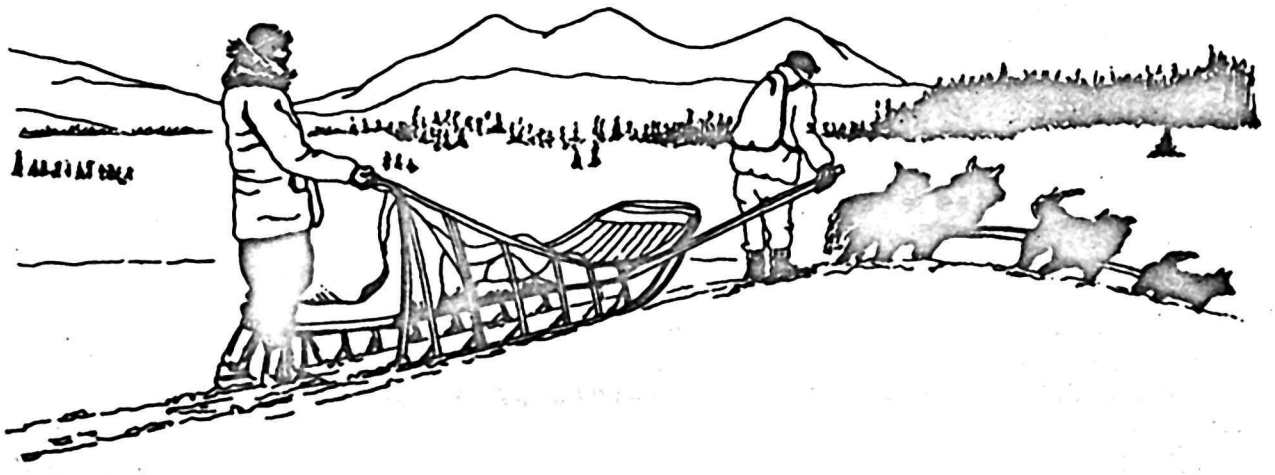
KUUVAŊMIIT SUBSISTENCE:

Traditional Eskimo Life in the Latter Twentieth Century



National Park Service
U.S. Department of the Interior

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CONTENTS

	Acknowledgments	1
	Preface	5
I	Introduction	11
II	Earliest Inhabitants of the Kobuk River Valley	14
III	Nineteenth and Twentieth Century Kuuvaŋmiit	29
IV	Environment of the Kobuk River Valley	64
V	Reminiscences of Kuuvaŋmiit Villagers	78
	Lucy Foster (Aqugluk)	79
	Susie Barr	87
	Beatrice Mouse (Anausuk)	91
	Jenny Jackson (Masruana)	106
	Louie Commack (Aquppak)	121
VI	Kuuvaŋmiit Subsistence Cycles	126
	Upper Kobuk River, Late Nineteenth Century	126
	Upper Kobuk River, Mid-1970s	135
	Lower Kobuk River, Late Nineteenth Century	153
	Lower Kobuk River, Mid-1970s	165
VII	Fishing	182
	Technology	187
	Spring and Early Summer Fishing (April through June)	203
	Summer Fishing (late June through August)	225
	Early Fall Fishing (September until Freeze-up)	255
	Late Fall and Early Winter Fishing (October through January)	275

VIII	Hunting	306
IX	Trapping	364
X	Gathering	381
XI	Utilization of Subsistence Resources	403
	Inland Resources	409
	Coastal Resources	437
	Importance of Marine Products	441
	Uses of Resources in Traditional Medicine	444
XII	Travel	453
	Summer (Breakup to Freeze-up)	453
	Winter (Freeze-up to Breakup)	468
XIII	Village Dynamics	514
	Population Dynamics	514
	Activity Networks and Partnerships	531
	Roles	536
	Enculturation	540
	Village Life	544
	Integration of Subsistence Activities and Wage Economy	574
	Non-Native Settlers in the Kobuk River Valley	582
XIV	Place Names as a Reflection of Use Areas	587
XV	Subsistence Ecology	600
	Localized Nature of Resources	600
	Dynamic Nature of Resources	613
	Localization, Variation, and Subsistence Activities	624

Subsistence Activities and the Kobuk Valley National Monument 637

XVI Present Status and Future of Subsistence 641

Dependence on the Subsistence Economy 642

Cultural-Psychological Dependence on Subsistence 648

The Future of Subsistence 659

List of Figures

1.	Archeological artifacts from Onion Portage	28
2.	Snaring ducks	104
3.	Gill net ready for use	188
4.	Netting shuttle	189
5.	A float and sinker used on seines	190
6.	Seine drying rack	191
7.	Two types of summer fish-drying racks	192
8.	Fish-drying rack for half-dried fish	193
9.	Fish club	194
10.	Gaff	194
11.	Fish spear	195
12.	Dip net	196
13.	Fish weir	197
14.	Fish weir of matted brush and branches	198
15.	Fish weir constructed under river ice	199
16.	Hook, dip-net, and fence used for fishing	200
17.	Blackfish trap	201
18.	Cache for storing fish	202
19.	Spring fish camp at Black River	210
20a.	Smelt seine	217
20b.	Seine set in eddy of Kobuk River	232
21.	Salmon seine in position	236
22.	Water flow in a river eddy	239
23.	Gill nets set for salmon	241

24. Women cutting and drying whitefish 244
25. Cuts made to process whitefish 245
26. A string of whitefish 247
27. Cuts made to process salmon 249
28. Devices used to ward off birds 251
29. Cottonwood logs used to make smudges 253
30. Fall fish camp along the upper Kobuk River 262
31. Cuts of fall-caught whitefish 272
32. Fall cut of salmon 272
33. Enclosure for unprocessed fish 273
34. Fish raft used to tow salmon back to village 275
35. Trot line set under the ice for burbot 280
36. Fall fishing site of Paniyavik 282
37. Ice pick and hooked pole used to set gill nets under ice 283
38. Holes in ice through which a gill net is set 283
39. Pulling a line under the ice 284
40. Gill net in place under the ice 285
41. Placement of burbot (mudshark) traps 289
42. Current indicator and throat poles set into riverbed 290
43. Outline of area where mudshark trap will be built 292
44. Wall log of trap braced in place 294
45. Funnel inset into frame of trap entryway 296
46. Side view of throat in trap 297
47. Poles set to form long, narrow shoreward wing of trap 298

48. Layers of willow saplings set between poles of trench 299
49. Fastening toggles under the ice to keep barrier of willow saplings in place 300
50. Pliers for setting toggles over willow wall 300
51. Cutaway and condensed view of a mudshark trap 301
52. Top view of a mudshark trap 305
53. Killing a bear with a spear 344
54. Cubby set used to trap lynx 373
55. Deadfall for lynx 373
56. Hemispherical shelter made with a tarpaulin 456
57. A tripod-type shelter 456
58. Raft made of spruce poles 458
59. Man's traditional winter garments and contemporary winter clothing 469
60. Side and top views of sled with gee pole 500
61. Eskimos with their sled and dog team 500
62. Basket sled attached to snow machine 501
63. Plank-type sled 502
64. A temporary snow shelter, milluk 503
65. A temporary snow shelter, iipuggaun 504
66. A cone-shaped shelter of branches and poles 504
67. A snow house 505
68. Using temperature inversion as protection from cold 506
69. Heated earth camping place 507
70. Willow bough shelter 508

71. Canvas wall tent furnished for winter camping 510

Tables

1. Settlement locations, 1884-1885 46
2. Climatic data for villages of Kobuk and Kotzebue 68
3. Flora and fauna used by Kuuvaŋmiit Eskimos, 1975 73
4. List of animals and plants used by Kuuvaŋmiit 74
5. Fall catches of fish in gill nets 270
6. Daily catch of burbot in one trap, November, 1974 304
7. River boats and outboard motors owned by families of Ambler, Shungnak, and Kobuk 464
8. River boats and outboard motors owned by families of Kiana and Noorvik 466
9. A comparison of dog teams and snow machines: cost, upkeep, and performance 496
10. Age distribution by sex of Kiana residents, 1975 517
11. Number and percentage of Kiana residents, by age group and sex, 1975 518
12. Types of marriages of Kiana residents in 1975, according to premarital residence 520
13. Ratio of Kiana males and females married to non-Kiana residents, 1975 522
14. Marital residence pattern in Kiana, 1975 522
15. Types of marriages of Noorvik residents in 1975, according to premarital residence 524

16. Marital residence pattern in Noorvik, 1975 524

Maps

1. Summer subsistence zone, Lower Kobuk 596
2. Winter subsistence zone, Lower Kobuk 597
3. Summer subsistence zone, Upper Kobuk 598
4. Winter subsistence zone, Upper Kobuk 599

Charts

1. Annual Activity Cycle of Kuuvaŋmiit of Upper Kobuk River 127
2. Annual Activity Cycle of Kuuvaŋmiit of Lower Kobuk River 128

APPENDICES

1. Eskimo concepts, by Nita Sheldon 661
2. Orthography, by Stephen McNabb 691
3. Place names 698
4. Place name maps In pocket
5. Use area maps In pocket

BIBLIOGRAPHY 769

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This volume is an edited and slightly revised version of our 1975 final report submitted to the National Park Service entitled Kuuvaŋmiit: Traditional Subsistence Living in the Latter Twentieth Century. The unedited final report was submitted to numerous reviewers, including individuals representing NANA (Northwest Alaska Native Association) and the five Kobuk River village corporations. We have incorporated most of the suggestions and would like to thank all of the reviewers for their time and effort.

PREFACE

The Kuuvaŋmiit Eskimos of the Kobuk River Valley in northwestern Alaska are among the few people in North America, indeed in the entire world, who still actively pursue a hunting-fishing-gathering lifeway. The goal of our research was to compile an accurate and comprehensive description of their subsistence-related activities from as many perspectives as possible. The National Park Service of the United States Department of the Interior and the Northwest Alaska Native Association commissioned this study to provide background material for legislation and planning for the proposed Kobuk Valley National Monument, a park that lies at the center of the Kuuvaŋmiit homeland between the upper and lower river communities. The park is to be open to all United States residents and at the same time is to continue to be available to Kobuk River residents for traditional subsistence use.

To obtain the information needed, we set the following objectives:

(1) To document the history of Native use and occupation of the Kobuk River Valley.

(2) To determine the changes in subsistence activities that have occurred over thousands of years, and the degree to which modern subsistence activities are the result of this process of change.

(3) To describe the fluctuating nature of the resources within the Kobuk River Valley ecosystem and to show that open access to all traditionally utilized lands is necessary if the indigenous economy and its cultural underpinnings are to survive.

(4) To compile an accurate description of modern and traditional subsistence activities.

(5) To describe the knowledge and perceptions that underlie Kuuvaŋmiit subsistence activities, to relate their significance in the contemporary economy, and to show their role in the overall pattern of Kuuvaŋmiit culture.

(6) To examine the future of subsistence activities in the light of changing cultural patterns and land use policies.

Field Methods

Research was conducted among the Kuuvaŋmiit Eskimos between June 1974 and August 1975. The Kuuvaŋmiit live principally in five villages along the Kobuk River. Efforts were made to incorporate all five of the villages into the study. As many local residents as possible were included among the researchers.

Work was initiated by Ray Bane and his wife Barbara who resided in Shungnak on the upper Kobuk River from June 1974 until June 1975. Mr. Bane developed and implemented the research design for delineating the various areas used by the Kuuvaŋmiit and documented the subsistence techniques of the Kuuvaŋmiit who live along the upper part of the Kobuk River. His work was aide

by Mr. Joe Sun, a Native of Shungnak, who contributed much useful information from his inexhaustible knowledge of Kuuvaŋmiit traditions.

Nita Sheldon returned to her home village of Noorvik from January until July 1975, postponing her final year at the University of Alaska in order to record the cycle of life in this lowermost Kobuk River village. Aided by her knowledge of the Kuuvaŋmiit language and her training in linguistics, she concentrated on obtaining personal recollections from the older residents of the village. Martha Garfield, also a resident of Noorvik, was engaged to research subsistence areas and place names of the Noorvik region.

Richard Nelson and his wife Kathleen Mautner lived in the upriver village of Ambler from January until June 1975. Studies in Ambler focused on utilization of subsistence resources, areas of utilization, analysis of general subsistence ecology in the Kobuk River Valley ecosystem, and the interaction between the white and Iñupiat communities there.

Douglas Anderson, who served as head of the project, resided in the downriver village of Kiana from March until July 1975. He was joined by Wanni Anderson in April and Stephen McNabb in June. Research in Kiana covered a range of topics related to subsistence and included a history of the Kiana settlement, land use, a description of subsistence areas and techniques, women's economic roles, and place names. Two residents of Kiana, Donna Atoruk and Helen Blastervold, were also engaged to collect information on

subsistence areas and place names. A third resident, Elmer Jackson, a student at the University of Alaska, did research on the life histories of several village elders.

The methods for conducting the study differed according to the kind of information being sought. Subsistence techniques were observed and, where possible, the researchers took part in the full round of hunting, fishing, and gathering activities. Efforts were also made to participate in all aspects of village life in order to gain maximum understanding of the kind of living supported by the Kuuvaŋmiits' subsistence efforts.

Extensive studies were conducted through daily conversations and formal verbal instruction. Information gathered in this way covered a broad range of subjects that could not be studied through direct observation. Much of this was done informally, by visiting people and discussing diverse topics. Data on traditional knowledge and techniques, attitudes toward the environment and subsistence living, ecological concepts, and specific historical events were gathered in this way.

Formal interviews were carried out by all researchers to allow structured exploration of subjects of particular importance They were used especially for gathering the personal recollections of the older residents of Noorvik and Kiana. These people were sometimes asked direct questions about events, activities, or techniques of the past, and sometimes they were asked merely to talk freely about their younger days. Some of these conversations were tape recorded, and copies of the tapes were given to the narrators.

A detailed study of the areas used by the Kuuvaŋmiit was made possible by interviewing most of the families in the five Kobuk villages. Household members were asked whether they performed a certain activity during each of the past three years or, if not, when they last did so. Then they were asked to show exactly where they carried out the activity. They were also asked to pinpoint the areas where they generally obtained each resource, such as the area where they hunted caribou in the fall, seined for fish in the summer, fished with gill nets in the spring, snared ptarmigan, and so on. This led to the detailed compilation of resource places and subsistence zones shown on Maps 1-4.

Place names were also solicited from each family during these interviews. This led to a fairly complete inventory of places presently important to the Kuuvaŋmiit (see Appendix 3). The names usually designate landscape features, campsites, abandoned settlements, special resource places, and locations of noteworthy historical events. An airplane was used to fly knowledgeable upriver residents along travel routes to hunting grounds in the mountains, and several boat trips were made with downriver people to record traditional campsites between the Kobuk River Delta and the Hunt River. Although not complete, the place-name list gives an indication of usage areas throughout the entire Kobuk River Valley and demonstrates the Kuuvaŋmiit Eskimos' detailed knowledge of their region.

The bulk of the report was written at the University of Alaska, Fairbanks, during the summer of 1975 immediately following the completion of our research in the villages. In the summer of 1976 Stephen McNabb returned to the Kobuk River Valley to verify the locations and spellings of all the place names.

I

INTRODUCTION

The Kuuvaŋmiit Eskimos who have lived along the Kobuk River in northwestern Alaska for thousands of years are a branch of the Iñupiat Eskimos who have long inhabited the polar regions from Alaska to Greenland. The Kuuvaŋmiit are among the few people in North America who still sustain themselves measurably through their own hunting, fishing, and gathering efforts.

The United States Department of the Interior has proposed to set aside 1,854,556 acres of the traditional Kuuvaŋmiit land, land that has nurtured them for millennia, in a Kobuk Valley National Monument, and as a national monument it will be open to all people, just as other national parks are.

The establishment of the Kobuk Valley National Monument would undoubtedly bring changes to the Kuuvaŋmiit in ways that are impossible to foresee. At the very least it would encourage many more persons to visit the region than do so at present. Yet, the desirability of the changes must be assessed in the context of other directions of change that would just as certainly follow if other courses of action were taken. Having added a political and economic organization, NANA, to their traditional institutions of overseeing their lands, the Kuuvaŋmiit villagers may be able to exercise some small amount of control over the changes that are taking place. But for the most part their destiny is in the hands of government policy

makers who must consider them in the broad context of state and national interests.

Passage of the Alaska Native Claims Settlement Act (ANCSA) by the United States Congress in 1971 has already brought changes and problems to the Alaskan Natives. The act was to provide a "fair and just settlement of all claims by Natives and Native groups of Alaska, based on aboriginal land claims . . . without establishing any permanent racially defined institutions, rights, privileges, or obligations." After it was passed, many previously unthought-of problems arose concerning land occupancy and usage rights, many of which were with respect to a further stipulation that "no provision of this Act shall replace or diminish any right, privilege, or obligation of Natives as citizens of the United States or of Alaska, or relieve, replace, or diminish any obligation of the United States or of the State of Alaska to protect and promote the rights or welfare of Natives as citizens of the United States or of Alaska." The present study presents as much information as it was possible to obtain in a one-year study and is intended to aid lawmakers and government planners in whose hands the fate of Alaskan Natives lies.

Many of the decisions to be made regarding the Kuuvaŋmiit center around two questions: (1) given that the Alaska Native Claims Settlement Act has granted ownership of core regions to Native groups, to what extent do these Natives retain rights to use the lands beyond these core regions--lands that have been theirs for millennia?, and (2) since use of areas extending

beyond the core regions is essential for the survival of the Eskimo people, how is it possible, in keeping with the intent of the ANCSA, to guarantee the Native people the right to continue their traditional subsistence living?

Our research among the Kuuvaŋmiit should provide information that will give answers to these questions. It should also help to clarify some of the concepts, such as "subsistence activities," that have been incorporated into draft legislation affecting all Alaskan Natives.

II

EARLIEST INHABITANTS OF THE KOBUK RIVER VALLEY

Ten thousand years ago, when Alaska had barely severed its land connection to Asia across the Bering land bridge, the forerunners of the Kuuvaŋmiit Eskimos were already at home in the valley of the Kobuk River. They lived in a landscape vastly different from today. Whereas nowadays the vegetation of the valley is dominated by stands of spruce, poplar, alder, and willow, very few of the plants ten thousand years ago would have reached higher than a foot or two. The early Kobuk River Valley residents hunted caribou and other modern Arctic fauna, and possibly native American horses and bison which may still have been present in the valley.

The prehistory of the Kobuk River Valley is better known than nearly any other part of Alaska owing to detailed investigations made there in the 1940s by J. L. Giddings and to the extensive excavations made in the 1960s at the Onion Portage site at Paatitaaq (180)* midway up the Kobuk River. Yet archeologists feel that in regard to understanding the development of the Kobuk River peoples' lifeways, their work has just begun. At present they still must speculate on many aspects of the subsistence cycles represented by the archeological remains. A major reason for this is that most of the known archeological sites in the

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* The numbers in parentheses behind the place name refer to its location on the map in Appendix 4.

Kobuk River Valley are the remains of winter settlements. Winter homes were at times built partly underground of wood and sod, and after they were abandoned, they deteriorated, leaving depressions, now grass-covered, that are easily found. Fall, summer, and spring homes were temporary camps--tent sites--and despite the fact that they were the scene of every bit as much activity as the winter settlements were, they have left no surface signs to give their presence away. Further, because they now lie in dense undergrowth along the Kobuk River and its tributaries, they are found only with a great deal of searching, and the evidence they yield about the activities that took place there are scant (for further information see Giddings, 1952, 1967; Anderson, 1968, 1970a).

The Onion Portage site on the Kobuk River is one of the most important archeological sites in Arctic America. Its more than seventy distinct cultural layers document a progression of winter, summer, and fall settlements spanning ten thousand years. Objects left by the people who lived or camped there--such as stone, bone, and antler tools, pottery sherds, and fragments of bones of the animals they hunted--enable archeologists to piece together a picture of their lives.

The earliest people who used the Onion Portage site were hunters. Their stone implements discarded at the site are similar to tools made and used by people of eastern Siberia, who used them to hunt the last of the Pleistocene mammoths, and of interior Alaska, who used them to hunt horse and bison. Despite

their close ties to people so far away, we are quite certain that the Kobuk River people of ten thousand years ago were not recent arrivals from Asia, however; most likely their initial settlement in Alaska from Asia had come many millennia earlier. The reason we see such strong cultural similarities between the Kobuk and the Siberian peoples can be explained by the fact that as long as Asia and Alaska were a continuous land mass, styles that came into vogue among the people of one part of the vast tundra region were quickly accepted throughout the other parts. A particular type of stone core, part of the Akmak complex used by the earliest people at Onion Portage, for instance, was used throughout Alaska, northeastern Asia, Mongolia, and northern China (Fig.1-a).

Within northern Alaska the residents of the Kobuk River Valley must have had to travel widely to obtain some materials not available locally. Wood in particular must have been in constant demand, and because it is difficult to conceive of people's surviving without the use of at least some wood for poles and shafts, we surmise that a source was available to the earliest Kobuk River Valley residents. One such source may have been from residents along the Koyukuk River to the south. Besides contact with people to the south, the Kobuk River Valley residents apparently also had communication, and probably trade, with people to the northeast, for the stone--a particular kind of chert--from which their tools were made seems to have come from the western end of the Brooks Range.

During the ensuing millennium dwarf birches became more plentiful in the Kobuk River Valley, and alders, willows, and perhaps even poplars grew along the banks of the river and all of its tributaries. The Kobuk people of 8,500 to 8,000 years ago thus had an advantage over their ancestors in the valley in having at hand greater quantities of usable wood (alder and willow). They continued to be in touch with their southern neighbors of the Koyukuk River Drainage, but instead of obtaining wood from them, they obtained stone, namely obsidian, from which they made fine tools. At the same time they gave up their reliance on cherts from the western Brooks Range and concentrated on more locally available cherts which, though of inferior quality, suited their needs.

The subsistence activities of these people are known from a cluster of abandoned hearths at Onion Portage that date to between 6500 and 6000 B.C. Since all ungulates except caribou were extinct in the region by that time, these Kobuk River people had to rely primarily on caribou for sustenance. Neither they nor their ancestors seem to have depended on the fish resources of the valley, and whether or not they occasionally speared fish may never be known, for any antler they may have used for fish spears would long since have rotted away, leaving no trace. Their hearths lay on what was at the time a low, wet flood bank on the river's edge. Probably their campsites were set up immediately in front of willow thickets like those that line much of the Kobuk River today, and they most likely were the briefly used

early June or early September camps of hunters on the search for caribou. Like their ancestors, they used antler-headed spears for hunting, and perhaps arrows. Although the antler has decomposed, their stone microblade insets have survived (Fig.1-b). Scattered about the hearth areas the remains of caribou jaw bones have been found, probably left over after the hunters removed the tongues for eating. Fragments of other bones, exceptionally small, lay imbedded in the hearths and may well be the remains of rib sections that the hunters roasted over the fire.

Undoubtedly the winter dwellings of these people were not far away, but no trace of them has yet been found. We therefore do not know whether their tools as well as their weapons were similar to those of the Akmak complex left by their ancestors. They may not have made the large tools their ancestors made two thousand years earlier because with caribou as their major resource they would not have needed such large implements. As demonstrated by many different groups across the Arctic, small delicate weapon heads and knives are sufficient for bringing down and butchering caribou.

After about 6,000 years ago spruce trees began to gain a foothold in the Kobuk River Valley, growing along the main channel of the river and along its tributaries.

After about 8,000 years ago Onion Portage was abandoned for a span of two thousand years. Archeologists are at a loss to explain why, although it may have been simply that the channel of the Kobuk River in front of Onion Portage changed to make the

site unattractive to potential residents. Or, it may be that the causes were more far-reaching, such as food becoming less available. If this were the case, the change may relate to changes in the vegetation of the region. After about 8,000 years ago alder began to grow in abundance throughout the region. Caribou, which feed primarily on tussock meadows, herb species, willow shrubs, dwarf birches, heath, and lichens tend to avoid alder. They may therefore have found the Kobuk region too full of alder to their liking, and spent their winters and summers elsewhere. Without caribou, and without the knowledge of fishing techniques that were only later developed, the people would have found the area too barren to support them.

When people again occupied the middle Kobuk River Valley, they were not the descendents of the earlier Kobuk River residents, but instead were people whose cultural heritage derived from the southerly regions of interior Alaska and the southwest Yukon. They may well have been Indians who used tools very like those used by Indians in the interior of Alaska, where much wood was available. Possibly, of course, this new group of people were Eskimos who had adapted to a new habitat--one of spruce-lined rivers--and who accordingly adopted a way of life and material culture like that of interior Alaska, but if this were so, at least a few traces of their original cultural traditions should have remained. Since there were no such traces, it appears to us that it was Indians who began to occupy the Kobuk River Valley about 4000 B.C. Their tools included small,

irregular projectile points notched near the bases to facilitate tying directly to wooden arrow or spear shafts (Fig.1-c). Toward the latter part of their occupation of the middle Kobuk River Valley, around 2500 B.C., these people began to make use of the fish resources of the river. The first notched stones used at Onion Portage were in the levels that represented the years of residence of these people. The stones were probably used for gill nets.

It was not until 2200 B.C. that Arctic peoples again occupied the Kobuk River Valley. The changeover was dramatic, for after a period of two thousand years of Indian occupation, it took a mere fifty years or so for the people of an early dynamic Eskimo culture, known archeologically as the Denbigh Flint complex, to spread throughout the Kobuk River Valley. The Denbigh master craftsmen lived in various coastal areas of western Alaska, and they appear to have developed two of the three major subsistence patterns relied on by modern Eskimos, namely sea mammal hunting with harpoons (except whaling), and caribou hunting with spears, bows, and arrows. They also perfected the seasonal moves between the interior and the coast that have become such a vital part of modern Eskimo lifeways. They wintered along the Kobuk River and elsewhere in the Brooks Range, spent their summers seal hunting from the shores of Kotzebue Sound, and returned up the river in the fall in time for the caribou hunt. As with the earlier tundra-oriented residents of the valley, and in contrast to the Indians whom they replaced, they continued to maintain

contacts with Siberians, perhaps through trading connections like those that were active in the nineteenth century at Kotzebue and Shesaulik on Kotzebue Sound. The craftsmanship of flint knapping appears to have been learned from Siberians, but it was developed to its greatest height by the Denbigh Flint Eskimos (Fig.1-d).

The Denbigh Eskimos, who might well be the ancestors of all Eskimos, may also be credited with introducing into northwestern Alaska the idea of shaping stone tools by grinding, instead of by merely chipping them. They employed this technique for shaping the blades for adzes to be used for woodworking and for making certain grooving and cutting implements (Fig.1-e). Like their forerunners, they were primarily caribou hunters, living much like the Eskimos of the Brooks Range of the nineteenth century.

Between 1600 B.C. and 600 B.C. the descendents of the Denbigh people concentrated on hunting and gathering more intensively in their local regions. This brought about regional diversities in their culture. Game must have been plentiful during this period, and the Kobuk River families could spend most of their time hunting and fishing right in the Kobuk River Valley. Their Eskimo relatives who lived year round on the seacoast or on the shores of Kotzebue Sound no doubt supplied them with coastal foods like seal oil and beluga muktuk (skin and blubber). They also acquired pottery from the coast, newly introduced to their coastal relatives by Siberians. These first millennium B.C. Kobuk River residents also had frequent contacts with the

neighboring Indians, even to the point of adopting many traditionally Indian ways of making things.

After the beginning of the Christian era the Kobuk River peoples abandoned the Onion Portage settlement, preferring perhaps, other camps near by. More and more they did things in the manner of their coastal relatives. Their tools, for instance, became closely similar, and they constructed their houses with long tunnels more suitable to the climate of the coast than to that of the interior. Their economic activities, however, remained typically interior Eskimo. They wintered in isolated households along the river, perhaps spent springs at the coast, and returned before fall in time to hunt caribou from camp at the river's edge. They communicated intensively with their neighbors in the Koyukuk River Drainage (Clark, 1974) and perhaps spent parts of their lives along some of its tributaries.

The Kobuk River peoples flourished in the valley until between A.D. 500 and 600 when a regional decline in caribou forced them and their more northerly interior tundra relatives to concentrate their activities on the seacoast where their livelihood depended on the harvesting of fish and sea mammals. That they were able to sustain themselves with success can be directly linked to their prior seasonal experience there.

The temporary evacuation of the Eskimos from the valleys of the Kobuk and other northern rivers left the region available to people from farther in the interior who did not have ties to the coast through past experience or kin. These people who next

occupied the Kobuk River Valley were presumably Indians and the ancestors of the present-day Koyukon, an Indian group that now lives on the Koyukuk River. For a period of fifty years or so these people occasionally made hunting forays in the fall to Onion Portage, probably one of the few places at the time where caribou could still be encountered, to kill, butcher, and dry the meat to take back to their home bases. In a way, this practice must have been akin to the more recent Kuuvaŋmiit practice of going north, to the Noatak River, to hunt caribou.

Around A.D. 1000 the Eskimos, in all likelihood Kuuvaŋmiit, again began to occupy the valley year round. Having just prior to A.D. 1000 concentrated their activities on the seacoast, where their relatives, and probably they too, had successfully developed the elaborate seal, beluga, and whale hunting techniques that have characterized Eskimos of the past century, ancestral Kuuvaŋmiit brought into the interior many coastal values. They built coastal style houses, for example, designed with long tunnels to keep out the draft during the severe winter storms that occurred on the coast, and only later were these replaced by houses with storm sheds, which became typical of the interior.

As a result of several factors the period following A.D. 1000 was one of plenty and of population growth for the Kuuvaŋmiit, as well as for the Kotzebue Sound Eskimos. Caribou were once again abundant in northwestern Alaska including the downriver Kobuk area, and the Kuuvaŋmiit developed a new fishing technology that enabled them to make full use of the river's resources. At the

same time, conditions along the northern edge of Kotzebue Sound favored the taking of baleen whales and other sea mammals, providing goods that could readily find their way upriver through trade channels.

Between A.D. 1000 and 1400 the Kuuvaŋmiit developed a wide range of fishing techniques and began a seasonal round of subsistence activities that is basically the same as that followed today. In the middle reaches of the river, settlements sprang up that centered around winter caribou hunting in the Kobuk River Valley, spring seal hunting at the coast, and summer salmon fishing along the main river. The earliest of these sites were located where the people were able to establish their winter settlements at the same place they could conduct their summer salmon fishing. Ahteut (453), Onion Portage (180: Paatitaaq), and Qalukruitchiaq (478) all had winter houses located at or near long sand bars along bends in the river where seining for salmon would have brought fine yields.

The archeological remains of the Kuuvaŋmiit show that they possessed sealing harpoon heads, so they must have traveled to the coast in the spring to hunt seals after the ice broke up. They apparently did not engage in spring gill netting. In fact, at each of these three locations a paucity of sloughs makes them rather poor early-summer fishing sites.

Upon return from the coast, probably around the first of August, the early Kuuvaŋmiit set up their fish camps near their winter settlements, perhaps locating their tents within eyesight

of their winter houses. One reason for the proximity of the winter and summer settlements was probably the ease with which summer-dried fish could be transported to the winter quarters. Dog traction had not yet been developed, so pulling was solely a human task.

Since Ahteut, Onion Portage, and Qalukruitchiaq are located at the main river crossings for southward migrating caribou, the hunters also had easy access to caribou in the fall. These animals may, in fact, have remained in the vicinity of the settlements throughout the winters. It is also possible that whitefish traps were erected across the river at these sites in the late fall or early winter. Although evidence for such traps would be difficult to come by, the sites are located at points on the river where they could easily have been built.

Life on the Kobuk River remained quite bountiful during the fifteenth to seventeenth centuries. The oldest known archeological site in the lower river area is Ekseavik, located about five miles up the Squirrel River. This settlement was a winter village, which, judging from the location, was some distance from the residents' midsummer camps. The Ekseavik settlement is, however, located near sites that would have been excellent for early summer gill netting, and the several net sinkers and net gauges found in the roof and floor middens of houses that were archeologically excavated indicate that gill nets were prepared at the settlement. These lower Kobuk River Valley residents traveled to the coast for sealing as did their forerunners from

the three middle river settlements. Before breakup of the river ice, they also traveled to Kobuk and Selawik lakes for shee fishing through the ice.

On the island across from the mouth of the Redstone/Ambler River,* an eighteenth-century settlement at Ukiivikruich (127: Ambler Island) was home to families who pursued a typical upper Kobuk River subsistence cycle. Because they possessed dog teams, they had much greater mobility in winter than their ancestors had had. In the spring they neither traveled down to Hotham Inlet for shee fishing nor went to the coast to hunt seals. Rather, they remained inland year round, apparently traveling only to the higher reaches of the Kobuk River. They made extensive use of birch bark, derived likely from farther upriver, but apparently they did not hunt mountain sheep, which should have been available, for not a trace of sheep horn was found in the remains of their site.

As far as can be determined the eighteenth-century Kuuvaŋmiit subsistence cycle continued throughout the early nineteenth century (Hickey, 1976). Some time during the latter half of the nineteenth century the caribou populations began to decline as they had periodically during the previous ten millennia, and the Kuuvaŋmiit again had to rely heavily on the seacoast for their economic pursuits. This time, however, the growing influx of

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* The Redstone River is considered the major river to which the Ambler is tributary. Therefore it is the Redstone, not the Ambler, that joins the Kobuk.

foreign goods tempered the effects of the caribou decline, and the upriver areas were able to maintain themselves in the interior despite the decline in caribou.

III

NINETEENTH AND TWENTIETH CENTURY KUUVAŋMIIT

The five villages were established between 1907 and 1914, attracting people from the entire river system. Kuuvaŋmiit who were eyewitness to the previllage days are now few in number, but fortunately, descriptions of the way of life then abound in the oral history of the Kobuk, and other descriptions are to be found in the written accounts of early explorers and visitors to the region.

Few westerners explored interior northwestern Alaska until near the end of the nineteenth century, so there are few written accounts of interior Iñupiat groups before that time. The earliest written reference to Eskimos of the Kobuk River appeared in a report written in 1847 by the Russian explorer Zagoskin; he said there was a village named Kobuk "on the river of the same name" (Zagoskin, 1967:126). As this was one of the place names Zagoskin obtained from Norton Sound Eskimos who had heard about it from others during the 1838 Kashevarov expedition to the Arctic Ocean, there is no way to determine its precise location along the river, or to know whether it was a summer or a winter settlement.

The presence of a village along the Kobuk was next reported by John Simpson (1852:92), the first European known to have entered the Kobuk River Drainage. In May of 1850 Simpson, surgeon of HMS Plover, made a sled trip over the rotting spring ice to Selawik Lake and Hotham Inlet, and en route went some

distance up the eastern channel, probably Makkaksraġiaq Channel (603), of the Kobuk. From residents along the lower Selawik River he received reports of a large village on the Kobuk that lay seven days' travel northward from the Selawik. Depending on whether we rely more on the direction or on the travel time, this would place it either a little upstream from the mouth of the Squirrel River or in the upper half of the Kobuk River system. The reference was clearly to a winter village. At the mouth of Makkaksraġiaq Channel, Simpson met a family of Kuuvaŋmiit who, in addition to fish, had many caribou bones and antlers lying about, indicating the presence of caribou in the lower river area at the time.

The second westerner to visit the Kobuk River was Capt. E. E. Smith. He went a few miles up the river in 1874 but did not make a report from which we can locate Kuuvaŋmiit settlements during that period (Cantwell, 1889:105). Therefore, until the 1880s, all that can be gleaned from written sources is that during the first half of the nineteenth century villages existed in the lower Kobuk River area. Based on archeological findings, such villages had existed intermittently in the area for the previous four centuries.

According to reports that resulted from a voyage to northwestern Alaska in 1881 by the United States Revenue Steamer Corwin, captained by C. L. Hooper (1884), Kuuvaŋmiit Eskimos were at Shesaulik in large numbers for trading, sealing, and fishing during the month of August. As interpreted from the

archeology along the Kobuk, summer trips to the coast had been the usual practice of the Kuuvaŋmiit for centuries (Giddings, 1952:111).

The first sizable settlement of the Kuuvaŋmiit actually visited by westerners was located along the low shores of the Kobuk River Delta about ten miles from the mouth of one of the channels (Cantwell, 1889:54). G. M. Stoney visited this village in 1883, and he gave it the name Gilderville. He traveled that year about eighty-five miles upriver, or forty miles above the head of the delta, which would be in the vicinity of Qaqiaqtuqvik (486) and Iglukisaaq (479) (Stoney, 1900:535).

In 1884 Lieut. John C. Cantwell, United States Marine Revenue Service, and Lieut. Stoney made independent explorations of the river and the former provided excellent descriptions of the settlements and locations of the residents his group encountered. Much of the success of Cantwell's expedition can be credited to the cooperation of the Kuuvaŋmiit guide Natarok, who not only knew the geographical features but also seemed to be acquainted with other Kuuvaŋmiit families along the entire course of the river. On the low shores of the delta Cantwell found several settlements, most of which were unoccupied:

> We passed many deserted huts, but saw no natives until about 10 a.m., when we observed a collection of huts on the right bank, and upon landing discovered a native and his family, who were greatly surprised at our appearance. The children were perfectly naked and retired precipitately to their huts. Here we were informed that many natives had starved during the winter. (Cantwell, 1889:54)

Cantwell continued only a short distance up the river when, at thirty-one and one-half miles from the mouth, he came to another group of huts on a high bluff on the right side, which he learned was the settlement Stoney had named Gilderville. Apparently, no other settlements (neither occupied summer fish camps nor unoccupied winter houses) were discernible from the river as far up as the vicinity of Qalukruitchiaq (478), where a deserted village was located. This was, in fact, the first settlement large enough for Cantwell to have termed a village and not just a group of huts. An occupied village, in which, on July 16, 1884, the residents "were busily engaged in repairing their nets preparatory for the run of salmon," was located six miles above Qalukruitchiaq. Cantwell's account of a conversation with the residents gives us an interesting insight into some differences in attitudes between the government at the time and the Native population:

> A number of natives had preceded us to a place where suitable wood could be obtained, and for a small quantity of tobacco agreed to have sufficient quantity of wood cut to last us through the day. Here I saw a specimen of green stone which the Indians informed me had been obtained from the mountains about five days further up stream. They say that whoever goes to that mountain and brings away any stone will be afflicted with some dreadful malady everafterwards, and that the stone belongs to the natives and not the white men. I argued that the stone did not belong to them individually, but had come to them from their great-grandfathers, who were also our great-grandfathers. This direct claim to relationship did not meet with a very cordial reception, but they were not inclined to discuss the matter any further. (Cantwell, 1889:56-57)

Another village, which was just being set up for the season around July 21, was located at or a little below the Nuna (200: Hunt River). The people of the village had come upriver behind Cantwell, so presumably for the first part of the summer they had been down at the coast at the trading rendezvous, which by 1884 had apparently shifted from Shesaulik to Kotzebue. Entire families were there, and the men showed no intention that late in the season of going north to the mountains to hunt.

The residents of this village were quite knowledgeable of the upriver area, although they themselves appear to have been from the middle part of the river. According to Cantwell the villagers said that

> During the winter all the Indians [Kuuvaŋmiit] who come down to fish in the summer live near the headwaters of the river, and . . . after the snow has fallen they make sledge journeys to the headwaters of the Koyukuk, where they trade with the Yukon Indians, and then go still farther to the northeast until they reach a range of very high mountains, where the moose and mountain sheep are found in great numbers. (Cantwell, 1889:61)

From two distinct sources Cantwell learned "that the sea could be seen from the mountains on a clear day, but in only one direction, the view being shut out in all others by an intervening chain of mountains" (Cantwell, 1889:61). On the other side of the mountains where they hunted, the villagers told Cantwell, there was a river by which the sea could be reached in five days. Cantwell thought this was the Colville River.

When Cantwell reached the mouth of the Imaqluktuq (333: Umakalookta, or Black River) he heard of a village located up it, and as he was in need of boats to continue his ascent to the headwaters of the Kobuk, he diverted his expedition to visit it. His description of the village, which was located twenty-five or twenty-seven miles from its mouth, follows:

> At 1 p.m. [July 27] we arrived at the village and were welcomed with many manifestations of delight. Some of the Indians had never seen white men, and they crowded around me examining my clothing, etc., with the greatest curiosity. My watch was a source of never-failing interest to all, and whenever I took it out they eagerly pressed around me to see it opened, then they would express their astonishment by uttering the single word "Kay" in a short surprised tone of voice. This ejaculation seems to answer the purpose of expressing either joy or grief, admiration or contempt, acquiescence or disapproval. A traveler soon learns to distinguish the meaning to be conveyed by the difference in inflections. Our two river Indians [lower Kobuk River Eskimos] having explained the object of our trip, we had a consultation in which the entire village joined. I was disappointed to learn that no boats suitable for our purpose could be obtained, as the frail birch-bark canoes they use in fishing are never taken as far as the head of the river. . . . I also learned that from this village a portage could be made to the Kowak, and we would strike the river some twenty-five or thirty miles upstream from the mouth of the Umakalookta. The Indians agreed to help us make the portage if we remained with them till morning. (Cantwell, 1889:61-62)

After having made the portage the expedition encountered another village on the Kobuk River somewhere between the present location of Shungnak and the mouth of the Imaqluktuq. The

villagers there were apparently related to the Imaqluktuq families, as some of those who guided the party from the Imaqluktuq village took up residence there "for all summer apparently, as they had constructed a number of houses by weaving together the supple willow boughs in basket fashion and covering them with skins and old pieces of cotton cloth" (Cantwell, 1889:63). Cantwell describes the fishing there as follows:

> The women, in frail canoes, were running out their nets or hauling them up on the gravel beaches alive with the gleaming white fish, salmon and trout; and as we whirled past them one of their number seized a struggling king salmon by the tail and by a dextrous movement twirled it high in the air and it fell struggling and flopping into our boat. The feat was greeted with a tremendous "kay" of approval, and the sound of their shouts could be heard long after a bend in the river hid them from our view. (Cantwell, 1889:63)

This village was as far as Cantwell ascended the river in 1884.

In all, one unoccupied and eight occupied villages were located during the Cantwell expedition of 1884 between the mouth of the Kobuk River and Cantwell's highest point of ascent, somewhere below Shungnak. Of these, two were located in the delta, where there were also many deserted huts; five were along the middle section of the river between the mouths of the Siksrikpak (841: Squirrel) and the Ivisaaq (150: Redstone/Ambler) rivers; and two were in the Imaqluktuq-Shungnak area. Of the five mid-river villages, three were occupied for summer fishing only after July 21. Presumably the occupants of these villages had been to

the coast for hunting and trading, and had returned in time to fish, but not in time for the men to have gone off to the mountains of the Noatak River to hunt.

During Cantwell's 1885 expedition he observed only one settlement in the delta region, probably the so-called Gilderville, as it was located about thirty-one miles up one of the channels. The first occupied fishing village was located in the Puuvlich (714)-Qalukruitchiaq (478) area and was inhabited by many persons whom Cantwell had met the previous year. Cantwell also noted a deserted winter village located between the mouth of the Nuna (200: Hunt River) and Paatitaaq (180: Onion Portage), which he described as follows:

> An old winter habitation was discovered a short distance from the river, and Mr. Townsend and I proceeded to examine it. The spot had no doubt been selected on account of its sheltered situation. The densely wooded ridges running in on the river surrounded the collection of huts almost completely, and approach to the village was made by way of a narrow trail leading from the river. The houses were built by excavating a square hole five feet deep and from twenty to twenty-five feet square. Stakes or piles of spruce were driven close together along the walls, and long poles were then laid across the top, forming the roof of the house. The necessary pitch to shed rain was obtained by covering the outside with earth arranged in such a manner as to produce a moundshaped structure. We pushed aside the tall grass which choked the entrance and crawled on our hands and knees along a narrow passage just large enough for one at a time, until we reached the large chamber which doubtless constituted the living room. A small square hole in the middle of the roof furnished us sufficient light to see the interior. On the floor, along the sides of the walls, if I may

> so call them, were laid small willow wands, upon which the inmates were accustomed to lay their skins and sleep. In the center a square space was left, where could be seen charred sticks of a long-extinct fire. We set fire to a few dry sticks, and the smoke shot up in a straight column through the opening in the roof, showing that defective flues are a source of annoyance not yet known to the natives. (Cantwell, 1887: 26)

The second summer village upstream, named Un-nah-tak, was located on the Kobuk somewhere above the mouth of the Ivisaaq (150: Redstone/Ambler River). It was not yet occupied for summer fishing by July 7.

Cantwell noted the presence of many deserted villages in the vicinity of the present villages of Shungnak and Kobuk. The one occupied village there, apparently located at Sikliksraq paaŋa (409), along the gravel bank of the lower end of a large island south of the Kobuk-Shungnak channel, was occupied by villagers whom he had met the previous summer on the Imaqluktuq. He visited the village on July 9, and apparently the young men of the village were still there. Farther up the Kobuk River was a small fish camp of two women and three children who were subsisting on young shoots of willows (isiigagaak) while awaiting the beginning of the salmon run. Their husbands were away in the mountains hunting caribou.

Two more fishing villages were established that summer between Shungnak and the mouth of the Manailaq (267: Mauneluk River). These were set up some time between July 11, when Cantwell passed the area on the way upstream without noting their

existence, and July 28 to 30, when he visited them on the way downstream. One of these villages, visited July 30, was in the vicinity of Qalla (283: Kalla), if not at Qalla itself. The other village, located approximately three or four miles below the mouth of the Mauneluk River, as far as can be determined from Cantwell's description, was a women's fish camp comprised of eight women, ten children, and a sixty- or seventy-year-old man:

> The husbands of the women were away in the mountains hunting deer, and the solitary representative of the sterner sex, a decrepit old fellow, sixty or seventy years of age, seemed to have some difficulty in holding his own against such odds.
>
> The fishing season being at its height, the women were busy all day and until it became too dark at night, hauling their seines. A large fire was kept up in which round stones, two and a half to four inches in diameter, were heated red hot, and when a meal was desired they were thrown into a tub of water, rapidly raising its temperature to the boiling point. A half-dozen fish were then put in and in a few moments the natives gathered round the fire, and after the woman who superintended the cooking had removed the fish from the tub and placed them in a large wooden tray, they fell to without ceremony and ate until the supply was exhausted. In a short while another haul of the seine would be made and another feast inaugurated, so that one sometimes wonders if it is possible to appease their appetites.
>
> The Indians of my party took an active part in eating the fish after they had been cooked: but I never saw one assist in their capture by so much as helping the women shove their boats off the beach. They would squat lazily down on their haunches and look on with ludicrous impassiveness while the women loaded their boats with the seine or hauled it in heavily weighted with fish.

The children assist the women, and the scene when a big haul is made is picturesque in the extreme. A half dozen little naked savages, up to their waists in the water and struggling frantically with refractory salmon and white-fish, almost as large as themselves, was an event of frequent occurrence.

The fish which were not immediately eaten are cut open and the entrails removed, and are then hung up to dry on long poles placed horizontally on upright supports along the beach. The head is removed and the roe is dried separately. Fish are sometimes, though not commonly, buried without having been previously cleaned, and allowed to become putrid before eating. This form of diet is esteemed a luxury, but owing to the trouble of transporting it when traveling it is not so common as the dried fish. I attempted to eat some of the buried fish, but in spite of the fact that I was very hungry at the time, I could not retain it on my stomach, and I am satisfied that a white man would starve before his stomach could be educated up, or down, to this repulsive diet. In addition to the drying-poles, each fishing village contains a square house, ten or twelve feet high, made of piles and covered by small poles. When a sufficient number of fish have been dried on the poles, they are put in this house and thoroughly smoked, and are then ready for storing away for winter use.

The seines are cleverly made from the inside bark of the willow and range from thirty to sixty feet in length by four to six feet in width. Pieces of deer antlers are commonly used as sinkers for the seines. In many places along the river the banks are filled with a tough fibrous root, from which is manufactured a most admirable substitute for twine. Seines made of this material are accounted superior to any others, and from my experience with one which we had brought from the ship I do not think a comparison with the native article would show that civilization had made any improvement in this direction, except perhaps in point of weight. (Cantwell, 1887:42)

Cantwell also said that above the mouth of the Quġluqtuq (295: Kogoluktuk or El-yog-o-lok-tok River) many deserted winter villages were observed, "and now and then we catch sight of a tall pole, bearing a fluttering pennant of some gaily colored cloth, marking the grave of some departed brave" (Cantwell, 1887: 30).

Game was apparently present above the mouth of the Mauneluk River, for on July 11, his party observed fresh signs of bear, porcupine, and caribou along the river banks. The Natives informed him, he said, "that those animals were very plentiful in the mountains in this region. During the colder weather of the winter months the deer migrate farther to the northeast" (Cantwell, 1887:30).

At the mouth of the Saġvaqsiiġiaq (356: Pah or Chok-way-chok River), Cantwell was informed that this tributary of the Kobuk River was a travel route to the Koyukuk River but that it had fallen into disuse and another and easier route was used (Cantwell, 1887:31). Opposite the mouth of the Anaulaqvik (226: Selby or Nud-re-wor River), the stream draining the lake by the same name (221: Lake Selby), was a fishing village made up of a collection of summer houses and some half-dozen persons waiting for the salmon. When Stoney had been there the previous year, 1884, he noted many deserted winter houses, "but no natives, as they are either in the mountains hunting deer or at the fishing villages" (Cantwell, 1887:32). This village appears to have been the farthest upriver village Cantwell encountered along the Kobuk River.

Information from the 1881-85 exploratory expeditions to Kotzebue Sound and the Kobuk River, when combined with information from the diaries of early missionaries, and from the late-period archeology of the region, reveals many interesting aspects of nineteenth-century Kuuvaŋmiit life. During that century, as during the preceding four centuries, large groups of Kuuvaŋmiit spent up to two months of each year at the seacoast hunting seals and beluga, fishing, and conducting trade. Most of these Kuuvaŋmiit were from the lower half of the river. By 1899, when the caribou population in the upper region was reduced and the flow of western goods to Kotzebue Sound expanded, an increasing number of upriver Kuuvaŋmiit also began to come by boat to the coast annually.

A few of the lower river Kuuvaŋmiit families remained on the river all summer. For example, some of the families with winter homes in the delta also established summer camps there, presumably to fish and to hunt waterfowl and muskrat. Of the lower river Kuuvaŋmiit who traveled to the coast, some arrived before breakup and established hunting camps along the coast a little east of Nuvote (Sealing Point at Cape Krusenstern), while others arrived after breakup, usually after the first of July, when Hotham Inlet was open to travel. These late arrivals went directly to Shesaulik, and by mid-July the earlier arrivals had joined them and other groups there to fish and, more important, to trade. The lower river Kuuvaŋmiit would return to the Kobuk during the latter part of July laden with seals and sea mammal products,

reindeer furs, and other exotic items they had obtained by trading pelts of small fur bearers. They arrived upriver in time to set up fish camps along the broad-point bars of the main channel between the mouth of the Siksrikpak (Squirrel River) and Paatitaaq to seine whitefish and salmon. Since the expeditions of the 1880s met no people from the Shungnak-Qalla area who had been to the coast, we do not know for certain the time these people would customarily return. However, according to stories passed on by the oldest informants, some of the people would return as late as just before freeze-up and would try to go as far as possible upstream before being stopped by ice. Wherever they were stopped, they built their winter houses and remained at least through early winter. One such village is said to have been located near Paatitaaq. Neither Cantwell nor Stoney reported any winter houses or settlements in the lower river area, but these may have been concealed by extensive willow thickets in the Aksik (775: Oksik) and Squirrel river mouth areas, where concentrations of winter house ruins, of an undetermined age, may still be seen.

In the 1880s many more all-women's fish camps were located in the upriver area than in the downriver area.

For the lower river Kuuvaŋmiit, the decision to travel to the coast apparently made it impossible for the men to travel to the headwaters of the Noatak in the summer to hunt caribou. Such a trek would have required the men to leave for the north in June, which they could not do if they were to be on the coast that

month. Thus, the fish camps that Cantwell encountered in most of the middle river area were set up during the latter part of July by the lower river Kuuvaŋmiit and were therefore made up of men as well as of women. In the upriver area, the fish camps, although also set up during the latter part of July, tended to be women's camps, with the men away in the mountains. However, the men apparently remained with the women until the move to the fish camps. Some few of the lower river Kuuvaŋmiit men may have hunted in the interior during the summer, but it was more common for them to go north to the Noatak River Drainage in the winter. Ethnographic evidence tells us there were fish camps along the Squirrel River as far as the Auraqviuraq (527: Omar River), and, judging from the Eskimo name of the latter river, which means summer camps, there must have been fish camps also along the Omar. As the Omar is the major travel route to the Noatak from the downriver area of the Kobuk, families may have set up fish camps there in the summer and then, as the upriver Kuuvaŋmiit did, the men may have left for the Noatak. There is no firm evidence of this, however.

Between 1881 and 1884 Qikiqtaurok (Kotzebue) replaced Shesaulik as the trading center. Called Rendezvous or the Summer Rendezvous by the western traders and whalers, this place probably assumed importance because of its proximity to the ship anchorage off Cape Blossom and because the channel into Hotham Inlet runs along the eastern shore of Baldwin Peninsula from

Cape Blossom to Kotzebue, making it easier to transport goods from the ship to there than to Shesaulik.

The lack of caribou in the lower area of the Kobuk River Valley in the 1890s undoubtedly gave the downriver Kuuvaŋmiit an additional incentive to go to the coast each summer, so that they could trade furs for Siberian reindeer skins with which to make their clothing. According to the naturalist C. H. Townsend who was on the 1885 expedition of the Corwin,

> Reindeer skin appears to be the principal material used for clothing by the natives of the Kowak [Kobuk] River region, but judging from the number of "piebald" garments we saw, the stock is derived chiefly from the domesticated variety, which is herded in great numbers on the Asiatic side of Bering Straits, and obtained by means of exchanges carried on in summer. The wild Alaskan variety of a reindeer is probably not very numerous in the Kowak region, although Mr. Cantwell saw a few small herds among the hills at the headwaters of the river, to which they migrate in summer. (Townsend, in Cantwell, 1887:87)

Because hides taken from caribou in the winter and spring are not suitable for clothing, the Kuuvaŋmiit of the lower Kobuk, even if they did make forays into the upper Noatak area for caribou in those seasons, would not have been able to use the skins for clothing. The upriver Kuuvaŋmiit, on the other hand, were able to obtain caribou skins to clothe themselves, because they hunted the caribou in the summer when the skins were good.

Most lower river Kuuvaŋmiit conducted their own trade, person to person, whereas the Kuuvaŋmiit of the upper Kobuk River relied on certain individuals to do their trading for them.

These few upriver traders became quite important and traveled great distances to trade with the Koyukon Indians of the Koyukuk River and with the coastal Iñupiat both north along the Arctic coast and west at Kotzebue Sound. Their pivotal position between Iñupiat sea mammal hunters along the coast, foreign traders at the coastal trading fairs, and Indian trappers from the Koyukuk River, in fact, gave them an ideal opportunity to become middlemen.

In contrast to earlier times, during the 1880s the greatest population density of the Kuuvaŋmiit appears to have been in the upper Kobuk River area, owing perhaps to the greater abundance of caribou there. This population shift, however, certainly owed much to the abandonment of a great part of the lower Kobuk area in favor of the coast. Logically, some of the downriver people could have moved upriver, but if they did, we have no evidence of it.

The difference in population between the lower and upper parts of the river in the 1880s is indicated in Table 1 (compiled from Cantwell, 1887, 1889; Stoney, 1900).

Little is known of the changes in subsistence and settlement activities along the Kobuk for the decade following 1886 except that Kotzebue continued to be the chief trading site for the region and the Kuuvaŋmiit continued to go down to the seacoast annually to hunt seals and belugas and to trade with other Eskimo groups. It is certain, however, that they were well aware of the changes that were taking place within groups along the coast. The introduction of reindeer herding on Seward Peninsula in 1892

Table 1. Settlement locations, 1884 and 1885

	Occupied Summer Camps		Winter Settlements	
	1884	1885	1884	1885
Kobuk River Delta to Nuna (200: Hunt River)	2	2	0	0
Ivisaaq (150: Redstone/ Ambler River area) to below Imaqluktuq (333: Black River)	4	1	0	1
Imaqluktuq to Anaulaqvik (221: Lake Selby)	2*	5	0*	0**

* Below Shungnak.
** Many deserted villages.

must particularly have sparked the imagination of the Kuuvaŋmiit who were then feeling the effects of the periodic decline in caribou in the upper portions of the river that had been felt earlier in the lower part.

In addition, the news of schools at Cape Prince of Wales and elsewhere along the coast must have made the Kuuvaŋmiit realize that education, and perhaps missionizing, were prerequisite to benefiting from the new goods and services offered by the United States government. Their first direct encounter with missionaries probably came during this period. In 1896 the Swedish Evangelical Mission Covenant missionary David Johnson and the Native evangelist Iyarok, or Mr. Rock, who had previously made a trading expedition to the Kobuk and Noatak rivers, traveled from Unalakleet to Kotzebue Sound to look over the possibilities of establishing

a mission there. They spent the summer and fall visiting settlements along the shores of Kotzebue Sound and up the Kobuk and Noatak rivers. Mr. Rock, who had relatives in the region, returned to the Selawik-Kotzebue Sound area early in 1897 to carry out missionary activities (Svenska Missionsforbundet i Amerika, 1897:121-41; Karlson, n.d.).

After 1897, with the establishment of the mission and school at Kotzebue, great changes came to the Kuuvaŋmiit. Despite the Swedish evangelical effort, Sheldon Jackson, Commissioner of Education in Alaska, gave the Friends Church, which had already established itself in southwestern Alaska, the jurisdiction to missionize and educate the Natives of the Kotzebue Sound area. The task fell to the newly established California Yearly Meeting of Friends to establish the first mission in the interior of northwestern Alaska. Met by Mr. Rock, who acted as interpreter, Carrie and Robert Samms arrived at Cape Blossom in August of 1897, intending to go directly up the Kobuk River to establish the mission and school (Samms, n.d.). But because of the late season and other factors, they decided to winter over at the Summer Rendezvous, which apparently was being occupied in winter during those years by only two households. Later, as the village grew, Samms decided to stay at Kotzebue, which the rendezvous was named in 1900. In addition to educating the Kikitagmiit, the residents of Kotzebue and vicinity, Samms and his wife took in pupils from the Kobuk and other river systems during the summers, a practice that continued until the upriver schools were estab-

lished in 1907 and 1908. The school was popular among the Kikitagmiit, and most of the children attended. This meant that the children who spent their summers in school instead of with their families were not learning about summer activities from their families at home, and it was the beginning of the process of transferring part of the traditional family role of educating to white teachers.

The summer of 1898 ushered in what must have been one of the most dramatic events in the history of the Kuuvaŋmiit. As many as 1,200 outsiders, from California and elsewhere, made their way up the Kobuk River during the two months of July and August and scattered along the entire river in search of gold. They remained about a year, and the magnitude of such an influx of nonresidents into the valley has never been equalled in any year since, notwithstanding the rising number of tourists, sports fishermen, hunters, and government administrators who now visit the area. The impact on the Kuuvaŋmiit's resources and culture of these first prospectors was likely not as great as one might expect, however. For one reason, contact with foreigners was already an established way of life, although instead of taking place at the coast, it now occurred in their own territory. Another reason is that the prospectors for the most part brought in more supplies than they could use; they did not rely on local game except for ptarmigan, hare, and waterfowl. On rare occasions they purchased meat such as bear meat from the Kuuvaŋmiit. Thirty-two prospecting camps were spread out along the river,

the first one forty miles above the mouth of the Kobuk and the last one at the mouth of the Reed River (Grinnell, 1901:31-32). One of these camps was apparently at the present site of Kiana. In some areas of the river the camps were only from one-half to three miles apart.

The distribution of the Kuuvaŋmiit during the winter of 1898-99 is known owing to a government-sponsored trip upriver during December and January by C. and R. Samms to ascertain conditions and to take a census of the Natives. The two major settlements were at the mouth of the Nuna (200: Hunt River), where 80 Kuuvaŋmiit were living, and at Paa (262), the mouth of the Saġvaqsiiġiaq (356: Pah River), where 280 Natives, over half of the entire Native population of the river system, were residing (U.S. Dept. of the Interior, 1900:1400-1401). The remainder of the Kuuvaŋmiit, about 140 in all, were apparently dispersed along the rest of the river. The Paa settlement must have been the most populous in the interior of northwestern Alaska at the time, apparently even exceeding the size of Kotzebue. At the request of the Kuuvaŋmiit residents of the Paa village, Samms recommended that a school and mission be established there. The Natives at Nuna had intense contact with prospectors in several camps in the vicinity. These contacts included taking part in the first sustained church services for Kuuvaŋmiit along the river, which were conducted by some of the prospectors on their own.

During the spring and summer of 1899 the prospectors abandoned the Kobuk as fast as they had entered, some to follow up the reports of the Nome gold strike, and many to return to their homes outside. Several prospectors stayed in the Shungnak area, however, and others arrived in 1900. Walter Mendenhall's geological survey party that covered the area between Ft. Hamlin and Kotzebue Sound in 1901 encountered a lone prospector at Riley Camp, just above the mouth of the Pick River, who had been there at least a year, and the party also met a group of newly arrived miners at the mouth of the Black River who intended to stay the winter (Mendenhall, 1902:11).

Kuuvaŋmiit settlements were apparently more dispersed in 1901 than they had been in previous years, for the total number of Natives Mendenhall recorded as living all along the valley that year was 250, as compared to 500 in 1898. The settlement farthest upriver was at Anaulaqvik (226: the outlet of Lake Selby). Another settlement was apparently at Qalla (283). According to Mendenhall, the Kuuvaŋmiit went through a tragic one or two years of starvation after the 1898 gold rush. Contrary to the evidence from the miners' accounts, he attributed their plight to the "disrupting effect of the prospectors." During the winter of 1901 several Kuuvaŋmiit died of starvation, and others died of influenza, which reached an epidemic level in the region that year (Hadley, 1969:103). To compound the problem, there were again no caribou in the Kobuk River Valley; the few that remained in the region were in the Noatak River Valley or near the head-

waters of the Totsenbet (John River). Moose, which apparently had begun to occupy the Kobuk area some years earlier, were also absent in 1901. As a result of the scarcity, many of the upriver Kuuvaŋmiit migrated out to Nome or to the Yukon Territory, where, by working, they could obtain the means to buy foreign foods and western clothing (Mendenhall, 1902:56).

Life in the upper Kobuk region continued to be difficult during the first few years of the twentieth century, apparently because the caribou were still declining in numbers and were moving farther to the north and east. Still, it was better than in the lower Kobuk, for the residents of that area had to travel very far up the Noatak River in the winter to find caribou, and in the summer caribou were totally out of reach. Also, to travel such distances by dog team in winter meant that after feeding the dogs en route, little meat was left to bring back to the village. As a result the settlements were small and quite dispersed in the lower and middle Kobuk areas. In an account of a trip she made in December 1905 from Shungnak to Kotzebue, one Kuuvaŋmiit who now resides in Kiana recalls seeing just one house in the middle region, at Qalukruitchiaq (478), one house at the mouth of the Squirrel River, between three and seven houses at Aksik (775: Oksik), and only a few others in the delta area. The inhabitants of these houses were subsisting primarily on fish, hare, and ptarmigan.

In the upriver area the prospectors who remained around Shungnak managed to obtain enough gold in the first couple of

years of the twentieth century to attract more miners back to the area. In 1903 the present site of Kobuk village became a depot for supplies sent upriver by launch from the coast. A post office, called the Shungnak Post Office, was set up for the miners at the depot, and by 1905 mail was delivered from Kotzebue by dog team five times a winter. Two trading posts were listed for Shungnak in Polk's 1907-8 Alaska-Yukon Gazetteer, and during the same years gold mining began to be developed systematically (Brooks, 1925:51). By 1909 sixteen white miners took about $16,000 worth of gold out of the district (Brooks et al., 1910: 46).

The first mission and school for Kuuvaŋmiit was established in the vicinity of the Shungnak Post Office in 1905 by the California Yearly Meeting of Friends (Ann. Rpt., Calif. Yearly Meeting of Friends, 1906:84). The opportunity for schooling immediately attracted Kuuvaŋmiit from the region and created almost overnight a settlement of 150 residents. Although James V. Geary, the first teacher-missionary, christened the village Long Beach after the California city, the name never took, and within a year even the missionary reports refer to the village by the name of Shungnak. The mission school, a twenty- by sixty-foot schoolhouse with an initial enrollment of 63, lasted only a year, owing to the transfer of Geary to the Kotzebue mission. However, because the village was now in existence, the United States government reopened the school at Shungnak in 1907 (Brown, 1907:2). Its 1908-09 enrollment was 61 (average attendance of 40), which

was nearly identical to the enrollment figures of 65 (average attendance of 33) for Kotzebue in that year (U.S. Dept. of the Interior, 1910:1031).

In order to provide a source of meat and skins for the residents of the Shungnak region, the United States government established a reindeer herd there in 1907, bringing in the animals from the Unalakleet herd. This was the first of the interior northwestern Alaskan herds; shortly thereafter another herd was set up to the southeast, in the Selawik River Valley. But game continued to be scarce in the region for many years. According to the 1911 United States Geological Survey report on mineral resources in Alaska:

> There are but few game animals now [in 1910] in the Shungnak region except bear. These are found mostly back in the hills or along the unfrequented streams. Both black and brown bears are reported. Caribou have been shot at several places within the region, but they are not numerous and the natives have to travel far to obtain their supply. There is, however, a herd of reindeer in the Sheklukshuk Hills and strays from this herd have probably been taken for wild caribou. Small fur-bearing animals, such as fox, mink, and marten, are occasionally caught, but they are found in no great numbers and are becoming scarcer each year. (Smith and Eakin, 1911:279)

In the lower river area the Kuuvaŋmiit population continued to be dispersed except at Aksik and at the mouth of the Squirrel River. To supply the few prospectors in the region a depot had been established by 1908 at the mouth of the Squirrel River. This depot apparently also attracted additional Kuuvaŋmiit who

established households at their traditional residential area at the foot of the bluff facing the Squirrel River, which at the time was occupied by only one Native family (see p. 515). In 1909, or perhaps in 1908, placer gold was discovered at Klery Creek, a small tributary of the Squirrel River, and there was a mild stampede to the area. The depot, known as Squirrel City, was transformed to a village of twenty or more log houses, a store, and a restaurant. The following year Squirrel City was renamed Kiana, and, to take care of the influx of miners, two additional stores and the United States government recording office for the Noatak-Kobuk mining district were established there (Smith, 1911:307).

Physically, Kiana was two separate villages. The Native village at the base of the bluff facing eastward toward the Squirrel River was referred to as "Old Village," or Kutyak, a name indicating the lower end of many channels (two of the Kobuk River and one of the Squirrel River). The miners' village lay along the eroding bluff facing the Kobuk, and it was given the name Kiana, derived from the Kuuvaŋmiit name for the point of land south across the Kobuk. In the 1970s the remnants of the old village, including several caches and two large abandoned log cabins, can still be seen. Many of the original miners' houses and one or two of the stores along the Kiana bluff have since washed out. Right now, the bluff is more stable because of a change in the configuration of the meander loop of the main Kobuk

channel there. In addition, parts of the bluff have been shored up with pilings.

The resources of the Kuuvaŋmiit around 1910 were still largely confined to fish. According to P. S. Smith who studied the area for the United States Geological Survey,

> Undoubtedly, in the more remote parts of the Squirrel River basin large game, such as bear and caribou, may be found, but in the parts near the placer diggings [Klery Creek] this is not the case, and there are few indications that there has been much game in the region in the recent past. Ptarmigan and water birds, however, are abundant, and may be approached sufficiently close to obtain a considerable number, but it is believed that they are not to be entirely depended upon for food. Fish are numerous in all the streams. Salmon by the hundreds are caught in dragnets in the Kobuk and lower Squirrel River, and grayling may be had in almost all the smaller streams. So abundant are the fish that they may be safely counted on for food. (Smith, 1911:310)

Wage labor as well as store supplies became available to the Kutyagmiit, the residents of Kutyak, very shortly after mining operations began, thereby attracting more Kuuvaŋmiit from the upriver region, where mining was conducted primarily by a person alone or by pairs of miners on their own small claims. Opportunities for mining employment for Kutyagmiit developed slowly, however. In 1910, for example, presumably all workers were white. P. S. Smith wrote:

> At the time the region was visited by the Survey Geologist there were not over 50 men in the whole region and about a third of this number were employed on one claim. Capital had

> not taken hold of the region, and there were few opportunities to work for wages; consequently the camps were run on a partnership basis and few of the men were equipped with the necessary supplies to carry them for a year or so of unproductive labor in building drains, etc., preparatory to opening a property. Wages were said to be $7.50 a day and board for ordinary miners, but as there was only one company employing men and as that company was able to obtain all the help it needed at $5.00 a day the above figures are more or less fictitious. (Smith, 1911:312)

According to one Kutyamiu informant, shortly after 1910 Kutyagmiit were also hired at the mines, but for a wage of $2.50 for a ten-hour day. Their major employment during these early mining years was in transporting supplies to the mining camps, and payment was largely in foodstuffs and other store items.

The next event that profoundly altered the population and economic structure of the downriver Kuuvaŋmiit was the decision by the United States government to establish the Noorvik Reservation for the area's Natives. In 1914 Charles Replogle, the schoolteacher at Deering, a village near the southern shores of Kotzebue Sound, reported that the Native residents were experiencing economic difficulties. According to him,

> The [Deering] Eskimo hunter finds his vocation greatly hampered since the advent of the white hunter and trapper, who has made it necessary for the Eskimo to go on longer journeys than formerly for the game birds on which he depends for his summer supply of food to a great extent. The seal is plentiful, the natives going about 80 miles for it. The supply of salmon has, however, greatly diminished. Owing to the extension of mining operations, the river water is muddy and saturated with

> gasoline. More salmon were shipped in from Kotzebue this year than was taken in Deering waters. (U.S. Dept. of the Interior, 1915: 31-32).

In response to this, the federal government established a reservation around the Eskimo place of Putu on the lower Kobuk River. Putu was renamed Noorvik (from Nudvik, meaning "moving place"), and many of the Deering families moved there. The attraction of the area was a plentiful supply of salmon and an abundance of trees for building. Despite its assets, the region was not so much more favorable than Deering as it had first been thought, and shortly thereafter, some families returned to Deering. In fact, there are indications that the bleak picture of conditions in Deering may have been somewhat overstated. According to recent information from some persons who took part in the move,

> food was no problem at any time. They [the residents of Deering] always went to their traditional hunting places for the seal and oogrook, salmon fishing was even better when the mining started because the sluice muddied the water and the fish couldn't see the nets. The white people and the Natives personally had no problem with each other, but the BIA was discouraging mixing company. Both Kugruk and Inmachuk Rivers were used for subsistence hunting and fishing. Fish, fowl, sea mammals, greens and berry picking were taken in season. The only problem they had was heating. The only fuel they had was drift wood and alder. (Craig, 1976)

Noorvik was intended by the federal government to become the major settlement in the Kotzebue-three-river area, and soon after it was founded it had a telegraph system with direct communication

to Nome, a hospital (the first in the region), and electricity. The hospital remained until the next decade, when it was removed to the faster growing community of Kotzebue.

Perhaps the greatest benefit the residents of the lower Kobuk received when Noorvik was founded was the introduction of reindeer, which were brought along from Deering, where the herd had been thriving since its introduction there nine years previously. Driven by eight Deering herders, the reindeer arrived on the Kobuk in about 1915, and for the next several years were grazed in the Noorvik-Kiana area.

Once Noorvik was established, other residents from the lower Kobuk, including some from Kiana, also moved in. In particular, nearly all of the residents of Aksik moved there. Only two years earlier the first government school in the lower area had been established at Aksik, and the removal of the residents effectively shut down the school. The lumber and supplies intended for a new Aksik schoolhouse, which previously had been a small log house, were therefore diverted to Noorvik and the school built there.

Kiana continued to grow during the second decade of the twentieth century, through the continuing influx of miners from America and Europe and of Kuuvaŋmiit families from upriver. In addition to the accessibility of foreign goods from Kiana's three well-stocked stores and the opportunities for work in mining-related activities, the upriver Kuuvaŋmiit of the 1920s were attracted to Kiana by the opportunities for hunting and trapping muskrats for furs. Because the Kuuvaŋmiit had little money, furs

began to serve as the standard medium of exchange at the trading posts.

A school was started in Kiana about 1916, and it was organized differently from the Shungnak and Noorvik schools. Rather than being set up as a federal public school for Alaskan residents as provided for by Section 13 of the federal government's Organic Act of 1884, the act that provided a civil government for Alaska, it was set up as a Nelson school through the efforts of the white residents of Kiana. A Nelson school was one set up as a result of the federal government's Nelson School Law, enacted in 1905, which was intended to provide schooling for Alaskans not reached by then existing federal government schools. According to this law, "any community outside incorporated towns, having a school population of twenty 'white children and children of mixed blood who lead a civilized life' might . . . secure the establishment of a school district, after which a school board, consisting of three members, might be elected to manage the school" (U.S. Dept. of the Interior, 1920:23). Apparently, however, the Kiana school was permitted to operate without the requisite number of students. Although there are no accurate figures on attendance the first year, it must have been closer to ten than to twenty, and the fact that the school was set up is probably a reflection of the sentiments of the Territorial Legislature, which passed an act in 1915 to permit schools for communities with only ten or more students, instead of twenty. This act, however, was subsequently disallowed by Congress. It was not until 1917 that

legislation by Congress entitled "An Act to authorize the Legislature of Alaska to establish and maintain schools, and for other purposes," enabled the governor of the Territory legally to permit schools for as few as ten students.

Despite the presence of many Native families at Kiana's "Old Village" in 1920 (the first year for which attendance lists for the Kiana school are available), all of the twelve students attending during the 1920-21 session had white fathers. By the following year five of the sixteen students were Natives from the Old Village, however, and for the next decade between three and five Kutyagmiit children attended regularly.

Summary of Kuuvaŋmiit Economic History

In reviewing the economic history of the people who have inhabited the Kobuk River Valley, it is apparent, first, that there has been a constant ebb and flow in the area's major subsistence resources. Notwithstanding the fact that each major innovation in harvesting and storage techniques (or related activities such as travel) has cushioned the effect of scarcities, the periodic absences of game animals have required major adjustments in the Natives' way of life. It is also clear that there has been a constant interaction between the Kobuk River residents and their coastal Eskimo relatives on the one hand and their Indian neighbors along the Koyukuk River on the other. This interaction has played a vital role in maintaining the well-being

of each group and in preserving the options open to them in the course of the constant changes in the animal ranges and populations.

In the past 10,000 years, the most important innovation with regard to people's being able to maintain themselves in the Kobuk River Valley was acquiring the means to hunt caribou throughout the winter. Presumably, this meant use of the bow and arrow, although this weapon may have been in use at the time of the earliest occupation of the valley. The development of fishing techniques--such as fish spearing and presumably the making of fish traps--came later and was perhaps modeled on hunting and trapping techniques. These technological advances enabled the early Kobuk River people to occupy the valley year round, with their subsistence dependent upon caribou hunting and fishing. Owing to their direct access to the coast, either through trade or travel, they were also able to obtain sea mammal products. In periods when caribou were scarce, however, fish trapping, which was primarily a fall and early winter technique, would not have been sufficiently productive to sustain the population. Therefore, each time the caribou numbers dwindled or for whatever reason failed to migrate through or winter near the valley, the people were hard pressed to make a living. We envision increasingly frequent periods of starvation and an increasing number of families, particularly those of the downriver area who would have been more familiar with the coast, moving into settlements with relatives at the coast, and a gradual abandonment of the valley during

winters. The abandonment of winter settlements in the valley and a decline in the Eskimo population at any time of year would, however, have allowed Indian hunters of the Koyukuk area freer access to the upper Kobuk without fear of impinging on Eskimo hunting areas.

After the development of gill nets and, perhaps earlier, seines, great quantities of fish could be taken and people had a food base that could see them through all but the most severe caribou population declines, and from A.D. 1000 the valley seems to have been continuously occupied by Kuuvaŋmiit. As long as caribou were present in sufficient quantities, people were able to maintain a few sizable winter settlements, despite their lack of a means of rapid transportation such as dog traction. When caribou declined, the Kuuvaŋmiit, although they could remain in the vicinity, had to disperse for the winter in order to sustain themselves on small game and, in early winter, fish. When dog traction developed--initially with teams of no more than three to five dogs--people were able to live year-long in their villages, even when caribou were in short supply in the vicinity, a situation that occurred in the late nineteenth century. It was about that time that a heavy demand for exotic goods developed. The major trade item possessed by the Kuuvaŋmiit Eskimos was furs, and since these could not be intensively trapped by families in large settlements, the population of settlements again declined as people scattered and set up separate households.

As exposure to western culture, schools, and trading posts increased, the Kuuvaŋmiit people again became concentrated in settlements. To maintain the mobility needed for trapping and hunting, greater numbers of dogs were needed, giving rise to teams of from eighteen to twenty-four dogs. Some families owned as many as forty animals. Large dog teams necessitated procuring an enormous quantity of fish, for man and beast, and fortunately for the Kuuvaŋmiit the salmon harvests were plentiful. With the coming of the snow machine, dog teams are becoming obsolete, and the number of dogs per family has declined. This has of course reduced the need for salmon. However, in place of a need for salmon is a need for a sizable and steady cash income to pay for the machines and their upkeep.

Life along the Kobuk River has clearly been cyclical for the Kuuvaŋmiit throughout the centuries. There is no reason to doubt that cycles of abundance and of scarcity will continue to occur.

IV

ENVIRONMENT OF THE KOBUK RIVER VALLEY

The Kuuvaŋmiit Eskimos inhabit a vast area of pristine forest and tundra just above the Arctic Circle in northwestern Alaska. This is a land of singular beauty, with great sweeps of open country bounded on all sides by mountains. To the north, the Baird and Schwatka mountains rise abruptly, dominating the view from all parts of the Kobuk River Valley. They form a southerly extension of the Brooks Range that stretches in a broad arc across the north quarter of Alaska. To the south of the Kobuk River Valley are the lower and more weathered slopes of the Kiana Hills, Waring Mountains, and Zane Hills.

The mountains are not large by Alaskan standards--elevations vary from 1,000 to 4,500 feet. However, their closeness to the river and to the villages gives one an impression of their great size. Narrow valleys and low passes cut through the mountains at various points, creating natural pathways for overland travel. For many generations the Kuuvaŋmiit Eskimos have traversed these passes, moving north into the Noatak River Valley and the Brooks Range beyond, or south into the Koyukuk River Valley and Selawik Lowlands.

For the most part, however, their home is within the Kobuk River Valley. This is a broad expanse of flat and low-rolling terrain, 15 to 25 miles wide and some 350 miles long, oriented roughly east to west. The valley floor is covered by a complex

array of tundra and forest interspersed with streams, river channels, lakes, and sloughs. Vegetation and drainage patterns are heavily influenced by the depth of permafrost, which underlies all of the valley except some areas immediately adjacent to the river.

The dominant feature of the landscape is the Kobuk River and its tributaries. The river heads in the southern Brooks Range near Walker Lake, then flows generally westward, never more than a few miles south of the mountain flanks. The waters of the upper river are swift, shallow, and clear until a point below the villages of Kobuk and Shungnak. There the channel deepens and the flow becomes increasingly sluggish. Fifty miles above its mouth the river divides into many channels that spread over a broad delta before emptying into Hotham Inlet near Kotzebue.

Throughout most of its course, the Kobuk meanders widely over its flood plain. Lakes, sloughs, and timbered ridges mark the river's past wanderings and create a rich, diversified environment along its entire length. The process of change continues today, especially during annual periods of high water when old banks collapse into the current and new deposits enlarge sand bars in other parts of the channel. The river's banks are quite low except in a few areas where bluffs stand fifty to one hundred feet above the water.

The Kobuk River is fed by innumerable small tributary streams and by several important navigable rivers. The largest of the latter is the Paa (262: Pah River), which originates south

of the Kobuk in a huge timbered flat of the upper Kobuk River Valley, and the Squirrel River (841), which originates north of the Kobuk in the Baird Mountains, separating the lower Noatak and Kobuk river valleys. Other important tributaries flowing into the Kobuk from the south are the Pick and Black rivers. Like the Paa, these contain dark, sluggish waters derived from hundreds of small ponds and lakes in the flat country. Tributaries north of the Kobuk, which drain mountain areas, include the Mauneluk, Shungnak, Ambler, and Hunt rivers. These rivers are all swift-flowing and clear.

It is difficult to overestimate the role that the river plays in Kuuvaŋmiit life. Its waters provide them with a rich harvest of fish every year, and along its course their hunters take waterfowl, caribou, moose, bears, and many smaller animals. It is an open avenue for travel, too, by boat in summer and by sled or snow machining on the frozen surface in winter. Without the river and its concentrated resources, it is doubtful that people could live in the Kobuk River Valley.

Climate

The climate of the Kobuk region is predominantly continental in nature, with very cold winters and warm summers, but the proximity of the Pacific Ocean creates a significant maritime influence that ameliorates the temperature extremes. This is especially noticeable in the downriver areas, where the range of daily and

annual temperatures is less than in upriver areas and cloudiness is more prevalent.

Winter is the dominant season in the Kobuk River Valley, encompassing roughly five months of the year, November through March. During most of this period, temperatures remain consistently near or below 0° F. Seasonal lows of -60° F. to -70° F. are the rule, and cold spells with -40° F. to -50° F. weather commonly last from one to three weeks. These periods are frequently interrupted by storms sweeping inland from the coast, bringing snow, gale winds, and temperatures ranging from 0° F. to 20° F. or more.

At the other extreme are the three months of summer, June, July, and August, which bring mild temperatures and occasional hot spells. Temperatures average from 50° F. to 60° F.; their range is from the upper thirties to about 90° F. Spring and fall are rather abrupt, lasting only from six to eight weeks. On the upper river, freeze-up comes in mid-October and breakup occurs in mid-May; on the lower river, freeze-up and breakup are delayed one or two weeks.

Precipitation amounts are quite low, as Table 2 indicates, but low evaporation rates and poor drainage (owing to permafrost) prevent the region from developing a desertlike character. Summer months bring the heaviest precipitation, especially near the mountains, where convective showers are common. Long, soaking rainfalls also occur, especially during the months of July and August. Snowfall amounts are not large, but the long uninterrupted cold of winter permits considerable accumulation.

Table 2. Climatic data for villages of Kobuk and Kotzebue

Period		Kobuk	Kotzebue
January	mean maximum temperature	0.5° F.	1.3° F.
	mean minimum temperature	-20.2°	-12.7°
	overall mean temperature	-10.4°	-3.7°
July	mean maximum temperature	68.4°	58.6°
	mean minimum temperature	45.1°	46.8°
	overall mean temperature	57.1°	52.9°
	annual mean temperature	22.1°	20.7°
	highest recorded temperature	90.0°	85.0°
	lowest recorded temperature	-64.0°	-52.0°
	average annual precipitation	18.0"	8.0"
	average annual snowfall	63.6"	46.0"

Total snowfall varies from about forty-five inches at low elevations to about one hundred inches in the mountains.

Wind is also an important climatic factor in the Kobuk region. The valley acts as a natural channel for exchanges of air between the inland and coastal areas. As a result, moderate winds blow much of the time, and powerful gales are not infrequent. East and west winds predominate, but north winds are common near passes through the Brooks Range.

The daylight period changes drastically from summer to winter and exerts a powerful influence on human activities in the region. During the months from May to August there is no real darkness. The sun circles monotonously above the horizon, dropping behind mountains to the north for only a few hours each "night." The spring and fall transitions are very rapid, with the period of light changing by six or seven minutes each day.

For several weeks in midwinter the sun never climbs above the horizon. Even at this time, however, there are five or six hours of twilight, enough to permit extensive outdoor activities to continue. The long nights are often brightened by moonlight and auroras.

Flora

The vegetation of the Kobuk River Valley is strikingly diverse for an area so far north. Over 360 plant species have been recorded in the region. Boreal forest, tundra, and coastal plant communities intertwine in complex patterns, their designs differing according to their elevation, drainage, soil, climate, and fire history. Viewed from a high vantage, broad tundra prairies dominate the terrain. Scattered over these open plains are copses of birch, usually occupying low knolls or hillsides. Depressions, gulleys, creek beds, and lake shores are usually covered by thickets of low willow and alder. Along the Kobuk River, on rolling uplands, and in mountain valleys there are large areas of spruce forest.

Tundra vegetation consists of a low mat of mosses, lichens, sedges, and cotton grass. In many areas, especially in very wet or alpine localities, no plants taller than these are found. Elsewhere isolated thickets of low shrubs--dwarf birch, willow, cranberry, blueberry, and Labrador tea--dot the tundra. These shrubs are rarely more than waist high. Tundra is an extremely

important element of the Kobuk River Valley ecosystem. It supports herds of caribou which are a vital resource in the Kuuvaŋmiit's economy, and is an ideal terrain for spotting and hunting these and other animals. It also permits easy travel on snow packed hard by strong winds.

Continuous shrub thickets of close-growing willow, alder, and birch are also found throughout the non-tundra areas of the Kobuk region. The best-developed thickets occur on gravel bars and alluvial deposits along the river and its tributaries. There shrubs may reach ten to thirty feet in height. Dense brushy thickets of alder and willow also grow on the mountains near the tree line and in sheltered hollows on the tundra. The shrubs in these thickets rarely stand over ten feet tall, yet they are useful in creating pockets of shelter for humans and animals in the otherwise open country.

Kobuk River Valley forests are dominated by small- to medium-sized white spruce, aspen, paper birch, and balsam poplar trees. Because they are located on the tundra's edge, they tend to have a fairly open character. The largest and most dense growth is found along the river and its flood plain (where permafrost is poorly developed) and on warm, dry, south-facing slopes. Many timbered areas have been burned in the past, creating successional communities of willows, aspen, birch, and sapling white or black spruce. In poorly drained areas or on north-facing slopes, forest succession leads to the development of stands of

black spruce underlain by a thick boggy mat of mosses, grasses, sedges, and prostrate shrubs.

The forests are very important to the Kuuvaŋmiit, for they provide wood for construction and heating as well as game and fur-bearing animals that are different from those found on the nearby tundra. The Kuuvaŋmiit are unusual in their adaptation to life in the timbered country, for most Eskimos elsewhere are oriented exclusively to the resources of water and tundra. While the Kuuvaŋmiit depend on these resources, they also use the resources of the forest.

Fauna

The Kobuk River Valley fauna, like the flora, is a mixture of species found in the boreal forest and on the tundra. The diversity is further enhanced by the presence of mountains and, in the lower valley, the proximity of the seacoast.

For the Kuuvaŋmiit, the most important tundra animal (in fact, probably the most important animal) is the caribou. Thousands of these animals migrate into the Kobuk region in the fall, scatter widely for the winter, then move northward through the valley again in the spring. During all of these seasons they are hunted intensely by the Kuuvaŋmiit.

Another tundra animal significant in the region's economy is the grizzly bear, which is regularly hunted for its meat and hide. Red fox, wolf, and wolverine frequent both open and timbered

country, but are usually hunted or trapped on the tundra. The tundra-covered alpine regions are the habitat for Dall sheep, hoary marmot, Arctic ground squirrel, and Arctic hare.

The boreal forest, which includes both the timber and the tall, flood plain shrub thickets, supports a rich fauna of its own. Moose are common residents of forested areas along the entire Kobuk River. These huge ungulates are relative newcomers to the valley, having first appeared only during the latter part of the nineteenth century; but they have become quite important in the local economy. The black bear is another large, frequently hunted species that favors the timbered country.

Forests and thickets are also inhabited by important small game, including the snowshoe hare, porcupine, and red squirrel. Lakes and streams in these same areas provide the habitat for muskrat and beaver, both of which are utilized extensively for meat and fur. Other fur species of the timber include marten, mink, otter, and weasel.

About one hundred species of birds have been recorded in the Kobuk River Valley, most of them recognized and named by Eskimos. Of these, the most important are waterfowl, including six species of loons and grebes, four species of geese, and thirteen species of ducks. Geese and ducks are highly regarded as food by the Kobuk River people, who hunt them during their annual migrations. Ptarmigan and grouse are the only other birds that rank high in the Kuuvaŋmiit economy. Ptarmigan snaring is an important winter activity for women in the villages today.

The Kobuk River, its tributaries, and nearby lakes and sloughs are extremely productive environments for fish. In the summer, salmon and sheefish provide a relatively stable foundation for the Eskimos' economy. These are augmented by rich catches of humpback and broad whitefish, least cisco, grayling, trout, northern pike, sucker, and burbot. In terms of resource volume and long-term reliability, fish are the economic mainstay of Kuuvaŋmiit society.

The list that follows names all of the plant and animal species important for subsistence to the Eskimos of the Kobuk River. Undoubtedly there are some omissions of birds and plants that are infrequently used, although some rarely used species are included; but for most purposes the list is complete. Totals are shown in Table 3.

Table 3. Flora and fauna used by Kuuvaŋmiit Eskimos, 1975

	Number of species utilized	
	upper river	lower river
Mammals	26	26
Birds	42	42
Fish	13	14
Plants	34	37
Total	115	119

Table 4. List of animals and plants used by Kuuvaŋmiit

English name	Scientific name	Eskimo name
Mammals		
caribou	Rangifer arcticus	tuttu
moose	Alces alces	tinniika
Dall sheep	Ovis dalli	ipniaq
black bear	Ursus americanus	iyyaġriq
grizzly bear	Ursus arctos	akłaq
wolf	Canis lupus	amaġuq
red fox	Vulpes fulva	kayuqtuq
red phase	Vulpes fulva	kavvaiq
silver phase	Vulpes fulva	qaiŋġaq
cross phase	Vulpes fulva	qigñiqtaq
marten	Martes americana	qapvaitchiaq
short-tailed weasel	Mustela erminea	tiġiaq
mink	Mustela vison	tiġiaqpak
wolverine	Gulo gulo	qapvik
river otter	Lutra canadensis	pamiuqtuuq
lynx	Lynx canadensis	nuutuuyiq
beaver	Castor canadensis	pałuqtaq
muskrat	Ondatra zebethicus	kigvaluk
porcupine	Erithizon dorsatum	iḷuqutaq
red squirrel	Tamiasciurus hudsonicus	saqalataayiq
Arctic ground squirrel	Citellus parryi	siksrik
hoary marmot	Marmota marmota	siksrikpak
Arctic hare	Lepus othus	ukalliuraq
snowshoe hare	Lepus americanus	ukalliq
harbor seal	Phoca vitulina	qasigiaq
ringed seal	Phoca hispida	netchiq
bearded seal	Erignathus barbata	ugruk
beluga	Delphinapterus leucas	sisuaq
bowhead whale	Balaena mysticetus	aġvik
Birds		
common loon	Gavia immer	taatchiŋig
yellow-billed loon	Gavia adamsii	tuutlik
Arctic loon	Gavia arctica	malġi
red-throated loon	Gavia stellata	qaqsrauq
horned grebe	Podiceps auritus	suġliq
red-necked grebe	Podiceps grisegena	suglitchauraq
white fronted goose	Anser albifrons	kigiyuk
Canada goose	Branta canadensis	iqsraġutilik
snow goose	Chen hyperborea	kaŋuq
Pacific black brant	Branta nigricans	nigliġnaq

old squaw	Clangula hyemalis	ahaaliq
shoveler	Spatual clypeata	alluutaq
pintail	Anas acuta	ivugak
mallard	Anas platyrhynchos	ivugasrugruk
greater scaup	Aythya marila	qaqłukpalik
lesser scaup	Aythya affinis	qaqłuktuuq
green-winged teal	Anas carolinensis	qaiŋŋiq
bufflehead	Bucephala albeola	nunuqsiġiiḷaq
American widgeon	Mareca americana	ugiihiq
harlequin duck	Histrionicus histrionicus	saġvak tiŋmiaq
white-winged scoter	Melanitta deglandi	killaḷik
surf scoter	Melanitta perspicillata	tuunġaaġruk
common scoter	Oidemia nigra	uviñauyuk
red-breasted merganzer	Mergas serrator	paisugruk
willow ptarmigan	Lagopus lagopus	aqargiq
rock ptarmigan	Lagopus mutus	niqsaaqtuŋiq
spruce grouse	Canachites canadensis	napaaqtuum aqargiq
ruffled grouse	Bonasa umbellus	ituqtuuq
sandhill crane	Grus canadensis	tattirgaq
lesser yellowlegs	Totanus flavipes	tiŋmiam qipmia
American golden plover	Pluvialis dominica	tullik
semipalmated plover	Charadrius semipalmatus	qurraquraq
mew gull	Larus canus	nauyatchiaq
glaucous gull	Larus pyperboreus	nauyasugruk
Sabine's gull	Xema sabini	aqargiyiaq
Arctic tern	Sterna paradisaea	mitqutailaq
great gray owl	Strix nebulosa	naataq
horned owl	Bubo virginianus	nukisaġaq
snowy owl	Nyctea scandiaca	ukpik
osprey	Pandion haliaetus	qaluksiiġayuk
tree swallow	Irodoprocne bicolor	tuluġaġnauraq
rusty blackbird	Euphagus carolinus	tulukkaam ittuq
pine grosbeak	Pinicola enculeator	qayuttaaq
gray jay or camp robber	Perisoreus canadensis	kiiriq
common raven	Corvus corax	tuluqaq

Fish

sheefish	Stenodus leucichthys	sii
chum salmon	Oncorhynchus ~~kisutch~~ keta	qalugruaq (waldbaum)
whitefish	Coregonus sp.	qalupiaq
humpback whitefish	Coregonus pidschian	qausriḷuk
broad whitefish	Coregonus nasus	qaalġiq
least cisco	Coregonus sardinella	qalusraaq
round whitefish	Prosopium cylindraceum	quptiq
Arctic grayling	Thymallus arcticus	sulupaugak
Arctic char	Salvelinus alpinus	qalukpik
lake trout	Salvelinus namaycush	qalukpik

northern pike	Esox lucius	siilik
Alaska blackfish	Dallia pectoralis	iłuuqiñiq
longnose sucker	Catostomus catostomus	qaviqsuaq
burbot or mudshark	Lota lota	tittaaliq
smelt		iłhuagniq

Plants

white spruce	Picea glauca	napaaqtuq
black spruce	Picea mariana	napaaqtuq
common juniper	Juniperus communis	tulukkam asriaq
willow	Salix sp.	uqpik
diamond-leaf willow	Salix planifolia	qanuŋiaq
paper birch	Betula papyrifera	urgiilik
American green alder	Alnus crispa	nunaŋiaq
balsam poplar or cottonwood	Populus balsamifera	ninŋuq
quaking aspen	Populus tremuloides	piŋuqraitchiaqmi ninŋuq
prickly rose or wild rose	Rosa acicularis	kakitl̇aŋnaq
rose hips		igruŋnaq
crowberry or blackberry	Empetrum nigrum	paungaq
Alpine bearberry	Arctostaphylos alpina	kavlaq
bearberry or kinnikinnik	Arctostaphylos uva-ursi	tinnik
low-bush cranberry	Vaccinium vitis-idaea	kikmiñaq
bog cranberry	Oxycoccus microcarpus	qunmun asriaq
high-bush cranberry	Viburnum edule	uqpiññaq
nagoonberry	Rubus arcticus	tuunġaum asriaq
bog blueberry	Vaccinium uliginosum	asriavik
cloudberry or salmonberry	Rubus chamaemorus	aqpik
American red currant	Ribes triste	niviŋaqutaq
Labrador tea	Ledum decumbens	tilaaqiq
Eskimo potato or wild potato	Hedysarum alpinum	masru
wild rhubarb	Polygonum alaskanum	qusrimmak
sourdock	Rumex arcticus	quaġaq
wild celery or seacoast angelica	Angelica lucida	ikuusuq
fireweed	Epilobium angustifolium	quppiqutaq
wild chives	Allium schoenoprasum	paatitaaq
cotton grass	Eriophorum sp.	palliksraq
grass or sedge	species unknown	ivgiich punaq
Alaska sagebrush	Artemisia alaskana	sargiich
four-angled cassiope	Cassiope tetragona	ikugutigiksut
cordate-leaved saxifrage	Saxifraga punctata	asriachiak

Parry's wallflower	Parrya nudicaulis	masu aigaq
peat moss	species unknown	tininniq
sphagnum	Sphagnum sp.	ivruiyaq
mosses	various genera	manaq ipagaksraq tiŋauraq uġruq
reindeer lichen	Cladonia rangiferina	niqaaq
birch fungus	Fome ingniarius	avaatsiqiq suppun
white bracket fungus	species unknown	tunuuraq

V

REMINISCENCES OF KUUVAŋMIIT VILLAGERS

Part of our Kobuk River subsistence study involved collecting oral histories and reminiscences from elderly Kuuvaŋmiit about their way of life as children and about their parents' stories of life still earlier. Their reminiscences depict life along the Kobuk River in the late 1800s and the early 1900s. Some of those early ways of life continue today, while others are present in modified form. The reminiscences are presented in the exact words of the informants, for they best reflect the feelings of the Kuuvaŋmiit for their land, their cultural heritage, their happy moments, their disappointments, and their values. Their remembrances were taped in Eskimo, then transcribed and translated.

The reminiscences are from:

1. Lucy Foster (Aqugluk). Born in Kivalina, Lucy and her father lived in various places along the lower Kobuk River before finally settling in Noorvik, where she now lives.

2. Susie Barr. Susie was seventy years old in 1975 and is presently living in Kiana. As Kiana's only surviving resident of the abandoned Aksik settlement between Kiana and Noorvik, her recollection provides glimpses into Aksik and Kiana ways of life as she experienced it.

3. Beatrice Mouse (Anausuk). Beatrice was seventy-four years old when she talked to us. She is a resident of Noorvik.

Her recollection is most poignant on subsistence living and the belief system.

4. Jenny Jackson (Masruana). Jenny was born in Kobuk village in about 1893. She provides in her recollection a detailed account of life on the upper Kobuk River from around the turn of the century.

5. Louie Commack (Aquppak). Louie was born along the upper Kobuk River and grew up around Ambler and the Hunt River. He has been an active hunter and trapper all his life. His recollections of hunting and fishing provide excellently detailed descriptions of traditional Kuuvaŋmiit techniques.

Some parts of the personal accounts are largely descriptions on how to earn a living by using traditional Eskimo knowledge. As they helped greatly in shedding light on other information recorded by us, we have worked these particular passages into the pertinent descriptive sections of the report.

Lucy Foster (Aqugluk)

My name is Lucy Foster Aqugluk. I was born in Kivalina and I don't even know my mother. My father raised me. Whenever someone was nice to me, I called them "mama"; I even call my grandmother "mama." My father brought us to the Kobuk and we started living here on the Kobuk. I didn't have a mother but I had my father.

Back at Siksriktuumi we spent some years with Panikpaitkuk and Qunisitkut. I don't know how many years we lived there, but then we moved to Qaggugruaq near Kiana. My father started making a living for us, but he got us a mother first and we started living at Qaggugruaq. That was where Ulugatkut and his family lived. The couple were just getting old and Joe Carter was their baby. I always packed him and took care of him although he had a sister named Belle. But like a man, she would take a shotgun, go out, and bring back a rabbit. After spending a year there, my father and I moved to Aksik to find a place to live with Nalikkatkatnun, my father's father. I schooled for half a year in Aksik. After I went to school there for a year, Noorvik started having people. They said, "There are people from Deering who are going to move to Putu [original name for Noorvik]." When they said that, my father wanted to go to that place, Noorvik. I don't know how old I was when Noorvik was first built--maybe twelve years old. My father built a house when I was about fourteen or when I turned thirteen. Then my father said, "These two people have only one child and they are going to send him away for good." When they were going to send him, my father gave me away. Sometimes I asked my father, "Pop, why did you give me away?" He just always laughed at my stupidity.

I was an orphan, and when someone was nice to me I called them sister and brother. I remember when Putruq and her family first came. Their father always told me his kids were my sisters and brothers. "They are your sisters and brothers," he always

said to me. Then they started calling me sister and Putruq also became my mother. There were lots in the family and I added more to their family.

The missionary Replogle told the Deering people to move to Noorvik so they wouldn't have a shortage of food. But some of the people moved back to Deering when they started to crave for seal oil. When they spent another year without seal oil they moved back. How many of them come here? There were the Wells, the Newlins; I don't know the rest of the people. The Wells and Newlins are the only ones now in Noorvik. Then, there were only few people living and they ate fish and their food. When there were no caribou, they ate ptarmigan and rabbit.

It was said that at that time people cooked their fish by skewering them with willows. After running the stick through the fish, they were put near the fire and constantly turned around to let them cook.

And when they wanted boiled fish or meat, they got the rocks and put them into the fire till they were red hot. Then the rocks were put into a wooden pot that had water and cut-up fish or meat. They let the rock boil it--that was how they cooked. I don't know how many rocks they always put in. It had to be about three, probably, that were about this big [gesturing], or maybe they used about two rocks. And then they started eating the cooked meat [fish] that the rock had cooked.

Long ago when they had no matches they used flintstone and got white cotton from the willows. With this white cotton they

put it in an old fireplace where there was charcoal or soot in it and they smeared the cotton with this, then stretched the cotton out so that it would burn easy. They got two flintstones and hit the rocks in opposite directions, and when the fire sparked and it started burning, they put it where the fire would burn. They had to blow at it, and this was how they made fire.

One time my grandmother Uyagak and I followed the people that were going berry picking. With Ayaitchaitkut while they were still alive, we followed them for blackberry picking. There were people dipping qalupiat [whitefish] down there at a little river or creek. They made a ditch and they shared the fish with Iyagak and I. They gave us part of the fish in the ditch near the area we went berry picking. And then Aqpagailuum in the wintertime would go and get some fish from there. He did not give me anything. He probably gave some to Iyagak because she might become his mate [laugh]. That was the way people went places--by storing and taking everything.

People went to get rhubarbs, sourdocks, and berries when they were ripe. By going barefoot or without boots into an undulating tundra, you found no pain even if you stepped on twigs that were going to turn to berries. But now when you go without shoes and when you are going to walk, it hurts.

When my father and I lived alone, he made a rope, stretched it, and put it on a pole. I guess he made it because he saw how lonely I was. For this type of bird, when they landed, you pulled the rope. The bird tried to go up, he did not know what

happened. When it fell, you ran to it real fast and killed it. After getting a few, I would pluck them and cook them because I was a big girl then.

When the seal bones had worms or larvae on them, the baby birds always tried to eat the worms and you could hit them with a stick. They are the type that goes way up and when they start coming down they always make a sound--the snipe [kuukukiag or putukuituit].

And also the birds that were a little bigger and looked like a robin. They had quite a lot of meat on them, and we always went nest-hunting for them. When we found a nest, we put a snare out, made of hair. When we put out a snare, they always got strangled. And when a bird did not want to go into her nest, we sang for it and tried to persuade it to come to her nest. "Your nest, your children. Take the nest and take the children away." That was how we always sang for them, and they always came to their nests. That's how we sang for them down there [probably Kivalina].

Long ago down there [Kivalina?], people went seal hunting. One time our dogs, I don't know how many, could not pull when the wind was from the inside. My father put up something so we could sail. We always just rode, we always sailed. It always got really slippery, and the wind always blew us along. And those people, Panikpiatkullu, we always were together. And then his kids like John Stalker and I were like sisters and brothers. I didn't have a mother so I always stayed with them. When my two grandmothers died, my father's mother and mother's mother, I

stayed with people like that. But when these two Selawik people, Nauyaq and Taynak, wanted to adopt me, my father did not say yes to them. I would have been a Selawik person now had my father given me away.

My girl friend Naagaiyiuraq is down there [Kotzebue?]. She is like me, but she is smarter because she is usually alone. She didn't live by herself but her husbands always died. She and I always played toys together. Qatuk usually didn't care for us but she did not really hate or despise us. She always said, "Those two girl friends!" Me, I always pretended and packed a piece of rock as my baby, and my girl friend packed what I guess was wood (that was why she doesn't have any kids, too). Whenever I moved the rock upward, it would hit my back and make loud, hard noise and Qatuk always heard it. My friend always led us into everything even though I was scared, because we might get scolded. It was scary but we weren't afraid. She led us sourdock picking back there at the graveyard's lake; at that time there were no graves back there. Her friend had taken her sourdock picking before. There were no houses then because it was too far away. We filled out calico parkas. We pressed them down and started packing them. When Qatuk woke up, she didn't scold us. She just started cooking the sourdocks.

One time when Deering people moved here [Noorvik], they brought along their reindeer. They brought their reindeer through that big river down there. And when Noorvik had that big beach down there in front of Noorvik, they always slaughtered

them. Their little reindeer fawns were just cute. While they were killing them, we always watched them. And then through there they would drive the reindeer back afterwards. They don't do that nowadays. I don't know where they take them now. Maybe they quit because their herds die off. Or maybe they sell them to Nome again.

There were not many people at that time. One time Aktuq transported some of her things closer to her camp. She let me follow her because she was a big girl and I was a young girl. She took her stuff down there. I didn't know that was going to be our river. "It is very far," I thought to myself at the time. [She said at that time she didn't know that was going to be her river. That is where their camp is now and probably where her Native allotment is, too.] To the last part, farthest away, she took her belongings. When we got back, they were playing football on the river. After they had played a while, a person from over there started hollering; it was Nalikkak who broke his leg. He broke his leg in the springtime. They always put a splinter or wood to the broken leg, almost like a cast, wrapped it and tied it, and it healed like that. Back there in that lake they always played a lot of football. We used to play a lot of games a long time ago. When Aktuq and I got there, they said when a person's leg broke, it made a noise. I did not follow Aktuq again because it was too far. But after I had started getting used to going over there, it was no longer far. When we went

muskrat hunting, it seemed close. We always went muskrat hunting for food.

Long ago people did not have twine nets, but instead they made the ropes for nets from willow barks. And they also made seining nets. Right now no one has any bark nets. In the wintertime, in the springtime, or when the bark was easily separated from the trunk, they always went to get the willow bark. And when winter came, they soaked the bark, stripped them, and then braided them. Some of the twines were always weak. It seems that willow barks have different strengths. The funny barks always break easily. This was what they made for catching fish with willow skins or bark.

When there were no traps, people used wood. One stood up the poles and put meat on the inside, making it possible for the game animal to touch. When that wood was touched, it squeezed and trapped the animal. That was how they tried to catch animals in those days when there were no traps.

People boated and made boats out of skin, caribou skin. One time Ikkiayutkuk, those two Kotzebue people, had a kayak with fur on it. They put the skin part on the outside and it was really good and warm. But when they used it all the time, the fur probably rotted and pulled off, especially at the place they sat because it was always wet from the bottom on the outside. They also used caribou skin to make houses when they had no other materials [cloth].

Needles were then made of bones. Their thimble was made out of sealskin, similarly used for making mukluk bottoms. This was before they had iron needles and before they had any contact with the white. They made thimbles out of the sealskins that were thick. Their ulus were made of jade. Flint was hard, so they always used it to make knives and weapons, and also used it to start the fire.

Susie Barr

I was born December 25, 1905. Since that time I started living and am still making my living. I am going to tell about my parents' way of life. When I became of that age, knowing what was happening, my parents were making a living. When spring came in the last part of April, the people always prepared to go to their muskrat camps. They used dogs, sled, and brought along their boats close to the muskrat camps. When they had some food, they brought their Eskimo food and supplies closer to the muskrat camps also. They always prepared and gathered their belongings, and during those days they had a lot of hardship. I never really understood and realized how much hardship my parents and the Eskimo people were going through. My brothers, Johnny and Duffy Smith, were the ones left when all the other brothers died. Now I am the only one left.

After we settled over there, we began fishing. My mother took her nets out. They were made of flour-bag cloth and the

upper sides of gloves. When she made the nets by winding and weaving them, I used to help her after I was through with playing. I did not do everything well, but my mother was always working along with me.

After camping, living over there some place, they always returned to their winter camp called Village. Around June, people always returned to their homes on their lands. Around that time the parents got the young men ready--those young men who could keep up with the trip. Their fathers took them out hunting around the areas where the caribou were. Kobuk people went out hunting by walking. At times they took along the dogs with saddles and went way up towards Noatak. After they had left, their wives always worked, gathering the fish and the berries. They gathered all they could for their winter use. Their caches were filled with dried fish. After they had fished for a length of time, the women went berry picking. The seal pokes were always filled with berries. Cranberries were hard to bust, so they were put into the flour sacks. The women picked all kinds of food like rhubarbs and sourdocks. So while the men were out hunting, the women prepared and gathered the food that they would need for the winter.

In late September the men returned home in the rafts. They returned to their winter camps with half-dried meat that they packed. When the men returned home, it was called "homecoming." When the men got close to the village and the villagers could hear them, they would shoot into the air. On hearing the rifle

shot, the villagers would know that the men were coming. The villagers would return the shot, and the men coming home would know that all in the village were all right. Another shot was returned by the men to tell the villagers that all who had gone out hunting were coming back safely. The home return was a joyous occasion for all. The men always returned home in the moonlight.

When I understood what was going on, that was the way my people lived. During those days people used little of white man's things. They were very cheap then. At that time not many people worked, and they did not have the welfare checks either. That was why they worked hard during those days. They did not have the snow-travelers or Evinrude motors--only dogs. When they saw a boat with an engine, they would get excited and say, "Everybody come--a steam launch." [Then Susie thanked the Lord for the love he gave the Eskimo people.]

When fall came, people began fishing through the ice. They had a different method and equipment for catching the fish. They called the equipment fish trap. That was how hard people worked in those days. They used the candles for light. Among those with the gasoline or kerosene lamps, their homes would be bright. And so candles are not used as much now that we have a machine that can brighten the darkness in the homes.

We don't live the way our people used to live in those days.

After working hard fishing during the summer, when winter came, some men, and possibly a few women, would start making

plans and traveled to the next village, Aksik. During those days people played football [agstaurag]. Men from the Village would play against the men of Aksik and tried to win so that they could return to Village with the ball. Then Aksik men would come to the Village to try to win the ball back. I had witnessed my parents and Mulluk preparing Jack Porter and my older brother, Johnny Smith, to play the ball game for the Village. If after playing against Aksik people, the Village people won and brought the ball back home, they always had a good time. After a while the Aksik people would come to play the Village to try to win the ball back. When we saw the Aksik people coming, we would holler. Lots of people would play in front of the Village. The playing ball was set on the Squirrel River. From Village to the line, for the Village people, would be about a mile long. The line of the Aksik people would be about a mile down the river. I witnessed one Aksik man and three Village people going after the ball. They were fast runners and they worked hard at it.

After playing all day, they gathered in the evening at a meeting place, at the Atoruks' home because they had a big house. They would gather together to have Eskimo dances. The singers would sit together, along with my father Gupilgug, his brother, Matulik, also Aagausrauraq. The Aksik people would come in dancing in the middle. They would be shouting also. I saw Mary Curtis's husband who considered himself an Aksik man. So he would dance. I wish now we could watch them singers and dancers

again. I grew up with this knowledge of my parents and their people. I am going to sing this song even though I make mistakes:

Those up there are going to welcome me.
Those rich people are going to welcome me.
Aa-yaa-ŋaa-ŋaa. Arigaa-yai.
We can't find songs that are good.
Aa-yaa-ŋaa-yai.
With something on its chin.
Yai--real good now!

Beatrice Mouse (Anausuk)

I am going to talk about long ago and about things I learned while I was a child. I am going to talk about what I learned while I was growing up.

I remember that in the fall time people made winter house by digging into the ground. My mother and brothers got sod blocks for the house and packed them home. A frame, a six length, was made and then covered with mud to make a cozy, warm house. The window was up on the roof. Inside the house a log was put by the bedding to prevent it from sliding. The level of the bed was usually higher than the floor and people could sit on it. The entrance of the house faced the river. They put the flooring on and started to build a fire. There was firewood of cut tree trunks [kipniqutat] which were split in half. When the house became dirty and smelly, the belongings were carried out of the house, then my grandmother would clean the house with hot water. I remember also that there was no "meal," that

is, no soap. There were only grass ends brought upriver from the coast. My mother used these to scrub the dishes when I first became aware of it.

We lived through the year and the winter without knowing the cold. In the big sod house we slept against each other.

I cried when my mother went out to have her baby, the one before my youngest brother. The weather was then very cold, so they built a fire and put grass around the edge of the house. I was told that my mother had that baby with only a caribou skin as the mattress. In the old days they built a big snow house for pregnant women. They had the house ready before the baby arrived. When we children played, grownups did not like us to go inside the snow house. After the baby came, my mother went to that snow house. The children could not go in because they did not want the snow house spoiled by the kids since it was made of snow. After the baby came, my mother crawled in, taking along her clothes into the house that was well lighted for her. They put in there her honey bucket and other things she might need; the entrance was closed with ice. There was also an ice window on the roof. The seal-oil lamp that was put in the house made nice, big flames since there were no drafts inside. The house was warm from the seal-oil lamp as if there were a real fire. My father and grandfather said that my mother always did all right in the snow house. After four days, she would wash herself and then returned home. She had water. That's how people had babies in the old days.

Young girls were not to eat bear meat when they were getting big and almost became a woman. It was the devil's law [tunnġaq] and people believed it. The devil did not want the bear meat eaten by young girls. That's how we were brought up.

When we went downriver, we always tried to get oil from the seals and walruses. After we obtained a large quantity of it we would go back upriver again to the end of the Kobuk.

Now there are houses way up the Kobuk. The houses nowadays are half the size of the houses we used to live in in the old days. Our houses were situated further in.

One time when we went upriver to seine, strangers came to our camp. My mother, who could not walk, and we children were at the camp. My father was collecting all the salmon together when suddenly I heard people.

I called to my mother, "Mother! Father! They are coming!"

"My pretty one, let them come. We will cross to the other side."

I immediately went down to the boat and when they docked, I told my father, "Father! Strangers [Indians] are back there! They are making cracking sounds. They sound as if they are whispering. I heard them."

"Let the food stay there. Get something for your bedding. Pull with rope from the shoulder and someone steer the boat. Let Mother crawl to the boat."

She crawled to the boat and they put her in. We did not know the place we were going, but the place was there all right.

We crossed to the place with a lot of willows, moored our boat, and made a shelter covered with leaves so that we would not be seen. We burned the tree fungus that was broken into pieces. I cannot remember how many tree fungus fires we made to smoke the place; there were a lot of nosee'ums [black flies] around there. My mother did not want the children to make any noise. A watch was kept outside. We saw our fire on the other side of the river tampered with. It burned brighter and bigger. I started listening because I was scared. My mother asked me to carry some water, and I heard people from the other side while I got the water.

The whole night the Indians on the other side did not cross over because they did not have any boat. When we fled over to this side, we had already started to fish and had stored the fish in a big cache [kiġġiplutiglu]. We were fishing when the Indians came and frightened us. We spent the whole night on this side of the river. The Indians did not bother us.

After seeing the Indians' camp, my grandmother said, "Take me across there. I will go to see them." The Indians [ayuyart] do not fight with women. My mother wanted to go with her but she was not physically strong, so she followed her in spirit.

"If the Indians are there, I will cover their mouths," she said. They took my grandmother to the beach area where she would be able to see the Indians. She would wave like this [gestures] if they were gone--she would wave instead of shouting.

They said my grandmother did wave her arms. Afterwards, they got us and we were told to take our bedding. The Indians took our

food, then left. They left, following each other up the river.

There was always a lot of fish during the seining season. People seined a lot of them and put them into big boxes when they went downriver. This is where I will end this part of my life.

Do you want to hear the scary part of my life?

At one time in Kotzebue when I was getting a little bigger, we children were going to play when my mother stopped us, saying some people were going to perform a shamanistic ritual [anatquaq]. Around there if those people passed us they would kill us through their shamanistic act. We started for home fast because we were very frightened.

Then my mother spoke, "My ataata, let's push off in the boat. People are killing each other through evil means. They are already possessed [ikiliġ uqtaaniktut]. They don't know that they've already killed some people. I dreamed so. Let's leave!"

When dusk came we left for the point of Tikigaygruk to the other side of Apqugaaġruk and camped when it became too dark to travel. There was a lot of fish around there, also a lot of ducks and berries. We were safe there. We set our nets and in the morning I went to pick salmonberries which were ripe and red. I can't remember how many small buckets I filled while the adults were preparing to leave, carrying all our belongings to the boat. We went to the mouth of the Ugrivik and camped. One of us, my mother, got a bad cold. She started coughing and she should be in a warm place, but we had not thought about it.

My mother must have looked straightforward when we left, for she said, "There may be a bearded seal or something [niqsaq]. It was on top of the ground." We went toward it and my younger brother, who had a shotgun, shot it. It was a bearded seal all right. We cut it up, and while we were cooking, Iraillak and his family arrived coughing. We left the place again.

"Back there, there was food for you. We got a young seal," we told them. We left because they were sick. We lost sight of them after they went ashore. [Here the researcher asked, "Why were you afraid of them?"] "I don't remember being afraid," Beatrice answered.

We camped again at the point or the end of Paalagik where we could set the nets and catch some fish for our meal. We did catch enough pike. The next day it rained hard and the people we left behind did not follow. The following day the weather improved; the rain would stop once in a while, so we left again.

The wind was at our back when we went across to Kanaaq area and passed Aġviġiuraq to where there were rocks. We camped there about a week. At that time we did not know that my brother got a brown bear back there. Iraillak and his family barely made it; they ate the fat of the bear. My mother was barely alive then. At the end of our trip we met another group of people whom we had not known before.

They told us, "Paniagruk's adopted child died at Tikigayautchiaq. At Napaaqtusrugruatchianum, Aumalchiaq and Uġummigayauraq also passed away." That must be the work of the devil as my akaa

dreamed. By the two lakes Mayyuk also died. At the place called Kiksraq, inside of the Ugrivik on the side of the Aullinġat in Tikigaagruk, Sałaiqsraq (Mayyuk's husband) died. When Sałaiqsraq died, Aŋuqaatkuk left him there. When they came out of the Ugrivik, when they went through the two bends, they left Qayaq. After going through another big bend, they left Qałhapak. Thirteen people altogether died there because of the devil [evil spirit]. Young people nowadays do not know about this, so they usually say, "I don't care."

The people who work for God [missionaries] got rid of these frightening things. However, we can see them still once in a while. Outside anyone can see, for example, the snakes that crawl on the ground. Long ago people saw a lot of animals with scales. When the missionaries came to Kotzebue, people wanted to pray but they did not know how. Our missionary used to be the husband of Carrie Samms. People talked to each other that they would like to do away with shamanism because it was frightening. They became converts. When a person is converted, he is washed with the water brought down from up there [heaven]. When he is sick, he wants a mixture of this water to wash his sickness away. People believed and became converts. Robbie said Christianity is stronger than shamanism. He started jailing the people who practiced shamanism because he was afraid. Those who practiced shamanism tried to work with things that do not exist. They made a mistake and people were frightened by it.

At another time when I was still a girl, my family went downriver to visit an old man and his wife at their summer camp. I cannot remember how many people were there. There were Kicaaluuratkuk and his wife, Aġnaqhautkuk and his wife, Paulin. Putyuġialuk was married to the old couple's only daughter and she died while they were out in the Arctic cold. Her mother cried and cried when the clothing belonging to her daughter was given back to her. Then, just when we were about to eat, she put a curse on her son-in-law. She was angry, so she put a curse on his berries with the intention of killing him. Although Putyuġialuk knew it, he took a spoonful. He thought, "She wants me to eat the berries, so I'll eat them no matter what will happen to me."

My family was there when it happened. We were about to eat when all of a sudden we heard the noise. Putyuġialuk was possessed! He started taking off his clothing and his teeth turned into frightening dog's teeth. He bared his fangs and jumped on top of the fire. Then he smashed the sleds, biting into them and throwing them around. We could not eat; we were so scared. He was flowing with red blood and he had no clothing on. Kivvaluuraq, his father-in-law, bowed his head to avoid seeing the plight of Putyuġialuk. He did not want that to happen. We were all very frightened but we could do nothing. Putyuġialuk's brother named Kutchuq was also there. He followed Putyuġialuk, taking along his top parka or it could be another piece of clothing. My

mother took us to our boat and covered us. I cannot remember how many of us, brothers and sisters, were there then.

It was the devil's stupidity that went into Putyuġialuk. They thought my akaa might get some of the curse, so they wanted us to take her home. In the boat, she started talking about the devil. "Talk to her calmly. Hopefully, she will go home. We will not live in peace with shamanism like this." I heard the old woman, Putyuġialuk's mother-in-law, talk. Back there it is said she is still singing and walking around. She was not afraid to put the curse on her son-in-law.

Nowadays most people have not seen shamanism. Me, I have seen so much of it in Kotzebue that I am scared of it. When I received Christ, I did not have even one friend. When they said I was a sinner I wanted Him to come into my heart. When I gave myself, even when they threw me out of the church, something in my heart wanted to go to church. I became very brave and when I went to the door they would open it. All year long whenever I gave any offering they would return it. Another time, in fact a couple of times, they told me not to go to church, but I still went and they opened the door again. A person should not give in. The Comforter, the Holy Spirit, opens the door for him, lets him come in, and will lead him. A person by himself does not have the strength, only Jesus can help.

The Shamans

When a partner [naraaq] was sick, the other partner used to go to see the shaman with the gift of his belongings, hoping the shaman would be able to save his partner through his shamanistic power. If the sick person could not be saved, he would get his belongings back. [Question: What did they do to the shaman then?] Nothing. People only took back whatever was given as the payment. When someone was practicing shamanism, one was not supposed to use the curved knife [ulu], drink water, eat, or become frivolous. Anyone who did, even during the night, would die. That's why shamanism is dangerous. One should not even think of attending the shaman's ritual. When you think of shamanism, it is better to look at it in a different light. I am ashamed of it and was not going to talk about it. And that poor woman! Her husband used to give her to the shaman. The shaman used her even though she did not want it. But the husband who was sick wanted to live; he always got better after the shaman used his wife. It was frightening to be a woman or an ignorant person whom the shaman could kill. When a young girl was disobedient or bad, the shaman killed her. This information is for you to help you. Old people are not to be talked back at. Old men are not to be yelled at. Anyone who did that did not go very far; he always died. I know that as fact.

A lot of people in Kotzebue practiced shamanism. We used to go downriver to the coast to Kotzebue. People should not be

egotistical because the shaman would want them through the devil. When a person was prejudiced, talked back to old people, he or she died. I don't know how many people were killed by the shamans in Kotzebue. The bodies of the dead were taken and left without any coffin at the place beside the lagoon where the ground was high. Sometimes the sealskin was used to wrap the body. Those who were poor used old blankets. I had seen a lot of unhappy people. At one time when a woman's husband died, no one gave her any help. The wife had to pull the body of her husband in a blanket to that high place by the lagoon. Had she used the sled, it would have to be left with the body. People were afraid of contamination. It was the same way even if the dead person was a young child. How sad it was when one had to "throw away" one's own child.

In church I always try to be truthful. I am also beginning to understand the preacher who says things from deep down in his heart. I should be singing the translated church songs to my grandchildren, nephews, and nieces, but unfortunately I cannot sing well any more.

People in the old days worried a lot. The person who had no container to drink with would go to another person's house, and the host or the hostess would let him drink by holding the container over his mouth so that the container would not be touched. When food or <u>unaqsiq</u> was given to someone whose relative had just passed away, the person who gave the food felt insecure afterwards because it was believed that relatives of the dead person were

also contaminated. The relatives were even afraid of using their own clothing; they kept changing, throwing them away, and washing themselves with the snow every time they changed. Women did this also during menstruation. After one had washed, the contamination period was considered over. Although people had to make a living and did not care for what they had to go through, they had to do it.

Now when I saw a young girl trying to look pretty, going out in the evening without much clothing on, I was immediately reminded of the past. Long ago the shaman would have wanted to kill the girl or the boy she went to meet. The aŋatkuq or the devil himself would have killed him or her.

When a young man wanted a girl and wanted to get married, he stayed with her and helped her parents work. If her parents liked him, they gave her to him. There was no formal marriage; they did not know about it.

We also did not know the English language. When I first saw white people, I kept looking at them. When I went to school, all year long my parents had to hold my hand. And I had a pencil like a rock! While we were playing outside, an Eskimo who understood some English taught me. He said if a white man said, "Come on," he was saying qaqain. And if he said, "Sit down," he was saying aquvittun. But, when a white man said, "Come on," I heard something like "kam-mak," so I drew a picture of muktuk (whale blubber). And when he said, "Sit down," I slid down ["to slide" in Eskimo is sissusraaq]. I thought I understood a lot of English!

And when I went back to the Kobuk where no one knew any English, I started to teach them English the way I understood it! Nowadays children are born into the period when English is spoken. In the old days people could hardly speak English, but we tried, and barely could understand each other. We pretended to dance, eat, carry the water, and did all kinds of things as if we understood each other in English.

When we went upriver and got a lot of fish this last winter, we had a lot of fresh fish [aiparuq] to eat. When the ground froze and there was no snow, we went berry picking. Sometimes we even stayed overnight. I am not sure how many sealskin pokes one filled up with berries. During winter the berries would be got by sleds. For caribou hunting during the summer, the men would go to the mountains. Sometimes during summer and fall, they had to go back and forth four times backpacking the dried meat, skins, and the fat of the animals (marmot, sheep, caribou) they got during the summer. They went back and forth, finally loading them on the raft. We really had a hard time, always walking all summer. After we dried lots of meat and skins, we would be secure with our winter food supply. Some men were very good at hunting marmots. In winter when caribou came, the men would hunt the caribou.

When spring arrived, we started drying the meat. After the meat was half dried, we cooked it by boiling. People who had seal oil dipped the cooked meat in the seal oil. The dried meat was kept, wrapped in the fall caribou skin. We also cracked the end

bones of the caribou and boiled them until the marrow and the fat settled on top. These were then put into the stomach container and when we wanted something to mix with our food, we used this marrow and fat.

When fall came, we began to store the berries in the ground. It's like a freezer; the berry would not spoil or ferment fast. We always had berries in the ground cache, covered with willow twigs to allow ventilation. The hot air would go out through the hole. We even had a dried fish storage place [sigluaq, a ground cache]. We dug a hole in the ground, put a pole in the center of the cache, and rested other poles around it. When it rained, the water did not leak through because we put the moss [ivruq] that we gathered from dry lakes on top. We always made food storage places like these before we had the freezer.

We ate meat or fish cooked over the fire [qauraq]. We ate meat and other things from the coast. A salmon cooked on a flat, thin rock near a fire cooked very fast. We could also make biscuits in the same way. We made biscuits after the flour came in.

Our cooking pot was made of birch bark, with split willow on the rim and sewn with willow roots. Rocks were heated in the fire and the tongs for picking the rocks [kiġiġuti] were made from two sticks. The rocks had to be red hot before they were put into the basket filled with water and meat. The water and the meat would boil. When the water turned cold, the cold rocks were taken out and red hot ones put in. When the fish, fish intestines, or the cooked meat was done, it was taken out. [Here the researcher

asked: "Did they put the rocks in twice?"] Sometimes three times when the meat, fish, caribou, rabbit, or duck was cut into big pieces. We usually cut the fish in half when we wanted it to cook fast. When we cooked the meat, we put both the meat and the bones in.

When we first had the white man's cooking pot, we called it "bucket" [atuasriqsuatuaq] because we did not have another word for it. Other white man's things like frying pan, kettle were at first called differently. After calling all kettles "teapot," we started calling it uunaqsiuvik, meaning a container used for heating.

Also people of Suluppaugaq never heard of boats. People from around here [lower Kobuk] used to go upriver to get strings of dried fish. When they cleaned the boat, they would turn the boat over and hit it to make the dirt drop off. When upper Kobuk people first heard that lower Kobuk people were arriving in that boat, they were frightened and ran back into their homes. "Silaqaaqtuuq! Silaqaaqtuuq!" they cried. Lower Kobuk visitors had to explain to them that it was just a boat. Upper Kobuk people only had small boats made of birch bark. They did not know that boats could be made with walrus skins. Me, I grew up at the time there was hardly any bark boat left, but I remember having seen a few of them. One should not go into shallow water with the bark boat, for it would tear. Let me end here.

Jenny Jackson (Masruana)

My name is Masruana and I am going to talk about my childhood days with my grandfather and about our lives during spring, summer, and winter (if I could finish it). I was born at Sulupaugaqtuuq in upper Kobuk. Tom Baldwin told me the year I was born was 1893. He is one of the first white men.

After we lived through spring on the back part of our summer place at Utuayupak, my grandfather always took us down to the inside of Mauneluk River to a creek called Avaraġaaniq after the ice went away. We stayed there about one month. My grandfather's name is Sapiqsuaq. He always put a duck snare across the creek or the slough out there [see Fig.2]. In his box was his duck trap. (If you want to see the snare sometime, you can.) We always ate ducks that were snared from the top of the water. My grandfather always snared the loons also after springtime.

When a slough had not much water, my grandfather always put in a fish trap. We then started having the big whitefish and the pike that he trapped for our meals. The fat, big whitefish that really jumped was really a good kind of fish.

After the men went away to hunt the marmots [siksrikpak], my grandmother, grandmother's sister, and I were always left alone. My grandfather always went hunting. Sometimes he took his sons along to hunt the squirrels. We always spent our summer at the Avaraġaaniq. After staying there for a while, when the ducks started molting and salmon were almost there, we would move

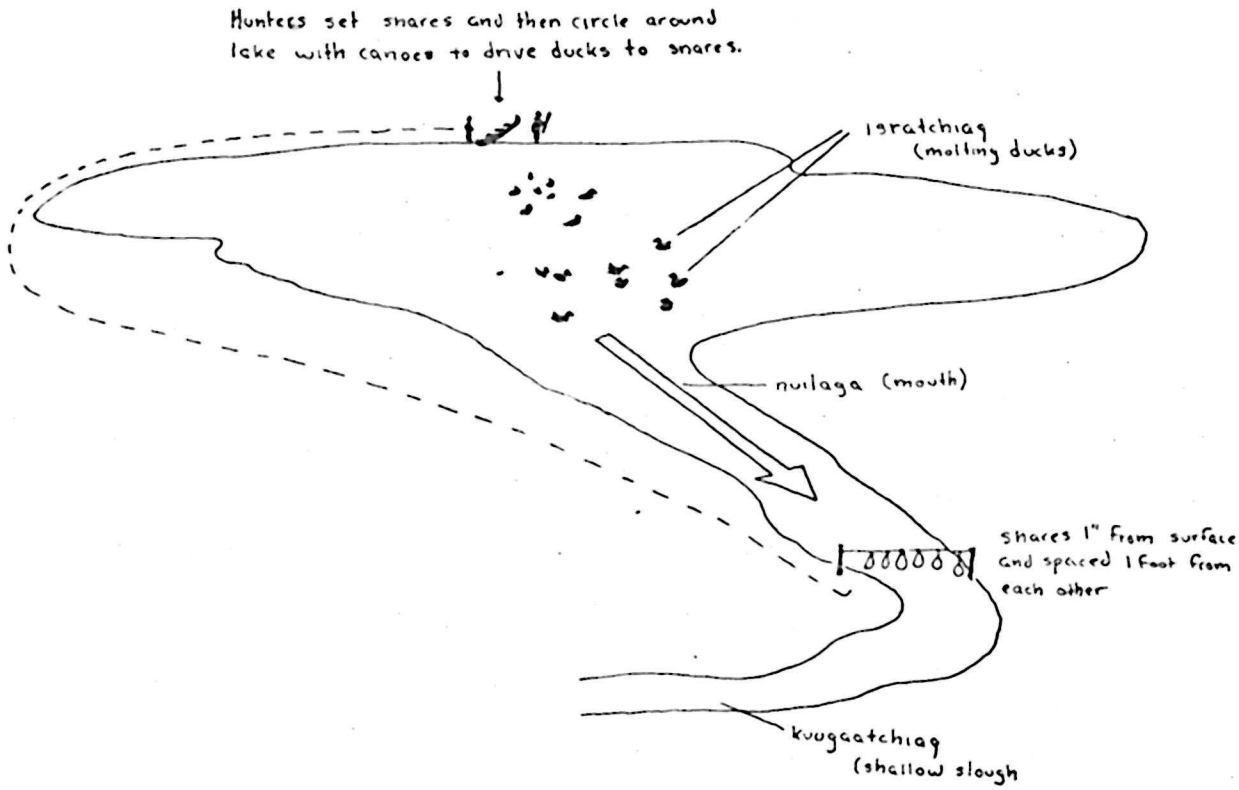


Figure 2. Snaring ducks.

The snares can be made out of salmon skin or of the early spring willow bark (about June when they have a great deal of sap). At this time (before the willows have leaves), the bark comes off easily. They strip the white inner bark off from the outer bark, then let it dry a little, but not so long that the bark hardens and cut the fingers when being braided together. They use this bark for making nets and also rope.

upriver. We always moved out of Mauneluk River then. While going upriver, if we ran into molting ducks we would catch them and we had ducks to eat. Even our dogs back there knew how to kill molted ducks. We ran, trying to catch them while my grandmother would canoe around. When she speared a duck, she always made a sound (like a dancing sound "oiui") to indicate she got a duck. We always hollered or made some noises. After the duck hunt, we usually camped and cooked the ducks. Then, we would continue on our trip upriver again.

We traveled past the original place of the Paa people, went around the bend, then went to Saġvaqsiiġiaq. There we stopped to spend our summer like other years. "The salmon will be late in coming," they said. Saġvaqsiiġiaq was the place where the Indians used to pass through in the summer and in the springtime. We stayed there with our kayaks and boats. The men would then search for the barks inside of the Saġvaqsiiġiaq. They tried to get new barks for the canoes and boats. The old barks were taken off and new ones put on while we were there. The boats were sewn with willow roots. Willow and tree roots were used as thread, and spruce gum was used for plugging up the seams. We did not have the corking material. We melted the gum, using birch bark as a pot or container. We melted the gum slowly in a campfire. We used the tree gum on the seams after putting on new barks. We always put a new bark cover on the kayak before the salmon fishing.

We ate fresh fish and ducks. We also ate rhubarb and sourdock which we mixed with our food. Sometimes we had no seal oil, but

we had oil from the marmot, and also the fish oil we made at Avaraġaaniq. That was the way we lived and that was how I was raised with my grandparents. When we wanted friends, people followed us to Avaraġaaniq.

Just before the salmon came, we used to go to our original summer camp at Atuayukpak's broad river, back there on the side of Anauliġvik. When the ice broke up, it broke the ground cache and tore apart our summer camps, but we made them over and stayed there again. We covered our house and ground cache with tree barks, and it did not drip. Anyone who wanted to come to spend the summer came with us. At the end of a long stretch of river, there were my grandparents, and Kituk and his wife. My father's aunt, Qunuyak, was Kituk's wife. Kituk was an Indian. He was adopted from the Indians when he lost his parents over there [Indian country]. To us he was our Indian. We knew him as far back as I can remember, back to the days in our original summer camp. But I did not learn how to speak Indian. My grandfather [?] Kituk said that when he went to the Indian country, he spoke Indian. My grandfather Sapiqsuaq couldn't speak Indian at all, but he probably could understand a little.

After we fixed the boats, the fish came. We worked really hard to catch salmon. We caught so many that sometimes we didn't have the time to finish them all. Sometimes they caught sheefish, too. The men went to the headwaters of the river and then up into the mountains. They went up to hunt mountain sheep, and if they found caribou, they would hunt them too, to get the skins

for clothing [parkas]. They also hunted marmot for their bedding [blankets]. After the men left, the women that stayed behind worked on catching a lot of fish.

In the fall time, which is now known as September, the men who had gone up the mountains would come back to my grandfather's place, which was a bend away. They came back to camp with my grandparents Kituk and Qunuyuk; they came back because they were uliqqa [when one is being annoyed by Indians or strangers who are thought to be Indians]. The Indians were not seen but they could be heard, whistling, making noises in the bushes, and they stole anything they could without being caught. They tried to avenge the Eskimo-Indian wars. Another reason they were around was that they wanted to mine for gold. We were brought up with having to uliqqa; we were always afraid. We couldn't play outside even when the day was long. Before the sun set, the adults always made us return to our summer houses. They didn't want us to shout or holler because they were afraid that would attract the Indians to come close to our house. And right as soon as it got dark, the Indians would kill them and the children that were noisy. Those who didn't watch out or be careful were always killed in those days. Long ago when they fought, people always said, "We are scared all the time." After waking up, people were scared and didn't want us children to be taken by the Indians. When we went berry picking, we took along old people so we could be protected from being hurt by the bears or being taken by these people [itqiliq: Indians]. The old people always followed. We

were raised to that type of life. We had the type of life in which people were always afraid or fighting. How scary! The adults didn't want us to die and they also didn't want to die. Sometimes all the summer campers were killed. That's why the summer campers in that area went to Kituk's camp in the fall time. When we saw those Indians [Itqiliq] my grandfather Kituk always went and talked to them. Kituk was Louie Commack's grandfather, his real [blood] grandfather. His mom was Kituk's daughter.

When fall arrived, we went up the river to the inside part. We always went there to get fresh fish for the winter. When the cold started coming, the sheefish were very good. We tried to get all kinds of fresh fish like whitefish (small sharp-nosed whitefish and big round-nosed whitefish). We also picked berries from there. It was really cold when we seined. In the fall time we children didn't have time to play. When I was lazy, I didn't want to pull the seining rope. My grandmother would then tie the rope around my waist and make me pull the rope. That was why right now I can pull the seine. I used to tell my grandmother that she would not be able to make me pull the seine any more when I grow up. We got fresh sheefish which we didn't bring downriver with us, but put into boxes to prevent the bears from eating them. The men didn't like the women to be scared of the bear, so the men would go and get the fish. They even spent the nights where women left the fish. Sometimes the men even caught or killed some bears there. Even though we had seen bears before,

the men didn't like us to be scared. When we were going upriver or downriver we would see them back there on land. They just turned to look at you. They went around the back part of the camp. Although we were scared they didn't bother us. The adults didn't want us to run away, or make any noise. When adults scolded us, we tried to obey them. The old people, our parents, our uncles, and people like Aqattuluuraq, were stern. They were even afraid themselves, but right now they aren't any more.

We always called the family with Iqsiñġait, Kanuaq, and Sapmalin, Uluġaaġrutkut. They always ended their trip camping downriver from us on the Paa River. They camped at the Paa at that time when no one went upriver, and before the time people started going to Aqusriuġvik. As far as can be remembered there have always been people at the Paa River. People called them "the people of Paa." The mouth of Saġvaqsiiġiaq empties into the Paa River. The Paa people lived on the side of the Paa River. They lived about fifteen miles away from where we camped. It was further away than ten miles. When they came upriver, after they went downriver for seal oil, we could hear them. Naataġnaq, uncle of Anausuk [Beatrice Mouse], always came to us immediately. He also brought us seal oil. Everyone realized that the people who went to the coast went there to get seal oil. They took with them dried fish or other things and traded them for seal oil.

When the river froze up or when it was nearly frozen up, people came home. Those who went up the mountains to hunt always had a meeting at the beach of Uqaq. My grandfather and grand-

mother, those two Indians (they are referred to as Indians even though she is not, only her husband is), stayed there at the end of the Ikpik cliff, Saagitłutaana. Kituk gave those two places [Uqaq and Saagitłutaana] Indian names. Uqaq was the original summer camp of Kituk and his wife. There at Uqaq, they dug into their packs that the men brought back from the mountains. After that people would spend the winter there. They wanted to spend the winter where they would not be bothered by the Indians any more. The men then went to check their summer camps where their food was. They always went to check on them before it froze up. And while there was no ice in the river, we gathered fresh fish that would be eaten frozen. We all got ready for the coming winter. We ate a lot when the men who went up the mountains came home. When the river froze up, we cleaned our winter houses. Some made new winter houses. Then winter came and we again spent our time there.

When the ice was sturdy enough the men always started making mudshark [burbot] traps; they made them to catch mudsharks. We ate the mudshark with other food--their fresh livers are delicious. That was how we were raised and that was our way of life before we were really affected by the white people. That was how the Eskimo people upriver, the ones I grew up with, lived. We also gathered berries, masru Eskimo [potato], and anything else that grew. The men also hunted for bears. When they went to the mountains, they always came home when the river froze up and before it snowed. They always walked by the side of the river.

They always put the food away in the cache so that in the winter-time they would be sure to have food to eat. When they wanted the food, they would just go to get it from the cache. That was how we lived.

When winter came, we would trap for fish by using fish traps. And then all winter long we used the snare to catch ptarmigan and rabbit, if there were rabbits around. When the days got longer, suitable for going out, the men went to neighboring areas, past Allakaket to Naataq and then toward Anaktuvuk Pass. They always went hunting for caribou. When they had it they would eat tuttu [caribou]. They went with the dog sleds, but they didn't take too many dogs. I went with them about three times on a hunting trip like this. One time was with my parents. They always went to this side of Anaktuvuk Pass and also to Barrow, because there were no caribou around here at that time. But right now when the caribou start to be here, people do not go any more. They used to go to hunt caribou at places far away.

[The researcher asked: "Why did they stop having caribou?"] I don't know. The Uqaliq [the word, or a prophecy] said that long ago, and that was how it became. "Who said that?" It was said that God or Jesus said that in his Bible, and that was why it became like that. Long ago people had food, but still there were some who starved when there were no caribou. And when there were no ptarmigan and no rabbits, they used to starve. Also when they didn't get enough fish. That was why people worked hard at getting food.

The nets that were used to catch the fish were made of willow bark. We used the bark for salmon nets and other kinds of net. The seining nets were also made by braiding the sinew of caribou or seals. The people who went down the coast to trade got the sinew from the walrus. They tried to get the sinew for making their nets. We had no nylon nets before the white man brought theirs. We also made other nets from threads of cloth that came out. But we were raised with bark or sinew nets for fishing. The sinkers were tied with spruce roots. We also used sinew or skin to tie the sinkers but they wore out easily. The spruce roots were hard to wear out. We used all these to tie sinkers when we made the net or the seining net. In the wintertime, women would go to get willows with good bark. They packed them on their backs, carried them home, and then took the barks off and braided them in wintertime. That is what I remember of that type of net. There was then no place to buy things for nets. They had to make them from roots and from things that grow. Tree gum was also used for corking. The people worked very hard. Beds were not there, but they had skins for beds, and for parkas; they had skins they had brought back from out there [to the north].

The men who went out there [to the north] brought back caribou or other things they traded with the people from Barrow and Anaktuvuk Pass. The original name for the Anaktuvuk people was Naqsraq. They always called a place with no mountain <u>naqsraq</u>. Those people lived in that area, but when the white people came,

they named it Anaktuvuk. The place was named Naqsraq from time immemorial. There were mountain sheep, and people used to stay there. They started staying there, the people of Naqsraq's land. This was a mountain sheep country since time immemorial.

When spring came, we went to the fish camps. But the people who went downriver to the coast to get seal oil wanted to catch walrus and seals. They would load their boats when the ice was gone. These were the Paa people: Iqsiñġait, Akkatkut [uncle], and Aŋaaraatkut. And me, I was raised with a family that didn't go to the coast. When I got bigger I always wanted to go with Kanuaq and his family, but my grandmother did not like me to go, not even with my uncle Sagliaq and his family, even though they wanted to take me to Allakaket. So I always ended up staying. One time when the people that went to the coast left us, I started wanting to go with Suġnuuquuŋuraq and his family. Even though they did not want me to go I went. The year 1913 was my first trip downriver to Kotzebue. I was twelve or thirteen, or maybe I was sixteen or eighteen years old. I got married when I was sixteen. I went downriver with Suġnuuquuŋuraq and family. The white man came way before that time, and 1913 was my first trip to the coast.

Kiana in 1909 or 1910 already had white people after they started mining in Klery Creek. We started going downriver, Suġnuuquuŋuraq, his wife, and I. Uluqse and his son also went with Suġnuuquuŋuraq. They were from Laugvik [Kobuk village]. They took their son, Qauliuvik, to the doctor; his hand had got

infected and was swollen. We left them in Kiana and our group left. But a white man joined us. We went downriver. Paŋalik and Umilġusuk showed us the way because none of us knew the river. He told us to go through the right side all the way, following the cliff. He told us to go downriver, and when it looked like we passed the cliff, we were to watch for a river. It was the mouth of Ugrivik, and that was our river. Ahead of us were other people who were also going down to Kotzebue. There were Putyuġialuk and his family, and Kanuaq and his family. ["Who was Kanuaq?"] Your grandfather--Anausuk's father. Cranes and ducks were flying at the mouth of the Ugrivik. We traveled down the Ugrivik a little distance and then stopped to camp. We started to feel sleepy at the mouth of the Ugrivik, for we had been paddling for some time. There was then no law against hunting cranes or anything else.

On this side of the lake, in Allutunŋituŋam, there was a tent. In it were Nashuk and others. Nashuk was the father of Aġnauẓhgaq. Everyone was warm and comfortable in his tent. Nashuk has a boat made of wood, and he and his wife had sheefish drying outside. ["Where were Nashuk and his wife from?"] They were from the Kobuk and were on their way down to Kotzebue. They told us there were eggs to be found around there, but we did not have the time to look for them. We wanted to catch up with those who went ahead of us. Nashuk told us that we would catch up with them on the other side of Qalugaaġruk where they were trapped by the still frozen river ice. There was no opening, the old man

said. We left after we finished eating. The sun was rising. We found that the people who went ahead of us were trapped by the ice on this side of Qalugaaġruk. They had pitched up a tent on the river bank and had pulled their boats up. If the ice had jammed them in, I don't know what would happen to them. Someone recognized the danger and therefore decided to camp.

We reached them and camped with them. We did not sleep--simply lay down for a while. Then we all waited for the ice to open up. The wind started blowing and the ice began to move. It moved very fast and cracked halfway up Tikigayuk. With the river ice in that half-cracked condition we left and others left with us. We followed them and boated along the bank all the way down to Kotzebue. It was far. When you traveled all through the sloughs it was far.

In Kotzebue we set up camps. There were hardly any people but the stores were already there. Tom Peary was there, too. Those who came to hunt seals went to where there were good catches. They went there, those people who came down from the Kobuk. As for us, Suġnuuquuŋuraq let us stay there. He said in a "It didn't matter" attitude that he didn't have to try to hunt seals. That was my first trip down and that was my first time seeing people from down there. Those who hunted seals at Qallivik had good catches. They also hunted beluga and other sea animals. But then they wanted to go back to fish. They left the ocean and I got in Putyuġialuk and his family. Suġnuuquuŋuraq and wife went

up the Kobuk River, too, but I left with Putyuġialuk because I wanted to go with the people that went upriver first.

While in Kotzebue, they wanted me to work for the schoolteachers. I worked for them for a while, washing clothes. They wanted to take me outside [lower forty-eight states]. I really wanted to go but when I told Kanuaq and Sialauraaġrutkuk and family, Kanuaq did not want me to go. He was afraid that I wouldn't come back home. He was scared of my grandmother. He said if he said yes but my grandmother said anything else, he would be scared of her. He knew she didn't like me to go anywhere. But I used to stay with them [at Kanuaq's] since I was small.

We started back upriver again in order to fish in the upper Kobuk. They said, "It always freezes up fast," so we did not want to get caught downriver when it froze up. After the people danced all summer in Kotzebue, the river could freeze up on them. ["What did they do when it froze up on them?"] They went to the Aksik people. The river was easy to freeze. They always spent the winter in Aksik or any place else if the river froze up on them. But sometimes they went by dog sled and went back home up the Kobuk. ["Did they take their dogs when they went downriver?"] Yes. They always went up there. That's the way we lived. But when we went upriver that time, it didn't freeze up on us.

We worked hard, trying to fish. We worked hard. At that time I was older and my grandmother used to get sick. We went to the Qalla people who put poles in the river and blocked it. They

caught fresh fish to be used as frozen fish. Anausuk, people from Paa River, and us went to the Qalla peoples. That's how we lived when we started living in Laugvik, the present Kobuk village. We went upriver from Laugvik to fish for fresh sheefish, and we put them in boxes. The Indians must have worked hard, too, because like us they didn't have store-bought food. We started having white man's food when Kotzebue had a store. In Kiana the store came in around 1909 when Klery Creek opened for mining and people had money. In 1910 and 1911, even in Isiŋnaq [Shungnak] people had money. [Kaviqsaaq, gold, from the word for red. Qatiqtaaq, silver, from the word for white.]

People started having an easy life when they ate store-bought food or white man's food. I grew up at the time people started to use flour. Because Kuulepak [Yukon River] and Barrow first had white men, people from Kavruqutaq and other places started to get and use flour. People started eating white man's food when white men came in looking for money. But those of us who lived in the summer camps had nothing. My uncles from both sides of the family like me. They used to give me a little flour.

I am talking about nothing, but I am talking about things I have not forgotten. I don't want to tell stories. I don't want to miss or skip any part.

Louie Commack (Aquppak)

I am going to talk about the way I was raised on the Kobuk. I was raised in Kobuk village [Laugvik], and also by the headwaters at the end of the Kobuk River. I've traveled as far as Allakaket. Long ago when I was small, my grandmother Ullaaq, my father's mother, used to always talk about people starving. They had no food, that's how she always talked. In Qalla they used to make a living for us. My grandmother Ullaaq always fished for us. When I was small they used to fish. The fishing places were Kigvalluat, Tirravak, and Mauneluk. Long ago when the weather was bad in the wintertime and people didn't get any food, they always starved. When days got longer and it was stormy and hard to travel, they always starved. I also was raised at the place called Ivisaaqpaat [Ambler], and also on the Hunt River. The people before me hunted; they tried to get food so that they could eat. When game got scarce or hard to get, they always suffered on the Kobuk long ago. Even right now when the fish don't go upriver or when they are slow in coming, the Kobuk people--the people of Kobuk, Shungnak, and Ambler--always get hungry. But now the white people are going to take hold of the place we live. Us older people won't be able to live long on it, but the young people, our grandchildren, nieces and nephews, and our children are going to live off it right now. When things get hard, they are going to have to live off it. I want the land that I know to stay open. There at Mauneluk and Suluppaugaq are

fishing and berry-picking places. People lived off it; when there was no fish or when the berries didn't grow much, that's when they starved.

If the white men take hold of the land, we will really suffer. If our children have no place to hunt, they will suffer. Some of our children can hunt, and they know how to live. In this land they hunt in the spring and fall. From here they go to hunt or fish; they hunt caribou, bear, or anything else eatable.

Long ago before the contact with the white people the Kuuvak Iñupiat [Kuuvaŋmiit] depended on food they hunted and gathered. Wintertime, when days get longer and the weather is stormy and unbearable, traveling becomes difficult--there is a possibility of famine. Many Iñupiat are victims of a harsh environment when there is lack of food. During starvation periods, when food is hard to get or out of reach, many people are forced to areas they don't usually go to. There was a family who lived in the mountains near Anaktuvuk Pass; when their father passed away, they moved to the Kobuk area. They fled to safety, to where there was more abundancy of game. Their dogs were dying off one by one from lack of food. There are a lot of situations like these that have scared a lot of my people but survival was greater, and from these experiences of the elders, even though they themselves may have been spared, the stories have been passed on to them from their ancestors as to what happened and can happen when one is hungry. Even if a person literally throws himself away, men

travel miles in search of caribou.

Even today people suffer when fish are late in coming and the berries do not grow much. That is why village people utilize everything. They don't throw anything away. For instance, caribou: they eat the meat fresh, frozen, or dried. The bones are used for various reasons: a scraper, fish scaler, and also handles for ulus or anything else; stomach is used for container; the fur is used for clothing, mukluk, or bedding; heart, liver, and intestines are eaten. Even the hooves are stored away and saved for later use. When food is scarce, the hoof is boiled till the outer black part comes off; inside there is gelatin substance. In the lower forty-eight [states] they use the gelatin from cattle or beef to make jello. Even today my mom uses the hooves when making beans. Although in this present day and age the villagers are just beginning to get only the choicest part of the caribou. They do not go to the extent of saving sinew for later eating, for there is no fear of starvation. Along with the introduction of the western world also came their canned food. Although this type of food may be essential, the older people do not feel like they have quite eaten till they have Eskimo food [niqipiaq]. Although today the people may not go to the extent of saving and eating the whole caribou it is still one of the main diets of the Kuuvaŋmiit.

Comment. Many non-village people may get the impression that the Eskimos are killing all the animals and catching all the fish. The knowledge of animals is very important. When hunting,

the men look for only the fattest caribou, and the skinny and the young are left alone. No one shoots a pregnant muskrat; only the head and rear end can be seen when a pregnant muskrat is swimming. A person has to know what weeks, even days, to go out duck-egg hunting. When seining, all fishes aren't taken; they throw the bruised and small fish back into the water. Although our elders may not be able to speak English fluently or do not use modern dress or even have beauty parlor fixed hair-dos they have what is most important to them, the knowledge of their environment. Their laws might not be written, but they are given in another sense. The taboos, superstitions that have been passed on, work as sufficiently as the laws that are written in books for average society. Even their knowledge of weather, which is vital to the people. One has to know the conditions of the weather before going out hunting or fishing. Who knows, you may never see him again.

I have learned a great deal from the elders that I have talked to in Noorvik. They were sincere and willing to pass on the information of the type of life they led and what their parents have told them. Many commented that the young people today are lazy and don't even bother to find out about their past history. I, too, would have neglected to learn and gather the information that soon may be dead. From listening to the people, life was hard but they had their identity and sense of usefulness that we young people are losing our grips on. Although old people have traveled miles and labored hours for their food,

the looks on their faces when talking about the past life proves how much life had meant to them. They are hard workers, knowledgeable, sincere, strong, stern, patient, and wise. This may not sum up all the qualities of all the long-ago Eskimos, and life may have been hard for them, but they have everything that we don't have. Yes, we have the stores to ease the starvation, movies to keep us from boredom, alcohol to take us away from our problems, running water to save us from many trips to the river, and schools to help us teach one another about the American heritage which sometimes does us no good in the village. But most of all we still have those people to show us how to fish and hunt, and tell us about our culture if we are only willing to listen.

VI

KUUVAŋMIIT SUBSISTENCE CYCLES

In the subarctic environment of the Kobuk River Valley, the changing seasons have importance beyond all other natural events. Every plant and animal species must respond in its own way to the seasonal transformations of warmth and cold, light and darkness, rain and snow, water and ice. Each year is marked by a regular cycle of growth, reproduction, fruition, migration, and dormancy or death. This sequence of changes also governs the patterning of human life, and from it the Eskimos have developed an annual cycle of subsistence activities. Because the environment of the upper Kobuk River differs from that of the lower Kobuk, the cycle of the Kuuvaŋmiit living along the upper river is somewhat different from that of the Kuuvaŋmiit living at the lower end of the river. The subsistence cycles of both groups are shown in Charts 2 and 3 and are described in the following pages, first for the late nineteenth century, and then for the mid-1970s. The activities that take place in the proposed Kobuk Valley National Monument are shown in Table 3.

Upper Kobuk River, Late Nineteenth Century

In an ethnographic study of Eskimos of the upper Kobuk River J. L. Giddings (1956) described the annual cycle followed by the Kuuvaŋmiit in the early 1880s, before European explorers first

Chart 1. Annual Activity Cycle of Kuuvaŋmiit of Upper Kobuk River

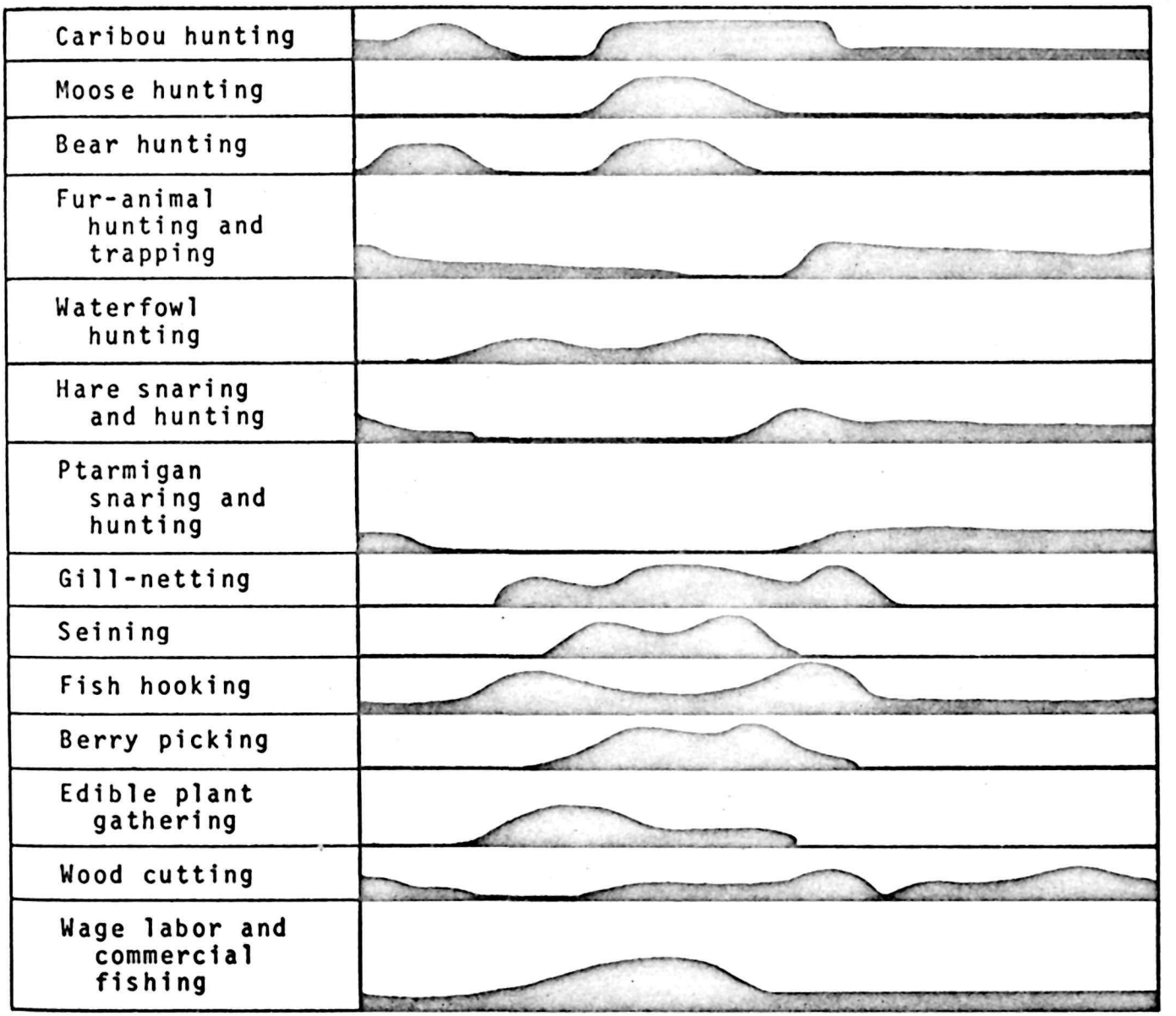


Chart 2. Annual Activity Cycle of Kuuvaŋmiit of Lower Kobuk River

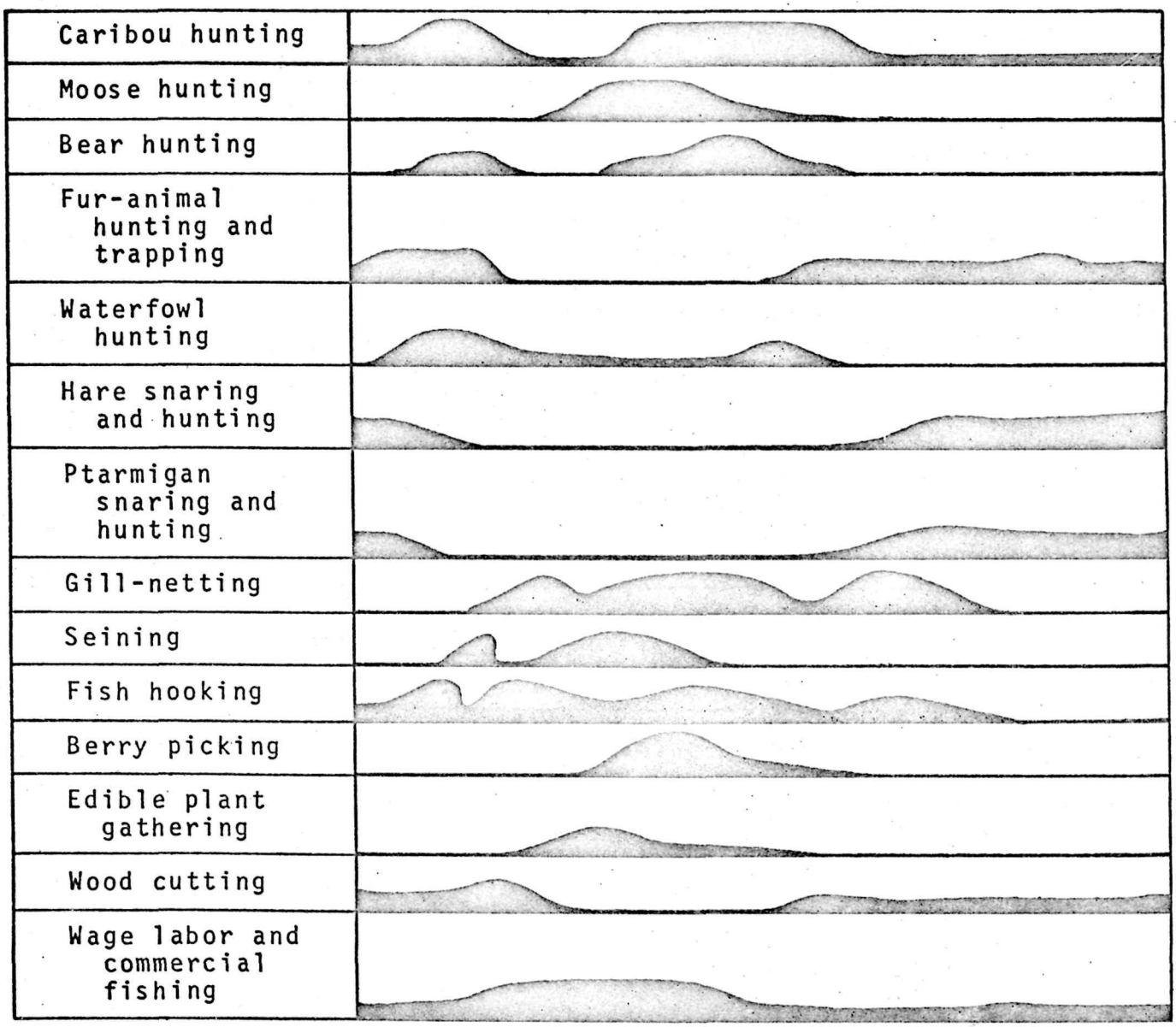


Table 4. Kuuvaŋmiit subsistence activities in the proposed Kobuk Valley National Monument

Eastern portion of the Monument

Spring	Summer	Fall	Winter
*hunting camp	fishing camp	fishing camp	*hunting camp
*caribou hunting	caribou hunting	*caribou hunting	*caribou hunting
bear hunting	gill-net fishing	moose hunting	*fur-animal hunting and trapping
waterfowl hunting	*hook and line fishing	bear hunting	ptarmigan hunting
muskrat hunting	edible plant gathering	waterfowl hunting	hare hunting
gill-net fishing		gill-net fishing	birch wood cutting
		hook and line fishing	
		edible plant gathering	
		berry picking	

Western portion of the Monument

Spring	Summer	Fall	Winter
*caribou hunting	fishing camp	fishing camp	*caribou hunting
*bear hunting	caribou hunting	*caribou hunting	*fur-animal trapping
waterfowl hunting	*seining	*seining	ptarmigan hunting
	*hook and line fishing	*moose hunting	hare hunting
	*edible plant gathering	bear hunting	finding house logs
		hook and line fishing	
		edible plant gathering	

* Denotes activity for which proposed monument withdrawal is a key subsistence area.

ascended the river. His account, which provides the basis for this section, derives from the recollections of old people who had reached maturity before they had contact with whites.

Spring (late March to mid-May)

In former times, as today, spring was a season for traveling. As early as February the increasing length of the days made people restless to move, anxious to leave their permanent winter dwellings. So sleds were loaded, and a period of wandering began. The Kuuvaŋmiit families of the upper Kobuk River sometimes set up camps beside caches of food left behind during the previous fall, sometimes near lakes where fish could be hooked, then again in willow stands with abundant ptarmigan or snowshoe hares, or else in areas where scattered caribou bands could be found. Often times were lean, especially during March, when people were forced to rely heavily on their stored foods.

Spring camping lasted for several months, while the weather steadily moderated. People lived comfortably in hemispherical, caribou-skin-covered tents heated by wood fires. As the days became warmer, they built tipi-like structures of spruce saplings, or they lived outdoors.

As the season progressed, new resources became available. Bears were sometimes taken from their dens, beavers were dug out from their houses, muskrats were shot with arrows, and migrating waterfowl were hunted. During this time, too, the snow melted,

lakes and creeks became clear of ice, and finally the river ice broke up and churned its way downstream. When the river was clear, the Eskimos made large rafts and drifted down to their summer camping places.

Summer (mid-May through August)

Hemispherical shelters covered with spruce bark were built each year at summer fishing camps set up along the upper Kobuk River. After this was done, usually in early June, the men joined together in small groups and walked northward into the Brooks Range. They moved high up through the mountains, hunting and snaring sheep, caribou, marmot, and occasionally bear. The men hunted all summer, accumulating valuable hides and sinew that the women would later use to make clothing, tents, and sleeping bags. Antlers were saved for making a variety of tools. The meat was largely consumed in the mountains, and very little was saved to be taken home. The men's summer hunt was thus directed primarily toward acquiring animal products other than meat.

While the men were away, the women, children, and old men remained in their camps along the Kobuk River. Early in the summer they made willow-bark nets, gathered edible plants such as wild rhubarb and willow leaves, collected birds' eggs, and did some fishing in small streams and sloughs. In early July the salmon began to run, and the women were constantly busy from this time on. Salmon were taken by the women's pulling long

seines out into the river from birch-bark canoes, encircling schools of fish, and then pulling the fish-filled seines up into the shallow waters by the beach. After a catch was made, many hours were spent laboriously cutting the fish and hanging them on racks to dry. When this was finished, the innards were boiled to make fish oil, a vital fuel for light and heat during the winter months.

Fish runs reached their peak in August, when salmon, whitefish, and sheefish were caught in great numbers. Lines of racks laden with fish stood along the bank at every camp, and the people subsisted mainly on their catch. August was also a time for picking blueberries, cranberries, currants, and other fruits as they ripened. Some of these were eaten immediately, and the rest were preserved in oil or dried for use the following winter.

Fall (September, October)

At summer's end, in late August or early September, the men trekked down out of the mountains, burdened with great packs. At the headwaters of the tributaries of the Kobuk River they built log rafts, loaded their goods aboard, and began the final leg of their homeward journey. Eventually they reached the main river and the fish camps where their families had remained all summer.

For some time thereafter, the Kuuvaŋmiit stayed at their summer camps. Migrating flocks of waterfowl were hunted along the river, several kinds of fish were still taken from the nets

each day, berries were gathered, and the few choice pieces of sheep and caribou meat brought back from the mountains were eaten. Then, as colder weather descended into the valley, the people broke camp and began pulling their heavily loaded boats upstream.

New camps were established in the upper valley of the Kobuk, where many families gathered at known caribou crossings. Skin tents were erected, and small fires were kept going inside to provide warmth. Somewhere nearby was a caribou corral. This consisted of two lines of stone cairns, maintained year after year, that stretched for miles across the tundra and converged upon a large lake. When herds of southward migrating caribou arrived, they were driven between these cairns and into the lake, where men in kayaks speared large numbers of them. Killed animals were butchered immediately, and their meat was preserved by drying or freezing. Then, as now, almost all parts of the animal were utilized; meat, hide, antlers, bones, and internal organs all had their uses.

Winter (November into March)

After the fall caribou hunt, people separated into small family groups, traveled down to where the river was large, and built their winter houses. These were substantial, half-underground, sod-covered dwellings that provided warm shelter against the extreme cold of winter. Heat came from an open fire set

beneath the house's smokehole, and light was furnished by oil lamps and a gut-skin skylight.

Right after freeze-up, the people began making fish traps. These were of several types, but all consisted of fences put down under the ice to divert fish into trap devices or hand-operated dip nets. Sheefish, burbot (mudshark), whitefish, and pike were taken in large numbers during this time. Later on, as the snow deepened, ptarmigan and snowshoe hares were hunted or snared. Hook and line fishing was also done through the ice until the fish stopped biting in midwinter. Caribou and fur-bearing animals were also taken for food and hides during the winter months.

KOBUK ESKIMO CALENDAR

January----------Siqiñaasugruk (new sunshine)
February----------Kusrugaqtuġvik (icicle time)
March----------Qalġit tatqait (hawks coming)
April----------Tiŋmirat tatqait (geese coming)
May----------Sikuiġvik (ice breakup time)
June----------Igñivik (birth time)
July----------Itchavik (molting time)
August----------Amiġaiqsivik (loose antler velvet time)
September----------Tiŋŋivik (bird migration time)
October----------Sikuvik (freeze-up time)
November----------Nippivik (sunset time)
December----------Siqiñaatchiaq (no sunshine)

(Source: Webster and Zibell, 1970:119-20)

Subsistence activities slowed considerably during the coldest and darkest times of the year. People occupied themselves indoors, however, making and repairing equipment, telling long narrative tales, joining shamanistic performances, and

participating in trading feasts that brought people together from distant camps. Finally, as the days lengthened, they prepared again for the travel and camping of early spring.

Upper Kobuk River, Mid-1970s

The years since 1880 have seen a great many changes in Kuuvaŋmiit life on the upper Kobuk River. Aboriginal technology has been abandoned, altered, or replaced by new implements from western cultures. Log and lumber houses have supplanted tents and semisubterranean dwellings, rifles have displaced bows and spears, motorized boats have replaced canoes, nylon gill nets substitute for nets of willow bark, and snow machines are just now superseding dog teams. The life pattern, too, has altered considerably. People are permanently settled in villages, they participate in a wage economy, and their entire social culture has been altered drastically.

Despite these changes, the Kuuvaŋmiit of today still make their livelihood primarily from the land. Because they depend on hunting and gathering for much of their livelihood, they must follow the plants and animals through their yearly cycle of changes, just as their predecessors did in the last century. Although their technology and settlement patterns have changed, their annual round of hunting, trapping, fishing, and gathering remains fundamentally intact.

The following descriptions of Kuuvaŋmiit life today are based on the researchers' observations of and participation in subsistence activities on the upper Kobuk River and on verbal accounts gathered from Ambler and Shungnak villagers during 1974 and 1975.

Spring (late March to mid-May)

Spring begins in long, often winter-cold days, and it ends abruptly after the river ice breaks up in the summery warmth of middle or late May. This is a time of sudden transition--days lengthen until there is no night, warm air spreads into the north, caribou pass through and are gone, waterfowl appear, river ice lifts and is swept away, snow vanishes, and green vegetation covers the land.

During March and April the days are long, temperatures are moderating, and snow conditions are excellent for dog teams or snow machines. It is no surprise, then, that Kuuvaŋmiit Eskimos travel widely at this time. People make long and frequent hunting trips, journey to the medicinal hot springs, and exchange visits with friends and relatives in villages throughout the region. Overland travel continues until early May, when the snow becomes slushy and water overflows the ice on tributary streams. People remain largely immobile until the Kobuk River is ice-free, and then a flurry of boat travel begins.

Spring is also a favored season for camping away from the villages. Until recent years, family camps were established from early April until after breakup. These camps were an escape from the mud and crowding of the settlements, and provided an opportunity to exploit local concentrations of game such as caribou, waterfowl, muskrat, and beaver. Nowadays, however, the children of elementary-school age must remain in school until after breakup, so family spring camps have become a rarity. (High school students have to leave the villages to receive a high school education in southern Alaska or in the lower forty-eight states.) Temporary camps are still frequently set up by men on prolonged hunting trips. After breakup, family camps are often established on traditional sites noted for good fishing and hunting.

Spring is second only to fall as a time of intensive caribou hunting. In April and May the caribou start fattening, and the quality of their meat improves. Their leg skins are good for making boots, but the rest of their hide is nearly useless because of shedding fur. Nearly all meat from spring-killed caribou is cut into strips or slabs, hung on racks to dry, and kept for summer use. The best weather for drying meat comes in May, during or just after the northward caribou migration. Primary areas for spring caribou hunting depend on the animals' movements, but in recent years the Hunt River area and tundra flats just to the south (within the proposed Kobuk Valley National Monument) have been favored. Caribou also tend to frequent the

Ambler River Valley and the tundra country between Shungnak and Ambler villages during the spring.

Hunters on far-ranging spring trips sometimes encounter black or grizzly bears. These animals are still fat during April, just after they emerge from their dens; but they begin losing fat in May and are not much hunted thereafter.

Spring is also a very important season for hunting ducks and geese, which are fat and have excellent meat at this time. Eskimos can reach their long-established hunting places by land or water travel, depending on the progress of the season. Waterfowl may be a vital resource in the springtime, especially during years when other game is scarce or unavailable. For Ambler-area Kuuvaŋmiit, the best spring waterfowl area is within the proposed Kobuk Valley National Monument, south and east of the Hunt River mouth.

Another activity is hunting and trapping muskrats. These animals can be trapped on lake ice from March until May; they can be hunted only from the middle of May, when they come out onto the ice, until the first week of June, when the males begin fighting and perforate their skins with wound-holes. Muskrats are fat and make good eating throughout the spring. Some excellent muskrat hunting and trapping areas are located south of the Kobuk River in the eastern part of the proposed Kobuk Valley National Monument.

The upper river Kuuvaŋmiit anxiously await their first opportunities to catch fresh fish in the spring. Gill nets can

first be set at certain creeks where water flows out over the ice before breakup. This catch is largely broad whitefish, along with some pike.

After breakup, the main spring fishing begins. Gill nets are put in creeks and sloughs known to have fish at this time, and occasionally at favored spots in the Kobuk River. Some of the best places used by the Ambler Kuuvaŋmiit are in the proposed Kobuk Valley National Monument area. Netting continues from breakup (middle to late May) until late June, when the high-water period ends. The principal species taken are sucker, pike, and broad whitefish, along with some grayling and humpback whitefish.

Spring fishing is also done through the ice with hook and line. Pike and burbot (mudshark) are taken this way from February until breakup, with the best catches during April and May.

Some gathering of vegetation also takes place in the spring. Wood is cut for firewood, green willows are gathered for basket making, and birches are cut for making sleds. After the snow melts, people occasionally pick blueberries, cranberries, or bearberries that still remain from the previous fall.

Summer (mid-May through August)

Summer is fairly uniform--daylight is continuous, temperatures are never cold, and the only marked resource changes are the appearance of fish and maturation of plants. Sometimes,

however, there is a period of scarcity in early summer, around June and early July. Caribou are absent (or in poor condition if present), fish are scarce and difficult to catch, and nearly all other game resources are at a low point of accessibility. Older Eskimos can recall times when they had "nothing but coffee to eat" for several weeks, when they ran out of stored foods and could not replenish their stocks.

In summer the upriver Kuuvaŋmiit travel largely by boat, following the Kobuk River and the streams, sloughs, and lakes that flow into it. This travel keeps them within the forest zone, since timber usually flanks the waterways. Overland travel, which must be done afoot in summer, takes them away from the forest and onto the open tundra, where they can make straight traverses, orient themselves easily, and usually find wind to suppress the mosquitos.

The upriver Eskimos frequently live in camps during the summer, sometimes for only a week or two, sometimes for a month or even most of the season. Most of these camps are at traditional fishing places and are occupied year after year by the same families. Some sites are located quite far from any settlement, including several within the proposed Kobuk Valley National Monument that are regularly used by Ambler Eskimos.

Very little caribou hunting takes place during the summer, because the herds have moved far to the north. Stragglers are occasionally seen, however, especially along the Kobuk River near the mouth of the Hunt River and Onion Portage. These animals are

shot for fresh meat whenever possible. Caribou hides with summer fur are excellent for making fancy skin boots.

Few bears are taken during the summer because they are in poor condition, with little fat, from May until the end of July, when they start fattening on berries and fish. However, a bear is shot any time by the Kuuvaŋmiit if food is in short supply.

Ducks also have little fat during this season, and are very rarely taken. Geese are in good condition, but are not often encountered. In the past, hunts for molting and fledged geese were undertaken at certain lakes and tributary streams in July. This is apparently no longer done.

The most abundant and reliable summer resource is fish, for above all else, summer is the fishing season. People may spend long periods camping at fishing places or visiting them by boat from the village. Cutting and drying fish is also a major activity at this time. The Kuuvaŋmiit of both the upper and lower Kobuk River undertake three types of summer fishing: gill netting, seining, and hooking.

Gill netting for the upper river Kuuvaŋmiit begins in mid-July when salmon come up the river. Other fish are available before this time, but the weather is too hot for proper drying. Nets (see p.) are placed almost exclusively in eddies scattered along the Kobuk River, sometimes many miles from the villages (see Fig.23). Ambler-area Kuuvaŋmiit set gill nets at various locations within the proposed Kobuk Valley National Monument.

Species taken in gill nets include the following:

Chum salmon, taken from mid-July to early September, with the largest catches late in the season.

Sheefish, taken from July to September. They are fattest and best for cooking in July; dried throughout the season.

Pike, netted from July to fall.

Broad whitefish, taken from mid-July to fall.

Seining is usually done in July and August in the Kobuk and Ambler rivers. Seining places are always located along sand bars, in spots where the water is fairly deep and has little current.

Species taken by seining include:

Chum salmon, taken in July and August. Early salmon are fattest and best for cooking; good for drying all summer.

Broad whitefish, taken mostly in July. Up to 2,000 or 2,500 may be taken in a single seine haul. All must be scaled and strung on willow sticks.

Round whitefish, taken only in summer seining; never common.

Hooking for pike, grayling, and sheefish is carried on all summer with rod and reel. This is a fairly important method of catching fish for subsistence purposes, especially in the case of sheefish. The best areas for sheefish hooking by the upper river Kuuvaŋmiit are located within (and just above) the proposed Kobuk Valley National Monument. These are specific deepwater places

where the fish school temporarily during their upriver migration, usually in the month of July.

A variety of vegetation is gathered during the summer. Cutting of trees for firewood is not an important summer activity, but logs are taken for house and platform cache building. Other uses of vegetation at this season include:

Birch bark gathering--bark is peeled from the trees in June and early July, when it comes off most easily.

Spruce root gathering--roots are dug in June and early July, when they are juicy and easy to peel.

Wild rhubarb and sourdock gathering--young shoots are gathered in June and July.

Wild chive collecting--plants are gathered in July (late June in early summers), before they become hard and strong tasting.

Summer is also the principal season for wage labor and commercial fishing activities among the men. Most of this work takes them outside their villages, to Kotzebue, Fairbanks, or the Alaska pipeline. For the adults, wage employment is always temporary, but it may cause absences of from a month to four or five months' duration. This summer work pattern in some ways resembles the traditional cycle, where men left their families to hunt in the mountains. Nonetheless, most men strongly prefer to remain in their home villages if at all possible.

Fall (September, October)

Like the spring, fall is a period of rather sudden transition. Days become shorter, temperatures drop rapidly, the snow comes, and bodies of water freeze over. Fall is also a season of great abundance for the Kuuvaŋmiit Eskimos, a time for intense hunting, fishing, and gathering activities, when caches are filled for the winter ahead.

Most fall travel is immediately related to hunting, fishing, and gathering. Trips are fairly short in duration because harvests are large and quickly made, and there is little time to waste. Travel may come to a brief standstill between the time of freeze-up and the first snows, after which overland transportation is again possible. Fall camping is done in connection with gill netting and seining, mostly during September. Men who hunt away from the villages also establish short-term camps, but usually stay for just a few days or perhaps a week.

The year's most important hunting, and perhaps the most important single activity for Kuuvaŋmiit Eskimos, is the fall caribou hunt. This takes place in August, September, and October, the exact time depending on the southward migration of caribou into the Kobuk River Valley. Areas for the hunt also depend on the caprices of the caribou, but there are known preferred routes and areas for the migratory passage.

Favored migration routes in the upper Kobuk area run through passes from the Noatak River Valley into the Ambler, Redstone,

and Hunt river valleys. In recent years, the caribou have used the Hunt River route most heavily, and, in fact almost exclusively in some years. After reaching the Kobuk River area, the animals tend to spread southward across broad stretches of tundra in the Kobuk, Selawik, and Koyukuk river drainages. Before crossing the Kobuk River, however, the herds may pause for some time, wandering toward the east or west. One important route brings them down the Hunt River, then eastward through the Onion Portage area, and finally south across the Kobuk in the Ambler-Shungnak region.

The most important single area for caribou hunting is in the vicinity of Onion Portage; and in recent years the heaviest activity has been inside the proposed Kobuk Valley National Monument.

Caribou are in excellent condition during the fall. Bulls are preferred in August, because they are fat and their hides and leg skins are prime. They begin to smell with the rut in October, and remain foul into November. Only the cows are taken during this time.

Another big game animal hunted in the fall is the moose. These animals are taken almost exclusively during this season, though people may hunt them at other times if they are in need of food. Hunting is done before freeze-up, when moose congregate along the Kobuk River and its major tributaries. They are in excellent, fat condition during late August and early September, and hunters prefer two- or three-year-old bulls at this time. After the first part of September (as soon as the leaves fall),

the bulls smell and lose fat from the rut, and so only cows are taken.

Bears are also taken during August and September. They reach their peak condition in September, especially in areas where they feed on berries and small animals. If they are feeding on spawning fish in the upper tributaries they are not taken, because their taste is poor. Ambler-area Kuuvaŋmiit prefer to find bears in certain parts of the Redstone and Hunt river drainages, because they tend to be in prime condition there.

In recent years the upriver Kuuvaŋmiit have seldom hunted mountain sheep in the fall, because trips to the upper Noatak River Valley, where the sheep are most abundant, have been uncommon. Sheep are found and occasionally hunted in the Kobuk River Valley, however. These animals have excellent meat and prime hides in August and September. Males are preferred until they begin smelling with the rut in September, and thereafter the females are hunted.

Ducks and geese are also taken in the fall, because they are fat and excellent tasting at this time. They are enthusiastically hunted by people traveling on the rivers, and by those who stay away from the settlements in fishing camps. Areas along the Kobuk River in the eastern section of the proposed Kobuk Valley National Monument are favored by the Ambler-area Kuuvaŋmiit for waterfowl hunting at this season.

Fall fishing is a busy continuation of summer fishing, and very sizable catches are realized. There are two major types of fall fishing: gill netting and seining.

Gill nets are set primarily in the Kobuk River. They are kept in the water during the month of September and are taken out before freeze-up. Ambler-area Kuuvaŋmiit make their largest catches of sheefish at this time. The highest quality sheefish, however, those that are full of eggs, are taken by Shungnak and Kobuk village Eskimos in areas upriver from their villages, above a place named Qalla. Salmon are also running in September, though the late ones have the least fat. Other species of fish taken include humpback whitefish (just coming upriver at this time), Arctic char, pike, and burbot (mudshark).

Seine fishing begins again in mid-September and continues until ice begins to form in early or middle October. Ambler people seine mostly along the Ambler River, and Shungnak people use the Kobuk River. Fall and summer seining are done in identical localities, scattered from below the Hunt River mouth to above the mouth of the Paa River. Species of fish taken include broad whitefish, humpback whitefish, sheefish, and sucker. Very large catches of least cisco are also made in fall seining.

The most important gathering of vegetation in the fall is berry picking, which begins in August and ends with the October snows. Berries are usually gathered along the Kobuk River and its main tributaries, but people also walk far back into the flatlands and mountain flanks to some favorite areas. The most

important species is bog blueberry, which is collected in August, September, and October. The berries become soft after snow comes, but they are still usable. Lowbush cranberries are also gathered in large quantities during August and September, provided that the crop is a good one. Bearberries are highly desired as food, but are uncommon. They are picked in August, almost exclusively in sand dune areas within the proposed Kobuk Valley National Monument. Cloudberries are also gathered in August. Most, if not all, berries of significance to the Eskimos are subject to marked variability in abundance from year to year. One other important fall plant is Eskimo potato, which is dug up after the ground freezes in September.

Cutting of spruce for firewood increases before freeze-up. This is done along the river banks, and wood is hauled to the village by boat. In recent years oil heat has largely supplanted wood in many houses, so there has been a steady decline in timber cutting.

Winter (November into March)

Winter is by far the longest season at the latitude of the Kobuk River, encompassing nearly half of the year. Daylight decreases until there is no direct sunshine at all, temperatures drop to extreme levels of cold, snow deepens and is blown hard by gale winds. Although it is long and harsh, winter does not

preordain scarcity. The Eskimos remain active throughout the season, utilizing a variety of game and fish species.

Winter travel is strongly oriented toward the tundra, where snow is hard and sleds pull easily. Nearly all regular winter trails follow the open country, sensibly avoiding the deep powder and mazes of forest along the rivers. The cold season brings freedom for snow machine and dog team travelers, who have easy access to every part of the region. Winter travel sometimes involves camping, either while en route to distant places or while on long hunting excursions. The upriver people rarely camp for more than a few days at a time during winter, however, especially since the advent of rapid mechanized travel.

Winter activities of all sorts are, of course, heavily influenced by the weather. Except for periods of gale winds and accompanying deep cold, however, the Eskimos are continuously busy outdoors throughout the season. Field notes made in December 1974 illustrate:

> Several days after we arrived in Shungnak the temperature abruptly fell to -30°, then to -40°, -50°, and finally to -65°. Despite the intense cold, there continued to be much activity in and around the village. Children's voices could be heard at all hours, as they played outside the houses. Snow machines ran up and down the river. Chain saws buzzed in the surrounding forest. On December 31, a group of men and women traveled 35 miles to Ambler by snow machine, in -55° to -65° temperatures.

Caribou are taken throughout the winter, but the intensity of hunting depends on the proximity of herds, the condition of

the animals, and the extent to which fresh meat is needed. Caribou (regardless of sex) are usually not fat during the cold season, so unless the people are low on food they do not hunt them intensely. If fat animals are found, however, as sometimes happens, men will surely go after them. The hides are of relatively poor quality at this time, except for the leg skins, which are very good for boot making. When winter caribou are shot, some are likely to be cached until spring, when they will be cut up to make dried meat.

Areas for winter caribou hunting depend entirely on the animals' unpredictable wanderings. Herds are usually south of the Kobuk, but the distance varies from a few miles to over a hundred. In recent years, wintering herds have remained on the tundra north of the Waring Mountains, within the proposed Kobuk Valley National Monument. These animals are hunted throughout the cold season, and provide an important resource for the Kuuvaŋmiit of the upper Kobuk River.

As previously mentioned, the Kuuvaŋmiit Eskimos rarely hunt mountain sheep during the fall because they seldom travel north to the Noatak River Valley. The same is true in the winter months. During the first half of the century, however, winter caribou hunting and trapping was frequently done in the Noatak area, and sheep were taken at the same time. Winter hunting in the Noatak region could become common again, if caribou again stay north of the Kobuk River Valley (as they have during some periods in the

past) so that the Kuuvaŋmiit people have to travel there to obtain their necessary supplies of meat.

Some hunting and trapping of fur-bearing animals takes place in winter. In times past, when commercial hides provided one of the few sources of income, fur animals were diligently trapped. Today there are other ways of earning cash, and so commercial trapping is virtually extinct in the Kobuk River Valley. However, the Eskimos actively pursue fur animals for their own use. This is done largely by hunting, and it constitutes a major winter subsistence pursuit for some men.

The principal fur species are red fox (including cross and silver phases), wolf, and wolverine. These animals are hunted (and sometimes trapped) throughout the tundra regions surrounding upriver villages; but there are favored areas. The Ambler Kuuvaŋmiit focus their activities west of the village, in the Onion Portage area, the Hunt and Nuna river drainages, and in the tundra-lakes country south of the Hunt River mouth. These areas, all within or just outside the proposed Kobuk Valley National Monument, are especially known for wolf and wolverine. The Hunt-Nuna river drainages have been utilized extensively for fur hunting and trapping throughout this century. Traplines in this area are noted for otter, mink, marten, beaver, and lynx, as well as the major species above. Lakes south of the Hunt River mouth have also been utilized for beaver, mink, muskrat, and otter trapping during the winter months.

Most of these fur species are in prime condition from November or December through March. After this time their fur begins to shed and is bleached by the sun. Beaver and muskrat remain prime through the spring, however.

During the first half of this century, when moose and caribou were scarce in the Kobuk River Valley, snowshoe hare and ptarmigan were often the most important winter game. Although no longer staples, these animals still provide important supplementary food during the cold months.

Snowshoe hares inhabit brushy areas throughout the upper Kobuk River region. They undergo drastic population changes, varying over the years from abundant to scarce. Hares are hunted and snared year-round, but most are taken from October to May, when they are fat and have prime fur.

Ptarmigan move into the lower elevations of the Kobuk River Valley after the deep snows of early winter. They inhabit the low tundra and stands of willows along the rivers, usually from November until May. In good years, women snare large numbers of ptarmigan near the villages. They are also hunted by school-age boys, and by men who encounter flocks while traveling.

Fishing continues into the winter and is very productive. Gill net fishing under the ice is done for several weeks immediately after freeze-up on the Kobuk River, usually starting in mid-October and ending with the thickening ice and growing cold of early November. The largest catches are of humpback whitefish, which are migrating down the river at this time. At Ambler,

between one thousand and two thousand of these fish may be taken in a few weeks' time. Other species caught by gill netting include broad whitefish, sheefish, Arctic char, and burbot (mudshark).

Fish are also hooked through the ice in early winter. Large catches of grayling are made through the holes made for the gill nets in October. And burbot are hooked in known schooling places from October until early December.

Mudshark (burbot) traps are made by the Kuuvaŋmiit of Shungnak shortly after freeze-up, and they remain in use through December when catches rapidly diminish. These traps are not presently made or used by the Ambler people, although they were in the past, and their use could easily be revived, as occurred in Shungnak.

The only significant vegetation acquired during the winter months is timber for firewood. Wood-burning stoves are used as primary heat sources in many homes, and as supplements to oil heat in most others. Low-grade firewoods such as willow or poplar are cut throughout the winter for use in preparing cooked dog food.

Lower Kobuk River, Late Nineteenth Century

The year-round subsistence activities of the lower Kobuk River Kuuvaŋmiit have never been described in detail for the 1880s, as have the activities of the upper river residents.

One of the reasons for this is that the caribou which had once been abundant in the downriver region had disappeared by the 1880s, and many of the families on the lower river were forced to move to other areas. By the time life histories were recorded for the Kuuvaŋmiit who had grown up in precontact times, few people still lived in the downriver area. The most complete account of the lower river way of life is that published by Giddings (1961) who recorded the reminiscences of Oolyak, an Eskimo who spent his childhood around the Salmon River and much of his adult life in the vicinity of present-day Kiana. Oolyak described a typical year's round of subsistence activities in which the men of the family spent the summer hunting in the interior. Many other lower river Kuuvaŋmiit of the late nineteenth century traveled each summer to Kotzebue Sound to hunt sea mammals or to obtain sea mammal products and foreign items from the coastal people.

Spring (late March to mid-May)

In the latter part of April or early May the downriver Kuuvaŋmiit families set up isolated spring camps for hunting and trapping at the entrances to sloughs entering the Kobuk either between the Squirrel River and the delta or along the narrow winding channels of the delta itself. People lived in lean-tos of spruce saplings (with branches left on) stacked against a large spruce. The scarcity of caribou made winters

lean, so the move to the spring camp was a welcome chance to get fresh meat as well as furs.

Small game and fur-bearing animals were abundant, and the men, without regard to day or night, were constantly out hunting. Muskrats, which were beginning to emerge from their winter quarters, fell easy prey to skilled male archers, and hares were caught in snares set out by the women and boys. Occasionally a lynx was taken, too.

Most of the families in the lower delta also made trips to Hotham Inlet (842: Imagsuk or Kobuk Lake) and Selawik Lake to fish through the ice for shee. With their intricately carved ivory lure-hooks shaped like tiny fish they could obtain a large number of fat shee in a one- or two-week period. One of the favorite settlements for shee fishing was at the mouth of Makkaksraġiaq Channel at Selawik Lake. Because breakup occurred later there than upriver, people at the channel could continue to fish through the ice when other families were already preparing for summer. Ducks and geese were also plentiful in the delta by mid-May. They were caught in snares placed on sand bars. The snares were made of twisted strips of salmon skin. While the women at spring camp fished, the men, when not hunting, collected spruce bark to be used at the fish camp for houses and boats.

Summer (mid-May through August)

In the period of ice breakup, families were confined to their separate camp areas, unable to venture out on the moving ice and unable to travel over the swampy or flooded lands. They were plentifully stocked with geese and half-dried muskrat, however, and suffered no particular hardship while waiting. Once the spring flood waters began to recede, the women set gill nets for whitefish, first at the mouths of the higher elevated streams draining the shallow lakes, and later, as the water continued to recede, at deeper sloughs. They also set nets at selected spots along the Kobuk River. The nets, made of twisted willow bark, were fragile, and they had to be constantly taken out or reset as the levels of the river changed. Otherwise, the nets could be damaged by driftwood or buried in mud. In some of the smaller sloughs dip nets were also used for whitefish (Wells, 1974:36).

Muskrats, whose skins were used for clothing when caribou skins were unavailable, were hunted along the edges of the sloughs and along the banks of adjacent lakes. The high water made hunting particularly productive because, flushed out of their homes, the animals were constantly out along the banks or swimming. The skinned muskrat carcasses were either hung to dry partially before being boiled for eating or were roasted fresh over a spit.

The whitefish run continued throughout June and, depending on the amount of rain, a woman would net as many as one hundred or two hundred fish a day. During the first or second week of

June smelt began their annual run up the river to spawn. Traveling in long lines close to shore, they were easily dipped out with a small mesh dip net or were caught by seining. The dip nets had six- or seven-foot-long handles and the openings in the mesh were from eighteen to twenty-four inches across. The mesh openings of the smelt seines were one inch or less in size. The same seines were used in the fall for whitefish (qalusraak). In the Kobuk River Delta area, smelt fishing lasted for more than a week, but between the upper delta and just below the mouth of the Squirrel River, it lasted only from one to three days. Fishing in the upper part of the smelt run was therefore pursued intensively in this short period.

Some of the families that were particularly anxious to obtain coastal products such as ugruk (bearded seal) skins for ropes, boot soles, and boat coverings went to the coast in April, a month before breakup. Taking along their skin umiaks (broad, open boats), they proceeded by sleds pulled by dog teams to their camps east of Sealing Point, where they remained until mid- or late June, hunting ugruk and small seals among the ice pans. In the third or fourth week of June, other Kuuvaŋmiit families, those who had remained in their spring camps along the Kobuk River, moved to the coast, crossing Hotham Inlet by boat and then going to Shesaulik. There they hunted ugruk and beluga, and fished. Their relatives who had gone to the coast earlier soon joined them and the other groups that had assembled at Shesaulik.

Occasionally a whaling ship on its way north took the trouble to stop, and then they had the opportunity to trade.

Certain of the lower Kobuk River Kuuvaŋmiit families elected to remain inland, fishing all summer. When the daily catch of whitefish from the gill nets decreased, and pike increased, it was time to move to the main summer camp. This was generally along a broad bend of the main channel such as at Qalukruitchiaq (478), or on a long, smooth, flat sandy stretch of river bank, as at Puuvlich (714). Here salmon or whitefish could be seined with ease.

The summer fish camps were not widely separated, as the spring camps were. In fact, the camps of a neighborhood were sometimes within fifty yards of each other, spread along the river bank. They were also in the vicinity of the winter quarters because the quantities of fish obtained in the summer for use all winter were too great to be easily transported. The fish, after being dried, were stored in caches at the summer camp and retrieved during the winter as needed.

The summer house, erected by the man of the family, was hemispherical and bark covered. The frame was made of branches tied at the top and with an opening left for the smoke from the cooking fire to escape. The frame was sided with spruce bark collected in the late spring and subsequently covered with blocks of moss. If the fish camp was at a place where the family returned year after year, the man built a permanent drying rack (paiviich) of four or six large posts. Otherwise, he erected

tripod support drying racks (inisaq or saiktat). These could be placed near the water's edge where the mosquitos were less numerous and the fish more easily handled; at the end of the season the small poles could be easily disassembled and piled up on the high bank, above flood level.

Normally, two women and their children would fish together, as was also the practice in the upriver area. The work of making a seine was very time-consuming so each woman contributed a section of the net in order to make it long enough. The men made sinkers from caribou antler sections or, when not available, made notches in elongate, waterworn pebbles. The fishing boats used for seining were open boats, larger than the hunting kayaks, and covered with spruce bark collected late in the spring. Although some families owned skin-covered umiaks, these were not normally used for fishing but rather for traveling on the river and for moving from camp to camp.

The women seined nearly every day, hauling in a large catch of salmon or whitefish, cutting them up, and hanging them to dry. When these tasks were performed, they would wait for the next run of fish and start the process all over. The techniques of seining were identical to those used by the Kuuvaŋmiit of the upriver area.

After a man had set up the fish camp for his family, he and other men in the neighborhood headed northward toward the mountains. They traveled in small groups, often made up of brothers, brothers-in-law, and their older children, and they carried with them only one or two pairs of boots, changes in clothing, and

weapons. Those whose fishing camps were located near the mouth of the Salmon River (461: Qalukruaq) trekked north along the relatively high ground on the western side of the Salmon River Valley, while men from farther down the Kobuk proceeded up the Squirrel River Valley or smaller valleys to the west of it. Once in the Noatak River Drainage they hunted sheep and bear in the mountains or continued to trek up the Noatak River until they found caribou. Bears were abundant, and occasionally the hunters got as many bear hides as they did hides of sheep or caribou. The summer was a time of constant walking and camping within a fairly well-defined area. These small groups of hunters would often meet in the course of hunting and, if at all practicable, would camp together for a while, but the real emphasis was on hunting in the small family group that started out together. It was during the summers that the young men learned a great deal about hunting techniques and hunting lore from the older men.

Those who had gone to the coast for the summer to trade returned to the fish camps on the Kobuk around the beginning of August. Although the coastal products were vital, they were in no way sufficient to furnish a major part of the winter food supply. Part of the reason had to do with logistics, for despite the great carrying capacity of the boats, they were incapable of holding many foodstuffs in addition to such items as skins, kettles, pots, seal oil, etc., needed from the coast. The bulk of the winter food supply had to be obtained from the river.

Therefore, it was important to get to the fish camps in time for the peak runs of salmon and whitefish.

On their way upriver the families stopped in the delta to pick their yearly supply of salmonberries which they stored in sealskin pokes obtained at the coast. Since salmonberries were not so plentiful on the drier lands near the fish camps, this was the only opportunity to harvest them.

The fish camps recorded by Cantwell (1889) and Stoney (1900) were between Puuvlich and the Hunt River (see p. 32), but others were undoubtedly along the upper portions of the Kobuk River Delta. When the men reached the camps they erected skin-covered conical teepees, the same ones they had used on the coast, and hastily set up fish racks. Because the summer was too far advanced for the men to make the trek to the headwaters of the Noatak for caribou, they remained at the fish camps. Their activities at these camps have never been recorded. However, the camps, like those upriver, were the domain of the women, and the men probably did not engage in the salmon fishery.

Fall (September, October)

As the willow and alder leaves turned their brilliant colors, the men who had gone to the mountains started back with their game. The primary purpose of these trips was to obtain materials for clothing: prime summer caribou and sheep skins for jackets, trousers, and boot tops; bear skins for mats and door coverings;

and caribou back and leg sinews for thread to sew with. Sheep horns for fine utensils were also brought back. In addition, as much fat as could be carried without sacrifice to the other, more important items, was brought along. Meat on the other hand, on which the men had feasted all summer, was too heavy and bulky, even when dried, to be carried back in sufficient quantity to make an appreciable contribution to the winter's larder. As the groups came back to the headwaters of the Kobuk's tributaries, they built rafts, floated down to the main channel of the Kobuk River, and then down to their wives' and mothers' fish camps.

By this time the bountiful salmon and whitefish seining period was ending, and the families moved to the fall fishing camps such as at Alalauraq (480) and Qalukruitchiaq (478). There they seined for qalusraak (least cisco) which are exceptionally plentiful in September.

Winter (November into March)

Just before freeze-up, around the middle of October, the families moved back to their traditional winter locale, along the major channels of the delta or, if above the delta, at the mouth of one of the major tributaries--a place where there were sufficient trees for firewood and houseposts, willow thickets to attract hares and ptarmigan, and also where fish such as grayling and burbot (mudshark) would be plentiful through much of the winter. In the earlier years when caribou were numerous

in the lower area, people could winter together in sizable settlements, but in the 1880s families normally lived in single, isolated households.

The old house was not repaired and used again; rather, a new one was built each year. The shape and size of the house depended on whether or not married children and their offspring were also going to live there. Basically it was the same as houses in the upper Kobuk River region: a flat topped, log frame structure covered with planks and sod. The pair of ridge poles, set about two feet apart and covered with short planks, served to seat a combination skylight and smoke hole. The best time to begin digging the pit for the house was just after freeze-up, when the sod was frozen solid to a depth equal to the desired thickness of the sod blocks to be removed.

Because of the absence of caribou in the lower river area, winter was precarious, and even with the summer's catch successfully stored away the early winter fishing was extremely important. In more recent times gill nets were set under the ice, but we have no evidence that this was the case in the 1880s. At any rate, the major late fall-early winter fishery was the trapping of whitefish in fish weirs (saputit). The whitefish in the upper Kobuk started downriver before freeze-up and arrived in their greatest numbers in the lower area after freeze-up. The fish weirs used by the lower river Kuuvaŋmiit were huge in comparison to those used in the upriver area. They were built across the entire channel at specific wide places such as across the main

channel of the Kobuk at Sapusriġiachiaq (752) just above the mouth of the Squirrel River. These large weirs were too much for a single man and woman to build so were fashioned through communal efforts. The amount of whitefish that was obtainable from such a trap was more than enough for one family, so all families in the general vicinity were welcome to use it for their own harvest. Probably the fish were divided equally among the families that had worked in concert to harvest them.

The weirs were usually used throughout the whitefish run during October and early November. They were also used to catch burbot (mudshark), but these fish were taken mostly at night, whereas whitefish were caught during the day. Because so many burbot could be taken at the weirs, burbot traps were not as common in the lower river area as in the upper river area. A smaller type of trap, set along the edges of the channel, was also used for burbot. These traps could be built by single families, so were popular with families that lived in isolated areas. They could keep a family supplied with fish until mid-winter.

In the absence of caribou, ptarmigan and hares constituted the primary source of fresh game meat during the winters. Generally these animals were snared, a task done by both the men and the women. Fences of willow stakes and brush were put along the flanks of the snares to funnel the animals to them, and the snares had to be checked and usually reset each day. The men also set traps for fox, ermine, mink, and wolverine, the furs of which were needed for clothing. Already by the 1880s steel traps were one

of the major trade items that went from the coast to the interior of northwestern Alaska.

Another major winter activity, particularly for women and children, was firewood collecting. Women also devoted a great deal of time to making nets for the following summer's fishing. Because so much netting was required each year, this was a constant task. In addition, they had to make dip nets, one for smelt and a larger one for whitefish caught in the early winter fish weir.

With the returning sun the downriver Kuuvaŋmiit again prepared themselves for the spring camps and the start of another year.

Lower Kobuk River, Mid-1970s

The major difference between the seasonal subsistence rounds of the Kuuvaŋmiit of the lower Kobuk River in the 1880s and in the 1970s is that caribou are present and are hunted in the region now, whereas there were no caribou in the 1880s. In the mid-1970s caribou are at least as great a food resource as fish for many Kuuvaŋmiit families.

Spring (late March to mid-May)

The lower river Kuuvaŋmiit look forward to the long days of spring and the chance for extended family trips by snow machine and sled. Many annual, region-wide events are scheduled for March and April. The first of these is the quarterly meeting of the Friends Church, held in Selawik, Noatak, or one of the five villages of the Kobuk River Valley. As many as seven hundred visi-

tors from these villages, as well as from Buckland, Kivalina, Point Hope, Point Barrow, and Kotzebue, travel by snow machine or airplane to the host village for a week of attending services and visiting.

The coming together of so many different Iñupiat groups has taken on important economic functions. For a village to host such a large group, the residents must begin planning in the summer of the previous year in order to obtain sufficient food to feed the guests. There must be fish enough to eat, plus sufficient dried fish to give to or trade with visiting friends and relatives who have brought with them foods from their areas. Before spring comes the men must also make extra caribou hunting trips so that the village will not run out of meat. The visitors for their part must also have worked hard in order to obtain surplus supplies. If they come from a coastal village they bring seal oil and beluga and whale muktuk. If they are from another interior village, they bring extra caribou meat or frozen fish. The visitors, who are put up in all the different homes of the village, provide their hosts with additional food to help out with the meals. During the week there is constant visiting back and forth between houses, usually with meals served each time, so the food requirements are exceptionally great. For many of the interior Kuuvaŋmiit this is one of the few opportunities to eat as much of the coastal products as they like. Similarly, it is an opportunity for the coastal residents to eat salmon, frozen fish, and dried fish, which they are unable to obtain in their own villages.

This is a time also when the Eskimos establish partnerships (see p. 532) with people from different regions and are able to fulfill their obligations to their old partners and relatives by giving them goods from their own areas. In 1975 for example, Kiana was the host village, and for the ensuing three months after the meeting nearly half the households were still enjoying coastal products brought in during the week of the meeting. At the same time most of the visiting families from the coast had been able to take dried fish back with them to their own villages.

Other annual events held in the spring are carnivals, scheduled on alternate weekends so that people from the different villages can attend. Most of the intervillage visiting at this time is by the young people, who often travel in groups to the host village by means of snow machines and sleds. They watch and take part in the races and school-held events and have the opportunity to meet others their age. Although the carnivals have little economic impact on the villages, they play a role in establishing and strengthening social ties that later may have economic ramifications, as for example through marriages.

Spring is also a period when the men make frequent trips to hunt caribou. Everyone in the village is aware of everyone else's movements. If a hunter returns with a sled-load of fat caribou, he lets it be known where he found them, and the next morning usually several other hunters go out. In 1975 Kiana residents traveled primarily to the Hunt River area for their spring caribou because the animals in that area were fat. This is where the

Kuuvaŋmiit of the upper Kobuk River have hunted caribou in recent years, and the process of preserving the meat is similar for both groups (see p. 335). Some hunters are unable to go that far, however, because they have jobs in the villages or have too little gas for their snow machines. These people go to the mountains between the Salmon and Squirrel rivers, where the caribou are leaner and less prized. In 1975 the Noorvik hunters concentrated on hunting caribou in the area between Noorvik and Selawik.

During April and May, most of the downriver families, like those upriver, are in the villages. One of the major subsistence activities at this time is shee fishing. During the periods of calm weather several families from Kiana will travel down to Hotham Inlet or to Selawik Lake to hook for shee through the ice. Occasionally pike are also caught, but these are not so prized as the larger and fatter shee. Owing to the speed with which they can go and return by snow machines, the Kiana residents usually stay less than a day at the lake. As soon as the sled which is attached to the snow machine is filled with fish the family returns. Often several couples or families will travel together and, especially for the wives, who have had fewer occasions to be out in the country than the men, the trip doubles as a pleasant family outing during the long spring days.

The Noorvik families tend to spend more time at Selawik and Kobuk lakes fishing, usually camping there for a week at a time. One reason for this may be that although they are closer to the lakes than are the Kiana residents, the Noorvik families have had

a chronic gasoline shortage in spring and thus tend not to travel as much as they would like. Since the shee are constantly roaming the lakes in schools, searching for least cisco, the fishermen usually have to search over a wide area for the fish, testing for schools by chipping holes in the ice. Once a school is located by one of the fishermen, others move into the vicinity of the successful person to chip holes for themselves. Recently, a few fishermen have used ice augers to punch holes through the thick lake ice, but others say that this scares the fish and is not as productive as the usual method of chipping with an ice pick. Both on the trip down and on the trip back from fishing the Eskimos are alert to the possibility of hunting geese with a shotgun or muskrats with a .22 rifle, and most trips turn out to be a success for both hunting and fishing.

When not fishing, the men of the lower Kobuk River, like their counterparts on the upper river, are busy at their other major spring subsistence activity: goose and duck hunting. After a winter of living primarily on caribou and dried or frozen fish, goose or duck soup is a welcome change of diet. They hunt primarily at the edges of lakes and rivers where the waterfowl are known to return each year. Some of these are close to the villages, so this is an activity that many schoolboys engage in, hunting on foot late at night or early in the morning. With long hours of sunlight, they often stay out a full day or two, though seldom sleeping out. It is a time when fathers take out their young sons to hunt, often for their earliest hunting experiences

by snow machine. If the spring breakup is late and the caribou that are migrating northward come within a short distance of the village, the men make a special effort to hunt them. Because late spring weather is ideal for drying meat free from insects, every opportunity to lay in a supply of dried meat is taken. Whenever a wolf or, rarely, a wolverine is spotted, it also is taken. The furs are necessary for winter clothing, as ruffs and as trimming, even though the everyday winter garments are cloth atigas and down-filled parkas.

As in many other places, the season between winter and summer is the time for spring cleaning. The melting snow by late May has uncovered all the old pieces of hides, discarded parts of animal carcasses, occasional lost tools, and other paraphernalia not seen for many months. Each family thoroughly cleans its yard, often working throughout the night; during the early hours of the morning the trash is burned or taken out to the local dump. Each village also hires schoolboys and other young men who are not away hunting to clean up and repair the dirt or gravel roadways being eroded by the runoff.

This is also the time when men, and even some of the women, young boys, and girls start overhauling their boats that have emerged from the melting snow. At freeze-up the boats are pulled up just far enough to be out of reach of the river's ice, and in the spring they are hauled along the open water that collects along the banks to spots that are protected from the spring flood and drifting ice. The boats are recaulked, rotten boards are

replaced, and they are repainted. Once the boat is in use for the summer, only an urgent need of repairs will prompt a person to lay up his boat for extended work on it. Women are busy at this time with retrieving from storage and repairing their whitefish gill nets. Usually several women have had to buy new nets from the trading posts to replace their oldest ones, and they must tie all the floats and sinkers to the nets.

As breakup nears, news of its progress downriver is relayed by the Kotzebue radio station or by bush pilots who happen to land in the village. The more impatient men are already in their boats following the open water around the edges of the ice to places where they can hunt for waterfowl, even though they can go only short distances and must again secure their boats when the breakup comes. During breathing spells from their busy work schedules, the people gather at vantage points to talk and watch the progress of the disappearing ice. Since the tributaries go out before the main channel, the Squirrel River opens early, and several persons from Kiana leave at once to hunt.

There have been few muskrats in the lower Kobuk River area in the 1970s, which is not the case on the upper river. The Kuuvaŋmiit of the lower Kobuk therefore spend little time in the spring hunting muskrats, despite their need for the skins for parkas. The trading of muskrat skins for other goods has stopped in the lower-river area except for an occasional trade between individuals or except for a few that have gone into Kotzebue stores (where in 1975 they sold for four dollars a skin), or

except for some used for tithes to the church. But the number is economically insignificant.

Summer (mid-May through August)

As soon as the breakup passes the village and the running ice begins to thin, the men are on the lookout for large driftwood logs, which they collect from among the ice floes and drag to above the floodline on shore. These will be used as posts for the permanent fish racks and for various other purposes. When the amount of driftwood and debris among the floes increases, the residents say it is Kobuk ice, derived from the upper river area; this is the sign that the breakup is almost over. As soon as boats can be taken upriver without the danger of running into ice jams, groups of men, or husbands and wives, take off for the Salmon River, Hunt River, or Onion Portage where, like the upriver Eskimos, they hope to intercept whatever few caribou stragglers are still fording the river at those spots. They also hunt for waterfowl along the banks. In 1975 most of these upriver trips were made by the residents of Kiana, not Noorvik, where there was a gas shortage. If the parties go as far as Onion Portage, they usually continue on to Ambler to visit friends or relatives. The meat obtained on the trip is dried or, if the electric home freezers are not yet filled, frozen. When the ice breaks below Noorvik the men from both Kiana and Noorvik boat down to the delta to hunt muskrats, hook shee and pike, and hunt waterfowl.

Two or three friends will frequently spend all night in their boat, fishing in one spot, and then, en route to another fishing spot, will hunt geese or ducks.

Several Noorvik families spend much of the early summer at their whitefish camps along channels of the delta. Makkaksraq (602) is one of the most popular. The men erect tripod support fish racks and the husband and wife set their gill net across the mouth of the sloughs. The racks quickly fill with cut whitefish. The husband often helps his wife with such chores as removing the fish from the net, handling the heavy tub-loads of fish, and hanging the dried fish, but the women alone do the cutting. The men also take their boats out to hunt muskrats and waterfowl and to catch fish by hooking, but the amount of this depends on the availability of motor gas. Kayaks are not used.

In the Kiana area most of the families set out gill nets for whitefish across small streams draining lakes or along the shore of the main Kobuk River channel within a two-mile radius of the village. In 1975, none of the families moved out to their fish camps for the season. Those whose fish camps are within an hour or hour and a half's boat ride from the village (five to ten miles) go to their camps in the morning, remove the fish from the net, reset it, and begin cutting and hanging the fish. In the afternoon they again empty the net, and after cutting and hanging the fish, they return to the village for the night. If the camp is more distant, they spend two or three days at a time

there and then return to the village with a boat-load of partially dried fish. They string these at home, eight to a string, and hang them to dry further.

During the 1970s whitefish were of more importance than salmon as a food resource for all the residents of the lower Kobuk River area. The duration and intensity of early summer whitefishing is very dependent on weather conditions. If the usually dry month of June is rainy, as it was for the latter part of the month in 1975, the river rises and essentially eliminates the take. Therefore, every effort is made to get the nets in early and to utilize them to the fullest extent for as long as the good weather holds. Trout, pike, and grayling, as well as whitefish, are caught in the nets. The trout are usually taken home and cooked immediately.

Shortly after breakup, sheefish are already in the vicinity of Noorvik on their way upriver. The first shee caught at Noorvik in 1965, for example, was on June 2, only two days after the ice went out (Alt, 1969:41). The men and boys go out in boats, often all night, to hook fish at favored fishing spots. Each fisherman keeps the fish he hooks, unless one person is much luckier or much less lucky than another, in which case fish will be distributed to make the catch more equal. Children spend long hours casting from shore at the villages for grayling, trout, and whitefish. Trout, although always rare, are most commonly caught at this time. When a child lands one, he/she usually takes it home immediately and it is cooked for the evening meal. The

child is praised for his/her contribution to the family's larder. Later in the summer the fish caught by the children are not so readily consumed by the family.

By the middle of June the women have prepared their gill nets for shee. The first shee caught by net at Kiana in 1975 was on June 17, the second day the large net was set. The nets are set in eddies along the Kobuk River where the shee stop evenings before continuing up the river, and the nets usually produce from three to five shee a day. With a normal weight of 20 to 30 pounds per fish, 150 pounds are not unusual for a day's catch. The fish not consumed immediately are cut and hung to dry. If the weather has been wet and the fish do not dry properly, they are used for dog food; otherwise they are eaten later by the Eskimos.

During the second week of June the smelt begin their run up the river. They go as far as a point just below Kiana village. Shortly before this the few women who have small mesh seines get them ready, and as soon as someone reports that the smelt have arrived, boatloads of people go down to the annual fishing sites below Kiana and begin to seine. Dip nets are also used, but since they are not nearly so productive as seines, they are not much used if someone with a seine is present. The smelt are seined directly into tubs or, when not enough tubs are available, into a ditch in front of the net. Families that do not own seines can, by helping with the seining, obtain as many smelt as they want. Both men and women take part with the seining, and

when the members of one helping family feel that a good catch has been assured and they want to go home, they set their empty tub in front of the net to be filled, or they dip the fish out of the common pile of already seined fish, and then leave for home with their supply of fish. The smelt are eaten fried, are stored in home freezers, and are dried. The frozen smelt are eaten during the winter or are used for bait for sheefish the following spring.

If the whitefish catch has been satisfactory, the nets are pulled in when pike begin to outnumber whitefish, usually in the second week of July. Although pike are a good eating fish, they often damage the gill nets with their teeth and fins when retrieved, and so are not fished unless necessary. The women of the lower Kobuk villages next concentrate their attention on preparing their gill nets for large salmon and sheefish and their seines for salmon and whitefish. These involve a large investment in time and money. A fully outfitted seine cost around $450 if purchased in Kiana or Noorvik in 1975, the exact price depending on the length, the weight of the twine, and whether or not commercial floats were attached. To prepare the nets, the woman must check every inch of netting and repair any that is torn. She must also check to see that the weights and floats have not torn loose during the previous summer's use. If the oldest parts of the net show signs of weakness, they are taken out and new sections put in. The new section is usually put at the head of the net (upstream end) which gets considerable strain as the fish fight with the net. The selection of the seining

spot entails boating to a place where the fish are expected and looking for the telltale ripples or jumping fish. The crew does not wait at a potentially good spot for fish to arrive, but travels to various spots known to be potentially good. Seining trips from Kiana usually last all day, depending on how successful they are. Usually two women fish together, along with some of their children or other helpers. In addition to contributing sections to the same net, women who seine together also share boats, motors, and expenses, such as money for drums of gas. Usually the women alternate in using their own boat and motor. In the last few years a man and a wife and some of their children often seine together. Upon returning to the village after a seining trip, the women cut and hang the fish to dry on the racks near the river's edge.

In recent years most of the seining is for whitefish. Salmon are less frequently seined in the lower-river villages than formerly, but instead are obtained by gill net. Because the number of dogs kept in the villages is less, these gill nets are able to supply the salmon needs of a family and their few dogs, as long as conditions remain favorable all summer.

Many of the men go to Fairbanks or other parts of Alaska on construction jobs during the summer. In 1974 and 1975 they worked on the Alaska Pipeline or related jobs. Several of the men, some with their families, were in Kotzebue working for the commercial fishery those two years. Wage earning is crucial to the Kuuvaŋmiit, for without money they could not buy the equip-

ment needed for subsistence hunting and fishing. The most constant summer employment for the people of both Kiana and Noorvik has been fire fighting, and crews are organized before the start of summer to be ready at a moment's call throughout the summer. In 1974 and 1975 both men and women worked in fire-fighting jobs.

Fall (September, October)

In fall, the families of the lower Kobuk River continue to seine and to set nets for salmon and whitefish. The intensity of their activities, however, depends on how successful the summer fishing has been. If the summer has been rainy and the catch small, they take every opportunity to make up their winter supply by seining. For the families that went to the coast to fish commercially, this is an exceptionally crucial time of year. By the last of August they must be back on the river, with their fish camps set up, and working long hours to catch enough salmon to hang and dry before the run is over. Despite the earnings of the summer fishing on the coast, the families need to obtain both salmon and berries for their own requirements. Earned money, necessary for buying hunting and fishing equipment, for acquiring store goods, and for paying off bills related to new housing and village improvements, does not help much in obtaining traditional foods. Families manage to store up just about the amount of salmon and berries they require for their own use, and a

family can not count on buying these items from others. Although most people, especially relatives, are willing to share their food supply during the winter, a family without enough of its own would feel uncomfortable in having to be a burden on others by constantly requesting traditional foods from them.

As soon as the moose season opens, most men go out by boat to hunt these animals. The moose are frequently spotted several weeks earlier, but the men wait until they have fattened before hunting them. With electric home freezers in nearly all homes now, moose meat can be stored fresh and has thus taken on an important role in subsistence foods for the lower Kobuk River Kuuvaŋmiit. Most people regard the moose as a form of insurance against the possibility that caribou, which migrate southward from the Brooks Range in fall, will not show up or will show up late, so moose are eagerly hunted.

Winter (November into March)

After freeze-up, people prepare for the changeover to winter living. As soon as the river ice is strong enough to support a person's weight, women put gill nets under the ice along the main channel in front of the two lower Kobuk villages, Noorvik and Kiana. The best net sites are those just in front of the villages, or at least as near the villages as possible. Because river bank and river bottom conditions, as well as climatic conditions, vary from year to year, netting locations also vary from year to year.

At Kiana, for example, a favorite under-ice gill-netting spot is usually just off Kiana Point (748: Qayaina) opposite the village. Owing to the current off the point, the ice is usually thinner there than at other places, and the nets can therefore stay in longer. But in the fall of 1974 an early, deep freeze, followed by a short warm spell, caused large pans of ice to float into the area and to freeze in place. The jammed ice pans made the ice very rough, and the first nets that were put in kept getting caught on the submerged protuberances of the ice, making it impossible to pull and reset the nets easily. The nets were therefore withdrawn and reset elsewhere that winter. Gill netting continues as long as the ice has not frozen as deep as the net. When it has, and there is danger of the net's being incorporated into the ice, the nets are pulled. This occurs usually in November.

As soon as the streams are iced over hard enough for travel, men try out their snow machines to go after any caribou in the vicinity. The herds should be in the vicinity by this time, and until they are spotted, there is some anxiety for the coming winter. The amount the men are able to bring in early in the season determines to a great extent how much effort must go into caribou hunting during the coldest months.

Trapping, which is carried on from December or January to spring, has been a minor activity during the last few years. Each trapper has a trap-line which is several miles or more

distant from that of the next man, and it is often within this area that he obtains his winter supply of caribou.

During the coldest months of the year few of the people make long journeys in pursuit of game. One reason is that there are village activities connected with Thanksgiving, Christmas, and New Year's day. Another reason is that the snow machines do not function well in the extreme cold of January and early February. When used in temperatures of fifty to sixty degrees below zero, the machines sometimes break down. The hunter then requires help, and if he is far from home, he may be in real trouble. By late February and early March the men begin to journey out farther for caribou hunting. By this time the locations of the winter herds are well known, and as they begin to move, foraging in different directions, their movements are kept track of. Caribou hunting in late winter is considered extremely enjoyable as well as necessary. When late March finally comes, everyone in the village is eager to travel, and all look forward to the various spring events in the different villages that give people an excuse to visit.

VII

FISHING

The Kuuvaŋmiit Eskimos are, first and foremost, people of the river. It is the Kobuk River with its interconnecting web of lakes, sloughs, and streams that provides the Native inhabitants with their most reliable resource: fish. A wide variety of fish species and subspecies, both anadromous and resident, are found in the waters of the Kobuk River Valley (see p.75) and may be exploited at various times throughout the year. Indeed, were it not for the availability of these fish, the Kobuk River Valley would be a much poorer environment for human habitation. Caribou, bear, moose, and other game animals either do not occur in numbers great enough to sustain a resident population as large as that of modern times or are subject to unpredictable migration shifts and population declines which could have a drastic impact upon dependent humans. As an elderly Native of Shungnak put it, "We must have fish to live."

For much of the year rarely a day passes that the average Kuuvaŋmiit family does not have one or more meals in which fish is the main course. Fish and parts of fish are eaten boiled, fried, baked, frozen, dried, and in decomposed paste form. Fish oil, obtained from boiling the intestines and eggs of whitefish and sheefish, is used to supplement a family's supply of seal oil.

Fish is the food not only of humans but of dogs. Until recently, the Kuuvaŋmiit Eskimos were heavily dependent upon dog traction for winter transportation and, to a lesser degree, for summer travel. These dogs annually consumed prodigious quantities of fish (dog traction is described more fully in Chapter XII.

Fish and fish products have long served as items of economic exchange among the Kobuk River Eskimos. An example of how this system works can be seen in the fall fishing practices of the Kuuvaŋmiit of the upper Kobuk River. During the last week of September, schools of migratory sheefish move into the swift clear waters of the Kobuk River above the village of Kobuk. When they arrive, the female fish are fat and full of oil-rich eggs ready for spawning. Villagers from Shungnak and Kobuk catch these fish in set-nets and beach seines and then lay them out on willow mats to slowly age and then freeze as the weather gets colder. Such fish are considered a delicacy by Natives throughout northwestern Alaska. They are used as a medium of exchange for such coastal goods as seal oil, bearded seal skins, and muktuk, or in direct cash transactions. Fish are also bartered and sold within the confines of each village.

The Native dependence upon fish has resulted in an impressive array of technological developments designed to facilitate the harvest, curing, and storage of fish catches. Well before contact with Europeans, the Kuuvaŋmiit Eskimos had developed a variety of spears, snares, traps, hooks, lures, nets, and seines with which to exploit this rich resource. They had also

discovered efficient methods to preserve and store their catches for future use. Although considerable change has occurred in many Native subsistence practices during post-European-contact times, much of the rich store of skills and knowledge surrounding fishing continues to influence local life.

The pervasive influence of fishing extends beyond the economic and technological spheres into the social areas of Native culture. The make-up and organization of seining crews, the division of labor associated with fishing, the systems for the sharing of catches, the transfer of knowledge and skills related to fishing, property rights, and so on, all have ramifications throughout the social structure of each Native community.

A common misconception concerning Native subsistence activities is that "men hunt and women fish." On the Kobuk River, women do dominate the spring, summer, and early fall fishing activities. They are the ones who usually manufacture the seines, hang, place, and check nets, carry out the seining activities, cut and care for the drying fish, etc., but the men play an important, if less visible, role in subsistence fishing. Men carve the net floats and sinkers, build boats and maintain motors, erect family dwellings, drying racks, and caches, make fish boxes, and, particularly within the last two decades, occasionally assist in seining efforts and in the setting of gill nets. Young boys are often seen transporting their mothers or older female relatives in outboard-powered boats to net or seining sites, and older men, who are no longer able to engage in strenuous hunting

activities, often turn to fishing to remain productive. The building of fish traps is a male-dominated activity, as was the spearing of fish in the past. Today males are quite active in rod and reel fishing during the summer months and participate to a lesser extent in winter ice fishing.

The focus and dependence upon fishing as a primary source of subsistence has led to the development of a very generalized form of territoriality in respect to sites for the setting of gill nets and fish traps. During our year of field research no stated policy was obtained from Native residents concerning the restricted use of eddies, sloughs, and other possible fishing sites. However, we observed a definite trend toward the exclusive use of certain fishing sites by the older adult residents of a given village. Rather than term this practice "ownership," it would be more accurate to label it "first right" or "preferred" status.

An individual who makes continued use of a particular site for a net or fish trap over a period of several years seems to attain preferred status in the use of such a location. Others in the village tend to defer to this person when placing their nets or traps in the same vicinity. Preferred status has come more from the placement of fish camps than from fishing. When a family used a particular site for its fish camp over a period of two or more years, others usually avoided pitching camp in the same location and avoided setting their nets in nearby eddies unless they had first gained the permission of the established

user. The use of such sites often passed to the offspring of an elderly couple, and preferred rights were maintained through continued use. It would be, in the Eskimos' mind, both foolish and wasteful for a productive fishing site to be withdrawn from common use and then to lie idle while others were willing to use it. Although several persons may utilize particularly large and productive eddies, most fishing spots are individually used.

A recent complicating factor in the subsistence fishing practices of the Kuuvaŋmiit Eskimos, and undoubtedly of other Native groups, has been the sudden change in land status brought about by the Alaska Native Claims Settlement Act. Under the provisions of this act, most of the lands along the Kobuk River will become the property of village corporations or regional corporations or the State of Alaska or will be placed under specific federal control in the form of national parks, monuments, or wildlife reserves. In order to protect established fish camps and other subsistence sites, resident Natives have been encouraged to file for Native allotments that will give them exclusive legal claim to such sites. All of the above have the effect of "freezing" the fishing activities in place as of the present time (1974-75).

Unfortunately, this act fails to account for the dynamic nature of subsistence fishing. All rivers, and particularly the Kobuk, are constantly eating away at their banks, cutting new channels, shifting bars, filling in old eddies, and forming new ones. As the river changes, it becomes necessary for subsistence

fishermen to seek out new and more productive fishing sites. This factor undoubtedly was one of the prime deterrents to the development of private property concepts among the natives. Now, however, as they are forced into the rigid complexities of legal ownership and trespass restrictions, it becomes increasingly difficult for them to adjust to the dynamics of the environment.

Technology

Subsistence fishing by the Kuuvaŋmiit Eskimos requires a broad array of tools, nets, traps, spears, hooks, gaffs, etc. Some of these implements are fashioned entirely of local materials, while others are made of imported materials or are purchased ready made. A partial listing of the devices the Kuuvaŋmiit have used to harvest fish over the past fifty years is given below. A few of the items, such as fish traps, have not been built for several years, so that exact information is sketchy.

Gill Net (kuvrag)

In early times gill nets were constructed by individual women using braided willow bark and split spruce roots. Today all nets are purchased from local trading posts. Most are of woven nylon. The most popular mesh sizes are:

4-1/2"-5-1/2" (stretched) (qalugruaqsiun) used for catching salmon and sheefish.

4" (stretched) (iraġuralak) used for catching large whitefish, large pike, small shee, and small salmon.

3" (stretched) (aŋuniugauraq) used for small whitefish and small pike.

2-1/2" (stretched) (iraquksuuraq) used for catching the smallest whitefish.

Most village women continue to hang their own nets, using 5/8" polyline or manila rope for the top and bottom lines. Net floats are carved by the men from the thick bark of cottonwood trees or from dry spruce roots; they are usually egg-shaped. Sinkers are small denim or canvas bags filled with gravel. Spreader bars are attached to either end of the net, and a weight, usually a large rock weighing about four pounds, is secured to the bottom of each bar. A shore line and an anchor line of 1/4" rope are attached to the net before setting. Figure 3 shows a gill net ready for use.

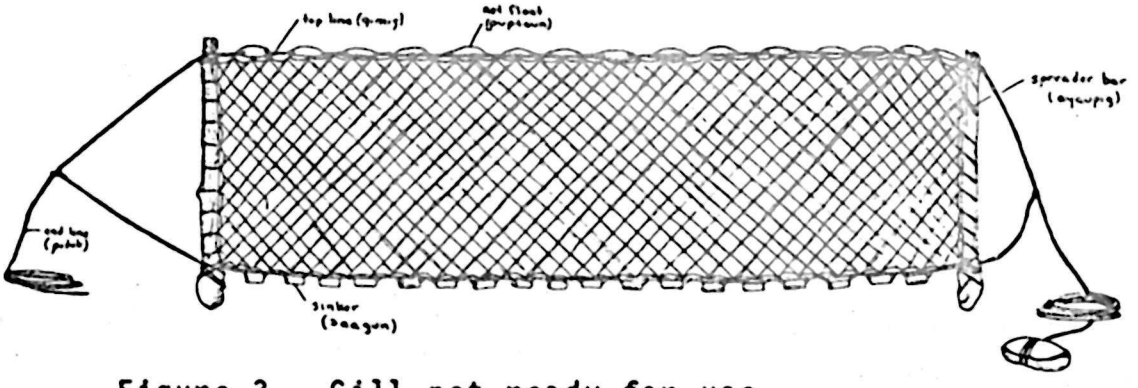


Figure 3. Gill net ready for use.

Seine (qaaktuun)

Prior to the 1900s beach seines were made, much like gill nets, of woven willow bark and split spruce roots. Today Native women continue to manufacture their own seines, but heavy cotton twine has replaced bark and roots. Tools used in seine manufacture include a netting shuttle (nuviilioun), carved from hardwood or ivory (Fig.4).

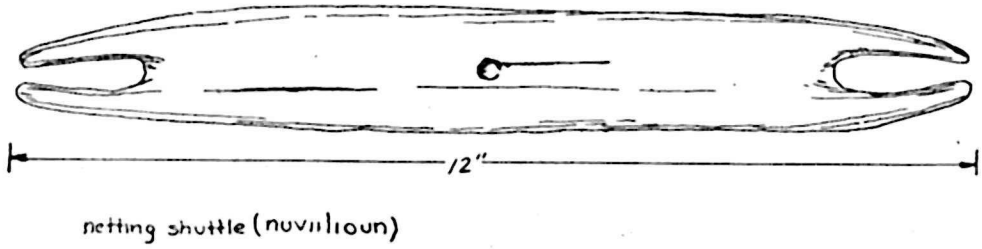


Figure 4. Netting shuttle.

The seines consist of three forty-foot sections joined together. Each year a new section is woven and the oldest (three-year-old) section is removed. Thus the entire seine never wears out at one time.

Seines are constructed and hung basically like gill nets. The chief difference between them, other than mesh size, is in the design of floats and sinkers (Fig.5). Seine floats tend to be elliptical with flat bottoms so that they offer minimal resistance to the water when being pulled in. Sinkers are usually cylindrical sections of caribou antlers. A beach seine at Shungnak measured and diagrammed in the summer of 1974 had 146

floats attached to the top line and 143 sinkers attached to the bottom line.

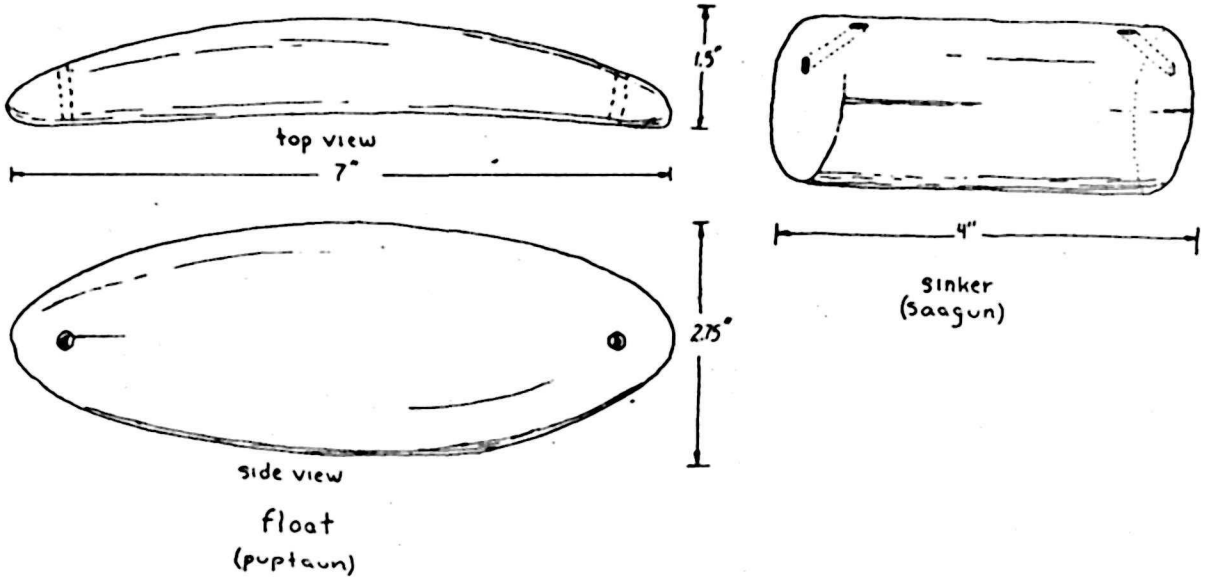


Figure 5. A float and sinker used on seines.

The seines used in the upper Kobuk River usually have a stretched mesh size of 2-1/4". Seines used in the lower Kobuk have a slightly smaller mesh. The Eskimos of Kiana and Noorvik have a special smelt seine (qalusraaġauniksiin) with a particularly small mesh, about 1" stretched. These are also used for seining small whitefish (qalusraq) in fall.

Seine Drying Rack (qaaktuuntiminnivia)

The Kuuvaŋmiit Eskimos use a special rack for hanging their seines between periods of use. It is made of a long, slender

spruce pole, approximately thirty feet long, hewn and bladed smooth in the shape of a rounded triangle. Two legs are attached permanently to the heavy end, and when in use, two forked poles are used to support the narrow end (Fig.6).

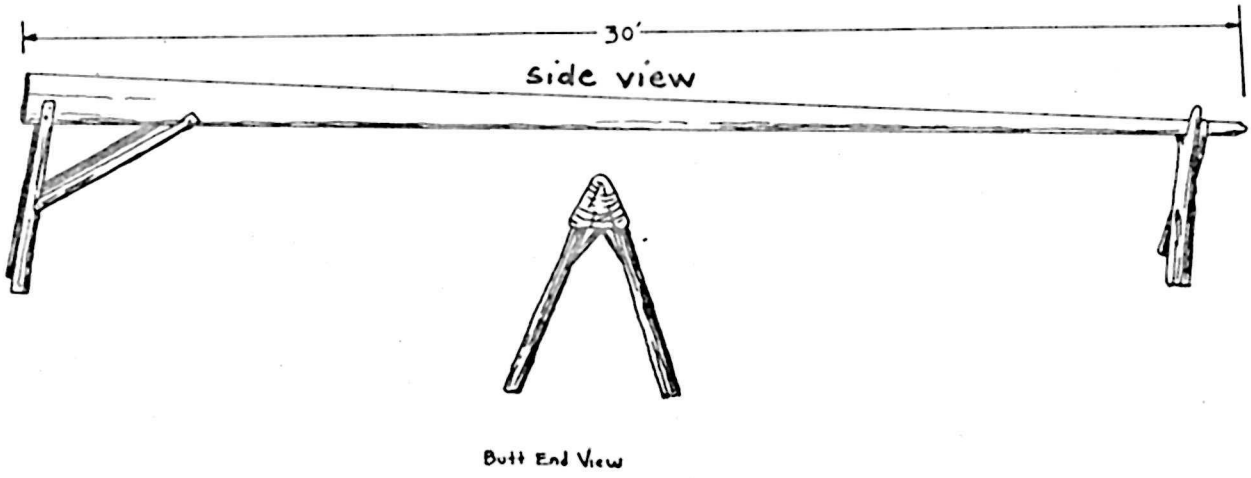


Figure 6. Seine drying rack.

Fish Rack (inisaq)

Four styles of unroofed racks are used to dry summer-caught fish: (1) inisaq, the most common type, constructed of two tripods spanned by three or more poles, (2) saiktat, a series of tripods connected by overlapping poles, (3) paviich, a semi-permanent rack consisting of four strong corner posts supporting a rectangular frame having a series of poles suspended across the frame, and (4) uuyuraġaġvik, consisting of a single stout pole suspended between two tripods or two pilings. The paviich

is used for hanging particularly large, heavy fish (Fig.7), and the uuyuraġaġvik is used to support several layers of fish after they have become half to two-thirds dry (Fig.8).

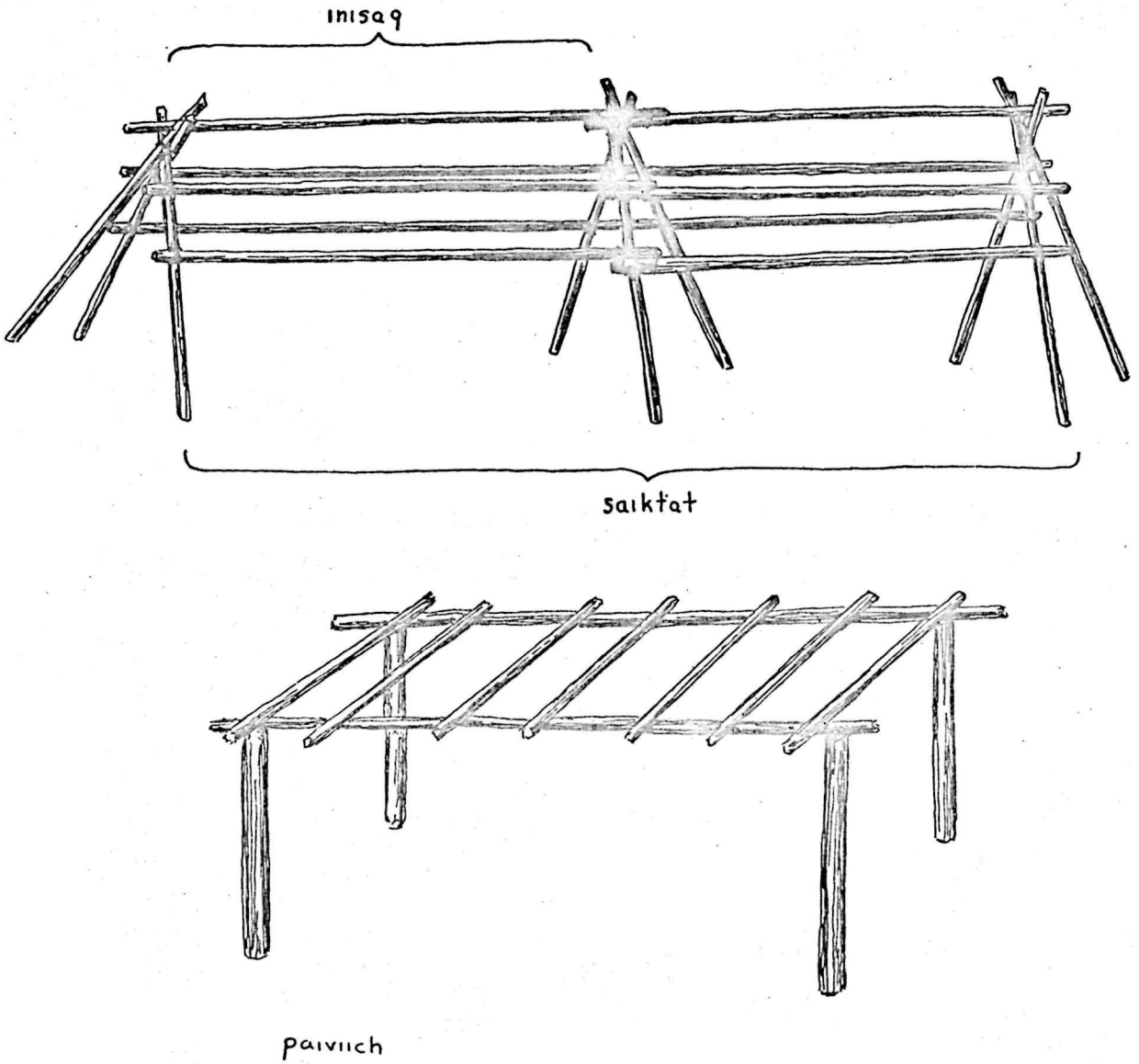
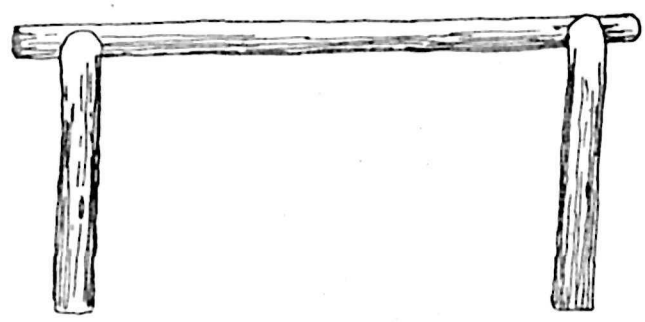


Figure 7. Two types of summer fish-drying racks.



uuyuraġaġvik

Figure 8. Fish-drying rack for half-dried fish.

Fishing Pole, Lure

The Kuuvaŋmiit have long used pole and line fishing. Today most open water fishing is done with modern spinning rods and commercial lures, but most winter ice fishing is done with equipment made locally. Ice-fishing poles (igniisaq) are generally three feet long. In the past, lines were made of sinew or fish skin, but now nine feet of heavy monofilament line is used with a small commercial or handmade lure having a barbless hook. Lures (niksirak) may be hand carved from bone, antler, or bear's tooth, and hooks may be of animal tooth, ivory, or beaten metal. An example of the latter was a brass wood screw beaten into a flat spoon shape with a small nail projecting from one end and a tiny hole drilled at the other end to receive the line. Grayling hooks are often baited with a fish scale or small piece of fish scale or small piece of fish flesh. When fishing for burbot

(tittaaliq) the Kuuvaŋmiit often use a trot line having a series of baited hooks. This is referred to as a qaguksuk.

Fish Club (nigi)

When large fish such as salmon, sheefish, and burbot (mud-shark) are caught, they are usually dispatched with a short, stout club (Fig.9). The club is usually rough hewn from spruce or birch.

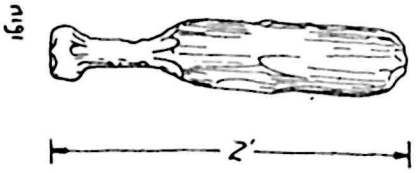


Figure 9. Fish club.

Gaff (akii)

The Kobuk River Natives have two basic forms of gaffs. One (akiiruk) is short handled and used in boats to pull in hooked sheefish or to assist in removing fish from a net; the other (akii) is long handled and used to hook fish from traps under the ice (Fig.10).

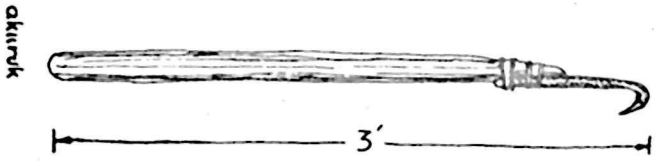


Figure 10. Gaff.

Fish Spear

Several different styles of fish spears were used by the Kuuvaŋmiit until the early part of the twentieth century, but have been replaced by hooking and netting. One of the spears is the kakiat, or trident. It consists of a long rod having a thin center projectile point. In pre-European contact times the point was bordered on two sides by flexible barbed bone rods. Now the point and barbs are made of steel. The other is the qapugaan, a long pole tipped with a detachable barbed point connected to the shaft by a short line (Fig.11). The kakiat is considered a spear for sheefish and the qapugaan for salmon.

Figure 11. Fish spear.

Dip Net (qalu)

The Natives of the Kobuk River Valley historically used large dip nets in the fall to catch fish in fish weirs. On the lower Kobuk River, smaller versions (qalurak) were used also in the early summer to harvest a brief run of smelt. The qalu used

for fish weirs was a large affair consisting of a widely forked pole to hold the mouth end of a long, tapering, net funnel (Fig.12). The lighter, smaller dip net for smelt continues to be used today.

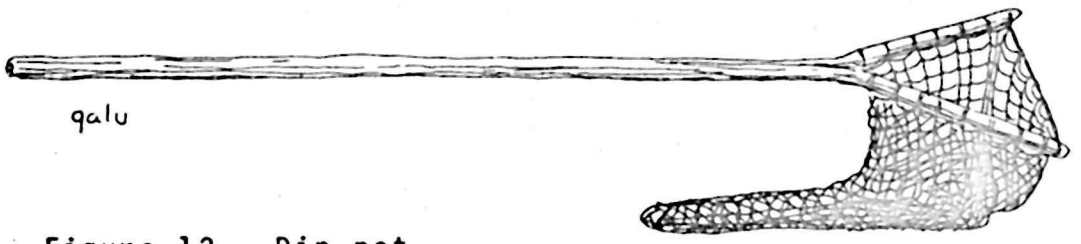


Figure 12. Dip net.

Fish Weir (saputit)

The Kuuvaŋmiit employ a variety of weirs to harvest fall fish runs. One type, called a paurvich, was a large weir built across the upper Kobuk River just before freeze-up to harvest sheefish migrating downstream. The site of construction was known as Paugriruk. The weir consisted of a series of stout tripods extending across the river with overlapping poles spanning the length of the tripods. Smaller poles were placed close together vertically along the upstream side of the tip rails with their tips resting on the rails. This formed a fence or saputit across the river, blocking the movement of large fish downstream (Fig.13).

In the evenings, men in boats would pull up behind the weir and remove a small section of the fence so that the boats could be anchored directly over the fence. Lanterns were hung on poles

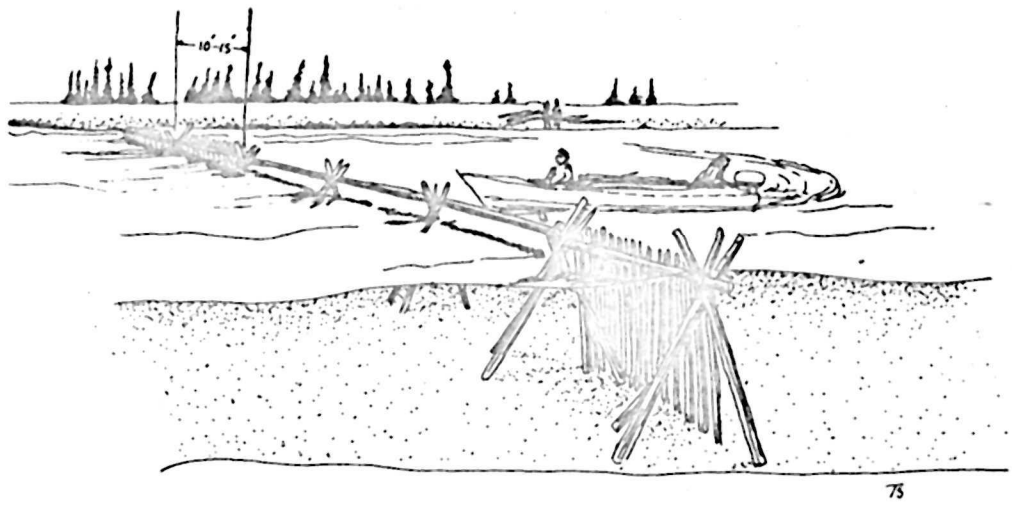


Figure 13. Fish weir.

over the bows of the boats, and the men speared sheefish that were attempting to swim through the openings. While the men were spearing, the women were seining along the gravel bars above the weir.

A somewhat different version of the paurvich was also built prior to freeze-up. This weir, called taluyak, was used on the lower Kobuk River to catch spawning salmon.

Small weirs were used in the fall to block off small streams, sloughs, and the outlets to large lakes. These fences were made of close-matted brush and branches. A "gate" fashioned near one end of the fence consisted of two stout poles driven firmly into the river bottom. Split spruce was laid on the bottom of the gate to reflect light and make it possible to see the fish. A dip net or qalu was used to span the opening so that the edges

of the net frame rested against the upstream sides of the poles (Fig.14). The Eskimo fisherman hid in a blind atop the bank holding the handle of the dip net. He lifted the net when schools of fish swam into it.

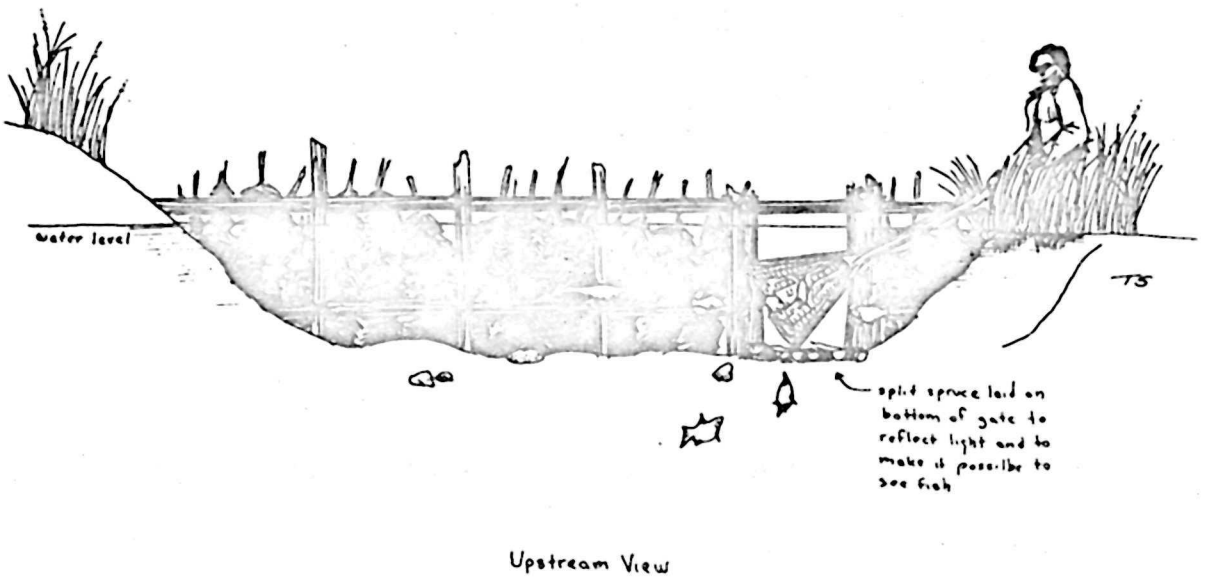


Figure 14. Fish weir of matted brush and branches.

The most widely used weir apparently was the kuuvaksiunqalu which was built in the fall as soon as the ice was thick enough to walk on. This weir consisted of an extensive brush fence or saputit which formed a shallow downstream "V." At the point of the "V," two stout stakes formed an opening or gate and a large dip net or qalu was used to cover the opening (Fig.15). This type of weir was used by both the upper and lower Kobuk River Eskimos. It was reportedly used in the village of Kobuk and at Kiana up through the 1950s. The construction of such a weir was

a cooperative affair. Its purpose was to harvest the large runs of whitefish moving downstream in the fall.

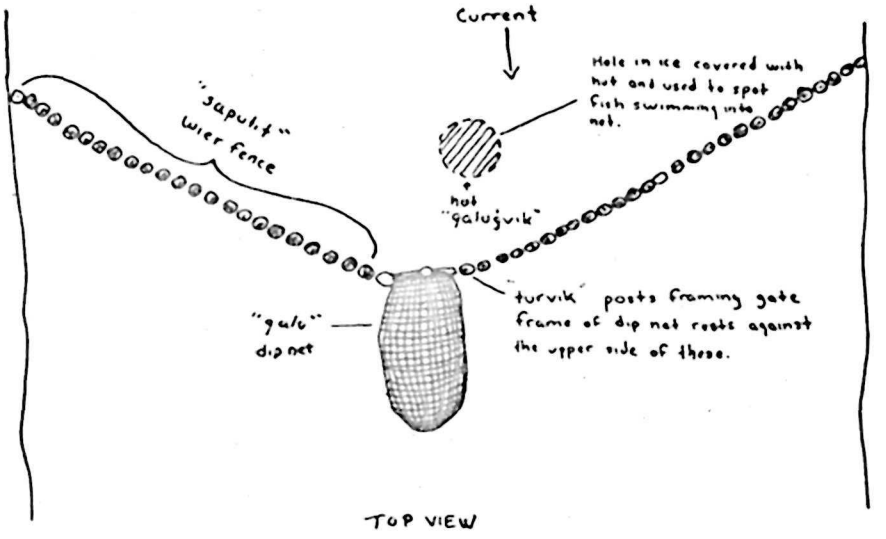


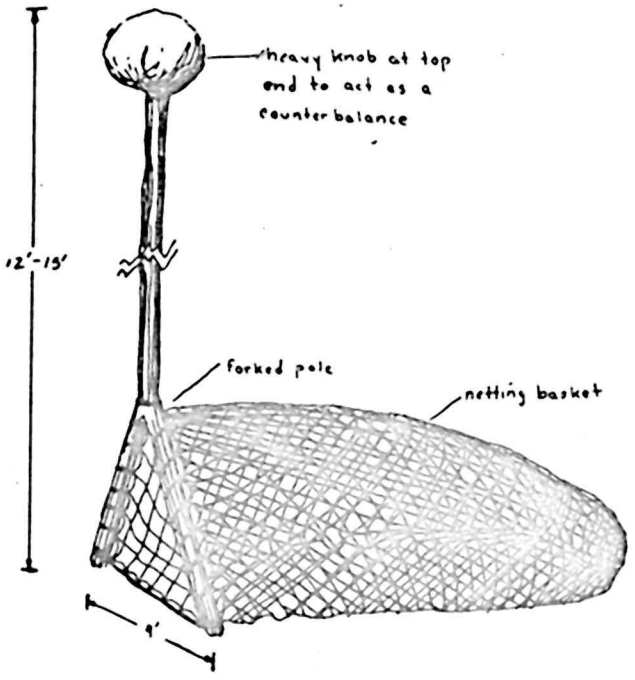
Figure 15. Fish weir constructed under river ice.

Other fishing aids are shown in Figure 16. They are illustrated on the basis of information gained from Joe Sun, Wilson Tickett, Mae Bernhardt, and Louis Giddings' book, Kobuk River People (1961).

Burbot or Mudshark Trap (qarqich)

This trap has long been used by the Kuuvaŋmiit of the upper Kobuk River in the harvest of burbots or mudsharks in the late fall. A full description of this trap is given on pages 286-305.

willow pole hook used to help lift bottom line of dip net.



galu

Fence, "saputit", consists of inverted spruce trees shoved vertically into river bottom so that branches of trees mesh together.

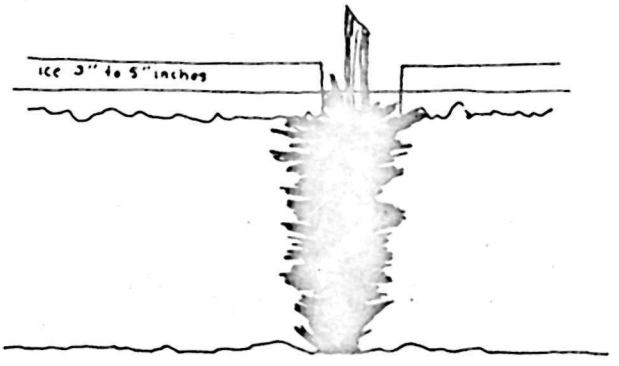


Figure 16. Hook, dip-net, and fence used for fishing.

Blackfish Trap (iluuqiniqsiun)

The upper and lower river Kuuvaŋmiit use a basket-type of fish trap to harvest blackfish. This trap consists of a funnel-shaped willow wicker open at both ends. The wicker is placed in a large burlap bag with the mouth of the bag held open by, and secured to, the mouth of a willow funnel. This device is fastened to poles that are laid on the ice over holes caused by blackfish concentrations. The top of the bag is suspended just slightly underwater, and the fish swim up and into the bag. Those that swim through the willow funnel do not normally seek their way out by swimming back up through the narrow funnel mouth and are trapped in the bag. The illustrations in Figure 17 are taken from descriptions by one of the upriver Kuuvaŋmiit.

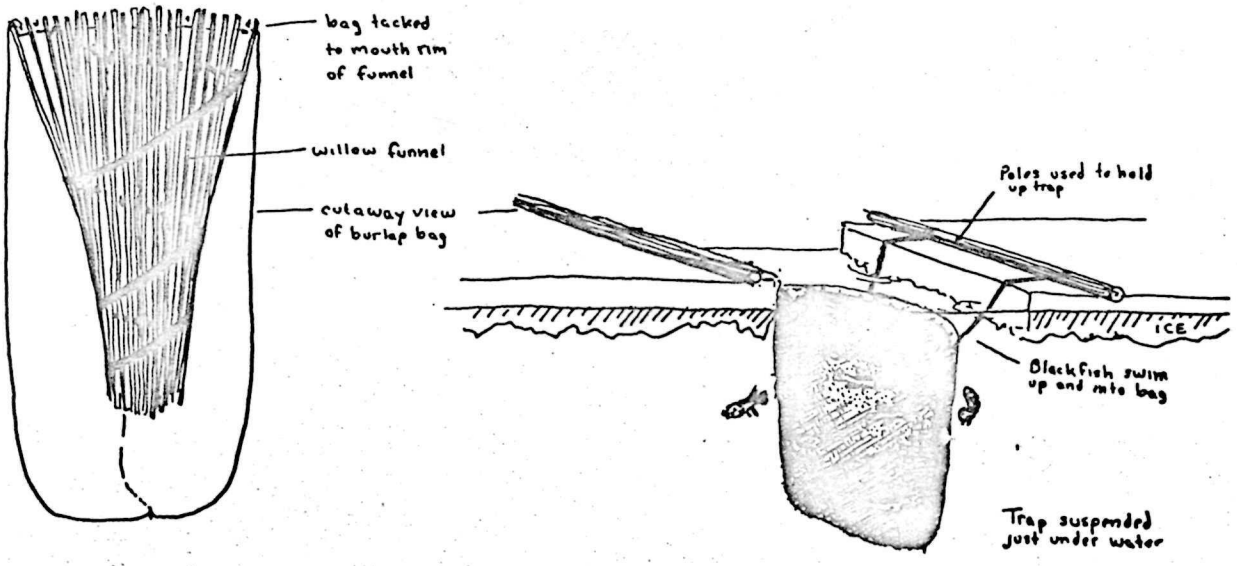


Figure 17. Blackfish trap.

Containers, Shelters

Containers and shelters for the specific purpose of storing dried fish are an important part of fishing technology. Such shelters include saigut, a ground-level cache with walls of vertical poles and generally roofed over; unalut, a cache consisting of a small house built on pilings; and a boxlike cache built on low pilings and having low horizontal log walls (Fig.18).

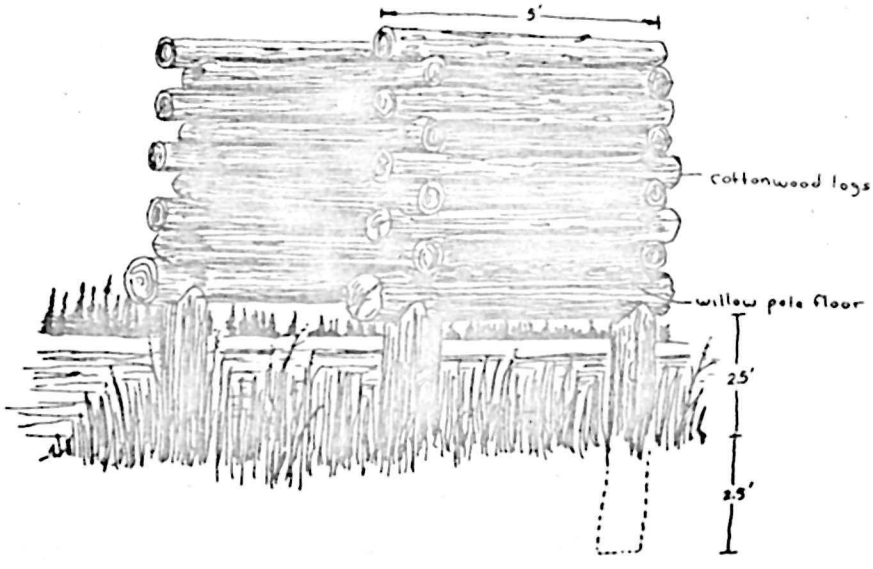


Figure 18. Cache for storing fish.

Spring and Early Summer Fishing (April through June)

Ice Fishing

Starting in early April, sheefish are active under the ice in the Selawik Lake-Hotham Inlet area, where they roam about in large schools in search of least cisco (Coregonus sardinella) (Alt, 1969:40). They continue to be present in the area until breakup, sometime between mid-May and early June, when they begin to migrate upstream. It is difficult to predict the locations of the schools of shee, and obtaining a large catch involves a great deal of searching, hard work, and perseverance.

The areas most commonly fished for shee under the ice are off the northern shores of Selawik Lake between Sinauruk and the mouth of Makkaksraġiaq Channel (603) and in Hotham Inlet in the vicinity of Imaaqvik (613). Because the Kuuvaŋmiit of Noorvik live closest, they move down to the Kobuk River Delta area in large numbers to hunt shee. They usually pitch family tents on the ice and camp there for a week at a time. Owing to their greater distance from the delta, not so many Kiana people go down to fish in the spring, and those who do travel down come by snow machine and spend only a day or two, rarely longer. In 1975 the Kiana people who managed to catch between forty and eighty fish were well satisfied with their catch and did not bother to go down again. In contrast, a Noorvik family will catch more than two hundred fish during the season. The Kuuvaŋ-

miit of the upper river do not participate in this activity because of their distance from the delta region.

The fishermen seek out large pressure ridges that form across Selawik Lake and Hotham Inlet along which the shee seem to cluster. The ice is thinner and holes are easier to put in there than elsewhere on the lakes. An ice pick is used to chip out the hole in the ice, which at this time of year is between five and six feet thick. The fisherman takes care to enlarge the hole evenly as he deepens it so that when he finally breaks through he can quickly widen and smooth the bottom edge before the inflowing water fills it. If he is slow he must complete the last stages of making the hole by chipping the ice through five feet of water, which is wet work. When the hole is finished he lowers a hook lure to about three feet below the bottom of the hole and activates it by a jigging motion. His pole is a curved one and one-half- to two-foot-long willow stick notched at one end to hold the line. Every two or three minutes, depending on the air temperature, the platelets of ice forming on the hole hinder the line and must be removed with an ice scoop. If no fish are caught after fifteen minutes or so, the fisherman moves to another spot and chips out a new ice hole.

Other fishermen, if they came down in a group, have spread out and are likewise testing for fish. When both men and women fish, the man usually is the one to chip the holes in the ice, although if women are by themselves, they will also take up the task. If the fishermen are unsuccessful, they continue to put

in more holes, fanning out over a larger and larger area. Occasionally they return to their previously dug holes to test them again. With perseverance one of the fishermen will eventually encounter a school and will begin to pull in shee as fast as he can remove the fish and throw the hook back into the hole. The other fishermen will then move over to the vicinity of the lucky fisherman and put down more holes. As long as the fish are biting, one person can catch as many as sixty fish in a three-hour period. It often happens, however, that a person who puts down his hole only a dozen or so yards from a successful fisherman will end up not catching any fish; at other times several fishermen will make a good haul when they fish close by.

When a shee is removed from the hook, it is thrown on the ice, where it freezes. The fish can then be stacked like cordwood to be transported back to the village at leisure. Often, one of the teenage boys who is attending school during the day will drive down by snow machine in the evening to watch the fishing and to take back a load of fish. Sled loads of one hundred to two hundred fish, each fish weighing up to thirty pounds, are not unusual.

By mid-May the air temperatures in the Kobuk River villages remain above freezing throughout the day. Many of the shee caught at this time are transported to the villages, cut, and hung to dry. As with the caribou meat at this season, the cool, dry air, free of insects, is ideal for drying and preserving fish.

Before the introduction of commercial hooks, the Kuuvaŋmiit of the lower Kobuk fished for shee with a special hook lure carved in the shape of a fish. These have been found archeologically as early as the fifteenth century and, with but slight stylistic modifications, continued to be made until very recently. Some, in fact, are still used today, but because they are prized possessions people are reluctant to subject them to the danger of loss. The most common material for these hooks was ivory which because of its hardness, even when soaked for hours, is very durable. Federal trade restrictions make it difficult to obtain ivory now, and this has been an important factor in the demise of these homemade hooks. Those who have used them say they are superior to commercial hooks. Nowadays the most popular device is a triple hook to which is attached a large (two and one-half-inch-long) red and white lure, used without bait. These have the disadvantage, however, of being time consuming in extricating from the fish, an important consideration when the fish are biting. In the last year or so, some of the Kiana fishermen have experimented with lures with single hooks and have said that while they have not noticed much of a loss of fish, they are much quicker to remove. They also do not damage the occasional undersized fish that are caught and thrown back. In this respect, the single hook is much more like the traditional hook than is the triple hook.

Open Water Fishing

The ice on the Kobuk River usually begins breaking up and moving seaward sometime between mid-May and early June. This event may vary by two weeks or more from one year to the next in response to such variables as snow cover, ice thickness, and spring weather. Breakup is a progressive affair, beginning first in the swift headwaters and then extending downstream to the mouth. The last flush of ice in the main river may pass the upriver village of Kobuk two weeks before it reaches the downriver village of Noorvik.

As breakup progresses, flood waters back up into sloughs and lowland lakes and marshes. Run-off melt water adds to the volume of water temporarily stored in these areas. As the water volume increases, the oxygen content of the water also rises. As this happens, whitefish, pike, and other fish move from the deep pools in the main river into the side streams and sloughs to feed on submerged vegetation or to prey on other fish.

After the initial flush of melt water has moved through a given area and the water begins receding, the fish move back into the main river and side tributaries. The open water fishing season begins at this time.

The Kuuvaŋmiit recognize and use two basic types of slough: kuvgechiak, the shallow, higher sloughs, and kugachevik, the lower, deeper sloughs. The shallower sloughs are the first to be exploited in the late spring because during the high-water

period they are the proper depth (six to eight feet) for the gill nets. Later in the season, as the water level drops, these sloughs dry up, and the other sloughs, which were too deep in spring, become the proper depth for the nets.

Outlets to large lakes (iggiatchianga) and protected river eddies (kasrurak) are also used as net sites during spring fishing. This is particularly true in the Kobuk River Delta area where the river current is sluggish and deep waterways into lakes are common.

When we made maps of past and present early summer fishing sites, we saw that the great majority were located along sloughs and small, sluggish streams that drain low, marshy terrain dotted with interconnecting lakes (Appendix 5). Fishing sites currently used extend from the mouth of the Kobuk River Delta to above the village of Kobuk. Particularly favored areas include the Paa River Flats, Black River Drainage, Kuugaachiavak River Drainage, the lower Hunt River and flats to its south, the Squirrel River Flats, and the Kobuk River Delta.

Such variables as weather, personal health, wage employment, and river conditions determine the number of persons that set up a spring fishing camp. Before the 1950s most of the Kobuk River families established such a camp. Although the number of participants has declined and/or the harvest methods have been modified, early summer fish camps continue to be used by the majority of the Kuuvaŋmiit families in the two uppermost Kobuk River villages. In the three lower villages, between one third and one fifth of

the families established spring camps, and of these many utilized them only during the day or for two or three days at a time.

Most of the desirable fishing sites along the Kobuk River are presently being used, but occasionally conditions make a site unprofitable, or a young Native finds it necessary to establish a new camp. In such cases, certain criteria are used to select a new site. These include:

1. Proximity to productive net sites (eddies, sloughs, lakes, etc.).
2. Wind patterns (windy areas are preferred as fish dry faster and insects are less bothersome).
3. Vegetation cover (low vegetation is preferred near the camp so as not to block air movement. Berries, sourdock, and other edible plants are desired).
4. Surface condition (high, well-drained ground is preferred).
5. Proximity to firewood (including driftwood).
6. Distance from village or main residence (distance is compounded when one establishes a camp downstream from one's main residence).
7. Proximity to other camps (desirable to have camp near relatives but not so close to other camps as to compete for available fishing sites).
8. Availability of other resources (edible vegetation, birch bark, ducks, geese, beaver, muskrats, etc.).

One of the better-known sites for spring fish camps on the upper Kobuk River is found at the mouth of the Black River (333: Imaqluktuq) (Appendix 4). Over the years an impressive array of caches, net racks, fish racks, tent frames, and other such structures has been built. During the spring of 1974 one of the researchers for this study camped with an elderly Shungnak couple at the Black River while they carried out their fishing activities. The camp is shown in Figure 19. An inventory of their supplies and equipment is given below.

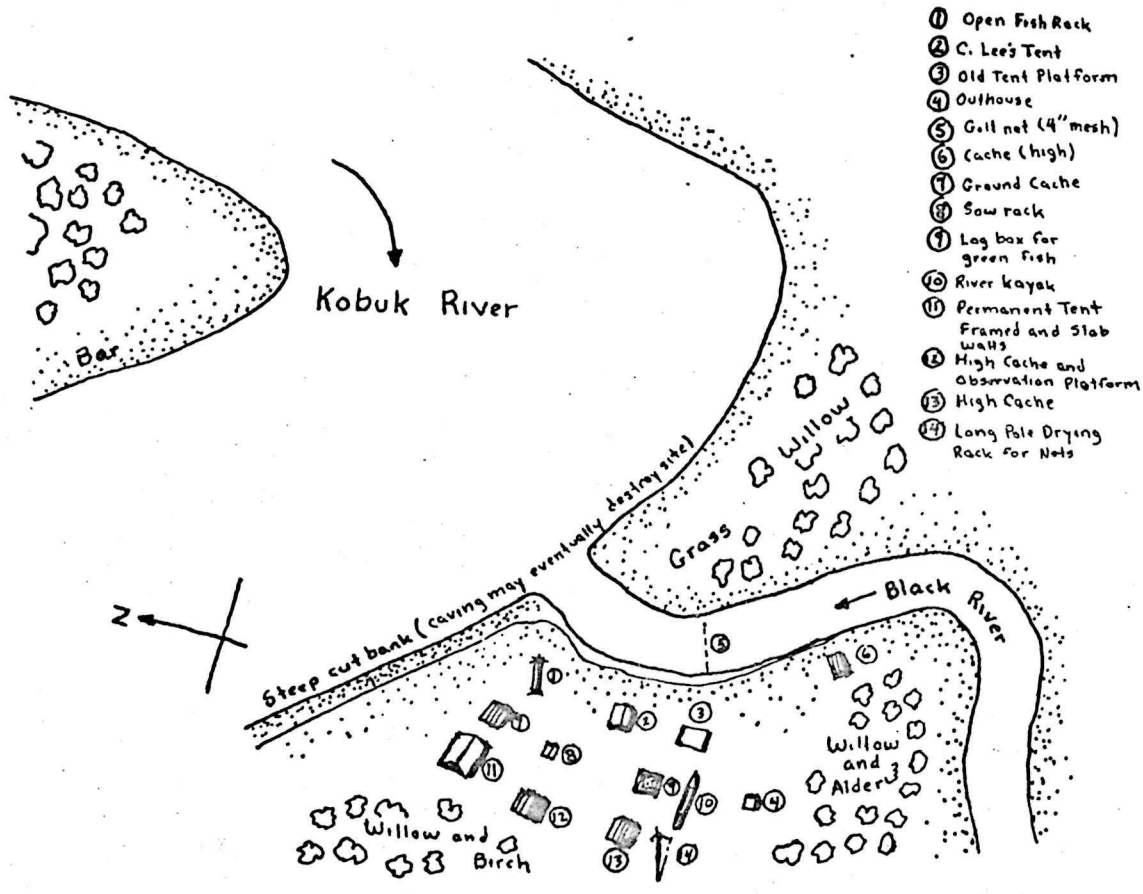


Figure 19. Spring fish camp at Black River.

1 10'x12' wall tent
1 sheet metal wood-burning stove
1 2-burner gas camp stove
1 gallon Blazo
1 double mattress and blankets
1 large mosquito bar (handmade)
1 waterproof tarp
1 high-powered rifle with scope and 20 rounds of ammunition
1 .22 WMF rifle (pump) and 3 boxes shells
1 double-bitted ax
1 hand ax
1 large single-bitted ax
1 grub box (made from Blazo box)
3 drinking cups
2 metal plates
3 shallow bowls
2 sets of eating utensils
1 large wooden spoon
2 small cooking pots
1 large cooking pot
1 ulu
1 hunting knife
1 butcher knife
1 sharpening stone
1 Bible
2 comic books
1 periodical magazine
1 large washtub
2 buckets
1 plywood river boat
1 25 h.p. outboard motor
15 gallons mixed gas
2 gill nets
1 small funnel
1 boat paddle
1 poling pole
several pieces of cardboard for tent floor
1 battery-powered radio and antenna wire
1 box of tools: spare spark plugs, assorted screws, nails, and wire
various drying racks, net drying poles, plastic tarps, etc.

Food consumed in such a camp includes:

fish--the predominant food
seal oil
salt
sugar
flour

syrup
fruit (canned and fresh)
noodles
bread (homemade)
pilot bread
butter
jam
Tang
canned milk
coffee
tea
cookies
crackers

The three basic techniques of harvesting fish in the spring are gill netting, seining, and dip netting. Hook and line fishing is also carried out, but on a smaller scale.

Gill Netting

Gill netting is currently the most widespread and productive method of spring fishing among the Kobuk River Eskimos. It is basically the same on both the lower and the upper Kobuk River, although species harvested and amounts taken vary somewhat. Once the spring flood waters begin to recede, the Kuuvaŋmiit begin traveling to sloughs and lake outlets where they set their gill nets to harvest the fish that are attempting to return to the main river. Mesh sizes for these nets are generally from three to four inches, although larger mesh nets (qalugruaqsiun) are often set in sheltered river eddies to catch the first sheefish migrating upstream. The length of the nets ranges from ten to sixty feet depending upon the width of the slough or outlet for

which they are designed. These nets are also called set nets because they remain stationary in the place they are set.

While the river level is high, most nets are placed at the mouths of shallow sloughs and outlets and well into the channels of deeper sloughs. As the water levels drop, the nets are moved down the deep sloughs to be placed near the mouths; and nets in shallow sloughs and lake outlets are shifted into the deeper waters of the main river, usually near the mouths of shallow sloughs.

When blocking off a slough with a gill net, the Kuuvaŋmiit usually keep close check on the site. As the water drops, the outward current may increase rapidly, washing floating debris into the net, or possibly sweeping the net onto a sunken snag. Fish runs themselves can be so heavy as to place a considerable strain on the net particularly on the lower Kobuk River. Beavers and otters are particularly active at this time of year, and they, too, may become entangled in the net and cause damage.

As is to be expected, it is the sloughs and lake outlets within a few miles of established villages that are the most heavily used spots. Often those who find it necessary or desirable to remain home during the spring manage to get in a supply of fish by maintaining one or two nets relatively near the village which they visit once or twice daily by outboard-powered river boats. On June 28, 1974, one researcher counted fourteen nets set within a two-mile radius of the village of Shungnak. It was later learned that several other nets were set within

this area but not observed. During the spring of 1975 ten Kiana families maintained spring gill nets within two miles of the village. They traveled to this net daily while continuing to live within the village.

Because of intense competition for available sites within a few miles of the villages, certain families continue to find it desirable to move to a distant camp to carry out their early summer fishing. It is usually expensive, both in time and fuel, to maintain nets more than three or four miles from one's base of operations. But the Kuuvaŋmiit place considerable noneconomic value on being able to spend time in the early summer camp. Virtually every adult questioned as to spring camp activities expressed a strong desire to move to such a camp and to participate in the related activities.

The productivity of spring gill netting varies from one site to another and from one area to another. Generally, the middle and lower Kobuk areas are more productive than the upper Kobuk. The Kobuk River Delta is exceptionally productive in terms of whitefish, pike, and other river fish species. On June 29, 1974, a single fish net across the mouth of the Black River netted enough whitefish and pike to fill a large washtub three-fourths full over a twelve-hour period. On the same day a single net positioned at the mouth of a slough in the Kobuk River Delta caught one and one-half washtubfuls of whitefish and pike. In Kiana in 1975, the second week of fishing for two families yielded seven tubfuls of whitefish, but the fluctuating river

level the next week reduced the take to nearly nothing. Had the weather held, the high yield could have been sustained for several weeks.

Fish species other than whitefish and pike taken in spring gill netting include trout (qalukpik), grayling (sulupaugak), sucker (qaviqsuaq), and sheefish (sii). Sheefish are of particular importance because of their size (up to fifty pounds) and rich flesh. To catch the early migration of shee, gill nets with meshes of four and one-half or five and one-half inches are set in river eddies rather than in sloughs and lake outlets. Spring catches of sheefish are usually larger in the lower river areas. The catch in the upper Kobuk gradually increases through the month of June into mid-July.

Fish taken by gill nets in the late spring are dried, frozen, or used for immediate consumption by humans and dogs. Even though most Kobuk families own or have access to home freezers, drying is the traditional and still most common means of preserving surplus fish and meats taken during the warm months.

The following is a description of the steps taken by a woman from the village of Shungnak to preserve whitefish and pike caught in late June:

1. Each fish was scraped with a dull table knife to remove scales and then laid on a grass mat before the worker.
2. When all fish had been scaled, the worker grasped each by the head with one hand and, with an ulu in the other.

made an incision that girdled the flesh just behind the head and gill plate.

3. A lateral incision was made along one side of the fish's spine from the base of the head to the base of the tail.
4. The flesh was peeled back away from either side of the spine to form a broad flap of boneless flesh joined to the spine at the base of the tail.
5. At this point pike heads were removed and thrown into a refuse pail, while whitefish heads were allowed to remain attached to the spine. Internal organs were also discarded, except that pike guts were placed in a separate container and later hung on sticks for drying.
6. Cut fish were thrown into a tub of water and scrubbed clean of blood and slime.
7. Each fish was hung on seasoned poles suspended between two tripods. The fish were turned inside out for the first day of drying.
8. Smudge (smoke) pots were lit and placed so that the smoke drifted over the fish racks and repelled flies. On windy days and during the nights the smudge pots were not lit. Once the fish developed a dry crust, smudges were no longer required.
9. Fish were daily checked and turned so that each side was given equal exposure to the air.
10. When fully cured (five to eight days in dry, breezy weather), the fish were removed from the racks, tied

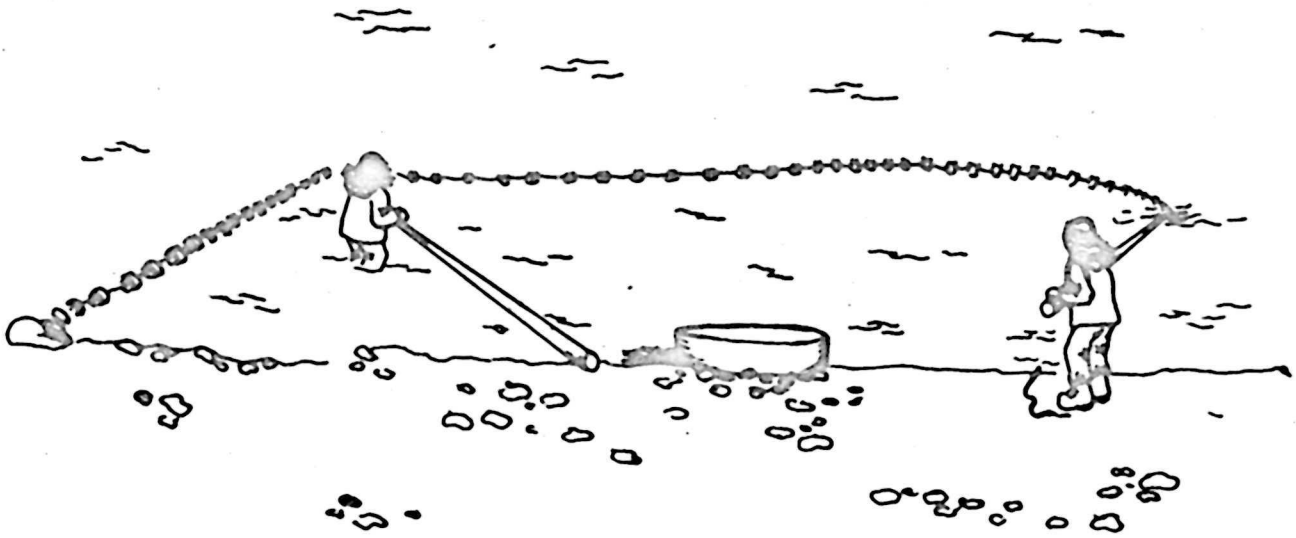


Figure 20a. Smelt seine

in loose bundles, and stored in weather-tight storage caches for later use.

Time checks maintained during residency at one spring fish camp revealed that it required two persons (man and wife) in a river boat between forty-five and fifty-five minutes to remove from nine to fifteen pike and three to ten whitefish from a single net. The time counted was from their arrival at the net until they left it. The wife averaged one minute and twenty seconds to scale, cut, and wash each fish. It required approximately twenty minutes to hang twenty-five cut fish from poles. Other camp activities, such as gathering firewood, maintaining smudge fires, constructing drying racks, checking and turning drying fish, repairing equipment, gathering edible vegetation, preparing meals, etc., kept the camp residents active throughout the day. The day usually began around 7:00 A.M. and ended between 10:00 and 11:00 P.M. The late evening hours were usually devoted to leisure conversation and relaxation.

Seining, Dip Netting

Seining and dip netting are practiced by the Eskimos of the lower Kobuk River in the spring after breakup to harvest smelt (iłhauġniq) (Fig.20a). These small fish winter in salt water and migrate up the Kobuk in early June as far as Kitiq, a rocky outcrop of calcium carbonate that extends into the river a mile

below Kiana. They spawn for two days--although no one in Kiana has ever actually observed this--and then turn around and go back down. Only twice in the last ten years have smelt been reported as having reached the village itself. There is a saying that the smelt go upriver in order to eat kitiq, the Iñupiat word for the rock, and as soon as they have done so, return to the coast. There is also a saying that the smelt always arrive during a wet, stormy period of east winds, and as soon as the run is over summer weather arrives. This in fact is generally true. After the ice goes out at Kiana, but before it is out in Hotham Inlet, there is usually a strong west or southwest wind that, blowing across the ice, is chilled. As it meets the warmer interior temperatures, it creates an uncomfortably cold, wet fog that comes in daily until the ice recedes from the river mouth.

Toward the end of the first week in June people start preparing their dip nets and, if they have them, seines. Word comes over the radio or by word of mouth on the location of the smelt. People can tell about how long it will take the smelt to arrive once they start up the delta. When the fish near, individuals boat down to Kitiq at different times to check on the fish, taking along a dip net. As soon as someone spots the smelt, that person returns to the village to inform the others, and within an hour several boatloads of families set off for Kitiq, or any part of the shore between there and Uqaq Point (771: Uqaq) to fish.

In Kiana slightly fewer than half of the families own dip nets (qalurak) although not all are used each year. The handle of the qalu is about ten feet long. A small-mesh (about one inch) conical net about three feet long is affixed to one end. The diameter of the opening is between eighteen and twenty-four inches wide. Any larger opening would diminish the effectiveness of the qalu, because it would retard the speed of the sweep through the water and would drag on the bottom. Only the men use dip nets, and as the fisherman stands on shore he holds the qalu roughly parallel to the shoreline so that the smelt cannot see the net or handle out over the water. Smelt are wary of such obstructions and quickly dive and head farther out from shore when they see them. When a large number of smelt come by in a bunch near shore, the fisherman quickly dips the qalu into the water and sweeps it downstream into the path of the fish. After pulling it out he extends the handle up the beach and, with a single jigging motion, turns the net inside out, spilling the fish on the ground. Then he turns back to the river to dip again. The full length of the qalu is often not used while actually fishing, since only the smelt very close to the shore are easily caught, but the full length is used for dumping the fish high up on shore. If dumped too close to the water many of the lively fish jump back into the river.

The most popular form of smelt fishing is seining. The smelt seines (qalusrailhaugniksiun), which are the same as those used for least cisco (qalusraaq), are about five to six feet wide

and from thirty to forty feet long. The floats are the same type as used for the salmon and whitefish seines, and the sinkers are either rock-filled canvas sacks or, as in one case in 1975, rectangular beach rocks about six by three by two inches, collected and used at the seining site. The mesh of the seine is, like that of the dip net, about seven-eighths to one inch. Both ends of the net have four-foot spreader bars (ayaupiq) similar to those used for gill nets and the other types of seines. To set the seine, the upriver end of the net is anchored by a rope to a rock on shore at about waterline. A sixteen-foot-long spruce pole, its thick end toward shore, is tied to the tip of the net about one-third the distance from the anchored end, and a second pole, about twenty feet long, is tied to the top of the free, downstream end. A long rope is tied to the bottom of the net at the downstream end, too, in order to be able to pull in the bottom of the net at the same time the top is pulled in.

To start the seine, two persons wading into the river push out the two poles connected to the net. The person at the free, downriver end first pushes it out as far as he/she can reach without getting water into his/her hip boots and then brings his/her end in a little to form a kind of rounded pocket. The person at the upriver pole acts as the spotter for the fish and, while holding the pole at its fulcrum, stands in the water to watch the smelt swim in. As the smelt enter and then encounter the upstream end of the net, they turn outward and follow the net around. If the small pocket on the lower end of the net is

properly set, many of the smelt will begin to follow the curve around and meet the new smelt just entering the net and join them swimming back up to the front of the net. Most, however, go on around the lower end of the net and escape out to deep water.

The spotter lets the smaller bunches of smelt swim into the net, circle, and then back out. When a large bunch swims in, the spotter gives the sign to pull the net, and while this person slowly walks to shore with pole in hand, the person at the downriver end quickly walks to shore with his pole and net. At the same time a third person pulls in the bottom rope as quickly as possible so that both the top and bottom of the free end of the net reach shore at about the same time. When the downriver end of the net is in, the person at the upper end walks back into the water and with one foot drags the bottom of the net to shore while holding the top of the upper, floated edge of the net so that the smelt cannot escape over the top. The fish trapped in the long pocket formed by the net are then jostled to the center of the net and dumped into the waiting tub at the shore's edge.

As soon as the net is dumped, the two seiners set the net again to wait for another good bunch of smelt. When all of the tubs are filled, or if no tubs are at hand, a shallow basin is dug at the shoreline close to the seine. The basin is lined with plastic, and rocks are piled along the edge as a containing wall to keep the fish from slipping back into the water. The seine loads are simply dumped into the basin, which can hold as many as four or five tubfuls.

Seines are owned, made, and repaired by the women, but both men and women participate in smelt seining. After the owner of the seine has chosen a spot to anchor the net and has determined how far out to push the net each time to bring in the largest number of fish, any person is welcome to help with the actual seining, which requires three people. Only the more knowledgeable persons act as the spotter, however. During the seining each of the three persons remains at his/her task until he/she wants to have a break. Then, when the net is set, or just after it is pulled in, that person simply walks away to the nearby campfire to eat or get coffee, while someone else steps in to take the job.

In 1975 members of three or more Kiana families took part in seining at each of the two seines being used. Each participating family came with a tub and all took turns at seining and getting their tub filled. After three or four seine loads of smelt were dumped directly into the tub, the owner and his family removed it to their boat and, with additional smelt dipped from the basin into buckets and plastic sheets in the boat, departed for the village.

In 1975 the smelt run was considered relatively light, and it took from three to five seine loads to fill a tub. In other years a tub may be nearly filled with only one seine load.

The smelt catch for Kiana in 1975 was the equivalent of seven tubfuls for each of the two seines in operation, plus about another two tub loads of fish caught by dip netting. Although

only two of the existing five smelt seines in Kiana were used in 1975, they produced enough smelt to supply the needs of the whole village.

The residents of Noorvik did not fish much for smelt in 1974 and 1975 around the village, partly out of regard for a family that had had an accident while smelt seining a year or so previously. Ordinarily they seine for smelt just across from the village or at the upper end of the village. In previous decades the many families camping at Makkaksraq (602) used to dip and seine smelt there.

Smelt fishing near the villages is also considered an outing, and the participating families bring food, tea, and coffee for all to eat while seining. Smelt are a rich food, and as soon as the first ones are caught they are fried over a driftwood campfire and eaten on the spot. Later, back at the village, a large number of smelt are fried at home, often eaten for four meals or so in a row. Smelt are traditionally processed by stringing them on young willow shoots tied into rings of about a foot in diameter. They are strung by inserting the pointed willow stick through the mouth and out one gill. To dry properly, the fish should be strung evenly along the loop and should all face in the same direction. They dry in about a week of good weather. One way to prepare smelt is to dry them only partly and then boil them. If fully dried, they are stored and eaten as is. Since the introduction of home freezers, a sizable number are also

frozen, to be eaten fresh during the winter or to be used as bait for burbot (mudshark) hooking through the ice.

Smelt fishing is strictly a downriver activity, and few smelt are ever sent upriver to the Kuuvaŋmiit families there. Many of the Kuuvaŋmiit of the upper Kobuk, in fact, have never tasted smelt. In 1975 two families from an upper river village came down for a visit and, as they were present during the smelt run, went down to the seining site to watch and try some fresh smelt. It was the first time they had ever eaten it. They did not take part in the actual smelt fishing, however.

Summer Fishing (July, August)

July is normally a month of warm weather in northwestern Alaska. The snow cover has disappeared except for a few sheltered drifts in the high mountains and near the coast; and the rivers shrink because of the reduced amount of runoff. Heavy rain showers may cause sudden rises, particularly in the headwaters, but unless the rain is prolonged, the streams quickly drop back to seasonal lows.

August, on the other hand, is often a wet, cool month. In 1974, the upper Kobuk experienced fourteen days of rain during the month of August as compared to eight days of rain in July. This wet weather causes higher river level and may result in brief flooding.

As the river level drops in early summer, pike and whitefish move out of the flooded marshes and lakes back into the deeper waters of large tributaries and the main river. Sheefish (sii) which winter at the mouth of the Kobuk in Hotham Inlet and Selawik Lake begin migrating upstream during the month of June and arrive in the waters of the upper Kobuk River between the end of June and the first of July. Salmon may begin their upriver journey from the mouth of the Kobuk any time between the first and third week of July, after the ice has left Kotzebue Sound. They normally begin arriving in the villages of the lower river four days to a week later and in the villages of the upper Kobuk one to two weeks later--toward the end of July. Salmon continue to pass the upriver villages throughout August and into the first or second week of September.

Both the sheefish and salmon migrations are subject to environmental variables. A late breakup of the ice in Kotzebue Sound or Hotham Inlet will delay the arrival of fish in the Kobuk River. Low water can also retard their movement. Natives of the Kobuk area state that a west wind blowing for a prolonged period will hasten the arrival of fish migrations.

The Kuuvaŋmiit have three means of harvesting fish during the summer months: rods and reels, seines, and gill nets. In order of their productivity, gill nets are the most productive, with seines second and rod and reel fishing a distant third.

Rod and Reel

Fishing with a rod and reel, that is, with cast and spinning rods, is a relatively new development in subsistence fishing, but Kobuk River Natives have historically made use of a pole, line, and artificial lure in the harvest of fish. In the past, however, hooking was primarily ice fishing, carried out by men and women, whereas today rods and reels are used in open water, and mostly by men and boys. The modern counterpart to the traditional hand-made fishing pole apparently was introduced into the Kobuk River area during the middle part of the twentieth century. Sport fishermen began to make use of the Kobuk River at that time, often chartering the boats of the Kuuvaŋmiit and hiring them to act as guides. Resident non-Natives, that is, people such as ministers, teachers, and traders, also made use of sport fishing gear and hastened its adoption by local villagers. Today, modern spinning rods and assorted artificial lures are found in most homes along the Kobuk River.

Rod and reel fishing is used to catch pike, grayling, char, and trout, but the primary target is sheefish. Shee are a relatively large fish that may weigh as much as fifty pounds. They travel in schools, and they often strike eagerly at a spoon lure. All these features make them attractive and susceptible to rod and reel fishing.

Kobuk River Eskimos have learned to predict the summer movements of shee with considerable accuracy and are thus able to

harvest significant numbers of these fish by rod and reel. Over a three-year period, twenty-six households in the upriver village of Ambler harvested an estimated 3,200 sheefish, or an average of 41 shee per family each year. The great majority of them were taken by rod and reel. During 1974, the forty-three families of the downriver village of Kiana took about 1,600 shee, or a year's average of 37 shee per family. But here the majority were taken by net.

Sheefish tend to school up during the evenings in deep pools often just below a riffle in the river. The local villagers have pinpointed locations along the river that tend to be particularly productive, and they travel via river boat to these locations in the late afternoon or early evening when conditions are favorable. Twenty persons were once observed casting for sheefish in a pool several miles below the village of Shungnak. The majority of these persons were men and women in their teens and twenties, although persons as young as ten and as old as fifty are known to be ardent and skillful fishermen.

Summer shee fishing by hand lasts from just after breakup to the end of July on the lower Kobuk River and from late June through August on the upper river. Some fall fishing is done on the upper Kobuk River in September as the fish prepare to spawn and make their downstream migration.

Sheefish taken by rod and reel are often distributed freely throughout the village, particularly to elderly people and rela-

tives. The fish that are not immediately consumed or placed in home freezers are cut and hung to dry on open fish racks.

Seining

Seining activities on the lower Kobuk River begin in late June or early July. On the upper Kobuk River they begin in mid-July and extend through the fall. In July and early August the target is primarily whitefish, and in mid-August it is salmon as the migration of these fish reaches its peak.

Seining crews tend to be relatively fixed, usually made up of two or three related adult women as the core and their younger daughters as auxiliary members. Occasionally husbands or a young son may join a crew, but women are the dominant sex in seining. Crew members coordinate their efforts and perform their tasks with a minimum of confusion and waste of energy. They also have an unspoken, efficient system of sharing both the labors and rewards of seining.

Seining takes place mostly in the late morning and early afternoon. The people of Shungnak explain this by saying that fish, particularly whitefish, travel in the evenings and mornings and stop to rest at mid-day in eddies and at the mouths of still-water sloughs. This is when they can best be harvested. In Kiana, people explain that the fish appear to disperse when the sun is shining directly over the river and that the catch during

mid-day therefore drops off sharply. So in Kiana they fish in early morning or late afternoon when the catch will be greater.

The following is a condensation of the seining activities carried out by a Shungnak crew one day in the summer of 1974.

The crew consisting of three adult females and one adult male assembled in front of the village at 9:45 A.M. They first removed the seine from its drying rack and submerged it in the water. This was done to allow the caribou-bone sinkers to absorb water for weight and to make the net less prone to tangling. One of the older women then loaded the seine into a flat-bottomed river boat. To do this she first pulled in several floats, then lifted the net, made a half-twist of the bundle, and deposited it on the boat floor, repeating this procedure until the entire seine was piled in layers of connected bundles. A tarp was then placed over the seine to keep it from drying.

Items carried in the boat besides the seine included two heavy butcher knives, three large washtubs, a large plastic tarp, three paddles, two long poling poles, six gallons of mixed gas, and a light lunch consisting of dry fish, seal oil, a thermos of coffee, and other snacks. The boat was a twenty-one-foot, flat-bottomed scow powered by an eighteen horsepower outboard motor. Clothing worn by the female participants included cloth parkas, shirts, trousers, and hip boots.

The first seining attempt occurred at a site known as Umittaq (395) near a deserted United States Weather Bureau station approximatel two miles above Shungnak. The boat was slowed considerably

as it came abreast of the site, and it was kept well offshore until just above the intended landing. The motor was then stopped and tilted out of the water while the crew quietly paddled the boat to the beach. These precautions were taken to avoid creating waves and noise which might frighten the fish in the eddy.

Two persons, the male and a female, remained on the beach to handle the anchor line of the seine while the other two women paddled in the boat toward midstream. Approximately twenty yards offshore, one of the women began to drop the seine into the water while the other propelled the boat downstream in a broad shallow "U" with the opening of the "U" facing the beach (Fig.20b). The end of the seine was reached as the boat began its turn into the beach. An end line was played out for approximately twenty feet and then secured with a slipknot to a seat of the boat. Both women then paddled the remaining distance to the shore.

Upon reaching shore, one of the two women in the boat released the slipknot, jumped out of the boat, and ran up the beach holding the seine line. She and the woman who had remained on shore pulled at one line while the man pulled at the other, drawing the seine inward. The woman remaining in the boat poled it along the outer edge of the moving seine, using her pole to lift the bottom line over hidden snags and to slap the water at either end of the seine in order to prevent fish from swimming around its edges.

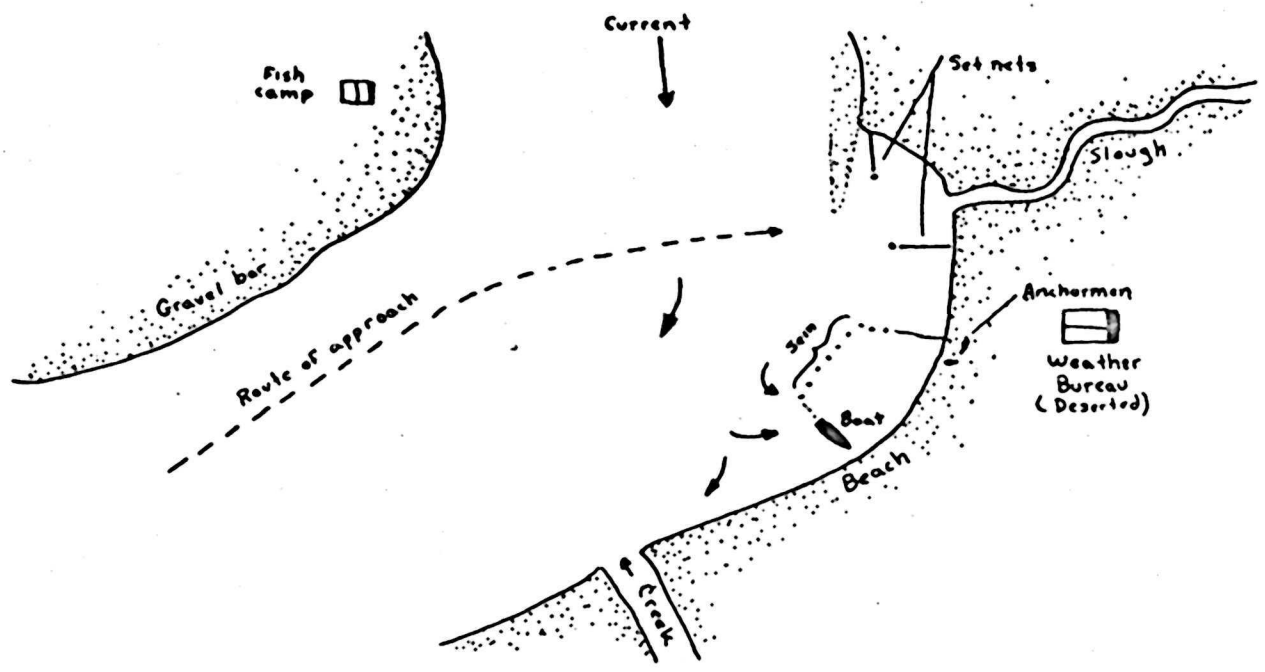


Figure 20b. Seine set in eddy of Kobuk River.

As the ends of the seine touched shore, everyone rushed forward to grab the ends of the sinker line. They held this line underwater and close to the river bottom while they continued to pull the seine in. The slack top line was periodically gathered and pulled onto the beach.

With roughly twenty feet of net separating the workers, each grasped both the top and bottom net lines to form a pocket in the net and hauled the thrashing fish onto the beach. The lines were held until the struggles of the fish subsided. The captured fish were then loaded into the three washtubs for transporting back home.

The seine was pulled back into the water, picked clean of debris, rinsed, and reloaded into the boat.

From the time the net began to be played out until it was reloaded required approximately forty-five minutes.

One other highly productive seining operation was carried out that same day by the same crew. This took place in the mouth of a slough known as Isruktauraq (384), approximately three miles downstream from the village of Kobuk. The procedure was basically the same as the first, but with minor variations because of the confined space within the slough.

As the boat was being loaded at the last place several small fish were thrown onto the bank. These were meant for the always-present ravens. It is a Kuuvaŋmiit custom to share one's luck with this bird because it plays an important role in local legends.

The total day's catch was 876 whitefish and 2 small pike. Roughly 700 of these fish were taken at the second spot, in the slough.

A loose mat of freshly cut willows was placed over the loaded fish to shade them from the sun and to prevent their drying during the ride back to the village.

Salmon seining follows roughly the same procedure as that described for whitefish, with a few exceptions. Salmon seining is carried out more along broad gravel bars than in slack water eddies, and the process involves considerably more drifting of the net and lateral movement along the beach. Salmon are much

more powerful than whitefish, so the increase in work can be considerable.

Before beginning a salmon seining operation one must first select a suitable bar. Over the years certain bars have gained a reputation for being particularly productive, but when a new one is sought certain criteria must be considered: (1) The bar must be fairly long with a relatively gentle curve, (2) the slope into the water must not be so steep as to make it possible for salmon to swim under the net or so shallow as to make the net drag on the bottom and roll up around the sinkers, (3) the water to be seined must be free of snags and large rocks (this is often checked by drifting in the boat over the site and visually checking the bottom), (4) the current must not be so strong as to make it difficult to control the boat or so weak as to preclude any drifting, and (5) last, but certainly not least, salmon must pass the bar in numbers large enough to justify the efforts.

One of the principal means of determining the potential productivity of a given bar is to check for "fish trails." River water, even when apparently clear, carries a certain amount of suspended silt. This silt is deposited in fine layers over submerged gravel, giving it a slightly gray cast. Schools of salmon moving through shallow water create enough disturbance to clean the silt from the path of their travels, and schools of salmon tend to follow "trails" created by preceding schools. When the water is clear, one can discern these trails and know the paths the salmon take.

The procedure after selecting a promising bar is to position the boat at the head of the bar with the seine in the boat, ready for use. The crew members wait on shore. A lookout stands on shore downstream at a place that affords a good view of the river. A large school of salmon creates telltale ripples as the fish move through the shallow water, and the lookout hurries to alert the crew.

The crew rushes to the boat, paddles out, and proceeds to set the seine as previously described (see Fig.21). As the seine is being set, it is necessary for the person holding the anchor line to move along the beach at approximately the same speed as the current so as to maintain the proper shape of the extended seine. Unlike whitefish seining, the "U" is not completed until the extended net has been allowed to drift around the salmon school. Then the boat occupants turn shoreward, poling and paddling quickly to the beach.

Gill Netting

Summer gill netting is a continuation of the procedures described for spring gill netting (see pp. 212-218) Whitefish gill netting, which is exclusively woman's work, is the most productive subsistence activity for the downriver people during early summer. The weather is just right for drying fish and the blowflies and other insects are not yet out in enough force to be bothersome. A woman can set one or two gill nets and recover

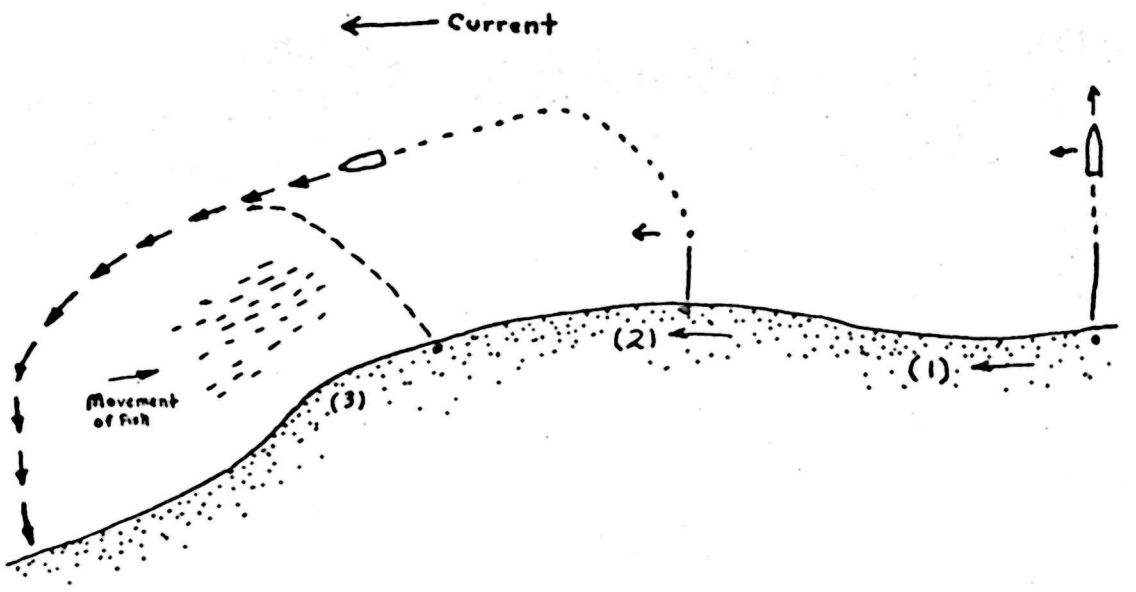


Figure 21. Salmon seine in position.

one or two tubfuls of fish per day, which is just the amount she can comfortably cut up and hang to dry in two or three hours and still have time for other daily chores. It takes approximately four days to dry the fish, and once the system is going, she can rotate the catch each day by taking down and stringing the four-day-old catch and replacing it with the new catch.

Gill netting is practiced by all but a very few Kobuk River families. The netting of whitefish continues well into July, particularly along the upper Kobuk. Nets with larger mesh (four and one-half to five and one-half inches) begin to be set by village residents as soon as the sheefish begin moving by their village. However, sheefish tend to remain in deep water and

travel along the channels, so that, at least in the upriver areas, fewer are taken in this manner in the summer than by hooking. In the lower river area up to five or six large shee may be caught in gill nets in a twenty-four-hour period during the first part of July.

In the upriver area it is the annual arrival of salmon that gives gill netting an important role in subsistence activities in summer. In Shungnak, on July 22, 1974, for example, the first three salmon of the season were caught in a locally set net. At that time less than five households were maintaining gill (set) nets. By August 10, twenty-seven gill nets were counted within two miles on either side of Shungnak.

The competition for available net sites near each village in the summer, as in the spring, is such that some families find it preferable to move to distant fish camps, some of which are at the same places as early summer fishing camps and others of which are at different places. At one time or another virtually all the families along the Kobuk River have occupied an established fish camp, and many continue to rely on such camps, if only for brief periods during the summer. For various reasons (weather, economic considerations, etc.) a camp may be unoccupied for one or more summers, but a productive site is never abandoned and will be used again as soon as practical.

During the summer and fall of 1974, one researcher visited six fish camps along the upper Kobuk River in order to obtain data on fishing activities. One of these camps is described on

pages 230-233. Another camp was visited on August 15, 1974. This was a well-established fish camp belonging to a family from Ambler. It was located on the Kobuk River approximately seventy-five yards downstream from the mouth of the Hunt River. Two canvas wall tents were set up, one atop the low cutbank and the other at the upper edge of the gravel bar. The larger tent contained a wood stove made of a low drum, bedding, mosquito netting, cooking utensils, battery-powered radio, clothing, several books and magazines, a box of food, and other miscellaneous items. There were also several rolls of birch bark that were being used to manufacture baskets. The smaller tent was used for extra sleeping and storage space.

Three large fish racks had been constructed along the beach and all were filled with drying salmon. The supports for these racks were drift logs implanted in the gravel. Several other large drift logs had been pulled ashore and were secured by a line. These were to be used later as building material for a more permanent shelter.

Seven grown huskies and one pup were tied to nearby willows. The occupants of the camp included a man and wife, one teenage daughter, three preschool daughters, and one preschool grandson. At the time of the visit, the husband was out in his boat hunting, and the mother and older daughter were engaged in the manufacture of birch-bark baskets. High water had temporarily interrupted their fishing activities.

Successful gill netting along the Kobuk River for any fish in summer requires a certain degree of environmental knowledge, particularly in the selection and use of river eddies and currents. An eddy may be formed in a variety of ways such as from a direct obstruction to a river current, uneven river-bottom configurations, the joining of two streams, and so on. Each type of eddy has its own peculiarities, but all share certain basic features that are known and referred to by the Kuuvaŋmiit Eskimos. Types of eddies and currents include (1) saġvak, the main river current; (2) aragumuksaq, the reverse current of an eddy that flows along the shore; (3) qasrurak, the "eddy line," a discernible, undulating line in the water dividing the outer edge of an eddy from the main current; (4) iłutmuq, the upstream current of the Kobuk River estuary or of small tributary streams of the Kobuk River caused by winds or floods; (5) tiliuniq, the current that undercuts a bank; and (6) itimniq, riffles across a stream (Fig.22).

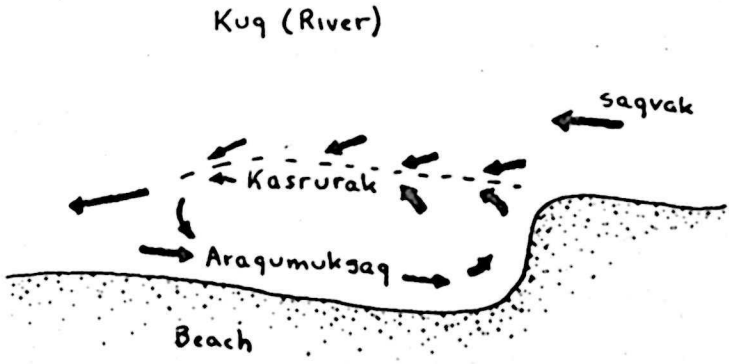


Figure 22. Water flow in a river eddy.

The productive potential for salmon in a particular eddy is determined by several things. Certain eddies are productive in relatively high water but become isolated from the main channel in low water, causing fish to bypass them. Ideally, for salmon fishing an eddy should be connected by relatively deep water to the main channel, should be six to ten feet deep at normal water level, should have no sunken drift or snags, and should be large enough to allow the stringing of one or more long nets (forty feet or more). Such ideal eddies are rare, particularly as one progresses into the shallower and swifter waters of the upper Kobuk River. Consequently, compromises and adaptations are necessary to meet the less than ideal conditions of most eddies.

Some of the more frequent adaptations to eddy peculiarities include using shorter nets, angling the nets to cover the greatest area possible, using long anchor lines to reach the deepest part of shallow eddies, and moving the nets to other locations as the level of the river fluctuates.

The mere positioning of a gill net within a given eddy can markedly influence the number of salmon caught. Following the advice of local residents, one researcher placed a gill net in an eddy several miles from the village of Shungnak. His catch averaged thirty-five fish for three days. An Eskimo seeing the net suggested that it be repositioned to just inside the eddy line, a shift of less than two feet. The day after the shift was made the catch increased to sixty-seven and remained high for the duration of the season.

Figure 23 shows how several Kuuvaŋmiit gill nets were set along the Kobuk River in 1974.

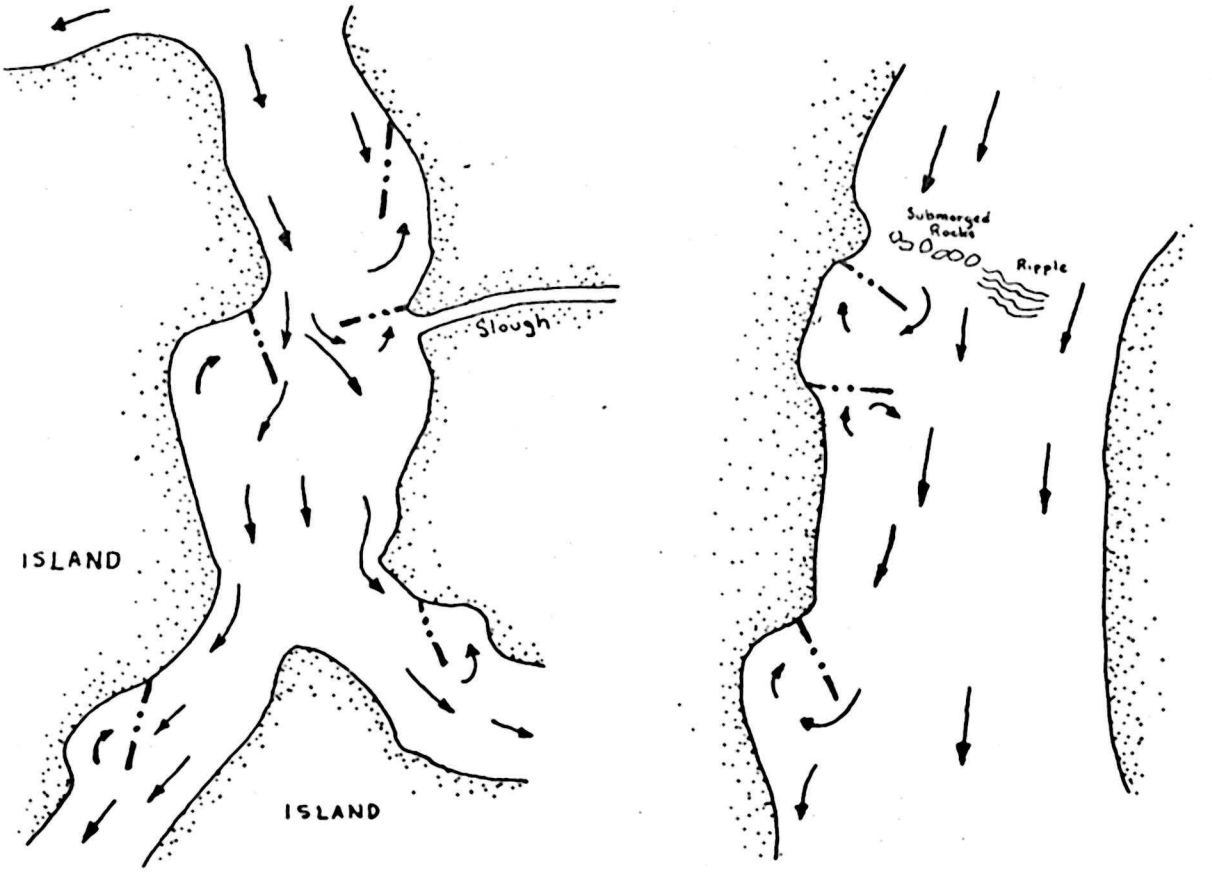


Figure 23. Gill nets set for salmon in Kobuk River, 1974.

As has been mentioned, the productive potential of these sites may differ considerably, even in sites that are within a few yards of one another. It should also be noted that when the river rises enough to carry drift or to submerge eddies, all gill nets are removed to await the return of normal water levels.

In August 1974, river conditions precluded gill netting in the village of Shungnak for a total of eight days. According to two informants, those lost days and the generally damp weather substantially reduced the total catch of salmon. The average number of salmon taken that month per set net per day was thirty-four. Some nets caught as many as ninety-five in a single day, while others took only fifteen. The catch rose at the peak of the migration and fell when the peak was past. Each of three families in Shungnak estimated their total 1974 salmon catch at well over one thousand, while others estimated theirs to be between fifty and six hundred.

In 1974 in Kiana, the salmon take for twenty-five families who reported that they were engaged in salmon fishing was approximately 4,000, or an average of about 160 salmon per family. Field counts taken in Kiana between July 21 and August 15 totaled 1,215, or approximately 120 fish per family. The gill nets were not set every day, and the average take per set of each net was 18.5 fish. Besides the salmon, whitefish seining continued sporadically throughout the summer. Of the 1,215 salmon taken, more than 1,000 were obtained by gill netting. Seining usually accounts for more whitefish in summer. Each family tried to get at least one whitefish seining trip in; the take per trip was between 400 and 500 fish, occasionally taken in one set of the net.

Formerly, salmon fishing was much more important. For example, in 1956 the reduced dependence upon dog traction

undoubtedly made less need for salmon and therefore reduced the harvests. A resurgence in the use of dog teams, as is presently being experienced in some Native communities, should bring with it greater need and thus heavier salmon harvests.

Processing

Catching fish is, in a way, the easiest part of summer fishing. It is the cutting and drying of the catch that requires the greatest amount of time and effort.

Seining for whitefish during late July and August usually produces numerous small, rich fish that are liable to spoil rapidly in warm weather. The processing of such massive catches requires a well coordinated team effort involving several people, and the Kuuvaŋmiit have developed an efficient system.

The following description of the processing of a large load of humpback whitefish (qausriluk) caught by a seining crew from Kobuk village is taken from field notes made on July 26, 1974.

The fish were placed in washtubs and carried to the top of the bank where driftwood logs formed a low rectangular box to hold the fish. The box was lined with a plastic tarp. After the entire load had been transferred, the owner of the seine provided the crew with lunch and coffee at her home in the village.

Actual processing began at 3:10 P.M. when the workers assembled at the fish pile. The work crew of eight consisted of the net owner (female, age approximately 38), her three unmarried

daughters (ages 16, 17, and 23), a second woman (age approximately 44), and her three daughters (two married and one approximately 17, unmarried). Two small boys (ages 6 and 7, related to the net owner) assisted by carrying pails of water from the river.

The crew efficiently divided their labors. Four of the younger girls sat on one side of the pile and scaled the fish with dull table knives while the two older women and one of the younger ones sat together and acted as cutters. Another young girl had the task of washing the cut fish and hanging them on open fish racks (Fig.24).

Figure 24. Women cutting and drying whitefish.

The scalers would rapidly scrape the scales from fish and toss them into piles before the cutters. The cutters, with deft strokes of their ulus, made three joint incisions in the fish and peeled the flesh free of the spine. The spine and head were joined to the flesh near the base of the tail (Fig.25).

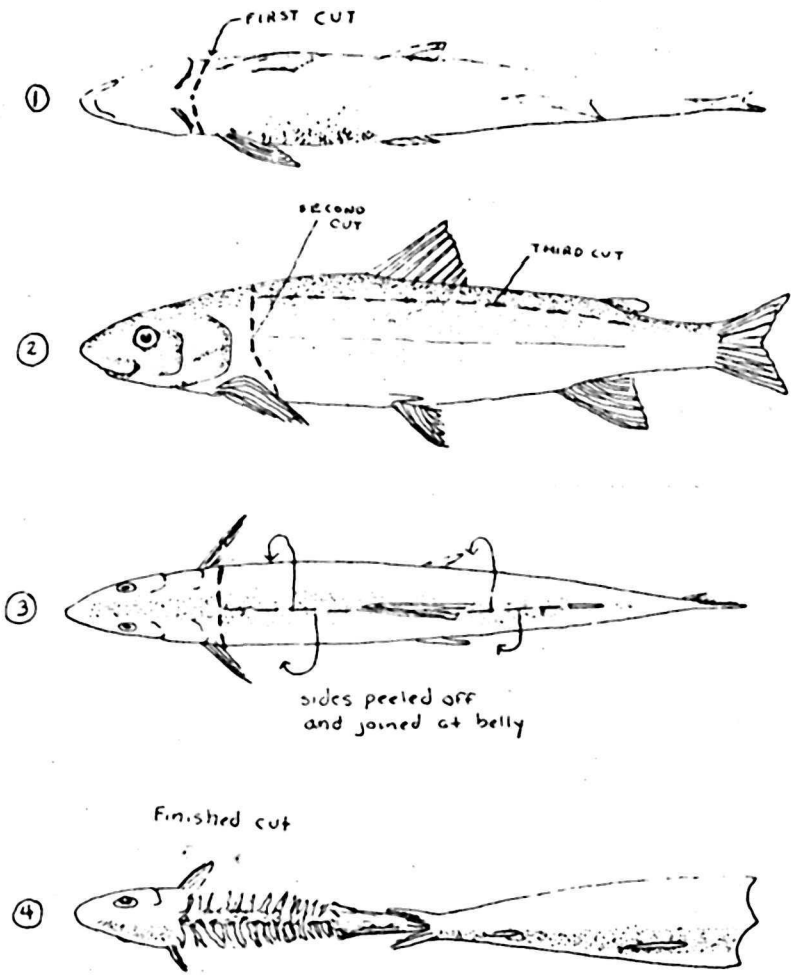


Figure 25. Cuts made to process whitefish.

Fish eggs were tossed into one pan, stomachs into another, and intestines, bladders, and hearts were deposited into a dog pail. It required an average of twenty seconds to scale each fish and thirty seconds to cut it.

Cut fish were placed in a washtub partially filled with water and rinsed clean of blood and slime. They were then hung

over seasoned poles so that the inner flesh was exposed to the air. Six hundred small whitefish were processed during this particular work session. Twenty-five of these fish were selected for measurements. They ranged from thirteen to fifteen inches in length and weighed between two and three pounds. After cutting and cleaning the average weight was one and one-fourth pounds.

The crew worked at a steady, unhurried pace, requiring seven hours to complete all work. Women talked and laughed while children played nearby. Hot tea was kept on hand to provide refreshment.

Several of the fattest whitefish were removed from the scaled piles and taken home by the older women to be cooked for their families. These were male fish, as female whitefish containing eggs are thin in the summer.

Once the fish were hung, smudge pots (puyuq) were lit and placed so that the breeze carried the smoke to the racks and repelled blowflies. The smudges had to be maintained each day and the fish checked for fly eggs. As they dried, the fish were periodically turned so that both sides were given equal exposure to the sun and air.

If the crew is lucky and the weather remains dry and breezy, the fish will require from four to six days to dry. It will then weigh, on the average, one-fourth of a pound. When sufficiently air-dried, the whitefish are attached to one another to form "strings" or nuvirat. To form a fish string, a hole is punched with a pointed tool in each fish between its back gills and tail.

The spine, except for a small section near the tail, is removed and later used as dog food. The remaining vertebrae section is inserted into the hole of another dry fish (Fig.26). This is done to four fish, and then two bunches of four are joined to form an inverted "V"-shaped string. These strings are then tied together in groups and hung in a shelter for storage. A slightly different technique of forming fish strings is to insert the tails of the fish into slits cut into body flaps, turning the tail to "toggle" and joining eight fish into an inverted "V" string.

Figure 26. A string of whitefish.

Salmon processing is similar to whitefish processing, with certain variations. One field researcher who participated in salmon netting in 1974 made the following observation, "Caring for fish is a seemingly endless chore. Nets must be checked daily. Fish must be removed from the tangled mesh, hauled home,

cut and cleaned, washed, and hung to dry. Drying racks must be constructed and expanded. Fish intestines and heads are cooked for dog food. Smudge fires must be lit and checked (they never stay lit). Drying fish must be checked for fly eggs and turned to facilitate drying. All this and related activities consume entire days."

The technique for cutting summer caught salmon is as follows: A woman sits at the edge of a shallow depression that is lined with willows or grass or a plastic tarp and is filled with freshly caught salmon. She grasps the head of a salmon and flips it onto its back. With the other hand holding her ulu, she peels away the flesh from beneath the lower jaw. Turning the fish as she works, a cut is made around the fish just behind the head and in front of the pectoral fins (Fig.27). With a firm downward chop, the head is severed from the body. A lateral cut is then made along one side of the spine from the head end to the base of the tail. The thumb of one hand is inserted into this incision and used to pry back the flesh as the ulu separates the flesh from the rib cage. The flesh covering of the body is laid open as a single unit united with the spine at the base of the tail. Internal organs are removed and thrown into a nearby tub. Eggs are often kept separate and hung to dry. Lateral slashes are made into the thick flesh of the body flap to allow more exposure to the air. Cut fish are thrown into a tub of water to be rinsed clean of slime and blood.

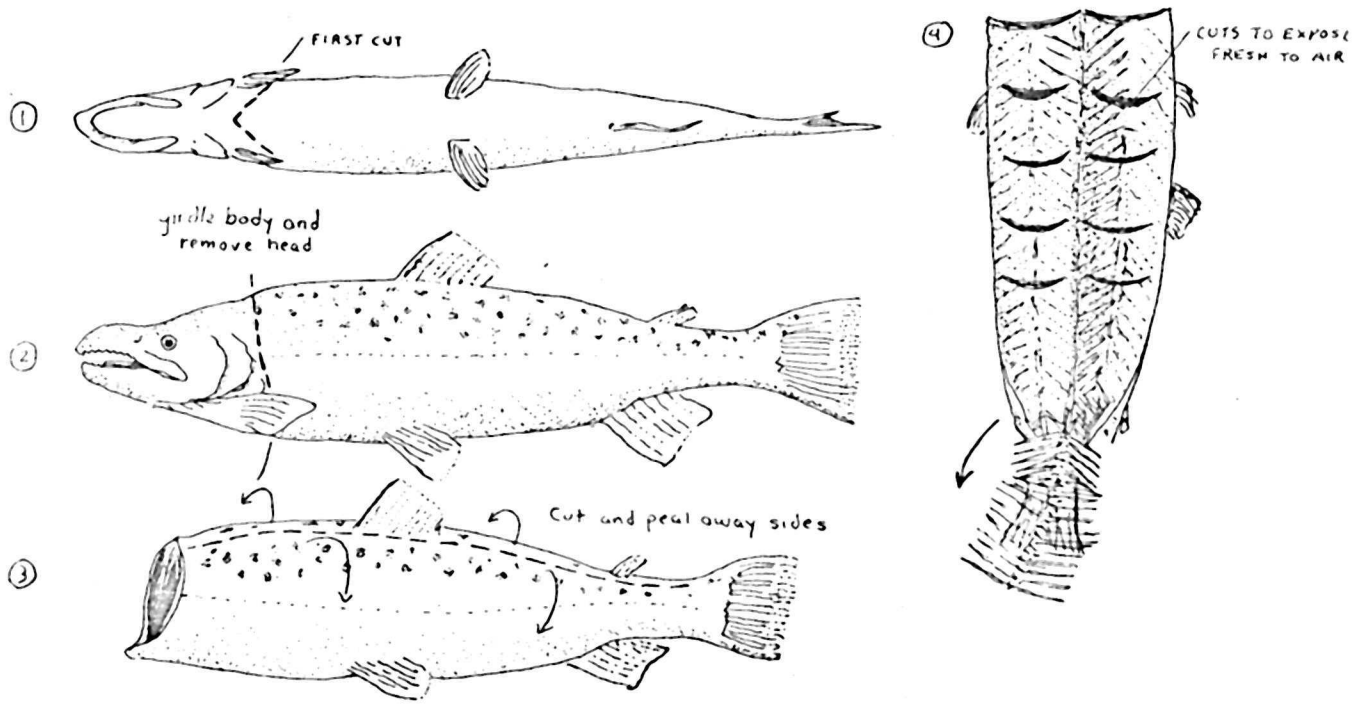


Figure 27. Cuts made to process salmon.

On August 15, 1974, an elderly Kuuvaŋmiit woman in her seventies and her adult daughter cut and cleaned one hundred salmon. A time check kept during this operation revealed that it required between two and one-half and three minutes to cut and clean each salmon. The variations owed to differences in the size and sex of the fish being cut.

Cut salmon are hung on open pole racks along the beach and are given the same basic care that drying whitefish get.

Besides the flesh of salmon, other parts kept for drying include sperm sacs, egg clusters, and heads. Sperm sacs and eggs are simply draped over poles. Heads are split from the bottom so

that only the thin skin at the top of the head is left to hold the two sections together. Several heads may be strung together by passing a willow rod through the gill opening on one side of each head. These heads are then suspended in the open air.

Another means of preserving fish parts is to bury them. The Kuuvaŋmiit often excavate "fish holes" (qache) for the purpose of burying fish heads and fish eggs. One such pit, lined with grass, measured four feet in depth and three feet in diameter. Fish heads were placed in the pit and then covered with grass and cardboard. A board was placed over the top of the hole and covered with a pile of earth to prevent the entrance of flies. These heads slowly decomposed into "head cheese" and were consumed during the winter. Fish eggs were placed in open five-gallon gas cans and were also buried. Aged eggs make excellent dog food.

The three major forces that work against the efforts of the subsistence fisherwoman are birds, rain, and blowflies. Of the three, birds are the least destructive, but they can nevertheless cause considerable loss if care is not taken. The three birds most responsible for fish losses are sea gulls (nauyaq), ravens (tulugaq), and gray jays (kiiriq). Sea gulls, particularly, can cause problems if fish are left exposed and unattended on the beach, but they are usually satisfied with feasting on the guts and heads dumped on river bars below the village. Ravens, too, can quickly consume large amounts of unprotected fish. However, they are relatively shy and easy to frighten off. Gray jays, or

"camp robbers," as they are commonly known in Alaska, are bold, intelligent birds and are persistent when attacking a rack of drying fish.

The principal means of warding off birds along the Kobuk are devices known as nuyuksaan. These consist of such things as mock bows with attached arrows, willow loops, and sharpened willow stakes attached to or suspended from a long pole that leans over a rack full of drying fish (Fig.28). A modern innovation of the traditional nuyuksaan is to suspend shiny can lids from poles so that they turn in the wind. These seem to be effective in warding off ravens, but have limited success with gray jays.

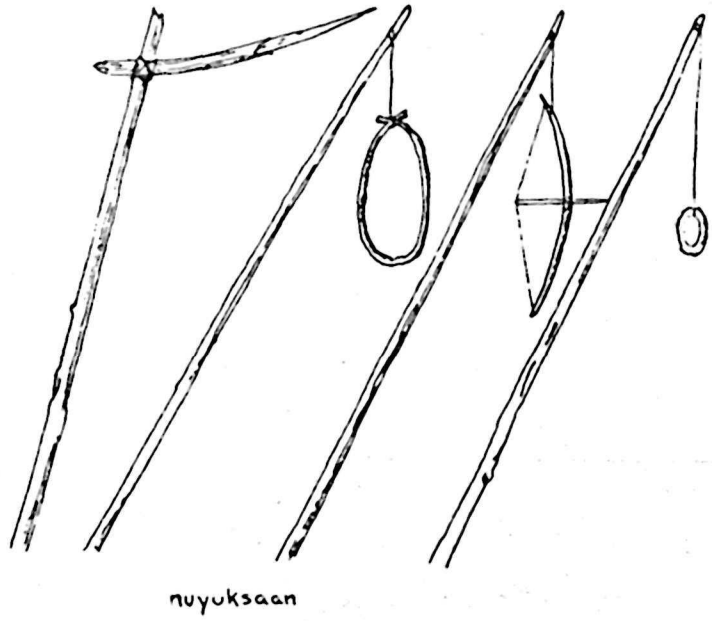


Figure 28. Devices used to ward off birds.

Blowflies (nuviivak) are a constant and often very destructive pest to the fisherwomen. In the summer months they quickly swarm about any open flesh or tissue in the earliest stages of decomposition. Each female fly will attach itself to such a surface and, within seconds, deposit clusters containing hundreds of tiny opaque white eggs. These eggs require moisture and heat in order to hatch, and both of these can be provided by the decomposition process. Hatching time takes from less than an hour to several days depending upon environmental conditions. Once hatched, the larvae (maggots) quickly bore into the exposed flesh and begin consuming their host from the inside out.

The Kobuk Eskimos rely on two deterrents to the blowfly menace: dry, breezy weather and smoke. As soon as fish are cut and placed on drying racks, smudge fires (puyuq) must be lit and maintained to produce insect repelling smoke. These smudges may be built directly on the ground near the fish racks or within metal cans so that they may be repositioned as the winds shift (Fig.29). They must also be "cool" fires so that escaping excess heat does not result in fish spoilage. Green or dry-rotted cottonwood (ninŋuq) is a much-used fuel for smudges.

At times, even with the best of efforts, blowflies lay their eggs on exposed fish. If these eggs are found before they can hatch, they may be removed by carefully flicking them off the affected area with a knife point. Villagers are careful not to accidentally push eggs into the exposed flesh. If the maggots do appear, the affected fish are hung directly over a smudge fire,

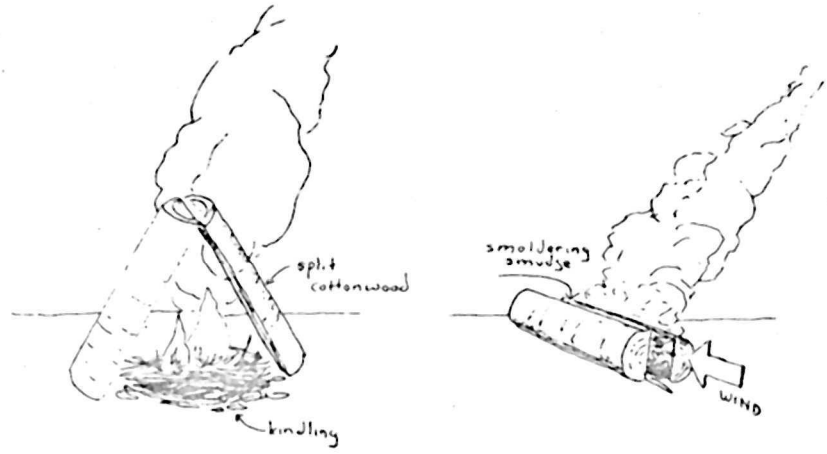


Figure 29. Cottonwood logs used to make smudges.

causing the insects to drop off. To expose larvae hidden within the affected fish to air and smoke the drying flesh is broken open. As the fish become dry and a protective crust forms over the exposed surface, maggots are unable to find a suitable habitat, and the fish are safe from infestation.

The element over which the Kobuk fisherwomen have no control, of course, is the weather. Rain or damp weather for a period of several days can, and occasionally does, ruin for human consumption hundreds or even thousands of drying fish.

On days when rain threatens, villagers hurry about securing canvas or plastic tarps over their fish racks. These will protect the fish from rainstorms of short duration, but they will not prevent spoilage if the weather continues wet for three days or more. During the last week of July 1974 over 1,500 drying whitefish in the village of Shungnak spoiled due to rain. This

was a loss to everyone concerned. The following month of August was generally wet and caused considerable spoilage of hanging salmon. Many people simply pull up their nets during a wet spell and await better conditions.

Fish that become spoiled for human consumption are usually kept for dog food. This may be one reason that most households keep a few dogs, even though they do not use them to pull sleds. Dogs make excellent garbage disposal units.

As fish dry, they lose approximately two-thirds of their wet bulk and three-fourths of their fresh weight. The shrinkage is particularly noticeable in drying salmon. As the fish become nearly dry, the Kuuvaŋmiit women begin piling them loosely on top of one another on single stout poles. This frees space on drying racks for freshly cut fish. Such "half" or "two-thirds" dry fish continue to dry as the air circulates through their loose mass, and it is easier to cover such a concentration of fish in case of rain.

Some salmon are removed from the racks and placed in an enclosed shelter before drying is complete. These "half dry" salmon, imaġsluq, are particularly valued for human consumption. Fully dried salmon are also of course removed and placed in sheltered storage.

Dry fish, except whitefish, are stored by being stacked flat and pressed down. Stacks are kept separate according to fish species and type of drying. "Bundling" of dry fish does not seem to be generally practiced, although two informants stated

that in the past dry salmon were sometimes placed into tightly wired bundles of twenty-five fish for carrying.

Early Fall Fishing (September until freeze-up)

As August fades into September, the weather cools appreciably. Frost can occur any time after mid-August, and freezing temperatures become more frequent as September nears its end. Ice is possible in the upper Kobuk River any time after mid-September, although the upper river normally doesn't begin to run ice until the end of September. In the lower Kobuk River ice normally begins to run a few days later.

The water level of the Kobuk begins to drop as the weather cools. While sudden or prolonged rain showers can cause rises in the water level, such increases are normally of short duration.

The main body of migrating salmon has passed the upper Kobuk River villages by late August, but diminishing numbers continue to be caught in gill nets into mid-September. Aerial surveys and surface observations made in September 1974 showed that the major salmon spawning grounds for the upper Kobuk River are above the Mauneluk River, with the heaviest concentrations occurring at the mouths of the Selby, Beaver, and Reed rivers (Map 3). For the lower Kobuk River area, they are along the Squirrel, Salmon, and Hunt rivers. No salmon were spotted above the Lower Canyon of the upper Kobuk River.

Salmon continue to arrive at their spawning grounds well into September. Both the aerial and surface observations of these areas impressed the researchers with the highly productive and important role these sites play in the economic well-being of the Kuuvaŋmiit and in the ecological balance of the general area. Any significant disturbance of these spawning grounds would cause irreparable damage to the subsistence base of the dependent human populations.

The spawned-out salmon literally begin to decay before they die. Grayish-white spots appear on the skin of such salmon. In this stage they are referred to as tukunnarraq by the Kobuk River Eskimos. These fish grow weak and begin drifting with the current. A Shungnak Eskimo said that after spawning the salmon begin to grow sleepy. They die a very peaceful death as they drift downstream. By early September, dead and dying salmon are common in the waters and along the beaches of the entire main river.

Sheefish migrate to the upper Kobuk River area during July, August, and early September to prepare for spawning. In late September they move from the deep waters into the swift, clear waters of the upper Kobuk to carry out their spawning activities. In 1974 spawning shee were observed in late September from the mouth of the Kogoluktuk River to the mouth of the Paa, and, according to Native residents, shee also spawn above the Paa. According to Alt, spawning takes place in the relatively swift main current near cut banks and in the center of the channel as

the current swings to an opposite shore (Alt, 1969:45). Major spawning occurred in 1965-66 between twenty-four and thirty miles above Kobuk village in water depths from .65 to 1.8 meters. The best river bottom for spawning is siltfree coarse gravel with some sand. Spawning occurred in both those years in a short period--between September 26 and 29 each year (Alt, 1969:44-49).

Unlike salmon, sheefish do not die after spawning. Rather, they turn and begin moving downstream late in September or early October to spend the winter in the brackish waters of Hotham Inlet.

Whitefish react to the drops in water levels and temperatures by deserting the shallower lakes, sloughs, and streams and moving into the deeper waters of the main river. Large schools of broad whitefish begin to congregate along the headwaters and upper tributaries of the Kobuk during the month of September and work their way downstream as the fall progresses. This downstream migration continues until well after freeze-up.

Other fish found in the Kobuk during the early fall include grayling (sulupauqak), sucker (qaviqsuaq), trout (qalukpik), burbot (tittaaliq), and pike (siilik). These fish, however, play only minor roles in the early fall fishing of Kobuk River Natives.

Sulupaugaktuaq (228), the area at the mouth of the Selby River (221: Anaulaqvik), has been, and continues to be, of significant importance to the Eskimos of the upper Kobuk River. Great masses of salmon gather here each fall and fill the Selby River and adjoining sloughs. In past years camps would be established

in the general area and Natives would make brief visits of several days in order to obtain fish.

From information provided by older villagers, it seems that Native men often traveled to Sulupaugaktuaq during the latter part of September in order to secure a supply of salmon to be used primarily as dog food. They walked along the Selby River to spawning pools or along the nearby sloughs and speared salmon with a long-handled salmon spear (qapuqaan). Some men hooked salmon with long-handled gaffs (see Fig 10). Both of these techniques were accepted methods of harvesting fish as late as the 1920s, and salmon spearing may have survived into the 1940s.

Salmon taken in these ways were usually cached nearby. Each man would build a log fish box to hold his catch and then cover it with heavy logs and large rocks. Bears were always a danger to such caches. Later in the winter these cached fish would serve to feed the dogs of men trapping in the area or they would be hauled back to the village by dog team.

The Kuuvaŋmiit also made use of a large weir, paurvich, which would be built as a cooperative effort by several families at a site known as Paugriruk, a few miles above Qalla on the main river. This weir would stretch the entire width of the river. Gates could be made by removing poles that formed the wall. The purpose of this weir was to block the downstream migration of sheefish so that men could spear them with the three-pronged fish spear, kakiat, and women could engage in seining above the weir. One man reportedly speared eighty sheefish in one evening at such

a weir. The useful life of such a weir was relatively limited as the first run of slush ice would destroy them.

In the upper Kobuk River villages, the attention of residents shifts to whitefish and sheefish as soon as the main salmon run has passed. Large-mesh gill nets continue to be maintained in eddies near the villages, particularly in Shungnak and Kobuk, in hope of ensnaring sheefish as they pass on their way to the upriver spawning grounds. The last of the salmon are also harvested at this time. These salmon, while not occurring in as great numbers as in mid-August, are easier to process because of the decline in blowflies with the cooler, drier weather. A few smaller-mesh nets are again set near the mouths of tributaries and sloughs along the river to catch the first migrating whitefish and trout. Rod and reel fishing is once again practiced, particularly near the village of Kobuk, in order to harvest the sheefish as they move upstream.

Prior to the 1960s, most Native families of the upper Kobuk spent the early fall in fish camps scattered from the Hunt River to Selby River. The majority of these camps were located above the village of Kobuk. The families would move upriver during the month of August, following the peak run of salmon, and remain in camp seining and checking gill nets until just before freeze-up. Families of the lower Kobuk spent early fall in fish camps scattered along the main channel all the way from the delta to Salmon River.

Establishing Camp

Moving to a fall fish camp is still customary along the Kobuk River, but the number of people who do is significantly less, particularly in the lower river area, than in times past. This reduction is to be attributed to such factors as a decline in the canine population, increased emphasis on keeping children in the village to attend school, the abundance of caribou, and an increase in wage employment. Changes in one or more of these factors undoubtedly would affect the number of people participating in future fall fishing.

The first Shungnak family to establish a fall fish camp in 1974 moved to the site of Qalla, roughly ten air miles east of the village of Kobuk, on September 9. A second family moved to a site known as Qalukrivik, at the mouth of the stream by the same name (271), four and one-half miles downstream of the Mauneluk River mouth, and a third family established a fall camp at the mouth of the Black River. At least one Ambler family camped along the middle Ambler River during the fall, and others from the village of Ambler may also have established fall camps. One family from Kobuk also moved to Qalla. At least six other families expressed a strong desire to set up fall camps, but were prevented from doing so for reasons of health, family emergencies, or other unforeseen occurrences.

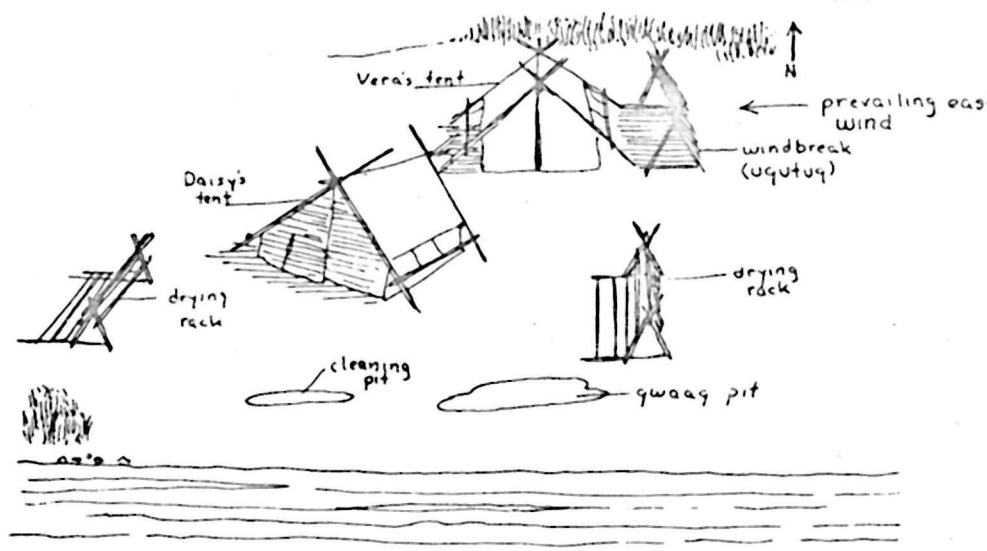
The establishment of a fall fish camp requires a considerable investment in equipment and supplies, to which must be added

the cost of fuel and parts to operate outboard engines. The following is an inventory of the equipment needed for a typical camp for two adult women and one adult man:

1 10'x12' wall tent
1 wood-burning stove
1 Coleman Blazo stove
1 gas lamp and extra mantles
2 flashlights and extra batteries
1 ax
1 Swede (bow) saw
1 maul (alutuk)
1 sharp-nosed shovel
1 chain saw
1 double mattress and other bedding
2 sleeping bags and air mattresses
assorted pots, pans, and large spoons
assorted dishes, bowls, cups, and silverware
2 water buckets
4 washtubs
1 battery-powered portable radio
1 battery-operated tape recorder
several bags of clothing
3 large cardboard boxes of food supplies (includes seal oil, cooking oil, dry meat, dry fish, rice, oats, salt and pepper, canned fruit, raisins, condensed milk, coffee, tea, Tang, soup mix, canned vegetables, etc.)
1 Bible
assorted magazines and pocket books
2 wash towels
2 bars of soap
1 thermos bottle
3 large ulus
2 butcher knives
2 hunting knives
several rolls of toilet paper
3 rolls of paper towels
5 gallons of Blazo (white gas)
50 gallons of mixed gas and several gas cans
2 tubes of lubricating oil
1 can of gun oil
1 pair 7 x 50 binoculars
2 high-powered rifles and 3 boxes of shells
1 shotgun and 3 boxes of shells
1 .22 rifle and 5 boxes of shells
1 revolver and 2 boxes of shells
1 tool kit
assorted nails, wire, screws, and bolts

1 roll of plastic sheeting
1 canvas tarp (12'x14')
1 sewing kit
2 net shuttles and 1 ball of net twine
several pairs of canvas gloves
3 rain jackets
several boxes of matches
assorted toiletry items (combs, brushes, etc.)
3 pairs hip boots
several hundred feet of 1/4" and 5/8" rope
3 gill nets, 5-1/4" mesh
1 gill net, 4" mesh
1 beach seine
1 river boat with outboard, poles, and paddles

As is obvious, the move to fall camp is no small matter. The Kuuvaŋmiit, like most Native groups of Alaska, tend to establish comfortable camps for long-term occupancy. After a day of being exposed to wet, cold wind while checking nets, hauling in seines, and cutting fish, one soon learns to appreciate the basic comforts of a warm, well-equipped camp. Figure 30 shows the fall fish camps of two women set up along the upper Kobuk River.



Fall fish camp upper Kobuk

Figure 30. Fall fish camp along the upper Kobuk River.

Fish camps no longer used in the fall are evident at numerous locations along the upper Kobuk River. Several that were examined had a cache of dry poles stacked nearby for fish racks. Drift logs and stakes outlined tent sites. The frame for a windbreak (akivik) was often evident. A ridge pole was usually found leaning against a tree. Minor debris such as discarded magazines or tin cans were scattered about. At least four of the sites not in use during the fall of 1974 displayed evidence of usage within the past one to three years. According to several informants, fall fish camps above the mouth of the Selby River were used as late as the 1940s and early 1950s.

Women are the primary occupants of fall fish camps, although adult males participated in varying degrees in all known camps during the fall of 1974. The number and makeup of each camp's personnel varied from time to time. The Qalla camp was usually made up of two adult females (mother and daughter) and two young men in their early twenties (sons). Relatives also spent brief times at the camp.

The following is a hypothetical time check of one day's activities in a typical fall fish camp:

7:00 A.M. - Adult females rise, start fire, and prepare breakfast.

7:45 A.M. - Adult men and younger members arise.

7:50 A.M. - Everyone eats and then relaxes and talks.

8:30 A.M. - Adult women begin cutting fish taken previous day (up to September 15, after which most fish is left uncut).

10:30 A.M. - Men drive women in boats to check and empty gill nets. Fish are deposited in storage pit.

11:45 A.M. - Women prepare noon meal and everyone eats.

1:30 P.M. - Crew loads seine net into boat and drives to seining sites. Depending upon distance traveled, weather, number of fish caught, etc., seining activities take from three to six hours.

5:30 P.M. - Crew returns and deposits fish on beach.

6:00 P.M. - If the fish run is heavy, nets are checked again.

6:30 P.M. - Fish deposited in cache pits and women start evening meal. Men may collect firewood.

7:30 P.M. - Evening meal eaten and remaining time spent relaxing, doing odd chores, and talking.

10:00 P.M. - Everyone goes to bed.

Numerous variations can and do occur in this hypothetical schedule. Weather, water level, fish runs, and other interests of the crew such as hunting and gathering can significantly alter the day's activities. It should be emphasized that set rigid schedules are unknown in these camps.

The Kuuvaŋmiit of the upper Kobuk have many favorite bars and eddies for fall fishing (Appendix 5). Obviously, the sites closest to established villages receive the heaviest use, particularly in the case of set (gill) nets. However, seining crews, both village-based and camp-based, often traveled ten or fifteen miles to make use of particularly productive sites. The Qalla-

based crew members boated twenty-two miles upstream to the Paa River to spread their seine.

Seining

Seining is the most productive means of early fall fishing, as this is the time that fish gather into large, densely packed schools, and river conditions are generally favorable. The following are observations taken from field notes of a day of seining on the upper Kobuk with a Shungnak crew based at Qalukrivik (Bane).

> We arrived at Magdaline's camp at 8:45 A.M. Magdaline made a pot of coffee and provided a snack of pilot bread and jam. When Magdaline began pulling on her hip boots everyone took it as a signal to begin getting ready.
>
> The seine had been spread out on the gravel bar to dry. We pulled it into the water. Magdaline stood in the boat and began drawing in the seine. See page for description of loading. . . . Such a seine . . . requires a fairly strong person to manage it.
>
> We poled the boat up the bar into the dead water of the slough. Magdaline directed Roy and me to pole and paddle while she set the net. Terry Magdaline's son and Barbara researcher's wife held the anchor line on shore, while Laura elderly mother of Magdaline stood by and gave advice. See page for description of setting and pulling in a seine.
>
> Our catch was a mass of churning small whitefish. As soon as the net was in, the men returned to the tent for coffee while the women placed the fish on long willow rods.
>
> Laura had cut several long pliable willow rods for stringers. These rods were rarely more than 1/4 inch thick at their base, 18 to 30 in. long, and stripped of leaves. To insert a rod, the fish is flipped on its back with the hand holding the

head and thumb depressing the gill plate. The thick sharpened end of the rod is pushed through the top of the gill emerging on the opposite side. An average of 20 fish will fit on each rod. Once full, the ends of the rod are drawn together and the thin pliable end is wrapped twice around the butt and inserted in the wraps to form a half-hitch. The fish are lifted by picking up the stringer from two sides. A willow shoot full of 20 fish is referred to as a "stick," nuviġak.

We filled a total of 25 sticks for an estimated catch of 500 whitefish. The sticks were piled together on the bar and covered with freshly cut willows (leaves on). We then shared a light snack of dry fish and coffee.

The second attempt was carried out 1-1/2 miles above the camp. The procedure here was basically the same as described on page . Our catch consisted of 20 sticks (400) whitefish, 4 large sheefish, and several suckers. Very small whitefish and suckers were thrown back into the river. Again the catch was piled on the beach and covered with willows.

We drove our boats upriver to a large eddy known as tavasaa [269] above the mouth of the Mauneluk River. Before seining we built a campfire on the bank and boiled up fresh tea. We had a snack of dried fish, dried moose meat, seal oil, and cookies. Roughly one hour was spent eating and resting.

Our third attempt followed the same procedure as the first. The catch consisted of 42 sticks of whitefish, roughly 840 fish. These fish were loaded onto a plastic tarp in the center of the boat. The other two fish piles were retrieved on the way home.

Each sweep of the seine, stringing of fish, and reloading of the seine required between one and two hours. Approximately two hours were spent having snacks, and one hour was spent in boat travel. We began seining at 10 a.m. and ended at 2:30 p.m.

As it was late September, none of the fish taken were to be cut and dried.

In the lower Kobuk River area fall seining for the small whitefish (qalusrak) is the major subsistence activity before freeze-up. In contrast to the upriver area, however, the best

seining areas are sufficiently close to the villages to enable the residents to make their seining expeditions from the villages rather than to establish fall camps. For the Kiana residents the best qalusrak seining sites are at Qalukruitchiaq (478) and Alalauraq (481). The fish are laden with eggs at this time and are highly prized. Using the small mesh qalusraksiun, the lower river Kuuvaŋmiit are able to make large catches and within a short time can completely fill up their boats. Several of the people recalled with obvious pleasure the times when their boats were so full of fish that they had to take care on their homeward trips to keep from swamping the boats.

Toward the end of September seining crews based above the village of Kobuk concentrate on harvesting sheefish. Late evening is considered the best time to seine for shee as this is the time they gather along the bars, usually just below the riffle. When large numbers are present they reveal themselves by swirling and rolling in the water. A crew can catch well over one hundred in a single sweep if conditions are right.

According to an elderly Kuuvaŋmiit woman, Kobuk River Eskimos are able to predict the downstream migration of sheefish when they begin finding eggs in the stomachs of grayling. The grayling feed on the eggs spawned by the sheefish and tend to move ahead of them as the migration progresses.

Unfortunately, the fall of 1974 did not prove to be a good season for the seining of shee. The downstream migration of the fish was late, and rain with resultant high water prevented

seining at the prime time. According to residents of the upper Kobuk, the sheefish "hire" the semipalmated plover, qurraquraq, to produce bad weather when it comes time for the downstream migration. This prevents the Eskimos from catching them in their seines. The sheefish pay the plover with bright beads. Kobuk River Eskimos are alert for this bird during the fall and make it counteroffers and present it with gifts to induce it not to listen to the sheefish.

Gill Netting

Gill netting, though usually less productive than seining, is also an important means of harvesting fish in the fall. The larger eddies near all five Kobuk River villages are usually quite crowded with nets. Seven very long nets were observed in the large eddy in front of the village of Kobuk on September 7, 1974, and eddies as far upstream as the Kogoluktuk Channel (295: Quġluqtuq) contained set nets. According to two Kobuk village women, "lots of salmon and sheefish" were being caught. On September 21 that year, seven gill nets were observed in use near the Qalla fish camp. They were being tended by three unmarried women.

One of the field investigators (Bane) and his wife maintained a fall fish camp at the mouth of the Mauneluk River both for the purpose of observing Native use of the area and to obtain food for themselves and their dog team. This site is normally

occupied by Natives of the area, but it was vacant during the fall of 1974. Not far away, however, were other crews, and the investigators were able to participate in their seining activities and observe their gill nets. Nets were usually checked twice daily.

Table 5 is a record of the researcher's daily catches, and inasmuch as this is typical of what a Kuuvaŋmiit family could expect to catch, gives some indication of the potentials of fall gill netting. As can be seen, the salmon catch declined from a high of ninety-six on September 15 to a low of five by the end of the month. Obviously the peak salmon run was just ending at this location when the net was first set. The sheefish arrived quite suddenly and then tapered off. It should be noted that the nets were pulled during the late morning of the 30th, and that three sheefish were caught between the first early morning check and the removal of the net--possibly indicating the beginning of the downstream migration. The small whitefish were taken in a small-mesh net set for only two nights inside the mouth of the Mauneluk River. On September 19 a fish camp located downstream on the Kobuk caught twenty-one sheefish and approximately sixty-five salmon in four gill nets.

It is interesting to note that the upper Kobuk River Natives keep a close tabulation of their catches of sheefish in the fall but make little attempt to maintain counts on salmon. This may be explained in part by the fact that the State of Alaska has carried on sheefish studies on the Kobuk River and made local

Table 5. Fall catches of fish in gill nets

Date, Sept. 1974	Fish					Number of Nets
	Salmon	Sheefish	Trout	Humpbacked Whitefish	Small Whitefish	
15	96	-	-	-	-	2
16*	-	-	-	-	-	2
17	140**	-	-	-	-	2
18	72	29	-	-	-	2
19	43	26	1	1	-	2
20	17	22	-	1	-	2
21	33	17	1	-	-	2
22	9	14	-	-	-	2
23	20	4	-	-	-	2
24	13	7	1	-	-	2
25***	-	-	-	-	-	2
26	12**	11**	-	-	-	2
27	18	8	1	1	-	2
28*	-	-	-	-	-	2
29	28**	10**	4**	1**	20**	3
30	5	7	-	1	10	3
Total	506	155	8	5	30	

* Absent from camp.
** Two days' catches.
*** Too windy to check nets.

people more aware of the importance of this fish species. However, sheefish taken in the fall are a highly prized food of the Kobuk River Eskimos, and this undoubtedly encourages them to keep count of their take.

Processing

Fish taken between September 1 and September 15 continue to be cut and hung to dry on open racks, but the technique of cutting differs from that of August. The fall cutting methods reflect a response to the generally cooler weather and provide a special type of food for the Native diet.

There are two methods for cutting fall-caught whitefish, siilaichiaq and amatchiaq. The siilaichiaq method involves opening the side and belly flesh while not disturbing the strip of flesh across the back. The head and internal organs are not removed. The amatchiaq technique is to peel away the flesh over the back while not disturbing the side and belly sections (Fig. 31). Salmon are cut by one basic pattern, except for minor differences between males and females. Both sexes have the heads removed and the top flap of flesh peeled back. In males the stomach is pulled so that it hangs exposed to the air while still attached to the fish. This is called igdii. Female salmon carrying eggs do not have their stomachs pulled forward. These are anaalik (Fig.32).

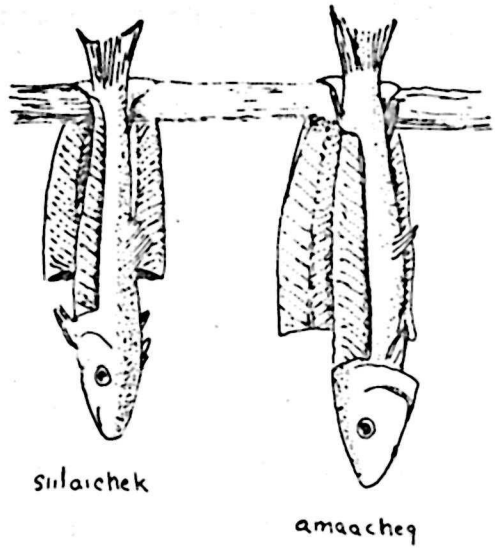


Figure 31. Cuts of fall-caught whitefish.

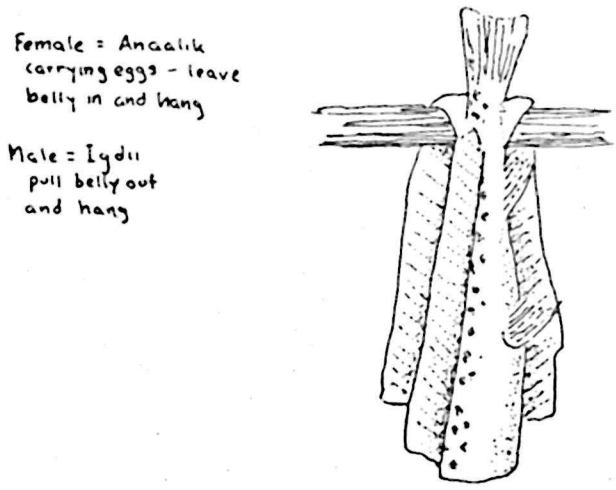


Figure 32. Fall cut of salmon.

While visiting a fall fish camp on the upper Kobuk on September 14, 1974, a researcher counted 146 siilaichiaq, 687 amatchiaq, and 226 anaalik and igdii hanging on open drying racks.

Each of the described techniques allows the stomachs to ripen slightly, giving the fish a desired flavor.

After September 15, the Kuuvaŋmiit usually cease making dry fish and simply begin stacking their fish in low piles on the beach or at the top of the banks. The most common enclosure for these fish stacks is a three-sided crib roughly constructed of driftwood (Fig.33). Occasionally only a single braced log will be used. A willow mat is laid on the ground and the fish are placed inside, usually in rows with the heads pointing forward.

Figure 33. Enclosure for unprocessed fish.

These fish slowly sour, producing a flavor, particularly with sheefish, that is much appreciated by local Natives. Sour salmon are also considered excellent dog food.

"Green" fish (not dried) are allowed to lay in piles until after freeze-up. They are then broken free and placed in raised log boxes and covered with tarps for winter storage.

All early fall fishing comes to an end with the first run of slush ice. At that time everyone rushes about pulling their nets and moving their goods to safe ground. Kobuk River Natives are alerted to the impending freeze-up when they begin to catch whitefish with heavy rough scales. This is called atiigiirut or "putting on the parka" and usually is discovered a few days before ice begins to form.

Before the ice flows it is necessary to move fish catches and camping equipment back to the village. Today this move is carried out entirely by outboard-powered river boats that make several round trips between the camp and village. In the past, families often constructed large rafts of dry wood and loaded their goods and fish on these to float home. The wood would then serve as winter fuel. A unique method of transporting "green" salmon was described by two Shungnak men. They referred to it as a "fish raft." The raft consisted of from one to three dry spruce trees with limbs removed and made smooth. They were fashioned into a wedge shape and secured with spiked or lashed poles (Fig.34). Salmon strung on willow rods or line were suspended along the sides of each pole with loops of supporting line spaced along the top of the poles. These men stated that each pole could support up to thirty sticks of salmon (six hundred fish). The raft was then towed by a power boat back to the village.

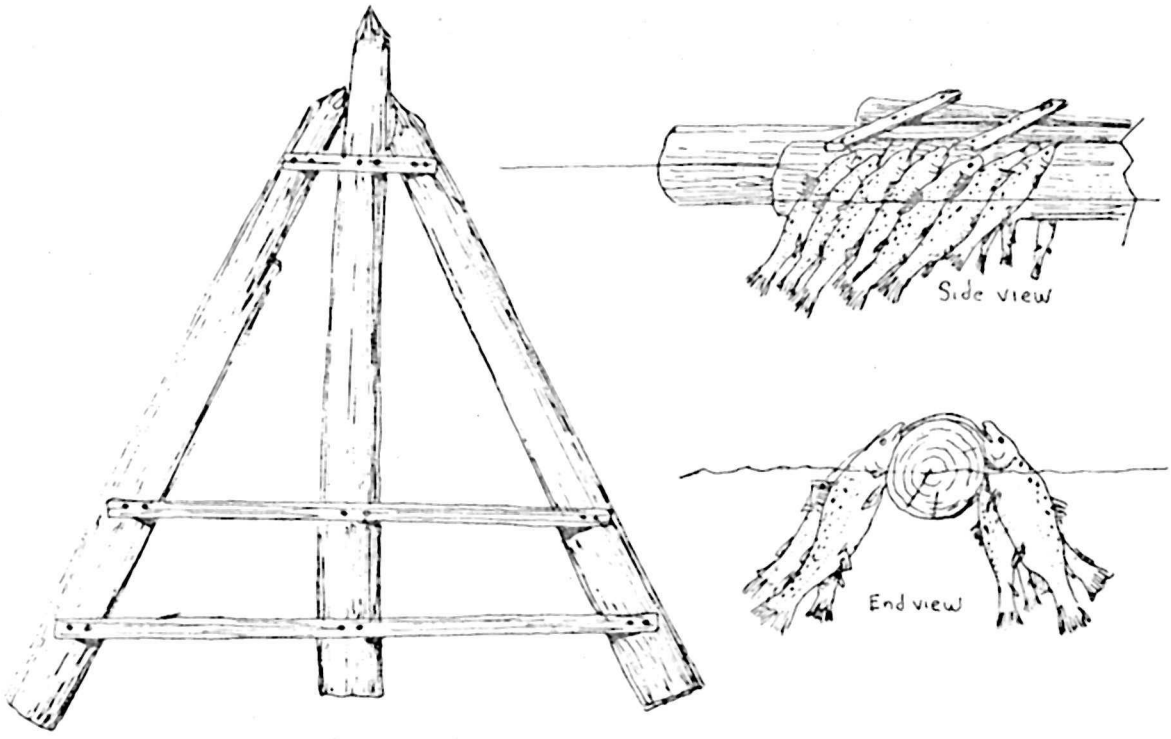


Figure 34. Fish raft used to tow salmon back to village.

Late Fall and Early Winter Fishing (October through January)

Freeze-up may begin along the Kobuk any time from late September through mid-October. This event is determined by air temperature, water temperature, and water levels. If the river is high and muddy it tends to resist freezing, but if it is low and clear, freeze-up can occur with startling suddenness. Falling snow can quickly chill the water and lower the surface temperature to the freezing mark. A cold wind will also hurry the process. It is not unusual for one to go to bed on a fall

evening while the river is completely free of ice and to awaken the next morning to find it clogged with pans of slush ice grinding their way downstream.

Both whitefish and sheefish continue moving down the Kobuk River through freeze-up and well into November. The whitefish apparently spend the winter months in the deep quiet pools of the lower river, while the sheefish winter in Hotham Inlet and Selawik Lake (Alt, 1969:40).

A certain species of whitefish, qauriluk, are spawning as they move down the Kobuk, and they attract large numbers of grayling and other predator fish.

Burbot or mudshark, tittaaliq, form a reverse pattern from that of the sheefish and whitefish. Immediately after freeze-up large numbers of this primitive fish are found swimming upstream from the mouth of the Kobuk to its headwaters. They begin arriving in substantial numbers in the upper Kobuk in late October and continue into January. The females are full of eggs by midwinter, indicating that spawning may take place somewhere along the upper river.

Hooking through Ice

Hooking, or jigging, (niksiksuqtuq) is the most widely practiced form of ice fishing among the present-day Kuuvaŋmiit. During the winter of 1974-75 both sexes and virtually all age groups were observed engaging in hooking at one time or another,

although the majority were adult females. Elderly women and a few older men were particularly active in ice fishing.

Hooking begins as soon as a few feet of ice form a firm shelf extending out into the river, and it continues through mid-November. Severe cold and thickening ice make this activity increasingly difficult as the winter progresses.

The first target for jigging is grayling, sulupaugak. These predator fish can be found in large numbers near the mouths of clear tributaries and in the waters of the upper Kobuk immediately following freeze-up. They are particularly plentiful and active around gill nets that have been set under the ice to catch whitefish.

Ice fishing for grayling consists of cutting a hole (alleq) in the ice with a tok (long-handled ice pick), clearing the hole of floating ice with a shovel or hand scoop, and lowering a small lure attached to a line and pole into the hole. The gear used is described on page

On October 17, 1974, an adult Eskimo man from the village of Shungnak was observed fishing for grayling through a hole that marked one end of a fishnet placed under the ice. After lowering the hook he would give the pole occasional short jerks. Upon feeling a strike he would smoothly lift the line and a struggling grayling clear of the hole and swing the fish to one side where it was allowed to flop off the barbless hook. Occasionally he would club a particularly large grayling with a stout willow rod,

but most died quickly of freezing. He caught twenty-seven grayling in a span of one hour and twenty minutes.

The primary target of ice fishing in the fall is burbot, also called mudshark (tittaaliq). The large, oil-rich liver of this fish is a much desired food of the Kobuk River Eskimos, as are the flesh, eggs, and other parts.

Hooking for burbot begins along the lower Kobuk as soon as the ice is firm enough for walking. It starts somewhat later in the three villages of the upper Kobuk. However, by mid-October persons in all five villages are participating in this activity, which continues into November and may go on to early December depending upon such factors as the fish run, weather, ice thickness, and alternative sources of food.

The equipment used in burbot fishing is basically the same as that employed in jigging for grayling with the exception of the hook. Burbot hooks are usually relatively large spoons with barbless hooks. In the past, such hooks were constructed of bone, ivory, or beaten metal, but today most people use large, commercially made, spoon lures. Such lures are usually four inches long and may have bright paint or be studded with flashy glass. A piece of fish flesh is usually attached to the hook.

Burbot fishing is carried out after dark and may last until midnight. In the community of Shungnak such activities tended to end around 10:30 P.M.

The place to fish for burbot is at gravel bars that slope off steadily to a depth of four to six feet and that are swept

by a gentle current. At such spots the Eskimos chip holes through the ice and, using a lantern or flashlight, peer down to see if the film of silt on the gravel has been disturbed by passing tittaaliq.

If the site looks promising, the person places a piece of caribou hide on the ice on which to stand or kneel and then lowers a hook into the water until it is suspended just above the gravel bottom. The pole is given short, light jerks to attract burbot that may be swimming nearby.

Two variations in the basic hooking procedure include building a short fence to direct burbot to the fishing hole and setting "trot lines." The fence is installed while the ice is still fairly thin (less than eight inches), and it is made of boards or sticks that angle upstream from the beach to the hole being used. Burbot swimming inshore of the ice hole are thus directed to the fishing hole. Villagers also fish at sites where burbot traps are being constructed by using holes at the end of the finished segments of the main wall.

The qaġuksuk (trot line) consists of a string of baited hooks placed in a fishing hole overnight for the purpose of catching burbot. The end hook is usually larger than the others and the belly flesh of a burbot is inverted over it and sewn on to resemble a small whitefish. The barb of the hook projects from the rear of this lure (Fig.35).

The number of persons involved in burbot hooking from the village of Shungnak in the fall of 1974 ranged from two to over

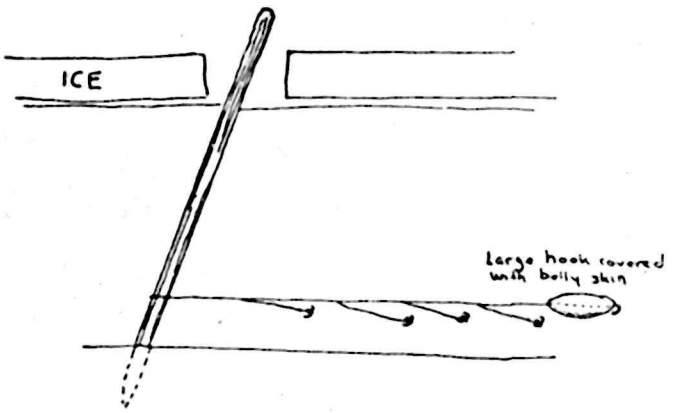


Figure 35. Trot line set under the ice for burbot.

ten depending upon the weather and fish run. Catches per person varied from zero to twenty per night. In the village of Ambler, nineteen households fished for burbot and they averaged 39.73 fish per household. The largest number of fish taken by one household was 180 and the smallest number was 3.

Gill Netting

In all five Kobuk villages, gill netting under the ice for sheefish and whitefish begins as soon as the ice is safe enough to walk on and continues through late October or early November, when thickening ice and reduced fish movements make it unprofitable. According to Native informants, there are particular places along the main Kobuk River where springs keep the ice thin and allow fishing throughout the winter.

Sites selected for gill netting under the ice are usually large, deep eddies often formed by the joining of two streams

or channels. The confluence of large tributaries or streams that drain lake-filled basins are particularly favored netting locations, because these streams often disgorge large schools of whitefish during the late fall. One such site is located at the confluence of the Ambler and Kobuk rivers in front of the village of Ambler. Each fall the villagers of Ambler fill this large eddy with their nets in order to harvest the seasonal run of whitefish. Another is at the confluence of the Squirrel River and the two channels of the Kobuk River at Kiana.

Most late fall netting is carried out within a few miles of the villages, but in the recent past it was not unusual for families to establish fall fishing camps distant from their villages (Appendix 5). As for other areas of subsistence, variations in the economic or social situation may revive this practice. A decline in moose or caribou as food resources could also result in an expansion of winter fishing.

One of the long-established winter fish camps on the Kobuk that is still used lies roughly eight river miles or six air miles southwest of the village of Shungnak. This site is known as Paniyavik and has a history of use that extends back past the father of a seventy-five-year-old resident of Shungnak, Joe Sun.

The Paniyavik camp began to be occupied in 1974 during the second week of October, when Joe Sun set up a tent camp on the river bank, and two other elderly persons moved into a small cabin across the river. Sons, daughters, and other relatives visited and often camped with these occupants. Other Shungnak-

based families also maintained nets at this site and visited them via snow machines. Figure 36 shows the Paniyavik fishing site.

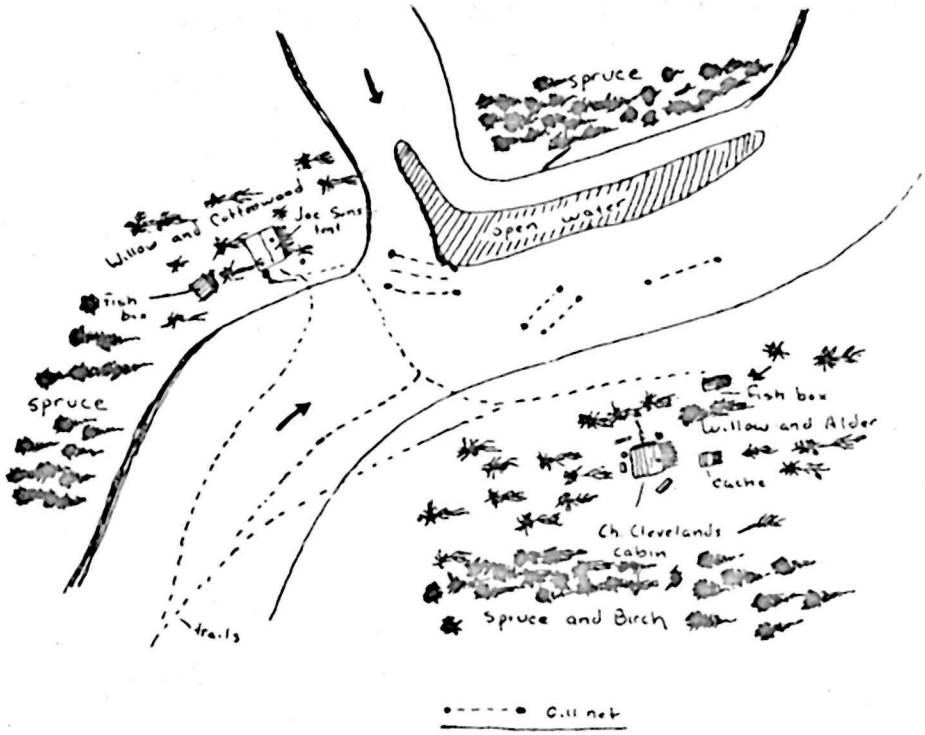


Figure 36. Fall fishing site of Paniyavik.

Gill nets used in under-the-ice fishing are basically the same as those used in summer fishing. However, winter gill nets are often longer, occasionally over 150 feet; they also have fewer floats and heavier weights than the summer nets have, so that they do not touch the ice and freeze in; and their end lines are attached to the top of each net pole.

While visiting the fish camp shown in Figure 36, one of the researchers was able to participate in the setting of a winter fish net. The following is extracted from the field notes of

October 17, 1974 (Bane).

I assisted Pansy and Charlie in setting a gill net under the ice. Persons involved included Charlie, Pansy, Ernest (Pansy's son--25 years) and me. George (Charlie's son--58 years) joined us near the end of the project and assisted.

The first step in setting the net was the chopping of a series of holes through the ice. Ernest would use a pick to chip out a hole roughly 1-1/2 ft. long x 10 in. wide. He would stop just short of breaking through the ice and move on to the next excavation, while I followed and completed each hole with the long ice chisel, tuuq [Fig.37]. Pansy followed me with a sharp-nosed shovel, clearing the floating ice from each hole. A large oval-shaped hole was opened at the upstream end of the series. The series of holes extended 150 ft., which was the length of the net being set [Fig.38].

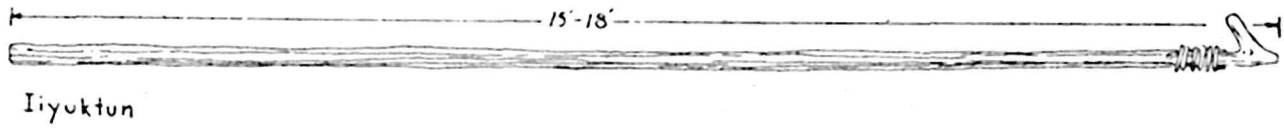
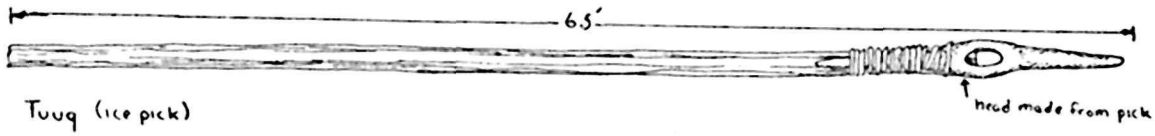


Figure 37. Ice pick and hooked pole used to set gill under ice.



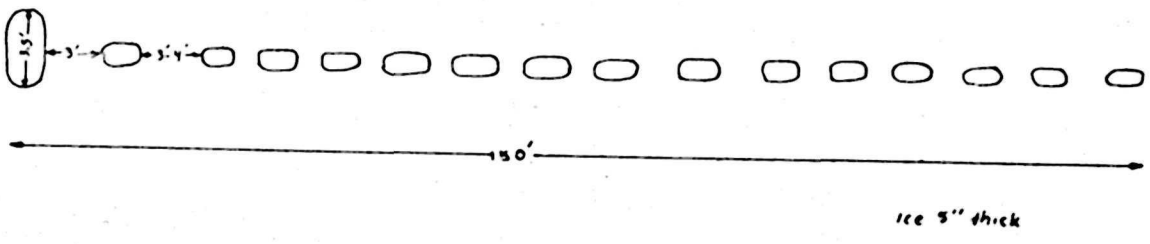


Figure 38. Holes in ice through which a gill net is set.

When the holes were complete the net was piled at the edge of the oval excavation. A rawhide line of ugruk skin, amun, with a weight attached was lowered through the oval hole. A second person stood at the second hole and reached under the ice with a long pole tipped with a caribou antler hook, iiyuktun [Fig.37], which was used to snag the ugruk line. He then drew the line to him. The first person then came forward, and held the line. The hook man moved to the next hole, and the operation was repeated until the line had been passed under the entire length of holes [Fig.39].

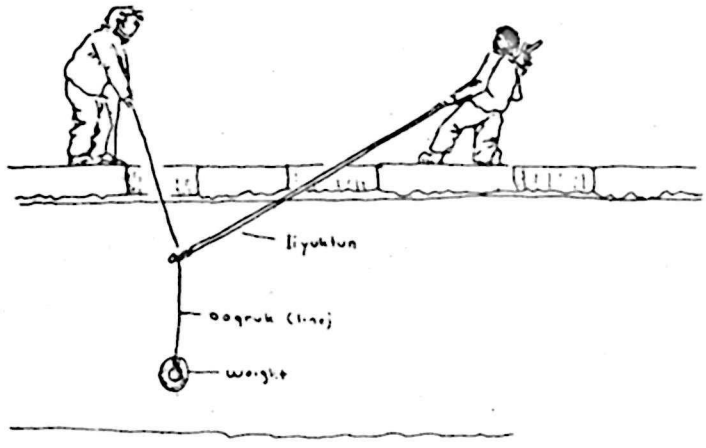


Figure 39. Pulling a line under the ice.

The net line was then attached to the ugruk line. Ernest stood at the far end of the holes and pulled the line slowly toward him while Pansy and Charlie fed the net into the oval hole at the opposite end. When the entire net had been pulled under the ice, two poles were placed and frozen into the ice at either end of the holes. The poles leaned over each end hole, and the end lines of the net were tied to them so as not to freeze against the sides of the holes [Fig.40].

Nets are usually checked--that is, pulled out--at least once daily. The large oval hole and the far end hole are picked open

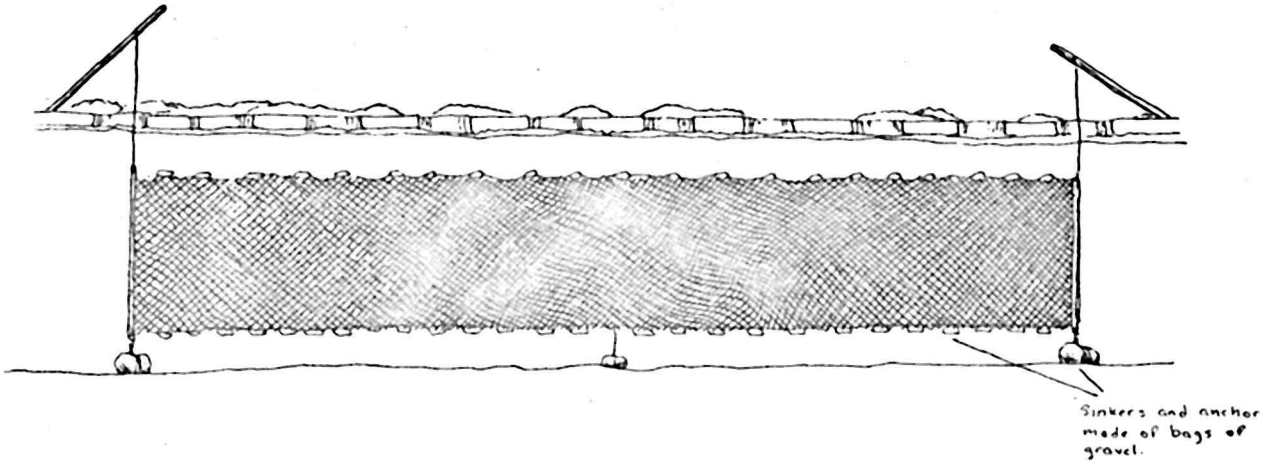


Figure 40. Gill net in place under the ice.

carefully to avoid cutting the rope, and then ice debris is shoveled clear. The far end line is allowed to drop free, but its end is secured to the stake so that it won't slip entirely into the hole. The net is then drawn onto the ice, and the fish, caught by their gills, are removed from the mesh. As the net is being deposited on the ice, the workers occasionally life it free and shake it to prevent it from freezing. With all the fish removed, the net is again pulled under the ice. The fish freeze and are placed in piles to be taken back to the village by sled or to be stored in fish boxes for later pickup.

Under-the-ice gill netting is not always possible at traditional netting sites. In certain years the ice on the main river will freeze across and then break loose and freeze again in a mass of irregular ice. If this occurs at netting sites it becomes impossible to set gill nets, as they will snag on rough ice projecting downward. This was the case in 1974 at Qayana,

the point across from Kiana that is usually a popular winter gill netting spot. At least five families who usually set their nets there had to move them to other spots.

The productivity of ice gill netting can be seen in the fish take records obtained for a three-year period from twenty-five households in the village of Ambler, a particularly active ice fishing community. In 1974, the total harvest of surveyed households was 24,357 whitefish caught in fall netting. This compares to 16,539 fish in 1973, and 19,728 fish in 1972. The mean average catch for each of the seventeen households that participated in the 1974 harvest was 1,432.7 whitefish. Catches by persons in other villages who actively participate in fall gill netting likely average between 500 and 1,000.

Trapping

The Kuuvaŋmiit have built traps for the harvest of burbot, tittaaliq, beyond the memory of the oldest Native. Burbot (mudshark) traps (qargich) were in use before the first white man ascended the Kobuk River (Giddings, 1961:44) and they continue to be used today. During the year spent among the Eskimos of the upper Kobuk, one researcher (Bane) was privileged to have many rewarding experiences, but none surpassed the excitement and pleasure of being able to observe and participate in the construction of a qargich--a mudshark trap.

The construction of a burbot trap is usually undertaken by the immediate or extended family of a particular household, although close friends occasionally assist. The direction and construction of traps is male-dominated. Women may assist in the building of traps, but never in a supervisory capacity. Older men in their sixties and seventies are often called upon to direct the work or to advise on procedure.

According to several Native informants, formerly every major household on the upper Kobuk River would construct a burbot trap each year. Persons who opted to spend the late fall in camps usually set out a burbot trap to obtain food for themselves and their dogs. Trap sites were from the Paa River to below the Hunt River. Apparently, these traps were not as commonly used by the lower Kobuk River villagers, although two Kiana families indicated that in the past they had constructed such traps on the Squirrel River.

The use of burbot traps declined considerably during the 1950s and 1960s and had all but disappeared by the early 1970s. This was a period when both caribou and moose were relatively plentiful in the Kobuk River Valley. In the fall of 1974, however, not many migrating caribou were in the vicinity of the upper river villages of Shungnak and Kobuk, and this resulted in a relatively small take of prime fall animals. Then, too, a considerable number of fish caught by villagers in the summer of 1973 were spoiled by wet weather. These two events, in addition to the general increase in the canine population in recent years,

undoubtedly helped to encourage the resurgence of fish trap construction in the villages of Shungnak and Kobuk in the fall of 1974. This is an excellent example of how Native people adapt to the unpredictable nature of their environment.

The first order of business in building a fish trap is to locate a proper site. Suitable locations are generally well known within a several-mile radius of each village (Appendix 5) but the Kuuvaŋmiit have a set of criteria for evaluating possible new sites and for determining whether old sites are still usable. Sites must be evaluated in the fall prior to freeze-up. At that time men look for smooth, gradually sloped gravel bars in the river where the current and relatively deep water swing close to the beach. Snags, large rocks, and an uneven river bed must be avoided. Sites should also be reasonably close to a supply of building materials, that is, cottonwood and willow trees. Two such spots chosen for fish traps in the Kobuk River are shown in Figure 41. These were upriver from Shungnak.

When a man has decided to construct a fish trap and has chosen his site, he waits until freeze-up to indicate where it will be placed. He then visits the site and sets a pole in the ice to mark his selection. Others seeing the pole know the site has been reserved and will not make use of it. Construction does not begin until the season and ice thickness are properly advanced.

The builder and his assistants begin gathering their tools and building materials a week or more before starting

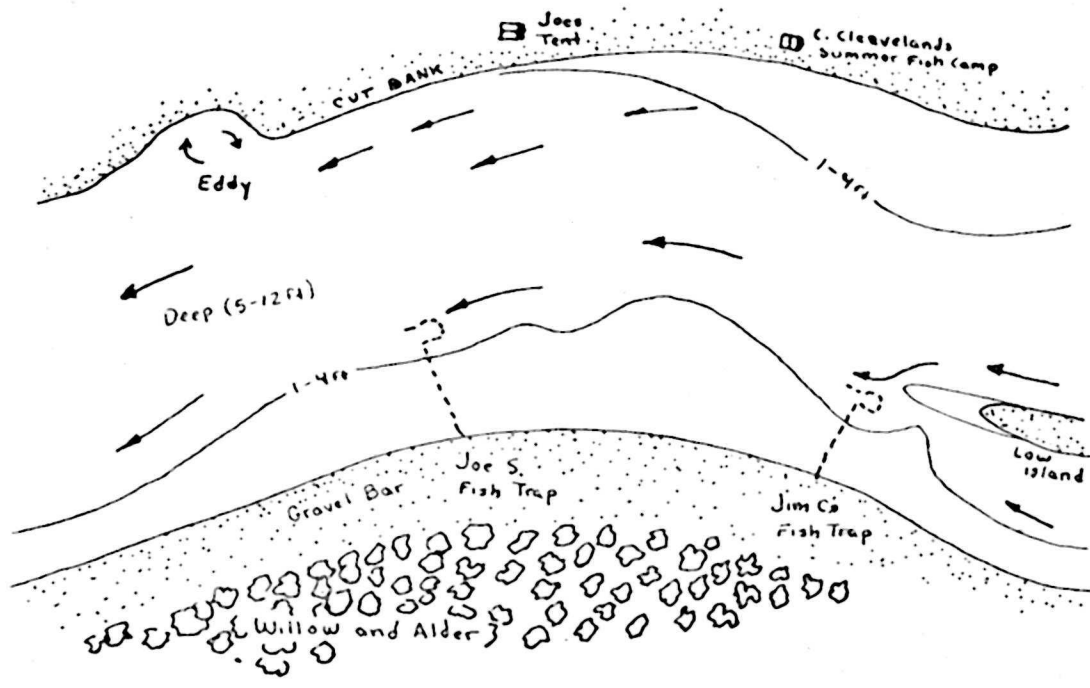


Figure 41. Placement of burbot (mudshark) trap.

construction. Raw materials include twenty or thirty straight cottonwood logs from five to nine inches in diameter, several dozen straight cottonwood or willow poles averaging three inches in diameter, hundreds of long, slender willow saplings or branches from one-half to three-fourths of an inch in diameter at the base, twine, small nails, and possibly several yards of chicken wire (only one trap was observed that made limited use of this material. Tools include axes, pole ice picks (tuuqs), mauls, sharp-nosed shovels, knives, hammers, and saws. Today, chain saws are also used in the cutting of ice.

It is important not to begin trap construction too early. After freeze-up, the river level begins to drop slowly until it

stabilizes some time in late October or early November. If trap supports are placed too soon, they act to hold the weight of the sinking ice and may break or be thrown out of alignment.

The first step, before constructing a fish trap, is to determine the proper placement and alignment of the trap box in the river. The water must be between six and seven feet deep so that thickening ice won't block the entrance or limit the capacity of the box. When the location for the box has been chosen, a large hole is cut through the ice. A rod with a ribbon near the lower end is set into the river bed to act as a current marker (nagaruk). Two gate or "throat" poles (split cottonwood logs with the inside surfaces hewn flat) are next set vertically through the water and into the river bottom at what will be the narrow entrance to the trap box (Figs.42, 43). This opening must be aligned exactly with the current.

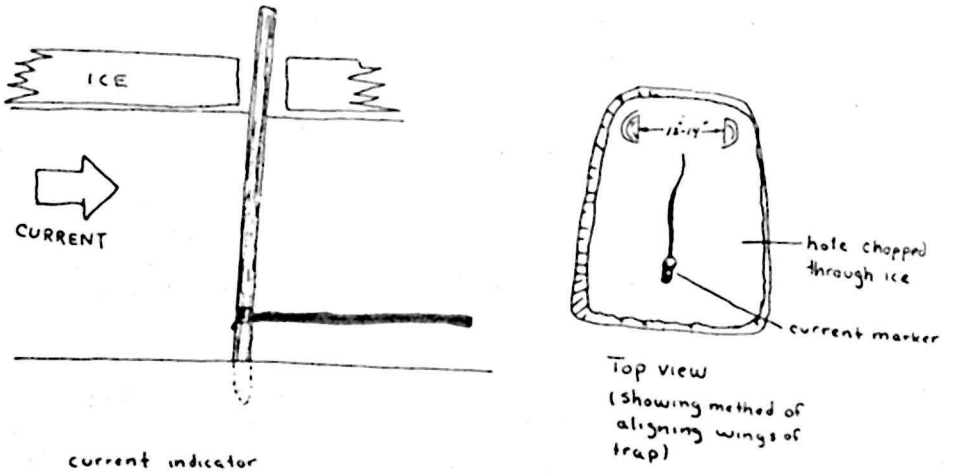


Figure 42. Current indicator and throat poles set into riverbed.

A burbot trap consists of several elements. Except for the meticulously made entryway that permits the fish no exit, all elements are built in place, that is, they are set through the trenches made in the ice, into the water, and anchored in the river bottom. The four main parts are:

A. The trap box. The left and right walls (tupyiich) are made of split logs set flush against each other. The back wall (qaitnut), also made of split logs, is closely set, but not flush. At the front of the box between the throat poles (mitlignaq) is set the funnel (see D).

B. The inner, or long shoreward, wing comprised of the qituliŋnich and the patiŋuk. The qituliŋnich is a wall of thickly matted willow saplings held in place between pairs of poles for the purpose of deflecting the fish from swimming upriver into the trap. The patiŋuk is a short section of tightly placed split logs at both ends of the qituliŋnich.

C. The outer wing (sraglinaq). This extends downstream from the right wall of the trap to prevent the fish from escaping around the outer end of the qargich.

D. The funnel or gate (iggiaq). This is set at the entrance of the trap box, allowing the fish to enter but not to leave.

After the current marker and poles for the trap throat (iggiaq) are in place, the workers mark the ice with ice picks, making an outline of the space the trap box, its two downriver

wings, and its shoreward wing will take. The curving outline of the trap box is determined by eyesight and by alignment with the current. The shoreward wing outline is determined by stretching a rope taut from the throat poles to the shore. The outer wing outline is determined by the direction of the current (Fig.43).

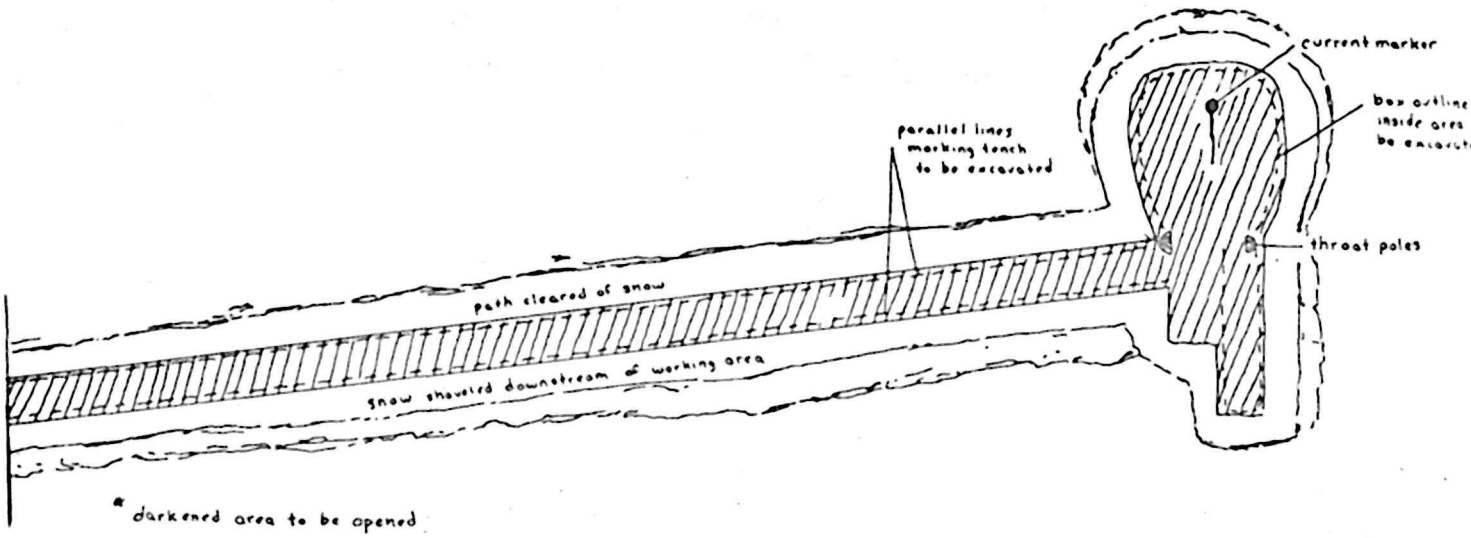


Figure 43. Outline of where mudshark trap will be built.

Once the outline of the trap has been determined, workers begin removing the ice (the shaded areas in Fig.43). In the past this was done with bone-tipped poles (Giddings, 1961:41), but today metal-tipped ice chippers, mining picks, shovels, and chain saws are employed. The chain saw is used to cut the ice along the marked lines, while the other tools are used to break up and remove the ice from the indicated areas. All snow and ice debris

is shoveled to the downstream side of the shoreward wing and to the top and right of the trap box and right wing, leaving paths to give a clear working space.

The ice cover on the river by early November may be sixteen or more inches thick, so the process of opening a trench for the shoreward wing and the hole for the trap box can require from several days to well over a week of work.

While some helpers concentrate on cutting ice, others are splitting and shaping cottonwood logs, removing limbs from poles and smoothing them, placing piles of willow saplings, shaped poles, and split logs at strategic locations along the opened areas in the ice, and so on. One man usually does nothing but prepare the walls of the trap box.

The cottonwood logs that form the right and left sides (tupyiich) of the trap box are split in half with an ax. The face of each half is carefully hewn smooth and the edges on both sides are lightly smoothed. One half of each split log is used for the right wall and the other half is used for the left wall, assuring uniformity in the side walls. The worker dresses each split log so that it will fit flush against it neighboring logs.

When the logs are ready, great care is taken by the crew in placing them into the water to form the walls of the trap box. They must be kept vertically straight and must be set snug against one another. One man steps to the rear of the hole and directs the man placing the logs to make slight shifts in the alignment of each log. The log-setter also lies on the ice and peers down

into the water to check on each log. A maul (alutuk) is used to drive the shaped logs into the river bottom. When in place, the upper ends extend above the ice. Snow is shoveled behind each log where it projects above the ice, and the snow is soaked with water, which soon freezes. To help keep the log firmly set while the water is freezing, a brace is placed on the log to keep it firm (Fig.44).

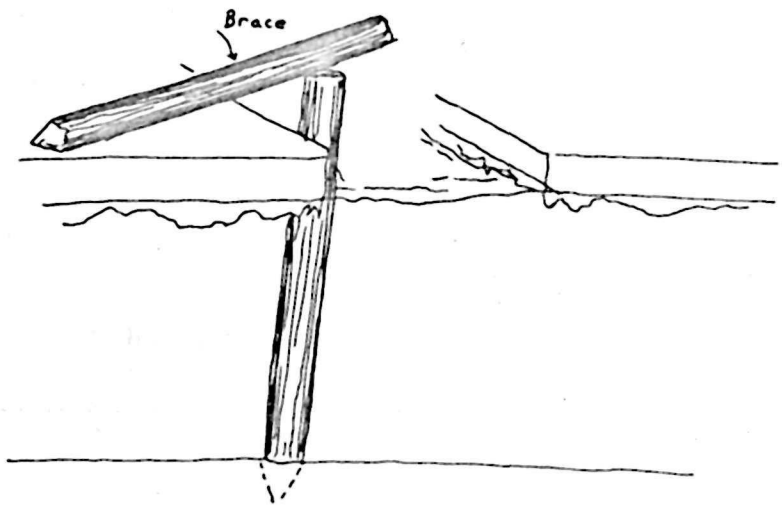


Figure 44. Wall log of trap braced in place.

Straight, smooth poles from five to five and one-half inches in diameter are used to form the back wall (qaitnut) of the trap box.

Split logs are used to form the two ends (patiŋuk) of the shoreward wing that is downriver from the trap box (see Fig.43) and also for the entire outer wing. While care is taken to keep cracks between logs to an inch or less in width, they are not

given the same degree of precise workmanship that is given to the side walls of the trap box.

As work progresses on the vertical structures of the trap, one man, usually the head of the project or an elderly father, assumes the task of constructing the trap entryway: the throat, or iggiaq. This is perhaps the most exacting part of building the trap. The following is a description of how one man, Joe Sun, an elderly Kuuvaŋmiit Eskimo of Shungnak, obtained and built the entryway materials for his burbot trap. The description is from the field notes made in November 1974 by the researcher who camped with Mr. Sun while he was building his trap.

> Before dark, Joe hiked across the river to a willow thicket beyond the gravel bar. He selected and cut an armload of straight young willows varying in thickness from 1 to 1-1/2 inches, and in length from 3 to 5 feet. These he packed back to the tent and arranged around the stove to thaw. Some he hung lengthwise from the ridge pole. Joe had selected these rods because they were straight and free of knots and branches.
>
> After the evening meal, Joe proceeded to take down the willows and split them lengthwise. He would insert his knife blade into the butt end of a willow rod and carefully guide it along the line of shear, allowing the blade to act as a wedge. If the rod seemed to be splitting unevenly, he would pry the sides apart by hand, guiding the line of cleavage and skillfully bending and twisting the rod.
>
> The shorter, thicker rods would be used as longitudinals for the trap entrance, while the longer, thinner rods became the wrapping for the entrance.
>
> The wrapping required several steps to prepare. After splitting, Joe whittled each half rod to form a thin band approximately 3/16 inches thick. These bands were then carefully rolled and tied into small bundles. Later the bands were untied, spliced into one continuous strip, and used to bind the trap.

> The shorter rods [which were two feet three inches long], meant for longitudinals, required less care and preparation. Once split, each half was whittled smooth on the inside only. The narrow end was shaped into a long, tapering point. The butt end was whittled into a round tendon to be fitted into a hole drilled in the entrance frame.
>
> The preceding work was carried out by Joe and the researcher (under Joe's direction) and required approximately five hours to complete.
>
> Joe said that in the old days a man would place a tarp under him as he whittled. When all parts of the entryway were complete, he would carry the shavings deep into the woods where they would be disposed of.

The next day Joe hewed out wooden members for the frame of the entryway and joined them by lapp joints into an open square. He used a hand drill to bore holes around the back sides of this frame and tightly fitted in the shaped longitudinals, compressing them into an open funnel (Fig.45). Twine lashing secured the wrapping to the longitudinals. Two long, slender rods were tacked to the sides of the entryway frame so that each extended three inches below it and ended in a sharp point.

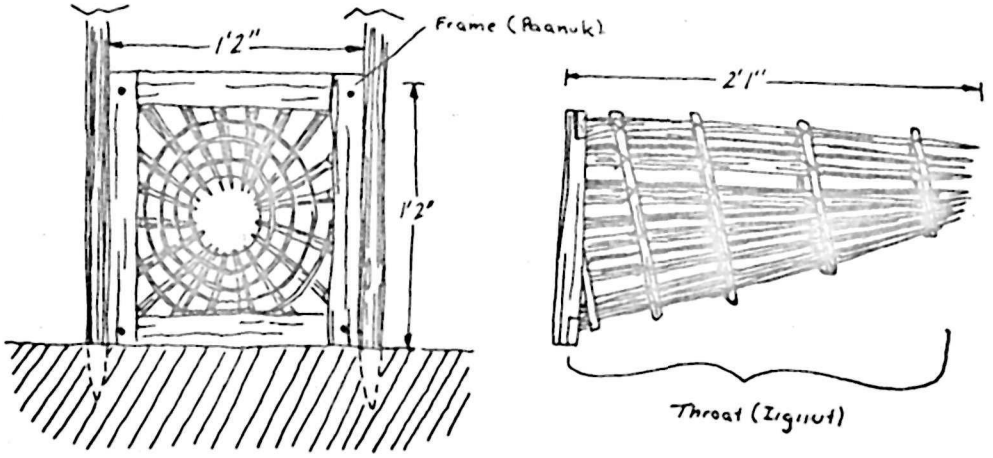


Figure 45. Funnel inset into frame of trap entryway.

The trap entryway (paanuk) was fitted snugly between the faced gate or throat poles of the box and oriented in such a way as to lean slightly forward. According to Joe, fish will swim upward through the trap entryway, but they do not like to swim downward. Short poles (qalusrit) were placed vertically across the top of the entryway frame, so that the only opening to the box was through the trap entrance (Figs.46, 51).

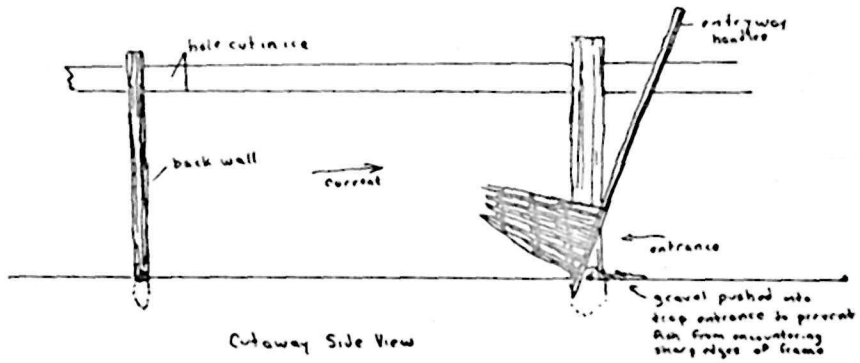


Figure 46. Side view of throat in trap.

The final phase of constructing a burbot trap is to build the willow-filled wall that makes up the main body of the lateral wing (qitulŋnich). This task should be carried to completion, once begun, as it involves laying overlapping and intertwined layers of tightly packed willows. Usually this chore is set aside for the last day of construction.

Before beginning work on the final section of the trap, the trench in the ice between the inner and outer split-log walls

(patiŋuk) of the shoreward wing is reopened, and each side is given a smooth vertical face. The water is cleared of all ice debris, and shallow slots are chipped vertically into both sides of the ice trench to receive a series of poles. The poles, which have been smoothed and are sharpened at one end, are set in pairs two and one-half inches apart, each of the pairs placed three feet from the next (Fig.47). After being pounded into the river bottom they form the two long walls of the shoreward wing.

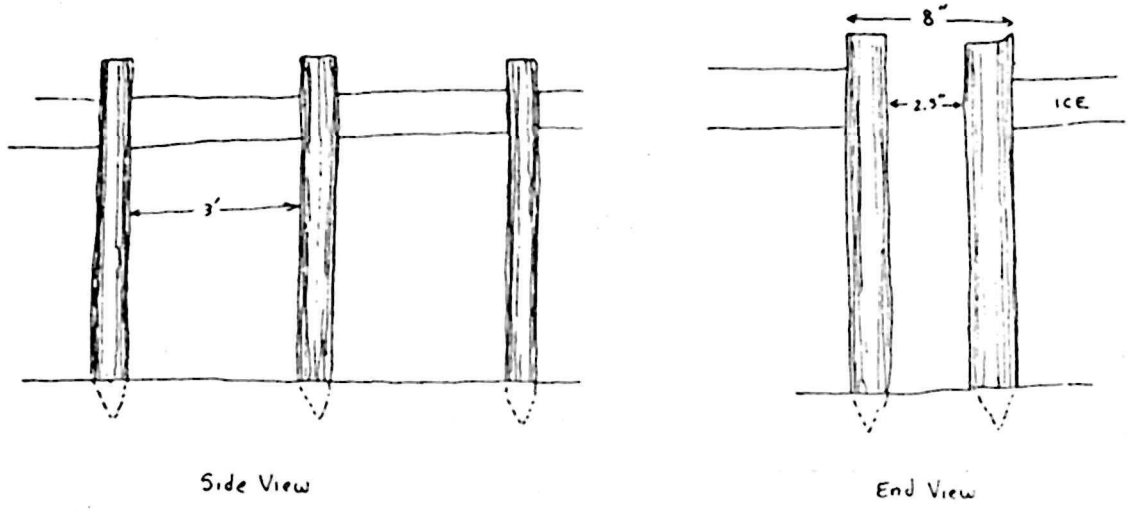


Figure 47. Poles set to form long, narrow shoreward wing of trap.

Once the poles have been set, workers begin laying willow branches in the two and one-half inches of space between the walls of the shoreward wing. First the most slender, pliable willows are placed horizontally between the poles, as these must conform to any small irregularities of the river bed. There should be no gaps through which fish can pass. The first layer of willows is placed so that all the tips are pointing in the

same direction; the butts overlap the tips of other willows. After laying a loose mat of willows five or six inches deep between the poles, workers walk along the ice trench with long forked poles, shoving the mat to the bottom of the river and compressing it down.

A second layer of willow branches is placed like the first, except that the tips are pointed in the reverse direction. The second mat is then pushed down and compacted onto the first. This procedure is continued until the packed willows reach from the river bed up to the bottom of the ice layer (Fig.48).

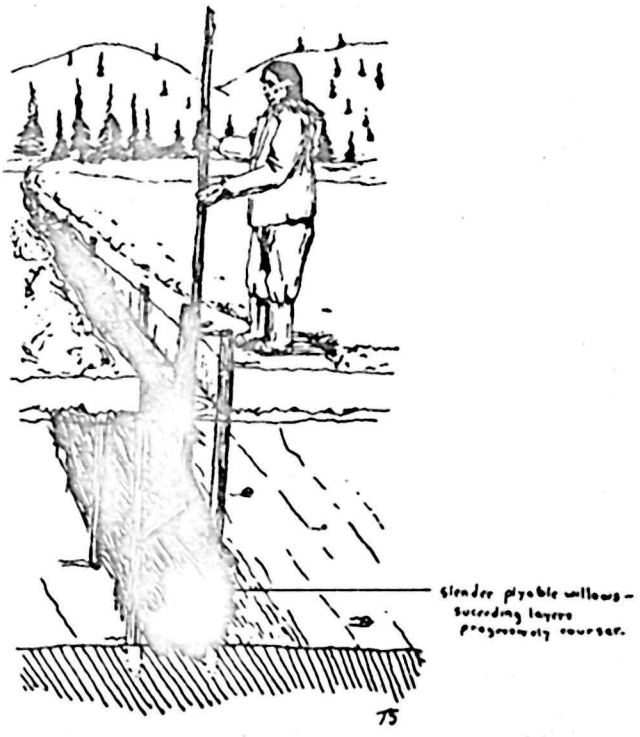


Figure 48. Layers of willow saplings set between poles of trench.

When no more willows can be compacted, toggles are set across the top of the layers of willows between each set of stakes to hold down the springy filling. Usually this takes three men: two who press down on the filling with their forked poles and another who reaches under the ice to place a stout cottonwood pole across the top of the willows and under the ice layer on each side of the trench (Fig.49).

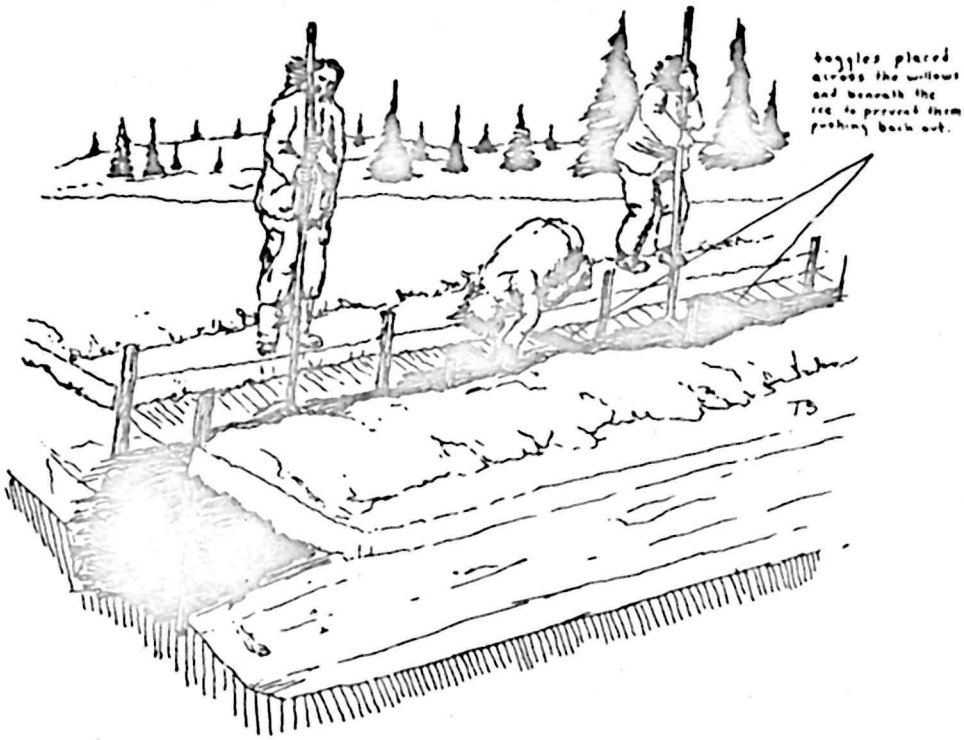


Figure 49. Fastening toggles ice to keep barrier of willow saplings in place.

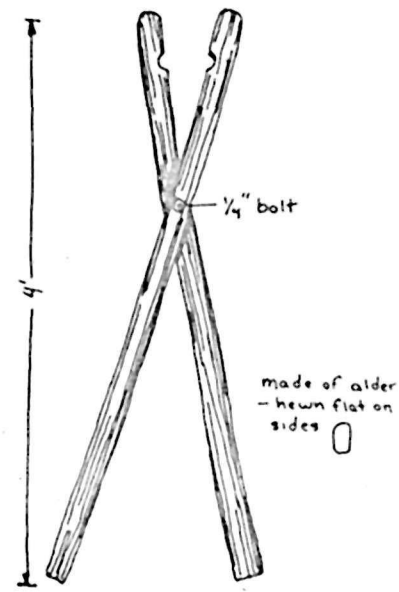


Figure 50. Pliers for setting toggles over willow wall.

By the time the final stage of building is reached, the ice may be so thick that a man's arm cannot reach far enough to set the wall toggles. In this case the workers impale each toggle on the end of a tuuq (pole ice pick) and lower it into place. Joe Sun

met this problem by constructing a giant pair of pliers with which he could grip the toggle and maneuver it into place (Fig.50). He used two pieces of alder, hewn flat on the sides and fastened together with a bolt.

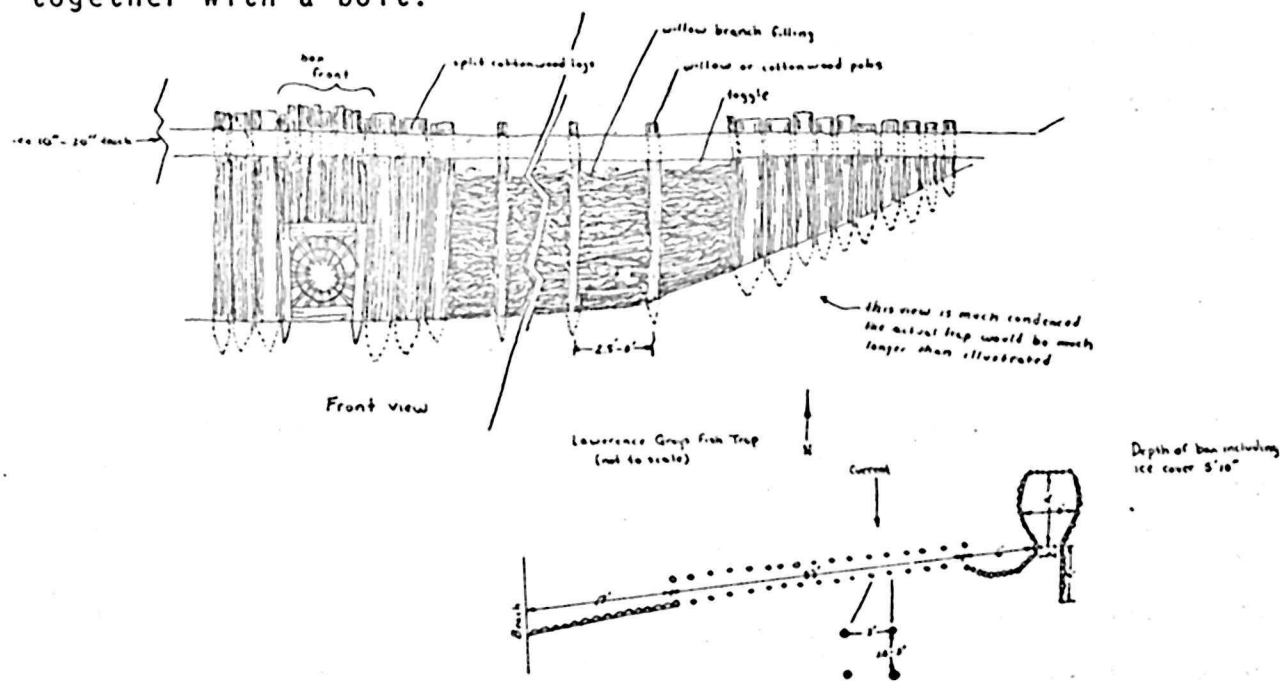


Figure 51. Cutaway and condensed view of a mudshark trap.

Figures 51 and 52 show two burbot traps observed and measured by one of our researchers on the Kobuk River. It should be pointed out that each fish trap varies slightly from the others. The length of the shoreward wing, the depth of the water, and the personal preferences of individual builders all help to make each fish trap unique.

The amount of time required to construct a given fish trap depends upon the availability of materials, the length of the shoreward wing, the number of workers available, the weather

conditions, the ice thickness, and so on. One trap built by a Shungnak family involved between five and nine persons at various stages of construction. Work began on October 29, and was completed on November 15. Several days of work in this period were lost because of severe storms and other interruptions such as hunting activities. Approximately nine days were fully devoted to construction. Three other traps built the same fall required somewhat less time to complete because they were built earlier, when the ice was not so thick.

Building the fish trap necessitated working on the frozen surface of the river, fully exposed to the elements. During the construction of one such trap, air temperatures ranged from 32° F. to -50° F. The warmer air temperatures were often accompanied by stiff winds that produced significantly lower chill factors. A tent equipped with a stove, food, and bedding was set up approximately 250 yards from the trap site. Usually a hot breakfast of meat, fish, seal oil, and hot cakes was prepared for the crew before work began in the morning. A similar noonday meal was also prepared, often by the wife of a crew member. One or two coffee breaks were taken during the day to warm up. Even in the coldest conditions no one was heard to complain, and work progressed despite subzero weather.

Once a burbot trap is complete, a layer of poles, willows, and a tarp are placed over the trap box to break the light. Once each day one or two persons associated with the trap's construction go to the site and chip out the ice atop the trap box.

After all ice has been shoveled clear of the box, a crew member uses a long-handled gaff (akii), to snag the burbot swimming within the box enclosure. Snagged fish are flipped onto the ice and clubbed. Care is taken to avoid snagging fish in the belly, as this is thought to release an odor that will repel other fish. Care is also taken not to accidentally hook and damage the trap entrance.

After the trap has been emptied, a stout pole is used both to stir up the gravel at the bottom of the box, thus flushing out offensive odors, and to push some of the gravel against the walls of the box to cover any possible openings caused by trapped fish.

Once the fish have been removed and killed, they are carefully divided into equal and neat piles and are placed before stakes bearing the names of individual trap workers. No extra share is taken by those who open and empty the trap. The piles of fish freeze overnight and are then pried up and leaned against each stake so as not to be lost under a snowdrift.

During the winter of 1974-75, one burbot trap was checked up until January third. By this time the severely low temperatures were producing a heavy cover of ice overnight, limited daylight made it difficult to see the fish so that they could be hooked out, and the fish catch was only a fraction of the earlier catches. Furthermore, ice over the trap entrance was slowly blocking the passage.

Table 6 gives the record of the daily catch taken from one of the three traps constructed by Shungnak Natives. Estimates

Table 6. Daily catch of burbot in one trap, November, 1974 to January, 1975.

Date	Number of Burbot	Weather Conditions			
		Wind	Miles Per Hour	Degrees F.	Precipitation
Nov.					
16	147	ENE, light	-	+20	heavy snow
17	131	E	5 to 10	-10	light snow
18	127	E	10 to 15	-20	none
19	128	calm	-	-30	none
20	120*	calm	-	-25	none
21	118	calm	-	-35	none
22	98	calm	-	-38	none
23	100*	calm	-	-42	none
24	100*	calm	-	-52	none
25	110	calm	-	-48	none
26	123	calm	-	-45	none
27	110*	calm	-	-51	none
28	110*	light, var.	-	+20	light snow
29	114	ESE	10 to 15	+22	light snow
30	110	E	5 to 10	-10	none
Dec.					
1	100*	calm	-	-42	none
2	110	calm	-	-48	none
3	100*	calm	-	-48	none
4	100*	no record	-	-	-
5	100*	NE	10 to 15	-42	none
6	100*	N	15 to 20	-20	none
7	114	E	3 to 7	-35	none
8	95	ENE	3 to 5	-35	none
9	104	SE	10 to 15	+ 8	none
10	90*	calm	-	-34	none
11	80*	ESE	10 to 20	0	heavy snow
12	80*	ENE	15 to 20	+12	none
13	105	ENE	10 to 20	+12	heavy snow
14	400*	**	**	**	**
Jan.					
3	23	ESE	5 to 15	-49	none

*Estimated.

**From December 14 through January 2 the fish trap was checked irregularly. The estimated total catch for this period was between 300 and 400 burbot. Temperatures averaged between -45° and 55° F.

are indicated when the researcher was not present and obtained counts from others who checked the trap. The trap was located approximately five miles via trail from Shungnak. Round trip travel time was approximately forty-five minutes by snow machine and one hour and twenty minutes by dog team. Each checking required between one and three hours of work. Weather conditions are noted to indicate the environmental stress placed upon persons engaged in taking fish from the traps.

The total estimated catch for this trap was 3,447 burbot (tittaaliq). Estimating the average weight of each fish at three pounds makes the total weight of fish caught 10,341 pounds. This catch was divided into six equal shares, so that each worker received roughly 575 fish with a total weight of 1,725 pounds.

Each worker utilized his share as he saw fit. Three men kept dog teams and each used one-half to three-fourths of his share to feed his huskies. Some fish were sold to other villagers who needed dog food or wanted burbot liver for personal consumption. All crew members gave away fish to relatives and friends, some being sent as far away as Kotzebue.

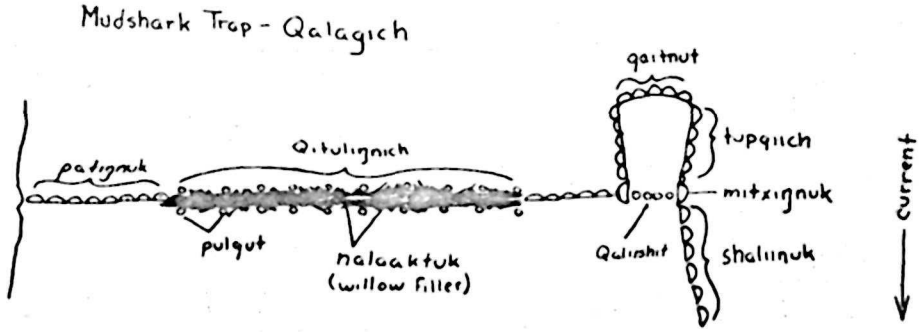


Figure 52. Top view of a mudshark trap.

VIII

HUNTING

As with fishing, hunting has played and continues to play a vital role in the life-style of the Kuuvaŋmiit Eskimos. It formerly provided food; raw materials for tools, clothing, and bedding; and items for trade with other Eskimos, Indians, and non-Natives. In times past, it has also served as a catalyst for certain social developments, and this continues today. Hunting partnerships, cooperative hunts, and sharing traditions are all ramifications that extend throughout the general culture. Hunting still provides men with a standard by which they can measure their worth and their status among their peers.

Dependence upon something as important as hunting encourages a continuity in relations between the young and the old, particularly in males. In order to succeed or excel in the culturally assigned role of a hunter, young men must be tutored by old men. Hunting is thus one means by which the cumulative knowledge and philosophy of the Eskimo culture is passed from one generation to the next.

Caribou (tuutu)

The Arctic caribou (Rangifer arcticus) is a large, Arctic-adapted deer that, with minor variations, is found on virtually every major land mass in the northern circumpolar zone (Spencer,

1959:27). It is somewhat larger than a mule deer and smaller than an elk. Its pelt varies from very light to dark brown according to the season. A mature bull caribou (paŋniq) ranges from five and one-fourth to six and one-half feet in length, from three and one-fourth to three and one-half feet in height at the shoulder, and weighs 150 to 400 pounds. A mature cow caribou (kulavak) is two-thirds this size (Palmer, 1954:303).

By early fall a mature bull caribou is an impressive animal. His body fills out with heavy layers of flesh and fat over a thick-set neck and trunk. A large creamy-white cape covers his neck and fore shoulders. His antlers sweep back and up into a large C-shaped curve over the head and neck. The beams of these antlers may reach a thickness of two and one-half inches and a total length of six feet from the bottom palm to the top end point. A heavy layer of tallow-like fat develops along the top of the back, often reaching a thickness of three inches over the rump. Cows also fill out during the fall, but somewhat later than the bulls.

The caribou is physically well adapted to an Arctic tundra/taiga environment. Its coat is made up of long, hollow hairs that provide excellent insulation against the cold. Its hooves are wide and well rounded with a hollow center and sharp edges. These spreading hooves, together with the animal's dew claws give a large supporting surface for travel on snow and soft earth (Palmer, 1954:303). The eyesight of a caribou is inferior to

that of the smaller North American deer, but it has excellent hearing and smelling abilities.

The highly specialized diet of the caribou consists primarily of lichens and mosses, allowing it to thrive in areas where other grazing animals would perish (Freuchen and Solomonsen, 1958:10). It will also feed on green willow shoots, cloudberries, and coarse tundra grasses.

The caribou is a gregarious animal usually found in the company of others of its kind. The size and make-up of a caribou herd varies according to the season, weather, available food, predation, and instinctive drives. Herds ranging from ten to well over three hundred animals were observed in the Kobuk River Valley during the winter of 1974-75. The much-publicized migratory herds of countless thousands are, in reality, very brief and localized occurrences. Such migrations are made up of many small bands of caribou, numbering between twenty-five and one hundred fifty, all moving in the same general direction and forced into temporary close association by geographic restrictions. In areas with few restrictions, migrations may spread from thirty to sixty miles, with one or more miles separating individual bands of animals.

With the exception of a few scattered stragglers, caribou are absent from the Kobuk River Valley during the summer months, having migrated to the North Slope of the Brooks Range in the spring. In mid-August small bands begin wandering into the Noatak River Valley (Map 3), slowly grazing and moving southward.

By mid-September the pace of migration quickens and larger numbers of caribou are seen moving across the foothills of the northern slope of the Brooks Range. Soon the first scattered forerunners of the migration appear in the middle Kobuk area. The main body of the caribou migration seems to literally burst onto the plains of the central Kobuk River Valley between late September and mid-October. The central scene of this event may shift widely from one year to the next, although within recent years the Hunt and Salmon rivers have served as the main migratory routes into the Kobuk. Archeological evidence from Onion Portage and other nearby sites suggests that this general area for hundreds of years was the passage used by caribou. Smaller numbers of caribou filter through valleys both east and west of the central route, usually reaching the Kobuk River somewhat later than the central part of the herd.

Once through the Brooks Range, the migration pauses briefly as bulls aggressively assemble cows for the mating season. This may be either before or after they cross the Kobuk. The bulls are in prime condition at this time, but they rapidly deteriorate once mating begins. The pause may last for as long as a week, and then the animals once again move south to scatter out across the vast Selawik Lowlands.

Some of the caribou, however, remain all winter in small bands from Hotham Inlet to the headwaters of the Kobuk and Selawik rivers. Occasionally loose assemblages of a few thousand caribou will temporarily gather where food is abundant and avail-

able, but widely scattered bands of less than one hundred animals are more common. During this period the general physical condition of the caribou is poor. The meat has lost its fat, becoming dark and stringy, and the hides are worthless. Cows remain in somewhat better condition than the bulls.

As winter fades into early spring and mosses and lichens reappear, the caribou begin again to build up thin layers of fat. Toward the end of March the bands begin to drift northward where they meet and merge with other scattered groups. By mid-April large numbers of caribou are moving in the direction of the Brooks Range, often forming long, single-file lines that cut deep ruts into the winter snow. The spring migration does not seem to be as localized or as sudden as the fall migration. The move continues into mid-May when the bands are virtually rushing to cross the mountains. A few stragglers will continue to filter across the Kobuk River into early June.

The preceding description is, of course, general. Tundra fires, deep snow, predators (including man), overgrazed pastures, severe weather, and the complex nature of the animal all make caribou one of nature's least predictable creatures.

A grazing herd of caribou is a study in continuous movement. The sparse vegetation rarely provides enough food to allow a grazing animal to remain in one spot, so that with each mouthful of vegetation the caribou takes a step or two forward. Although the animals feed individually, a herd remains together. Their forward movements usually run in opposition to the wind.

During the cool late summer evenings, caribou often lie down and sleep for short periods with their heads pointing downwind. Eskimo hunters say that this enables the animals to detect danger approaching downwind of them and at the same time to be able to smell any predators upwind of them. They tend to sleep in short snatches, awakening every few minutes to search for possible danger. In a group of resting caribou at least one is usually awake. Smaller bands of caribou are easier to approach because there are fewer animals alert at a given time.

As mentioned earlier, caribou were virtually absent from the Kobuk River Valley from about the late 1800s to the mid-1940s. There were no other large mammals that could replace them as a source of food, skins, sinew, and bones, so the Kuuvaŋmiit in those years traveled to the upper Noatak River Valley and the foothills of the Brooks Range to the north where the caribou continued to spend summers.

Former Hunting, Summer

Extended summer hunting trips were carried out by the Kuuvaŋmiit from at least the late 1800s into the 1940s.

Small parties of men usually traveled and hunted together in the northern mountains. The general area of Howard Pass and the Itivilik River was particularly used by Eskimos from the upper Kobuk River for hunting summer caribou. The hunters began walking north in mid-July and would arrive in the hunting area

as the first caribou began filtering south in early August. This is the time when caribou hides are prime for clothing and the meat is most tasty.

Summer caribou hunting was considerably easier than winter hunting before the advent of the snow machine. Eskimos say that the warm weather makes the caribou lazy and less alert. Undoubtedly the movements and odors of the abundant flora and fauna, which help to mask the approach of a hunter, are also a factor.

Caribou taken during summer hunts were skinned so that all parts of the hide were usable. The hides were turned inside out and stretched on the ground to dry in the sun. When thoroughly dried, they were rolled together into tight bundles for packing.

The meat was cut into strips and hung from willow bushes to "half dry" so that a little moisture remained in each piece. Back fat and intestinal fat were also hung to dry. The stomach pouch of a carcass was removed and cleaned of vegetation. The leg bones were cracked to obtain the marrow or patiq which was stuffed into this stomach pouch. Strips of sinew along the back were cut and hung to dry for later use as thread, and certain bones and antlers needed for tools or handles were cut into appropriate lengths. All of these products were carefully bundled into compact packs that the men and dogs laboriously carried home to the distant Kobuk River. Of these, the fat and items for manufacture were especially important.

Former Hunting, Fall

Two methods used in the past by the Kuuvaŋmiit but no longer practiced were large cooperative caribou drives and the snaring of caribou at river crossings during the big fall migrations. Elderly informants stated that they had never participated in a caribou drive but that their parents and grandparents had.

The caribou corral consisted of earthen or rock mounds, or bunches of willows or grass set in two converging lines, occasionally stretching for miles, that formed a huge open funnel. Sometimes this led the animals into a circular enclosure filled with snares and hidden hunters, and at other times it led them into a large lake or river where men in kayaks and larger boats paddled among the swimming caribou and killed them with spears.

When the corral method was used, women and children hid along the edges of the funnel until the herd had entered. As the caribou moved by, these people stood up and frightened them deeper into the trap. According to Joe Sun, the Eskimos made dummies of bundled willows which they placed across the funnel behind the caribou to prevent them from escaping. Willow dummies were also used to rapidly assemble an entire funnel at a new location.

Caribou migrations through restricted passages usually result in narrow openings being forced through the willow and alder thickets parallel to river and creek banks. When reaching these areas, the caribou tend to bunch up briefly and then to

rush through paths in the thickets down to the river. In the past, the Kuuvaŋmiit would locate these caribou paths and then suspend wide rawhide nooses across the openings with the bottom of the loop roughly two and one-half feet from the surface. The diameter of the loop was approximately three feet. The paths without snares would be blocked off with brush to force the caribou into the paths with snares, which were secured to heavy brush or small trees. Snaring was practiced by the Kobuk River Eskimos into the early years of the twentieth century.

Former Hunting, Winter

Prior to the introduction of the snow machine, the Kuuvaŋmiit traveled either on foot or by dog team to distant places to obtain caribou during the winter months. Very little winter hunting is presently undertaken by these means of locomotion, but increases in fuel prices, difficulty in maintaining machines, regulatory restrictions on hunting, and the personal preferences of individuals may revive such modes of transportation.

Hunting on snowshoes was a standard practice well into the 1950s and early 1960s. If caribou were within six or seven miles of the village or campsite, men often preferred to travel on foot because dog teams sometimes frightened away the animals. A man on snowshoes would leave home before daylight carrying his rifle, a bag of ammunition, a hunting knife, matches, and binoculars. In a wide bag slung across his back he might carry some dry meat

or fish, tea, sugar, a cup, extra canvas gloves, and perhaps dry socks.

Occasionally two men traveled together, but usually winter hunting was a solitary pursuit. The hunter would set a steady stride on his snowshoes and hike toward an area in which caribou had been previously sighted or where he felt hunting might be promising. As he went along he was constantly alert for tracks or other signs that might lead to game. Usually he stopped at the top of rises or hills and carefully studied the terrain.

Upon sighting a band of caribou, the hunter carefully studied their position and movements. As in fall hunting, it was necessary to determine the wind direction, route of approach, concealment, and so on. The winter hunter had added factors to consider. Deep, soft snow can make it impossible to crawl toward the animals to avoid detection, and hard, crusted snow can transmit sounds over long distances to the sharp ears of caribou--particularly in subzero weather.

Eskimo hunters on snowshoes sometimes were able to run down a caribou. When the snow is deep and soft, caribou will quickly tire if chased. If a crust develops over deep snow, the animals can often remain on top as long as they don't run. Men on snowshoes chase these animals, causing them to flounder. Some Kobuk River hunters have trotted on snowshoes for several hours when hunting. Tommy Douglas of Ambler is one who several years ago chased down a caribou in the Walker Lake area where he had gone to trap.

When an Eskimo hunter on foot in cold weather (-30° F. to -50° F.) encountered caribou in an area of hard-packed snow, he removed his snowshoes and, to further reduce the possibility of transmitting sounds to his prey, sometimes turned his tuttuliks (fur boots lined with caribou hair) inside out so that he was walking on a cushion of caribou hair. He might stalk the caribou from one to three hours before he attained a reasonable firing position. Once in position he placed his shots.

When firing into a group of caribou that has not detected his presence, the hunter does not shoot the closest animals but aims for the ones on the far side of the band. This causes the herd to move away from the stricken animal and toward the hunter. If the herd begins to run, the hunter attempts to shoot the leaders. This causes the caribou to mill about and may make them reverse their course of flight. Skilled hunters can thus selectively bring down the animals they desire. Younger, less trained hunters spend considerably more time, energy, and ammunition, with less return, than do the older, more knowledgeable men.

After making a kill the hunter opened the bellies of the caribou and removed the intestines. Sometimes a piece of raw kidney was eaten for nourishment. He might also remove the tongues and put these in his pack. All the caribou, including the innards, were then dragged to one pile and covered with brush to ward off ravens and jays. After this the hunter hiked home, to return the following day via dog team to pick up his kill.

Hunting by dog team of course gave a man more mobility than he had on foot. He could also carry more, but preferred to travel light so as to have room for the game he would bring back. To the items a foot hunter carried he added only an ax, sled tarp, tea pot, and perhaps some extra bits of dried fish to feed his dogs.

The usual technique was to drive across open, wind-packed snowy areas and stop on high rises and hills to scan the terrain. If trees, willows, or large rocks proved to be within one-half mile of a band of caribou, the driver usually secured his team there. He then followed the same procedure as a foot hunter. Most men trained their dogs to remain quiet while they were away hunting, but there was always the possibility of a dog fight or of a husky's breaking loose to chase nearby caribou.

Occasionally circumstances did not permit the tethering of dogs or foot stalking of caribou. In such cases a man drove his team directly at the herd, hoping to close the distance enough for firing. Some teams ran to within 150 yards of a herd of caribou. As his dogs rushed forward, the hunter kept his eye on the caribou, and when he saw the animals preparing to run he stepped on the brake, anchored the sled, and snapped off two or three shots.

As the caribou ran away, the driver pulled up the sled anchor and gave chase. Caribou can easily outdistance a dog team, but they tend to run away from danger at an angle and will stop once or twice to look back.

The dog team driver could command his lead dog to take a route that would bisect the path of the caribou's flight. The dogs were running wildly by this time, and as the caribou paused in their flight, the driver would stop his team and fire. All of this required a well-trained team and a man who was both a skillful driver and an excellent shot.

Huskies served for more than just transportation in such hunts. Eskimos came to know their dogs so well that they often relied upon them to find game. A dog team can often detect the scent of caribou more than a mile upwind of them. The way a husky holds its tail, ears, and head, together with its general body stance, conveys a message about caribou to a knowledgeable driver.

To transport several caribou on his sled, the hunter butchered his animals in such a way as to make compact packages. The procedure for making compact packages is described on pages

In addition, a hunter in earlier times separated the forelegs from the thorax by cutting away the flesh from under the upper legs and scapula. The size of the rib cage was reduced by removing one entire wall of the thorax and inverting it to lay flush against the inside of the opposite wall. Then an ax was used to split the hind quarters into two sections. Meat was boned out and all non-edible parts discarded. An Eskimo hunter skilled in this technique could load a twelve-foot-long basket sled with the meat and hides of six to eight caribou. A team of dogs often pulled two large heavily laden sleds and would relay

loads from one campsite to the next until finally reaching home again.

Prior to the 1950s, when caribou once again began wintering in the Kobuk River Valley, it was common for Kuuvaŋmiit hunters to travel via dog team to the upper Noatak River Valley. Most of the caribou were located in the general area between the Cutler River and Howard Pass, although hunting was also carried out as far east as the headwaters of the Killik River. Men who planned to trap in this area usually departed in December, while those interested primarily in caribou might wait until early February to mush north.

Occasionally the caribou were difficult to locate and privation would result. Several informants told of running out of dog food and being low on their own food supplies before finally locating game. Dogs then became so weak they couldn't stand up, and some even died. However, when caribou were found, the dogs quickly recovered and grew sleek and strong on fresh meat.

Mid-1970s Hunting, Summer

The Kuuvaŋmiit Eskimos no longer hike over the mountains for summer hunting, because caribou presently stay within easy traveling distance of all the communities along the Kobuk River in the winter. If their migration patterns change again and suitable game substitutes are either not available or are not sufficiently plentiful, the Kobuk River Natives will likely have

to revive their former summer hunting practices, although in modified form.

Mid-1970s Hunting, Fall

Each September the Kuuvaŋmiit eagerly await the arrival of the fall caribou migration. Pilots who fly the scheduled or chartered flights through the area are closely questioned as to caribou sightings. Natives in the villages of Ambler and Kiana make periodic boat trips to the Hunt River to check on possible caribou movements, and persons residing in fall camps in the area are alert for signs of southward migration. People from other villages also like to travel up and down the river at this time to look for caribou, but since they have to travel farther to get to the vicinity of the Hunt River, few of them can afford to do so because of the cost of gas.

When news is received that the migration has descended the Hunt River, villagers, particularly from Ambler, travel via river boat to intercept the main herd. Boatloads of hunters from the lower villages and occasionally from as far away as Kotzebue travel upstream to harvest the fall caribou.

If the herd arrives before the bulls go into rut, the hunters concentrate on taking bulls. Once rutting begins, however, and the mature bulls develop an offensive odor and taste, the hunters turn their attention to cows and immature bulls.

Hunters who come by boat to the major crossing area of the caribou often establish temporary tent camps on the river banks near the paths of migration. From there they hike into the surrounding terrain to seek their prey. Most hunting is done within a mile of the Kobuk River. If water levels permit, some of the Eskimos boat up the Hunt or Salmon rivers and set up their camps there.

The Eskimo caribou hunter carries or has access to the following:

1 high-powered rifle with scope
2 to 5 boxes ammunition (20 rounds per box)
1 hunting knife
1 sharpening stone or small file
2 pairs cotton work gloves
1 rain jacket
1 small ax
1 box matches
1 pair hip boots or rain pants
1 heavy jacket
1 parka
1 pair insulated pants
1 pocket knife with a thin sharp blade
1 thermos hot coffee or tea
1 pair binoculars

Two to five men may hunt together during fall migrations and share the expense of gas for outboard motors and the labors of the hunt. After arriving in the general area of the migration, they climb to the tops of bluffs or low hills where, using their binoculars, they study the surrounding terrain. If the migration is in full swing, they will see numerous bands of caribou scattered across an open plain. In deciding which particular group to stalk they take several factors into consideration:

1. Size and make-up of the band. Very large groups on the move are usually relatively easy to stalk, as are small groups at rest. Prior to rut, bands of bulls are preferred as they are larger and fatter than cows and fawns. During and after rut, cows are preferred.

2. Route of travel. Bands moving toward the river or general direction of the hunters are preferred.

3. Behavior of animals. If the band appears nervous and is running or trotting without stopping to eat, it is likely that it has recently been frightened by some predator and will be difficult to approach.

4. Topography. Herds near or moving toward terrain in which the hunter can find concealment are preferred.

5. Wind direction. The hunter must be able to approach the band without having the wind carry his scent to it.

After taking these factors into consideration, the hunter selects the band he wishes to hunt and carefully chooses a concealed route of approach. To reach an advantageous spot often requires running in a low crouch for hundreds of yards over hummocky ground and crawling through marshy ditches to avoid detection. The hunter is careful not to pass upwind of his prey so that his scent is not carried to the herd. If he has selected a group of sleeping caribou, he watches their ears and antlers for any sign of movement that indicates that an animal is awake and about to raise its head. If he detects movement, he lies quietly until the caribou looks away or resumes sleeping. If there are

cows in the herd, the hunter must be particularly careful in his stalk because cows with fawns (nuggalik) are much more alert to possible danger than are bulls.

If the hunter has chosen a moving band of caribou, once he has reached a suitable position from which to fire, he waits until the band is alongside him. If two or more men hunt together, they spread out and wait until the band is between them before firing. Skilled Kuuvaŋmiit hunters do not waste ammunition and game by firing at random into a milling band. Rather, they locate the prime members of the group and attempt to place their shots selectively in the neck or shoulder. Neck shots are preferred because they result in quick kills with minimal wastage of meat and skins.

A knowledgeable hunter can, with varying degrees of success, control the movements of a given band by placing his shots much the same as a winter hunter does.

When firing into bands of migrating caribou it is inevitable that some animals will be wounded. Severely wounded caribou are usually not killed until the initial firing is over. A wounded animal that is able to walk may be driven toward the hunter's camp along the river to save his having to carry it on his back. Caribou that are unable to walk are killed either by reaching over the animal's back to stab it directly in the heart or by inserting the knife blade into the spine at the base of the skull to sever the spinal cord.

A wounded caribou can sometimes help the hunter by serving as a decoy. A severely wounded animal will often stand upright

with its head down. This presents the silhouette of a peacefully grazing animal and will reassure other caribou moving nearby (Pruitt, 1960:5). Small groups or individual caribou may even be drawn to the "decoy." A wounded caribou lying with its head up also acts as a calming influence on other caribou. The hunter may allow these "decoys" to live until he can dispatch other animals nearby.

Occasionally a hunter sights a stationary group of caribou in an area that is so open that a concealed stalk is not possible. In this case he utilizes the caribou's instinctive reaction to silhouettes. A low, stalking silhouette would resemble a wolf or some other predator and alarm the caribou. However, as mentioned, the outline of another caribou peacefully grazing is acceptable. The hunter therefore holds his arms or two sticks above his head to represent antlers and then copies a caribou's leisurely, zigzagging grazing route as he slowly approaches the herd. If two men are involved, one may crouch behind the first, giving the appearance of a single caribou. A band of caribou will seldom tolerate such a ruse after the hunter has moved within a range of 150 to 300 yards, however, for at this distance the caribou are able to detect flaws in the hunter's disguise.

A caribou, when alarmed, assumes a stiff stance with its right rear leg held outward and its head alertly facing the suspected danger. In a band this stance causes surrounding members to assume the same position. A hunter seeing this sign knows he must begin firing before his prey bolts out of range.

Single caribou, particularly at rutting time, may be lured within range of a hunter's gun. To accomplish this, the hunter holds one arm above his head and does an odd little dance while imitating the hoarse cough of a caribou. He makes short dashes back and forth while bobbing his body up and down from the waist. This resembles a doe calling its fawn. Both fawns and adult caribou have been seen to respond to this ruse.

The fall migration of caribou into the Kobuk River Valley usually continues well into freeze-up. At the height of the season the animals may be encountered from just above Kiana to the village of Shungnak, a span of approximately sixty-five miles. Usually the caribou do not reach the Shungnak area until several days or a week after they arrive in the Hunt River area. Ice is often running by the time they arrive, and rather than swim the river, many of the animals swing east and mill about on the open plains between the mouth of the Ambler River and Wesley Creek until a safe crossing on the ice is possible. Most of the caribou in the lower river area migrate through the Squirrel River Valley. They tend to arrive in the Kobuk River Valley later than do those in the Hunt River area.

Several older Shungnak hunters believe that the first bands of caribou to move through during the fall migration should not be molested because the forerunners of the migration create trails that other bands will follow. Ideally, then, the hunters of Shungnak allow the first few bands to travel by the village before they start to hunt. Residents of all of the villages are

particularly critical of low-flying aircraft that may drive the herds away from the area.

In late October of 1974 when caribou were gathering in the open flats west of the Shungnak River, hunters of Shungnak refrained from hunting them, hoping that the herd would swing eastward and pass the village. Unfortunately, the rivers froze before this happened and the herd filed across the Kobuk River and continued southward to the Selawik Lowlands without coming near the village. When it became obvious that the migration would miss Shungnak, several men traveled by snow machine over the rough, virtually snowless tundra and across the Shungnak River to obtain what caribou remained. Approximately sixty-seven caribou were taken that month, but most of them were quite thin or were in rut, which substantially reduced the value of the meat.

At Ambler in the fall of 1974 the migration was somewhat later than usual, and slush ice was beginning to run in the Kobuk River when the caribou arrived. This made boat travel impossible. A few Ambler Natives attempted to travel overland by snow machine to migration areas, but weak ice and no snow made travel both difficult and dangerous. To solve their dilemma, several Ambler men arranged to be flown to the general area of migration, where they set up camp with minimal gear on a river bar. These men spent several days hunting and butchering caribou for their fall meat supply. They cached most of their meat for pickup after overland travel became possible. The rest they took with them

when they flew home. It must be noted that this was an unusual situation.

Caribou meat is best--that is, fattest--in September and early October before the rut. After making a caribou kill, Native hunters quickly and efficiently skin, clean, and butcher the carcasses for transportation and storage. The effort and length of time required to clean a caribou depends upon the size and condition of the animal and the number of skinners involved. In the fall, when men tend to hunt in pairs or small groups, caribou carcasses are usually skinned and cleaned by two men working together. Bull caribou are somewhat more difficult to skin than are cows, and when the hides grow thick in the late fall they adhere more to the flesh. A pair of Eskimo skinners can peel the hide off a bull caribou, remove its intestines and internal organs, and quarter it in less than fifteen minutes. During the winter, a single hunter may require twenty-five minutes for such an operation.

When processing a fall caribou, the carcass is rolled over onto its back and pulled forward so that the neck is arched back and the antlers brace the body. The legs are skinned first by making a long incision down each leg and around the edges of the hoof. The incision on the front legs begins at the meeting of the two toes and follows the front of the legs down across the kneecap, finally meeting at the base of the underneck ruff. The back legs are cut from the rear of the hooves down the back of the leg, meeting two inches below the anus. An incision is next

made along the underside from the anus to the end of the jaw. The hide is then cut from the lower jaw around back of the antlers so that the ears are left on the pelt. (Some skinners prefer to cut further back and remove the ears.)

The legs are stripped and the hide is pulled back from the belly and neck. One of the men then inserts his hand between the hide and the flesh and punches downward to separate the two. The neck skin is then grasped firmly and vigorously jerked backward to finish peeling the hide from the back. When the hide is pulled away, it is stretched out with the flesh side exposed and allowed to dry.

After the hide is removed, an incision is carefully made along the middle of the abdomen from the rear of the testicles to the tip of the sternum. The skinner is careful not to puncture the bloated stomach pouch or niġukkaq. An incision is then made down the left side of the abdomen to the backbone. The carcass is tilted to the left while a man pulls out the stomach (kisaġuaq) and intestines (ingaluat), taking care to place the kidneys (taktuk) to one side where they won't be lost.

To remove the lungs or puvaich the throat is cut lengthwise to expose and loosen the trachea. The diaphragm membrane (mulik) is cut away and then the lungs and trachea are pulled out of the chest cavity as a unit. The heart or uuman is removed, given two long slashes over each ventricle, and allowed to drain of blood. If the head is to be kept, the antlers are usually chopped off to facilitate handling. If the head is not desired,

the tongue (uqaq) is removed by making an incision under the jaw and pulling the tongue through to be cut off.

When the innards are removed the carcass is divided between the last rib (tulimaak) and the pelvis (kuutchinaaq). The skinner deftly inserts his knife blade between two vertebrae and twists to complete the division. Each end is propped upward to facilitate drainage of blood. Hand holds are made in the upper part of the carcass by slits through the back of the neck and on either side of one middle rib. Incisions through the muscles of each leg serve as carrying grips for the hind quarters.

After completing the skinning and butchering of each animal, the Eskimo skinners open the animal's stomach pouch and use the contents to clean the blood from their hands and knives. Butchering knives are rehoned with a file or stone in preparation for the next carcass. Before beginning again the men may relax and leisurely smoke a cigarette. The younger men of a boat crew are usually called upon to carry the meat and skins to the boat. Every two or three hours the crew will take time off to brew tea and have a snack. The entire process of butchering and then hauling fifteen carcasses to a boat three or four hundred yards away takes approximately nine hours of hard work for a crew of five men.

Fall-killed caribou is particularly valued by the Kuuvaŋmiit. The meat, which is prime just prior to the fall rut, makes excellent quaq, which is frozen meat eaten uncooked. It is also of course excellent as cooking meat. The fat is used in the making

of akutuq, a mixture of whipped fat and berries, as well as in other dishes. Fall caribou meat also makes a fine gift to send to relatives and friends in other villages or urban centers.

Mid-1970s Hunting, Winter

The hunting of caribou continues to be an important male occupation throughout the long winter, although activities decline somewhat during December and January. This midwinter slump can be attributed to the short days, severe weather, and the fact that caribou are usually thin and widely scattered at this time.

Caribou undergo certain physical and behavioral changes during the winter which are recognized by the Kuuvaŋmiit. The animals lose their fat and grow lean, their hair becomes brittle and sheds easily, and they seem to be more wary and difficult to approach. The latter may be partly explained by the general absence of natural distractions and the increased pressure of natural predators.

Today well over 90 percent of all winter caribou hunting--and winter traveling--is done via snow machines. Whereas in the past it was largely an individualistic affair, it is presently often carried out by pairs or small parties of men. There are two reasons for this development. First, there is safety in numbers. If a machine breaks down, which they often do, others are at hand to help repair it or to haul the driver home. The

second reason is that under most circumstances two or more machines greatly increase the chances of success in a hunt.

In open areas hunters in a group generally spread out as they travel, though keeping each other in view, so as to be able to survey the greatest area possible. When game is spotted the drivers come together and decide the best approach. When the terrain, size of the band of caribou, and number of machines warrants it, the hunters split their forces. One group goes off to circle behind the caribou while the other group moves ahead. Usually this causes the caribou to run directly across the path of the forward-advancing hunters. These men dismount from their machines and allow their prey to come within range before firing. There are several variations to this procedure.

When hunting by snow machine it is usually a simple matter to catch a wounded caribou that would have escaped a man on foot or on a dog sled. Then too, a foot or dog team hunter might have only enough daylight to carry out one attempt at a group of caribou. A man on a snow machine is able to make several attempts if the caribou are available. The snow-machine hunter also need not worry about dog fights or the possibility of huskies' frightening off his prey.

Some hunters still go out alone in the winter, but they usually do not travel more than a few miles from their village unless they know their snow machine is in good working order or new. Often two men will travel on one machine with one driving while the other rides in the sled pulled behind. This allows

one man to concentrate on maneuvering the machine as close as possible to the caribou while the other can give his attention to shooting as soon as the machine stops.

Most present-day caribou hunting is carried out within a one-day round trip of the hunter's village, although tent camps may be established if the caribou are distant or if a particular area receives frequent use over a long period of time. During the winter of 1974-75, hunters from the upper Kobuk River exploited a mountain range that bordered the main valley between the Paa River in the east to just west of the Hunt River in the west. The areas that received particularly heavy usage were the plains from Kobuk village west to Shungnak River, the foothills of the Sheklukshuk Mountains, and the open plains bounded by the Jade Mountains, Hunt River, and Great Kobuk Sand Dunes. The caribou near the sand dunes and to the south of the Sheklukshuk Range were in particularly good shape that winter. An explanation for this was given by several men who pointed out that there was less nonhunting traffic in these area and that few serious hunters made use of such distant regions. Thus the caribou were not disturbed so much as to cause them to become thin.

In 1974-75 the Kiana residents hunted mainly along the eastern slope of the Squirrel River Valley and within about a five-mile radius of the mouth of the Hunt River. Because the Hunt River caribou were much fatter than those of the Squirrel River most of the efforts, as long as money and fuel supplies held out, were directed to hunting in the more distant area.

Noorvik residents did most of their caribou hunting in the lower part of the Selawik River Valley that winter.

Caribou taken by a party of hunters are shared equally by all participants. On February 20, 1975, one researcher participated in a cooperative caribou hunt involving eight village men from Shungnak. A total of eighteen caribou were taken. All of these were pulled to one location where they were gutted without skinning. Before dividing up the shares, each caribou was cut just over the sternum to check for fat. The carcasses that had evidence of fat were first divided equally among the hunters, and then the thinner, less desirable carcasses were shared. Caribou taken by lone hunters belong to the individual, of course, but are often shared with relatives and close friends.

Men with snow machines usually do not skin or quarter their kills on the spot, but instead gut them and then load them to the sled intact. If several caribou are to be hauled, they are placed side by side in pairs in the sled with the legs projecting upward. Five or six adult caribou are a maximum load for most machines.

Occasionally a hunter kills more caribou than he can haul home in one trip. In this case he dresses the surplus carcasses where killed and then pulls them into one pile. To keep ravens from eating the meat, he may cover the kill with cut brush or hang a mock snare like those described on page 251 over the pile of carcasses. Traps may be set around the pile to capture any wolves, foxes, or wolverines drawn by the scent of blood.

Weather permitting, the hunter returns the next day to retrieve these.

The Kuuvaŋmiit hunters have developed rules to designate ownership of animals left in the field. A wounded caribou, for example, belongs to anyone who finds it. A dead caribou with its belly opened is considered private property and will not be disturbed by others. A dead caribou that has not been gutted becomes the property of the person who finds it.

When a hunter sets traps near a dead caribou or parts of a caribou, he marks their presence. Small traps, such as for fox or marten, are indicated by a single stick stuck into the snow nearby. Large traps, for a wolf or wolverine, are marked with crossed sticks placed near the carcass. These signals are meant as warnings so that people will not be injured by the traps.

Caribou taken in midwinter are used both for human consumption and for dog food. Families that continue to keep teams of huskies generally take and use considerably larger numbers of caribou than do those who own just a few dogs or none at all. The fattest caribou are kept for humans while the poorer ones are fed to the dogs. A team of ten huskies can consume an uncooked, frozen caribou in from three to five days, depending upon the size of the carcass. If the meat is cooked in dog soup it may stretch from five days to a week as long as the weather isn't severe or the dogs are not being worked hard.

Mid-1970s Hunting, Spring

Caribou hunting becomes a major occupation of the Kuuvaŋmiit during the months of March, April, and early May. Approximately 35 percent of the year's caribou kill is taken in these months. Long hours of daylight, milder weather, and the gathering of the migratory herds make this an excellent time to be out hunting, and villagers make use of the full limits of their hunting range. This is also the time they make dry meat, paniqtuq, for the coming summer. Because snow remains on the ground for most of this period, caribou hunting continues to be carried out primarily by snow machine, although some animals are taken by boat immediately following breakup.

In the spring, caribou are less wary and easier to approach. This may be related to the warmer weather, which Eskimos say makes the caribou lazy. Both snow machines and dog teams are able to approach to within one hundred yards of caribou during the spring months, which allows for relatively easy shooting.

The fattest animals taken in the early spring are buried under the snow near the hunters' homes. In April the women of the household begin digging up these carcasses. Each one is skinned and quartered. The women then begin stripping off the meat and hanging it from racks of poles built near the house. Rib cages are hung with the flesh attached. Throughout the month of April and into early May, men are hauling in more and more caribou while the women are continually busy cutting it into

thick strips to hang and cure in the sun. The most active households may process more than twenty-five caribou in this period.

The hanging meat slowly dries and shrinks, developing a hard black crust. Most women lightly salt the meat before hanging it to aid in the curing and to give it added taste. Before the strips are completely dry and brittle they are removed from the racks, placed in clean burlap bags, and stored in cool dry caches.

Dry meat, paniqtuq, is a staple summer food, particularly among the upper Kobuk River Eskimos. Quantities of this cured meat are sent to relatives in other communities and some is traded or sold to contacts in Kotzebue and other places.

Moose (tinniika)

The moose (Alces alces), largest species of the North America deer family, ranks next to the caribou as a source of protein for the Kuuvaŋmiit Eskimos, but in their eyes it ranks far below caribou. The moose is a recent addition to the Kobuk ecological structure. All informants over the age of fifty-five can remember when no moose were in the Kobuk River Valley. Nor were there moose in times past, according to archeological evidence (W. Anderson, 1975). Daisy Tickett, a resident of Kobuk village, who was fifty-four years of age in 1974, said that she saw her first moose in the upper Kobuk River Valley when she was seven years old, in 1927. Other informants corroborated this information. The Kobuk River Eskimos' relative unfamiliarity

with this game species is indicated in their word for moose, tinniika, a term borrowed from their Athabaskan Indian neighbors to the southeast.

Moose are now found along the entire length of the Kobuk River and to the north and south of the Kobuk River Valley. Over the past few years the moose population in the upper valley has seemed to stabilize, while the lower valley continues to experience an increase (Pegau, 1974).

During the summer months, moose tend to move into the higher elevations, probably to escape the mosquitos. By August they have filled out with thick layers of flesh and fat. At this time they begin to drift down toward the main valley of the Kobuk. As the air cools in September, the mature bulls go into rut, crashing about in the brush eager to mate or fight. As winter sets in, the moose browse on willows and the shoots of other low brush. When the snow deepens, they congregate along willow-covered river bars. In spring, now lean and rangy, the moose again make their way into the higher hills.

Before the 1920s, the Kuuvaŋmiit reportedly traveled as far east as the south fork of the Koyukuk River (Map 3) to hunt moose. Considering the distance and difficulty of traveling that far it is doubtful that moose meat was common in the diet of Kobuk River Eskimos until the animals became numerous in the Kobuk River Valley in the 1940s and 1950s.

Today, most adult male Kuuvaŋmiit Eskimos hunt moose from mid-August through early October. Often, however, moose hunting

is subsidiary to the search for bears. The hunt is carried out principally by river boat in the fall. Two or three men in one boat travel along the Kobuk and its main tributaries and watch the bars and banks for signs of moose. In areas where shallow lakes occur close to the river's edge, they may walk back into the brush hoping to discover a feeding animal. They also climb high bluffs from where they might sight a moose on an exposed plain or shoreline. All Kuuvaŋmiit traveling along the river at this season are alert to the chance of coming across a moose on the bank, and many moose are obtained as part of the regular river travel.

Late evening, just before dusk, is considered the prime moose-hunting time. This is when the animals go out to the edges of the river bars to drink and search for mates. The hunters wait in hiding, often for several hours, in known areas of moose activity. When a moose is sighted, it must be shot before it enters the river or lake (as dragging 1,500 pounds of dead weight to shore or butchering the animal in the water is a horrendous task). The preferred target is the neck, with a shoulder shot the second choice. Most men will hesitate to shoot a moose that is walking directly away from them for fear of striking and ruining the hindquarter meat.

On September 12, 1974, a moose hunt took place near the village and a three-year-old bull moose was killed. The hunting party consisted of two adult Kuuvaŋmiit men and one researcher. The following is a description of the skinning and butchering:

> Felton was the oldest, so Eddie and I followed his directions. Fresh willows were cut and laid about the moose to protect the meat from sand. Fore and rear legs were removed without skinning. One person would lift a leg while the other two using butcher knives cut away the limb at the upper joint. The limbs were pulled to one side. As the carcass lay on its side the skin was peeled away from the top side. The slab of flesh covering the rib cage was cut away and placed on a willow mat. The membrane covering the stomach and intestinal area was cut away by an incision that followed the outline of the last rib. The fatty web covering internal organs was gathered and placed in a separate pile. Internal organs were removed, with the liver, heart, and kidneys put aside for use. The internal fatty tissue and fat concentrations were stripped away and placed in a separate pile. The rib cage on the right side was removed as one unit from the spine. The head and neck were cut away. Back-straps were removed from either side of the spine. The pelvis was separated from the spine and split with an ax. The left rib cage was removed and cut into several sections. The backbone was divided into several sections.

When the butchering had been completed, the meat was divided into four equal piles. Each of the three hunters received a share, and the fourth share was to be given to the village. Most of the meat hunters gave to the village was saved for use in the Thanksgiving feast; the rest was sent around to be shared by each household. The three hunters also shared their own meat with relatives and friends.

Much of the moose meat taken in the early fall is either dried or frozen for future use. The drying process is essentially the same as that described for caribou (p.335) except that smudge fires must be maintained to repel flies. In all the villages except Kobuk along the Kobuk River most Native homes now have home freezers, and moose meat is often preserved in them. Moose

fat is saved to be rendered into lard for cooking or to be used in the making of aqutuq, fat whipped together with berries. Moose taken later, in September or early October, are simply butchered and hung in small sheds to slowly age and freeze.

If caribou are scarce, moose may be taken during the winter months by men on snowshoes or in snow machines, but moose hunting is always subsidiary to caribou hunting. Older informants say that the Koyukuk Indians are much better moose hunters than the Kuuvaŋmiit Eskimos are, but the Kuuvaŋmiit are superior when it comes to hunting caribou.

Thirty-one moose were taken during the fall and winter of 1974-75 by hunters of 56 families from the villages of Kobuk, Shungnak, and Ambler. The average was a little over .5 moose per family. This may be compared to the total of 1,306 caribou taken that year by the hunters from the same three villages, for an average of about 23 caribou per family. The hunters of 63 families from Kiana and Noorvik took 18 moose in the fall and winter of 1974-75, for an average of a little more than one-fourth moose per family. This can be compared to 742 caribou taken by the same 63 households, for an average of about 12 caribou per family.

In 1973-74, 34 moose were shot by the hunters of 56 households in the upriver area, for an average of .6 moose per family, and in the downriver area 28 moose were taken by the hunters of 67 households, for an average of .4 moose per family.

In 1972-73, 40 moose were shot in the upriver area by hunters of the 56 families, for an average of .7 moose per family,

and in the downriver area 17 moose were shot by members of 37 families (fewer families in the downriver area responded to our questionnaires on the 1972-73 moose hunting than for the subsequent years), for an average of .5 moose per family. These figures suggest either a decline in the local moose population or a reduction in hunting pressures during the period between 1972 and 1975.

The entire Kobuk River Valley up to Lower Canyon, which is the limit of boat travel, is exploited by the Eskimos for moose hunting. One researcher recorded at least six boat crews passing the Mauneluk River for extended moose and bear hunting forays along the upper Kobuk during the 1974 hunting season. Moose are also taken within the Reed, Paa, Mauneluk, Hunt, Salmon, and Squirrel rivers during the early fall.

Black Bear (iyyagriq) and Grizzly Bear (akłaq)

Two species of bear inhabit the Kobuk River Valley: black bear (Ursus americanus) and grizzly bear (Ursus arctos). Both species use the same general range, although grizzlies are more frequent in the higher elevations. According to Native informants, black bears tend to avoid contact with grizzlies and will desert an area when grizzlies arrive. Grizzlies have also been known to attack, kill, and eat black bears.

Both black bears and grizzlies are hibernating creatures that spend the long winter in dens asleep under the snow. April

is the month when the bears awaken and break out of their self-imposed imprisonment. Contrary to popular belief, bears are usually still fat when they awaken in the spring, but their physical condition deteriorates rapidly after they leave their dens. Bears are also known to be mischievous and irritable in the spring. Unoccupied cabins, camps, or caches are fair game to a spring bear and they may rip a door to pieces or even pull a log out of a cabin wall to gain entry.

During the early summer, bears wander about feeding off roots, the carrion of winter kills, and whatever game they are fortunate enough to catch. Later in the summer their diet shifts to berries and fish. Spawning salmon are an important source of food to bears along the Kobuk River.

By September both black and grizzly bears are normally in prime condition, heavy with fat. In October, when the first snows begin in the valley, bears seek suitable shelter for the approaching winter. Some excavate dens into the sides of hills while others select natural caverns formed by overhanging rocks or old deadfalls. They line each den with grass and dry leaves. When complete, the bears crawl into the dens and plug the entrance with brush, leaves, and earth.

Bears have long played an important role both in the subsistence and mythology of the Kuuvaŋmiit Eskimos. Tales dealing with the supernatural, physical, and mental characteristics of bears are numerous. The hunting of bears is far more than a simple act of acquiring food. It is perhaps the highest form of hunting,

and a successful bear hunter attains high prestige among his peers.

Prior to the introduction of firearms, Kobuk River Natives hunted bears with spears. The following information was gained primarily from Louie Commack, Joe Sun, and Charlie Lee--all long-time residents of Kobuk River villages:

Successful bear hunters were brave men, but they never bragged about themselves or made offhand remarks about bears. Rather, such men were modest and respectful of bears.

To hunt the bear a man used a special stout spear called a pana. This man would hike the hills until he finally located a suitable bear. He would study the animal before attacking. Such a man knew that there are three types of grizzlies: akłaq, the regular bear; the two-humped bear; and milak, the great oversized bear. Only akłaq was considered safe to attack. The hunter also knew that black bears are dangerous, because they usually move faster than do grizzlies. The hunter avoided being downslope of a bear or in a confined area that would restrict his movements.

The man would attempt to get as close as possible to the bear before revealing himself. He then would rush up to the bear and make it rear to attack (Fig. 53). Bears are all left-handed, so the hunter always avoided the left paw of a fighting bear. He had to be careful that the bear didn't grab his spear or knock it from his grasp. The angered bear would stand on its hind legs and lunge at its tormentor. As this happened the hunter would crouch and brace the butt of the spear against the ground while

aiming its point at a spot near the collarbone of his prey, where bones would not deflect the spear. The bear dropped onto the spear as the man dodged away.

One man, Siqaniq, who was Joe Sun's father, is renowned for having fought a bear while holding the butt of the spear in the crotch of his right arm. He had to struggle with the bear while holding the spear, until the animal finally died.

In the old days bear meat was not eaten in the village but rather the men would go out from the community to cook and eat its flesh. A similar custom is still practiced by the Athabaskan Indians of the Koyukuk River.

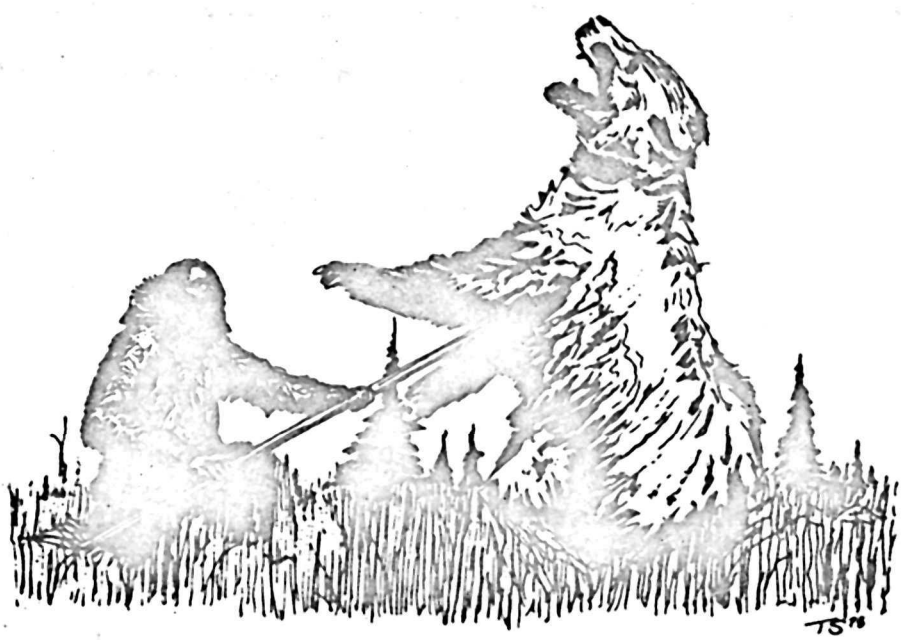


Figure 53. Killing a bear with a spear.

Winter den hunting for bears has also been undertaken by the Kuuvaŋmiit, although not so much in recent years. One such hunt, in which Charlie Lee of Shungnak was a participant, occurred in the upper Noatak River Valley. According to Charlie, several men discovered the den of a hibernating grizzly bear. Charlie took a long rod and poked it down into the drift covering the den. He did this several times until he felt something soft, and then he let the rod rest on the obstruction and saw it move up and down slightly. A man aimed his rifle down alongside the rod and fired, striking the bear, which screamed and thrashed about for a few moments.

A rope was tied about Charlie's waist and he crawled down into the den. Two men held his feet while others stood by with ready rifles. Inside the den Charlie found a dead sow bear and three full-grown cubs. He said the bears did not bother him, because bears usually won't fight in their own dens. Charlie tied the rope about the neck of the dead bear and signaled to be pulled out. The adult bear was hauled out and then the cubs were killed.

Bear hunting today involves the use of snow machines and boats. When bears begin to leave their dens in the spring, the Eskimo hunters, in pairs or small parties, travel widely in search of the bears' tracks. Usually the animals remain around their dens for the first few days after awakening, and the hunters try to locate and kill them before they begin to travel.

In the summer, bears may be taken at any time. No intense effort is made to hunt them until late August or September. Then bear hunting becomes a major activity among the adult men of the villages.

In the fall, bears are known to frequent certain salmon-spawning beds, profuse stands of blueberries, and concentrations of other food supplies, and these places become favored bear-hunting sites. The older hunters chose certain of these locations to visit each fall. Two or three men usually travel together in a single boat. They keep watch along the banks and bars for any sign of a bear and will frequently stop to climb a bank and study the terrain with binoculars. Open mountain slopes are carefully viewed, and if a bear is sighted in the distance, the men will hike several miles to reach it and pack it back to the boat.

Many fall bear hunts are extended affairs in which boat crews spend a week or more in traveling, camping, and searching for bears. These hunts often take the men into the very headwaters of the Kobuk River where they must pole and line their boats over shallow riffles.

All bears are considered to be potentially dangerous, for they will attack with or without provocation. When they do attack, older hunters advise shooting the bear in the left shoulder or left foreleg. According to local belief, bears are unable to fight without the use of their left arm. Furthermore, an attempted head shot may glance off the bear's thick sloping skull without slowing the animal down.

As mentioned, both black and grizzly bears normally settle in their dens in early October, but occasionally bears do not enter a den in the fall or they leave their den in the winter. Upper Kobuk River Eskimos tell of very old grizzlies that spend the winter roaming about. These bears, known as milak, are large, rangy grizzlies that are so old they no longer develop a thick undercoat of fur. Such bears pose a real threat to humans because they fear nothing and will even come into a village at night to hunt. The Kuuvaŋmiit still tell of such a bear that terrorized a Kobuk River village in the mid-1800s until all the hunters were able to surround it and kill it.

During November of 1974, a large grizzly was spotted several times roaming near the village of Shungnak. It was usually seen close to the main trail leading to Ambler. Residents worried that the bear might enter the village at night and endanger the children, or that a dog-team or snow-machine traveler might encounter the beast in some confined portage. Finally the men formed a large hunting party to search the bear out and dispatch it. One researcher participated in this hunt. The bear was discovered feeding on a cache of caribou meat approximately four miles west of Shungnak, adjacent to the main winter trail. It was shot several times before dying.

After the shooting had ended and the bear was apparently dead, one man approached it and leaned over its back to touch the eye with the barrel of his gun to be sure that it was lifeless. Bears have been known to fool a man and pretend to be dead until

the man comes close. This particular bear was approximately six and one-half feet long and relatively fat. Its claws were long and sound, but its teeth were worn to stubs indicating advanced age. The hide was dark buff-brown, well furred and free of rub spots.

This bear was referred to as uqaiktuk, a bear that comes out of its hole in the winter. One man thought that the bear's den may have been flooded by the overflow of a nearby stream which forced the bear to leave the den. Such "winter bears" are often very difficult to kill because they swim across open places in the river and then roll in the snow, which produces a coat of icy armor over their fur. This armor can deflect bullets--or, in the old days, arrows.

A bear is skinned by rolling it over on its back and making an incision running from the crotch to the throat. Joining incisions are made along the inside of each leg. The hide is peeled away with knives as one unit. The head is skinned out at this time. The paws with attached claws are left on the carcass.

To dismember the carcass, a cut is made through the abdominal membrane and the intestines, stomach, and other internal organs are removed and placed on the ground. The fatty tissue around the intestines is set aside, and then the intestines, after being squeezed clean, are collected for food. The heart and kidneys are kept, but the lungs and liver are discarded. The forelegs and back legs are removed and pulled aside and the rib cage is separated into two parts from the sternum and spine.

Then the pelvis is removed and the neck cut free of the backbone. Finally, all parts are allowed to drain of blood before being loaded for transportation. All of the above parts, including the hide, are used.

During the butchering a small cartilage just under the bear's tongue is cut out and placed on a willow branch nearby. This practice stems from traditional treatment of bears.

A good example of the importance placed on bear hunting by the Kuuvaŋmiit occurred in September 1974. Two adult Native men and a young teenage boy were traveling by boat up a tributary of the Kobuk River when they spotted a bear on one side of the river and a moose on the other. All three immediately chose to shoot the bear.

During the fall and winter of 1974-75, twenty-nine bears, both black and grizzly, were harvested by the Natives of the three upper Kobuk River villages, and thirteen by those of the two lower Kobuk River villages. In 1973-74 the total was forty-four in the upriver area and eleven in the lower river area. In 1972-73 the total was forty in the upriver area and nine in the lower river area. Several villagers believe that both black and grizzly bears are on the increase.

Mountain Sheep (ipniaq)

The mountains of the Brooks Range are inhabited by a subspecies of mountain sheep referred to as Dall sheep (Ovis dalli).

Members of this species may reach a height of three and one-third feet at the shoulder and weigh between 125 and 200 pounds in their adult stage. Sheep are not presently found along the slopes of the Kobuk River Valley, although according to Native legend mountain sheep once ranged as far south as the present village of Shungnak. They do occur, however, on slopes along several tributaries that flow into the Kobuk River from the north. Most of the sheep hunted by the Kuuvaŋmiit of the upper Kobuk River have been taken in the mountains near the headwaters of the Noatak River.

Sheep meat and skins were once widely used by the Kuuvaŋmiit, but the hunting of this animal declined drastically when caribou began migrating into the Kobuk River Valley. The last intensive hunting of sheep occurred in the 1940s. Only a few men hunt sheep today.

Formerly, sheep were hunted both in summer and in winter. In summer sheep were taken by men on foot, and the meat, fat, and skins were dried and then transported much as summer-killed caribou are transported. Summer hunting seems to have ended several years before winter hunting ceased.

On different occasions in 1974-75 seven Eskimo men, who ranged in age from fifty-eight to seventy-five, told of their experiences in summer sheep hunts in the Noatak River Valley in former years. The time of the hunt seems to have coincided with the time of the caribou hunt, and the techniques used were similar. The number of sheep a given individual could harvest was

determined primarily by the amount he could transport. Seven to nine sheep, butchered and dried, were probably a maximum load for a hunter and a team of six dogs.

Occasionally sheep were taken in the winter by the Kuuvaŋmiit while hunting and trapping in the upper Noatak area. According to informants, sheep served as an emergency food when caribou were not to be found. In the winter, ewes were preferred, as rams were too thin at this time. The intestines were fed to the dogs and the meat and hides were hauled back to the camp or village.

According to Joe Sun, there are many Eskimo names for sheep which denote age, size, sex, and physical condition, but he could recall only a few. These are:

ipniaq--mountain sheep (general term).

anuttiisugruk--adult male sheep.

nuvak--female sheep (also female moose and caribou).

iivutuk--sheep less than one year old.

tumutalook--yearling sheep.

avaliiyalook--two-year-old sheep.

navuyaqayak--large ram with horns so long it is forced to break them off so that it can graze.

qalutuksaarak--ram with one-half curl.

In recent years a few men have boated up the Ambler and Reed rivers in order to search for sheep, but the difficulties in navigation and the distances involved discourage most villagers from participating in the activity.

The dependency upon and utilization of sheep is directly related to the availability of caribou. If and when caribou become scarce again, the Kuuvaŋmiit people will likely return to sheep as a source of meat and skins.

Porcupine (iluqutaq)

Porcupines occur throughout the Kobuk River Valley, but their numbers are not great enough to make them more than an occasional supplement to the local diet. They are usually taken when and where encountered, although they are more valued in the fall than in the spring and early summer. They are very easy to run down and may be killed with a small-caliber rifle or a club.

After a porcupine has been killed in fall or winter, it is often placed intact over an open fire so that the quills are burned off. It may then be cooked without skinning. In the spring and summer the skin is usually removed, because of small developing quills which are not affected by burning.

Hare (ukalliuraq)

Hares, during the years when they are plentiful, are found throughout the willow-covered parts of the Kobuk flood plain. Early in the twentieth century when caribou were scarce, hares constituted the major source of fresh meat throughout the winters. Today they are especially important in the spring when other

sources of fresh meat or fish are unavailable, and even in the winter they offer a welcome change of diet.

Hares usually do not stray much more than an eighth of a mile from their home base, although young males may roam three or more miles during the spring and summer (Trapp, 1962:51). They choose a simple, slightly oval depression in the ground litter under good cover for their forms which they use both summer and winter. Sometimes the forms are made in pockets of bent-over branches weighted to the ground by snow, and sometimes they are in bowl-shaped depressions in the snow at the base of spruce trees, called qamaniq, such areas being slightly warmer than others (Trapp, 1962: 54). Each hare usually has several forms within its home range. Normally hares do not use burrows unless an unused fox or porcupine burrow is available.

Hares make and follow paths in the snow, which often become quite well worn after an extended period of windless or snowless days. The population cycle of the snowshoe hare is not well known. Kobuk residents agree, however, that hares tend to reach a population high between eight years and twelve years.

In cold months, hares are snared around the Kuuvaŋmiit winter settlements, as they have been traditionally for as far back as people can remember. In times past, both men and women set snares made of twisted sinew, salmon-skin strips, or even strips of baleen obtained from the coast. A willow or bird bone tube, tuqluktaak, through which the noose slid was also used to prevent the hare from biting through the line. Nowadays, picture

frame hanging wire is used for snares because it is very flexible, slides easily, and cannot be chewed through by the animal. In a good year, two or three dozen hares may be snared by a family in a quarter-mile hunting range over a two-month period.

Rabbit drives, uŋuraq, are another means of taking hares. In the spring of former years a group of men and women from a settlement would select a long, narrow willow thicket bounded by open ground on both sides and would then stretch a long net about three feet high across one end of the thicket. Then the men and some of the women, acting as drivers, walked forward in a row from the opposite end hitting the bushes, calling out, and otherwise making noise. Any hares seen by these drivers were shot, but most hares fled in front of the men and were caught in the net. Since snowshoe hares will stay in the willow thickets and normally will not dart out across open areas even when frightened, the people were able to contain them easily in the ever-narrowing thicket. Other women meanwhile had dug out holes in the snow near the net, where they hid, and each time a hare was snared, a woman would rush out, club it, and then hide again to wait for the next one.

Rabbit drives are still carried on by the Kuuvaŋmiit but without the nets. Instead of being clubbed, the hares are shot as they try to flee the drivers. One technique is for two or more of the best shooters to conceal themselves near one end of a narrow strip of willows, while others drive the hares to them. As the fleeing hares emerge from the thicket, they are shot.

Normally, the drivers do not use firearms for fear of shooting someone during the drive. A successful rabbit drive can yield as many as one hundred hares, which are then divided equally among the participants.

In 1973 such a drive took place near Portage Creek on the Kiana-Selawik trail. A group of about eight men went out by snow machine in March to the narrow, triangular-shaped wooded section between the western side of Portage Creek and the tundra. Two hunters were stationed at an advantageous spot for shooting and the rest drove the hares from the far end to the spot where the two men with guns could pick them off.

In addition to furnishing meat, hares are important for their skins. To skin a hare, a slit is made in the skin starting along the inside of one back leg, often after cutting off the feet, and then across to the opposite leg. The whole skin is then pulled, inside out, over the rump and toward the head and is cut away from the carcass at the neck. The most important use of hare furs in the past was for woven blankets. Long rings of skin were cut and these were woven together into thick, warm blankets. Other uses for the furs were for children's inner garments and boots, and for adults' socks. Nowadays the furs are used for children's parkas and trimming.

Muskrat (kigvaluk)

Muskrats are especially numerous in the Kobuk River Delta area and in the Paa River Flats. They are also found throughout the Kobuk River Valley where there are shallow lakes and sloughs. Wherever the lakes have steep banks, such as at the numerous oxbow lakes in the floor of the valley, muskrats burrow into the banks from below water level so that their homes are protected by a subaquatic entrance. Where such burrows are not possible, muskrats make their homes out of piles of vegetation along shallow lakes. After freeze-up they also build series of brush piles, or "pushups" (noonon), in the lakes which are entered by tunnels from the peripheries where they feed.

Muskrats become active in March when they come out of their homes and feed on grass under the ice around the lakes. When water forms around the edges of the lakes and sloughs in April, they may be seen swimming there in the late evenings and early mornings. They are most abundant immediately after breakup when the spring floods drive them out of their homes.

Muskrat hunting and trapping was one of the major occupations of the Kuuvaŋmiit from the early 1900s to the early 1960s. At the beginning of the century their meat and skins were equally important, but by the 1920s, they had become more important for their fur. During the fur-trapping years from the 1910s until the 1950s, most families and their dog teams set off for a "rat camp" in late March or early April loaded down with an open boat

with a kayak strapped inside along with household and camping items. By late April, the villages were virtually abandoned except for storekeepers and teachers. Once set up in camp in the delta area or in the upper areas along lake shores, both the men and women hunted muskrats and, at the same time, geese. Since furs were worth more commercially if the animals had been trapped rather than shot, people made some effort to use traps. However, most muskrats were shot because a far greater quantity could be taken that way, making it a more lucrative process than trapping.

During a good season as many as 1,200 skins could be obtained by a single hunter, sometimes 100 in a single night. In 1953, 10,000 skins were received by a trader in one downriver village alone. The prices for skins vary from year to year depending on fluctuations in the world market. Skins from the Kobuk area were generally worth less than skins from Canada or the lower United States owing to the facts that the skins were thinner and so many had been shot.

In the last fifteen years, muskrat hunting has declined and the skins are mainly for home use. The muskrat parka is a popular item and is the standard dress parka. Muskrat backs from fifty to sixty animals are used for one man's parka and the lighter-colored bellies are used for the woman's parka. In addition to personal use, people also sell skins to each other. Prices in the first five years of the 1970s ranged from $1.00 to $1.75 per skin. In 1974, owing to a muskrat scarcity, skins were

nearly impossible to buy. A few were sent to Kotzebue where they sold for $4.00 per skin.

Muskrats are skinned by the casing method. Beginning at the inside of one of the hind legs, a slit is first made down the back of one hind leg and then across to the other. The skin is cleared away from the feet with a knife and pulled inside out over the body to the head. It is then cut away from the ears, eyes, and, finally, the nose. It is stretched inside out to dry on a long, rounded, triangular stretching board outside the tent. To be able to remove it easily from the board, a stick is inserted between the skin and the board while drying; when dry, the skin is somewhat larger than the board and can be easily slipped off. Because of the large numbers of skins a family might acquire, there are sometimes not enough drying boards. In that case the skins are put on for only a short while to shape them and are then dried unframed. In recent years, wire drying frames have become popular. Skins are also hung to dry on a clothesline, and it is a common sight in the spring to see a whole line of skins drying in the breeze.

As previously stated, muskrats are an excellent food animal. They are fat in the spring, when they are eaten roasted fresh. If they have been partially dried, they are boiled for eating.

Waterfowl

Approximately twenty-four species of waterfowl are known to and utilized by the Kuuvaŋmiit Eskimos (see p.74). For simplicity these can be grouped into two basic categories: geese and ducks.

The Kobuk River Valley is devoid of all waterfowl throughout the long winter. In late April, as the snow retreats before the spring sun, a few flights of ducks and one or two pairs of geese begin to be sighted at scattered locations along the valley. These flights increase in frequency until by mid-May the cries of geese and ducks are heard throughout the day and night.

By mid-June the ducks and geese have located mates and scattered into the marshes and sloughs. During an aerial survey of the upper and middle Kobuk River in July 1974 families of ducks, geese, and swans were spotted in virtually every lake and marsh. Particularly heavy concentrations were observed in the flats north of the Kobuk Sand Dunes.

As the summer draws to a close, young waterfowl are seen in the skies being trained by their parents for the approaching migration. In mid-September flocks of ducks and geese appear on the main river, although in smaller concentrations than in the spring, and the cries of ducks and geese are once again heard as "V"-shaped flights begin the southern migration. With the advent of freeze-up the land is once again barren of waterfowl.

Waterfowl are an important element in the subsistence pattern of the Kuuvaŋmiit people. In times past they obtained water-

fowl with bolas, bird arrows, and snares. They also harvested flightless birds in molt during the summer. The meat of waterfowl was dried or stored for future use in a cool place, such as in a snowdrift in early summer or next to the permafrost.

Today waterfowl are taken primarily with shotguns, although at least one Native woman of the upper Kobuk River snared geese during the fall of 1974. Occasionally duck meat not eaten fresh is dried, but usually it is preserved by freezing in home freezers.

The Kobuk River Eskimos are quite efficient in their hunting of waterfowl because they know the most productive bird-hunting sites. When hunters described their waterfowl-hunting activities, many of them pinpointed the same spot on a given lake or river bar as a profitable site. They knew what type of waterfowl to expect there and the approximate time of day they would be active.

When an Eskimo hunter is shooting ducks and geese he often uses the first dead bird as a decoy. He drives a thin stake down the bird's throat, through the flesh near the breast, and into the ground. The fowl is positioned with its head erect, so that it resembles a live goose or duck resting in a marsh or on a bar. Other waterfowl flying over are drawn lower by this apparent evidence of safety. Young boys and some men can produce a remarkable imitation of waterfowl calls and draw birds to their blinds.

Observations and interviews in the upper Kobuk River Valley indicate that an average household consumes up to twenty-five ducks and thirty geese in any given year.

Ptarmigan (aqargiq)

Willow ptarmigan are an important source of fresh meat for the Kuuvaŋmiit in the winter, although fluctuations in their population make them undependable. These fluctuations occur with some regularity and are referred to by biologists as the "ptarmigan cycle." According to a study made by Roberts (1963:7) in northwestern Alaska for the period between 1877 and 1952, high willow ptarmigan populations occurred every 8.9 years, low populations occurred every 11.7 years, and intermediate populations occurred every 5.0 years.

Ptarmigan are hunted in the fall when they have changed to their white winter plumage but before the first snow falls, so that they are visible at long distances. At this time, they fly and feed in large flocks, and though they flush readily, they can be approached close enough to be shot. Formerly, they were shot with bow and arrow, but in the twentieth century a .22 caliber rifle has been used. Hunting trips in the fall are rarely made for the express purpose of hunting ptarmigan--rather, the birds are shot incidentally while a person is en route to fishing, berry picking, or some other pursuit. The hunter keeps his rifle handy in his boat and may kill a dozen or more birds of a flock in the willows next to shore or at the edge of the tundra, before the rest fly off.

Ptarmigan remain in large flocks after the snow falls until late November. They stay together in one vicinity feeding on

dead willow leaves still clinging to branches until they are depleted and then they move on. The Kuuvaŋmiit hunt them at this time by setting snares (nigatchiaq, sing.) in and among the willow thickets along the stream banks. Formerly, the snares were made of twisted sinew or salmon skin tied in loops of about five inches in diameter. These were set at ground level across openings in the willows where trails in the snow indicated that ptarmigan had passed. Recently snares have been made with twisted strands of pliable picture framing wire. Willow brush is piled up as a kind of fence (saputit) on both sides of the snare, out to a distance of four feet or more. Ptarmigan encountering the fence follow it until they see the opening, and while trying to dart through it, they are snared.

Ptarmigan generally disperse during the dead of winter and are rarely encountered in large flocks. As in the fall, men seldom go out expressly to hunt them. Instead, they are shot when a person is out traveling or hunting caribou, and a .22 caliber rifle is always kept handy for such a contingency. Children who are old enough, however, walk to the outskirts of the villages specifically to hunt ptarmigan with a .22 rifle during the winter.

In the spring, ptarmigan again flock together, and many villagers take part in hunting them. One productive method of hunting in the past was with nets. James Wells of Noorvik (1974: 29) offers a good description:

> The story is told how the ptarmigan are caught with a net. A man would take his sled and fill it with green willows cut long enough to be used for a net and short willows cut to be used as feed for the birds. He pulls the sled to a lake where the ptarmigan have been flying by. In the morning the ptarmigan usually fly around looking for a good place to feed after the willows have been thawed out by the sun. The man stands up the long green willows in a line on a snowbank out in the open so the birds can land on them to feed. The bottoms of the willows are open. The net is hung up with weights on top. The small willows are then set up on the side where the birds will have a good feed.
>
> The trick the hunter uses is simple. First he hides and watches for the birds to come. He has with him a wing of the bird hawk tied up to a willow stretched out so the ptarmigan can see it when he lifts it out from his hiding place. He has a peek hole where he can watch the birds if they land there. He waits for a good chance to scare them with this bird hawk wing.
>
> Finally a flock of birds, say twenty-five or thirty, land there. For a while they watch the area where they land, but they do not see anybody around so they start to feed. At first they feed on the big willows and then they jump down to feed on the shorter willows. The hunter watches through a peek hole. Finally when they bunch up close to him he pushes out wiht the wing high and makes a motion as if a bird hawk were landing on them. The ptarmigan get scared and fly under the tall willows to hide away. Then the weight of the net drops down, the birds are covered, they tangle up their wings in the net, and they are caught.

In recent years, the only method by which ptarmigan are hunted in spring has been with the rifle. They are hunted at the same time hares are, so that a hunter may come home with both.

Rock ptarmigan (<u>niqsaaqtuniq</u>) are uncommon in the Kobuk River Valley except in the mountainous sections of the upriver area. Because of their distance from the villages and streams they are not so often hunted as are the willow ptarmigan.

IX

TRAPPING

The animals that the Kuuvaŋmiit hunt are used primarily for food, although skins, bones, sinew, and other parts of the animals are also utilized. Wildlife that is trapped, on the other hand, is taken principally for its fur, although some animals are eaten. Over the centuries the Kuuvaŋmiit developed a variety of efficient techniques for trapping game. Some of these devices survived up until recent years when they were superseded by modern steel traps and snares. Joe Sun, Charlie Sheldon, Charlie Lee, and others of the older men along the Kobuk River remembered using various Native-built deadfalls and snares to take martens, marmots, lynx, and other such fur bearers well into the 1930s and 1940s.

The people of the Kobuk River, unlike the Koyukuk Indians to the east, do not recognize exclusive use or "ownership" of a given trapping area by one individual or family. While an individual may use the same area over a period of several years for trapping, this does not prevent others from running traplines through the area. Because of this "open use" policy, Kuuvaŋmiit trappers tend to be secretive as to their trapping activities. Most are reluctant to discuss where they trap or what success they enjoy for fear of attracting others to their areas. According to older informants, trappers never told anyone except their immediate

families where they were going when they left the village for a trapping trip.

Two natural forces working against the establishment of set trapping territories are the mobility of fur-bearing animals and their relative scarcity. The Kobuk River Valley is only a marginal trapping environment when compared to such fur-rich areas as the Kuskokwim River and the Yukon River Flats around Ft. Yukon. The major target species--foxes, wolves, and wolverines--travel widely according to the availability of food. The populations of martens, mink, otters, and lynx are spotty and will produce profitable returns in relation to the effort expended only if the trapper is able to move frequently so as not to deplete localized concentrations.

The Kobuk River Natives have an oral history that tells of a fur trade system between the inland Eskimos and coastal Eskimos extending back well beyond the nineteenth century. The skins of wolves, wolverines, beavers, lynx, and other such fur bearers that were not needed for the Eskimos' personal clothing were traded for such coastal products as seal oil, muktuk, sealskins, and ivory. This trade continues in modified form today.

During the early nineteenth century trade goods of foreign manufacture began arriving in the Kobuk River Valley via Native traders who annually met with the Kotzebue Sound and Kobuk, Noatak, and Selawik river Eskimos at the mouth of Hotham Inlet (Foote, 1965:108-28). To acquire enough trade items to obtain these goods, the Kuuvaŋmiit traveled and trapped deep into the

central Brooks Range, occasionally beyond the Anaktuvuk River. They also served as middlemen in the transfer of Russian goods into the Koyukuk River Valley.

After the establishment of trading posts along the Kobuk River in the early 1900s trapping became more of a cash economy than a bartering economy. Fur prices and trapping activities increased until the early 1930s when the wild fur market was virtually crushed by the Depression and by the increased use of domesticated fur bearers. The Kobuk River Natives continued to rely on trapping as a diminishing, yet important, source of income into the 1950s, when other forms of employment became increasingly available.

During the peak of commercial trapping, which was in the 1920s, the area utilized by the Kuuvaŋmiit trappers expanded dramatically. Traveling by dog sled, they ranged as far north as the Colville River and as far south as the Huslia River. To the east they went to the middle Alatna River, and to the west just beyond the Hunt River (Map 4). These boundaries were maintained into the 1940s and early 1950s.

Exploiting the farther limits of the trapping zone called for considerable travel, and trappers found it convenient to journey in small parties with two or three dog teams. It was far easier to open and maintain trails with two teams than it was with one. There was also safety in numbers. It was not uncommon for a man to take his wife and sometimes a child or two

with him if he planned to be absent from the village for an extended period.

Trapping is still one of the subsistence activities of the Kuuvaŋmiit, particularly those in the three upriver villages, but now most trappers take their prey within a twenty-five mile radius of their homes and they visit their traps by snow machine. In the fall of 1974 one Native trapper from the upper Kobuk River built a sod igloo well above the village of Kobuk so that he could live close to his trapping area, but he was an exception. Only a few men continue to establish tent camps at the far edges of their trapping field, and they use these only in case of bad weather or machine breakdown.

Trapping involves the risk of losing game even after it has been caught. The escape of an animal from a trap can be a substantial loss to the trapper, particularly if the animal is large and particularly if it carries away a valuable trap. The Kuuvaŋmiit help one another by killing an animal observed in another person's trap and then either notifying the owner of its presence or carrying the animal back to the person's home. It is customary for the wife of the trap's owner to return this kindness by making a pair of gloves, skin socks, or other such gift for the assisting person.

A large percentage of the furs taken by village trappers today are used locally or are traded to friends, relatives, or partners in Kotzebue and other coastal villages. A few are sold to distant fur markets. In this respect trapping has come full

circle. It has the same place it had in the Kuuvaŋmiit economy before the arrival of Europeans.

Red Fox (kayuqtuq)

The red foxes are found throughout the Kobuk River Valley and are the animal most often trapped. Their furs are usually sold, but some are kept locally for such things as parka ruffs, trim, and mitten linings.

While foxes may be found in all environmental zones, they occur most frequently in open or lightly forested plains within broad valleys. They are generally well scattered, occurring in concentrations only temporarily where there are substantial numbers of rodents or the remains of hunting activities.

The Number 2 steel jaw trap is the one most used for foxes. A trap may be set near the carcass of a dead caribou or a pile of animal intestines, or it may be set on a small knoll or near some muskrat pushups. When the site is picked, the trap is placed in a small excavation in the snow and covered with a thin sheet of tissue paper. A light dusting of loose snow is used to conceal signs of disturbance. A trap toggle, usually a stick of dry wood, is also buried in the snow to help prevent escape. Bait in the form of fish or rotten meat may be placed just upwind of such a set.

Wolf (amaġuq)

The gray wolf is the largest land mammal predator in Alaska and is common throughout the Kobuk region. The wolf population of the delta area is somewhat less than that of the upper valley. Wolves are highly mobile animals that tend to move and associate in groups (packs) ranging from two to ten members. Larger packs have been reported, but five to seven wolves are the number that commonly travel together. Such packs cover extensive areas in their search for food. From late spring through summer they rear new litters, and they are consequently less mobile then than at other times. This is the period when their food is most abundant, and they may be spotted near river banks feeding on small game, spawning salmon, and the occasional ungulate that stops to drink at the streams. With the onset of winter the wolves are forced to resume their nomadic ways. Caribou, moose, and sheep become their primary food sources, although they also catch small game.

The Kuuvaŋmiit Eskimos regard all wolves as potentially dangerous, but a well-fed, healthy wolf is not considered as dangerous as a thin, old animal which is unable to capture natural prey. When traveling or camping, the Eskimos usually have a firearm handy in case they encounter wolves. They also regard wolves as a valued resource for furs. A wolf pelt is a prized fur for parkas, mittens, and other clothing.

Until the late 1950s a bounty was paid on wolves, and the Kuuvaŋmiit checked known den sites in the region each spring and

summer for new litters that could be converted into bounty money. Summer wolf hunts were also conducted in the upper Noatak River Valley by hunters with pack dogs. Since the repeal of the bounty, wolves are rarely shot during the summer.

Wolf trapping and hunting becomes important in the late fall and throughout the long winter months. It ceases when the wolves begin to shed their undercoats in late April. Wolves are considered intelligent animals and not easy to trap. Young, inexperienced wolves are most prone to capture by hunters and trappers.

Wolf trapping is basically the same as fox trapping except that a much heavier trap and a larger toggle are used. When found, partly consumed wolf kills (moose, caribou, etc.) are used as bait for the traps. In forested areas a trapper will often pack down a trail in the deep snow and then set a baited wolf trap at its edge, so that when wolves use his trail they will be drawn to the trap. Because of their size, wolf traps are potentially dangerous to men and huskies, so most Natives set up markers nearby to warn of their presence.

Wolves are also hunted by snow machine during the winter. A few men are quite skilled in predicting the behavior of wolves and are able to approach close enough for accurate shooting.

Wolf harvests for the three upper Kobuk River villages totalled sixty-five animals in 1972-73, twenty-two in 1973-74, and thirty-three during the winter of 1974-75. In the two downriver villages at least six were shot in 1972-73, approximately eight in 1973-74, and approximately ten in 1974-75. From 65 to

70 percent of these hides are used locally for clothing or are traded and sold to Natives in the coastal villages; the rest are sold to furriers.

Wolverine (qapvik)

Wolverines inhabit basically the same terrain that wolves do, but unlike wolves they are solitary creatures traveling alone except for brief mating periods and when caring for their young. They are also highly mobile, but tend to remain in a given area somewhat longer than wolves do.

Although the wolverine is a relatively small animal, from two to three feet in length and weighing from twenty to thirty pounds, it is reputed to be extremely strong and fierce. Kuuvaŋmiit informants credit wolverines with killing both caribou and moose and being able to drive wolves from their kill. Normally, however, the wolverine is a scavenger living off the remains of human and wolf kills.

Wolverines are occasionally taken in wolf traps. When fresh wolverine tracks are discovered, a trapper will usually set a baited trap nearby. Heavy-gauge snares are also used. Either device must be checked frequently, because a caught wolverine will literally bite off its toes in order to escape.

The wolverine harvest for the upper Kobuk River villages was forty-three animals in 1972-73, seventeen in 1973-74, and eighteen in 1974-75. In the two lower river villages at least six were

shot in 1972-73, seventeen in 1973-74, and nine in 1974-75. Virtually all of these pelts were used locally or traded to coastal Natives for use as trim on parkas, boots, and mittens.

Lynx (nuutuuyiq)

The lynx is the only true member of the cat family in northern Alaska. It is primarily a tree- and brush-dwelling creature, although it is occasionally seen on the tundra far from the forest.

Along the Kobuk, lynx are found mostly near the edges of the river in willow and alder thickets. Here they live off hares, mice, ptarmigan, and other small game. The lynx population seems to follow the same cycle as that of the hare.

The Kuuvaŋmiit have a variety of methods for trapping lynx. Snowshoe trails through thick brush are often chosen as good places to bury Number 3 or Number 4 steel-jaw traps beneath the snow crust. Sometimes a wire snare is attached to a sapling or tree overhanging the trail. Cubby sets, formed of branches and brush set next to a large tree in such a way as to provide shelter are also used to catch lynx. They have a trap buried at the front part (Fig.54). These sets usually have the wing of a ptarmigan or a piece of caribou hide tacked to the tree trunk inside the cubby. The open entrance is partially blocked with short twigs which leaves an opening directly over the hidden trap. The lynx will step into this open space when investigating the

bait. In former times deadfalls like that shown in Figure 55 were another means of trapping lynx.

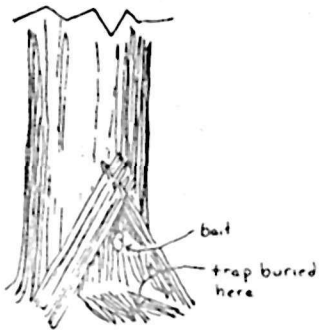


Figure 54. Cubby set used to trap lynx.

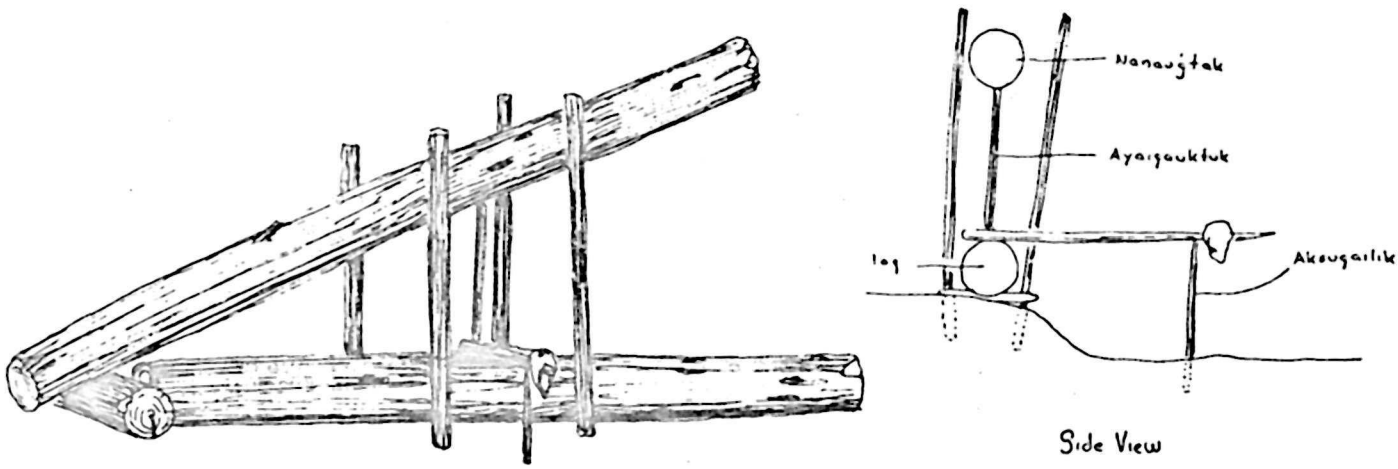


Figure 55. Deadfall for lynx.

Unlike other creatures, lynx usually do not fight a trap when caught. They will sit quietly even when approached by a human. The trapper usually kills a trapped lynx by attaching a

wire loop to the end of a pole and then dropping the loop over the lynx's head to strangle it. This is usually a quick operation and results in the least damage to the pelt.

It should be noted that lynx meat is excellent, and usually the animals are cooked and eaten after skinning.

The lynx harvest for the upper Kobuk River was twenty-one animals in 1972-73, thirteen in 1973-74, and twelve in 1974-75. In the lower Kobuk River area at least nine were trapped in 1972-73, approximately twenty-two in 1973-74, and approximately thirteen in 1974-75. The increasingly smaller take was partially due to a low in the hare-lynx population cycle. Some of the furs were used in the manufacture of mittens but the majority were sold to distant fur buyers.

Marten (qapvaitchiaq)

Martens are relatively sedentary forest dwellers that live off red squirrels, birds, and other small game. The Kobuk River Valley is the northwestern fringe of their environment and consequently they are not numerous. Martens were formerly trapped throughout the Kobuk River Valley, but the upper valley above the village of Kobuk has been the most productive ground. Today martens continue to be trapped in small numbers around the communities of Ambler, Shungnak, and Kobuk. In addition to being sold commercially, their fur is used for mitten linings and caps.

Martens are relatively easy to trap and their population can be reduced very quickly if they are hunted intensively. One simple means of taking a marten is to place a small steel trap on a leaning pole that has a ptarmigan wing attached to it just above the trap. The trap chain is either wired or nailed to the pole. The marten will run up the pole over the trap to reach the bird wing. A second means of taking these animals is to build a small cubby similar to that shown in Figure 54. It is placed at the base of a spruce tree and baited with a bird wing or rotten fish.

The take of marten during the 1974-75 year was small in the upriver area; none reputedly was taken in the downriver area between 1972 and 1975.

Beaver (paluqtaq)

Beavers, North America's largest rodents, are found at scattered locations from the headwaters of the Kobuk River to just above the delta. These animals require brush suitable for food and dam building and a stable supply of water. Like their cousins the martens, they are in their most northwestern limits within the Kobuk River Valley.

According to informants on the upper Kobuk River, beavers were uncommon in the central valley until some thirty or forty years ago when they began moving into the area from the Paa River Flats and soon colonized local streams and lakes. Beaver popula-

tions are now diminishing in the upper valley and are on the increase in the Selawik Lowlands.

The Kuuvaŋmiit Eskimos view beavers with mixed feelings. While they desire their pelts and meat, at the same time they resent the beavers' building dams across lake outlets and small streams, thus cutting off access to whitefish and other fish species. Several Selawik Natives complained that beavers on the Kugarak River were reducing the whitefish run in the Selawik River. Other Natives also see beavers as a factor in reduced fish runs.

Prior to the early 1900s, beavers were usually obtained by chopping open their houses or by shooting them with arrows as they swam in the water. They were also speared from a kayak. With the introduction of firearms, they could be shot from a kayak or boat. While a limited amount of hunting continues to be done for immediate subsistence uses, the take is minor and has little impact on the beaver population.

Winter trapping for beavers became a common practice in the upper Kobuk area with the introduction of steel traps. At best, it is an arduous undertaking. To set a trap and place bait requires chipping through several feet of ice, and checking the set and removing the catch requires breaking open the new ice over the hole. A certain amount of danger is involved because areas of very thin ice are to be found around an active beaver lodge. More than one person has fallen through such weak spots.

If the person can pull himself out before drowning, he faces sub-zero temperatures in soaking wet clothing.

Most beaver trapping in the past was done with steel traps secured to poles and placed near feed piles or runways leading from the lodge. Recently heavy-gauge wire snares and double-spring connibear traps have become popular.

Most beaver furs today are used locally for the manufacture of hats, boots, and mittens. For the fur market, late winter pelts are desired. The meat of beaver is a welcome addition to the daily fare.

Otter (pamiuqtuuq)

The river otter, a large member of the weasel family, is found in small streams and lakes throughout the Kobuk region. Kuuvaŋmiit Eskimos regard the otter as "the best hunter." They say that otters catch and kill beavers, mink, muskrats, ducks, and fish, and they are blamed for causing declines in the populations of other aquatic animals.

Otters are relatively difficult to trap. Traps may be set along the sides of narrow streams where the animals place their paws as they swim along, or near well-used slides that lead into holes in the ice. Otters are occasionally taken in beaver sets as they try to enter a beaver lodge.

Historically, their fur was an important trade item. Today it is used by the Kuuvaŋmiit mainly for boots and mittens.

Marmot (siksrikpak)

The hoary marmot is an alpine dweller that lives above the tree line in mountains throughout the Kobuk region. It is a relatively large rodent occasionally weighing up to twenty pounds.

Marmots were once heavily exploited by the Kuuvaŋmiit, particularly during the 1920s and 1930s, but this exploitation has decreased substantially over the past several years. The reason is primarily that they are more abundant in the Noatak area than in the Kobuk area, and they used to be taken during summer and fall hunts for caribou in the Noatak River Valley. Now that caribou are plentiful in the Kobuk region, the Kuuvaŋmiit have little need to journey to the northern mountains. If the caribou once again desert the Kobuk River Valley, then utilization of the marmot for food could again increase.

According to Joe Sun, marmots are found at the heads of steep mountain creeks in bowl-shaped drainages. A certain type of meadow grass, umuguraq, grows in such locations and is a prime diet of the marmot. Small piles of rocks in these high meadows are indicators of den sites. The principal harvest of marmots was made between mid-August and late September when the animals were particularly fat and had prime skins.

The most common means of taking marmots was a deadfall of large flat rocks constructed at the entrances to dens. When men planned to trap marmots in a given area they avoided firing guns or making loud noises that would make the animals wary. They

would also camp some distance from the trapping area. If men were simply passing through an area, they would hunt the marmots with rifles. Charlie Sheldon of Shungnak said that several years ago he and his father trapped two hundred marmots in one summer. They sold the skins for one dollar each to a local trader.

When a marmot is killed, it is skinned and gutted. The carcass is hung on a willow by the hind legs for partial drying. A willow rod is rammed into the throat and down into the chest cavity to facilitate the drainage of blood. The head remains on the carcass, as the Kuuvaŋmiit like to eat marmot heads as well as the bodies. The skin is scraped of fat and flesh and hung separately on willows to dry.

Marmot skins are highly prized as material for parkas and other clothing. In times past, the skins were bartered to coastal Natives.

Mink (tigiaqpak)

Mink are small, semiaquatic members of the weasel family. They are found in lowland marshes and along the edges of lakes, sloughs, and small streams. In the winter, they often cross the ice to investigate muskrat pushups. Their dens are usually in abandoned muskrat holes, and near them can be seen small, well-used trails radiating out to the nearby terrain. When a mink

kills a muskrat or other small mammal, it drags the carcass to whatever brush is nearby and hides it there for future feeding.

A Native trapper is alert for mink tracks and will try to follow them to a den or cache site. He also tries to locate regularly used trails along the shores of waterways. Once these locations or trails are discovered, he places a Number 1-1/2 or Number 2 steel-jaw trap on the runway or near the cached prey. Bait in the form of rotten fish eggs or other decomposed flesh is used to draw the mink to the trap (Nelson, 1973:209-15).

In times past, mink skins were used by the Kuuvaŋmiit for trimming clothes (see p.419). The pelts were also traded to coastal Natives and to Siberian traders, and later they became part of the commercial fur trade. The few that are obtained at present are used locally.

X

GATHERING

Kuuvaŋmiit have long depended on wild berries, leafy vegetables, and tubers to supplement their meat and fish diet. These have all come from the plants they gather in the summer and fall and store for use throughout the rest of the year. In Forest Eskimos Giddings reported conversations with Natives of the upper Kobuk River who remembered traditional subsistence living around 1880. He summarized their descriptions as follows:

> While some members of the family mend nets, others take digging sticks and hunt for polygonum roots and tubers along the banks of the river and inland on the margins of ponds. Willow leaves are gathered for food early in the season, as is also wild rhubarb and a variety of other green plants. Some greens are eaten raw with fish oil, while others are boiled into the stew with fish or meat. (Giddings, 1956:10)

> August is . . . berry-picking time. The women take every opportunity to go out on the slopes of the hills with birch bark baskets and beating sticks to secure quantities of blueberries, some of which can be preserved in oil, some eaten at once, and some allowed to half dry for winter use. Other berries, such as cranberries, black and red currants, and yellow cloudberries, are eaten as they ripen but are seldom kept for any length of time. (Giddings, 1956:17)

The photographer Edward S. Curtis (1930:208), who traveled along the Kobuk River in 1920, likewise mentioned the gathering of blueberries and cranberries. He also described the collecting of blackberries, salmonberries, and masru (Eskimo potato) as part

of the Natives' subsistence activities. Masru was crushed, and later used "like butter." Berries and masru were kept in caches with the meat and fish. Curtis also noted that sealskin pokes were obtained from the coast for storing berries and masru.

A Kiana resident born in 1880 (see pp.87-91) remembers the gathering of wild rhubarb, sourdock, and berries during the days when she was young. According to her, cranberries, which are not easily crushed, were stored in cloth flour sacks, while other types of berries, softer, were kept in sealskin pokes. An elderly resident of Noorvik (see pp.79-87) told us that those who did not have storage containers dug a hole in the ground for berry storage. The hole was lined with large leaves, the berries were then put in, and more leaves were put on top, after which the hole was sealed with mud. Along the lower Kobuk River, then, berries in earlier days were stored in sealskin pokes, cached, or buried in the ground where permafrost preserved them. After contact with whites, who brought in flour in cloth bags, the Kuuvaŋmiit switched from sealskin pokes to flour bags for cranberry storage.

Along the upper Kobuk River, Shungnak Natives told us of two methods formerly used to store berries. In one, the berries were put into round or oval birch-bark baskets (qalivik) with large leaves or a layer of seal oil used to seal them. The baskets were then placed in a deep hole in the permafrost and covered with moss and earth. In the second method the berries and sugar were put in alternating layers in wooden kegs and the kegs were

then buried in the permafrost. Wooden kegs and sugar are post-contact items, so this is no doubt the more recent of the two methods. People from the lower Kobuk were close to the coast and could easily obtain sealskin pokes, whereas people from the upper Kobuk had a ready supply of birch bark for their storage baskets, and the means of storage seems to reflect the materials available.

By the mid-twentieth century canned vegetables and fruits had become available at trading posts and Native cooperative stores along the Kobuk River. Such items do not decrease the summer and fall gathering activities of the Kuuvaŋmiit, however. Rather, the store-bought products give variety and ensure a supply of fruits and vegetables throughout the year. Very little fresh produce arrives at the villages because of the difficulties of shipping perishable items, and when they do arrive, they are quickly sold out. The prices are high, about double the price outside of Alaska, and are becoming even higher.

All Kuuvaŋmiit families today actively gather berries and edible plants in order to secure fresh produce for themselves. As soon as the willow leaves come out in the spring, children are beside them, picking and munching on them. Any cranberries left unpicked in the fall cling to the branches, frozen, all winter, and the children soon learn to spot them. These berries are juicier and sweeter than the fresh ripe ones, and the youngsters eat all they can find. Each year the women eagerly await the time when berries and other plants will be ready for picking.

They worry that a cold summer may damage the blueberries, and they wonder over an occasional poor year for cranberries. When the time comes, they know and seek the places where yields will be the most plentiful.

Berries

The picking time for berries and other wild plants is frequently synchronized with a fishing trip, although sometimes an expedition is organized solely for gathering purposes. Such occasions are pleasurable times for the whole family and are much looked forward to. The picking is done mostly by women and children, and close relations or friends without means of travel may join the group. A young son who has learned how to run the outboard motor is at the helm of the boat and if the father is free or if the trip involves camping out overnight, the father also goes along. If the previous winter was exceptionally cold, with light snow, and the frost reached deeply into the ground, the family can anticipate that August will be the most promising blueberry-picking time. Older women take along their birch-bark baskets, often inherited from their mothers. Children who do not yet own birch-bark baskets take along plastic buckets or, if they are going to pick low-bush cranberries, cloth flour bags or plastic bags. Once at the site where the berries are plentiful, each woman tries to pick as much as she can. The older women have wooden ladles that they use to beat the blueberries into the

baskets the way their mothers and grandmothers did in the past. Even though this gives them many leaves mixed with the berries, it is the fastest method. Others use one hand or both hands to pick, depending on their individual dexterity. Big, ripe, juicy berries are tempting to the palate, and once in a while the pickers pop them into their mouths instead of into the baskets.

On a warm day, the mosquitos are out, and after a while a break is welcome. The family brings paniktok (dried fish or meat) for a snack. They gather around to share the food, chat, and joke among themselves, and compare the amount each has collected so far. After the break, the berry picking continues or they move to another location where other berries can be found. Each family takes great pride in the success of its effort. A successful berry-picking summer is measured by the number of barrels of blueberries and the number of flour bags of low-bush cranberries picked.

Of all the berries found along the Kobuk River, blueberries (asriavik) are the most abundant. Low-bush cranberries (kikmiñaq) are next. Plants with lower yields are salmonberries or cloudberries (aqpik), Alpine bearberries (kavlaq), bearberries (tinnik), blackberries (paungaq), and American red currants (niviŋaqutaq). Likewise picked and eaten off the bush are rose hips (igruŋnaq).

The storage of berries is today facilitated by the use of home freezers. Low-bush cranberries, which keep well, can simply be kept in bags in the family's cache or storm shed. Some women spread the cranberries in the sun to dry before storing them in

gunny sacks. Kuuvaŋmiit of 1880 served aqutuq, a mixture of chopped caribou fat, berries, and seal oil, as a special treat during the midwinter ceremonies (Giddings, 1961:135). It is still a special dish for occasions like birthday parties and funerals. In fact, the Kuuvaŋmiit enjoy it so much that they are inventing new varieties of it. One such aqutuq dish mixes blueberries with boiled, separated fish meat and seal oil, and another mixes caribou fat with canned fruit cocktail and seal oil. Blueberries are also eaten with canned milk and sugar. Sometimes blueberries are cooked with cornstarch and sugar and then used as a pudding or jam. For a tangy variation, blueberries and/or salmonberries are cooked with rhubarb. The Eskimos prefer bearberries and cranberries mixed with the oil of seals or fish. Cranberries fried in oil are said to help cure a sore throat. (For the use of berries and wild plants for medicinal purposes, see the section on folk medicine, p.444).

Questions addressed to Natives of Kiana about berry picking led unexpectedly to a bit of folklore. It seems that an area much used for bearberry picking by both the lower and upper Kobuk Kuuvaŋmiit is Qaqłiikuvik (449: Kavet Creek). Shungnak and Kobuk villagers on their way to the coast would stop at the mouth of the creek to camp, and at the end of the summer, on their way back home, they stayed there to pick bearberries. Until 1961 when a fire burned the area, villagers went there once a year. They believed that they were not to go more often than that. Walking up the sand dunes at the river's edge, each person carried

a willow stake about five feet long. They passed along a trail marked by such stakes. At the end of the line of stakes, each person drove his or her stake into the ground, thus extending the trail markers. Each person remembered his or her stakes, for a belief attached to them was that if a person's stake fell over, that person would die. This meant that each year, each person who went back checked his or her stakes, and presumably those of relatives and friends who could not go that year, to make sure that they were securely lodged. The functional aspect of this belief and this practice was the automatic maintenance of the trail year after year. The trail was "very straight and beautiful" with the markers, according to our informant.

Wild Vegetables and Usable Plants

Wild vegetables are not as abundant as berries. Within the recent past, the inner bark of young willows (nanatkuk) was commonly eaten. The immature plants, up to three feet in height, were cut in the early summer. The outer bark was first peeled off and then the inner layer was eaten by pulling it through the teeth. It was eaten in season only, and no preservation or storage was made. Willow shoots or the tips of young willows (isiigagaak) as well as the young spring willow leaves (suura) were part of the vegetable diet of both the upper and the lower Kobuk River Natives, but they were most favored by those from the coast. The leaves were picked in the spring and stored in

seal oil for later use. Another kind of wild leaves eaten with oil and sugar and considered a good accompaniment to fish dishes is saxifrage (asriachiak, meaning little berries, the same term used for raisins). The leaves, round and scallop-edged, have a nutty taste. The plants grow along the river bluffs to a height of about ten inches, and the leaves are ready to be picked in July.

Sourdock or wild spinach (quagaq) grows in marshy spots on the tundra and along the river and is picked around June for use as a salad. Along the upper Kobuk, where sourdock is especially plentiful, leaves that are not eaten fresh are cooked and stored in barrels, covered with a layer of sugar, and then topped with large leaves. The barrels are capped and buried in the permafrost. The sourdock harvest is intensive also in Noorvik, but in Kiana, villagers collect more rhubarb. Trips to check the gill nets in late June include looking for wild rhubarb along the sand bars, even into the willow thickets. In cooking, the leaves as well as the stalks are boiled and then sprinkled with sugar. As for wild chives (paatitaaq), the gravel beach at Onion Portage is known among villagers of the upper as well as the lower Kobuk River as one of the richest spots to collect them. These greens gave the Onion Portage archeological site its name. Other areas where wild chives can be found are near large lakes and along river banks, especially near the head of the Kobuk River.

September, after the ground has begun to freeze, is the best time to collect masru or Eskimo potato. Masru gathered in summer is rubbery and untasty, but in fall the cold weather makes it sweet. The plants, which look like tall grass, grow along the inland edge of gravel bars next to willows. The roots are dug up with a digging stick. A quicker way, however, is to steal them from a mouse hole! To locate mouse holes, the women who do the masru collecting look for areas with poplars. When mouse holes (uva iniġit) with mud on top are spotted, the women test them for masru either with their feet or with their digging sticks. If the mice have been industrious, as much as a whole mound of masru can be collected, a cache as large as one foot square. Through this labor-saving device, some women can collect a barrelful by the end of the season. Masru taken from a mouse cache is called nivii. After removing the masru, upper as well as lower river Kuuvaŋmiit usually replace them with dry fish or pieces of bread before putting the dirt back over the hole. They do not want to starve these hard-working mice, for next year they would like to depend again on their good labor. Masru storing in the past was done by burying the tubers in permafrost. At present, they are kept in the storm shed in a barrel with the lid on tight. Upon occasion the mice steal them back!

A number of other vegetables and plants are known to be edible and are used occasionally. They include wild celery (ikuusuq), the young shoots of fireweed (quppiqutaq), and the roots of Parry's wallflower (masu aigaq) (Webster and Zibell,

1970:99). The juice from the trunk of the spruce tree was said by Stoney (1900:100) to be drinkable.

Several varieties of grass and moss have also been used by the Kuuvaŋmiit in times past. Manaq and ipagaksraq are mosses formerly used as wicks in stone lamps, and another variety of moss called tingauraq and the silky bristles of cotton grass (palliksraq) were used as tinder. Eskimo boots, kamik, were insulated with dry grass called punak. In fall, whitefish caught in fish traps were carried home in braided, round grass sacks or baskets about one and one-half feet across and one and one-half feet deep called kuukulchon (Giddings, 1961:43). Lacking cloth diapers, mothers in the old days lined their babies' caribou-skin diapers with the spongy moss known as uġruq. Nowadays, log cabins along the Kobuk River are still chinked with the sphagnum called ivruiyaq, collected during the summer.

Trees

The utilization of various species of trees and tree parts is an integral part of subsistence living for the Kuuvaŋmiit. The trees described below are all used for firewood as well as for specific other purposes.

Willow and Spruce

Until the first part of the twentieth century the wood from spruce and willow was the primary material for hunting and fishing equipment. Bows, used until the turn of the century, were usually made of spruce, although occasionally they were also made from diamond-leaf willow (qanuŋiaq) and birch. Fish nets were made from the inner bark of willow cut into narrow strips and twisted together. This task of net making was the most time consuming of all the Kuuvaŋmiit women's activities.

Snowshoes, still occasionally made by the Kuuvaŋmiit, and dog collars were made of diamond-leaf willow (qanuŋiaq). Willow leaves and the inner bark were part of the food diet, as previously mentioned, and the inner bark was made into strips and braided together to make one type of rope. The acquisition of cloth after white men came to the area, later modified this rope-making technique: instead of braiding three strands of willow-bark strips together, two strips of cloth were braided with one strip of willow bark. The heavy ropes for nets were made with spruce roots wrapped with birch bark.

Formerly, to build a house and standing cache at the summer fish camp, willow poles, spruce bark, and moss were required. The men had first to go to the hills where good spruce trees could be found. Two rings, six feet apart, were then cut around the trunks of large trees and the bark peeled off. For the house and fish cache, about fifteen such bark sections were needed.

The moss was next gathered, and after this came a search for long, straight willows to be made into the frame poles of the house. The poles were tied at the top with a small opening left for the smoke hole, and this frame was covered with the moss and spruce-bark sections collected earlier. The spruce bark was likewise put over the fish cache to protect the fish from rain. The upper river Kuuvaŋmiit, closer to the supply of birch bark, occasionally used this material instead of willow bark for the roofs of the summer house and fish cache (Giddings, 1961:35, 48). Other uses for trees and their parts, such as for building fish racks, traps, and lures, have been described in the sections on fishing, trapping, and small game hunting.

Nowadays permanent houses at summer fish camps are still built occasionally, although white canvas tents, with or without a wooden tent frame, are more common. Spruce logs are used for the house frames, and manufactured lumber, corrugated sheet metal, tar paper, and visquine are variously used for the siding and roofing of the house. Green spruce and driftwood are still used for fish racks and caches.

One of the most important uses of spruce nowadays is for erecting caches next to the dwellings in the village. The two most common forms are the uŋaluraq, a gabled log structure on piles, and iiqiqak, a platform on piles. The pilings are approximately six-foot-tall spruce logs, notched on the upper ends to receive two horizontal spruce poles. Smaller spruce trees span the pilings to form the floor. The advantage of logs over

planking is that the irregularity of the logs allows air to penetrate the cache and circulate within. Stored in the cache are dried fish, frozen meat, and various equipment--such as nets, outboard motors, etc.--too valuable to leave outside. The cache is entered by ladder or, less common, attached ladderlike stairs. The platform cache is used for storing large items such as kayaks and long poles. The walls of the cache are either spruce logs, split logs, or sawed lumber obtained from the store. Often various skins may be seen draped from the floor logs of the cache or horizontal poles nailed to the upright support posts.

Women in the nineteenth century also had to rely on forest products. One of their methods of cooking was to use a birch-bark basket or a spruce pot, sewn together tightly enough to hold water. Into this, hot rocks were dropped, and then the meat or fish to be cooked was added (see Lucy Foster's reminiscence, p.79). The spruce pots (piktalik or iġavun) were made from the wood of an appropriately grained tree. After detaching a thin board by splitting the section off, it was grooved near one end, soaked in water until pliable, and then bent around a spruce board base which fit into the groove. Occasionally, deep pots were made by lashing a second curved spruce board onto the upper edge of the first. Holes were drilled by means of a mouth drill where the ends of the bent board overlapped, and sewn with rawhide line or split spruce roots. Spruce containers were also used for storing fat rendered from boiled fish and for storing other foods. Folded spruce bark containers were used to hold the

melted pitch used to join sewn seams on birch-bark kayaks (Giddings, 1961:38-39). Other utensils manufactured from the spruce tree included wooden serving trays or plates. Even now members of the older generation find a bent tree stump useful for making wooden spoons or ladles for serving food and beating the blueberry bushes in berry collecting.

Roots of spruce trees were used in stitching the seams of birch-bark kayaks, birch-bark containers, and the spruce pots mentioned above. Spruce roots are still extensively used in the manufacture of birch-bark baskets in which the side, top, and bottom supports of the baskets are lashed with split spruce roots.

Roots should be gathered in July, and the spruce trees to look for are those that grow upright and have long, straight branches. Digging up the spruce roots is much easier if they are in sandy soil than heavy soil and if they are under moss, and close to the surface. The roots are uncovered one by one. Once a section of a good root of the proper size, about one-fourth inch in diameter, is located, the digger continues to uncover the soil in the direction in which the root runs. The roots are collected in about one-yard-long sections. They are cleaned of dirt, folded once over, and tied into a bundle for easy carrying. To give a more thorough cleaning of the dirt, the bundle is thrashed against the spruce tree trunk a few times. The roots are soaked in water before they are split so that they will not be too dry and brittle.

To split a spruce root, two cuts are made into one end of the root with a sharp knife. If the root is not of even size the whole length, the cuts are made at the bigger end. The cut is across the roof diameter to both sides of the core. Each of the two side pieces is worked off by gripping the cut-away outer section with the teeth and holding on to the other section with the hands, gently pushing to one side and guiding until the whole length comes off. The inner section containing the core of the root is discarded. In the past it was braided with willow bark in the manufacture of seining nets.

Birch

Birch bark has been intensely utilized by the Kuuvaŋmiit. The upper Kobuk River is the region where the birch trees grow, but both the lower river villagers and the upper river villagers have used the bark for making kayaks, baskets for berry picking, drinking cups, and bowls for seal oil. Clearly the lower Kobuk residents had to make a long trip to gather the bark from upriver. Springtime before breakup was considered the best time of the year to go upriver for bark because the ice was still frozen and a person could walk a long distance to the place he knew where there were birch stands.

Nowadays the people of the three upper Kobuk River villages are the principal users of birch bark. They make birch-bark baskets of the old style used for berry picking as well as new,

innovative designs. These are major folk craft items and a source of cash income. There are still villagers who know how to make birch-bark kayaks. The last few were made in Ambler during 1966 and 1967 for the Haffenreffer Museum of Brown University and for the University Museum of the University of Alaska.

In former times a man had to make the trip for bark alone, on foot. He took little food with him and lived on whatever game he could get with his bow and arrow. The whole task took two or three days of hard work and walking (Giddings, 1961:36-37). With the addition of outboard motors birch-bark collecting has become a pleasant family venture. The husband and wife and frequently the children go along, especially those who are old enough to learn to help, and the trip can be made in one day. The collecting period has likewise been revised. Instead of going for bark in the spring before breakup, villagers now go for bark from June through September. In June and early July, when the sap is running in the birch trees, the bark peels off easily and the bark sections are light yellow on the underside. In August and September the bark adheres to the pulp, causing the underside to have a dark brown color. In making baskets the light and the dark underside strips are combined with the white outerside strips to create patterns of light and dark colors.

High up the Kobuk River Valley is where the birch trees grow largest and have the best bark. The quality of the bark decreases as one progresses down the valley toward the coast. Peeling the

bark is best done during the day, for in the evening when the mists form over the rivers and lakes the bark adheres more to the tree and is more difficult to remove. One recognizes good bark on a tree by the thin lines on its surface and the fastness of its color--the white should not come off when rubbed with the hand. It must also be free of knots, cracks, and scars. Bark with thick "eyes" is not too desirable for it tends to be brittle.

The technique for removing the bark from birch trees is the same in 1975 as it has been for many years. Two rings, three or four feet apart, are cut into the tree trunk with a knife and are joined by a vertical incision. The collector then works around the tree with a bone tool to pry the bark loose. Care is taken to cut the outer layer only and not into the cambium layer as this might kill the tree. A tree in which the bark has been correctly removed heals itself in time and continues to be healthy. A dark-checked scab eventually forms over the disturbed area, but this new bark is not suitable for basket making.

Local residents take considerable care not to kill the tree from which they have taken bark even though this tree will not produce usable bark in the future. As the demand for birch-bark products keeps increasing, it will become more and more difficult to find good quality bark within a reasonable distance. At present two or three persons in Kobuk village and two or three in Shungnak are engaged in the manufacture of birch-bark baskets. Ambler, which has a reputation for fine birch-bark basket making, is the main production center. There seven households are

involved. They sell their products to schoolteachers all along the Kobuk; to government personnel traveling through; to gift shops in Kotzebue, Fairbanks, and Anchorage; to occasional tourists; and to customers in distant cities and states who appreciate this type of art. Their repertoire ranges from rectangular and round baskets to model kayaks, sleds, and picture frames. There is also of course a strong demand from local Natives for the traditional birch-bark berry-picking baskets. Birch-bark products are no longer made in the lower river villages.

Firewood

In the nineteenth century, firewood was collected both in the early fall, as the after-product of rafts made and used by men returning from hunting trips, and in winter as an almost daily activity. Collecting and cutting up firewood was in fact the single most time-consuming cold-weather activity. No clear day passed that villagers did not go out by sled after loads of fuel. Normally the men went out several miles by dog team, pulling a sled to transport the cut spruce or alder logs, and the women, particularly the older ones, went out with hand-drawn sleds to collect small alder and willow trees near the village.

As the Kuuvaŋmiit moved into the villages after the turn of the century, rafting firewood in the fall continued. Later, when caribou became populous in the Kobuk River Valley making it no longer necessary for the men to go on hunting trips to the Noatak

River Valley, collecting firewood became a summer activity. Until the late 1950s, when the Eskimos increasingly had cash to buy stove oil, most families continued to obtain one raft load of firewood each season. The major sources of rafted logs for upriver villagers were along the main channel of the Kobuk River, along the Paa River, and along the lower reaches of the northern tributaries. In the downriver area, the major sources were along the Hunt, Salmon, Tutuksrak, Napaktoktok, and Squirrel rivers. Apparently much of the rafted Kiana wood came from the Squirrel River and much of the rafted Noorvik wood came from the tributaries farther upriver.

Another source of fuel was driftwood, collected during the high-water phase of the spring breakup. As the last of the ice passed, particularly in the lower river area, large spruce logs from the upriver tributaries floated by and could be retrieved by boat and line. These logs were towed to shore and pulled up above the high-water line, where they could be cut and transported to the wood pile at leisure during the summer. Large drift logs are still collected annually by the villagers, but they are now used primarily for the construction of fish racks.

The two major species of wood collected in winter for fuel were alder and spruce. Birch, willow, and cottonwood were secondary. When the villages were newly established, alder, which is superior to spruce in its output of heat, was preferred, but with the diminishing supply of large alders near the villages, spruce increased in importance, particularly after the introduc-

tion of the chain saw, which lends itself well to cutting spruce. It is presently the most-used firewood. Birch, which is superior to spruce in heat output, was not used in the lower Kobuk area because of its scarcity, and it was rarely used in the upriver Kobuk area because of its greater importance for manufacturing uses. In winter, the major sources of spruce in the upriver area were within a couple of miles of the villages themselves. In Kiana, the major sources lay in the hills immediately north and northwest of the village. In Noorvik, a few spruces were taken from the wide valley bottom both upstream and downstream from the village, but the major supply was along the bluffs overlooking the valley to the north.

Most villagers along the Kobuk River and its tributaries are quick to state that the trees are available to anyone who wants to cut them. In practice, however, particularly around Ambler, there are very few areas that the villagers do not recognize as being places where particular families have greater rights than others have. This feeling of use-privilege has been accentuated among residents throughout the Kobuk River Valley with the increasing number of claims being filed for Native allotment selections. As is to be expected, Native concepts of land-use rights and ownership are rapidly changing as a result of the increased number of Native allotments. For the most part trees may be individually owned only after they are felled. For example, even if a person goes to the effort of ringing a tree to kill it and dry it as a stump, he stands the chance of losing it

to another wood cutter until he actually cuts it down. In the case of driftwood, once a log is pulled above the waterline it is considered private property, even if the owner has not marked the log by notching.

As in the past, the preferred firewoods are dried alder and spruce because they give a hotter and cleaner fire than other woods. On the other hand, dried woods burn too fast, so they are used in conjunction with green logs, primarily to ignite the green wood and to keep the fire clean-burning. If only green wood is burned, the stove is likely to rust from the moisture and the stove and pipe will collect soot. Some firewood is obtained from driftwood and some is created by ringing trees to kill them; if there has been a fire in the region, wood is also obtained from the fire-killed stumps.

In Shungnak and Kobuk, most houses are now equipped with both a wood-burning and an oil-burning stove. In Ambler, Kiana, and Noorvik, a few live in homes with dual heating systems; most live in new houses designed solely for oil heat. In all five villages the householders that have both wood and oil stoves feel themselves in the best position. This is because of the increasing cost of oil and the difficulty of obtaining wood. A house heated solely by fuel oil requires from ten to eighteen drums of oil annually. The average is twelve drums. This converts to an average of 660 gallons and, in 1975, an average annual fuel oil cost of $540 per household.

To keep a house warm that is heated solely by firewood, on the other hand, requires an average of two hours of wood collecting a day throughout the winter months. Most of the people who depend entirely on wood for fuel are the older villagers, often no longer able to go out for wood themselves. In the past, these people could rely on offspring who, while collecting their own firewood, could be relied upon to bring back extra loads. If there were no offspring, sled loads could be purchased from others. Fewer men now go wood cutting, and even fewer cut wood to sell commercially. The price for a quarter of a cord had reached $12.50 in 1975, a high price for an elderly person to pay. The problem of firewood is compounded by the fact that snow machines balk and are difficult to use at very cold temperatures, when the need for fuel is greatest, and hauling heavy loads of wood is very hard on these expensive machines. In addition, good stands of firewood trees are quite a distance from the village, and the cost of running a snow machine there adds to the price of the wood. If a wood cutter can bring back four loads of wood a day, receiving $50.00 for them, his profit is only about $35.00 after deducting for gas and the upkeep of the machine. Prices in Alaska are double what they are in the other states, so that $35.00 is equivalent to a pay of only about $17.50 for a day's work. Despite these problems, villagers in the new houses designed for oil heat see a need to return to firewood as a supplement to stove oil and this need may become stronger in the future.

XI

UTILIZATION OF SUBSISTENCE RESOURCES

The Kuuvaŋmiit of the upper Kobuk River remain dependent upon the resources of their environment for a major proportion of their food, for raw materials used in the manufacture of clothing and equipment, for housing, and for heat. The extent of their dependence on local foods was indicated in a dietary survey taken by Heller and Scott (1961). Eleven representative villages in different parts of Alaska were surveyed over the five-year period 1956-61. One of these villages was Shungnak, where the study showed that over 81 percent of the total per capita intake of protein was from local subsistence foods (Heller and Scott, 1961: 39). Carbohydrate sources were more varied, with 46 percent coming from local sources and the remainder from imported or mixed sources.

Quantitative data of this sort are not available for the 1970s, but locally obtained foods clearly dominate in the upper Kobuk River Eskimos' diet. Although similar data are lacking for the lower river villages, the per capita harvest of caribou and fish indicate that reliance on local foods for protein and carbohydrates is only slightly less there than in the upriver villages. Imported carbohydrate sources appear to have increased during the past decade, but protein still derives overwhelmingly from subsistence products. In the majority of households, meals without wild meat or fish are an uncommon occurrence. Many Kuuvaŋmiit

have a strong conviction that meals are incomplete without "real food" from the land, and they emphasize that they cannot remain strong, healthy, and contented when they eat only "white man food."

Indeed, the preference for Native foods is a recurrent theme among Kobuk River villagers. The qualities of various kinds of game are discussed, people lament the absence of certain foods when they are out of season, catches of uncommon or exceptionally fat game are events of real importance, and social visits are often predicated on the availability of special foods. Lack of subsistence foods is perceived as one of the greatest hardships in living away from the village. This is why people at home regularly send frozen and dried meats, dried fish, seal oil, and occasionally delicacies like maktak or muktuk (whale skin and blubber, obtained in trade) to their relatives and friends living away.

Caribou and fish, the most common foods, are valued above all others, and the phrase, "You never get tired of eating caribou," is a common expression. These staples are not only the easiest foods to live with, they are also the most difficult to live without. This is not to say, however, that the Eskimos do not crave variety in their diet. The next season's varied animals and plants are anxiously anticipated as each preceding season ends, and considerable effort is made to diversify meals. In modern times, imported foods, available at local stores, allow more variety than ever before.

Added to the strong preference for local staple foods is a marked provinciality or perhaps a highly refined sense of taste. There is, for example, a conviction that Kobuk River fish are superior to any others. People say that Koyukuk River sheefish "taste funny," and are not very fat. And one man who had lived in Fairbanks said that Lake Minchumina whitefish taste "just like mud" to him.

Eskimos are accustomed to a very different diet from that of outsiders, as later parts of this chapter will illustrate. Many of their most preferred foods, such as fermented sheefish or raw caribou meat, are not usually regarded as edible by non-Eskimos. This must not be construed as reflecting indiscriminate eating habits, however; quite the contrary--Eskimos choose to eat as they do because of their strong taste preferences. They are often aware of subtleties in the taste of game foods which are beyond the outsider's ability to detect. Kobuk people often long for certain foods by saying, "I just wish I could taste some of that animal right now." This is frequently said about certain highly preferred traditional foods, the kind that are eaten at holiday feasts and other special occasions.

Foods served at feasts in the Kobuk River villages during 1974-75 included the following: stews or soups made with fat caribou or moose meat and vegetables, rice, noodles, and condiments; bear meat; goose stew; boiled sheefish; fermented sheefish; cooked wild rhubarb; blueberries; beluga <u>maktak</u> (skin and blubber); and seal oil. At one feast, strips of whale blubber were passed

out. This traditional delicacy, obtained through trade from the coast, was so esteemed that the names of persons who were to receive it were checked on a list during distribution, to assure equitability. Another precious food, saved for small get-togethers, is aqutuq, a mixture of caribou fat, meat, berries, and sugar. The Kobuk Eskimos' appreciation of traditional foods is revealed by the context in which they are most valued--they are the matrix for celebrations and other important social gatherings. Beyond this, traditional foods have special cultural meanings. They set the Eskimo person apart from all others, in an era when the distinction has become somewhat blurred. They are an affirmation of Eskimo-ness.

Food from imported sources is an important but clearly secondary element in the Native diet. Bread, canned goods, tea, coffee, and sweets have long been a part of the daily fare. But however much the Kuuvaŋmiit may enjoy these foods, they do not consider them suitable as a steady diet. There is universal agreement on this point: "No matter how much white man food you eat, you will never be satisfied until you have wild meat or fish." Whites who attempt to live on an exclusive regimen of Eskimo foods find that the same is true in reverse. Whether the dependence on familiar diet is physical or psychological, it is certainly real. One old Kobuk River Eskimo explained his reaction to living on white man's food this way:

> You see me here, what color my face and my fingers look. Sort of brown color. One time I

> went to Fairbanks to work for a few months, and I eat white man food all the time. Pretty soon my skin was getting pale, like yours, because I eat too much soft food. It's not good for me. When I came home I had strong food again; my body has to work hard to use it. Then my skin changed color and I'm back to Eskimo. When I eat strong food it changes my whole insides. I'm sure glad to get back home that time.

Provision of food is the first and most essential reason for use of subsistence resources today, but it is not the only reason. Many elements of Eskimo clothing are still made partially or entirely from products of the land. Animal hides are used for making parkas, parka ruffs, mittens, neck scarfs, clothing trim, and boots. Although manufactured or homemade cloth garments are used extensively, Eskimo designs and the use of fur are very highly valued. In fact, wearing Native clothing appears to have considerable symbolic importance--it is a part of <u>being</u> Eskimo. From a pragmatic standpoint, some items of Native apparel are far superior to their manufactured equivalents. This is especially true of footgear. No commercially made footgear measures up to Eskimo caribou and sealskin boots for warmth, lightness, and overall comfort.

It is important to note that most use of animal hides by Kuuvaŋmiit Eskimos is for subsistence, not commercial, purposes. Animals such as wolf, fox, wolverine, mink, marten, otter, and lynx are obtained primarily for use of their pelts. Muskrat, beaver, bear, moose, sheep, hare, and caribou are valued for both their hides and meat. Regardless of how these animals are taken,

their hides are used in the local manufacture of clothing or other goods. When furs or parts of furs are sold, it is usually to other people within the area, who will make direct use of them. For example, the women use fox, beaver, and marten pelts to make hats. These are worn locally; very few are sold to buyers beyond neighboring villages. Similarly, many fancy fur parkas have been made in recent years (after nearly vanishing from use earlier), and these are almost always used by family members or sold to local people for their use.

In addition to food and clothing, animals provide the Kuuvaŋmiit with a wide variety of other useful items. Hides are used to make camping mattresses, sled pads, thermos bottle pouches, ammunition bags, snowshoe webbing, sled lashings, and numerous other articles. Animal bones, teeth, claws, and antlers also have many uses.

Plants are also used in myriad ways, ranging from pincushions to medicine to dwellings. They are of course an important complement to animal foods and they provide wood for the manufacture of houses, caches, sleds, boats, tent frames, poles, containers, drying racks, and tool handles. Wood also provides heat for human comfort, for cooking, for smoking meat, for preparing dog food, and for making the all-important summer mosquito smudges.

Inland Resources

A detailed compilation of the uses the Kuuvaŋmiit make of indigenous plant and animal species follows. Explanations are necessarily brief and they should not be taken to indicate a lack of economic or cultural significance. Measures of importance are difficult to make, especially since they may change from year to year, and are not attempted here. The listing of game parts demonstrates the Kuuvaŋmiit's thorough utilization of game, which stands in contrast to the white man's pattern of using only the major muscles and a few organs.

It should also be emphasized that the methods of preparation are very incompletely described here. Eskimos have an elaborate repertoire of traditional and modern recipes, which involve myriad combinations of animal parts and preparation techniques. The methods of preparation mentioned below (such as "boiled" or "dried and later cooked") are usually incomplete summaries of more involved procedures.

Mammals

Caribou

Nose (umilġuq): Eaten after the entire head has been prepared by boiling.

Eyes (iri): Eyeballs and the fat behind them are eaten raw or from the boiled head. The eyes are also eaten after being dried by hanging them inside the house or turning them inside out, tying them with sinew, and allowing them to dry.

Ears (siin): The tips are chewed like gum after skinning fresh-killed caribou. Base part of the ear is eaten from the boiled head.

Tongue (uqaq): A delicacy, eaten boiled or dried. Often cut from fresh-killed caribou and boiled by hunters.

Lower jaw (agliġġuk): After the head is boiled, lower jaw meat and tissues are eaten; then the jawbone is cracked and the marrow (patiq) is eaten from inside.

Lips and mouth tissues: Eaten from the boiled head.

Head muscles: All meat from the upper jaw, temple, eyes, back of skull, etc. is eaten from the boiled head.

Brain (qaqisaq): Removed from the boiled head, mixed with fat skimmed from water in the boiling pot, and eaten with pieces of meat.

Neck (quŋisiq): Meat from the neck is eaten frozen and raw (quaq), or boiled.

Shoulder blade (kiasik): Meat from the shoulder blade is eaten cooked or raw. The scapula bone itself is used to make a fish-scaling tool, or a fan to cool oneself and keep mosquitos away.

Foreleg (sivuġaġluk): Upper and lower foreleg meat (siŋiich) is eaten cooked or raw, and is considered very good for making dry meat (paniqtuq).

Sinew (ivalu) from the forelegs is dried and used for sewing. It is especially good for making boots.

Marrow (patiq) is extracted from the upper and lower leg bones by cracking them open. Lower leg bones are preferred, because the marrow contains more fat. This marrow is eaten raw or cooked, usually with meat. It may also be pulverized and put into a container, preferably a dried caribou stomach. Oil rendered from the ends of humerus and femur bones is then poured into the dried stomach with the marrow. The mixture cools and hardens, and is usually stored, to be eaten (usually with dried meat) at some later time. There are several variations on this recipe.

Foreleg bones are used primarily for making oil (puiñiq). The ends of humerus and femur bones are soaked overnight to soften them, then they are pulverized, placed in a kettle of water, heated to just below boiling for about an hour, cooled to luke-warm temperature, and then the floating oil is skimmed off.

Lower foreleg bones (sivulliq) are made into a tool for skinning fur animals (naukłuun) and a scraper for preparing hides (itchuun).

Foot bones (isiqaich): Cartilage (nukik) from around the foot bones is eaten raw, fermented, or after the bones are thoroughly cooked by boiling. Marrow from the foot bones is also eaten. A bone from the "ankle" of the caribou is made into a whirler toy, with sinew strings.

Hooves (kukik): The black hooves are removed by boiling, then made into small items such as "Eskimo yo-yo" handles, jewelry for sale to tourists, and traditional Eskimo sun goggles.

Backbone (kiyupigaq): Meat from alongside the backbone (ivaluliñiq) is excellent cooked, dried, or raw-frozen.

Sinew from the back muscles is dried and used for sewing.

The spinal cord (qitiġaaq) is removed from cut-up backbone sections after boiling, and is considered very good eating.

Pelvis (kuutchinaaq): Meat from the pelvis is eaten raw, dried, or cooked.

Tail (pamaiłuk): Meat from the tail is eaten.

Hind leg (mumik): The hind leg meat (siŋiich) ranks with the hide as the most valuable part of the caribou. It is delicious raw-frozen, dried (cut into thin strips of sheets and hung on racks outside, or sometimes inside the house), or cooked (boiled, roasted, baked, or made into soup with vegetables, rice, and condiments).

The upper hind leg bone (anautaksraq) and lower leg bone (paiŋniq) are cracked open and the raw or cooked marrow is eaten (marrow is always cooked inside the bone).

Sinew from the hind leg is used for sewing.

Ribs (tulimaaq): Provide excellent tasting meat, prepared by drying or boiling, or made into a "soup."

Brisket (sakaigiich): Breastbone cartilage (isatigiich) and meat are eaten after drying or cooking. Highly preferred for making "soup."

Diaphragm (mulik): Highly preferred as dried meat because it consists of two layers, with tasty fat between. Also eaten cooked.

Belly and chest meat (aqaikłuk): Consists of thin sheets of meat, which are sliced away from the body and dried. Considered a delicacy, the best of all dried meats. Also eaten cooked.

Lungs (puvaich): Formerly eaten, cooked and mixed with blood. Used only for dog food today.

Windpipe (tuqłaaq): Boiled and eaten.

Heart (uuman): Boiled and eaten; considered excellent. Sometimes dried.

Liver (tiŋuk): Usually fried, but sometimes eaten raw-frozen. Also sometimes mashed and mixed with caribou stomach contents, or sliced and put inside a caribou stomach to make kivviq (see uses of caribou stomach below).

Cecum or "appendix" (kivvigruaq, kivviq): This organ is removed, cleaned, stuffed with mesentary fat, then boiled. Usually eaten with meat; considered a delicacy.

Omasum or "bible" (tunusisaq): Usually prepared by cleaning and then boiling, though older people sometimes leave the contents inside while cooking. Sometimes eaten raw after cleaning in cold water.

Rumen or "stomach" (kisaġuaq): Dried caribou stomach is either eaten or used for storing foods.

Stomach contents (niġukkaq) are removed from a caribou stomach that has been left inside the killed animal for several days, slowly fermenting in the retained body heat. Then the contents are mixed with sugar and seal oil before eating.

Slices of liver and of the small lower leg muscles are inserted into the contents of an opened caribou stomach, left for several days, then taken out and eaten raw. This is called kivviq, and is eaten by the old people.

Large intestine (iŋaluat): Turned inside out, cleaned, dried, and eaten.

Small intestine (amaniilik): Boiled, cut into small pieces, mixed with fat, and eaten. (People do not drink cold water after eating this food, lest it solidify the thick grease in their throat and choke them.)

Pancreas (mapsaq): Dried pancreas is used as a container to store fat from boiled bones (puiñiq), sometimes with bone marrow mixed in.

Kidneys (taktuk): Eaten raw or boiled, considered excellent especially when they are fresh.

Udder (mamautik): Boiled and eaten.

Blood (auk): Cooked with chopped fat to make blood soup (qaiauq).

Fat (qaunaq): Fat of all kinds is considered extremely valuable and excellent eating; taken from inside the muscles, along the back, among the organs, and on the mesentary membranes. Fat is eaten dried, raw, or cooked, nearly always together with meat.

Back fat (tunnuuk): Eaten with meat, or used to make aqutuq, a chilled mixture of fat, berries, and sugar. Seal oil, fruit, meat, whitefish that has been cooked and then dried, and sometimes Eskimo potato (masru) may also be used in aqutuq. This delicacy is frequently prepared by Kobuk Eskimos. It is often called "Eskimo ice cream."

Mesentary fat (itchaurat): Eaten raw or cooked, or stuffed into a section of intestine like a sausage, boiled, cut off in slices, and eaten with meat.

Antlers (nagruk): Have innumerable miscellaneous uses, but most often used for making net mesh gauges, handles for knives or other tools, net sinkers, and bark basket handles.

Hide (amiq): Caribou hide is commonly used for making several kinds of boots, for mittens, boot liners, insoles, wristlets, and (infrequently today) parkas. It is also made into skin mattresses, sled pads, thermos bottle pouches, and many smaller items. Hair (mitkut) is removed and used as filler in dog harness collars. The hairless skin is cut up for thong, which is used for snowshoe webbing, sled lashings, and many other purposes.

The thin membrane (mami) on unscraped caribou skin is pulled off, moistened, put onto small cuts, and held in place until it sticks. This effectively stops bleeding.

It is impossible to overstress the importance of caribou skin to the modern traditional Kobuk River Eskimos. During pre-contact times, when there was no suitable alternate clothing material, the skin was a more important resource than the meat. Even today, some articles of caribou hide clothing cannot be equalled by

commercial products. Thus, caribou is a vital subsistence resource not only for meat, but for hides as well.

Moose

The meat and organs of moose are utilized in much the same way as described for caribou, and nearly all anatomical terms are identical. The listing below therefore represents a summary, and should not be read as a complete detailing of methods for use.

Nose: Aged overnight and eaten raw (not frozen), or aged several days and then boiled.

Eyes: Eyeballs and the fat behind them are eaten from the boiled head.

Ears: Tips are eaten after the head is boiled.

Tongue: Removed from jaw, boiled, and eaten.

Lower jaw: Meat from the jaw is eaten after the head is boiled.

Lips and mouth tissues: Eaten from boiled head.

Head muscles: Eaten from boiled head.

Brain: Eaten from boiled head; also used for tanning hides.

Neck: Meat is eaten cooked or raw-frozen.

Shoulder blade: Meat is eaten raw or cooked. The shoulder blade itself was formerly dried, then used to attract rutting bull moose by raking it against trees and brush.

Foreleg: All meat is used, raw, cooked, or dried. Moose sinew is rarely utilized, because it is considered too thick and difficult to handle.

Foot bones: Boiled for many hours (often together with beans), then the bones are cut apart and the flesh and cartilage is eaten. Considered excellent.

Backbone: Meat along the backbone is eaten raw, cooked, or dried.

Pelvis: Meat is eaten raw, cooked, or dried.

Tail: Cooked and eaten; considered excellent.

Hind leg: All meat is eaten raw, cooked, or dried. All leg bone marrow is eaten.

Ribs: Meat on the rib cage is eaten raw, cooked, or dried.

Brisket: Usually prepared by cooking.

Diaphragm: Eaten cooked or dried.

Belly and chest meat: Cut off in a single large sheet and dried.

Windpipe: Boiled and eaten; considered excellent.

Heart: Boiled and eaten.

Liver: Always cooked before eating.

Stomach: Emptied, washed, and boiled for eating. Stomach contents never eaten.

Large intestine: Turned inside out, dried, and eaten.

Kidneys: Always cooked before eating.

Fat: Back, body, and muscle fat is eaten cooked, raw, or dried. Mesentary fat is dried. All fat is ordinarily eaten with meat.

Antlers: Used for making knife and other tool handles (preferred over caribou). The large, spatulate portion is used to make a platter for eating cooked fish.

Hide: An elaborate, difficult tanning and smoking process prepares the hide for use in making boot soles and mittens. Skin with fur removed is cut into lengths for making rope and the heavy part of snowshoe lashings.

Mountain Sheep

The uses of mountain sheep are not detailed here, because these animals have been taken infrequently over the past twenty years and because they are utilized in much the same way as caribou and moose.

Black Bear

Head: The entire head is boiled, and the meat, eyes, lips, mouth tissues, and cartilage are eaten. Modern Kobuk Eskimos follow traditional prescriptions for treatment of bear heads. The lower jaw is never removed; a "wormlike" piece of cartilage is cut out from the underside of the tongue, impaled on a sharpened live willow twig, and left on the spot; the brain is not eaten; and the skull is left out in the woods, either impaled atop a small live spruce or buried (if there are no trees around). Bear heads are never brought home for cooking.

Teeth: Bear teeth are carved into fishhooks.

Muscles: All bear meat is prepared by cooking; it is never eaten dried or raw (except for the fat). Parts used for meat are the neck, back, pelvis, shoulder, forelegs, hind legs, ribs, brisket, belly and chest, and diaphragm. Bear meat is very highly regarded as food.

Women were traditionally prohibited from eating bear meat, but this custom has been abandoned.

Feet: Aged about two weeks, then cooked and eaten. Considered excellent.

Claws: Carved into fishhooks, very good for grayling fishing.

Heart: Cooked and eaten.

Intestines: Entire intestines are pulled out, cut into three strips, braided, roasted over a fire, and eaten.

Liver: Not eaten.

Kidneys: Boiled and eaten.

Fat: Taken from the mesentaries, body, and viscera and rendered out for bear grease.

Back fat (uqsruq) is eaten raw with dried fish or meat.

Bear tail fat is also eaten.

Hide: Used for mattress, parka ruff, mittens (leg skins only), or cut into strips for rope. Traditionally used for making dog harnesses.

Grizzly Bear

The grizzly bear is utilized in the same way as the black bear. Grizzly bear meat tastes differently and is considerably less valued, but is eaten whenever available. All parts and organs desribed for the black bear are used in the same fashion.

Wolf

Hide: Used for making parkas, hats, parka ruffs, and clothing trim. Head skins are used for mittens and ammunition pouches. Tails are made into neck scarfs.

Muscles and organs: Not used.

Marten

Hide: Used for making hats and clothing trim.

Muscles and organs: Not used today, but formerly eaten.

Weasel

Hide: Occasionally used for clothing trim or as a wiping cloth for binocular lenses.

Muscles and organs: Not used.

Mink

Hide: Used for making hats, scarfs, clothing trim, and mitten linings.

Muscles: All body meat is eaten, prepared by boiling or roasting.

Organs: Not eaten.

Head: Cooked, and all flesh, muscle, and brain is eaten.

Wolverine

Hide: Used for making ruffs, clothing trim, and mittens. The tail is used as decoration for a man's parka belt; the feet for a woman's belt. Head skins are made into ammunition pouches. Wolverine hide is highly valued.

Meat and organs: Not eaten today, but the meat was traditionally used as survival food.

River Otter

Hide: Used for making hats and clothing trim.

Muscles: All meat is eaten, prepared by boiling or roasting.

Organs: Not eaten.

Head: Cooked, and all flesh, muscle, and brain is eaten.

Lynx

Hide: Used for making parkas, hats, mittens, and clothing trim.

Muscles: All body meat is eaten, prepared by boiling or roasting. Not dried.

Organs: The heart, lungs, kidneys, and liver are boiled and eaten. The stomach and intestines are not eaten.

Head: All flesh, eyes, muscles, and the brain are eaten from the cooked head.

Beaver

Hide: Used for making parkas, hats, clothing trim, and mittens.

Muscles: Beavers are taken for the meat as much as for the hide. Meat from all parts of the body is eaten after preparation by boiling, roasting, or half-drying followed by boiling.

Organs: The heart, lungs, liver, and kidneys are boiled together and eaten; considered a delicacy.

Beaver stomach is not eaten. It is immediately removed from a killed animal lest it sour and spoil the meat.

Head: All meat, eyes, lips, tissues, and the brain are eaten from the boiled head.

Teeth: Carved into fishhooks, good for grayling.

Tail: Boiled or roasted; considered a delicacy.

Castor gland: The gland or its contents can be used for bait in trapping other fur bearers.

Claws: Carved into fishhooks.

Anomalous organs: Beaver have several unusual parts, which are always removed and thrown away. This practice, intended to assure reincarnation of the animal, is still carefully followed. Anomalous organs include a large gland under the neck, a small "extra" oval-shaped bone in the foreleg, and the top portion of the double claw on each hind foot.

Beaver bones are also thrown back into the water after the meat is used, in order to assure the animal's reincarnation.

Muskrat

Hide: Used for making parkas, hats, clothing trim, and lining for mittens.

Muscles: Meat is prepared by boiling, roasting, or drying (entire animal is hung to dry).

Organs: The heart, lungs, liver, and kidneys are cooked and eaten. Other viscera are not used.

Head: All flesh, eyes, meat, and the brain are eaten from the cooked muskrat's head.

Tail: Sinew from the tail is used for fine sewing around the tops of fancy boots.

Porcupine

Muscles: The meat is prepared by boiling or roasting, after the animal has been skinned.

Porcupine meat is well liked, but the animals are killed only when encountered by chance. Traditional attitudes dictate that porcupines be left somewhat alone, so they will be around during times of food scarcity.

Organs: The heart, lungs, liver, and kidneys are eaten from the cooked animal.

Stomach and intestines are not used, except for the last foot of the lower intestine, which is dried with pellets of excrement inside it. One or two of these pellets are removed, crushed, mixed with water, and taken as a cure by a person suffering from diarrhea.

Head: All flesh, eyes, muscles, and the brain are eaten from the cooked head.

Feet: Eaten from the cooked animal.

Red Squirrel

Hide: Formerly used for making clothing trim and children's parkas.

Muscles: The meat was formerly cooked and eaten, but is not used today.

Arctic Ground Squirrel

Hide: Used for making fancy parkas; highly valued pelt.

Muscles: All meat is eaten, after preparation by boiling, roasting, or half-drying followed by cooking.

Organs: The heart, lungs, liver, and kidneys are eaten from the cooked animal.

Stomach and intestines are not used.

Hoary Marmot

Hide: Used for making parkas and hats.

Muscles: All meat is eaten, after preparation by boiling, roasting, or half-drying followed by cooking.

Organs: The heart, lungs, liver, and kidneys are eaten from the cooked animal.

The stomach and intestines are not used.

Head: All flesh, eyes, muscles, and the brain are eaten from the cooked head.

Snowshoe Hare

Hide: Used for making socks, mitten and hat liners, clothing trim, and (occasionally) parka ruffs. Formerly woven or sewn for blankets, parkas, mittens, and socks. The hide is not durable, but is extremely soft and warm.

Muscles: All meat is eaten, after preparation by boiling, roasting, or drying.

Organs: The heart, lungs, blood, liver, and kidneys are cooked and eaten.

The stomach and intestines are not eaten, but may be given to the dogs.

Head: All flesh, eyes, muscle, and the brain are eaten from the cooked head.

Feet: Little used today, but formerly utilized for washing or wiping objects.

Arctic Hare

These animals are exceedingly rare and seldom taken. If one is caught it is used in the same way as the snowshoe hare, described above.

Birds

Waterfowl

Geese, ducks, merganzers, loons, and grebes are grouped together under one category here, because patterns of utilization are nearly identical for all species.

Muscles: The meat of all ducks, geese, loons, and grebes is eaten, though there is considerable variation in quality. Geese and the larger ducks are most preferred. Meat is prepared by boiling as a soup or thin stew, roasting, or half-drying followed by cooking.

Organs: The stomach and intestines of fat waterfowl are boiled and eaten, if they are empty when the bird is killed. Full intestines are not used. The lungs, heart, and other small organs are cooked and eaten.

Head: All meat, cartilage, fat, tongue, and the brain are eaten from cooked waterfowl heads.

Feet: Often eaten when waterfowl are cooked as soup.

Fat: Eaten with the cooked meat of waterfowl.

Duck or goose fat, from inside the body, is aged, then rubbed on the torso of a person suffering from a cold. Dried fat, well aged, is also rubbed on rashes or insect bites to stop the itching.

Wings: The wings of large waterfowl (such as geese) are used for whisk brooms or fans.

Eggs: The eggs of all waterfowl are boiled and eaten, when they can be found. This is not a common food, however.

Skin: Waterfowl skin is eaten with the cooked bird.

Loons and grebes may be skinned (with fat left on the skin), then the skin is cut into small pieces and cooked with the bird's meat. Liquid fat is skimmed from the broth, hardened, and eaten with the meat. This is called qalluaq.

Loon and grebe skins can also be made into waterproof pouches for ammunition, etc., and were formerly used to make socks.

Down: Used to make home sewn parkas, blankets, and pillows.

Ptarmigan and Grouse

Willow and rock ptarmigan, spruce grouse, and ruffed grouse are all used in essentially the same way by Kobuk Eskimos, so they are grouped together here.

Meat: Ptarmigan are boiled (to make a thin stew), roasted, or dried (entire birds). Grouse are boiled and roasted, but never dried.

Organs: Heart, lungs, and stomach are eaten with the boiled meat.

Contents are squeezed from full intestines, they are cut in short lengths, dipped for a few seconds into boiling water, and eaten with seal oil. Empty intestines are never used.

The crop (puviaq) is inflated with the contents inside, then dried in the house. It is given to children for a toy.

Feet: Eaten with the cooked animal.

Head: Flesh, eyes, brain, and muscles are eaten from cooked birds.

Eggs: Ptarmigan and ruffed grouse eggs are boiled and eaten. Spruce grouse eggs are not eaten.

Sandhill Crane

Meat: Roasted, or boiled as soup.

Organs: Heart, lungs, and liver are cooked and eaten.

Stomach and intestines are not eaten.

Head: Flesh, eyes, tissues, and brain are eaten from cooked birds.

The beak was formerly used for making points, especially fish spears.

Feet: Eaten with the cooked birds.

Leg bones: The hollow leg bones are used to make a child's toy blowgun (siputitigaaq).

Marrow: Wing and leg bone marrow is eaten.

Wings: Dried and used for a broom or fan.

Eggs: Eaten cooked on the rare occasions when they are found.

Lesser Yellowlegs

The entire bird is boiled, and the head, meat, and viscera are eaten.

American Golden Plover

The entire bird was formerly eaten, but is rarely, if ever, taken today.

Gull

The eggs of the mew, glaucous, and Sabine's gulls, and the Arctic tern, are all boiled and eaten. Mew gulls were formerly cooked and eaten, but this is no longer done.

Owl

Meat and viscera of the horned owl, great gray owl, and snowy owl are boiled and eaten as soup. Owl heads are not eaten, "because they look funny, even though they must taste good."

Osprey

The meat only is boiled and eaten, and the rest of the bird is not used.

Tree Swallow

The body is dried, then bits of meat are rubbed on a person's lips or held inside the mouth to cure sores.

Pieces of nest material can also be put in the mouth for sores, or moistened and rubbed on itchy rashes or bites.

Rusty Blackbird

Cooked and eaten; rarely used today.

Pine Grosbeak

Boiled for soup, or roasted.

Fish

Sheefish

Meat: Eaten boiled, raw-frozen, dried, roasted, smoked, aged (fermented), and fried.

Special preparations include aging for about a week and eating the fish raw, and preparing a fish chowder by boiling the meat with flour.

Eggs (suvak): Eaten with sheefish meat, either cooked, raw, or raw-frozen. Eggs may also be dried, then roasted, mixed with fish oil, and eaten together with the long "air bladder" (avattauraq).

Eggs are also made into itakpalak, by mashing sheefish eggs and cranberries, mixing with seal oil and sugar, and whipping the dish to a fluffy consistency. This is considered a delicacy.

Fish eggs are sometimes stored in fish oil for later use.

Stomach and intestines: These organs are boiled to produce fish oil (qaluum uqsruq), which is skimmed off the water during cooking. The stomach and intestines are eaten afterward.

Air bladder (avattauraq): The long bladder organ is rich in fat. It is turned inside out and dried or cooked, then put in fish oil for immediate or later eating.

Liver (tiŋuk): Not eaten; used only for dog food.

Testes (iġri): This is an elongated white mass in the male fish. It is not eaten, but is used for dog food.

Head (niaquġruaq): Flesh, eyes, brain, and other tissues are eaten from the cooked head.

Heads are buried in a grass-lined hole for about six or seven days during summer, then are dug up and eaten. The heads of dried sheefish are used for dog food only.

Gills (masriich): Eaten with other parts of the fish, regardless of preparation.

Skin (raw is amiq, dried is amiġaatchiaq): Scaled after caught; eaten with dried or cooked fish.

Arctic Char and Lake Trout

Meat: Eaten boiled, raw-frozen, dried, roasted, smoked, aged, and fried. Often prepared as a soup with flour (fish chowder).

Eggs: Eaten with cooked fish.

Liver and eggs that have been boiled with the entire fish are mixed with blueberries or cranberries, then eaten.

Organs: Only the cooked liver is eaten; the rest of the organs are used for dog food.

Head: All flesh and the brain is eaten.

Skin: Eaten along with the fish.

Humpback Whitefish

Meat: Eaten boiled, raw-frozen, dried, roasted, smoked, aged, and fried. Often specially prepared as a fish chowder (only this species, trout, and sheefish are cooked this way).

Eggs: Eaten with cooked fish.

Cooked liver and eggs are mixed with blueberries or cranberries, then eaten.

Eggs are also made into itakpalak (see sheefish).

Eggs from fish caught through the ice are mixed with snow or ice shavings, stirred together until they are white, then eaten. This is done right where the fish are caught.

Stomach and intestines: These organs are boiled, the fish oil is skimmed off and kept, then they are eaten.

"Round stomach" (aqaiġutchiaq): The contents are squeezed out, then it is boiled or roasted for eating. Only done when the organ is not fatty.

Head and gills: Eaten along with the rest of the fish.

Skin: Scaled, eaten with dried or cooked fish.

Broad Whitefish

Meat: Eaten boiled, raw-frozen, dried, roasted, smoked, and fried.

Eggs: Eaten with cooked fish. Also dried, then cooked and put in fish oil to store; eaten with fish oil. Made into itakpalak (see sheefish).

Stomach and intestines: These organs are boiled, the fish oil is skimmed off and kept, then they are eaten.

"Round stomach" (aqaiġutchiaq): Contents are squeezed out, then it is boiled or roasted for eating. Only done when the organ is not fatty.

Head and gills: Eaten along with the rest of the fish.

Skin: Scaled; eaten with dried or cooked fish.

Least Cisco

Meat: Eaten raw-frozen, aged, and fried. Also half-dried, then boiled for eating (called imaaqluk, can be done with any species of fish). This fish is also an excellent dog food.

Eggs: Eaten along with the fish.

Organs, head, gills, skin: Not eaten.

Round Whitefish

Meat: Eaten raw-frozen or boiled only. Used primarily for dog food, because its taste is poor "like gas."

Eggs, organs, head, gills, skin: Used only for dog food.

Chum Salmon

Meat: Eaten boiled, dried, roasted, smoked, aged, and fried.

Eggs: Eaten dried, boiled, roasted, or dried together with the backbone (aanaalik). Dried eggs are sometimes mixed with bearberries, which keeps the eggs from sticking to a person's teeth.

Stomach, intestines, liver, and gills: Used only for dog food.

Head: Cooked and eaten, or buried in a grass-lined hole for six or seven days in summer, then dug up and eaten (called auruaq).

Skin: Eaten with cooked or dried fish; also cooked separately after being removed from the dried fish (patiktitaq).

Grayling

Meat: Eaten raw-frozen, boiled, dried, roasted, and fried.

Eggs: Eaten with cooked or raw-frozen grayling.

"Round stomach" (aqaiġutchiaq): Squeeze out contents, then boil or roast it.

Stomach, intestines, and gills: Not eaten.

Head: Eaten with the fish.

Skin: Scaled; eaten dried or cooked.

Burbot (Mudshark)

Meat: Eaten boiled, raw-frozen (after aging), and roasted.

Eggs: Cooked and eaten.

Stomach and intestines: Boiled and eaten.

Testes: Cooked and eaten.

Liver: Fried alone; considered a great delicacy.

Made into tiniigaq by mixing liver, eggs, and stomach parts, mashing them together (sometimes with blueberries or cranberries), and boiling them. Considered a delicacy.

Head and gills: All flesh, eyes, brain, etc., eaten from the cooked head.

The burbot has many strangely-shaped bones in its head, and sometimes older people relate old stories connected with these bones as the head is eaten.

Skin: Eaten with the fish. Formerly used for strips of trim on skin boots.

Northern Pike

Meat: Eaten boiled, dried, or roasted only. Also an important dog food.

Eggs: Eaten raw, raw-frozen, or cooked.

Intestines, stomach, liver, and head: All are eaten after cooking.

Skin: Scaled; eaten from dried fish. Formerly used to make bags for storing fish oil.

Northern Sucker

Meat: Eaten boiled or dried only. Also used for dog food.

This is not a preferred fish, but is the first available in the spring, so it is valuable as the earliest fresh fish and may be important as survival food in lean springs.

Eggs: Eaten boiled, or raw with intestines.

Intestines: Contents squeezed out, the intestines are washed, then eaten raw.

Air bladder: Eaten raw.

Head: All flesh, brain, etc., eaten from boiled fish.

Gills and skin: Not eaten.

Clam

Clams are found in certain lakes in the upper Kobuk area. These are boiled and eaten.

Vegetation

White Spruce

Wood: Firewood is cut from forests surrounding all upper Kobuk River villages and camping areas. Dry, dead wood (qiruk) is the preferred type, but it has become difficult to find near the settlements (except near Ambler, where a forest fire killed timber some years ago). Live, green wood (uumaq) is therefore used extensively for providing heat.

White spruce is also used in construction of log houses, which have been the most common upper Kobuk dwelling until recently. Large stands of straight-growing, straight-grained spruce are found in few scattered localities along the river, and these provide most of the house logs.

Spruce is also cut for making boats, hunting canoes, sleds, meat caches, drying racks, and a multitude of other small items.

Boughs: Utilized for covering tent floors in camps, and for insulative bedding for sled dogs.

Needles: Boiled near a person who is bedridden with a cold or flu, to relieve symptoms and freshen the air.

Bark (amiġaq): Taken from live trees to provide roofing for traditional summer shelter, caches, or drying racks.

Roots: Long, supple roots are dug from around young trees with long, straight roots. These are split and used for sewing birch-bark baskets. Large roots are carved into dippers, platters, and net floats.

Sap: Soft, clear sap (sugliq) is put on cuts and infections as an antiseptic, or boiled in water and drunk to relieve symptoms of flu or rheumatism.

Dark spruce pitch (kutchuq) is chewed like gum, used to caulk boats, and boiled in water until pure pitch floats on top and then skimmed off to drink as medicine.

Black Spruce

Larger black spruce may be used for wood, boughs, and roots as described above for white spruce. Usually, however, they are too small for any but miscellaneous uses such as making poles or burning for heat in camps.

Balsam Poplar (Cottonwood)

Wood: Used as firewood, but not highly preferred because it leaves heavy ash.

Bark: Carved into net floats, and formerly used to make sun goggles.

Seeds: The cottony material around the seeds can be used for emergency fire starting.

Birch

Wood: Used for firewood and burned for smoking fish. Made into lumber for sleds, snowshoe frames, cutting boards, and boat frames.

Bark: Extensively used today for making baskets which are sold or utilized for various purposes by the people themselves. Birch bark is excellent material for starting fires, because it burns regardless of wetness or wind.

Sap: Boiled to make syrup; formerly drunk the way it came from the tree (Stoney, 1900:100).

Alder

Wood: Despite its small size, alder wood is an excellent, hot-burning firewood; used fairly often for heating houses and tents, and for cooking dog food. Half-rotten alder is very good for smoking fish and making smudges to repel insects. This wood is also used for making scraper and knife handles.

Bark: Still used to make red dye for coloring the leather side of animal hides (e.g., wolverine-skin parka tassles).

Leaves: Chewed and used for a compress on wasp stings and mosquito bites.

Aspen

Wood: Sometimes used for firewood or as lumber in sled construction, but it is too soft to be of much value.

Bark: The inner bark is chewed as medicine for constipation.

Willow

Wood: Burned for firewood, insect smudges, meat or hide smoking, and dog food cooking. Used for making basket rims, wicker fish traps, withes for stringing fish, traditional shelters and caches (not used today), and endless miscellaneous purposes. Diamond-leaf willow (qanuŋiq) is excellent for making snowshoe frames.

Bark: Eaten from young shoots, or entire shoots (natatquq) may be eaten. Formerly used for making nets and snares.

Leaves: Very small, young leaves (sura) are eaten with seal oil and sugar, or mixed with fish eggs and eaten. After early summer, the leaves are too large and taste sour.

Sap: Outer bark is stripped from a willow, then sap is scraped from the exposed stem with a knife. The sweet sap is licked from the knife blade.

Prickly Rose

Rose hips, fruit of the prickly rose, are gathered and eaten raw.

Crowberry

The berries are eaten raw, or mixed with seal oil for eating or storing. They are fairly dry inside, so can be stored "as is" in a cool place. Juice from the berries is squeezed into the eyes to relieve soreness or mild snow blindness.

Bearberry

There are two species: Arctostaphylos alpina is seldom used, but is picked and eaten on the spot when found. A. uva-ursi is gathered in quantity at the Kobuk River Valley sand dune areas. The berries are stored in rendered fat (e.g., bear grease), fish oil, or seal oil, then eaten with the oil. They are also mixed with dried salmon eggs, or added to aqutuq (see uses of caribou fat for recipe).

Low-bush Cranberry

The berries are eaten raw, cooked for preserves, or added to itakpalak (see uses of sheefish eggs for recipe) or aqutuq (see caribou).

Juice from the berries is rubbed on a rash that occurs around the waist area.

Nagoonberry

This berry is eaten raw wherever it is found.

Bog Cranberry

Eaten raw, usually when and where it is picked.

Bog Blueberry

Eaten raw, boiled for preserves, or added to itakpalak (see sheefish) and aqutuq (see caribou).

Cloudberry

Eaten raw, usually when and where it is found.

American Red Currant

Eaten raw, usually when and where it is found.

High-bush Cranberry

May be eaten raw, but frequently used to make jam.

Labrador Tea

The leaves are gathered and used for making tea.

Common Juniper

The needles and twigs are boiled for a medicinal drink used for congested lungs, arthritis, rheumatism, and uro-genital problems.

Single berries are eaten as a medicine for sore throat, cough, and lung congestion.

Eskimo Potato

Gathered in quantity during the fall, and stored underground for winter. Eaten raw.

Wild Rhubarb

Gathered in early summer (until June). Stems are eaten raw. Leaves are cooked, then mixed with fish eggs or seal oil and sugar for eating.

Sourdock

Gathered only in early summer. The young leaves are cooked and eaten, or stored in seal oil for later use.

Seacoast Angelica

Stems are stripped of skin and eaten raw. Seldom found in the upper Kobuk River, but common in the lower river area.

Fireweed

Young shoots (six inches tall) are gathered in early summer, laid outside for half a day, then put in seal oil and eaten when desired.

Wild Chive

The plant and roots are sometimes eaten raw, but usually the plant is added to meat or fish "soups."

Chive slices are boiled in fish broth, the fish is removed, and the broth allowed to cool. Fish oil adheres to the chives, which are removed and eaten with half-dried fish that has been boiled.

Grass or Sedge

Grass-like plants of undetermined identity are used for lining holes for aging fish, covering roofs of cabins (beneath the sod layer) and dried for use as insoles.

Alaska Sagebrush

Kobuk Eskimos frequently use this plant for medicinal purposes. It is chewed or made into a tea which is drunk for flu, stomach ailments, or sore throat. Plants are also moistened, placed on painful arthritic areas, and covered by a hot stone.

Sagebrush plants can be burned to keep mosquitos away.

Four-angled Cassiope

This heather-like plant grows on the tundra. It is used for starting fires, because it contains a flammable substance.

Birch Fungus

Used as a fire starter in emergencies, and burned inside the house to repel mosquitos or drive mice out.

White Bracket Fungus

This is a soft fungus that grows on birch trees. It is used for pincushions.

Moss

Moss from timbered areas is used for chinking cabins and covering roofs (beneath a layer of sod).

Peat Moss

Sod from wet tundra and old lake beds is used for chinking cabins, covering cabin roofs, and covering semisubterranean houses. It is gathered during the driest part of summer.

Reindeer Lichen

Used as survival food for people or dogs.

Earth Resources

Water

The relatively pure waters of the Kobuk River and its tributaries must be included as a vital resource for the resident people. River water is used exclusively while in camps, and on a part-time basis in the villages (where wells are also available, but not always functioning). The Eskimos are acutely aware of the importance of this water in their lives, not only for drinking but also for providing the fish that are an essential part of their livelihood.

Water from the hot springs in Dakli Pass, south of Shungnak village, is another important resource for Kobuk Eskimos. People visit the hot springs each year in March, April, and May to soak in its medicinal waters. Large containers of water are also brought home for drinking, again because of its medicinal qualities.

Clay

Bluffs along the Redstone and Hunt rivers yield a special red clay that can be used to paint sleds, snowshoes, and houses. It is still utilized today, though uncommonly.

Jade

Kobuk Eskimos have a long tradition of utilizing natural outcrops of jade, which is abundant north of the Kobuk River. In pre-contact times, the mineral was used for making stone tools, but

today it is gathered for sale to outsiders. For some persons this represents a significant source of income.

Whetstone Rock

A slate-like rock called tinaakatisruk is collected at an outcrop on the lower Paa River. This rock is used as a sharpening stone for knives.

Stone

Rounded rocks collected along river beds are used as sinkers for gill nets and seines. Other selected river rocks are used as makeshift whetstones for sharpening knives, axes, etc. and are usually discarded after use.

Coastal Resources

The upriver Kuuvaŋmiit rely principally on local resources for subsistence, but they also make considerable use of marine products such as seal oil and whale skin, which they obtain from neighboring coastal peoples. Although they live only a few days' journey from the sea, and although their culture bears strong affinity to that of the coast, people of the upper river do not hunt marine animals themselves. Most of them have never attempted to hunt on the coast, and they do not seem inclined to try. Instead, they obtain resources of the sea through trade.

Exchange networks linking coastal and inland peoples developed long before Europeans arrived in this region. On a first ascent of the Kobuk River, Townsend (1887:87) saw many Eskimos wearing garments of piebald reindeer skin, which obviously came

from Siberia. Indeed, trading was a fundamental element of Kobuk Eskimo life, with a regular position in the annual cycle.

> At the beginning of summer some families followed the breaking river ice down stream. They eventually visited Sheshalik [Shesaulik], on Kotzebue Sound, where they traded with Siberian and coastal Alaskan people. . . .
>
> The Kobukmiut made important trade connections with the Koyukuk River to the south, Kotzebue Sound to the west and the Noatak River and central Brooks Range to the north and northeast. They often acted as middlemen in the exchange of goods through inland arctic Alaska. (Foote, 1966:15, 16)

Although this network of trade extended beyond the Kobuk-Kotzebue Sound region, its primary function for the Kobuk Eskimos was clear. This was the means to obtain precious sea mammal products, which the people felt they could not do without. This need did not change after Europeans arrived on the scene, and so the trade continued. The older generation of Kobuk Eskimos today can recall scores of trading excursions to the coast, when they drifted down the river, transacted their business, and then hauled their motorless boats slowly back up the river again.

An elderly Shungnak man recounted the extent of his travels--to Kotzebue Sound, the Selawik Lowlands, the Noatak River Valley, the Koyukuk River, and across the Brooks Range to the North Slope. Most of these journeys involved trade. Before going to Kotzebue, for example, he always tried to build up a stock of wolf, wolverine, and fox pelts. When he arrived, he exchanged his goods for seal oil, maktak (whale skin and blubber), and sealskin. Before returning home he always spent time socializing, and on one

trading journey he met the girl who became his wife.

During these early years, the Kobuk people brought more sea animal products than they could use themselves. The excess was traded southward, to the Koyukuk River Athapaskans, who gave beaver and marten skins in exchange for seal oil, fish, skin boots, or meat. Some of the Indians' pelts were then carried to the coast, where they brought a fine return in goods from the sea.

In time, storekeepers on the Kobuk began shipping seal oil and maktak up the river, so people could obtain them without traveling to the coast. Following this came the airplane, and subsistence goods could be exchanged by air freight, the terms arranged by mail if personal visits were not possible. The mechanics of trade were altered considerably by these changes, but its intensity remained much the same. And so it is today.

The modern Kobuk Eskimos still use a variety of marine products, which they obtain from several different areas. The heaviest trade is with Kotzebue people, and the primary source of exchange products is the Shesaulik-Cape Krusenstern region (where Kotzebue Eskimos hunt seals in spring and summer). Upper Kobuk River residents also acquire seal and beluga from Buckland and Deering on the Seward Peninsula, from Noorvik on the lower Kobuk River, from Noatak village on the lower Noatak River, and from Kivalina and Point Hope on the coast.

The methods of trade vary from time to time, and from person to person. Most upriver people have relatives, friends, or

formal trading partners on the coast, whom they rely upon for a regular supply of trade goods. Some exchanges, particularly those made through traditional partnerships, involve only subsistence goods. For example, an Ambler man may send a caribou carcass to his partner in Point Hope, who perhaps returns ten gallons of seal oil the following summer. Or a Shungnak woman might give her Kotzebue partner a pair of caribou skin boots, and receive a bearded seal hide the next year.

Although most trade is still carried out through personal friends or relatives today, monetary exchange has largely superseded that based only on goods. This means that Kobuk people now purchase marine products, paying prices determined locally by supply and demand. Some years ago, for example, a fifteen-gallon pok (sealskin bag) of seal oil sold for about twenty-five dollars. In 1975, oil was sold in five-gallon cans, at a cost of from twenty-five to thirty dollars each.

Seal oil is the most important item of trade, and at a given time its price tends to be uniform among all sellers. Costs for other goods are more variable, and can only be sampled here. For example, an Ambler man bought a five-gallon container of seal oil mixed with dried seal meat and pieces of blubber, at a cost of sixty dollars. A Shungnak woman purchased bowhead whale oil and blubber, one gallon for twenty dollars. Prized whale maktak (skin with attached blubber) may bring extraordinary prices. One man recalled paying ninety-seven dollars for two chunks, each about eighteen inches square.

Trade connections between different inland groups are less active today than in the past. Kobuk Eskimos retain their strongest ties with the Koyukuk Athapaskans, exchanging sporadic visits during the winter. Sealskin-soled boots traded from the Kobuk River people are fairly common among the Koyukon, and seal oil is another popular item of exchange. In return, the Eskimos receive Indian footgear and tanned moose hide. This trade apparently never involves money, and serves primarily to solidify friendships.

Importance of Marine Products

The most important animal involved in coastal-inland trade is the ringed seal, which is abundant on the Chukchi Sea and Kotzebue Sound coast. Seal oil (uqsruq), rendered from the animal's blubber, is by far the major product exchanged. Kobuk Eskimos use oil with almost every meal, and their per capita consumption seems equal to (if not greater than) that of most coastal groups.

Eskimos prefer to age their seal oil until it acquires a fermented smell and tangy flavor. Coastal people usually discard oil or feed it to their dogs when it becomes too strong, but the Kobuk River villagers would never do this. They prefer old oil with a powerful smell and flavor, which has begun to acquire a reddish coloration. As described by an old Ambler man, good seal oil has "plenty of stink in it, and you almost cough when you

taste it. This is the kind coast people throw away, but we love it." Seal oil has many uses in food preparation and storage, as illustrated by some of the recipes earlier in this chapter. Most commonly, it is used as a dip for meat and fish. At meals, every person has a small saucer of oil, and each small piece of meat or fish is dipped and liberally coated before it is eaten. This is done whether the food is eaten raw, cooked, or dried.

Kobuk Eskimos occasionally obtain whole seals, but when they do it is primarily for the blubber and oil. Strips of blubber, sliced into small pieces and eaten with meat or fish, are considered a delicacy. On the other hand, seal meat is not highly regarded, nor are other parts such as flippers or intestines, which are relished by coastal people.

Ringed seal skin is often acquired by Kobuk Eskimos. It is used for making the upper parts of boots, boot ties, and clothing trim. Bearded seal hide, which is larger and very tough, is considered far more valuable. It is used to make boot soles, and is cut into strips for the thong used in snowshoe and sled lashings. Bearded seal meat is also obtained occasionally, but it is not much sought after.

Kobuk Eskimos are occasionally fortunate to acquire oil and blubber from the bowhead whale or beluga. These are used in the same way as seal oil and blubber, but they are much harder to obtain. Maktak (from either beluga or bowhead whale) is occasionally purchased or traded from the coast. Most beluga products come from Buckland, and to some extent from the Kotzebue-

Shesaulik area. Point Hope is almost the only source of bowhead whale products, which may pass through several hands before reaching the villages of the upper Kobuk River.

Coastal-inland exchanges also involve a variety of finished goods, such as parkas, mittens, and boots. The upriver people generally trade clothing made from wolf, wolverine, caribou, or beaver hide, in return for items of sealskin. Coastal footgear, made from waterproof sealskin, is especially valued by the Kobuk people. Products such as these are exchanged mainly through close friends, partners, or relatives, and money is not often a part of the transaction.

It is difficult to measure the economic importance of coastal-inland trade. Surely the volume of materials exchanged is small--a family may obtain seal oil or hides only once or twice a year--but this is no indication of its significance. For example, waterproof bearded seal hide is an indispensable part of the most popular winter footgear used by upper Kobuk River Eskimos. And seal oil is a fundamental ingredient of every major meal.

Kobuk Eskimos often speak of the hardship they feel when they run out of seal oil. An Ambler woman said, "No matter how much we eat, we still feel hungry, and without oil our stomachs are always sour." Commenting on the high cost of oil, an old man said that he would simply have to pay the price, regardless of how expensive it might become. "I just have to taste that oil when I eat," he emphasized. Indeed, of all the subsistence products sent to people living away from the villages, seal oil is considered the most important.

Thus, coastal-inland exchange provides the Kobuk River people with food and other materials which are of great value in terms of their significance within the culture. Measured this way, their economic importance must be rated very high, regardless of the volume of goods entailed.

Uses of Resources in Traditional Medicine

Native plant and animal resources have also been used for a wide variety of medicines, and although everyone makes extensive use of the western health care facilities in the region, they continue to utilize their traditional pharmacopoeia and cures. The information on Eskimo medicine included here comes from Lulu Geary (Tuttuġruk) from Buckland and Lucy Foster (Aqugluk) from Noorvik who was born in Kivalina. Lulu's information is based on that passed on to her from her parents, Nuŋŋasiq and Kaugruaq, and from others of her and her parents' generations. Lucy, whose mother died when Lucy was a small girl, was given by her father to another couple on the Kobuk River when she was fourteen. She derived her information on the older people throughout the region. Some of this information is not strictly related to the use of resources, but in order to present a coherent picture, as close to the original narration as possible, of traditional medicine it is included here.

Long ago when people got sick they didn't know what was wrong with them, so the patients died on them sometimes. But today the doctors are saving lives. When they had no medicine

they used sargiq (stinkweed). When they cut themselves they covered them with this. When they had chest pains (qatiqaŋu) or uncomfortable feeling in the chest or anything, they boiled or cooked it and drank the liquid. Sargiq is still used but not as much in the present day as before.

They also ate juniper berries (tulukkat asriaŋich, "the raven's berries") when they had chest pains. When they ate them they always got well. They ate the leaves and stems also.

When a person's blood does not flow right (auŋa iglilguuññai-gaqsipman) they get Hudson's bay tea (tilaaqiq). They drink tilaaqiq like they drink regular tea. They always get better when they drink this kind of tea.

When a person loses his appetite for food (nigitliaq) and is having gall bladder (sunaq) problems, he is fed cranberries (kikmiñaq). First the cranberries are boiled and then mixed with seal oil during the time of treatment. This is how those long ago people made medicine for sunaq problems. A person that loses weight and strength and is not for food is treated with this type of medicine which is made to help him crave for food. This is what they use on themselves, people that try to help a body that becomes weak.

Hudson's bay tea (tilaaqiq) is also used when a person has food poisoning (niġġiqłuk). After the person has vomited he is given tilaaqiq as water. He is cured immediately. Even in the summer when tilaaqiq is green it is used as medicine. This is what they used for food poisoning.

When a person had a toothache (kigutinŋu) he bit on suluppaugaq (grayling) back fin. After biting on the fin for a while the toothache will go away.

When a person has a sore throat (iggianŋu) with white patches and nothing can be done, a long, thin strip of blubber is used as medicine. It is held so that a person swallows it in and out. This is so that he will throw up and take all the dirt out from his throat, he will feel better after.

Before tonsils (Eskimo name unknown) were ever removed in hospitals, they poked them when the tonsils get old and soft and let the liquid flow outwards. The sick person always got well because the tonsil was full of pus before the treatment. But sometimes people died from this.

When a child has sores (white spots) on his tongue (qangiq) and when he starts drooling you can get baby swallows from the nest or even the regular size swallows and kill them and let them dry after plucking the feathers. And after, whoever has sore tongue you wipe or rub the dried swallow on the tongue. And the child always gets well.

When a child has fits (qiluraġaq), seal oil (uqsruq) is boiled and the smell taken away from boiling it. Then sugar is added, but no matter how long sugar is boiled with seal oil some of the sugar is dissolved. After letting the medicine cool off it is injected into the rectum of the child (enema). He will get well. The child starts burping the seal oil because it comes up through the intestines. When it goes back down the child gets

hungry. It is like washing him out. When a child gets sick with this type of symptom, he always looks like he's dead and the only thing that's with him is his breath.

When a person has a very bad cold (nuvaksiqpak) and cannot smell anything, he is treated with fermented salmon. The fish is so decayed that it is not edible, but is used for medicine. This is put on the nose area and the outside part of the throat. Whenever one has rotten salmon it is usually saved and can be used when it is needed. We as a family have used this medicine when my father was alive. He gave us salmon (probably fresh) food when we had the flu that gives us headache, fever, or when we can't smell anything. This is what the old man had for our medicine and they tried to help their bodies when there were no nurses, long ago they had nothing to help them. We are now leading easy lives when that type of life has disappeared.

When a person cannot stop a cough and he is coughing constantly (quqiqpauraq, whooping cough) he is given tilaaqiq or Hudson's bay tea as water. The only way it can be made is by boiling and making it just right and it is drunk with no other mixtures. I have tried it with my children when my parents told me about it and it has been very helpful.

When a person has a continuous nosebleed (auktit) the Eskimo nurse uses her fingers and puts pressure on the bridge of the patient's nose. I have tried it when blood starts flowing like water. My husband has used this method on me to stop the nosebleed. (Have to press tightly.) Another method of stopping a

nosebleed is pressing on the nostrils. When I was a child and had many nosebleeds these methods were used for me. This was the time when there were no nurses or doctors.

When a person has a very bad headache (niaqunŋu) he is given a shot between the eyebrows or any part of the head, but you have to be very careful because there is a muscle like sinew and if you poke (kapi) it the skin will fall into the eyes. You hold the skin up with your fingers by pinching and when you give a poke you give it sideways, not into the skull. This is done so that the old blood will go out. Long ago people are afraid of going blind so this was practiced widely by the Eskimo people. It is said everything will get brighter after bloodletting. When any part of your body is hurting, you can kapi it. For example, there is a hole in the ankle which is the joint, and you can kapi straight down into it. This is also done in your kneecap. A shot can be given on any vertebrae of the back, but it has to be done on the side of the vertebra because of the sinew.

Although bloodletting can be used on any part of the body there is great danger involved. When shots are given, one has to watch out for sinew and brain. That is why the thumb plays an important part in bloodletting. It determines where a shot is to be given. You can feel it because of the blood that gathers in the afflicted area. When too much blood stays in the ankle or knee too long it will eat the bone and get pussy. If nothing is done immediately the pus will turn to water. Traditional doctors suggest that blood be let out immediately. The depth of the

insertion of the kapun depends on the part of body where it is inserted. For bloodletting in the hip joint the kapun is inserted three inches deep. The average size of the kapun is about three inches long. The blade is usually thin and sharp at the tip. Long ago jade was used, but in the present day steel blades have replaced them.

When a person has snow blindness (illuk) and he continues to have it despite warnings, he is punctured between his eyes with a kapun (bloodletting instrument). This is so blood can be drawn out, and it will help the patient. Blood is thought to be old (see bloodletting).

When a person has snow blindness with a sty, they used lice. Long ago people had a lot of kumaks (lice) and they look for kumak for the patient's eye. The kumak is tied with a strand of human hair and then put into the eye. The kumak always scratches the sty off. This is the method they used for removing a sty at that time.

When the center (iñua, meaning person) of a boil (ayuaqa; pl. ayuurat) is ready to be removed, it is done by pulling a human hair and using it to take the center off. This is done by tying the hair and squeezing the center out. And it won't grow again. After taking the center off, the boil is covered and bandaged with sargiġruaq (stinkweed). This is so it won't get infected and leave a scar.

When a person had a very bad cut (killiq) before there were medicines or nurses, warm urine was used to clean it. The urine

stops the bleeding immediately and the cut does not get infected.

When a cut cannot heal, long ago they used sargiq (stinkweed). They bandaged the cut with this. People that live near the ocean used blubber when it was available. The blubber is made into thin strips and placed on the cut. Or the seal oil is boiled and used to cleanse and soak the cut.

Today when a child gets a cut his parents or the child himself puts mercurochrome or iodine around the injured area and, drawn as a ring, it is a belief that it can stop the spreading of the infection.

When a small child's liver swells up (tiŋuktuq) and his nose begins to quiver and he does not eat, a rabbit skin is soaked in seal oil and warmed, then placed on the stomach, and tied like a belt. This is so the seal oil will seep into the liver and make it soft. The child will become lively, and this is how swollen livers are cured.

A person with a bad appendix (saqumanaaguit or uqsiutaaq) is cured by pressing lightly and working it to the intestines and draining it to mosses. It takes a long time to drain it. After, the person is given frozen sheefish or anything cold to eat.

Sometimes the appendix can burst during this process and the patient can die from it. A person who died of appendicitis can be diagnosed by the blue coloration of skin on his armpits and neck area.

No matter how young a girl is she gives birth (igñi) outside all by herself even if she does not know anything about child-

birth. She suffers, but at the end she always survives. Although she is brought food she goes through the pregnancy alone. When giving birth in the cold weather, she has to have strength stronger than her normal self. That is how it was for those people.

Josie (from the village of Kiana) explained some childbirth practices. When a woman was to have a baby her husband built a small framed hut for her to deliver the baby. The hut was called uqotak. Then the woman would go to a snow house called anigityaq for four days, because she was very quniq (contaminated), before she would go back to the main house. The woman would have to deliver the baby by herself. Another person had to bring her food.

Long ago the people before my time did not have any soap. They did not use water for they had no soap to use when taking a bath. Long ago their windows were on the top center of the house, so the first part of the month the smoke hole was closed. The whole night was spent sweating. After spending some time sweating the person went outside to wipe himself with fresh snow. After wiping he went in and dried. His body felt weak and light after. People watched for fresh snow to fall before taking a sweat bath. This is how they took a bath long ago when there were no soap and towels.

Before and during the contact with the missionaries the medicine man played an important role as healer, as necessary element in the control of the natural forces which would bring

about success in subsistence activities, and as social control agent. The Eskimos were very knowledgeable people. Broken arms, broken legs, or a person freezing or getting frostbitten rarely occurred to the long ago old-timers, because they were careful and did not play around with liquor. But after contact with the outside world there was the introduction of liquor--which I think is like a time bomb, where the people lose some of their sense of identity and social and physical control. Long ago when life got hard they stayed at home. "He got frostbitten"--no one had anything to say of this type. People were very watchful about the weather. They watched to see what type of day it would be. They were very knowledgeable about weather conditions.

We listen to weathermen over the radio today, and this is how it was with them. They were like weathermen. They were very careful and cautious people.

XII

TRAVEL

The land where the Kuuvaŋmiit Eskimos live is in a transitional zone between the Arctic and the subarctic, and the Kuuvaŋmiit have had to adapt to both types of environment. The birch-bark canoe has been needed as much as the dog sled. Since the Kuuvaŋmiit have long been hunters and gatherers, their livelihood has depended on their ingenuity and mobility at all seasons. Terrain, climate and weather, surface conditions, raw materials, and technology have all influenced the travel and trail systems that have served the Eskimos so well. Their travel methods fall basically into two seasonal categories: summer and winter.

Summer (Breakup to Freeze-up)

When viewing the land of the Kuuvaŋmiit from a summertime plane flight, one cannot help being struck by the extensive marshes and countless small lakes that polka-dot the valleys and lowland tundra. Water glistens in reflected sunlight across the poorly drained terrain even up to the lower portions of mountain slopes and atop alpine meadows. Rivers and sloughs fed by mountain streams of the Brooks Range meander across low plains and wide valleys.

Foot Travel

The Kuuvaŋmiit for centuries have traversed their summer habitat by hiking the relatively dry alpine areas or by using watercraft to travel a maze of waterways. Well into the twentieth century Native men hiked north into the Brooks Range early in the summer to hunt and did not return until just before freeze-up. With the return of caribou into the Kobuk River Valley, and with the advent of social and economic changes, the need and practice of summer-long hunting on foot has declined. Most foot travel now takes the men no farther than to the nearby mountain slopes that rim the valley.

According to several elderly informants, early in this century the Kuuvaŋmiit men began in the spring to get ready for their summer hunts. For footgear, the women prepared several pairs of special sealskin summer footwear (ishiigagun) for each hunter. These had holes in the soles to allow water to drain out. Later these boots were replaced by commercially made shoepacks. Saddlebags for dogs were made or repaired, and dry meat, seal oil, salt, sugar, tea, matches, and other supplies were gathered for the journey. Each man also carried such items as his rifle, ammunition, tarp, slicker, extra socks, gloves, warm jacket, mosquito head-net, knife, ax, sharpening stone, file, sleeping robe (rabbit skin or wool), rawhide line, a few nails, sewing kit, binoculars, one or two pots, cup, and eating utensils. A

few men would take a small hand reloading tool along with a supply of gunpowder, caps, and slugs to save on ammunition.

Hunters usually left their village around July 10, although those who planned to hunt in the drainages of the Colville River might leave in June. Each man had from four to six pack dogs to carry his load, although he would carry some of the burden himself. They usually traveled in small parties as they headed north. Younger men were sent ahead to forage for game while the older men and adolescent boys herded the pack dogs along and established campsites. All of the major valleys extending northward were used as paths. In the upper Kobuk area, the Ambler River was the favored route for traveling to the Noatak River. The Eskimo name for this river, Natmaktuġiaq, literally means "pack it across." In the lower Kobuk area the favored route was up the Squirrel River and then along the Omar River. Next favored was northward along the high ground west of the Salmon River.

By the accounts of two informants, hunters from the upper Kobuk villages came together when they reached the divide into the Noatak River Valley. Here they discussed where each man would hunt and which route he would probably take home. Often the men hunted in pairs. Some men hiked farther north and west to seek caribou while others hiked east to harvest sheep and marmot. This system prevented an overconcentration of hunters in a given area, and prevented possible conflicts between individual hunters.

Once in the mountains, the hunters had to find or make shelters for themselves. Through many years of using the same territory, they knew of and used particular rock caves (kuŋattuk) along the mountain sides. Some of these were large enough to sleep five or six persons. With the tarps they carried with them they could also make lean-to shelters or they could make an itchalik, a hemispherical frame of willows over which the tarp was draped to form a tent. The bottom of the tarp was held in place with sod placed around the circumference (Fig.56).

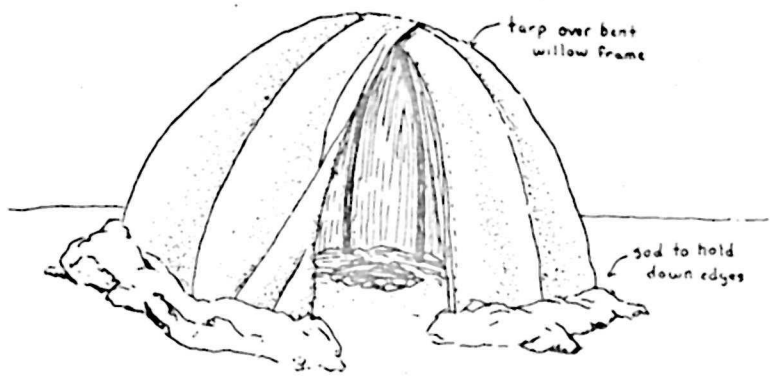


Figure 56. Hemispherical shelter made with a tarpaulin.

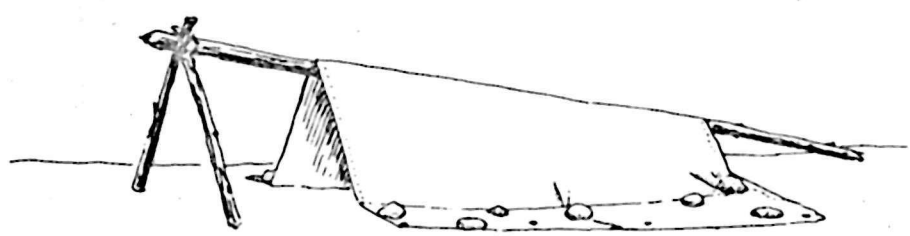


Figure 57. A tripod-type shelter.

A third style of summer shelter was the aoiyayuk, an elongated tripod of willows with the longest leg serving as a ridge pole for a tarp. The two bottom edges were kept in place with rocks (Fig.57).

As the men moved from one site to the next killing game and drying meat, they established stone-covered caches to protect the products of the hunt. They picked up these fruits of their labor in the fall when they began moving back to the Kobuk. This was a laborious task requiring both men and dogs to carry the heavy loads of dried meat, skins, fat, and other products of the hunt, and it usually required two or three round trips to move the total load from one campsite to the next. Elderly men told of carrying burdens so great that they used a staff to maintain their balance as they trudged over the hummocky ground.

Rafting

After packing their loads to the headwaters of the major tributaries flowing into the Kobuk River, the men built rafts to carry themselves, their dogs, and their loads down these rivers to the Kobuk and home. The first step in raft building was to fell and remove limbs from standing dead spruce trees to make logs for the raft. The poles were placed with the tips all pointing forward, creating a wedge-shaped craft (Fig.58). A single pole was place across and atop the bow end and each lengthwise raft pole was lashed to it. Then two poles were

spaced across on top of the raft just aft of its middle. Only the outer two lengthwise poles of the raft were lashed to these. A platform was built across the two aft poles, and meat, skins, and other supplies were placed on it to keep them well above water. Dogs were tied along the edges of the raft in such a way as to be able to break free easily if the craft were swamped. The hunter stood at the narrow bow of the raft and guided its progress with a long spruce pole. A spare pole was lashed to the raft in case the first was lost or broken.

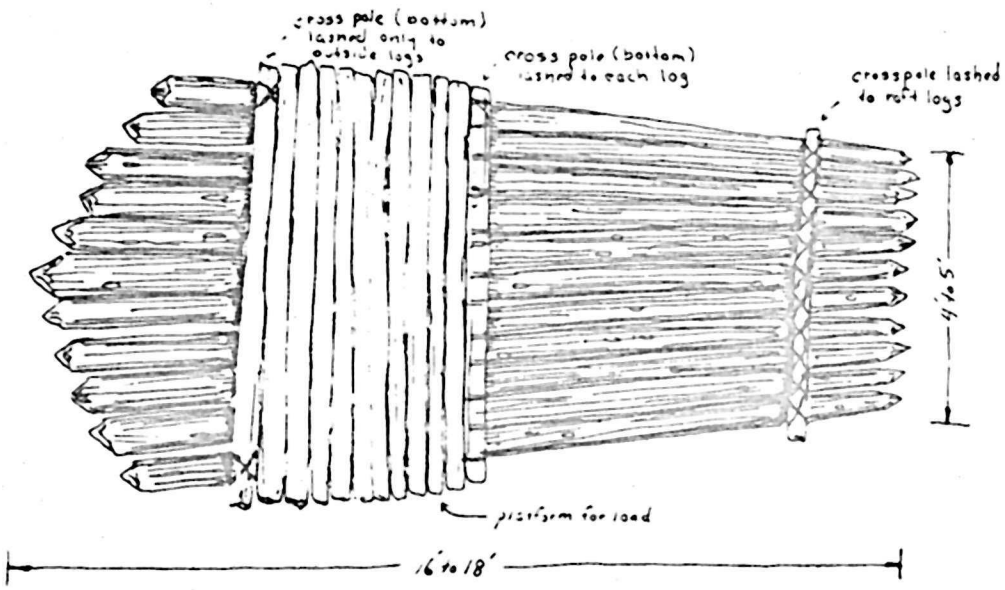


Figure 58. Raft made with spruce poles.

All the major northern tributaries of the Kobuk were used for rafting home, but each had its own peculiarities that had to be taken into account. The Omar and Salmon rivers are swift shallow streams for about half their courses, and during the

years when the water was low the hunters had to pack their loads several miles downstream before they could begin rafting. The Redstone River (Ivisaaq) is also relatively shallow, requiring the portaging of loads several miles downstream to begin rafting. The Ambler River (Natmaktuġiaq) is a swift stream with several dangerous crosscurrents that can capsize a heavily laden raft. Usually two men worked together on one raft for this river. About midway down the Ambler it was necessary to beach the raft and cache part of the load for a winter pickup, because the river fanned out in shallow braids and could not float a heavy-laden raft.

The Kogoluktuk River means falling water, and a rugged canyon and unnavigable rapids occur seven miles above its mouth. Hunters who used this river had to unload their supplies at this point and pack them across the mountains to the village. The Mauneluk River was fairly navigable, but loads had to be portaged over rugged terrain to reach water of the necessary depth. The Reed River was the most popular for returning hunters. Its Eskimo name, Anitġaagaak, literally means "the going home way." It was a relatively short portage from the Noatak River Valley to waters of navigable depth, and the river was not particularly turbulent. One could raft the entire way to the Kobuk and then downstream to the village.

The rafting of swift shallow mountain streams required a craft that could withstand turbulent water and bumps against rocks, carry a heavy load, and be maneuverable. The Kobuk Native

designed a special style of raft, umiaġluk, to meet these demands.

Other Watercraft

Besides rafts, the Kuuvaŋmiit used a variety of other watercraft prior to the 1940s. These included birch-bark or skin-covered kayaks, large skin-covered umiaks, spruce-bark-covered boats, double-ended plank boats, square-sterned plank boats, and broad shovel-nosed river boats. With the introduction of new boat building materials and outboard motors, and with the need to haul large loads in short times, the variety of watercraft has been reduced to a few basic designs. Ninety percent of the local summer travel is carried on by watercraft.

The open, shallow draft kayak continues to be used occasionally on the Kobuk River but instead of being covered with birch bark it is now covered with painted canvas.

The river kayak is a very light, portable craft used in the setting of fish nets, hunting in lakes and sloughs, and crossing areas of open water during the period of ice breakup. The craft may be propelled with a single-bladed paddle or with two rods, one held in each hand, that are used to push against the bottom along shallow river bars. Joe Sun told of traveling by kayak from Shungnak upstream to the Lower Canyon of the Kobuk. It required one week of paddling and pushing against the current to travel approximately ninety-five river miles.

The use of the kayak is declining, although most adult men still have the experience required to build and use this unique craft. In 1974, there were about six canvas-covered kayaks in the upper three villages of the Kobuk, and about the same number in the lower river area. A few aluminum canoes have made their appearance in recent years, most of them brought in by non-Natives and later sold to local Eskimos. There were approximately five metal canoes in use by Natives on the upper Kobuk in 1974. All of these craft were used for short trips on the river near the villages. A few shovel-nosed (square bow) boats are used, and short, broad boats designed primarily for speed have also been adopted since 1960.

Long river boats are the principal means of water travel on the Kobuk River, however. Until the late 1930s, these boats were powered by humans, dogs, or wind (Foote, 1966:21). When traveling against the current, a line was run from the boat to the dogs or to the people who were pulling the boats as they walked along the wide gravel bars. At least one person had to be in the boat to steer. Paddles and long poles were employed to propel the boat where pulling from the shore was not possible. When traveling downstream, the occupants of a boat simply used poles and paddles to avoid hazards and to remain in the current. While traveling across Hotham Inlet or along relatively straight sections of the river, makeshift sails were often set up with poles, paddles, and canvas to exploit a favorable wind.

Although outboard motors now power the river boats, poles and paddles are still carried. They are used principally in crossing short stretches of water where it is inconvenient to use an outboard motor. Poling and lining with human power occasionally supplement the motors when it is necessary to cross riffles or other shallow water not deep enough for an outboard, and non-mechanical power is used in emergency situations such as motor failure.

The gas-driven outboard-motor-powered river boats range in width from four to six feet at the midship gunwales and up to twenty-two feet in length; they generally have square sterns, flat bottoms, and gently rising pointed bows. Most are of local construction and virtually all are plywood-covered. A few plank-covered boats continue to be used. Fiberglass and aluminum river craft are coming into more frequent use, but they presently account for a small percentage of the total number of boats on the river.

Whereas in 1940 there was only one outboard engine in the village of Shungnak (Foote, 1966:34), in 1975, thirty-four were counted and an estimated six others were on hand. Among all three upper Kobuk River villages a total of eighty-three outboard engines were counted in 1975 (Table 7). These engines ranged in power from four to fifty horsepower; 61 percent were in the fifteen to twenty-five horsepower range, 19+ percent were in the four to ten horsepower range, and 19+ percent were in the thirty to fifty horsepower range. During the same year thirty-eight

motors were owned by the twenty-six Noorvik families surveyed and fifty-six motors were owned by the forty-three Kiana families (Table 8).

The fuel mileage for a given outboard varies according to the size of the load being hauled, the boat design, current, condition of motor, and degree of throttle. Wind may also be a factor. During a summer of using a shovel-nosed boat powered by an eighteen horsepower outboard, one person averaged five miles to each gallon of fuel consumed. When heavily loaded, the average might drop to three and three-fourths or four and one-half miles per gallon. Fuel costs in 1974 were $1.00 to $1.25 per gallon of gas and $1.00 per pint of motor oil required for mixture. A boat trip of fifty miles used from $12.00 to $16.00 worth of fuel. Adding engine and boat wear would bring the cost to roughly $27.00. Thus, medium-sized boats being powered by medium range (fifteen to twenty-five horsepower) engines will cost somewhat more than $.50 per mile to operate. For very large, expensive motors and boats this figure could rise to $1.00 or more per mile.

Outboard-powered boats now travel the length of the Kobuk River from the Lower Canyon to Hotham Inlet. Travel for any distance up tributaries is usually difficult except during periods of high water (see Appendix 4).

Table 7. River boats and outboard motors owned by families of Ambler, Shungnak, and Kobuk.

	Ambler (n=25)			Shungnak (n=17)			Kobuk (n=9)		
Family Number	No. of Boats	No. of Motors	Horse-power	No. of Boats	No. of Motors	Horse-power	No. of Boats	No. of Motors	Horse-power
1	1	1	7½	2	1	25	3	2	20,25
2	0	0	--	1	2	40,9½	1	1	20
3	1	1	25	1	1	25	2	1	25
4	0	0	--	2	4	35,20, 18,10	1	1	20
5	1	2	18,25	1	3	25,18,10	1	1	25
6	2	3	20,25,9½	3	3	25,9½,9½	2	2	20,25
7	1	1	25	1	2	18,7½	0	0	--
8	0	0	--	2	3	25,25,9½	0	0	--
9	3	3	50,25,20	1	1	40	1	1	20
10	2	2	28,10	1*	1	18			
11	0	3	28,18,9	1	2	25,15			
12	2	2	20,18	1	2	20,25			
13	2	1	50	0	1	25			
14	3	2	20,50	1	2	25,20			
15	3	2	33,25	1	1	40			

Family Number	Ambler			Shungnak			Kobuk		
	No. of Boats	No. of Motors	Horse-power	No. of Boats	No. of Motors	Horse-power	No. of Boats	No. of Motors	Horse-power
16	2	2	50,9½	2	2	25,25			
17	1	2	4,25	1	3	10,18,25			
18	2	3	40,33,9½						
19	2	2	25,9½						
20	1	1	25						
21	1	1	33						
22	1	1	33						
23	1	2	33,33						
24	1	2	25,25						
25	0	2	50,20						
Totals	33	41		22	34		11	9	
No. per family	1.3	1.6		1.3	2		1.2	1	

* Poling boat

Table 8. River boats and outboard motors owned by families of Kiana and Noorvik.

Family Number	Noorvik (n=26)		Kiana (n=43)	
	No. of Boats	No. of Motors	No. of Boats	No. of Motors
1	1	1	1	2
2	2	1	1	1
3	0	0	1	1
4	0	0	1	1
5	1	1	1	1
6	2	2	1	2
7	1	1	2	1
8	2	2	1	0
9	1	1	0	0
10	1	2	2	3
11	2	3	1	2
12	1	1	1	1
13	1	2	3	5
14	1	1	2	2
15	3	2	1	1
16	2	2	1	1
17	2	2	1	1
18	1	0	2	3
19	-	-	1	1
20	-	-	1	1
21	-	-	0	0
22	-	-	1	1

Family Number	Noorvik		Kiana	
	No. of Boats	No. of Motors	No. of Boats	No. of Motors
23	-	-	0	0
24	2	1	1	1
25	-	-	2	2
26	-	-	2	2
27	2	2	1	1
28	-	-	2	2
29	-	-	0	0
30	-	-	2	2
31	2	2	1	2
32	-	-	2	3
33	-	-	0	0
34	-	-	1	1
35	-	-	0	0
36	-	-	1	2
37	1	1	1	1
38	1	2	0	0
39	-	-	1	1
40	-	-	1	1
41	1	3	1	2
42	1	1	0	0
43	1	1	1	2
Totals	36	38	46	56
No. per family	1.4	1.5	1.1	1.3

Winter (Freeze-up to Breakup)

Winter is the true character of northern Alaska. The land and water solidify as a single unit, snow coats the surface, and cold predominates. This is the time when creatures not truly Arctic must flee to warmer climates or hibernate in a state of semisuspended animation. Those who remain active are placed under considerable environmental stress and must adapt to rigorous Arctic conditions.

It is during the long winter that mobility attains its highest value as a human survival factor. Game populations are sparse, widely scattered, and generally in a constant state of flux. Nonindigenous resources, such as fuel, require being transported from elsewhere to be of use to the Kuuvaŋmiit.

To be mobile means to be exposed to the severest elements. The human traveler must find or invent clothing and shelter that does not compromise mobility. He or she must also develop skills in predicting or recognizing significant changes in the weather, variations in surface conditions, and a host of other variables that will affect his or her mobility--and even survival. Over the generations, the Kuuvaŋmiit have amassed a considerable body of skills and knowledge related to winter travel and survival. The small amount that can be presented here will serve as a representative sample.

Clothing

Suitable clothing has first priority for a winter traveler, and the Kobuk River Eskimos have attained a high degree of achievement in this field. To meet both the needs of combatting cold and not encumbering movement, they have traditionally manufactured light, loose-fitting fur garments. Today, some of these garments have been superseded by commercial products that meet the same standards as traditional furs. Figure 59 shows the traditional dress of winter travelers as well as their contemporary dress. Many individuals, particularly the older men, continue to make heavy use of traditional clothing.

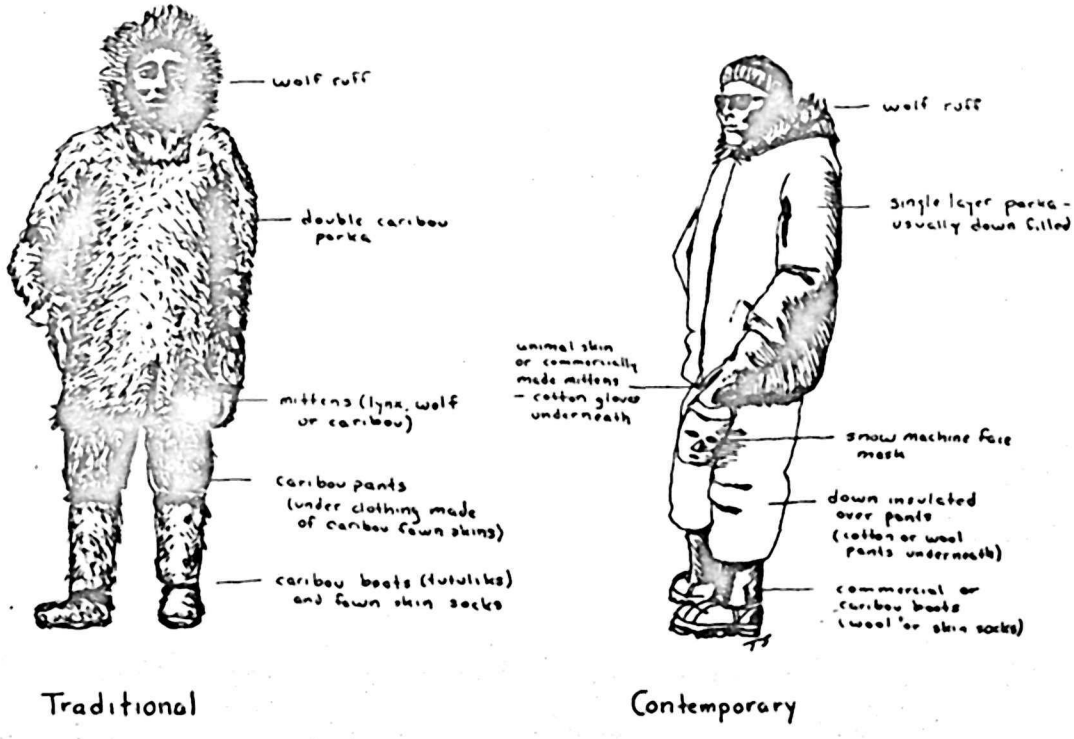


Figure 59. Man's traditional winter garments and contemporary winter clothing.

Weather Forecasting

Before beginning any extended journey the Kuuvaŋmiit traveler must first take careful note of weather clues. Unlike the open tundra plains of the North Slope, Kobuk River Valley weather is often very localized. The temperature, wind, and precipitation in an area only a few miles wide may be very different from that in the surrounding area. A person who leaves home in apparently ideal traveling weather may be suddenly engulfed in a howling windstorm or in subzero temperatures. The successful traveler must thus be able to predict and be prepared for significant weather changes along the planned route.

The first factor to be noted by a Native traveler is sky cover and precipitation. All clouds are known as nuviya, and the formation called "mares' tails" is known as qayaġuq. The Kuuvaŋmiit recognize this cloud formation as a forecast of strong winds that may strike within a twenty-four-hour period. Heavy, dark clouds, particularly on the southern or western horizon are usually a sign of an approaching storm. High, thin overcast, with a light snowfall, is interpreted as a sign of relatively stable weather, although it may result in a whiteout, in which nothing but the darkest objects can be seen.

There is a particular form of precipitation known to the Kuuvaŋmiit people as kiiniinik. This foretells the onset of an intense, long cold spell. It is not true snow, for it often falls from a cloudless sky. Rather, it is fine ice crystals

caused by a layer of intense cold air's passing over a relatively warm layer of air, causing the lower layer to cool rapidly. Moisture in the lower layer is transformed directly into ice crystals and falls to the earth. There is usually little or no wind during such occurrences. This falling frost coats the snow with a very dry, abrasive surface and brings temperatures down to -60° F. or -70° F.

The prospective Native traveler scanning the sky and horizon also takes careful note of the wind. He knows that certain mountain passes, valleys, and plains are subject to localized fierce winds that can obscure visibility, create severe wind-chill, and even sweep away a man and his equipment. The following is a partial list of such locations known to Kuuvaŋmiit:

Shungnak Flats to Pitqiq Lake--subject to strong easterly gales.

Selawik Pass near the head of Wheeler Creek--subject to extremely violent easterly gales.

Hunt River mouth--infamous for hurricane-force winds that sweep out of the north. May remain windy from several days to several weeks.

Selawik Lowlands south of Waring Mountains--subject to chilling westerly gales.

Kobuk Lowlands to Squirrel River mouth--subject to strong westerly winds.

Howard Pass south to the Noatak River--known for sudden violent north winds.

As the Native scans the horizon he carefully notes any signs of swirling snow on mountain ridges being carried aloft by winds. If the horizon appears hazy on a clear day he knows a gale may be building. He knows that a light easterly wind in Shungnak may be expressed as a gale in the upper Selawik River area or that a north wind in Ambler may foretell a strong east wind in Shungnak.

The danger of strong winds cannot be overstressed when considering traveling conditions. In the winter of 1974 one researcher was traveling by dog team with two Native companions on snow machines. The party left the calm shelter of a forested canyon and paused to look out across the broad open valley of the upper Selawik River. The valley was calm, although swirling snow could be seen on a distant mountain ridge. At the encouragement of the investigator the party started to cross the several miles of shelterless tundra. Suddenly the gale descended upon the valley, blotting out visibility and threatening to overthrow sleds and dogs. The chill factor was extreme. In crossing snow-free, frozen lakes, the dogs, sleds, and machines were blown sideways out of control. It was only with considerable difficulty and a little luck that shelter was regained in the trees on the far side of the valley.

Temperature is also a major consideration of Native travelers. During the winter temperatures may range from +35° F. to -72° F. During periods of intense cold, outdoor activities are drastically, although not entirely, curtailed. From December 26, 1974, through January 15, 1975, the village of Shungnak experi-

enced sixteen days during which the temperature ranged from -30° F. to -70° F. There were fourteen consecutive days when the thermometer never registered above the -50° F. mark. During this cold snap travel was generally limited to very short trips to obtain wood for heating. As soon as the temperatures moderated to -30° F. hunting, trapping, and general travel greatly increased. When temperatures are at or above the freezing mark, soft, slushy snow conditions prevail and the ice that covers swift water becomes weak and unsafe. Both dogs and snow machines become overheated. A winter temperature range of +10° F. to -20° F. is generally preferred for traveling.

Surface Conditions

From an airplane, the Kobuk River Valley in midwinter appears to be a relatively uniform surface of snow-covered plains, hills, mountains, lakes, and rivers. But to the Eskimo on the ground, the land is anything but uniform. Snow, apun, is the lubricant for winter travel, but it occurs in many varieties, all of which have some effect on transportation. The following is a partial listing and description of the snow categories that affect travel:

A. Fresh-fallen powder snow, nutaġaq, creates difficult traveling conditions, as it does not support weight and puts a drag on sled runners. It is particularly difficult for dog-team travel, and if it is deep, snow machines will also bog down. The upper Kobuk River

near the Paa River is known for sudden, deep falls of fresh snow. Informants told of up to three feet of snow falling in less than twenty-four hours, wiping out trails and forcing laborious snowshoeing to break open new routes. Wind, cold temperatures, and time result in the compacting of such snow into more easily negotiable material.

B. Packed snow, aniu, or hard crusty snow, siliq, is generally considered an excellent traveling surface. This snow occurs over open, wind-swept terrain and exposed stretches of the river. The Kuuvaŋmiit attempt to travel as much as possible on such snow and may opt to take an indirect route to a given location in order to take advantage of packed snow areas. Trails are unnecessary across such snow except that markers may be set up for purposes of navigation.

C. Rough surface snow, kaiyuktaq, occurs in wind-packed snow areas and is caused by strong windstorms. This surface resembles a choppy lake suddenly frozen. The drifts (waves) of this surface tend to align themselves with the prevailing wind and help to orient the traveler during periods of limited visibility. The hard uneven surface is a minor problem for dog-team travelers and can be a great hindrance to snow-machine travel. The short length and relative rigidity of a snow machine results in a severe pounding of both machine and driver.

D. Granular snow, pukak, is usually found in a thin layer next to the ground. This snow is generally overlain with either soft or packed snow, so it is of little consequence to the traveler. However, in extremely windy passes, the snow crust is so worn away by violent blasting that only pukak covers the ground. This snow has no body and will not pack; consequently, the traveler is hard pressed crossing such areas. Dogs, machines, men, and sleds slip between frozen hummocks and are being constantly thrown off balance. Tundra grasses are usually exposed, increasing frictional drag on sled runners. Only one who has waded and stumbled across several miles of such snow-covered terrain can appreciate the difficulty it presents to travelers.

E. Deep, soft snow, qatiqsuġniq, is found in forested areas, sheltered valleys, and along stretches of the river where vegetation or topography breaks the wind. Although this snow does not have the body to support as much weight as does wind-packed snow, men on snowshoes or lightly loaded snow machines can usually cross it with minimal difficulty. Dog teams and heavily laden machines, however, usually sink several inches or more into such a surface, considerably slowing their progress. Once the snow has been disturbed by human or animal travel it will firm up into a hard-packed trail allowing easy travel.

F. Ground drift, natiġvik, is a condition caused by steady winds' wearing the snow cover away and sending fine-grained snow drifting along close to the surface. It is regarded as beneficial because it helps to fill in depressions, creek beds, and other rough ground and creates a relatively even surface for travel. However, it may escalate and cause drifts to cover trails, camps, and equipment. Dogs forced to travel into such ground drift may develop sore eyes or even frostbite in lightly furred body regions.

G. Glazed snow, qiqsruqaq, is a condition that occurs in the spring when thawing and freezing form an icy crust on the surface of the snow. It may also occur in mid-winter if a sudden warm spell is accompanied by rain. If severe, it can be disastrous for such grazing and browsing animals as moose and caribou. Snow machine travelers are little affected by crusted snow, but dog team and snowshoe travelers can be severely affected. The icy crust is usually weak and shatters under pressure into sharp knifelike blades. The feet of dogs can be ruined by such a crust and snowshoes and the runners of sleds may be worn away by this glassy surface.

H. Frost crystals, kiiniinik, are a form of cold-weather precipitation. During periods of calm and intense cold this frost may accumulate up to three inches on the surface. The crystals present a very abrasive surface

that considerably increases friction on sled runners. Kiiniinik also packs into the feet of dogs and forms a hard solid ball of rough ice. It is impossible to pull these balls out without tearing away hair from the paws, so the dogs must chew them out. Such snow will frostbite the feet of working dogs unless care is taken. A wind quickly dissipates this frost.

I. Snowdrift cornice, mapsaq, is a condition caused by wind's carrying drift over a ledge or steep bluff causing it to gradually build a massive burden of frozen snow. As long as one is traveling across open plains or through gentle valleys such a condition is of little consequence. However, if one must travel through steep, confined mountain valleys or beneath high bluffs and cliffs, these formations can be hazardous. When the mass of this formation increases beyond a certain point or when thawing loosens its grip on the vertical surface, it will suddenly come crashing down in an avalanche or sisuuq. Areas of high avalanche potential are avoided by Eskimo travelers.

J. Melting or wet snow, auksałaq, occurs primarily during the spring. This snow is soft, sloppy, and sticky, making it difficult for all forms of winter travel. Wet snow slows the pace of a dog team and produces sore feet on huskies. It packs into snow-machine tracks and

causes them to jam. It soaks the rawhide of snowshoes and packs between the webbing, making them heavy and clumsy. Eskimos usually travel in the evenings and mornings when cooler temperatures freeze a thick crust over such snow.

Ice Conditions

Ice, siku, is the winter pavement that transforms waterways into highways. However, this pavement is subject to variables that either help or hinder the winter traveler. The following is a partial list of the ice conditions that the Native traveler must take into consideration:

A. Thin ice, maptugitchuq, is a constant threat to the traveler. It is common in the fall before the new ice, sikuliiraq, attains the thickness required for safe travel. The thin ice is dark because of its thinness and transparency, so it is usually discernible. It may be encountered, however, throughout the winter. Upwelling of water from submerged springs, hidden riffles, whirlpools, strong currents, and such phenomena all retard ice development. A heavy snow cover insulates the ice from cold air and also slows or reverses its growth. The Kuuvaŋmiit Eskimos over the generations have learned the locations of thin ice caused by water action and generally avoid crossing such areas.

It is possible to encounter thin ice also in areas where there is little water movement. Beaver lodges commonly have weak ice surrounding them. Schools of blackfish, iłuuqiñiq, will wear away holes in thin ice as they swarm beneath. According to informants, salmon-spawning sites may also be covered with thin ice. This may be caused by heat created through the decomposition of dead salmon.

With so many things, predictable and unpredictable, causing weak ice, it is inevitable that persons who travel extensively during the winters will encounter thin ice. When they do, the results may range from uncomfortable to disastrous, depending upon such factors as water depth, current, air temperature, wind, available shelter, available fuel for a fire, and so on. In the end, much may depend upon an individual's training and skill in meeting such emergencies.

B. Rotten ice, aunniq, is a phenomenon encountered in the spring just before and during breakup. Once the snow cover has disappeared from an ice layer it literally "rots" under direct sunlight. Rotten ice may be three feet thick, but it will crumble into millions of thin slivers when subjected to pressure. If a person falls through such ice it is very difficult to find a way out because the ice continues to crumble when he attempts to pull himself to the top.

C. Hollow ice is often encountered when traveling along rivers, sloughs, and streams. After the river has initially frozen over, the water will drop from several inches to several feet before stabilizing and refreezing. The first layer of ice will be spread like a brittle drum skin over nothing but air. People may be plunged into such a trap while traveling along a river. Snow-machine drivers are particularly vulnerable to injury, as they may slam into the lip of broken ice as they fall.

Mountain streams, such as the upper Ambler River, are particularly known for such dangers. The swift water beneath hollow ice may not refreeze, thus compounding the danger of this condition.

D. Glare ice occurs where wind sweeps away the snow cover from lakes and streams, or where deep overflow covers the snow and refreezes. This ice freezes faster and thicker than does snow-covered ice. Its hazard lies in its lack of friction. Dogs and men are unable to maintain footing and may sustain pulled muscles, bruises, and broken bones. Snow machines and sleds may spin out of control and crash sideways into rough ice or hard drifts. A light coating of frost or wet snow transforms glare ice into a superb traveling surface.

E. Overflow, <u>siqsiniq</u>, is a condition caused by water's being subjected to pressure and forced through ice

cracks or holes onto the surface. The pressure may result from ice's freezing to the stream bottom and damming the water flow, or from a heavy snowfall that causes the ice to settle into the water, or from a rise in water level resulting from warm surface temperatures and increased spring action, or from a damming structure, such as a beaver dam, that breaks and releases stored water onto the ice below.

Overflow is of particular danger to winter travelers as it may occur on any ice-covered waterway or deep lake, and it may be hidden from view by an overlying snow cover. The depth of such water can vary from a few inches to three or four feet. Even when temperatures drop to -60° F. overflow may be found beneath a layer of insulating snow.

The primary danger posed by overflow is the possibility of getting boots and other clothing wet and thereby risking frostbite. Unless the overflow is unusually deep, a man on snowshoes can usually extract himself without too much difficulty, as can a dog team. A snow machine, on the other hand, quickly bogs down in overflow and may become completely incapable of moving under its own power. The soggy snow immediately solidifies upon contact with cold metal and creates a massive dead weight of several hundred pounds.

Overflow is a condition that every winter surface traveler in interior Alaska has to cope with if his travels are extensive or frequent.

F. The final condition to be considered is that of snow and ice-free earth, nuna. The Kobuk River Valley is subjected to wind in varying degrees. On exposed tundra plains, gravel bars, and ridges it is not uncommon to encounter extensive stretches of bare earth and rock. The Kuuvaŋmiit are usually able to predict the occurrence of such areas and will, to the best of their ability, try to avoid them. Bare earth increases load drag by several factors, may damage sled runners, causes dogs to sustain bruised paws, and rapidly destroys the tracks and skis on snow machines. Travelers are often forced to cross up to several yards of snow-free earth.

There are three basic means of winter surface travel along the Kobuk River: snowshoe, dog team, and snow machine. Until the middle of the twentieth century, snowshoeing and dog mushing were the only means of midwinter surface travel, but today these methods have been largely superseded by the motorized sled or snow machine.

Snowshoes

The Kuuvaŋmiit Eskimos, and particularly those inhabiting the upper reaches of the Kobuk River, have adapted to an environment that is more interior than coastal. One aspect of this environment of course is extensive deep, soft snow. To have mobility enough to exploit the full spectrum of their physical surroundings, the Kuuvaŋmiit adopted the snowshoe or tagluk.

Until a few years ago, most snowshoes used by the Kobuk River Eskimos were locally made from seasoned birch wood and caribou rawhide. There were two basic designs: poryuaq, the short, sharp-nosed snowshoe used to break trails for dog teams and to walk behind sleds; and tuglupak, the larger, round-tipped snowshoe used for cross-country travel over deep, soft snow. Both styles were replicas of snowshoes used by the Koyukon, the Athapaskan Indians to the south of the Kobuk River.

Today the art of making snowshoes is slowly disappearing as men find it easier to purchase snowshoes manufactured commercially. The sharp-tipped snowshoe is no longer seen because few men are now required to break trails for dog-team travel. Roughly 80 percent of the adult Kuuvaŋmiit men possess snowshoes.

As late as the 1950s, Kuuvaŋmiit hunters and trappers journeyed extensively on snowshoes. Elderly villagers spoke of snowshoeing round trip from trapping camps they had established on the upper Noatak River to the village of Kobuk, a total distance

of over two hundred miles, to set up traps or obtain supplies or deliver furs. One villager spoke of walking on snowshoes from Purcell Mountain to the village of Cutoff (now Huslia) on the Koyukuk River, a distance of sixty-five air miles, to obtain tobacco for smoking.

Traplines often crossed terrain too rugged for dog-team travel, so men walked on snowshoes to set and check the traps. They usually carried an ax and a small pack containing traps, matches, dry fish, seal oil, rabbit-skin robe, and miscellaneous items, which served to sustain them for several days of hiking. Two Shungnak men were flown to Norutak Lake in the 1950s and spent part of the winter there trapping on snowshoes. Late in the winter they walked home through deep, soft snow in temperatures below -50° F., carrying no tent or sleeping bags. It required several days of trail breaking to travel the more than one hundred twenty miles. Neither man considered this to be an unusual achievement.

Snowshoe travel, not unexpectedly, has decreased since the introduction of the snow machine. Snowshoes today are worn primarily when men are opening trails to woodyards, going short distances to check traps, and making local hikes. They are usually carried by snow-machine travelers on extended trips for use in case of machine failure.

Dog Teams

It was huskies, qipmiq, that first supplied the power to help Eskimos make more extensive use of their winter environment than they were able to make on foot. The dog team, which was used by Kobuk River residents at least by A.D. 1700 (Giddings, 1952:112), had a tremendous influence on the development of modern Eskimo cultures before the advent of the snow machine, and many of those influences are still evident.

The term "husky" usually conjures up the picture of a large, furry, wolflike dog with pointed ears, curled tail, and masklike markings on the face. In reality, this ideal is seen more in dog shows than in Native villages. Over some fifteen years of observing and using sled dogs one of the researchers (Bane) has seen working dogs that range in size from forty pounds to one hundred twenty pounds and in color from pure white through rust, piebald, gray, tan, and black.

In earlier times, before snow machines made extensive winter travel possible, it was common to find certain isolated villages or areas that had developed unique strains of dogs that tended to conform in body size, weight, or coloration. Most of these have disappeared through crossbreeding with imported dogs or because of attempts to change local canine characteristics to conform to racing standards.

There are certain characteristics that most working sled dogs share, however. These include a thick undercoat of woollike

hair, a deep sturdy chest, a broad forebody tapering to more slim hindquarters, well-muscled shoulders and haunches, a strong neck and heavy jaws, and narrow eyes which often give the animal a glowering look.

The size and weight of individual huskies vary according to sex, age, care, and breeding. Prior to the 1950s the larger dogs were usually preferred by Native travelers. These dogs weighed between fifty and ninety pounds, with sixty-five or seventy pounds being the most common weight.

Selective breeding was rarely practiced in earlier days. Isolation and other factors usually maintained the necessary standards for working dogs. A bitch in heat might attract several males, but competition between them usually weeded out the less desirable. When puppies were born they usually lay without shelter next to the bitch and competed with one another for milk. As they began to wander about some would be killed by adult huskies. The owner might also kill one or more of the smaller pups or might keep only the larger males, depending on his needs. At six months of age the pups were chained to a stake where they were constantly exposed to the weather. When the owner began training his new dogs, he usually destroyed those unsuited to harness. Thus, through natural and human influences the sled dog was able to maintain certain very broadly defined characteristics.

The practical value of sled dogs is determined by the amount of weight they are able to pull and the distance they can travel in a given length of time. These abilities include endurance,

stamina, and speed. In the Eskimo community of Wainwright in 1963 Ray Bane watched several Native teams of dogs, seven dogs to a team, hauling ice that weighed 1,780 pounds for a distance of one mile at a speed of roughly two and one-half miles per hour. This came to an average of 254 pounds per dog. The team made three or four trips per day hauling ice. However, such loads are practical only for short distances. Teams of from nine to eleven dogs have been observed pulling a load of approximately 560 pounds and traveling one hundred miles in two days. From these and other observations, it is concluded that an average working husky weighing sixty-five or seventy pounds should be able to pull one hundred pounds for a distance of fifty miles in from nine to twelve hours providing that the trail is relatively smooth, packed, and level. Thus, a team of ten dogs in good condition should be able to transport a sled load of one thousand pounds up to fifty miles in one day depending upon trail and weather conditions. Accounts obtained from Kobuk River residents on their personal dog driving experiences confirm these conclusions,

The greatest disadvantage in owning huskies is the amount of food they consume. Like men, dogs are omniverous and are able to make use of most foods fed to humans. Also like men their nutritional requirements are determined by such factors as physical and environmental stress. Kuuvaŋmiit huskies are generally given little or no shelter from the elements, so they require considerable calorie intake to produce sufficient body heat to combat the

cold. The stress of sled work significantly increases their need. Several writers have studied the food requirements of working sled dogs and have calculated that their intake is from four to seven pounds of meat per day (Spencer, 1959:468; Dovers, 1957:22). Eskimo dogs are fed as little as one-half pound of food per day in the summer to as much as six pounds per day in the winter.

A conservative estimate of the food consumed by a husky each day of an average winter is three pounds. The owner of a working team of twelve medium-sized huskies can then expect to feed his dogs 36 pounds of food per day, 252 pounds per week, and 1,080 pounds per month. These estimates are solely for sledge dogs used regularly to pull heavy loads and/or to travel long distances under Arctic or subarctic conditions.

Fish, both dried and frozen, have been the mainstay of dog food in the Kobuk River Valley. All species of fish have been utilized but salmon and whitefish are the primary species. When dog teams were the principal source of winter transportation, an Eskimo family with a team of from ten to fourteen dogs would annually catch, cut, and dry from five hundred to one thousand salmon solely for dog food. In the fall, whitefish, salmon, and some sheefish were piled uncut to freeze and to be used for dog food. One resident of Ambler estimated that his team of three large huskies and four adolescent pups consumed 1,800 frozen whitefish during the winter of 1973-74 (Keith Jones, 1974:personal communication).

Caribou are also used for dog food. When abundant enough locally, they have occasionally become the dominant source of nutrition for sled dogs. A working team of ten or twelve huskies can consume a large bull caribou in three or four days without signs of overfeeding. If the weather is particularly severe and the work is especially hard, such a team may consume an entire bull caribou every two days.

Earlier in this century when the Kuuvaŋmiit hunted and trapped in the upper Noatak River Valley during the winter, caribou flesh was the primary source of dog food. The hunters usually could take no more than a week or ten days' supply of dried fish with them when they drove their teams north to the Noatak, and they counted on the presence of caribou to feed themselves and their dogs. If they could not find any, starvation resulted. Several older informants remember that it was not unusual to lose one or more dogs during such lean times. If the food situation became critical, the hunters knew of a few locations along the Noatak River drainages that remained unfrozen throughout the winter. Here trout could be caught with lures or spears. There were also salmon-spawning sites where rotted fish could be obtained as an emergency food source. Sheep and other game, and occasionally vegetable matter, were also used to feed the dogs in times of crisis.

Although dog traction was a feature of Eskimo culture before European contact, the size of individual dog teams was quite small until the end of the nineteenth century. Older Kuuvaŋmiit

Eskimos said that when their fathers were young, teams of two or three dogs per family were the normal size. A number of factors led to the increase in numbers of dogs on a team: the introduction of modern firearms, twine for fish nets that made it possible to secure more feed for dogs, improved harnesses and sled styles, the development of voice-trained lead dogs, the shift from nomadic living to village living, and, most important, the rise of the commercial fur industry in Alaska.

It was trapping more than anything else that created the need to travel long distances in relatively short time spans. The farther and faster a man could travel, the greater were his opportunities to harvest large numbers of furs--and furs meant money. According to numerous informants, teams of from ten to sixteen dogs were common during the 1920s and early 1930s. Although the fur industry fell off drastically after the Depression, the Kuuvaŋmiit men continued to rely on trapping as a major source of income until the early 1940s, when other forms of employment became available.

Dog team size did not decline when trapping decreased, however. By this time virtually all Kuuvaŋmiit families had abandoned their scattered winter camps in favor of permanent homes in the five Kobuk River villages. This called for intense exploitation of the resources in the vicinity of each community, and large dog teams continued to be necessary.

It was the early 1960s that saw a sudden decline in dog team use. This was when snow machines gained wide acceptance among

the Kobuk River Eskimos, and in an amazingly brief span of time, the use of dog teams all but disappeared in northwestern Alaska.

At this writing, in the mid-1970s, the number of sled dogs in the upper Kuuvaŋmiit villages appears to be slowly increasing, but it is impossible to say whether this trend will continue. In May of 1975, a total of 320 adult sled dogs belonging to fifty-one households in the three villages of Ambler, Shungnak, and Kobuk were counted. The average per family was 6.2 sled dogs. Statistics can present an inaccurate picture, however, and this is the case with dog ownership. Fourteen of the households owned ten or more dogs and the total huskies they owned was 217. Thus 27 percent of the surveyed households owned 67 percent of the canine population. Twenty-seven households owned fewer than five dogs each.

In the village of Kiana the total dog population in 1974-75 was sixty-one. Most of the forty-three families owned two or three dogs and of the two that owned more, one had five and the other seven dogs. The twenty-six families reporting from Noorvik owned 146 dogs, of which thirty-eight were owned by one family.

In 1974-75, dog teams in the Kobuk River villages were used primarily for racing or for recreational travel. A few individuals occasionally used dogs to haul in firewood, to travel between villages, or, in the downriver area, to go fishing, but at least 90 percent of winter-spring surface travel was via snow machine. Competitive dog team racing, particularly among younger villagers, has undoubtedly caused the recent resurgence in dog traction.

This sport is responsible for the continuation of dog mushing in many Native communities. It is also responsible for physical changes in the huskies. Villagers say that the dogs today are generally much smaller and faster than they were several years ago. This has resulted from the introduction of light-boned racing huskies into the breeding stock because of the increased emphasis on speed rather than draft capabilities.

Snow Machines

Today when a person speaks of winter travel in northern Alaska, he or she is talking about travel by snow machine. The impact of this transportational development may perhaps be compared to the shift from horses to automobiles in the rest of the United States.

The snow machine is familiar to most Americans who live in places that have a snowy winter. Basically, it consists of an open metal chair resting on an endless flexible track that is driven by an air-cooled two-cycle gas engine mounted on the front of the machine. Front skis are connected to a steering column, and handle bars guide the direction of the machine. Other basics include a cowling, windshield, gas tank, padded seat, and lights.

When snow machines first began appearing in Native villages, they were relatively primitive affairs, powered by eight or twelve horsepower motors and rarely able to travel faster than ten or fifteen miles an hour. Today's machines are streamlined

vehicles powered by engines that may exceed fifty horsepower and are capable of speeds of more than sixty miles per hour.

The suddenness of the snow machine revolution along the Kobuk River is illustrated by the fact that in 1965 there were only three such machines in the village of Shungnak (Foote, 1966: 34). In the spring of 1975, there were twenty-six, a ninefold increase in a decade. In all, sixty-three snow machines were counted in the fifty-one households in the three upper river villages. In Kiana the forty-three families owned sixty-two snow machines in 1974-75, and the twenty-six Noorvik families for which we have data owned forty-two snow machines. Forty percent of these machines were powered by engines in the ten to forty horsepower range.

The snow machine aids the Eskimos in a variety of ways. It is used in setting and checking traps, hunting, visiting friends and relatives in other villages, hauling fuel and water, carrying garbage to the dump, visiting winter fishing sites, moving building materials, meeting the mail plane, going to the store, packing a trail for a dog team race, and so on. Most families have come to view it as a necessity rather than a convenience, and few would willingly part with it.

The shift from dog teams to snow machines has placed a financial burden on Native families. In the mid-1970s a new machine cost from $1200 to $2100 depending on its horsepower (see Table 9). Mixed gasoline is as much as $7.25 for five gallons, and a large machine that averages eight miles per gallon may burn

five gallons of gas every two or three days. Spare parts are also very expensive, and with increasing age and use the cost of repairs escalates. Few machines survive more than three or four years of use and they depreciate to only a fraction of their original cost in that time. Thus the snow machine has become one of the most substantial expenses of the modern Kuuvaŋmiit household.

Probably the most frustrating aspect of owning and using a snow machine in remote rural villages is the difficulty in obtaining repair parts. Each manufacturer designs its machines so that it is difficult or impossible to interchange parts between makes or models. Small village stores cannot stock a complete supply of parts for all models or makes of machines, so owners must usually sent to outlets hundreds of miles away for even the most minor parts. Slow outlet service and/or slow mail service may delay an ordered part for weeks, leaving the snow machine owner with no transportation.

The difficulties of obtaining repair parts have encouraged the Eskimos to develop mechanical skills to deal with the unpredictable breakdowns of the machines. Innovations in repairs are shared with other owners and several men have become skilled welders. When visiting a snow machine owner's home in the winter it is common to find him tearing down and repairing the machine in the main room of the house.

The machines of even the most skilled mechanics eventually suffer a breakdown that cannot be repaired on the spot. Usually

this means merely a walk home, but in severe weather and/or on long trips, such failure may be disastrous. For this reason people often travel in pairs or in small groups. Search and rescue organizations have been formed in most Kobuk River villages and they are often called upon to find overdue travelers. Villagers now communicate with one another through a system of citizens' band and high-frequency radios and they can check to see whether travelers have arrived safely at their destinations.

The use of snow machines also enables Kuuvaŋmiit hunters to make intensive use of a relatively large area of terrain surrounding their home communities (see Maps 1-4). Hunters are able to cross miles of terrain, find game, and bring it home all within a few hours.

The snow machine has become a great equalizer in subsistence activities. In the past, the man with the best dog team or the person who could snowshoe the longest distances was usually the most successful in finding game. Young, inexperienced men or those with substandard teams of dogs were at a distinct disadvantage in the quest for wildlife. Now all men who are able to own machines are on an equal footing in the realm of transportation.

The reverse side of the coin is that the extensive use of snow machines is causing certain traditional environmental skills to be lost. Before the advent of the machine, adolescent boys and young men gradually gained the subsistence and survival skills necessary for successful environmental exploitation by traveling with their fathers or other adult men on dog teams.

The relative quiet and slow pace of the travel encouraged communication between the two generations. Physical features could be pointed out and memorized and the youths could receive answers to questions pertinent to immediate situations.

This "traveling school" has been substantially altered by the use of snow machines. Speed, noise, and physical distance isolate a driver from his passenger on the sled. Nevertheless, such skills as shooting and skinning game are still taught. When young men are financially able to purchase a machine of their own, they become independent hunters yet they continue to rely upon the advice and guidance of older men.

Table 9. A comparison of dog teams and snow machines: cost, upkeep, and performance.

Item	Dog Team (up to 10 dogs per team)	Snow Machine (up to 40 h.p.)
Purchase price	Adult husky: $30-$60. Lead dog: $75-$500. Usually obtained through breeding	$1200-$2100, including freight
Required accessories	Sled, harnesses, lines, snow hook, brake, snaps, chains, dog pans	Sled, hitch, spark plugs, drive belts, tools
Fuel	Fish, tallow, caribou, oats, rice, commercial dog food	Gasoline and oil

Item	Dog Team	Snow Machine
Fuel consumption	2-6 lbs. of food per day per dog. 10 dogs: 20-60 lbs. of food per day (computed as wet weight, not dry weight)	5-10 miles per gallon depending on horsepower, load, trail conditions, speed. May use 3-8 gallons per day when actively hunting and traveling
Replacement and repair parts	Purchase or breed for new pups. Young dogs of minimal use until one year old	Purchase directly from local or distant outlets
Average speed	4-9 m.p.h., 5 m.p.h. for distances up to 50 miles with medium load and good trails	15-20 m.p.h. with medium load and good trail
Top speed	15-25 m.p.h. with light load--only trained racing teams can sustain such speeds beyond 2 miles	20-50 m.p.h.--can sustain high speeds for duration of fuel, but high speeds increase possibility of machine or human injury
Weight pulling ability	Up to 2,000 lbs. for distances less than 5 miles, depending on trail conditions. Deep soft snow drastically reduces possible loads. Dogs have advantage of excellent traction	Up to 1,000 lbs. for indefinite distance providing that the sled can be started, traction is good, and the trail is smooth and level. Snow machines will "spin out" or wear out belts with extreme loads in loose snow or on steep hills
Possible travel distance in one day at average speed	50-100 miles with medium to light loads (long trips usually limited to less than 70 miles per day)	200-300 miles (long trips usually limited to less than 150 miles per day)

Item	Dog Team	Snow Machine
Adverse environmental conditions affecting use	Deep soft snow, thin crusted snow, warm temperature, glare ice, high winds, weak ice	Overflow, whiteouts, strong winds, severe cold, steep hills, glare ice, weak ice
Care when not in use	Require constant feeding and care	Require little or no care
General dependability	Generally very dependable within physical limits	Generally dependable for first year and decreasing dependability thereafter.
Average service life	9-11 years	2-4 years
General strong points	Dependability, may be fed from local resources, self-reproducing, long service life, may be eaten or fed to other dogs in emergency situations	Fast, not subject to tiring, cover long distances, require no care in summer, handling skills easy to acquire, highly maneuverable, may be replaced through simple purchase
General weak points	Subject to diseases and injuries, may run away, require care when not in use, must be trained, possible fighting, relatively slow, require considerable fishing and hunting to feed, become bored and difficult to handle if continuously driven on same trails for long period of time	Subject to unpredictable breakdowns, difficult to handle in overflow or spinouts in deep snow, difficult to obtain spare parts, expensive to purchase and operate, relatively short service life, dependence upon nonlocal sources for materials and fuel, relatively high occurrence of human injuries

Sleds

Two basic styles of sleds were being used by the Kuuvaŋmiit in 1974-75: a basket sled, qilġich, and a low, heavy, plank sled, uniat. Sleds are a necessity for dog team travel and are required for snow machines to haul fuel, supplies, and freight. It would be extremely difficult to carry out normal winter activities without the use of a sled.

According to Joe Sun, the sleds in earlier days, which were pulled by dogs, were low, flat affairs with plank runners that resembled the qamuti of the North Slope Eskimos. This style of sled apparently disappeared around the turn of the century giving way to the more intricate basket sled. The basket sled may have been introduced by miners and prospectors who entered the Kobuk River Valley during the late 1800s.

Up until the 1960s, Kuuvaŋmiit basket sleds were quite long, with runner lengths of sixteen feet common. The width of these sleds was usually twenty-one inches between inside stanchions, or between twenty-three and twenty-four inches from the outside edge of one runner to the outside edge of the other. Construction materials were locally obtained, seasoned birch wood plus rawhide lashings and assorted bolts, screws, and nails. Runners were often shoed with strips of green spruce in cold weather and with iron or steel for the wet surface conditions of fall and spring.

This style of sled often had a long pole lashed to the right side of the sled and projecting upward at a low angle four to

five feet ahead of the bow. This was referred to as a "gee pole" Figs.60 and 61).

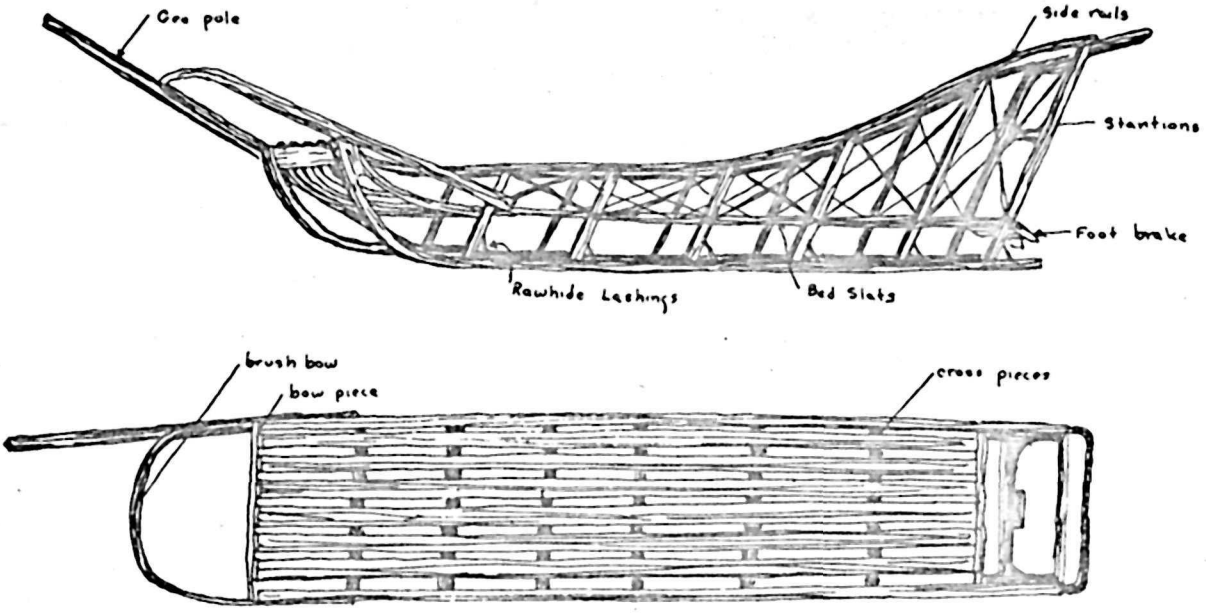


Figure 60. Side and top views of sled with gee pole.

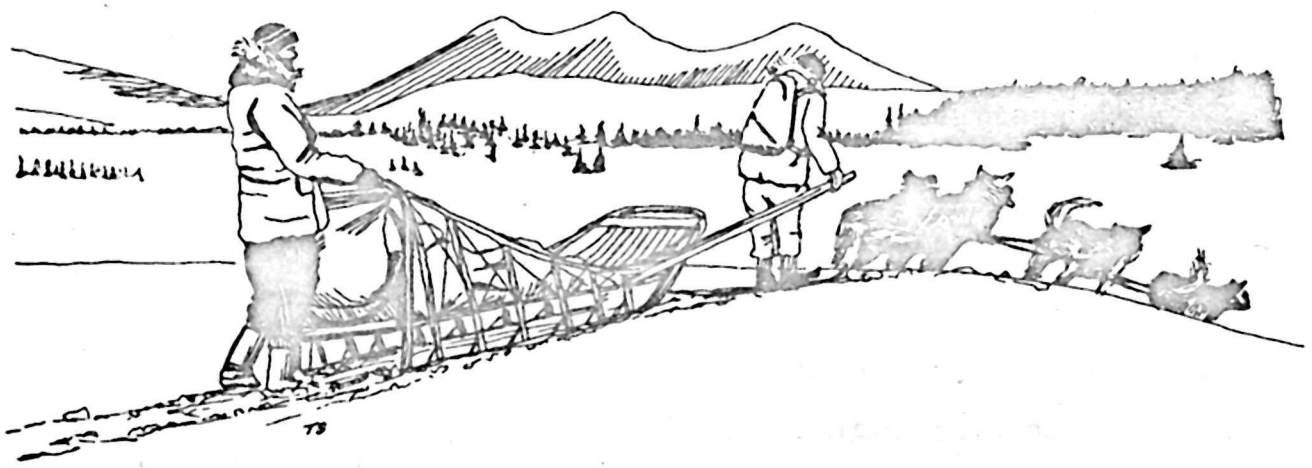


Figure 61. Eskimos with their sled and dog team.

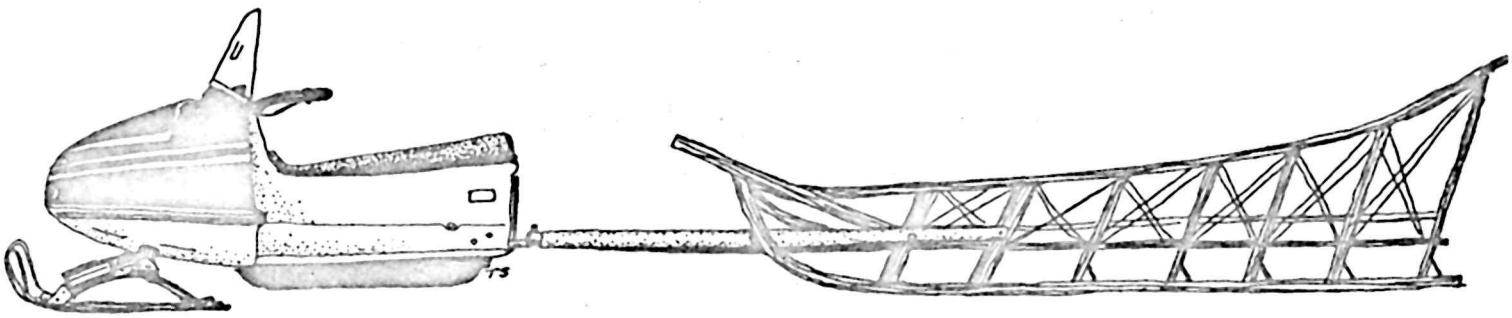


Figure 62. Basket sled attached to snow machine.

A man would often walk on snowshoes or ride on skis attached by a bridle to the tow line between the front of the sled and the wheel (rear) dogs. He would hold on to the gee pole to guide the sled around bends and away from obstructions, and to keep it from falling off packed trails into soft snow.

Today basket sleds are made primarily to be pulled behind snow machines (Fig.62). They are no longer made of birch but are constructed by the Kuuvaŋmiit of imported hardwoods such as hickory or oak. Construction is usually much heavier and stiffer than that used in dog sleds. Runners are generally from ten to twelve feet in length; a few are as long as fourteen feet. These sleds are wider than the earlier sleds, with outside widths reaching twenty-seven inches. Wider sleds are particularly popular near the coast. Foot brakes, gee poles, and brush bows are usually absent. A V-shaped steel hitch is hinged to the bow piece or side stanchions. This hitch allows attachment to the rear of a snow machine. Snow machine sleds are usually permanently shoed with steel runners.

A few basket sleds continue to be made for dog teams, but they are relatively small, light vehicles rarely having a runner length exceeding ten feet. Many have beds less than six feet long. These sleds are also narrower than snow machine sleds.

The second style of sled currently used in Kobuk villages, the uniat, is a low, rigid plank sled. Construction of these sleds is very simple, consisting of spiking two-inch by six-inch boards between two two-inch by eight-inch plank runners (Fig.63). Runners are usually seven or eight feet long. A V-shaped steel hitch is hinged to the front of the sled and steel shoes are usually screwed or nailed to the bottom of the runners. Plank sleds are made primarily for hauling heavy loads of wood and other freight and are used almost entirely for snow machine travel.

Figure 63. Plank-type sled.

During the spring of 1975, fifty-five basket sleds and twenty-seven plank sleds belonging to fifty-one villagers from the three upriver towns were counted. Only seven households were without sleds. Such households were usually headed by an elderly couple or a widow. In Kiana the forty-one families owned twenty-

seven basket sleds and nine plank sleds, and in Noorvik the twenty-six families who were interviewed owned twenty-two basket sleds and four plank sleds. Seventeen of the Kiana families and three of the interviewed Noorvik families did not own sleds. As with the upriver area these were usually the households of elderly couples or individuals, whose transportation and freighting needs were taken care of by their children who headed their own households.

Shelters

The need to adapt to and exploit a harsh winter environment led the Kuuvaŋmiit Eskimos to develop shelters that were quickly usable and camping techniques that did little to hinder mobility. The following are a few of their innovations developed for overnight or emergency camping.

A. A temporary shelter, dug into deep snow. Called a milluk, it has a bench area and is covered with a skin or canvas roof (Fig.64).

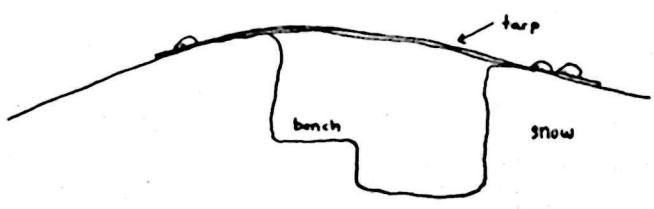


Figure 64. A temporary snow shelter, milluk.

B. A temporary snow shelter, dug into deep snow and just large enough to sit in and pull a cover over. Called iipuqġaun. Basically a survival shelter (Fig.65).

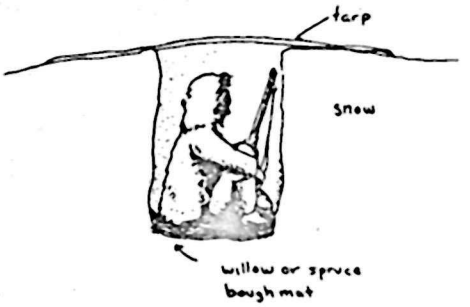


Figure 65. A temporary snow shelter, iipuqġaun.

C. A cone-shaped structure of branches and poles with snow packed against the walls: saweulek (Fig.66).

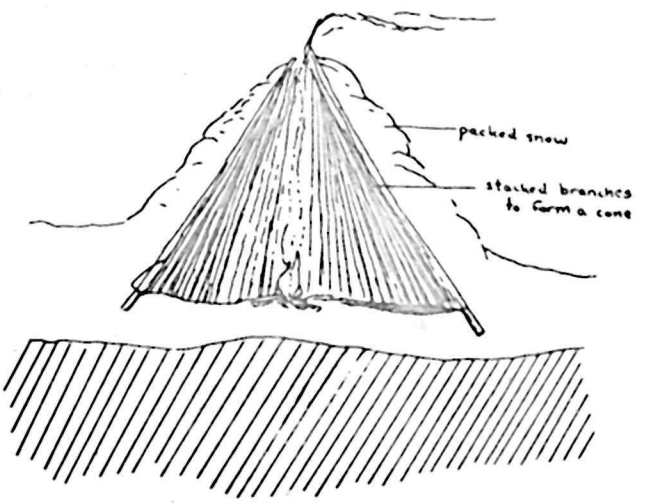


Figure 66. A cone-shaped shelter of branches and poles.

D. A snow house, aputaq. Joe Sun said that prior to the 1900s men made shelters by using their snowshoes as shovels and piling up loose snow, packing it down, allowing it to set, and then hollowing out a room. If rocks were available they would build a fire outside and heat them. Using wooden tongs they then carried the rocks inside to provide heat (Fig.67).

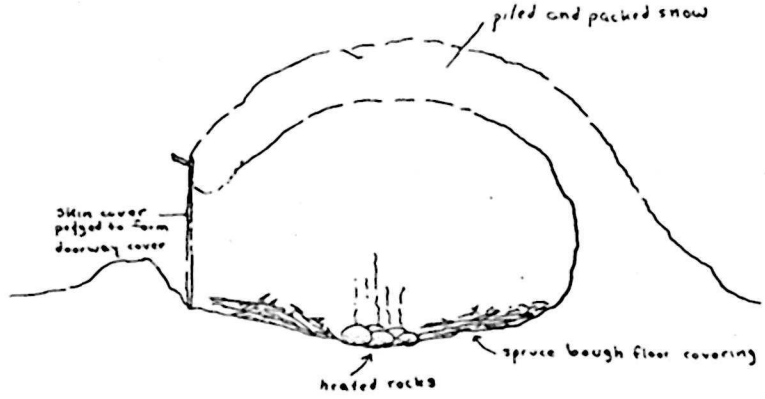


Figure 67. A snow house.

E. Snow caves. These were excavated into the sides of large drifts when wind made it impossible to set up tents or other shelters. Charlie Lee told of being caught with his wife and small daughter in a mountain pass when a severe storm broke. He used a shovel to tunnel into a drift to wait it out. It blew so hard that he could not leave the cave to feed his dogs for three days.

F. Temperature inversion as shelter. Eskimo travelers recognized the principle of winter temperature inversions and made use of them when traveling with minimal

equipment in mountainous or hill country. Gene Lee and Walter Douglas of Shungnak told of how men often camped without a tent or sleeping robe. If it was intensely cold (-40° F. to -65° F.) a man would climb a mountain slope until he got within the warm air inversion. He would then find relatively level ground, stamp down the snow, and cover the surface with a mat of brush or spruce boughs. He then built a large fire above his position so that the evening downdraft carried the heat to his resting spot (Fig.68).

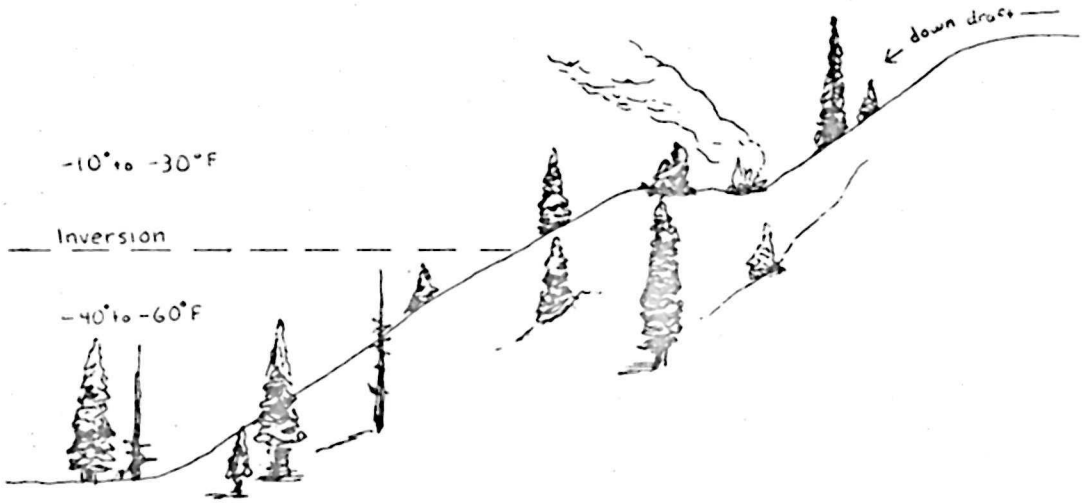


Figure 68. Using temperature inversion as protection from cold.

G. Heated earth. Walter Douglas and Gene Lee told of spending several days snowshoeing across forested land when the temperatures were extremely low. They had no tent or sleeping bags. At night they would sometimes

make camp by clearing the snow from an area with their snowshoes. They would then build a large fire on the ground and allow it to thaw and heat the earth beneath. After clearing away the coals they spread a mat of spruce boughs over the heated ground for their bed. Another fire was built nearby (Fig.69).

Figure 69. Heated earth camping place.

H. Willow bough shelter. Joe Sun told of an innovation he once made to provide a quick shelter. A storm caught him and a companion in an exposed area in the Noatak River Valley. The only visible vegetation were some clumps of willow growth. The two men spread the tent canvas over one such cluster and weighted down the sides with equipment and snow. They then proceeded to cut out the center of the willow cluster and lay the cut willows on the ground for a floor mat. A single

pole held up the middle of the canvas (Fig.70). After setting up their lantern and stove and bringing in their bedding, they spent a comfortable night.

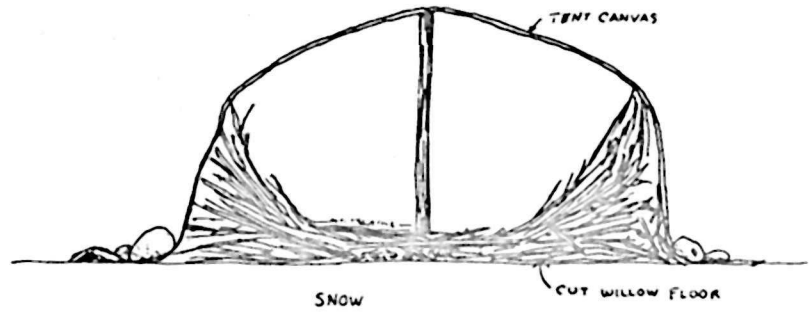


Figure 70. Willow bough shelter.

Canvas wall tents are now used as the principal shelter for winter camping of any duration. These tents may be eight feet by ten feet or ten feet by twelve feet in floor measurement. The eight by ten size is the more popular. These tents are usually purchased from local trading posts. Other equipment needed in winter camps include:

a sheet-metal wood-burning stove with stove pipe
caribou robes
sleeping bags
cooking equipment, including dishes, cups, and silverware
kerosene or gasoline lamp
food (usually in a grub box)
an ax and possibly a bow saw
extra fuel for lamps
sled tarp to throw over tent for added insulation
small piece of plywood to serve as a table
shovel, usually broad-bladed

When traveling, the Kuuvaŋmiit prefer to camp in timber stands or in heavy willow thickets where they are protected from the wind and have access to fuel. Above the timber line in such areas as the upper Noatak River Valley the Kuuvaŋmiit also utilize wind-sheltered creeks and mountain sides where camping can be done in comfort (see Map 4). When crossing new territory the men seek out such stands and look for soft snow, which indicates that the site has been well protected from the wind. Hard snow indicates windy areas. Hard snow-block shelters, such as the rectangular wall qillagun used by Wainwright Eskimos on exposed tundra, seem to have received little use by Kobuk River Natives.

Once a site is selected, loose snow is cleared away from the floor area and somewhat beyond the intended edge of the tent walls. The tent is set up so that the side walls have enough slack to be tucked in and weighted with equipment. Spruce boughs or freshly cut willows are placed to a depth of several inches over the floor. The stove is set up and bedding is arranged (Fig.71). A supply of dry wood is cut and soon the tent is warm and filled with the odor of frying caribou meat.

One researcher (Bane) was privileged to spend several nights camping in a tent with Joe Sun during the winter of 1974-75. At times the temperature dropped as low as -50° F. and we were kept busy feeding the ever-hungry stove, but those nights are still remembered as some of the most valuable experiences during the year of research. It was there, by the flickering yellow light

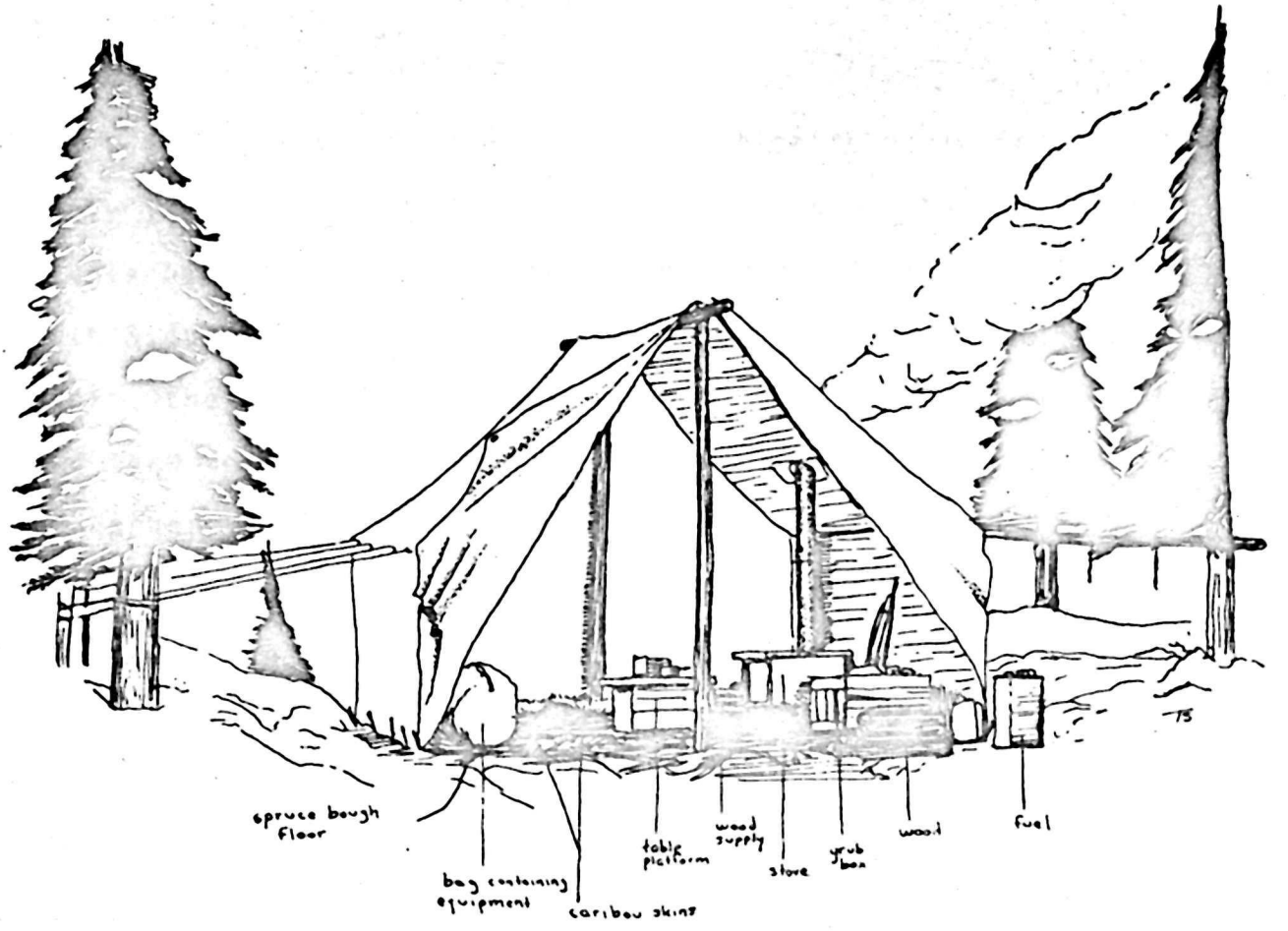


Figure 71. Canvas wall tent furnished for winter camping.

of a candle, that Joe quietly and patiently attempted to teach the researcher some of the ways of his people. As the weak light sent shadows dancing across the leathery wrinkles of his face, and his soft voice retold the stories and legends of the Kobuk, one could literally feel onself being absorbed into an ancient yet vital culture. Those memories are as warm as the crackling tent stove.

Trail Systems

The Kuuvaŋmiit Eskimos have historically exploited an impressively large territory in their subsistence pursuits. Their travels have extended from the open wind-swept plains of the North Slope to the forests of the Koyukuk River. Over the generations, they have discovered routes of winter travel that quickly take them to their desired destination with minimum difficulty and danger.

As is to be expected, trails tend to follow streams or to cross open plains. This is to avoid steep climbs and descents and to take advantage of wind-packed snow areas. When possible, trails cross land instead of rivers to avoid having to follow meandering courses and to avoid the possibility of encountering overflow or weak ice.

Some of the major trail systems between villages are marked with a series of wooden pole tripods. These markers were established several years ago through funds provided by the State of Alaska, but many markers have fallen, leaving gaps of a mile or more without visible navigational aids. The markers are of particular benefit to persons traveling at night or caught in a storm. Presently three trails in the upper Kobuk River area have tripod markers: the Ambler-Shungnak trail, the Ambler-Selawik trail, and the Shungnak-Selawik trail. This third trail connects with the main Ambler-Selawik trail near the Kugarak River. In

the downriver area the Kiana-Selawik trail and the Noorvik-Selawik trail are staked.

Marked trails are an insignificant number of the winter routes that have been developed by the Kuuvaŋmiit. Some trails are of particular cultural importance. These include the trail that crosses from the upper Kobuk River over Norutak Lake to the Alatna River. For many generations this has been the line of contact between the upper Koyukuk Athapaskan Indians and the Kuuvaŋmiit Eskimos. Early in the 1900s a group of Kuuvaŋmiit established a colony on the Koyukuk River at the mouth of the Alatna River naming their village Alatna after the river of that name. Directly across the Koyukuk River stands the Indian community of Allakaket. In the downriver area the trails that connect Kiana and Noorvik, and Noorvik and Kotzebue, especially heavily utilized with the introduction of the snow machine, have been the major routes of contact with the coastal Eskimos.

The pass dividing the headwaters of the Selawik River from the waters of Wheeler Creek, a tributary of the Koyukuk River, has also been a route of cultural contact. Both the Kuuvaŋmiit Eskimos and the Huslia Indians continue to make frequent use of this trail to bathe in the mineral waters of Selawik Hot Springs and to exchange visits across this cultural boundary.

Trails leading north from the Kobuk River into and through the Brooks Range have helped to make it possible for the Kuuvaŋmiit to reach and utilize resources that were not available in their home valley. A few of the major routes include the pass

leading from the Redstone Ivisaaq River to the Cutler Anayu River. This pass is known as Apqauġaaġruk, literally "the old trail." The pass dividing the Ambler River from the Nushrulutak Creek takes it name from the Ambler River, Natmaktuġiaq, meaning "pack it across." Only the most hardy hikers attempt to negotiate the narrow canyons and extremely steep climb from the Ambler to the Nushrulutak. Here men literally have to pack their loads up the pass and then help the dogs to climb the slope. Shishakshinovik Pass from the Kogoluktuk River to the Ipmiluik River is infamous for having once killed a party of Nanamiut Eskimos in a spring avalanche. Snowslide danger caused the Kuuvaŋmiit to stop using it. Instead they climbed the steep ridge separating Kutarlak Creek from Igning River. The Tupilik Pass between the headwaters of the Reed River and Tupik Creek was known to be steep, but men and dogs made use of it.

Another pass of importance to Kobuk River Eskimos is Howard Pass, Aqutuq, which in Eskimo literally means whipped fat. It acquired its name from the howling winds and whirling snows that sweep through it. There is also the pass separating Portage Creek from the Alatna River. Near here the ancient Eskimos of the Kobuk River fought and vanquished a now-extinct tribe of Indians known as the Iiyagamiit or "people of the rocks."

XIII

VILLAGE DYNAMICS

When prospectors and members of government expeditions visited the Kobuk River at the end of the nineteenth century, they noted that households and settlements were distributed along the river at locations most suitable for the Kuuvaŋmiits' fishing, hunting, and gathering pursuits (Stoney, 1899; Cantwell, 1887; Mendenhall, 1902; Grinnell, 1901). When trading posts, churches, and schools were built and when employment opportunities and local resources changed, the Kuuvaŋmiit were drawn into tighter and larger living units, and the villages of Kobuk, Shungnak, Ambler, Kiana, and Noorvik were founded. As stated earlier, the 1970 population census had Noorvik as the most populous village along the river, with 462 people. Kiana had 278, Ambler 169, Shungnak 165, and Kobuk 56 persons. By July 1975 Noorvik's population had declined but, with 445 persons, still remained the largest in the Kobuk River Valley. Kiana's July 1975 population was 280 persons, an increase of only two over the 1970 census figure.

Population Dynamics

The following is an in-depth study of the population growth and change in two of the Kobuk River villages, Kiana and Noorvik, from the end of the nineteenth century to 1975. The life histo-

ries of these village residents, obtained through oral histories and village records, show clearly that the make-up of the present-day population is primarily the result of changing subsistence opportunities and of intra- and inter-village personal ties.

Kiana: Late Nineteenth- and Early Twentieth-century Kutyak Population

Before 1898, the year of the first influx of white prospectors into the Kobuk River Valley, the only settlement in the vicinity of present-day Kiana was at Kuuriaq Slough at the mouth of the Squirrel River. There lived Akausaurak, his wife Minulaq, their son Iknautak, and later their adopted son Arthur Barr. The third and fourth generations of Akausaurak and Minulaq's descendants live in Kiana today (for further information on Akausaurak, see W. Anderson, 1975). According to the population figures of the 1900 United States National Census, forty-five Natives lived in the Squirrel River country at the turn of the century; of these, several were apparently living at or near the mouth of the Squirrel River.

By 1909 gold mining operations were under way at Klery Creek, on the Squirrel River. These mining operations and well-stocked trading posts attracted Kuuvaŋmiit from the upper Kobuk River settlements to the area. They came to find work--some by themselves, others with their families--and some stayed on, forming the first of the Native Kutyak villagers of the twentieth century.

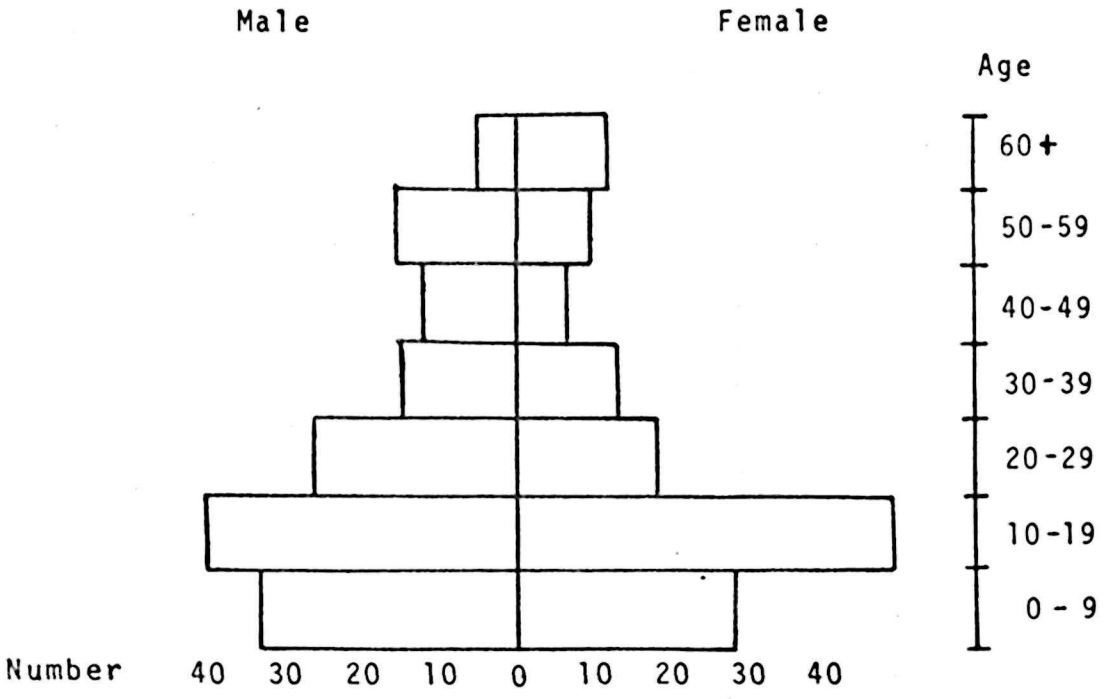
The place that the Eskimos settled, on the bank at the mouth of the Squirrel River, was called the "Old Village." The white miners settled on the hill, the site of the present Kiana village, and called their settlement first Squirrel City and later Kiana. Among themselves they referred to their settlement as "Downtown." The two settlements were within a ten-minute walk of each other. The white miners were of diverse ethnic origins. One had a Polish family name and another a Greek name, and a restaurant was run by a Japanese. Some of these miners married Kuuvaŋmiit women, and their descendants are among present-day Kiana families.

Kiana: 1975 Population

Table 10 shows the 1975 numerical distribution of the Kiana population by sex and age groups, and Table 11 shows the same distribution by percentage. Included in the population of 280 are the Native residents, seventeen white residents (three Bureau of Indian Affairs grade-school teachers plus their families, three high-school teachers, one B.I.A. grade-school superintendent-maintenance man, two trading-post owners, and one charter-air-service pilot), Kiana Natives temporarily working on the Alaska pipeline project, and Kiana students attending high school or other schools outside the village. Not included are Kiana-born residents who are married and living elsewhere, Kiana-born residents who live and have permanent employment outside of Kiana,

and students from Ambler, Kotzebue, and Noatak who reside in Kiana while they attend high school.

Table 10. Age distribution by sex of Kiana residents, 1975.



Kiana has slightly more men than women, that is, 146 versus 134. Thus males represent 52 percent of the population and females 48 percent. The past fifteen years have seen the population increase from 253 in 1960 to 280 in 1975. Shungnak's population has also increased, from 135 in 1960 to 165 in 1972 (Mauneluk, no date). In the mid-nineteenth century Kuuvaŋmiit families averaged seven persons per household (Foote, 1966:46). A number of these families were composed of not only parents and their children but also other relatives. Foote's 1966 study of Shungnak shows a slight shift since the mid-1800s from the large

Table 11. Number and percentage of Kiana residents, by age group and sex, 1975.

	Number of Persons			Percentage		
Age Group	Male	Female	Total	Male	Female	Total
0-9	33	28	61	22.6	20.9	21.8
10-19	40	46	86	27.4	34.3	30.7
20-29	26	18	44	17.8	13.4	15.7
30-39	15	13	28	10.3	9.7	10.0
40-49	12	7	19	8.2	5.2	6.8
50-59	15	10	25	10.3	7.5	8.9
60 and over	5	12	17	3.4	9.0	6.1
Total	146	134	280	100.0	100.0	100.0

extended family to nuclear families and tells us that in 1965 the average household had six persons. Our 1975 data for Kiana show the number in an average household to be 5.6. The largest Kiana family had thirteen members, of whom nine comprised the nuclear family.

More people of Kiana were in the 10-19 age group than in any other (Table 10). The number in the 0-9 age group is unexpectedly small. Effective birth control methods are known and used by Kobuk River residents, and this has likely caused a drop in the birth rate in recent years (U.S. Dept. of the Interior, 1973:92). The recent movement of people in their early childbearing years away from Kiana may also have contributed to the low number in

the youngest age group. For example, between 1972 and 1975 five married women moved out of Kiana to live with their spouses and young children elsewhere. And, in that same period one young married couple moved to Kotzebue where the husband was employed, and two families, both with children in the 0-9 age group, had moved away, one because of the death of the Kiana husband. These examples also point out a reason for the fewer number of women in the 20-29 age group than men. There is a recent tendency for more girls who meet and marry their spouses outside the village to live outside.

Life expectancy in Kiana in general follows the universal trend in which females live longer than males. Among those who are sixty or more years old, twelve are females and five are males.

Kiana: Marriage and Residence After Marriage

Data on the types of marriages of Kiana residents are given in Table 12. Couples who were living together, even with children, are not included if they were not registered as married, because their union is considered potentially not permanent, since it may or may not lead to marriage. In most cases the expectation of or the birth of a child to a couple that has been living together leads to a formal marriage registration and/or the establishment of a separate household. But in other cases the relationship may be dissolved. If there is a child, the child is adopted, usually by the grandparents. Widows, widowers,

and divorced persons living in Kiana are also included in the statistics in Table 12.

Table 12. Types of marriages of Kiana residents in 1975, according to premarital residence.

Premarital Residence of Husband or Wife	Premarital Residence of Spouse	Number of Couples	Percentage of Couples
Kiana	Kiana	10	17.9
Kiana	Noorvik	18	32.1
Kiana	Selawik	3	5.4
Kiana	Ambler, Shungnak, or Kobuk	6	10.7
Kiana	Elsewhere in Alaska	5	8.9
Kiana	Lower 48 states	3	5.4
non-Kiana	non-Kiana	11	19.6
Total		56	100.0

The highest percentage of marriages, 32.1 percent, occurs between Kiana and Noorvik residents. Geographically Noorvik is the closest village to Kiana. In the winter it takes about forty-five minutes to get from one village to the other by snow machine, and in the summer, about an hour by outboard motorboat. There are close contacts between the two villages throughout the year--social, economic, and other. The spring carnival and the long-distance snow machine race held at Kiana in 1975 drew residents from all four of the other Kobuk River villages as well as from

Selawik and Kotzebue. The largest group of people came from Noorvik, and the second largest group came from Selawik. Greater geographical proximity leads to greater social interaction, which in turn results in a higher frequency of marriage.

In nearly one-fifth of the marriages, both spouses were non-Kiana residents. This can be attributed to the fact that five schoolteacher couples are part of the computed data. Not many marriages occur between Kiana residents and people from elsewhere in Alaska or from the lower forty-eight states.

One can see that the majority of Kiana marriages is exogamous, that is, a marriage between a resident and non-resident. The relative degree to which Kiana men and women have attracted their spouses to Kiana is shown in Table 13. This leads to the predominance of the patrilocal residence after the marriage (Table 14). Of all the couples residing in Kiana, nearly half (44.6 percent) are non-Kiana wives married to Kiana husbands; this contrasts markedly with the 17.9 percent of Kiana wives who are married to non-Kiana husbands. The eleven neolocal couples include the five schoolteacher couples previously mentioned. The figure of course would be lower if only the six Native couples were included.

Table 13. Ratio of Kiana males and females married to non-Kiana residents, 1975.

Premarital Residence of Husband or Wife	Premarital Residence of Spouse	Number of Kiana Residents			Percentage		
		Male	Female	Total	Male	Female	Total
Kiana	Noorvik	16	2	18	64.0	20.0	51.4
Kiana	Selawik	3	0	3	12.0	0.0	8.6
Kiana	Ambler, Shungnak, or Kobuk	5	1	6	20.0	10.0	17.1
Kiana	Elsewhere in Alaska	1	4	5	4.0	40.0	14.3
Kiana	Lower 48 states	0	3	3	0.0	30.0	8.6
	Total	25	10	35	100.0	100.0	100.0

Table 14. Marital residence pattern in Kiana, 1975.

Marital Residence	Number of Couples	Percentage of Couples
Patrilocal: wife from elsewhere, lives with Kiana husband in Kiana	25	44.6
Matrilocal: husband from elsewhere, lives with Kiana wife in Kiana	10	17.9
Common: both spouses from Kiana	10	17.9
Neolocal: neither spouse from Kiana	11	19.6
Total	56	100.0

Noorvik: 1975 Population

Comparative data for Noorvik are shown in Tables 15 and 16. All married couples are included on the same criteria that were used in counting Kiana couples. While the majority of Kiana marriages are exogamous, Noorvik's marriages are predominantly endogamous, that is, a Noorvik resident marrying another Noorvik resident (57.8 percent). The low percentage of Noorvik-Kiana couples residing in Noorvik after marriage (6.0 percent, Table 15) contrasts sharply with the 32.1 percent of Kiana-Noorvik couples who settled in Kiana (Table 12). Some of the reasons that Kiana is favored will be given shortly. The percentage of Noorvik-Selawik couples settling in Noorvik is slightly higher, 9.6 percent. Unfortunately, we do not have the data to compare Selawik-Noorvik couples who settled in Selawik. Probably because Kiana is closer than Noorvik to the upper Kobuk River, more Ambler, Shungnak, and Kobuk spouses settled in Kiana than in Noorvik. There are undoubtedly other important reasons, some of which may be those discussed below. As is true for Kiana, the percentage of couples in which both spouses are non-Noorvik residents is high because of high-school teacher couples from outside. Seven such couples were residing in Noorvik in 1975.

On the Kobuk, when husband and wife are from the same village, most of them stay on in their home village after the marriage. Also in Noorvik as in Kiana, more married couples settled in the husband's village than in the wife's village.

Table 15. Types of marriages of Noorvik residents in 1975, according to premarital residence.

Premarital Residence of Husband or Wife	Premarital Residence of Spouse	Number of Couples	Percentage of Couples
Noorvik	Noorvik	48	57.8
Noorvik	Kiana	5	6.0
Noorvik	Selawik	8	9.6
Noorvik	Ambler, Shungnak, or Kobuk	1	1.2
Noorvik	Elsewhere in Alaska	8	9.6
Noorvik	Lower 48 states	2	2.4
non-Noorvik	non-Noorvik	11	13.3
Total		83	99.9

Table 16. Marital residence pattern in Noorvik, 1975.

Marital Residence	Number of Couples	Percentage of Couples
Patrilocal	12	14.5
Matrilocal	11	13.3
Common	48	57.8
Neolocal	12	14.5
Total	83	100.0

Population Movement

Kuuvaŋmiit choose the place where they will live for a variety of reasons. Some of the reasons an unusually high number of them chose Kiana, for example, were revealed in our study and are given below:

A. Job opportunities. It was the chance for employment in gold mining operations that first drew settlers to Kiana. When gold mining diminished, many people stayed on, adjusting to new opportunities. At present, outside employment is attracting a number of Kiana residents, but most such employment is temporary.

B. Subsistence resources. One Kiana Native whose parents were among the first group to settle in Kiana stated that the reason some people chose to stay was the area's abundance of food resources and fur-bearing animals. A journalist who visited Kiana in 1938 wrote that the settlement of about 20 white and 125 Natives had an ideal environment for subsistence living. During all of the Depression, he wrote, no outside relief was needed by the residents of Kiana, for

> they have their reindeer herds, their hunting and fishing, to all of which industries they give good heed. There is abundant supply of spruce for the making of their simple one room homes and for fuel and the dogs still satisfy their need for speed and for transportation.
>
> The muskrat hunting in and around the delta of the Kobuk is one of the chief resources of income from furs. One fifteen year old boy got ninety-nine with a 22 rifle. One of the local traders told me that from forty to fifty thousand were taken last season (1937) alone in or near the delta of this Kobuk River.

> In addition to muskrats, there are in their season, foxes, both red and silver gray; mink of exceptionally fine quality, land otter, ermine, and wolves. . . . Duck and geese are common in spring and fall. Rabbits and ptarmigan often caught by the women in snares during the winter add much to the family supply of food. (The Fairbanks News Miner, 1938:2-3)

The abundance of food resources, particularly fish, is still one of the reasons people give for selecting Kiana as a place to live. Also Kiana has been in the long run more strategically situated for caribou hunting. From Kiana hunters are closer to the Hunt River area than are hunters from Noorvik. In years when caribou are not plentiful in the vicinity of the villages they have been plentiful on the Hunt River.

C. Non-populous area. The reason many Noorvik people chose to settle in Kiana was the availability of land for their home sites and the openness of space. Also, Kiana, with a smaller population than Noorvik, has less competition for the available subsistence resources. Some Noorvik families moved to Kiana independently, without relatives already in Kiana to lend assistance or support.

D. Kiana relatives. In a few cases a close relative like a mother or brother was living in Kiana, and in other cases, less close relatives lived in Kiana. Their presence plus the subsistence resources or other opportunities were sufficient to draw other members of the family to live in Kiana.

E. Access to modern commodities. Kiana has better-stocked trading posts than other Kobuk River villages have. Noorvik and at times even Kotzebue residents buy in Kiana merchandise that is immediately needed and not available in their own village or town, such as outboard motor gas, spark plugs, or snow machine belts. Some people therefore prefer Kiana for the availability of its goods.

F. Marriage factor. As seen in Table 14, many husbands and some wives draw their non-Kiana spouses to Kiana to live. Any of the above reasons may influence the couple to live in Kiana, as may the fact that it is common for a wife to move to her husband's village.

Obviously the Kuuvaŋmiit are a mobile people. Kin and marriage factors aside, the Eskimos of Kobuk River villages move within the region to where employment is available, to where there are excellent subsistence resources, and to where a better life seems possible. Verbal accounts testify that many present-day Kiana residents have moved from location to location along the Kobuk and Selawik rivers before eventually settling in Kiana. Indeed, should conditions worsen in Kiana and should better opportunities present themselves elsewhere in the region, many Kiana residents might well move again. As it is, a few Kiana families spend part of the year with the other spouse's side of the family or move to another village for part of the year because of jobs available there. Added to this type of mobility is the mobility

caused by the cyclical nature of the Kuuvaŋmiit villagers' subsistence resources. The dependence on these traditional subsistence resources--psychologically as well as physiologically--is great, and access to game and fish continues to be a major consideration for residence. Mobility is very much a Kuuvaŋmiit way of life, and a necessary one that is likely to remain so in the foreseeable future.

Economic and Social Effects of Population Movement

As discussed above, the population of each village is a composite of villagers from other areas in addition to the home-born residents. From the kin network standpoint, this means that each family in a particular village will have either direct relatives or relatives through marriage in a few or more other villages. The effects on subsistence are pervasive.

An inland village like Kiana still makes use of coastal products as part of their subsistence depending on whatever contact they can make with coastal people. A Kiana family expressed how fortunate they are to have in-laws in Kotzebue who send them their yearly supply of seal oil. Those without coastal kin seek parallel contact through the formation of trading partnerships the way their ancestors did in the past. Several Kiana residents, for example, went to the 1975 spring whaling feast at Point Hope. They stayed at the homes of relatives or trading partners, and when they returned home they had with them muktuk (whale skin and

blubber), whale meat, and other choice parts of the whale their partners had given them. In anticipation of this, they themselves had worked extra hard all spring in order to have plenty of dried whitefish (panniqtuq), the half-dried fish delicacy called iamaaqluk, dried meat, and frozen berries to take to their Point Hope partners. Similar intervillage exchanges of products take place among inland villagers when the resources in one area are absent or insufficient. Without kin or a trading partner, the required products may at times be acquired through purchase, but even here friendship or a quasi-kin relationship is important. In the early spring of 1975, the caribou in the mountains around Kiana were thin, but in Selawik they were remarkably fat. A Selawik Eskimo came to Kiana with a few of these caribou in his sled. He sold them to families that were originally from Selawik and, in one case, to an elderly lady for whom a member of his family was named. To obtain local products from individuals in another village, one needs to go through someone there with whom he or she has a preëxisting kin, partnership, or some other social tie.

Kin, trading partner, and other kinds of relationship facilitate social and economic interactions between villages. Family members in any village along the Kobuk River have relatives in one or more of the other villages. Whether they visit another village or attend a Friends Church quarterly meeting, a spring carnival, a funeral, a Christmas-New Year celebration, they can count on the hospitality of the homes of relatives, friends, or partners. Such contacts strengthen and increase the number of

bonds between extended families, partners, and villages. Marriage bonds, too, are formed in this way, for young people with relatives in another village will at some time or another visit that other village and there meet new young people. Some of these will eventually marry.

Social interaction and economic activities within a village follow similar patterns. While all villagers interact with others in the same village, closer and more frequent interactions are observed between relatives and friends from the same home village. An individual's identity with his or her home village is strong. This is emphasized by the fact that even when a person moves to a spouse's village at marriage, that person continues to be identified as a Native of his or her natal village. For example, a resident of Kiana who came from Noorvik several decades back may still be referred to as a Noorvik woman. If a person living in an adopted village has no relatives close by on whom he or she can call for aid or moral support, that person will usually turn to a friend who came from the same village. A widowed woman with no transportation facility and no relatives with whom she can go fishing and berry picking is aided and taken into partnership by a female friend who not only has the needed facility but comes from the same home village. The meat from the game animal hunted by her friend's husband is likewise shared with her. In most of the cases analyzed in Kiana, when joint economic activities such as hunting, seining, gill netting, and berry picking were not joint ventures between relatives, they were partnerships between

friends of the same home village. In day-to-day social interactions and at parties, the people who most frequently come to visit are close relatives or home village friends.

Activity Network and Partnership

A sentiment often expressed by the Kuuvaŋmiit is that it is good to have children. Families are generally large, not only because the Eskimos love children but also because they need them. A family with only one child feels deprived emotionally as well as economically. If there is only a son, a mother does not have a daughter to help with the housework, gathering, and fishing, especially as she grows older. If there is only a daughter, the father has no son to join him in hunting trips or in maintaining the boat. Thus, a family with only daughters will adopt a son, and vice versa. The natural and adopted children grow up very close and they solidly support each other, their parents, and their other kin. In the case of a widowed elderly lady, it is the husband of her adopted daughter who brings her firewood for the stove while her son and daughter-in-law provide her with fish and meat.

Within the village, joint subsistence activities are undertaken first by relatives. In seining, gill netting, and berry picking, the working team is either a mother and daughters or a team of sisters, sisters-in-law, or cousins. On the man's side, brothers and brothers-in-law sometimes hunt together. Relatives

who do things together sometimes refer to each other as "partner," using the English word, but they are not partners in the traditional sense of the word.

The partner relationship in the traditional sense is a joint subsistence activity performed by two non-relatives (Spencer, 1959:83; Burch, 1970:50). In the same village, those who become partners are generally close school friends or friends from the same home village. Sometimes a partnership is formed between widows who come from different villages and have neither a friend from the same village nor a relative on their side of the family. The following types of partnerships make up the formal non-kin collaboration network that is an important part of Kuuvaŋmiit subsistence living.

1. Kuvraqqatigik (singular), kuvraqqatigich (plural)--fishing partner. The word derives from kuvraq or fishing net, and qatigik which means together or each other. This type of partnership is between two women who become seining partners and own the seining net together. Each contributes materials toward the making of the seining net. In the old days when nets were made from willow bark, this required long, hard hours of joint labor. Nowadays, the purchase of the net, rope, and floats costs a large sum of money. One village woman told us that her partner already had the sections of a net and that she contributed toward outfitting it by joining together these sections to form the required length and by supplying the rope and floats. Together the partners seine, cut the fish to dry, and later divide the

catch, each taking half. In seining, at least three or four people are needed, and the partners take along one of the husbands or children to help. The kuvraqqatigik partnership is exclusively for seining and not for gill netting, for most women own their own gill nets and the net is therefore the possession of one person.

2. Suuraqatigik (singular), suuraqqatigik (plural)--real partner. The word derives from suuraq which means things, wealth, or treasure, and qatigik meaning together or each other. This partnership is between two women who "do everything together" as well as "have things together." The suuraqatigik together own the seining net, seine, cut the fish, and divide the take in halves as in the kuvraqqatigik type of partnership. In addition they go berry picking and plant gathering together. In berrying, each partner keeps the amount she has picked. Sometimes they do the gill netting together. When the husband of one of the partners gets a game animal, part of it will be shared with his wife's partner. The fact that the partners share and cooperate in all subsistence activities that require additional helping hands makes them "real partners."

3. Piqatigik--two persons who help each other. This is a transitory type of partnership that can be between men or between women. Two women who at times help each other with setting individual gill nets and travel to check the nets together become piqatigich (plural of piqatigik). Since the nets are not jointly owned, the fish catch is not divided in halves. Men can become

piqatigich when they travel together, such as when one provides the boat and the outboard motor and the other provides the gas.

4. Angunqatigik (singular), angúnqatigich (plural)--hunting partners of the same sex, either male or female. In the latter case, it is for small game hunting--or big game hunting in cases where the women are widows and have to acquire the meat for their families.

5. Tuyuqtugtug (singular), tuyuqtuutiruk (plural)--partners who send things to each other. This is the trading partnership most often mentioned in ethnographic reports. It can be between inland and coastal people in which case inland and coastal products are exchanged, or it can be between inland partners who trade for the local resources each would like to have. There are male partners, female partners, and male-female partners in this type of partnership.

6. Nulaqatigik (singular), nulaqatigich (plural)--two men who exchange wives.

7. Niiviq (singular), niivigich (plural)--general term for partners who help each other with services each can provide for the other's needs. A niiviq obtains help from the partner without having to "pay" for it. One of the Kuuvaŋmiit to whom we talked stated that niiviq is a term used by Iñupiat who live on the coast. According to Burch (1970:52-53) the term is used by Iñupiat who live between the mouth of the Colville River and the southern coast of Seward Peninsula.

Three additional terms used to refer to partners in general are patnaq, ilagik, and ikayauqtigik. Any difference between the latter two terms is so subtle that it was not determined by our research. Although a partnership in general consists of joint activities between two people, a third person, such as a husband, may help his wife and her partner.

Collaboration in subsistence activities is not always exclusively a kin work team or a partnership work team. It can be a combination of both. In one case, two women who were close friends had been "real partners" or suuraqatigich for several years. Then a daughter of one of the partners joined her mother in fishing. In this case the fishing team became a mother-daughter team in addition to the suuraqatigich team. Temporary collaboration in different types of activity networks can also occur. In one smelt-seining operation we observed, the largest seining group consisted of five families and one non-kin partner to one woman among the five families.

While activity work groups are important to the Kuuvaŋmiit economy, this is not their only function. Both the kin work group and the non-kin partnership spring from close social interactions, and the long-term cooperation and responsibilities serve to strengthen the bonds between families making them very close to each other.

Roles

Subsistence living along the Koβuk River has profound effects on the economic and social structures of the Kuuvaŋmiit. In the realm of marriage, for example, the conjugal bond requires a different set of roles than is required among couples in an urban society. A Kobuk River wife not only cooks, keeps the house, makes and mends the clothing, raises the children, and, in some cases, works outside the home as a wage earner just as an urban wife does, but she also is her husband's most important partner in their traditional subsistence pursuits.

Kuuvaŋmiit women work long, hard hours. In all the work around the house, the woman's chores diminish proportionately to the number of children she has who have grown up sufficiently to take some of the responsibilities. In years past, the wife was expected to make clothing for everyone in the family. Nowadays, the availability of mail-order clothing lessens this duty, but a large number of women still make caribou or moose hide or calfskin mukluks, and muskrat and sealskin parkas. Those who have learned to use sewing machines make calico and corduroy parkas for every-day wear. And, women knit woolen mittens, socks, headbands, and baby booties for family members as well as for gifts to relatives and friends.

Until the recent return of caribou and the arrival of moose, the basic foods along the Kobuk were fish and wild berries and plants. Each year the family had to make sure that they had fish

enough for the family as well as for the dog team. Fishing remains today a significant part of the Kuuvaŋmiit's subsistence living. While the men do the hooking, burbot trapping, and retrieving of large quantities of fish with the fish weir, the women do the seining and the gill netting. Each is responsible for the making and maintenance of his or her own fishing equipment. The fish that are not for immediate use must be stored, and it is the women who cut them up and string them together to dry. A husband will help with the seining and the setting of the gill net if his wife has no one to help her and if he is not working away from the village at the time. Berry picking and the gathering of wild vegetables and plants have become more and more of a family activity, with everyone going along to help, thus making it a fun outing and camping experience.

Big game hunting and trapping are considered men's responsibilities. Caribou, moose, and other large animals are gutted where they are hunted and also frequently skinned in the spring when the skin is not usable because of larvae. Once the animals are brought home, the responsibility is transferred to the women who butcher, dissect, and, in summer, dry the meat. Women hunt small game such as rabbit and ptarmigan; when they accompany their husbands on muskrat hunting trips, they also help in taking muskrats.

Ethnographic accounts indicate that the building of birch-bark kayaks was accomplished through the joint teamwork of men and women. The husband collected bark while the wife collected

spruce-tree pitch. In constructing the boat, the husband and male relatives made the kayak frame and stitched the birch bark together with spruce roots, while the wife and female relatives prepared the pitch and put it on the stitched seams (Giddings, 1961:38).

It is not known whether men or women made the birch-bark baskets formerly used along the Kobuk River, but nowadays in Ambler, Shungnak, and Kobuk, birch-bark basket making is done mostly by women. It has, in fact, become a home industry that brings in cash income to some upper Kobuk River families who also make and sell mukluks. In villages of both the upper and the lower Kobuk River, a small number of residents are employed outside their homes, some on a permanent basis and others temporarily. These include women who become teacher's aides, nurse's aides, secretaries to Native organizations, and cooks in the elementary and high schools. In Kiana, the magistrate in 1974 and 1975 was a woman. Women also form fire-fighting squads, and in this capacity are recognized as being just as efficient as men. The women who are wage earners continue their subsistence activities outside of their working hours and during their vacations. They fish and go gathering to the same extent that unemployed housewives do, for the kind of food they are able to buy with their wages does not wholly substitute for the kind of food they are used to and enjoy.

With the approach of old age, the roles of men and women gradually shift from intense participation in subsistence living to occasional participation. Their role as an advisor increases.

On one smelt-seining occasion that was observed, the seining seemed to be proceeding quite successfully, but after the elderly lady who was the owner of the seining net looked on for a while, she gave a few instructions, which were immediately followed, and the amount of smelt caught increased appreciably. Until their late seventies, women often continue to go gill netting and to cut fish with the aid of younger relatives. One Kiana lady in her seventies not only does the gill netting and gathering with her husband, but also goes with him to hunt big and small game, and she collects and chops firewood. For most of the older women babysitting for their grandchildren becomes part of their occupation, and it is a task they gladly accept. "It's more fun having grandchildren than children," some of the grandmothers say.

The partnership of the husband and wife in subsistence living is so crucial that if one of the spouses passes away, the tasks accomplished and the food resources acquired by that spouse come to a stop. One woman, since remarried, remarked that when her first husband passed away, her children were still very young, and she had to do all the hunting, fishing, gathering of firewood, and so on, by herself. If a widowed wife is not already living in her home village, she will usually move back. There she can always obtain assistance from her family. Her male relatives will provide her with meat and others will give her whatever help she and her children need. More than a widowed wife, the widowed husband has a hard time, for he must take on the housework and care of the children while continuing his hunting activ-

ities. For love, companionship, and economic necessity, widows and widowers remarry whenever they can.

Neither the roles themselves nor the cultural expectations of the roles described above are static. There is as much flexibility in sex roles as there is in other aspects of Iñupiat culture where flexibility and innovations are the core of survival. Widows and widowers often assume the role of the deceased spouse until they remarry. If a husband becomes disabled, the wife becomes the hunter of the family unless they have a son old enough to hunt or unless they can afford to buy the caribou meat from others. An unmarried woman with children will often hunt to feed her offspring. A husband takes on the responsibilities of cooking and caring for the children when his wife must be out of the village temporarily. When the wife is a full-time wage earner, it was observed in one case that her unemployed husband helped with the dishes. The attitude is that one does what needs to be done. A family will be more respected if they can make a living themselves without requiring the help of others.

Enculturation

Some of the values emphasized in the Iñupiat culture are self-reliance and readiness to render help when needed. Kuuvaŋmiit children early in their childhood learn and understand these values and roles expected of them. The comment of an eight-year-

old girl, "You should have children; they can help you work," best demonstrates this perception.

Within the family, small children are trained to be helpful by running errands for their families; they soon learn to carry messages and to get necessary items from another house or from the trading post. Adults who are not relatives also have a hand in the training by asking children to do errands for them. The children always comply and are always rewarded with praise and thanks. The cultural viewpoint is that the earlier a child is trained, the better and harder the worker he or she will become. By the time the children are eight or nine years old, this helpful attitude extends beyond their own homes to the old people in the village, particularly those who live alone. The boys help with hauling water, getting firewood, and running other errands; the girls provide similar services as well as helping with the housework. They are rewarded with gifts, food, and sometimes money so that they can buy themselves treats of candy and soft drinks. Old people are normally cared for by their families, but if the family is busy or away from the village, the children will take care of them.

An eight-year-old daughter can relieve her mother of a great deal of housework. She will probably know how to cook simple dishes, clean the house, help with the laundry, and care for younger siblings. She will also have participated in berry picking and know where the rich picking spots are located. Girls as young as six or seven start learning the first stages of fish

cutting and scaling. In one spring fish-cutting session observed, a little girl playing at the river bank where her mother and friends were scaling and cutting up their fish catch tired of playing and asked her mother if she could try scaling. The initiative came from the daughter herself. She was given a dull knife and a small fish to start with, and she began imitating the way the adults were doing it. In another fish-cutting session, an older girl had her first try at cutting after seeing her friend have fun doing it. The adults kept an eye on her, but no verbal instruction was given unless she asked for it or unless a serious mistake was made. Small mistakes were ignored so as not to discourage her. The fish was pretty well mangled and she felt embarrassed by it, but her mother's friend consoled her, saying, "It's O.K. It's your first fish!" Observation and imitation are characteristic of the learning process in Iñupiat culture; verbal instruction is rare and considered uncalled for.

Enculturation for boys follows the learning-through-doing-and-practicing method. A boy must learn how to maintain and repair the family's boat and outboard motor. He becomes experienced by helping his father fix and repaint the boat before breakup. Parents who have two boats will give the older of them to their fourteen- or fifteen-year-old son. He and his friends will work hard on it, and if they are lucky enough to be given an outboard motor too, they will have the boat ready for muskrat and ptarmigan hunting by the time the river is open. Learning how to make a sled or to repair a snow machine usually starts in

his late teens or early twenties unless the village school teaches these skills as part of a workshop program.

Since hooking fish is part of a man's job, the father usually takes his sons along whenever he goes hooking. Learning to hunt for big game begins at the age of eleven or twelve, when a son starts accompanying his father on hunting trips. Later, as an older teenager, the son will hunt with friends of the same age. Some older, unmarried girls learn how to hunt and they generally travel with a girl friend or with the family.

Children's play activities parallel the adults' activities and thereby add to the enculturation process for the children. Girls play at cooking and keeping house. When small boys go around with slingshots in the spring, they are practicing precision aiming. During the spring and summer, small children can often be found on the river bank with their fishing rods, and at times they are rewarded with a catch.

Children's seasonal round of imitative play activities closely parallels the adults' seasonal subsistence activities. Thus in spring when the adults are intent on bird hunting, the children are also busy trying to get swallows and other small birds with slingshots. When the river is open and the adults are traveling in their boats, children can be found playing with toy boats made from a flat piece of wood with a string attached in front so that the boat can be pulled along the river bank. When the fishing season comes, the children start fishing too. When the snow begins to accumulate in the fall and the adults prepare

their snow machines or sleds, little boys go around pushing toy sleds their fathers have made for them. They particularly enjoy going fast along a smooth trail or intentionally going over bumps in the snow so that the sled will bounce the same way the dog sled does.

Learning and understanding the culture of the society is crucial if a person is to become fully a part of that society. Enculturation among the Kuuvaŋmiit children occurs by means of covert instruction, and through this the children are successfully initiated into their cultural way of life and survival.

Village Life

While life in a Kuuvaŋmiit village is a composite of both Kuuvaŋmiit and western traditions, it is also a single, coherent, and largely consistent flow of activities. The following is a description of Noorvik village life by Nita Sheldon as she experienced it in the early 1970s. The yearly activities described below, by seasons, holidays, and other eventful occasions, are typical of those in the Kobuk River villages.

Springtime

In spring, ice is still on the river, but it is rotten and unsafe, so the villagers must do a lot of walking on land. There is constant daylight, and hunters leave the village to hunt for ducks on spring afternoons. Since ducks fly during the night

hours, the hunters take food with them so they can spend the entire night out by the lakes or streams. Because so much walking is involved, it is mostly the younger people who hunt in this season.

Memorial Day

On Memorial Day everyone in the village who can walk and who has relatives buried in the cemetery goes in the morning or in the afternoon to the graveyard. Since the ice is still rotten, people may have to walk as much as three miles. They take food and flowers and they spend the rest of the day at the graves, cleaning and changing the artificial flowers, sitting around eating and enjoying the springtime. It is not a sad time but a happy time for everyone. Although some people may cry a little, they accept the fact that their mother or father or husband or wife has died and they just sit at the grave site, feeling once again close to the dead person.

Funerals

When someone in a village dies, everyone in the village stops whatever he or she is doing. They stop fishing or working, even if they work for a construction company. They become very solemn, and the sense of a death can be felt through the stillness that descends on the village. Death releases unhappy emotions. If a husband dies, for example, the wife and other close relatives will show a lot of emotion. No one holds back, and all

cry and stay close to her. To prepare the deceased for burial, they first clean the body and then dress it in new clothes. The body is kept in the village for at least two days. Meanwhile all the men and some of the women go to the church (Friends Church) where the men build a coffin. They measure how big the dead person is and they work on the coffin all day and late into the night. The women go to the church to make coffee or to serve food to the men who did not go home for lunch or supper. Usually everyone in the village helps at one time or another. After they put a sheet or some other kind of white material into the coffin, they bring the body to the church and put it in the coffin. If the dead person has died while away in the city, the body is returned to the village in a commercial coffin. Then they set the hour for the funeral.

Relatives, no matter how distantly related to the deceased--even if they never knew the deceased--come for the funeral from all the villages of the Kobuk River. In the western world, a cousin, for example, who did not know the person that died is under no obligation to attend the funeral. But in the Kobuk River villages, there is such a strong blood tie that everyone shows up for the funeral, even the dead person's atiuns (namesakes) from other villages.

In the church, chairs are arranged in the middle and on the sides. The close relatives sit in the front by the coffin. The distant relatives sit behind the close relatives. After the preacher says a prayer, the mourners sing songs, usually sad

songs. Sometimes the young people get up to sing, and usually their song is sad too. The preacher then talks a little and the people pray. They then walk along the sides of the church to the front to see the body in the coffin. While everyone is viewing the body for the last time, music is being played on the piano which makes the atmosphere of the funeral more sad. The last persons to see the deceased are the closest relatives. People who have seen the body then leave the church and wait outside. Usually six men help with the coffin. They put the cover on the coffin and carry it outside.

From there everybody gets ready to go to the graveyard. Noorvik has two grave sites. One is three miles away by walking or one-half mile away by boat; the other is about two miles south of the village, not too far away from the airport. Nowadays the bodies are often buried closer to the village so that the trip to the grave will not be so far. For instance, the husband of a woman in Noorvik died while the woman was in her early thirties. They buried him close to the village and about once a week the woman goes to his burial spot, taking along her children, because they miss their father. The youngest child does not realize where his father is and expects to see him, which makes the mother more emotional.

Marriage

Marriage in the Kobuk River villages is much less formal than it is in the city or in the lower forty-eight states. Long

ago the Kuuvaŋmiit did not have formal marriages. If a man liked a woman, he went to stay with the woman's parents, helping them however he could. If her parents liked him, they gave their daughter to him. Nowadays a couple is expected to get formally married. A couple usually first lives together and most of the girls in the villages have a child before marriage. When the couple decides to marry, they go to Kotzebue for blood tests, and if everything goes right then they go to the judge in Kotzebue and get married. When they come home, they pass out candy--big cans of candy--to everybody in the village; or they may pass out soda pop or even have a big liquor party. The liquor party is especially popular nowadays, especially with young couples. The marriage is simple. There is usually no white dress and no tuxedo--the couple gets married in jeans.

Summer

When the ice breaks up, everyone stays up and watches it go. The melted ice fills the lowlands with water. By now people are eager for boating. This is muskrat-hunting time. Muskrat meat is eaten dried or boiled. To prepare the meat the animals are gutted and then two carcasses are tied together by the tails and dried in the open air. The skins are saved for fashioning into jackets; long ago they were traded for money.

After the ice is gone, people go to spring camps and set nets for whitefish and pike. They hook for sheefish near Selawik

Lake. Ducks fly in, too, and everybody watches for them to come so that duck will be added to the menu.

The following is an excerpt from my (Nita Sheldon's) diary of activities in one spring camp in 1975.

> Makkaksraq Camp
> Monday, 6/2/75, 1:30 A.M.
>
> Left Noorvik at 7:30 P.M. and arrived at Makkaksraq Camp about 11:30 P.M. [In our party were] Billy, Aggie, Valeria, Tilmer (adopted), and I along with one dog and many things necessary for one week of camp. After leaving Noorvik with a full load we made our first stop one bend away from Noorvik. Billy shot two ducks. Because the ducks are beginning to arrive they shoot any duck they see just as long as it's in shooting range. After about an hour's traveling we stopped on a bluff and had coffee, tea, dried meat, homemade doughnuts, and crackers. Angie and Gordon stopped and joined us. They went down near Makkaksraq and set up a tent and stove. They will be heading down to their camp tomorrow. We stayed about a half hour. There was still snow around.
>
> After snacking and sharing a few words we were on our way again; it was a slow trip. We made another stop, Billy shot another duck. About an hour and a half before we got into Makkaksraq, fog started to

roll in making visibility very poor. The wind was blowing too. So we were being splashed but we were saved by plastic or visquine. But our driver Billy didn't have a raincoat on, so by the time we got to Makkaksraq he was soaked right down to his skin. We saw a lot of ducks on the way but they were too far to shoot at. On the way, saw Milugiuvik, Doug Brown's camp. Also saw Snell's camp.

We finally got to Makkaksraq some four hours after leaving Noorvik. When we got there, there was Maggie, her nephew, her four kids, Ruth and Raymond George and their two kids, and Fred and Alta Jack and their son. We got here to the most welcome warm tent of George [the Georges]. [Their] tent has been here all year. Luckily it didn't flood much during this year's breakup or else it would have wiped out the tent. And it also gets snowed in. If snow had gotten in the tent it would have been very wet. We had hot coffee and tea. She [Ruth] had caribou meat boiling on a red-hot wood stove. All the other families were there so it was a little crowded but very warm and the atmosphere friendly. For dinner we had boiled duck meat, tuttu meat and dried caribou with seal oil; after we had tea with crackers. After sitting around talking for some time each family goes back to their tents. During [the

time when] dinner was being cooked, Billy with the help of the other men had hitched up our tent.

Everyone is finally in bed but conversations can still be heard from the other two tents.

Makkaksraq Camp
Tuesday, 6/3/75, 1:20 A.M.

Weather: Foggy, windy, and cold, similar to yesterday's weather.

Today we ate big meals. Val, Tilmer, and I woke up at 10 A.M. and ate hot cakes for breakfast in our own tents but ten minutes later we [were] called to Geroge's tent for a big duck soup meal. Two big pots of duck soup were cooked. Aggie and Billy had gotten up at 6:30 A.M. this morning and went hunting while us kids were asleep. There were about twelve people in the tent. It was a very good lunch.

After lunch Maggie, Aggie, and I went to put their nets out, right across from the camp. About three hours later we went and checked them out. Six or ten pike and whitefish were caught in each net but Maggie had put out two nets. Maggie's net caught a big siilik (pike). So Aggie boiled a big pot of siilik outside in a campfire. Then we had another big meal at Ruth's tent. Also with siilik we had the intestines of siiliks also boiled. Then we had blueberries for dessert that Maggie had brought from

Noorvik. There had been conversations during the meal but mainly joking around.

All day there has been scolding of the kids for various reasons. One main reason is [that the children should not] go in the boat or near the water [because] the water is very murky and cold. Also the current is swift. [No one would] have a chance to survive in it. There would be chaos if a kid were to fall in. Although some of the parents let their frustrations out on their children by scolding them, the parents tend to get more lovable toward the evening, probably because their work has been done, which can be strenuous. And the only thing they have to worry about is going to bed.

One cannot help but notice the most popular tent in this camp. It's Ruth's tent, which is the center one, although the position hardly has anything to do with popularity. The tent has a wood stove which is usually kept burning continuously whereas the other two side tents have Coleman stoves which are usually on only when necessary because gasoline costs so much; it has to be rationed out as to how many days they have to stay at camp. The Georges' tent is somewhat like a house; it has a wood frame, plyboard walls, and wood flooring. Because of its continuous heat and comforts of a house, it drew us to the tent when we

were cold and hungry. Our meals are like a potluck--meals where everyone contributes food at one time or another. I could tell the Makƙaksraq [Channel] has abundance of various game [and] fish, mainly sheefish, pike, and whitefish. [We have] ducks of all kinds and tuttu (caribou) that was brought from Noorvik. Everyone eats like we haven't eaten in a long time. They would mention that once we go back to Noorvik we will just go hungry. Because when you're at camp, food is kayumik [it always tastes so good].

After lunch Donna (age ten), Val (age ten), Yogi (age eleven), and I went for a walk up in the higher grounds. We ate cranberries and blackberries left over from last year. Now and then we would find a bunch that birds hadn't already feasted on. I picked tilaaqiq [Hudson's bay tea] and brought them back to camp with me.

After, Maggie and I went to check nets. Aggie's net caught five whitefish while Maggie's two nets caught twenty-five whitefish and pike.

This time our meal or dinner was a little small. We ate leftovers: a whole potful of untouched duck soup that we didn't eat at lunch time. After all dishes were done we settled to a game of pit. Ray, Ruth, Maggie, Aggie, Billy, and I. It was foggy and cold so we couldn't do much.

Makkaksraq Camp
Wednesday, 6/4/75, 11:00 P.M.

Today has been a similar day, weatherwise. As usual it was foggy, windy, and cold. After breakfast Aggie, Maggie, and I went to check nets. Aggie got half a tub and Maggie got almost a tubful. Women tend to go check nets alone when more than one woman is in camp. Maggie's outboard motor wasn't running so she has been going with Aggie. Ruth checks her net with her husband. For lunch we had roasted whitefish and two whitefish that I tinfoiled separately and cooked in an outside fire. Also Billy made qauraqs. He made three of them: one pike and two whitefish. Qauraqs is an Eskimo way of cooking fish, the only method that was used long ago when there were no pots and pans. You poke a sturdy willow through the fish without taking the insides out and bore the stick into the ground by the fire, continually turning it from side to side as long as the heat will permit it. You do not flame the fire for it will burn the fish. Get green (willow) wood and let it burn. It turns to hot coal and it will gradually cook the fish.

After a big dinner which we had at Georges' again, Aggie and I plucked three ducks near our outside fire. Then she roasted them over the open fire. There wasn't much to do so I made a fish rack (iniaq) four feet high

for Valeria to hang her fish eggs. I got three forked willows on each end so they can hold up and then put a center willow to hang eggs on.

There was another big meal but I wasn't hungry. My stomach has been giving problems from overeating. So I resigned from supper. There is a graveyard here with Raymond's namesake grandfather and his two brothers.

Noorvik
Saturday, 6/7/75, 12:30 P.M.

Haven't been writing for couple of days. I'm recuperating from a head cold I got from the foggy Makkaksraq. I came back here to Noorvik on Thursday night 1:00 A.M. and left the camp at 11:30 P.M. Valeria and I came with Bobby S. It was a little faster coming back because he bought a new motor; I think it was a 55-horse and he also bought a used speed boat from Williard.

It was a little different coming back. After time had little meaning at camp, and work and eat and sleep are the main activities, I find that it was a little lonely coming back to all the luxury of material objects. Although all these comforts made life easy I also seem to lose my identity in one way or another. At camp everyone was expected to help at one time or

another but when one comes back here he doesn't have to lift a finger if he doesn't want to.

Although we came back late there were still fifteen to twenty-five people walking around having really nothing to do. Most of these young people easily fall into a late-to-bed-and-late-to-rise pattern. So most of them don't go to bed till one or three in the morning.

Summer. The sourdocks and rhubarb are growing. Sourdocks are eaten cooked and eaten by itself or cooked with whitefish liver--also put in barrels and saved for winter. They go by boat later to hunt for ducks in summer. Berries began to ripen--salmonberries or blueberries, depending on the land. Women usually pick the berries; relatives go together or best friends go out on all-day excursions. Sometimes men go too. People try to go every afternoon, if they can.

Usually the women check their nets in the morning. The sixteen salmon nets near the village Noorvik average about fifteen salmon a day each. Salmon come up the river about the middle part of June and run heavier in July. Women also get whitefish and pike. Villagers get smelt in the springtime, too, but not so many since a little girl was drowned across from Noorvik by the bluff. Mud caved in on her, she fell

in the water and drowned while her parents were catching smelt. Smelt fishing has declined since then.

In summertime the women go to the beach, check the nets, start cutting the salmon, and then go home for lunch after they finish cutting. Lots of flies are around so they put fire under the fish, using rotten wood that makes a lot of smoke to keep off the flies. Women are busy from morning to late afternoon.

In early summer people try to go out to fish camp for a while. Amaamnunaaq is one of these.

Amaamnunaaq Camp
Friday, 6/27/75, 11:00 P.M.

Dad, Mom, Allen, Sharon, and I left Noorvik at 6:30 P.M. after Dad quit work at the post office. We got here to Amaamnunaaq at 8:00 P.M. This is my mother's parents' camp; they've been coming here ever since I remember. My mother was practically brought up here.

Viola (Mom's sister) and Lee Barr were camping here last week. They just left their tent up so we stayed in it. There is a tower on a lookout here; it was built about twenty-five years ago. There is also a cache that is about as old as the tower. The tower is very useful; it gives a view of the surrounding area. There are a lot of lakes, so if someone spots a

moose they can pinpoint the exact position. There is also an underground cold storage place that is used summertimes to keep food cool or refrigerated. Lee B. and Mom's youngest brother Leo are building a new log cabin. The walls are done but no roof yet. I guess their work will resume this fall.

Pike are still running. According to Mom, whitefish should start running in about a week--about the fourth of July.

We didn't eat supper, so when we arrived here Mom fried some caribou meat we [had brought] from our freezer in Noorvik. We also had homemade doughnuts that Mom made this morning, cookies, and tea. After eating we took off for the slough across from our camp and put out a net. While Mom and Dad were putting a net out, a pike got caught in the net, so we decided to wait around a bit. While we were waiting Dad hooked up rod and reel; he caught two pike in about ten minutes. We didn't stay too long but we checked the net before leaving and it had caught four pike. When we got back Dad listened to Eskimo story [on the radio] (9:30 P.M.). I checked out the tower. It's a little shaky but it's still sturdy. It gives a good view of the camp surroundings.

Ammamnunaaq Camp
Saturday, 6/28/75, 12 midnight

Woke up at 8:00 A.M. It was cloudy today and it looks like it will rain. Yesterday was a nice day, sunny.

Mom and Dad went to check the net at 8:30 A.M. this morning. Allen and I were just getting up and Sharon was still asleep. We had sourdough hot cakes for breakfast. Mom had already cooked when I woke up. They came back with their catch and they got one and one-half tubfuls of pike and whitefish. So I went and helped Mom scale (avisiuqsi) pike and whitefish, and then Mom cut the fish. When lunchtime rolled around, Mom cooked three choice whitefish. She roasted them along with some potatoes. It was a good and delicious lunch because the fish were fresh.

After lying around for a couple of hours after lunch, we went across to the lakes; the slough where our net is leads to a lake. We went to the farthest lake and docked on the other side and Dad got some old dried-up trees for wood. I picked tilaaqiq (Hudson's bay tea) and we ate some cranberries that were left from last fall. They were still fresh and juicy because the snow had just melted. Looks like there will be a lot of cranberries this year and a lot of aqpiqutaqs (salmonberry flowers that will eventually

turn to berries). After staying there half an hour we left, and on the way out of the second lake we stopped and picked quaġaq (sourdock). We got a whole armload. After picking quaġaq we headed back, but we made a stop at the net and checked it again. We got another one and one-half tubfuls. All pike and whitefish. When we got back to camp at 4:00 P.M. we started working on the fish. Dad and Allen scaled the fish while Mom and I cut them. Dad kavisiuqsi (scaled) the pike because they are harder to scale than whitefish. And Allen, the youngest in the family, who is nine years old, scaled the qalupiaqs (whitefish). When we finished with the process of cutting, washing, and hanging the fish, Mom started cooking dinner. We had aqaiguq (intestines) and cooked quaġaq for dinner. Mom boiled the quaġaq and put cooked liver in with it and a little sugar: really delicious.

After supper Allen, Sharon, and I paddled across to the slough where our net is and hooked. We got two pike in no time. The fish were biting but we couldn't hook them. Allen got the prize fish. We stayed for only half an hour because it started to sprinkle a bit. The dark, black clouds had been threatening us all day. Everyone is asleep now and I can hear birds beginning to chirp.

I'm really learning how to cut fish. This morning Dad fell into the water. He fell when he was putting the support stick of the net back into the water. What they do is stick the pole into the underwater mud so it can keep the net even and straight. They untie one end of the net and pull it to one side of the river bank and take all the fish out and then put the net back in. The slough is not very long but it is deep. It takes a net with ten floats or puptaquns to put a net in the slough.

Amaamnunaaq Camp
Sunday, 6/29/75, 10:30 P.M.

Everyone is in bed now. But Mom is drinking tea in bed, while I'm sitting near the wood stove drinking tea with tilaaqiq. Dad is reading and Sharon and Allen are asleep. I can hear the wind blowing and there is a light shower (rain). But it's getting clearer.

This morning we woke up late. I woke up at 10:30 A.M.; everyone had already gotten up.

After lunch, which was a choice of wieners, intestines, doughnuts, and tea, we just lay around till about 1:30 P.M. and then we took off to visit Daniel Sheldon and his family (Mom's brother). On the way down we were looking at someone's camp so much that no one noticed the moose to our left. I saw a

movement and there was a bull moose running on the side of the river; then it took off into the willows. Dad ran after it to see where it was going; he said it was slowly walking to the opposite direction. He said that the moose sleep in the afternoon, so we must have awakened it. Also he said this is the best time of year to get them; it wasn't an old moose so it must have been the right type. We went to Daniel's camp through Narvagruuraq which is a big lake and then there is a slough leading to their camp. When we got there no one there but an empty tent. So we went to Aquppak's (Louie Commack's) camp about two bends away.

When we got to their camp Nauyaq, his wife, was sitting but was cooking caribou soup on her wood stove that she placed outside the tent. Annie (her granddaughter) was putting wood in the stove. Aquppak and Arthur, his grandson, were standing curious to see who was coming. The sun was shining so we all sat around outside but there were a lot of mosquitos. They didn't seem to bother the older people but they were really beginning to bug me. Arthur, Allen, and Sharon started playing. Annie told me she found a bird nest (pikiut). And this morning she was feeding the hairless baby birds with worms. She showed me where they were and they were really tiny; it was a small bird's nest. We sat around till the soup was done and we ate outside.

We all sat on the ground. We had soup that was made out of meat, macaroni, potatoes, rice, and chopped onion along with crackers, bread, intestines, canned fruit, and tea. It was a delicious meal.

Annie and I did dishes while the others lazed around. The children resumed their playing. After doing dishes Annie told me I could go read in her tent, so I did, because I couldn't stand the mosquitos. Meanwhile the older people were talking and telling stories.

About 6:00 P.M. we decided to head back because the wind was beginning to blow and the clouds were beginning to gather; signs of rain.

On the way back we saw a flock of geese. There were at least ten of them. They were just beautiful. We picked more quaġaq from Mom's Native allotment; we must have picked three or four armloads of them. When we finally got back to the camp it was starting to rain so we made it back on time.

When we got back Mom started cooking again. Seems like all we do is eat, but once we get to Noorvik it will be different. Yesterday Mom put aqiaguq (intestines) in cold storage and she cooked them tonight; she also cooked quaġaq. We also had dried whitefish. After eating we burned trash; the Barrs left this place a mess--used pampers, candy wrappers, and paper

all over. We waited around till 12 midnight because no one does anything on Sundays.

So I stayed up till 12 midnight and Allen and Mom got up. [Then] we paddled (iput) across to our net and were going to put the net in, but the water had risen and Mom thought it might get tangled with drifting sticks and wood (sanik) so we decided not to put our net out. Allen and I hooked a little while, then we went home to bed.

Noorvik
Monday, 6/30/75

Got up late today because it was raining. We knew it was going to be cloudy and rainy so we decided to come back to Noorvik. Also we couldn't set the net because the tide was still up. So this afternoon Allen and I did most of the packing and about 3:00 P.M. we loaded our things in the boat and left for Noorvik.

Coming back the wind was blowing and we got rained on at a couple of places along the river. And it was really cold. We stopped for about ten minutes to warm up about halfway home. Allen shot at a couple of ducks but he didn't get them. When we were a couple of bends away from Noorvik on the Nazurak Channel the waves were big; it sure was wavy. We were getting splashed, so Dad slowed down and that helped us from getting too wet.

> When we got to Noorvik and got ashore my grandmother Aana, Ramona, and Sarah were on the beach. Ramona and Sarah were going to go put a net out, but it was windy and it looked like it was going to rain so they changed their minds.

Fourth of July

On the fourth of July in the villages of the Kobuk River, villagers have many foot races for people of all ages: from under-six-year-olds to fifteen- to seventeen-year-olds, to older women. Boat races, too, are a big thing. There are different races for different sized outboards, and paddling races across the river with six or eight men in a boat, and women's teams competing with each other in paddling contests.

Late Summer

During the last part of the summer, villagers are busy picking berries and catching salmon. This is the time, too, when supplies they have ordered arrive from the lower states. After the North Star anchors at Kotzebue, goods are transferred to the B and R tug which brings food to the Native store in late August. Some of the men earn money as longshoremen for a couple of days, taking the food to the store by truck. Candy bars, pop, and cracker jack abound. When friends are visited, everyone is eating the new supplies. Although the Kuuvaŋmiit depend on

Eskimo foods, they have also become accustomed to naluagmiu (white man's food). This is a feast time and a happy time.

Fall

On many nights in the fall people have nothing special to do, so they visit friends and relatives. Often they play games when they visit and they are welcome for dinner without any formal invitation. They go to visit about eight or nine o'clock in the evening and eat about nine or ten o'clock. Villagers eat about four times a day, usually whenever they want to eat, not any special time. When visiting, people tell stories, talk about what is going on in the village, play pit, flinch, Sorry or Monopoly, or cards--especially if they are non-Christians. They also play rummy, poker, and snirts.

During the fall women make mukluks and parkas for their children. Commercial clothes are not warm enough. There are also nights when families enjoy staying at home to listen to the Kotzebue radio, where Eskimo stories are told. People send tapes from different villages to the radio station, and two times a week the tapes are played on the radio. These are very popular programs. As in other seasons, there are lots of picnics. People enjoy the day eating out, especially the younger people, even though it is cold in the fall.

Sometimes people visit each other by plane. Wein Airline planes come to the village almost every day on a mail run so that people can move about easily. Some people fly to Hot Springs--

the one near Buckland--for healing mostly. The mail plane is always eagerly waited for.

The post office in Noorvik is a one-room building. The postmaster passes out mail, sorts the mail, and issues money orders. People sit outside the building and talk. Whenever the mail is distributed, they check for mail, but it is also a visiting time. There is now a new post office with individual mailboxes in Noorvik.

In the fall people pick frozen berries. There is no snow, so the villagers can pick cranberries, blackberries, and blueberries to put away. Moose season opens in August, and this is the time men go out to hunt. Unless the villagers have meat in their freezers, moose will be the only meat until caribou come. In the fall women also pick masru (Eskimo potato), catch fish, stringing it to dry and putting it in their caches to freeze. Fall is the busiest time of the year because everyone is storing away food for the winter.

Birthdays

Birthdays in the villages are different from birthdays in the city. For example, if a child has a birthday, the mother or sisters bake a cake, as they do in western societies, but they also make Jello and sometimes soup. Often they invite all the children's schoolmates--as many as fifteen, but averaging ten--and all their atiuns (namesakes) for an afternoon party, and then in the evening they may have a party for the older relatives and

friends. They serve aqutuq (Eskimo ice cream), quaq (frozen raw meat), uqsruq (seal oil), panniqtuq (dried fish), caribou or moose soup, and tongue (a special part of the caribou saved for soup). Most of the birthday presents given to the child or, indeed, to any person, are money. Usually the amount of money is one dollar, though if the child has a atiun (namesake) who especially likes him or her, the atiun may give the child a present of about twenty dollars.

Winter

In winter everything is frozen and snow covers the ground. The men go off to hunt caribou, the main meat for subsistence. Caribou meat is usually frozen with the skin on; when it is to be eaten, the skin is taken off. The skin is saved to make the bottom soles of mukluks; in days past it was used also for mattresses. The caribou leg skins are used for the main part of the mukluks, the leg part. The meat is eaten on the bone, and the bone is cracked and the marrow also eaten. The head and all other parts are eaten, too, including the intestines turned inside out. Long ago the hooves were saved in case there was a food shortage. Now the hooves are boiled until the black outer part comes off; inside there is gelatin like that obtained from the hooves of cattle in the lower forty-eight states. The bones, mixed with beans, make a dish the Eskimos enjoy.

Rabbits are shot with a .22 rifle. Some people still set snares for rabbits. Ptarmigan are also caught with rifle or

snare and are a delicacy for older people; they even eat the insides, slightly cooked. A long time ago ptarmigan feathers were used for belts and decorations made in special ways. The rabbit skin is used for socks, which are very warm with the fur worn inside. Sometimes the skins are used for parkas for small children. The villagers also fish through the ice for whitefish and sheefish, and they trap for wolves and wolverines. The fur of the latter is used for ruffs because it does not frost up.

The colder it gets, the fewer activities there are. Bingo is the main winter diversion for some of the Noorvik residents. Every Tuesday and Saturday night about 9:00 P.M. the hall where bingo is played draws fifteen or twenty villagers. Sometimes as many as fifty people come, or even more if a carnival or dog race is going on. One of the villagers is in charge of the money and decides what time the hall will open. The bingo players are regarded as non-Christians by the churchgoers. Each bingo card costs twenty-five cents, unless it is blackout, the last game of the night, for which the charge is fifty cents per card. Players may buy as many cards as they wish. The rules are about the same as for bingo in the city. Whoever fills up a vertical or horizontal line first wins the game. The prize per game is eight or ten dollars, except for the jackpot prize. The jackpot game is held in the middle of the evening, and a player can win a large sum because the prize money increases every week when there is no winner within so many numbers called. At one time in Noorvik the jackpot had reached five or six hundred dollars. To win at

blackout, the last game of the night, the whole card must be covered. Sometimes people have from eight to fifteen cards they are trying to fill, and the prize may be as much as sixty or eighty dollars, depending on how many cards are being used. It takes fifteen minutes or longer to play this game.

Thanksgiving

Thanksgiving has taken the place of the potlatches held long ago. It takes place in church. Everybody brings food: Eskimo ice cream, frozen fish, berries, soup, rice with and without raisins, crackers, cookies, fruit, etc. The first bell calling everyone to the church is rung at 5:30 P.M. and the last bell at 6:00 P.M. The people have a prayer and then the women help to set the food in the middle, in front of the podium. The women cut the meat, and various people help to serve things. Chairs are set up so that people will face each other across the church. Families ordinarily sit together.

Servers go between the rows passing out the food. Everybody gets the same amount. If there is not enough of one kind of food for everyone, then the older people get the food. Older people are respected in the villages so they get first choice. Each family brings its own plates, cups, and spoons, and extra containers are brought to carry leftover food home to eat. Finally a big box of candy is passed around, and this is the time to visit. Thanksgiving is regarded as a big, happy, family occasion.

Christmas

The Christmas feast, like that of Thanksgiving, is held in the church. Since the program is long, it starts at 6:00 P.M. A prayer is first said, and then songs are sung. Each age group has a part. Beginners or primary Sunday school pupils sing songs and recite poems or scriptures. The older the person is, the longer the piece he or she will have. Intermediates in the church put on a skit or play, or sing songs. Young married couples put on plays or skits. A 1974 skit, which included songs, was "What Would You Do If You're Left Behind If Everyone Else Was In Heaven?" The old people give texts or testimonies, and they sing translated songs in Eskimo. Then there is prayer.

Popcorn, already popped, is next passed out to each family. Mixed with it are candy, raisins, and candy bars. The children can hardly wait for the popcorn bags. Every person gets a bag of mixed goodies. Even people who are away from the family are sent a bag, to wherever they are. By this time people are visiting back and forth and eating their sweets. All are dressed in new clothes.

Finally there comes the big moment when presents are passed out. All the presents were taken to the church before the celebration began. In 1974 in Noorvik there were so many presents that it took six men to pass them out. Presents are given to a person's best friends, to his or her atiun (namesake), relatives, etc. The church is decorated about a week before Christmas. Men go out and get the best tree for the church, and the older people

help to decorate it. Popcorn is strung, and lights and candies are put on to decorate it. There is just this one tree for everybody. Presents are ordered ahead of time, but if this isn't done, the villager will go to the store to pick out something to give. There are not too many things to choose from there, however, since the store stocks mainly such supplies as foods and soda pop. It is estimated that the people of Noorvik spent from two to four thousand dollars on Christmas gifts in 1974. The tree decorations are kept on until New Year's Day.

New Year's Eve

Everyone in the villages stays up New Year's Eve--there is no curfew that night as there is for school-age and younger kids on other nights. Usually all the kids play out. Until a few years ago adults used to play games New Year's Eve in the armory: ear pulling, arm wrestling, and so on. But nowadays, if their church allows it, the young people try to have a big dance. There are some arguments about this, but a few modern dances are now being held on New Year's Eve.

Basketball Games

Since there is a high school in Noorvik, everybody goes to all the basketball games. Students play teams from Kiana, Selawik, and Nulato on the Yukon River. Games are very competitive, and there are cheerleaders--Noorvik in 1975 had six female cheerleaders. They wear uniforms, lead all kinds of cheers, and

have much spirit. The older people worry that with too-short skirts the girls may hurt themselves in the split.

Dog Races

Dog races are held in Noorvik, as also in the other villages, in March and sometimes at Christmas. There are men's and women's sections, and competitors are invited from other villages. Children's dog races were once held, but are not any longer. The dog musher who gets the fastest time in each of the main sections of the men's and women's races gets a grand prize. There are also daily prizes. In 1975 there were five men with dogs in the men's race and three women with dogs in the women's race, so there is a chance that a person will win money even if he or she didn't get the grand prize.

There are springtime foot races, too. These are also held during the same time as the dog races. In 1975 in Noorvik the men's was four miles long and the women's was less than a mile. While the races are taking place the villagers have a tent set up where they sell coffee and doughnuts. After the races there is a carnival with all kinds of activities. Hot dogs and other refreshments are sold, there is a "fish pond" of wrapped objects to be fished for, guessing games such as how many beans are in a jar, a cakewalk, and so on. Carnivals are held in all villages of the Kobuk River at different times during the spring and people go to each other's carnival.

Integration of Subsistence Activities and Wage Economy

Every Kuuvaŋmiit sees himself or herself as basically oriented to a subsistence way of life. For the male especially, self-esteem is firmly tied to the ability to hunt and cope successfully with his own habitat; he feels a great deal of satisfaction in bringing back a sled-load of caribou. Even men who have lived away at dormitory schools for many years feel their identity to be with their own lands and resources. Among the women, it is more often the older and middle-aged persons who highly value the traditional subsistence activities. Younger girls, especially those who have been outside to school, often downplay the value of their traditional subsistence roles. For example, they do not express the same satisfaction for cutting, catching, and hanging a rackful of fish that boys do for hunting and traveling on the land. Not until the girl matures, becomes a mother, and assumes the responsibility as the joint head of a family does her emotional attachment to subsistence activities deepen.

Despite their primary orientation toward traditional subsistence values, the lives of the Kuuvaŋmiit are inextricably enmeshed with wage earning. Virtually every hunting, fishing, and trapping activity involves the use of manufactured items that have to be purchased with money. Necessary equipment includes snow machines, twine for nets, rifles, ammunition, traps, motors, boats, tents, camp stoves, etc. There are also increasing demands for money to

pay for the myriad new items and services being introduced into the villages. Within the last five years, for example, residents of the three lower Kobuk River villages have obtained new housing, which has indebted each family for a period of ten or more years. In the lowermost two villages the electrification program has encumbered each household to the extent of at least fifteen dollars each month for payments. Running water and sewage facilities have created a further steady need for cash. Television sets and telephones will be added to households in each village over the next few years, and these items will generate other demands which, taken in all, add up to an ever tightening web of money encumbrances from which the Kuuvaŋmiit are unable to extricate themselves. Undeniably many of these developments are improving the residents' way of life. Electrification, for example, which has permitted the use of home freezers, has significantly enhanced the use of traditional resources. But the new items also reduce the amount of choice each person has in distributing his or her time between subsistence and wage-earning activities.

Cash was extremely scarce in the villages until the early 1950s. Before then, transactions took place in trading posts in Kobuk, Shungnak, Kiana, and Noorvik, and these were primarily on a barter-credit basis. Muskrat pelts (and occasionally other furs) constituted the medium of exchange. Furs such as mink, beaver, otter, and marten were not usually bartered--at least not during the last forty years; rather, they were sent by the trapper to a fur exchange and traded for cash. In the trading posts

trappers were given goods for cash value credit in furs, and the traders made their profits on the wholesale-retail profit margin of the goods. Normally, families built up a small debt at the trading post during the winter, then encumbered a large debt for camping equipment and food in the spring just before going out to spring camp; they paid off their debt when they returned with muskrat skins.

Before the widespread use of outboard motors, the greatest flurry of business was conducted at the individual spring camps where the trader went to collect pelts in exchange for a large quantity of goods. After outboard motors came into general use about 1950 an increasing number of trappers in spring camps preferred to boat back to the trading posts for their needed goods. The value of the annual fur transactions in the valley was considerable. For example, in Kiana in 1953 ten thousand muskrat furs, valued at one dollar per skin, were traded. As cash became increasingly available in the 1950s, muskrat pelts ceased to be the standard exchange medium in the village stores. By the early 1970s cash income into the villages, from a wide variety of sources, was great. In 1971, for example, cash retail purchases made in the village stores totaling $283,256.00 in gross receipts from Kiana, $59,828.00 from Noorvik, and $62,105.00 from Ambler were reported by the stores for the general and miscellaneous merchandise (Mauneluk, 1974:110).

Most of the cash available in the Kobuk River villages comes from wage labor. In 1969 the median income for all NANA region

Native families was $5,742, and nearly 90 percent of all families had some wage and salary income (Mauneluk, 1974:83). Welfare or some other form of public assistance is also a source of money. Between 1970 and 1972 about 15 percent of the total cash income came from some form of public assistance (Mauneluk, 1974:154). By far the majority of job opportunities is part-time wage labor that requires the person to be away from the village. In 1975, for example, only eight Kiana residents (about 9 percent of the labor force) had steady jobs in their village, filling about 50 percent of the steady jobs, excluding those in trading posts. Whites from outside the valley filled the other 50 percent. In this same village thirteen persons from the labor force of one hundred persons (who were sixteen years of age and over) earned $5,000 or more; thirty-four earned less than $5,000 and fifty-three or over half of the labor force, were not employed at all. Employment between 1974 and 1976 was exceptionally favorable, however, owing to pipeline work, which offered the majority of winter jobs. Other employment, such as fire fighting, river and coastal freighting, commercial fishing in Kotzebue Sound, and local construction jobs, is available only during the summer. In the upper portions of the river, additional jobs are available in mining. Each village also has one family or more that runs a small store in their home.

One major problem confronting all the residents in the valley is how to reconcile the need to earn a wage with the desire to make a living off the land. Simply stated, money has

become an essential adjunct to living the traditional subsistence way of life. A man's decision about taking a job is therefore based on consideration of the amount of work he must do in order to make a living the way he wants, the way he feels he ought to make his living, and the way he knows he has a right to make it. The proper balance between wage earning and subsistence living is often difficult to attain because of the constant changes in the wage-earning economy, in the types of jobs available, and in the amount of money the individual needs. Since most of the jobs available to him are outside the valley, in places where he will be detached from his family, friends, and familiar surroundings, jobs are regarded as necessary evils that must be put up with in order to secure the items needed to carry out subsistence pursuits. A man does not feel that he receives important rewards from the jobs themselves; rather, he sees jobs as the means to the end of being able to be back with his family and living off the country. That the Kuuvaŋmiit take jobs at all, in fact, is a clear indication of their dedication to maintaining a subsistence living as successfully as possible. The residents most avidly seeking jobs outside are often those most dedicated to subsistence living. They need the cash for snow machines, gas, outboard motors, and so on in order to pursue subsistence living in the modern age. Ironically, except for the local store owners and the few people who have steady jobs, those who choose to remain constantly in the villages often appear to be the ones who are the least oriented to traditional subsistence hunting.

Some types of jobs are more compatible than others with traditional pursuits. Commercial salmon fishing is obviously favored, for as the Kuuvaŋmiit say, "We have handled salmon all our lives, so it comes natural to us to fish salmon commercially." Reindeer herding is another tradition-oriented job. Although it entails a hard and lonely existence, which few Kuuvaŋmiit enjoy, it also provides traditional rewards of meat and skins while at the same time producing a cash income. The guiding of sport fishermen may some day become another favored type of employment, although it requires a full-time business orientation, long-range planning, advertising, and a great deal of restriction on personal movement during the summers.

Fire fighting, one of the oldest forms of reliable summer employment in the lower river villages, has incorporated many aspects of traditional lifeways which make it exceptionally compatible with traditional living. It is first of all an activity in which men and boys go out away from the village in summers. It is also a village-coordinated activity, and each community has developed a pride in the effectiveness of its own crews. It is also an activity that permits closeness between the older and younger persons; it cuts across the usual village age-mate associations. It is significant that in the villages the teenage boys tend to speak English among themselves and to their parents, but while fire fighting they speak Eskimo among themselves and the older men. Beginning in 1974-75, fire fighting crews included both men and women, a situation that pleased everyone. The

following figures for 1971 through 1973 indicate the impact of fire fighting jobs in the Kobuk River villages:

	Number of Fire Fighters*			Dollars Earned
	1971	1972	1973	
Ambler	4	1	13	6,596
Kiana	5	101	59	24,657
Kobuk	0	9	0	0
Noorvik	0	119	59	21,349
Shungnak	0	32	2	384

The constant attempt of each Kuuvaŋmiit to strike a balance between wage earning and subsistence can be demonstrated in the following example. The case has been modified to obscure the identity of the individual but is nevertheless typical. In the summer of 1974 a Kuuvaŋmii went down to Kotzebue to help a Kikitagmii relative with his commercial salmon fishing. The year saw one of the biggest runs in the history of the fisheries there, and the boat owner earned over $20,000 during the two-month season, sometimes making as much as $2,000 in a single day. The helper quickly saw that with a boat of his own he could earn that amount too, so at the close of the season, he bought lumber with his share of the earnings, and constructed his own commercial fishing boat for use during the following season. Before freeze-up he returned to his Kobuk River village with the boat, and spent the fall hunting daily for caribou. His wife, who had been with him in Kotzebue during the summer, fished intensively for their own winter fish supply.

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* Mauneluk, 1974:108.

Back at the village, after freeze-up, the man signed up for work on the Alaska pipeline. Then he began hunting daily and avidly, because he would have to leave at a moment's notice. Intense subsistence activities were necessary because he would be away for an extended period--most of the winter months--and would not be able to pace his hunting over the year. When his work call was announced on the Kotzebue radio station, he left together with some other men on the next commercial flight. He worked nine weeks on the North Slope, returned to the village for two weeks, and then went back to work for another nine weeks. (Some of the others, deciding that they had enough money or unwilling to be longer away from home, remained in the village after their first nine-week period.) In April when he returned home for good, he threw a party for friends and everyone else in the village and then settled down to intense hunting again. He had to make up for the "poor diet" such as store bought meats and canned goods he had caused his family to eat, and he had to repay his relatives for the burden he had placed on them in keeping his family supplied with traditional foods while he was away at work. He also took trips with his wife to Selawik Lake to fish, combining these outings with subsistence activities. After breakup he busily fixed up things around his home and got the boat ready for commercial fishing. In mid-July he and his family went down to Kotzebue to beging fishing with his new boat.

In recent years construction jobs have opened in the villages, permitting more people to earn money at home. These jobs include

building new houses, installing sewage systems and water pipes, and constructing new school buildings. Wages in 1975 were in the range of $8.50 to $9.00 an hour.

For the younger people, work with the neighborhood Youth Corps began in 1975 during spring breakup. Adolescents were able to work all summer at $1.75 an hour cleaning the village, repairing roads, etc. Because of the amount of work in the villages that year few men wanted to go to work on the North Slope, despite the higher wages there.

With the money the people bought snow machines, gas, and other supplies. Bank savings are not common, and although no statistics are available, probably fewer than a dozen Kuuvaŋmiit families have savings accounts at the Kotzebue bank, and fewer than a quarter of the families have checking accounts.

Non-Native Settlers in the Kobuk River Valley

All of the Kobuk River villages have small numbers of non-Native residents. These are primarily schoolteachers and church leaders, who remain in the area for only a few years before moving elsewhere. Although few settle here permanently, they do participate to varying degrees in community social life and subsistence activities.

Over the past two decades, however, a permanent subcommunity of non-Natives has established itself in the upper Kobuk River Valley, particularly in the village of Ambler. About fifteen

years ago a small group of white settlers (less than ten people) established themselves near the Hunt River, seventeen miles west of Ambler. These people relied heavily upon subsistence resources, and began assimilating the life style of the nearby Eskimos, with whom they maintained frequent and amiable contact. Some of the original settlers eventually left the area, but they were replaced by others who remained. Within the last ten years, all of them have established residences in the village of Ambler, except for one family that remains in the original settlement.

The move to Ambler initiated a period of strong interdependence between the Native residents and their new community members. Drawing on their deep respect and admiration for the Eskimos, the settlers quickly absorbed subsistence skills, knowledge of the land, food preferences, social patterns, and a general Native living style. In a sense, these people became somewhat culturally hybridized, as they added an overlay of Eskimo culture to their own non-Eskimo background. At the same time, they influenced and assisted the Kuuvaŋmiit, especially by helping them with matters relating to the outside world. They gave assistance with the growing volume of paper work that confronted both individuals and the village as a corporate entity. And they helped people to formulate general decisions affecting the direction of their community.

This symbiotic relationship worked to the benefit of all concerned, but in recent years the need for it has diminished. The Native people have developed the skills to deal effectively

with the outside world, and the non-Native people have learned to subsist successfully on their own. Both groups are characteristically very individualistic and independent, so they have come to rely less upon one another. Their open, friendly social interaction continues as before (some have married into local families), and strong feelings of mutual respect appear to be maintained.

It is important to note that the non-Natives have assumed a very low profile in village affairs. Nearly all remain uninvolved with local political matters and social factions, and none have established themselves in business enterprises. This unaggressive attitude, which is atypical for non-Natives in rural Alaska, has probably been the key to producing a harmonious mixed society in the upper Kobuk River Valley.

In 1975 there were twenty-nine permanent non-Native residents in the upper Kobuk region. Of these, sixteen were living in Ambler, a family of four was planning to settle there, a family of three was temporarily residing in Shungnak, and another family of four was living permanently (for the past fifteen years) near the mouth of the Hunt River. One non-Native person lived in Shungnak and another in Kobuk. Not included here, because of their isolation, are scattered recent settlers in the upper Ambler River and far reaches of the upper Kobuk River.

All of the settlers obtain most of their staple foods by subsistence hunting, fishing, and gathering. Their degree of involvement with a cash economy varies considerably, as it does

among the Native people. One of the settlers, who lives almost exclusively on food from the land, requires only a few hundred dollars per year to purchase clothing, ammunition, and other incidentals. About half of the non-Natives follow an economic pattern nearly identical to that of the typical Native householders. Subsistence is their basic livelihood, and intermittent employment provides enough cash to purchase supplemental food and other basic necessities.

The Thompsons (a pseudonym) are typical of the subsistence-oriented settlers. They live with their children near the edge of Ambler, in a small and simple home with fewer luxuries than most Native households have. They do not own a snow machine, wood furnishes their only heat, they have no electricity, and they almost never travel beyond Kotzebue. Their life revolves entirely around subsistence, and much of their food is prepared Eskimo fashion. Each summer Mr. Thompson is temporarily employed in the local region, but he earns barely enough cash to bring his family through the year. Still, the family is healthy and obviously very contented. Like some of the other settlers, the Thompsons still follow patterns that have otherwise become rare. For example, they go to spring camp far from the village for about six weeks each year to put up a supply of meat for the summer.

A few of the other non-Native families have retained stronger ties to the wage economy. For example, three families are presently supported by employment as teachers or maintenance personnel

in local schools, and another family derives its income by providing an air charter service. Most or all of these people do not plan to continue full-time employment permanently. In fact, the majority have spent periods of years in the area without more than temporary work.

The non-Native settlers in the Kobuk River Valley represent a unique and interesting phenomenon. Like modern pioneers elsewhere in Alaska, they have adopted a subsistence lifeway in a remote area of the state. But they are much different in having partially assimilated the indigenous Native culture. In this sense they are most akin to the early American pioneers, who lived among the Indians and became very much like them. Opportunities for this kind of cultural hybridization in North America have been pushed to the northern fringe of the continent, where the last living indigenous cultures are to be found. The Kobuk settlers thus represent a final remnant of the American pioneer tradition.

XIV

PLACE NAMES AS A REFLECTION OF USE AREAS

The Kobuk River Eskimos have a richly developed language which includes, as does English, general terms to describe such phenomena as rivers, mountains, lakes, forests, tundra, etc. One unfamiliar with this Native culture might think that once one has learned the general terms for environmental features, he should be able to translate Eskimo names for specific rivers, lakes, and other features into a form that could be readily understood by map reading non-Natives. This, however, would be a mistaken assumption.

Kobuk River Eskimos do not conceptualize their environment in such gross terms as rivers, tundra, forests, etc. Rather, they view their surroundings as a complex interrelated maze of micro-environments existing within more general macro-environmental zones. Each bend on the river is a very special bend having properties that set it apart from all other bends. Each slough or lake has resources and/or conditions that make it unique. This uniqueness is often reflected in the use of a name that connotes both the type of place, such as a slough or a ridge, and additional suffixes that serve to distinguish it from other similar geographical places, such as a small slough (kuugaatchiaq) as distinct from a large slough (kucharaq) or a rounded ridge (qimiġaaq) as distinct from a stepped ridge (qimugruk). The

large variety of suffixes has given rise to an exceptionally rich vocabulary of place names.

Despite the wide variety of Eskimo place names, however, a certain core of names tends to reappear in each area. For example, although nearly every place name along the lower Kobuk River is distinctive within the area, many of the names are used by upriver Kuuvaŋmiit for similar features in their own area.

Eskimo place names, as well as other aspects of Eskimo culture, have traditionally been transmitted orally from one generation to the next. The Kobuk people are a land- and river-oriented people, so it is not surprising that a detailed knowledge of the land and river has been a vital link in maintaining their cultural continuity. In this case "knowledge" is meant to encompass a complex interconnected web of topography, weather, vegetation, animal life, subsistence, history, legend, and a host of other cultural and environmental factors. In other words, if one is to understand the concepts underlying the Eskimos' naming of places, he must understand their relationship to and dependence upon the land. Also, if Kuuvaŋmiit culture, or any other Eskimo culture, is to maintain its continuity, it is imperative that Eskimo concepts about the environment be transmitted from one generation to the next.

The place names developed by Kobuk Eskimos also designate special features or properties which are of particular importance to their past and/or present life. When an older Native woman teaches her daughter the skills of fishing, she refers to

specifically named river bars or eddies where one may set a net or use a seine. When an old hunter accompanies younger, less experienced hunters on their treks he names the places they pass to help them remember the routes in the future. An old man telling his son how to travel safely from one place to another names the mountain passes, streams, places known for such hazards as avalanches, overflow, and weak ice, and protected campsites. At the end of a trip the travelers often recount the journey to others by naming and describing the locations passed or visited. Finally, when recounting the history and legends of their culture, Kobuk Eskimos often refer to specific, named locations.

The following is a small fraction of illustrative place names used by Kobuk River Eskimos:

I. Historical:

Alaqanalik (37). "Half beaver, half marmot." A site inhabited by a mythical creature.

Iglukisaaq (479). "Juggle." A boulder at river edge that is said to be one of two stones juggled by a giant.

Iḷupqauġruuralik (59). "Somebody left their old underwear." A creek.

Iḷuvaurat (373). "Little graveyard."

Iñukiḷisuq (100). "Funny-faced man." A site inhabited by a white prospector.

Ipliqvik (376). "Somebody fell down." The site where a person died.

Iqsiaqvik (509). "Feared place." A village site, once the scene of a battle.

Kaniġaq (47). "Corral." The site of a former reindeer corral.

Malġutchiaq saputinik (524). "Twins' fish trap." The location of a stone formation in the river built by two legendary brothers.

Qargiat (279). "Big dance house." The site of a large shelter built to accommodate a meeting between the Koyukon Athapaskans and the upper Kobuk Eskimos.

Tauqsiqniaqvikruruaq (533). "The old place where you intend to buy." The site of an old trading post.

Umiaqviuraq (284). "Little umiak place." An upturned umiak-shaped hill associated with a legend involving a medicine man who flew in an umiak that turned to stone.

II. Physiographic descriptions:

Aqiat (237). "Round like belly." Rounded foothills.

Auyuukaq (25). "Always frozen." A large glacier.

Igliqtiqsiiqvikruaq (475). "Little place having a swift current." A rapids.

Imaqluktuq (333). "Dark water." A river with dark colored water.

Katyaaq (789). "Place where several river branches merge into one channel."

Kisimaluat (249). "Hill by itself."

Nuḷḷauraq (724). "Place where the river forks."

Piŋuqsraq (759). "Hill."

Putuchiaq (286). "Cutoff." A cutoff of a river meander loop.

Quġluqtuq (295). "Waterfall."

Saiqtuurat (229). "Rocks standing up."

Uuman (442). "Heart." A heart-shaped mountain.

III. Animal, plant, and resource concentrations:

Isiŋnaq (179). "Jade."

Israġuqliq (201). "Geese in molt." A lake used by molting geese.

Qalugruaq (461). "Salmon."

Qalukpiliviuraq (86). "Trout place."

Qalukruivik (120). "Salmon spawning place."

Qaluksiiġayuat (282). "Young osprey." (Literally, "goes after fish.")

Tulugauġnat (650). "Swallows." A high bluff.

IV. Subsistence activities:

Aullaqsraugaichiaq (404). "Way to go pick berries."

Itchauqvik (386). "Goose blind place."

Napaaqsraqniaqvik (739). "Place to obtain birch for sled stanchions."

Panaġvik (23). "Spearing place."

Salliñauraq (380). "Little seining place."

Sapusriġiachiaq (752). "Fish fence."

Siksrikpaktukruat (73). "Place to hunt marmot."

Talluyat (656). "Fish trap."

Uluksraurat (116). "Place to get ulus."

V. Directional or navigational:

Aŋiḷaaġaġiaq (35). "The way to go home."

Apqauġaagruk (87). "Old pass trail."

Itivlliq (253). "Portage across."

Quġaġniaq (76). "Road to Noatak."

Saġvaqsiiġiaq (356). "Drifting or rafting river."

Siḷaviġiaq (767). "Selawik trail." The Kobuk River end of the Kiana-Selawik winter trail.

Tunuuraq (62). "Way around the mountain."

VI. Warnings:

Agiinaqaq (11). "Wind hits hard on south side."

Jiipaulugaqtiaġvik (65). "Place to use a gee pole."

Nigiqpalukruuraq (61). "Strong north wind."

Siqsiññiq (99). "Overflow."

Sisuuqtat (77). "Killed by a snowslide."

Tuqunaatut (351). "Everyone who goes this way dies."

VII. Person's names (usually grave sites):

Aġviġiaq (634).

Agayutłuk (227).

Auruq (544).

Iyujiña (30). A creek.

Qałhaq (460).

Sailaq (619).

Sattu (666).

The geographical distribution of Native place names used by residents of the different localities along the Kobuk River is a rather accurate indication of the areal extent which they normally utilize in their subsistence pursuits. While resource availability, topography, weather, and technology directly influence this subsistence range, cultural factors, such as ideas about territoriality, are also of importance. For example, the detailed knowledge by upper Kobuk River Eskimos of place names virtually ceases just downstream of the site known as Tulukkaat (205) on the middle Kobuk River. This corresponds to the western limit of the resource utilization as recorded both on our 1974-75 resource surveys (see Appendix 5) and from statements about traditional harvest areas elicited from the Ambler, Shungnak, and Kobuk residents. Likewise the downriver Kuuvaŋmiit's detailed knowledge of place names declines sharply for areas above the mouth of the Hunt River, and there too the limit corresponds to the eastern limits of resource utilization as recorded during our 1974 and 1975 surveys. This is particularly revealing, since most of the Kiana and many of the Noorvik residents originally

came from the upper river area. It indicates that the remarkable detail with which people characterize their area through place names is maintained through their constant and intense use of the area.

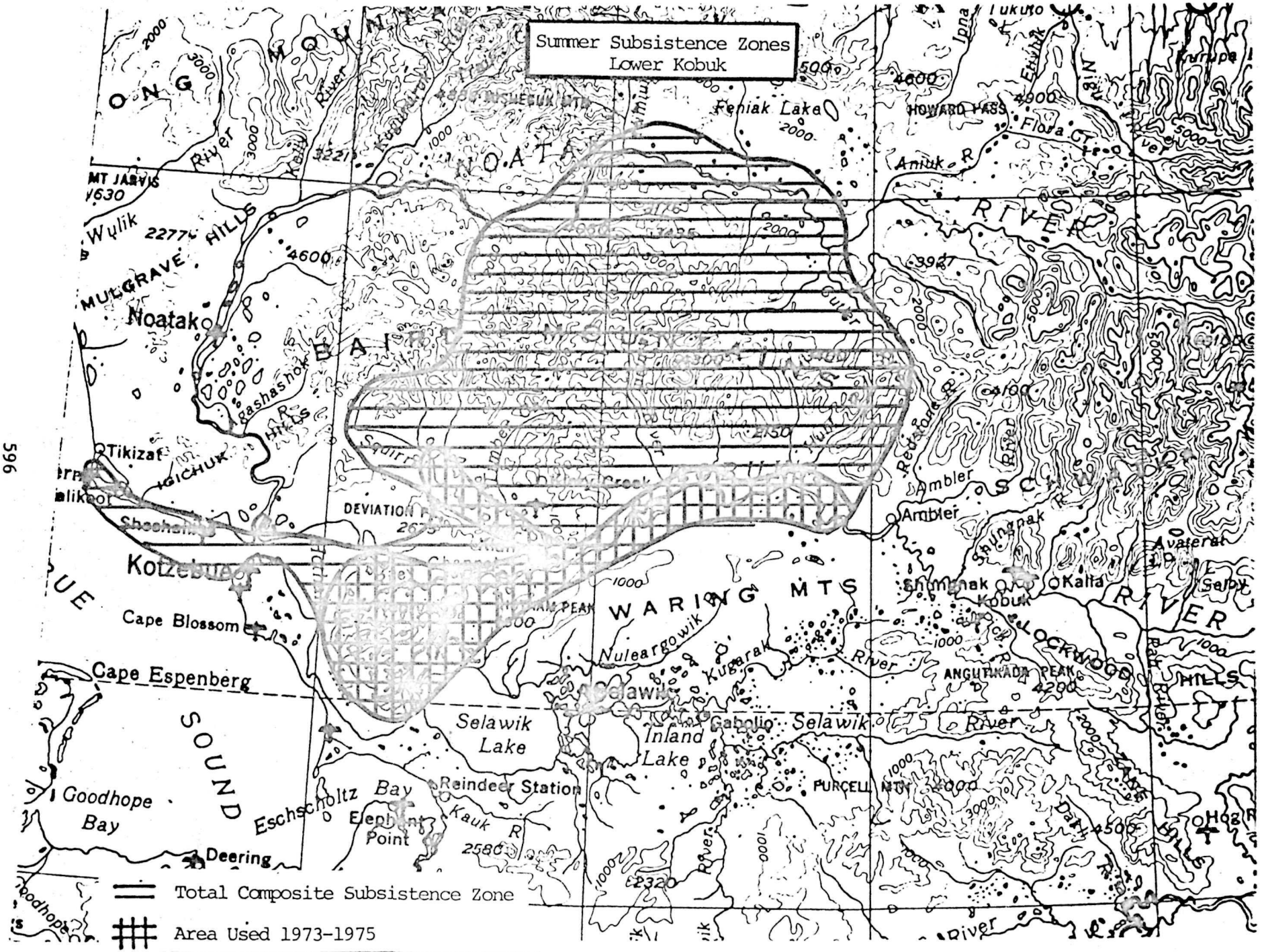
We must stress at this point that the Kuuvaŋmiit notion of territory differs from western concepts. To the Kuuvaŋmiit a territory is not a bounded area with exclusive rights to use; rather, it is a home area, one well-known, which for a variety of ecological, technological, and social factors a person tends to utilize more extensively than other areas. When necessary, other neighboring Iñupiat home areas can be utilized with few social constraints imposed by the neighboring groups, and what few constraints there are are easily resolved. For example, hunters, fishers, or gatherers who want to utilize the resources around some other group's home area ought, as a matter of etiquette, to let someone in that community know about it, something usually accomplished by visiting friends, relatives, or partners in the village during the trip. But if the hunters choose not to make the visit, few people in that village would give it any special thought.

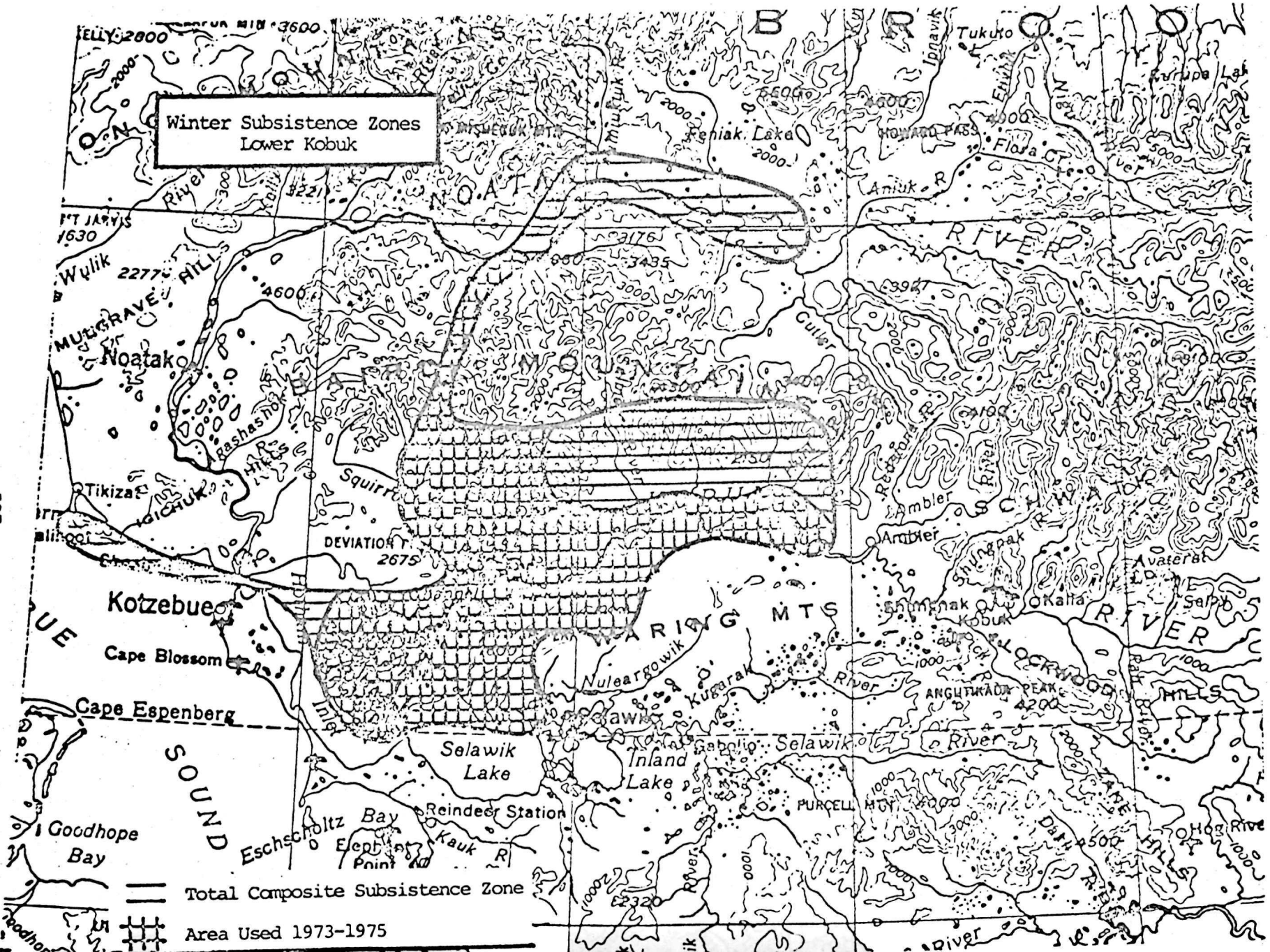
The southern limits of the upriver Kuuvaŋmiit area of intense utilization, as indicated by memorized place names, follows a line running approximately southeast, from the Great Sand Dunes to Purcell Mountain and then roughly due east to the middle Hogatza River. The eastern limits follow a line approximately from the middle Hogatza River northeastward to Norutak Lake and then due

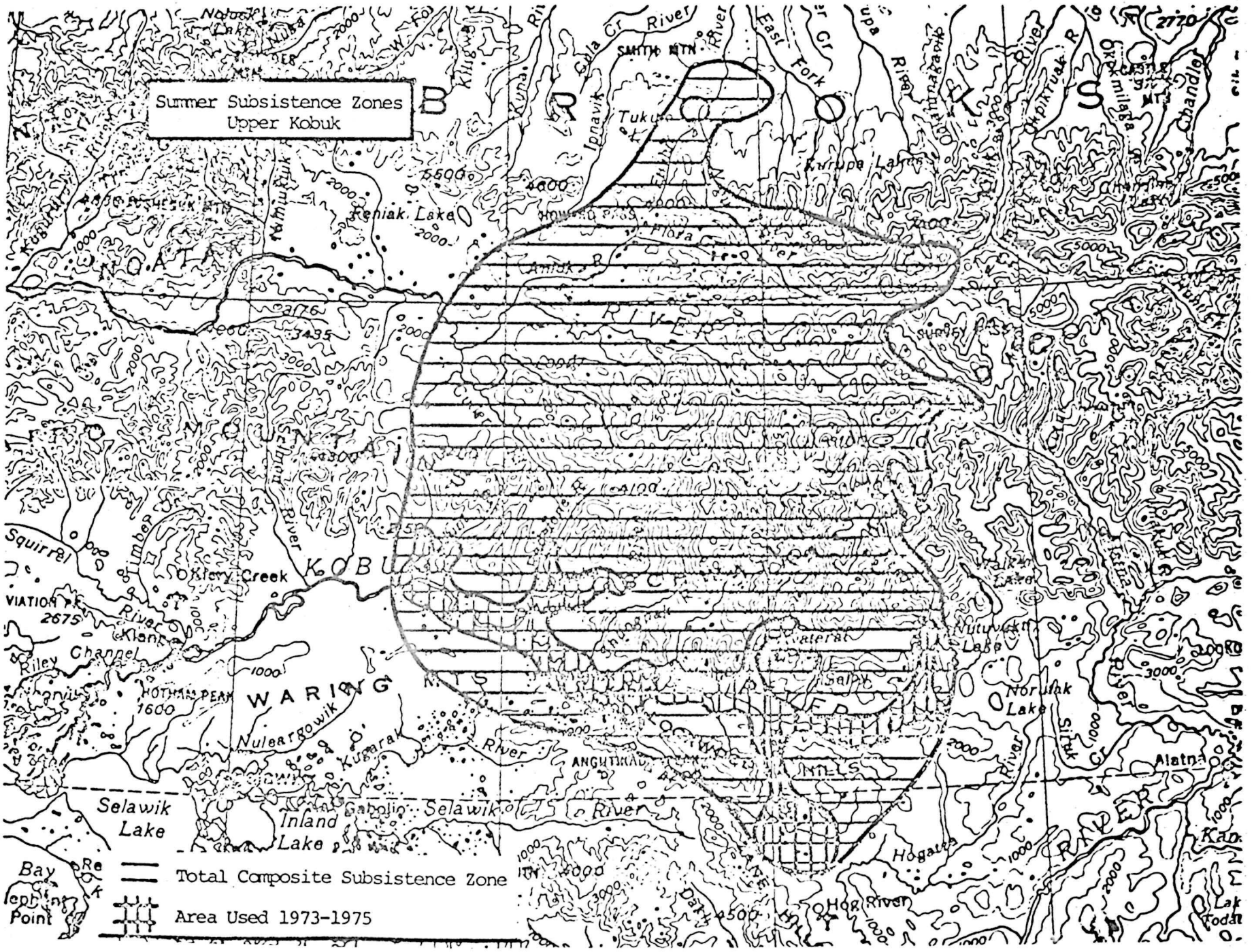
northward to the upper Killik River. This also seems to be a culturally perceived border with the upper Koyukuk Indians and, to a lesser extent, with the Nunamiut of the central Brooks Range. From the upper Killik River the limits as indicated by the distribution of upper Kuuvaŋmiit place names extended generally westward, with an extreme extension down the Itivilik River to its junction with the Colville. From the Itivilik River the limits extend along a line south to the mouth of the Cutler River and then across the pass leading to the Hunt River and back to Tulukkaat.

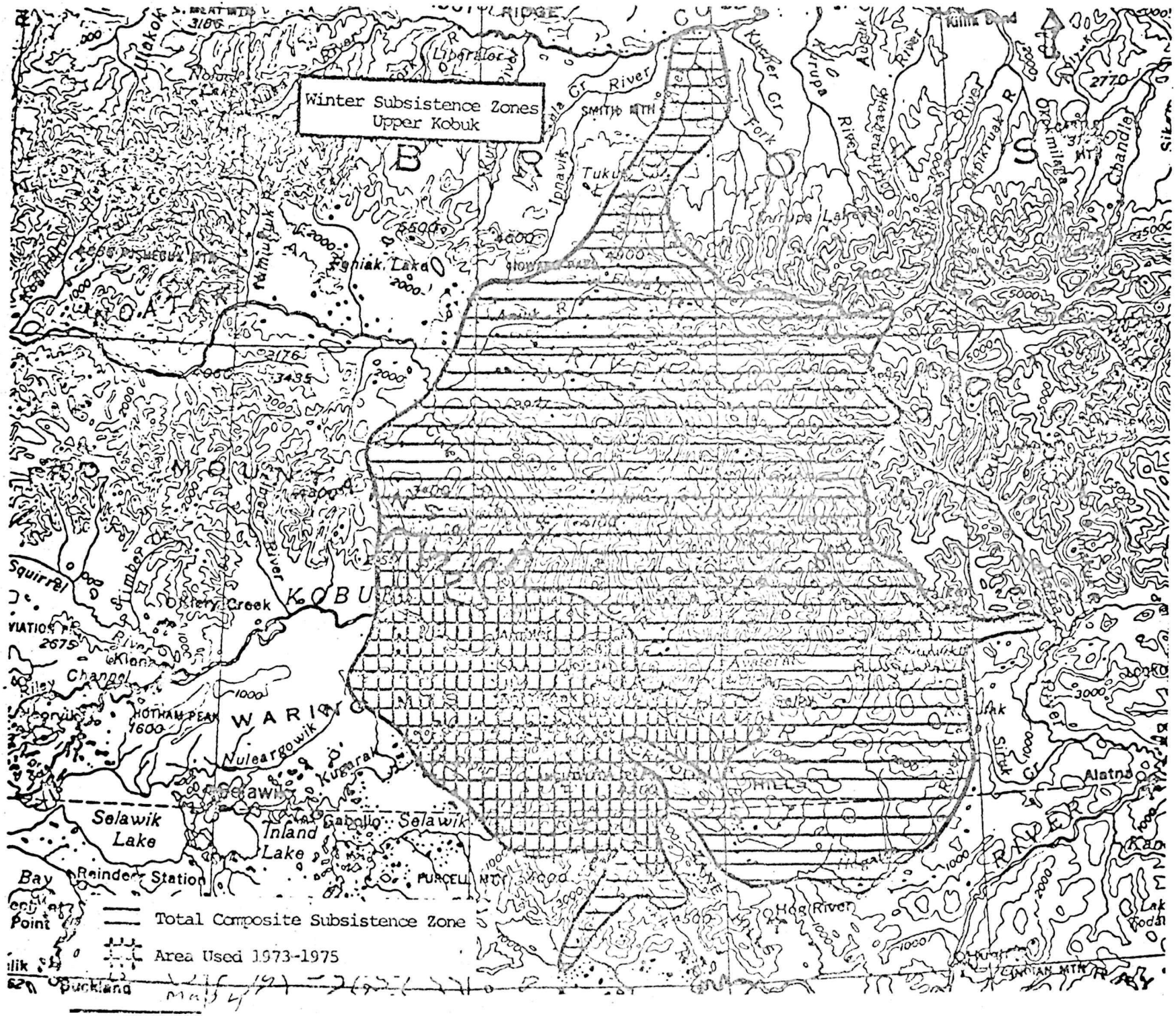
The intense utilization zone of the lower river Kuuvaŋmiit includes the entire lower Kobuk River Drainage and the northern part of the Selawik Lowlands. It also includes a portion of the Noatak River across from the headwaters of the Omar River and the coast between the mouth of the Kobuk River and Cape Krusenstern. It overlaps the upper Kobuk River Eskimos' area in the region between the Hunt River and Onion Portage.

The list of place names in Appendix 1 is undoubtedly incomplete, and as this list grows the total region encompassed by the outer limits of Kuuvaŋmiit place names may be revised.


Summer Subsistence Zones
Lower Kobuk
Total Composite Subsistence Zone
Area Used 1973-1975
Noatak
Kotzebue
Cape Blossom
Cape Espenberg
Goodhope Bay
Deering
Eschscholtz Bay
Elephant Point
Reindeer Station
Selawik Lake
Inland Lake
Selawik
Kobuk
Ambler
Shungnak
Kiana
Feniak Lake
Howard Pass
Aniuk R
Redstone R
Nulegowik River
Kugarak River
Gabolio
Purcell Mtn
Hogatza
Waring Mts
Lockwood Hills
Baird Mts
Mulgrave Hills
Wulik River
Kivalina
Selby
Avaterak


Winter Subsistence Zones
Lower Kobuk
Noatak
Kotzebue
Cape Blossom
Cape Espenberg
Goodhope Bay
Eschscholtz Bay
Selawik Lake
Inland Lake
Reindeer Station
Point
Kauk R
Tikizat
Igashashok Hills
Squirrel
DEVIATION
2675
Wulik
MUTGRAVE HILL
Feniak Lake
Aniuk R
Tukuto
Ipnavik
Flora
Cutler
Ambler
Shungnak
Kobuk
Okalla
Avaterak
Nuleargowik
Kugarak
River
ANGUTIKADA PEAK
4200
LOCKWOOD HILLS
PURCELL MTS
Gabolio
Selawik
Hog River
Total Composite Subsistence Zone
Area Used 1973-1975


Summer Subsistence Zones
Upper Kobuk
Total Composite Subsistence Zone
Area Used 1973-1975
Selawik Lake
Inland Lake
Selawik River
Kobuk River
Squirrel River
Riley Channel
Kiana
Noorvik
Kotzebue
Noatak
Kelly River
Nuiqsut
Atqasuk
Barrow
Wainwright
Point Hope
Kivalina
Noatak River
Kobuk
Waring Mts.
Baird Mts.
DeLong Mts.
Schwatka Mts.
Brooks Range
Anaktuvuk Pass
Chandler Lake
Walker Lake
Norutak Lake
Hogatza
Hog River
Alatna
Koyukuk


Winter Subsistence Zones
Upper Kobuk
Total Composite Subsistence Zone
Area Used 1973-1975
Selawik Lake
Inland Lake
Selawik
Kobuk
Squirrel
Riley Channel
Hotham Peak
Nuleargowik
Kugarak
Reindeer Station
Point Hope
Buckland
Ipnavik
Tukuto
Smith Mtn
Killik River
Alatna
Hog River
Purcell Mtn
Schwatka Mts
Chandler
Oxkmilaga Mt
Okpikruak R
Kuchfer Cr
Ambler
Shungnak
Kobuk River
Squirrel River
Riley Creek
Lisburne
Howard Pass
Reed Dome
Lonely
Walker Lake
Feniak Lake
Narvuk
Noorvik
Kiana
Ulakok
Lisburne Hills
Waring Mts
Baird Mts
Schwatka Mts
Endicott Mts
Brooks Range

XV

SUBSISTENCE ECOLOGY OF THE KOBUK ESKIMOS

To the passing eye, the taiga environment of the Kobuk River Valley Eskimos is a monotonous repetition of itself. There are uniform sweeps of tundra, expanses of undiversified timber, lakes and ponds, creeks and rivers, all apparently identical and all integrated into a pattern that seems to recur endlessly. Added to this impression of homogeneity is a feeling of timelessness and immutability. It seems that the plants and animals of this land must always be widely scattered, uniformly scarce, and constant in numbers.

But in fact, these impressions of uniformity and changelessness are completely incorrect. From the standpoint of human utilization, the dominant characteristics of this environment are uniqueness of specific resource places and changeability of resources over time. These two phenomena play a fundamental role in determining the nature of Kobuk Eskimo subsistence.

Localized Nature of Resources

Anyone who observes Eskimos hunting and gathering will be struck immediately by their intimate knowledge of the animals and plants on which they live. Clearly, an understanding of the behavior and ecology of prey species is one key to the success of human predators. But in the Kobuk Eskimos' taiga environment

there is another key as well. If people are to make a subsistence livelihood there, they must know every detail of the natural landscape as it exists during each season and under every sort of unusual condition.

This knowledge of the landscape is vital for two reasons. First and most obvious, it is essential for navigation and pathfinding, as people travel widely by land or water in pursuit of their livelihood. Second, in order to exploit the resources of this environment, people must know exactly where they will be found. The Kobuk River Valley taiga is comprised of an infinitude of specialized resource places, scattered in an unpredictable mosaic across the land. These places are unpredictable, because no two environments or micro-environments are identical, at least not from the standpoint of human use. Every bend of the river, patch of forest, or stretch of tundra, and every valley, pond, hillside, muskeg, or stand of brush presents a somewhat different pattern of resources. Each is unique. Some are sterile and devoid of usable resources; some are rich; some are intermittently productive according to chance, season, or special conditions (Nelson, 1973:273-76).

Thus, the people who inhabit this terrain must devote themselves to learning its pattern of resources if they are to earn a livelihood from it. Kobuk Eskimos have access to countless generations of accumulated exploration and experience in the region. Their knowledge of the terrain is continually passed on, enriched, and altered as the configurations of the natural landscape change

through time. And so, their knowledge is a living thing, a part of the culture and simultaneously a part of the land that sustains that culture. No more intimate connection between man and environment is conceivable.

Beyond simply knowing the pattern of localized resources, Eskimos must also understand the conditions under which these resource places will be productive. Each place is known for a particular species of plant or animal (sometimes several species) to be found there; but except for rare instances, this availability is limited to a definite season, part of a season, or special set of circumstances. Thus, localized resources are usually time-specific in ways that can be predicted if the nature of the place and the species are adequately understood. So the Eskimo hunter-gatherers must envision a landscape that is a composite of discrete resource places in a state of continual change. It is this understanding on which his daily activities are predicated.

Examples of Resource Localization

The following examples illustrate localization as it relates to the use of selected animal and plant species in the Kobuk River Valley.

Caribou. The caribou is well-known for its seemingly capricious responsiveness to natural forces, its tendency to occur almost anywhere and according to unforeseeable, unpredictable

urges. To an extent this characterization is true, but caribou movements follow some predictable geographic patterns. The most obvious of these are migratory routes. During the fall and spring migrations, caribou nearly always move through certain valleys and low passes in the Kobuk region. Thus, hunters can predict concentrations of animals in the Ambler/Redstone and the Hunt river drainages at these times. The most favored specific locality, however, is Onion Portage, where caribou nearly always congregate and cross the river in large numbers. Hunters from many villages converge on this place each fall to take advantage of its special attractiveness to caribou.

Migrations are, of course, influenced by geographic features that tend to funnel animals through certain places. Occurrences of caribou during other times of the year are not so easily predicted, but the Eskimos have learned some patterns. For example, in early January of 1975, Shungnak Eskimos needed fresh meat, but no caribou could be located in the immediate vicinity. An old man advised hunters to look along the wind-swept west and southwest slopes of Rabbit Mountain, where the snow cover would be thin and the sun would shine most brightly. Hunters who went to this place shortly thereafter found caribou exactly where the old man said they would be.

Bear. Ambler Eskimos know of two favored localities for black and grizzly bears during the fall. One is along a stretch of tundra between the Hunt and Nuna (Akillik, on maps) rivers.

The other is a portion of the lower Redstone River, where bears are attracted by spawning salmon and large patches of blueberries.

Wolf and Wolverine. Surprisingly, these two wandering species are more abundant, and therefore more often taken, in certain areas than in others. For example, the south end of a long peninsula of tundra near Onion Portage is known as an excellent place for hunting or trapping these animals during winter. This area is sometimes referred to as a "wolf crossing," where animals frequently pass as they move between the Kobuk and Noatak river valleys.

Beaver and Muskrat. These aquatic animals inhabit certain known lakes, ponds, sloughs, and stretches of river. For example, some of the lakes south of the Hunt River are heavily populated with muskrats, while some others have only a few, and still others inexplicably have none at all. This pattern must be learned through experience; it cannot be determined by simply looking at the lakes. Similarly, beavers tend to frequent certain bodies of water (or parts of rivers and streams) and not others. Ambler Eskimos single out the Milugiat River as having the best beaver concentrations in their area.

Mountain Sheep. This is a highly localized species. Kobuk Eskimos know of several mountains or specific parts of mountains where sheep tend to congregate throughout the year. These places are hunted, to the virtual neglect of all other places.

Moose. Certain large stands of willow along the Kobuk River are for some reason especially attractive to moose during the

fall and winter. These stands can be identified only through years of experience, and they are recognized and favored by moose hunters.

Waterfowl. Ducks and geese have a strong tendency to congregate in certain places at different times of the year. During the spring, they tend to fly along particular aerial pathways and over specific lakes, which hunters have learned through long experience. In the fall, completely different places are attractive to waterfowl. When Kobuk Eskimos hunt ducks and geese, they know of a large number of places from which to choose according to season, means of travel, weather, and other factors.

Fish. Hundreds, or perhaps thousands, of highly localized fishing places are known along the Kobuk River, its tributaries, and nearby lakes. Some of these spots are used for gill netting during one season, others are used during two or more seasons, and a few can be used at all seasons. There are places used only for seining. Others are used for catching certain species with rod and reel, depending on the season, or to jig under the ice. And still others are used for a particular kind of fish trap, again depending on the species of fish and the season.

For example, from March until breakup, pike can be jigged through the ice of Anuġaituut Lake, south of the mouth of the Hunt River. Fish can be taken in large numbers there, but only at one specific place in the lake. Elsewhere in the lake, and in any of the surrounding lakes, a fisherman will catch nothing.

In late spring, for a few weeks after breakup, there is excellent gill netting for pike, whitefish, and suckers in a small slough near Onion Portage. This place is named Siqlauraq (Little Cache) because it is a reliable source of food during the lean period following breakup.

Examples of localized fishing places, used for particular methods at particular seasons, could be multiplied endlessly. Knowledge of local patterns is especially vital for this complex of subsistence activities.

Spruce. Although stands of spruce look very much alike, they differ markedly from the perspective of human use. In some areas there are many standing dead trees with straight grain, which allows for easy splitting. These places are strongly favored for firewood cutting. In other areas, without apparent reason, the trees are tall but have extremely twisted grain, making them hard to split and therefore unsuitable for firewood.

There are also stands of straight, towering spruce with few branches--trees that are ideal for house logs. Few of these exist along the Kobuk River, and so these stands are highly valued resource places. Logs may be rafted as far as forty miles on the river from these stands to the villages.

Edible Plants. All species of edible plants grow only in certain places, and there are marked differences in productivity among these places. For example, wild chives are found on the Kobuk River banks in many areas, but in two places they grow in far greater abundance than in any others. One of these is

Paatitaaq, at Onion Portage, where Ambler Eskimos gather almost all of their chives. The other, Sikrikpaitch, yields more chives but is located quite far from any settlement.

Berries are always restricted to patches or small areas where favorable conditions cause them to flourish. Usually specific sites are good for only one or two species, and they are harvested by a few people each year. But there is a place, the upper slopes of Manulisat Mountain (north of Ambler), where blueberries, cranberries, crowberries, and salmonberries grow in abundance. In addition, excellent stands of birch grow on the lower elevations, where bark and lumber for sleds can be obtained. Like so many other resource places, this one has no distinctive physical features to set it apart. It could only be known through chance discovery at some time in the past.

Wind. Although weather is not itself a resource, it profoundly influences the use and availability of resources. It is strikingly localized in the Kobuk River Valley. For example, Shungnak village has stronger and more frequent winds than Ambler, though they are only thirty-five miles apart and are separated by flat land. An east wind at Shungnak blows as a north wind at Ambler, or it may not blow at all. Ambler people often know that an easterly gale is blowing only by seeing clouds of snow over the tundra south of their village.

The area from Shungnak west to Pitqiq Lake (eight miles southeast of Ambler) is known as windy country. From Pitqiq Lake to Ambler, and west to Onion Portage, winds are usually much

lighter. Then, from Onion Portage west to Tulukkaat (five miles west of the mouth of the Hunt River), the winds are extremely powerful. Snow is blown into hard drifts there, which makes for easy winter travel without regard to established trails. Then, westward from Tulukkaat is a stretch of calm country, where snow is often deep and powdery in winter. This makes travel extremely difficult away from regular trails. The Hunt River mouth area is a notorious wind tunnel, where passing boats have been blown up onto the beach in summer, and where winter travelers pass only during quiet weather. Eskimos must always consider localized wind patterns such as these when they plan subsistence activities.

Localized Resources at Two Traditional Campsites.

Kobuk Eskimos usually choose exceptionally rich places for establishing long-term camps. These are sites where numerous localized resource places are situated close at hand, providing a broad range of subsistence activities with minimum travel. The two sites described here are among the richest on the upper Kobuk River; they have been utilized heavily for many generations.

Imaqluktuq

This camp is situated at the mouth of the Black River, which flows into the Kobuk about midway between Shungnak and Ambler villages. The Black River runs northward through a large tundra area, draining many lakes that are well populated with pike,

suckers, and whitefish. Imaqluktuq, the name of the campsite and river, means "black water," which accurately describes the river's color.

Utilization of localized resources at or near Imaqluktuq camp includes a number of activities:

Spring Gill Netting. Nets are set in the Black River and nearby in the Kobuk River for several weeks following breakup. Catches of exceptionally fat humpback whitefish are made, as well as of broad whitefish, pike, suckers, and grayling.

Summer Seining. Several good seining places are located just above Imaqluktuq in the Kobuk River, close enough for easy access by boat. Catches include salmon and broad whitefish.

Summer Gill Netting. Gill nets are placed inside the mouth of the Black River for broad whitefish, humpback whitefish, and pike. Just outside the mouth, in the Kobuk River, good catches of salmon and whitefish are made.

Summer Hooking. Grayling, sheefish, and pike are taken with rod and reel around the mouth of the Black River.

Wind. Imaqluktuq is open to the fairly steady north wind that blows in this area. The wind helps to dry large quantities of fish as they are split and hung on open racks. It is also pleasantly cooling on hot summer days and suppresses the mosquitos, which torment people when it is calm.

Fall Seining. This takes place just outside the mouth of the Black River and at several nearby places up the Kobuk River.

Least cisco, humpback whitefish, and broad whitefish are taken by this method.

Fall Gill Netting. Nets are placed inside the mouth of the Black River where large numbers of broad and humpback whitefish, pike, and burbot (mudshark) congregate.

Burbot (Mudshark) Trapping. After freeze-up, traps can be set for burbot at a place just outside the mouth of the Black River.

Plant Gathering. Cranberries, blueberries, Eskimo potato, and abundant wild rhubarb can be found at specific localities near Imaqluktuq.

Hunting and Trapping. Migrating waterfowl are taken in good numbers at the mouth of the Black River. Bears are often hunted in this area during the fall, and caribou frequent the nearby tundra at various times of the year. A tower was built there for scanning the flat surrounding country to locate caribou. During the spring, muskrats and beavers are taken from a number of large lakes along the Black River.

Paungaqtaugruk

This is another very rich traditional campsite, located on the north side of the Kobuk River about four miles above the mouth of the Hunt River (within the proposed Kobuk Valley National Monument). It is situated at the end of a long bluff, near the mouth of Paungaqtaugruk Slough. The Eskimo name for this place

means "crowberry picking," which derives from the abundance of crowberries on the bluff nearby.

Spring Gill Netting. The mouth of Paunġaqtaugruk Slough is an excellent place for netting whitefish, pike, and suckers for several weeks after breakup.

Summer Seining. Three seining places are located in the Kobuk River, just below this campsite. Catches of salmon and broad whitefish can be made there during June and July.

Summer Gill Netting. An exceptionally good eddy is located in the Kobuk River at Paunġaqtaugruk, where salmon, sheefish, pike, and broad whitefish are taken in large quantities. Nets for whitefish and pike are also set inside the nearby slough.

Summer Hooking. The offshore eddy there is one of the best sheefish hooking places in the upper Kobuk River. During July, people regularly travel there from Ambler for rod-and-reel subsistence fishing. Pike hooking is done in Paunġaqtaugruk Slough throughout the summer and fall.

Wind. Like Imaqluktuq, this place is favored by north winds during the summer, though it is partially sheltered by the timber and bluff. Wind is most significant there during winter, when it blows with tremendous strength and curtails activities for long periods.

Fall Seining. Two seining places just below the campsite yield catches of sheefish and whitefish in the fall.

Fall Gill Netting. The large eddy offshore is an excellent place for catching salmon, sheefish, and whitefish in the fall.

Nets for pike, sucker, whitefish, and burbot are placed inside the mouth of the neighboring slough.

Early Winter Gill Netting. Whitefish, sheefish, trout, and burbot can be taken with nets set under the ice offshore from the campsite.

Burbot Trapping. A traditional burbot trap is located in the Kobuk River, just below this campsite.

Plant Gathering. Wild rhubarb, blueberries, cranberries, and excellent sources of crowberries are located in the immediate area of this campsite.

Hunting. Paungaqtaugruk is located in what is perhaps the finest hunting area of the upper Kobuk River Valley. Caribou migrations tend to funnel through there in the fall and spring, and animals sometimes winter nearby as well. Moose are commonly taken along the river in the immediate vicinity. Good stands of willow around this area provide excellent habitat for ptarmigan and snowshoe hares.

Waterfowl hunting is also exceptional in this area, and one of the best hunting places is located just upriver from Paungaq-taugruk. Another favorite shooting spot is situated within a few hundred yards of the campsite.

Furbearing animals are also unusually common in this vicinity. Fox, wolf, and wolverine are often taken on the tundra and along the river nearby. Muskrat and beaver frequent certain of the adjacent sloughs and lakes.

These two profiles of localized resource patterns at specific traditional campsites must not be taken to represent typical situations--indeed the opposite is true. They are favored by having a unique set of circumstances, such as water conditions, vegetation, and terrain, which create an unusual concentration of resources around them. More commonly, a given place will have only a few usable resources nearby, and others scattered at varying distances in the surrounding area. Even at the two sites described, the various hunting, fishing, and gathering places are spread over an area of several miles, and many could be found only by persons familiar with the local landscape.

Dynamic Nature of Resources

The foregoing discussions of localization frequently noted that resources are available only during specific times of the year. Eskimos must therefore know both the location of resource places and the exact time when each place will be productive. These conditions are, of course, seasonal and predictable. Caribou migrate through specific valleys during September; moose congregate along the river in August; fish can be caught in certain places following breakup. Thus the abundance or availability of utilized species changes drastically at different times of the year.

But there are other changes in resource availability which are nonseasonal or at least unpredictable. Some of these changes

are short-term as when a species is absent or difficult to obtain for a year, a season, or part of a season, because of some temporary condition. Other changes are longer-term and often cyclic, so that a species becomes scarce or unavailable for a period of years or even decades. These shifts are not always negative; resources may increase in accessibility for short or long periods of time.

Marked fluctuations in availability affect almost every significant resource utilized by the Kobuk Eskimos. This phenomenon profoundly influences the subsistence economy in ways that will be elaborated. First, some examples of short- and long-term change will be discussed.

Short-term Variations

Caribou. These animals undergo important changes in availability from year to year, depending on their movement patterns. For example, if fall snows south of the Brooks Range are unusually heavy or become severely crusted by a thaw, caribou may remain north of the range or in the mountains. This condition can temporarily delay the migration into the Kobuk River Valley, curtailing the vital fall hunts, or it may keep most of the animals north of the Kobuk region for the entire winter, as occurred in 1956-57 (Hemming, 1971:13).

In the fall of 1974, caribou did not arrive in the Kobuk River Valley until freeze-up time. Hunters could not reach them

by boat because the river was frozen, and travel overland was impossible because there was no snow. As a result, the fall hunt was poor. Fortunately, part of the Arctic herd wintered in the valley, and so the Kobuk Eskimos were able to obtain meat later on.

Occasionally a heavy rainfall occurs during the winter, causing a short-term change in availability of caribou (and moose as well). The animals have great difficulty feeding and moving when the snow is rain-crusted, so they move high up onto the mountains, where lower temperatures always preclude winter rains. There they can survive, but they tend to be thin. It is very hard for hunters to travel up the high slopes to reach these animals, which would be of poor quality in any case.

Bears. Black and grizzly bears are subject to changes in availability from year to year, apparently due to fluctuation in the berry crop. In good berry years, hunters usually encounter many bears, but in poor years very few are seen. The Eskimos do not know where they have gone, so this resource is unavailable. Note that this fluctuation also indicates the highly variable nature of berry crops, which are themselves an important resource.

Waterfowl. Ducks and geese tend to be fairly stable resources, but some variations do occur. There are good and bad years for waterfowl hunting, caused largely by weather conditions during the migration, which affect both birds and hunters. Also, in some years there are fewer ducks or geese than normal, and takes are correspondingly poor.

Fish. Kobuk River salmon runs are quite variable from year to year, so the subsistence take fluctuates a great deal. Catches of all fish species can be severely curtailed when protracted rains bring high water for part or all of a season. Gill nets cannot be used under these conditions. Long wet spells can also ruin a season's catch by causing it to spoil on the drying racks. In 1974, for example, prolonged dampness and cold caused spoilage of nearly all salmon taken in the summer and fall. Events such as these can bring a drastic impact to bear on the local economy and can necessitate heavier utilization of other resources to compensate for the setback.

The interrelatedness of natural phenomena has been illustrated in recent years, when whitefish runs diminished in the Black River. This reduction was apparently caused by an increase in the beaver population, which resulted in the damming of many lake outlets, so the whitefish could not run down the river as previously.

Long-term Variations

Caribou. The history of caribou populations and movements in the Kobuk River Valley is a classic example of variability of resources and its impact on subsistence activities.

Caribou were plentiful in the Kobuk River Valley during the nineteenth century. This fact is substantiated by archeological evidence and the accounts of old Eskimos. But the population

underwent a period of decline, reaching a low point in the 1880s. At this time, the caribou retreated into a core area north and west of the Kobuk and were rarely seen in the valley. The Eskimos were forced to make long, arduous winter journeys into the Noatak River Valley to find any caribou at all.

Then, around the turn of the century, the herd began a long period of increase. As caribou numbers grew, their range expanded, and wintering animals were forced to move east, west, and south into uncrowded marginal areas (Hemming, 1971:3, 5). By the 1940s, caribou began trickling back into the Kobuk region, first in small numbers and then in ever-increasing numbers as the herd continued to grow. Each year they returned in the fall and remained until spring, as they still do today.

There are increasing indications that the caribou population of northwest Alaska reached its peak during the middle 1960s. It remains very high at present, but some game biologists feel that a period of gradual decline has set in (Robert Pegau, Alaska Department of Fish and Game: personal communication). This pattern is expectable, since caribou everywhere appear to experience constant fluctuation in numbers. According to some authorities, these changes are cyclic, within a period of about one hundred years.

Thus, although caribou are at present abundant on a seasonal basis in the Kobuk River Valley, there is every reason to expect that they will not continue to be so. If the population declines, as it has in the past, the range will probably contract into its

core on the western North Slope. Should this occur, Kobuk Eskimos will be forced to extend their hunting territory in order to procure this vital resource. More will be said of this below.

A Kobuk Eskimo elder, recounting the long hunting journeys of his youth, saw the pattern clearly:

> I know caribou won't be around here some day. Look, where people lived long ago, lots of caribou bones. Piles of them. They didn't pack those bones over from the Noatak! They hunted right here. But then all of a sudden no caribou around here--nothing. I don't know for how long. Then caribou come around again all the time, the way it is now. Some of these days, going to change again and no more caribou. We have to travel then, just like before.

Moose. Although moose are common residents of the Kobuk River Valley today, they have not always been so. Before the turn of the century, no moose were in the region, and they could be found only by traveling far south into the Koyukuk River Drainage. Old men remember making winter trips to the Hogatza River, where they shot moose and brought home as much as their sleds could haul.

Around 1910, Eskimos began finding moose in the extreme upper Kobuk River Drainage, around the Paa River Flats. Over the next fifty years the animals gradually spread downriver, and they continue doing so today. This movement is only part of a dramatic expansion of moose range that has occurred throughout the North. It has introduced an entirely new resource into the Kobuk River Valley, but the Eskimos wisely refuse to see this as

a permanent change. Many believe that moose have already begun to decline in the upper Kobuk, while they are still increasing in areas toward the coast. Their explanation for this change is a westward movement of the entire herd.

Although the moose range is continuing to expand in northern Alaska, there is no way of predicting the future of this trend. The animals could continue to increase, reach a point of stability, or undergo a decline and diminution of range. Their future in the Kobuk region is therefore unpredictable; the Eskimos, accustomed to living with constant environmental change, feel that a day will come when the moose will be gone again.

Small Game. Ptarmigan and snowshoe hares are extremely significant in the Kobuk subsistence economy during some years. However, both are affected by sharp changes in population. Ptarmigan vary considerably in abundance from year to year, according to snow and weather conditions. They also appear to undergo cyclic population changes of some magnitude over longer periods.

Hares experience even more drastic cycles, which tend toward a period of ten years between high points. During population peaks they are prolific, and during lows they are hardly seen. Eskimo utilization of hares is of course directly dependent on these changes.

Beaver. According to Kobuk residents, beaver populations have undergone considerable change over the last twenty or thirty years. They have apparently declined markedly in the upper Kobuk-Paa river regions, while simultaneously increasing in the Selawik-

Kugarak river drainages. The Eskimos feel that the change resulted from a gradual westward migration of beaver.

Muskrat. These animals are subject to very marked population changes on a regional scale. In the upper Kobuk River area, muskrats were abundant until a few years ago, when they suddenly declined to relative scarcity today. Spring muskrat catches, formerly large in some areas, have now diminished to almost nothing. Muskrats are now found only in the most favored localities, and so hunters must travel long distances to accumulate a sizable catch.

Porcupine. In the 1920s, porcupines were very common in this region, but they have declined to relative scarcity today.

Fish. It is difficult to assess long-term fluctuations in the numbers of fish, because many factors besides population affect the size of seasonal takes. Nevertheless, the Eskimos do assert that chum salmon undergo cyclic population changes, and they believe that salmon and sheefish have both undergone a gradual decline in recent decades (Foote, 1966:12).

Whatever the case may be, it is certain that localized fishing places undergo marked long-term changes in productivity, caused by alterations in the river and its tributaries. Eddies where gill nets are placed can become larger or smaller, can appear or disappear, as the river shifts its course, deposits silt, and erodes its banks. Thus, a traditional fish camp may become unproductive when the netting places situated nearby are destroyed. For example, a major communal netting site about a

mile above the mouth of the Ambler River was recently destroyed when it became too shallow for nets. This was formerly an important resource place for the entire village of Ambler, but people have now been forced to crowd all of their nets into a single eddy farther downstream.

Even major spawning places for salmon have been known to vanish because of river changes. One such disappearance occurred in the Hunt River, above the confluence of Nuqauqti Creek and Nuna River, where a well-known spawning area was abandoned for unspecified reasons.

Changes such as these are fairly common, but do not necessarily result in overall loss of productivity. They do, however, require that utilization patterns be shifted, as people compensate for the loss of old sites by finding and utilizing new ones.

Vegetation. Very significant changes in vegetation are caused by fires, which are not uncommon in the Kobuk region. Most fires kill large numbers of trees, but leave them standing. After about two years the seasoned timber becomes an excellent source of firewood, and if it is near a settlement, a burned area can become a major resource. A burn near Ambler some time ago created enough firewood to last for many years. Of course, fires cause many other changes in vegetation resources, destroying some and creating others through the subsequent process of succession.

Explanations of Variation and Localization

The examples above are sufficient to document long-term fluctuation as a dominant ecological process in this environment. But why do these changes occur? There is no definitive answer to this question, because the causes are manifold and complex. Natural scientists have studied population cycles in boreal forest animals throughout this century, yet they cannot explain their causes (see Keith, 1963 for a complete analysis of this problem).

It can be said that some long-term fluctuations tend to occur on a broadly cyclic basis over vast regions of the North and that no external cause is known for them. The variations in population of species like the snowshoe hare, grouse, and perhaps caribou fall into this category. The population of predators that feed heavily on these animals can also be expected to fluctuate somewhat in concert with that of their prey.

The Kobuk River people, from their regional perspective, explain most population changes as being the result of movements. Moose became common because they left some other place and came to the Kobuk River Valley; they are declining again because they are moving on. This pattern is said to be followed by caribou, beaver, muskrat, hare--any animal that is common at one time and scarce at another. One old Eskimo declared, as a lesson of his youth, that animals move continually in a circular pattern

("maybe clear around the world"), and their reappearances in a given area cause cyclic population changes to occur.

Fires are another important cause of long-term changes in resource availability. It is estimated that approximately one million acres are burned by wildfires each year in Alaska (Viereck, 1973:170). These fires, which burn forest and tundra, have occurred throughout the Kobuk River Valley region. Fire-altered succession greatly modifies the vegetation, creating a mosaic of differently aged stands, which vitally affects wildlife populations. Fire is so universal that, "with the exception of a few scattered stands, the vast majority of Alaska is estimated to have been burned over the last 200-250 years" (Ibid.:470).

The effects of fire on wildlife vary considerably. It probably renders the area unattractive to wintering caribou for periods of up to fifty or one hundred years. On the other hand, burned areas become rich in moose forage several years after a fire, remain so for fifteen to twenty years, and then decline in value as stands of timber appear. Beavers feed on the deciduous trees that replace brush growth some years after a fire. Later, when spruce forest replaces these preferred trees, beavers disappear. This sequence seems to be occurring in the Paa River Flats, but might be reversed should a major fire burn through the area. Snowshoe hares are also uncommon in mature forests, but thrive in the brush that develops after a fire.

The vegetation patterns of taiga regions are further complicated by succession along the ever-changing river courses. As

the rivers shift their channels, timberland is destroyed in one area while soil is newly deposited elsewhere. This process combines with wildfires to prevent uniform development of vegetation. The heterogeneity and constant change in plant communities have a pronounced effect on animal populations. They therefore help to determine localized resource patterns and the changes that characterize them.

Localization, Variation, and Subsistence Activities

Clearly, the subsistence resources in the Kobuk River Valley tend to be scattered, localized, and ephemeral. How these patterns affect subsistence activities, and how they are of importance to future land use in this region are the subjects of this section.

Effects on Subsistence Range

Mobility has always been the foundation of Kobuk Eskimo subsistence--the ability to move to resource places during the periods when they are productive. This ability to move applies to the utilization of all plant and animal species, but it is most significant with regard to the staples, caribou and fish. "The flesh of the caribou furnishes the natives with their chief means of subsistence during the winter, and in hunting they are compelled to follow them hundreds of miles, from place to place,

over the vast tundra plains in their restless search for food" (Cantwell, 1889:79).

During aboriginal times the Eskimos had no large or permanent settlements, only camps that could be moved whenever the need for resources demanded it. Lacking means of rapid transportation--dog teams were very small and boats were propelled by hand--they could not travel long distances to resources and then bring the hunted or gathered produce home. Nomadism was the only pattern of life by which they could survive, so they were forced to live near the herds of caribou, wherever they might be.

After the Europeans arrived, a period of cultural and technological change began. Villages grew up along the river, dog teams were enlarged to provide greater mobility, boats were powered by engines. But the dynamics of the environment remained the same. Caribou vanished from the valley, and people were forced to follow them. Men traveled north to the Noatak River, by dog team in winter, by boat up the tributaries, and across the mountain divides on foot in summer. Whatever they could haul on their sleds or their backs was brought home to the new villages. The pattern and technology of subsistence changed, but the imperatives remained the same--the geographic range of activities was determined by the location of resources. Hunters went to the game.

Then caribou herds increased; the animals spread south again, and trips to the Noatak became a rarity. The extent of territory utilized by the Kobuk Eskimos grew smaller as the need for distant

travel diminished. At the same time, the price of commercial furs declined. Trapping was abandoned as a winter occupation, and this change further lessened the need to exploit vast tracts of land. Other resources in the valley, such as moose, also increased. During this period of concentrated resource wealth, people remained mobile as always, but within a more restricted area. Again, the range of activities was determined by the imperatives of the environment.

And so it will remain in the future. Hunters will go to the caribou, and their distribution of the herds will fundamentally influence the size and configuration of the Eskimo's exploitative range. If caribou are found only in one area of the Kobuk River Valley, Eskimos will hunt there; if they remain in the Noatak country to the north, Eskimos will hunt there. Thus, Kobuk people may well expand their territorial range in the future, as environmental dynamics require. "It should be remembered . . . that changes in land utilization patterns will probably follow closely any future changes in the distribution of caribou" (Foote, 1966:49).

Fish are obviously not mobile, as caribou are, being restricted to the comparatively narrow waterways. But neither are they uniformly available. The ecology of fishing in the Kobuk region is very complex indeed, and it has considerable bearing on the subsistence range of the Eskimos. Kobuk people point out that the tributaries which drain the country north of the river are all swift and clear, and are used by salmon, sheefish, trout, and

certain species of whitefish. These streams originate in the mountains. Tributaries draining from the south, by contrast, are discolored and slow, and are used by pike, lake whitefish, suckers, and burbot. These streams originate in the tundra flats. Thus, a successful subsistence fishery requires access to resources from both the north and south tributaries of the Kobuk.

Overlying this basic configuration is one of greater complexity. The fishing places are highly localized and time-specific for each species. Thus, the passage of seasons presents a constantly changing pattern of fish resources. During breakup, for example, fishing is done at particular sites, which may be used at no other time. In summer, different places are used and different species are taken. The same is true in the fall and in the early winter, as conditions follow their regular cycle of change.

A successful subsistence fishery demands that the Eskimos understand this changing resource pattern and maintain the necessary mobility to fish anywhere along the entire Kobuk River and its tributaries as conditions dictate. Therefore, in fishing as in caribou hunting, the range of subsistence activities is extensive, variable, and always determined by the imperatives of environment: "The two most important bases for survival were the fish and the caribou. Success in the quest for these assured a comfortable existence. A bad salmon season, or a year in which the caribou varied their migration might, on the other hand,

bring about hardship or even starvation" (Giddings, 1961:128).

Despite the maintenance of mobility and use of all available resource places, Kobuk Eskimos have known times of food shortage. Any adult in the villages can speak of these times from personal experience. Today, of course, importation of goods precludes the threat of physical starvation but does not guarantee against the hardship of dependence on foreign foods. Since the environment remains the same as it was before contact with Europeans, subject to the same fickle changes from richness to scarcity, there is no reason to assume that it will continue to provide in excess of demand.

This uncertainty causes the Kobuk people to speak often of hare and ptarmigan as staple winter foods. In former times, when caribou, moose, and beaver were scarce in the Kobuk country, these small animals were depended upon for meat. Fish was summer food, small game was winter food. Literally thousands of hares and ptarmigan were taken each year, when they were available. But of course, the same structures apply to these animals as to any others. In some years there were almost no hares, and ptarmigan were also subject to periodic scarcity. When small game was unavailable, the Eskimos were hard put to find food.

Effects on Personality and Concepts of Territoriality

The instability of resources and resultant need for a flexible, mobile approach to making a livelihood have had considerable

effect on Eskimo personality and attitudes toward exclusive use of the land.

The chronic uncertainties of life in this environment continually mitigate against the notion of rigid planning. Thus, Eskimos are always reluctant to commit themselves to long- or short-range plans. The outsider is frustrated in the face of this reluctance, until he realizes that it is a practical adaptation to the realities of life here.

"Will you go hunting tomorrow?"

"Perhaps."

"Will you stay in your fish camp this summer?"

"I don't know, I might try it."

"Will you build a new house in the spring?"

"Possibly."

All plans must be stated conditionally, because a person can never be sure that the animals or the weather will act in accordance with his plans. Everything, after all, is an uncertainty. As Eskimos sometimes say, when asked if they will do something several months or a year hence, "I might, if I'm still alive."

This same noncommittal approach traditionally applies to use of specific places or land areas. Kobuk Eskimos are basically nonterritorial, though they tend to focus their activities within vaguely defined areas to avoid competition for resources. For example, the Ambler Eskimos usually hunt and fish no farther west than the mouth of Anuġaituut Creek (a few miles west of the mouth of the Hunt River). Beyond this stream lies the range of the

Kiana people. This restraint is not a strict territoriality, however. It is simply the normal limit to the subsistence range. Within this range, people move anywhere according to familiarity and preference; but if times are lean they go beyond it without compunction. If there are no caribou east of Anuġaituut Creek, Ambler hunters travel farther downriver until they find some.

Along the same lines, certain families are traditionally oriented toward subsistence in particular parts of the village's range. Some Ambler families hunt and fish primarily downriver, others tend to go upriver. But these patterns amount only to tendencies based on years of experience which have produced deeper familiarity with localized resource places within a given area.

There is also a pattern of family usage of certain fishing sites, camps, and places for snaring hare and ptarmigan. This "ownership" is very loosely defined, is maintained only so long as the site is utilized regularly by the same family, and is apparently not so strong that access could ever be denied to anyone. All families have used many different places for fishing, camping, and snaring over periods of years. Thus, in accordance with traditional custom, people do not claim inviolate rights to specific areas. Doing so would be a self-defeating restriction of their own vital mobility and flexibility.

The adaptiveness of this land ethic has been thrown into clear light with its recent disruption by property grants made under the 1906 Native Allotment Act. Under this government

program, each Native person can claim up to 160 acres of land. The Kobuk Eskimos filed for these allotments, which are individually owned, private areas of land. Permanent, immobile resources such as timber cannot be removed from them, nor may a person camp or build there without the owner's permission. Because the plots are poorly marked, and because people are accustomed to free access to land, violations of exclusive usage rights have been frequent, and bad feelings have resulted.

Some Eskimos now realize that the land allotments were ill conceived as well as being maladapted to local conditions. While they give people a right to some land, they also bind them to specific places in a way that is at odds with the necessary pattern of subsistence living. Obviously, 160 acres is a tiny fraction of the area needed for hunting, fishing, and gathering, even if resources should somehow become rich and stable. The idea of the allotment was based on a concept for sedentary living, which cannot apply to a fundamentally nomadic economy. Thus, in accepting individual land allotments, the Eskimos violated their own customary pattern of communal land use and de facto ownership of the entire surrounding territory. "How can we choose one piece of land for our own?" an Ambler man asked. "We can't say we use this one place, or some other place, all the time. It doesn't work like that."

The Open Land Concept

In effect, the Kobuk Eskimos use all of the territory some of the time, but none of the territory all of the time. Each person has potential claim to every part of the land utilized by all of the people among whom he lives. This open land concept is constantly manifested in the Kobuk Eskimos' approach to subsistence. For illustration: A non-Native settler lived in the Kobuk River Valley away from any of the villages. Near his residence there was a porcupine, which he enjoyed seeing and therefore never disturbed. When an Eskimo visitor learned of it and wanted to take it for food, the settler would not tell him where it could be found. His refusal was incomprehensible to the Eskimo, who did not share the settler's interest in animal-watching. But more than this, the settler was denying him access to game, a necessity of life, in direct violation of the Eskimos' ethical code. The man protested, in extreme frustration, that one person must always tell another where game is located, and that anyone could take game at any time, regardless of where it may be found.

Contemporary Eskimos clearly feel that everyone living within a given region should have equal access to the land's resources. A person should not claim these resources for private use, should share his harvest among others, and should not use unfair advantage to obtain more than anyone else. These feelings are manifested in the Eskimos' attitude toward anyone who lives

permanently away from a village. Now that settlements exist and people are committed to them, no one should reside out in the bush. Doing so gives the advantage of easy access to local resources, which are harder to reach from the village, and interferes with the basic right of free access to all land (since people do not feel that they can hunt or fish immediately adjacent to such an outpost). Thus, having all of an area's residents within a village gives everyone equal and unimpeded access to all surrounding land.

The relationship that Eskimos maintain between themselves and the land is fundamentally based on these concepts of freedom and equality. People are able to range over the terrain unfettered by boundaries, unrestrained by foreign laws, unaffected by the decisions of distant governments. Ethics and rules derive from their own culture and economic system, and they prove most viable in a world remote from the distant Outside. Perhaps nothing is more valued by the Native villagers than their identity as Eskimos and their inviolate freedoms on land that they assume is under their guardianship.

These freedoms are primary elements of daily life in Kobuk Eskimo villages. The land remains open for people to use as custom dictates. Decisions of when or where to travel and what activity to pursue are made according to season and need. When a man travels, he is turned aside by no barrier except a natural one. When he camps, he stays where he finds resources and leaves when he has taken enough. And when he hunts, he kills what is

necessary without fear of judgment by anyone other than his village peers.

Freedom on the land has not been abused by the Kobuk people, because their needs have not exceeded the ability of the environment to produce. Proof that this system is successful can be seen in the Kobuk River Valley today, where the land is undamaged, no species of animal has become endangered or extinct because of local overuse, and a viable subsistence economy remains very much intact.

Subsistence Range--Present and Future

While subsistence has remained the economic mainstay of the Kobuk Eskimos, the geographic extent of subsistence activities has fluctuated markedly during the past century. As we have seen, these fluctuations resulted from changes in environment and technology, which caused expansion of terrain utilized at a given time.

During the past several decades, the subsistence range has become increasingly concentrated within the Kobuk River Valley and near existing settlements. This concentration has had several causes: Most important, during recent decades caribou reached a peak of abundance and were easily available near the villages. Also, the taking of fur animals for commercial purposes declined to a point of virtual cessation. Simultaneously, moose popula-

tions reached a high point, while fish and small game remained relatively plentiful.

In short, the present-day Kobuk Eskimos are living in the period of greatest abundance of natural resource that has been known within memory or legend. This plenty allows maximum access to game with minimal need to range over large expanses of land. The addition of imported foods to the Native diet has, of course, strengthened this trend.

But what can we predict for the future? As long as the land provides in abundance, Kobuk Eskimos will probably continue intensive utilization of a relatively limited range, mostly within the Kobuk and adjacent Selawik river drainages. But there is no chance that resources will remain at their present high level indefinitely. Caribou may have already begun to decline, and if their range shifts northward the Eskimos will surely move farther afield to hunt them. Moose populations could decline sharply at any time, small game will undoubtedly fluctuate to lower levels of abundance, and the availability of fish will also change on a yearly or long-term basis. The vital runs of chum salmon are now fished commercially in Kotzebue Sound, and are therefore subject to the same decline that has struck salmon everywhere else on the North American continent.

These changes might occur separately or in concert. They might be gradual, or they might take only a few years. The one certainty is that changes in resource levels will happen and that

they will have considerable effect on the geographical range of Eskimo subsistence activities.

As resources decline, the Eskimos will be forced to travel more widely for hunting, fishing, and gathering. Resources will remain localized, as always, but specific resource places will yield less, so people will need access to many more of them to maintain the same level of productivity. They will also be forced to increase their use of small game, mountain sheep, and the less preferred species of fish. Again, this change will lead to a more intensive and extensive approach to subsistence. These changes obviously increase the need for an open, unbounded access to the surrounding land. Obviously, limitation to the present range of utilization or to a portion of it would have a severely detrimental impact on the subsistence economy.

As subsistence species undergo these natural declines, there will undoubtedly be increased regulation on the size of the take. This might be combined with growing competition with outsiders for the resources, as Alaska's human population increases and becomes more mobile. Thus, Kobuk people could find themselves subsisting under the pressure of smaller resources as well as under the limitations of diminished access to resources due to regulation of take. The result will be a need for an even more greatly expanded geographic range of activities, which will maximize access to resources during the times of availability as determined either by physical presence or legal period of use. In other words, as the resource base diminishes, the need for

mobility over larger areas and free access to all parts of the subsistence range will increase.

Subsistence Activities and Kobuk Valley National Monument

These issues are of great importance in determining the future of subsistence in the area proposed for the Kobuk Valley National Monument. At the present time, this area is extensively utilized for subsistence by Kobuk River people and neighboring Eskimos from the coast. The importance of this area cannot be measured on a quantitative basis, because it varies for every resource every year. In a given period of time, this area may be utilized intensively for many essential resources, and at another time its use might be subsidiary to that of other parts of the surrounding terrain.

Certainly, the area of the proposed monument is a focal point for access to one extremely important resource--the caribou. Within its boundaries are major routes for spring and fall migrations as well as parts of the wintering range. In a specific year, most of the caribou utilized by upper Kobuk residents may come from the Hunt River-Onion Portage area, which is largely within the boundaries of land to be withdrawn from the Natives' use for the monument.

In 1975, for example, the fall caribou hunt was sharply attenuated by a late southward migration. By midwinter, Ambler Eskimos were low on meat. But wintering caribou appeared in the

Hunt River area, and since the animals were not being harassed by wolves, they were in excellent condition for human use. Villagers obtained their meat supply from these herds for several months and were thereby saved from the hardship that would have resulted had they not been available.

If this region had been closed to subsistence access, the Eskimos would have been forced to live without caribou meat, their most important daily fare. Fall rains had spoiled much of the fish catch, so this resource would also have been depleted very quickly. Hare and ptarmigan were both uncommon and could not have compensated for these shortages. Scattered wintering moose would have been hunted, but could not make up for the lack of other resources. It would have been a long, difficult winter; but the caribou were there and people had open access to them.

The territory utilized by Kobuk Eskimos cannot be circumscribed with definite boundaries delimiting its size, nor can it be cut into sections with permanently assigned uses. The nature of subsistence resources precludes such limitations. Any part removed from a subsistence range may be its vital core during a given time. Each section of the land is a fundamental and integrated element in an ecological system that, in this case, includes a human population. This system functions like an organism--it cannot survive with a major organ removed. In the Kobuk River Valley, the land to be withdrawn for the monument is an essential part of the system.

Access to land within the proposed monument is important today, during these times of maximum resource availability; and it could become far more essential in the future. When major resource species, such as the caribou, begin to decline in abundance, the Eskimos will be forced to utilize all potential subsistence areas more intensively than is done at present. As noted above, open access to land will therefore become more essential as the environment undergoes its normal processes of change.

The Kobuk Eskimos regard all of the land they have traditionally utilized as their own. They have had free use and unbounded access to it--in effect, ownership of it--for many centuries. Now, in the sudden passage of a few years they find it being divided into parcels and removed from their "control" (though it never was controlled, because there was no need for the concept). The freedom they have known on this terrain has been abruptly usurped, and the land is claimed by the people Outside.

A Kobuk River Valley resident observed that outsiders consider this region a wilderness. In fact it is not a wilderness, and has not been for millennia. It is an occupied land, supportive of a people and of a culture that have grown out of it. To the Eskimos, the Kobuk River Valley is a thoroughly known, elaborately named mosaic of recognized places and features, each with a long history of human occupancy, utilization, and personal associations. It may appear to some as an unknown wilderness,

but to the Kobuk Eskimos it is as familiar as the streets and buildings of an outsider's home town. It is their land; they are a part of it; it is a part of them.

XVI

PRESENT STATUS AND FUTURE OF SUBSISTENCE

Although they have experienced profound cultural changes over the past century, Kobuk Eskimos remain deeply committed to living on and from the land. Every day of the year, some village residents are involved with subsistence or related activities--hunting, gathering, fishing, trapping, camping, traveling, wood-cutting, or construction and repair of equipment. Daily conversation among the villagers, reflecting these dominant concerns, also centers around subsistence.

But there is a further dimension as well, because subsistence is much more than a form of economy. It is a way of life. The patterning of Kobuk Eskimo culture and society is powerfully influenced by its foundation on subsistence living. Relationships among people are closely bound to the need for cooperative enterprise and sharing. Traditional modes of child rearing, education, and recreation are directly related to the hunting and gathering livelihood. Attitudes, ethics, personality, and responses to culture changes are all partially outgrowths of subsistence living.

Dependence on the Subsistence Economy

Subsistence and Wage Economics

Subsistence is the economic mainstay of Kobuk Eskimo villages today. Kobuk people obtain some 80 percent of their protein and nearly 50 percent of their carbohydrates directly from the land (1956-61 survey data). Virtually all meals are dominated by Native foods, while imported products are used mainly as a supplement. There is a generally held opinion that strength and health can be maintained only through use of wild meat and fish.

In addition, about half of the people own dog teams (and nearly all families have a few dogs), which are supported almost entirely from the land. Many homes are fully or partially heated by wood cut from surrounding forests. And the raw material for traditional clothing and other locally made goods is provided by subsistence.

To sustain these needs, a large volume of wild game, fish, and plant products is annually harvested by Kobuk Eskimos. Needless to say, if an equivalent amount of imported food and other materials had to be purchased, the cost would amount to millions of dollars annually. Because there are few steady sources of cash income available there, the economic burden for supporting this population without subsistence would rest primarily on the government. In other words, the present alternative to subsistence there is public support.

At the present time, a viable cash economy does not exist in the Kobuk region. Wage labor tends to be seasonal and temporary, usually lasting for a few weeks to several months each year. Villagers often find themselves living with a boom and bust wage economy, which is considerably more fickle than the natural resources that have traditionally supported them. The Alaska pipeline is a perfect example: many Kobuk Eskimos have found temporary jobs during the construction phase, but when the pipeline is completed few if any will be hired to operate and maintain it.

Villagers rarely know, far in advance, when they will find work, where it will be located, and how long it will last. Most jobs are in construction, forest fire fighting, and commercial fishing--concentrated in the summer and tending to be of unpredictable duration. The majority of these jobs are also distant from the village, in Kotzebue, Fairbanks, Anchorage, or the North Slope. These locations have an extremely disruptive impact on family life, because men must leave their wives and children in order to find work. Most families are large, so the absence of one parent creates a real physical hardship for the parent left behind. Added to this physical hardship, of course, are the psychological difficulties caused by recurrent separation.

Village people today feel a need for cash income, which affords them the luxury of items, such as radios, motorized transportation, or household appliances, which are considered basic conveniences Outside. But they are required to make con-

siderable sacrifices to secure this income. For this reason, wage labor is taken as infrequently as possible, and short-term jobs are preferred. Villagers are forced to balance their need for money against the difficulties that are necessary to obtain it. The few jobs that are available locally, in the schools and post office, for example, are objects of intense and often divisive competition. These jobs tend to be shifted around among the people so different families may have a chance to enjoy the benefits of local employment.

The disadvantages of wage employment help to affirm these peoples' commitment to a subsistence economy. It is important to point out that this is not the easier option--it is not a "lazy man's way out." Indeed, subsistence living means constant hard labor and long hours at work. Few people who have grown up in a more urban setting are physically qualified to meet its demands or psychologically able to tolerate its discomforts. Continuation of subsistence in no way relates to perpetuation of an easy life, because by most standards it is a very hard life indeed.

Kobuk people often point out that subsistence is the only reasonable option for them, since they live where they cannot find jobs and where the only resources must be taken from the land. They also believe that natural resources are more reliable than money. If prices climb higher and money becomes scarce so the villagers cannot afford to buy goods from Outside, they will still have all the necessities here. One resident of Ambler said,

"As long as I have the land and nobody tries to stop me from using it, then I'm a rich man. I can always go out there and make my living, no matter what happens. Everything I need--my food, clothes, house, heat--it's all out there." And a woman, also of Ambler, pointed out, "Eskimo people have no money in the bank; not like you white people. Many times we even have no money in our pockets. We have few ways to make money, so we have to make our living from this country. That's something the people Outside don't understand. And another thing too. If we have nothing of our Eskimo food, only white man food to live on, we can't live. We eat and eat and eat, but we never get filled up. Just like starvation."

Subsistence and Competition for Resources

Because the Kobuk Eskimos depend on the land for their livelihood, they are concerned about its well-being and sensitive about competition for the resources that it provides. Feelings of territoriality exist among the villages, each tending to utilize a specific region and avoiding incursions into regions used by neighboring settlements. Although territories are not inviolate, they function to prevent too much competition for resources in a given area.

Fall caribou hunts are one activity that takes place irrespective of territorial considerations, because hunters must go wherever the caribou might be. Often this means that people from

Kotzebue, Noorvik, Kiana, Ambler, Shungnak, and Kobuk converge on the Onion Portage-Hunt River area during the fall migration. Upper Kobuk River people resent Eskimos who come from afar to hunt these animals, precisely because they feel that the resource is limited and should not be taken away from them.

Related to this territoriality is a general attitude that the upriver villages are large enough now, and so Eskimos or non-Eskimos from other areas should not move here to live. People feel that if outsiders move in they will put too much strain on the resources. They have all visited large villages and cities and realize that game is sparse near these settlements. "If we get lots of people here, same thing will happen. No more animals then."

A general attitude favoring establishment of the Kobuk Valley National Monument is largely based on concern for the future of subsistence resources. The monument would allow their traditional use of wild resources within its boundaries, while protecting these resources from depletion by outsiders. Kobuk people feel that through involvement with monument administration they could help to oversee the welfare of their own land, something that is of paramount importance to them.

Concern for welfare of the land is also reflected in the Kobuk villagers' strenuous opposition to roads through their subsistence range. Roads would bring increased competition from outsiders, they feel, and would necessarily damage the sources of their livelihood. People are also very fearful that roads might

affect the movement of caribou and disrupt tributary streams used by spawning fish. In addition, roads could bring settlement of what is now unoccupied but regularly utilized terrain, and this is universally opposed by the villagers.

Kobuk Eskimos are becoming increasingly aware of outsiders' interest in their land and consequently fear that their livelihood will be undermined by the development that will follow that interest. A leader of one upper Kobuk village expressed his anxieties; his statement is paraphrased here:

> Too much is happening to the people. Too many outside pressures are forcing in on us. Changes are coming too fast, and we are being pushed in all different directions by forces that come from some place Outside.
>
> People thought that the land claims settlement was the end of our problems, that it meant the future was secure; but it was only the beginning. Even before the lands were all selected, the government wanted pipeline easements and road corridors right through our territory. These would take away strips miles wide, cutting right across our land. And instead of open access to the land, the Eskimos might be surrounded by huge pieces of country that are declared national resources for "all the people." Land that has always belonged to the Natives is being parceled up and divided among the takers.

An old Kobuk Eskimo put the same feelings differently and more succinctly:

> I tell the people here, Eskimos should make laws for those people Outside. That would be just the same as what they try to do to us. We know nothing about how they live, and they know nothing about how we live. It should be up to us to decide things for ourselves. You see the land out there? We never have spoiled it.

Cultural-psychological Dependence on Subsistence

It is worth repeating that subsistence goes beyond merely providing the basis for Kobuk Eskimo economy. Indeed, their intimate dependence upon the environment and their direct communion with it form the wellspring from which their entire culture developed. Eskimo society and culture cannot be separated from the land and livelihood in which it evolved. This intimacy, apart from the basic need to survive, is why the Kobuk people are so firmly committed to their subsistence life style. It is what they are.

Eskimo personality and world view have clearly developed as an adaptation to the hunting-gathering life in a difficult environment. Most important, the Eskimos place extremely heavy emphasis on acquiring detailed knowledge of the land and of methods for successfully exploiting its resources. Because of this emphasis, adults and elders have an extraordinary understanding of their environment and are highly skilled in subsisting from it. They describe the land in a complex, specialized vocabulary; they perceive its subtleties with a trained and masterful eye; and they relate to it in a familiar and personal way that stems from knowing each place as unique unto itself.

Eskimos have also evolved an imaginative and profoundly resourceful approach to coping with the practical problems of life in an environment that demands constant creativity and cleverness to assure survival. They have learned to emphasize

cooperation as well, so that people will work smoothly together and share equitably in the proceeds of their efforts. Because their surroundings are harsh and unforgiving, Eskimos have developed qualities of perseverance and toughness that help them to cope effectively with the difficulties of daily life.

By emphasizing these qualities as attributes of successful members of a society, Eskimos have adapted themselves to their way of life. At the same time, they have evolved a system of values that brings social rewards for excellence in subsistence pursuits. To begin with, the traditional hunting-fishing-gathering life style is quite highly regarded and is considered superior to contemporary options. Furthermore, individuals are measured according to their success at subsistence. A man is esteemed if he is an excellent hunter, trapper, boatman, traveler, or craftsman. Similarly, a woman achieves status through her skills in fishing, skin sewing, and other domestic industries.

Through these characteristics of outlook and personality, the Kobuk people have developed a special attachment to living on and from the land. They opt for a subsistence livelihood, not just because it gives them the food they most desire or allows them to live where they most prefer, but because it permits them to be what they value most as human beings. Their sense of identity as Eskimos is fundamentally dependent upon living as hunter-gatherers. If they lose their subsistence life style, they are no longer "real Eskimos."

This system of values, combined with other elements of personality, economic imperatives, and need for certain kinds of food, ties the Kobuk people to their villages and to their subsistence livelihood. Beyond this, they are emotionally committed to this life style. It gives them satisfactions that they cannot find in other places. Most of the people show these feelings only through the intensity of their outdoor activities, but a few also verbalize them.

An old man, now in his seventies, vividly described his travels over vast areas beyond the Kobuk River Valley. That was the way to live, he said, the only way for people to be healthy and satisfied. He spoke of the freedom, the look of the land, the wandering, and the goodness of making a livelihood through use of his body and his cleverness. He did not praise the beauty of the country so much as the beauty of living within it. "I'm too old for all that now," he lamented, "but if I could do it again I would be out there every day."

The Kobuk Eskimos' attachment to the land is partially an esthetic one, but in a different sense than what is familiar to the non-Eskimo. They do not view their surroundings with a detached eye, as a living piece of natural art. The beauty that they perceive is a function of the land's nurturing their life and livelihood. When an Eskimo looks over the terrain and sees that it is rich--caribou are moving across the tundra, waterfowl are migrating in profusion, the weather is sunny and fine, or fish are running and the drying racks are heavily laden--he feels

a sense of beauty through the wealth and goodness of his surroundings.

Beauty is perhaps a universal human concept, but its sources vary from culture to culture. Thus, an empty landscape can be full of beauty for one who comes from an urbanized agricultural society; it holds no immediate spectre of starvation. But for the Eskimo, beauty comes not from the artistry of the landscape, but from its promise of richness and activity, its ability to reward the quest for food. Land is not just something to be viewed in the abstract, it is a place to pursue the activities that people love. Generations of Eskimos have learned to appreciate a pragmatic beauty that contributes importantly to the attachment they feel to their land and livelihood.

The Future of Subsistence

The nature of Kobuk Eskimo subsistence began changing when the first Europeans made their way inland, less than a century ago. Little by little, elements of western technology displaced traditional Eskimo implements. The old weapons were given up, sod houses fell into the ground, fur clothing was used less and less, traditional campsites were occupied for shorter periods of time. Subsistence took on different aspects as the Eskimos shifted from old to new ways of doing things.

But do these changes mean that subsistence is vanishing and will soon be abandoned entirely? Does the use of modern tech-

nology indicate that subsistence has already been replaced by a different economy and life style?

Modern Technology and Subsistence

> As a boy, he rode inside an open kayak with his father who hunted waterfowl with a throwing board and bird dart. Today, his own son rides behind him on a snow machine while he hunts with a high-powered rifle.

Visitors are often impressed by the modernity of life in contemporary Kobuk Eskimo villages. People travel with snow machines, live in substantial houses, wear manufactured clothing, listen to radios, hunt with rifles, and fish with nylon gill nets. Romanticists are likely to feel disappointed. They might even conclude that Eskimo culture has been lost in the transition, and that the traditional relationship to the land has vanished.

But anyone who remains in an Eskimo community long enough to see beneath the surface, who lives at least partially as the people do themselves, will perceive the life of the Eskimo in a very different way. Romantic notions are quickly replaced by practical understanding, as the realities of village life become clear. Eskimo culture is very much alive, with only a superficial veneer of westernization concealing the people's fundamental nature. The patterns of world view, personality, language, social interaction, and relationship to environment are all overwhelmingly Eskimo.

The outsider who resides in a Kobuk village also realizes that modern technology has not altered the basic facts and nature of subsistence living. Hunting, fishing, trapping, and gathering still provide the principal source of livelihood, regardless of the technology involved. If a man hunts caribou on foot, with a dog team, or with a snow machine, using a spear, bow and arrow, or rifle, he is still pursuing a subsistence life style when the game directly provides him with food and clothing. The vital question is not how the resources are obtained, but for what purpose they are obtained and what role they play in the person's livelihood. If a family needs a certain number of caribou per year for their basic subsistence, the means of procurement is less significant than the fact that the game must be procured.

Eskimos, quite logically, have opted for the best methods of obtaining needed resources. As new technology became available they experimented, then selected the tools that provided for their needs most effectively. In fact, this readiness to adopt technologically superior tools has characterized the Eskimo culture for thousands of years. The underlying principle has always been pragmatism, and so there was no pause to contemplate other ideologies. For example, the Eskimo feels no anxiety over the noise of his chain saw. His overriding concern is obtaining firewood to heat the house that shelters his family. Going back in time, the same pragmatism determined that bucksaws should replace steel axes, which originally replaced stone axes; the same amount of wood reached his stove whether he chipped at a

tree slowly and laboriously with an ax or cut it quickly and easily with a chain saw. The choice was clear.

The Eskimo sees no inconsistency with his heritage nor with the fact of his subsistence livelihood in his use of modern technology to obtain necessary resources. An outsider who adopts his life style comes to understand the reasons rather quickly. Subsistence living involves enormous physical labor and long days outdoors in extremely uncomfortable conditions. Even with chain saws, rifles, and snow machines, it is still a very tough way to live. Eskimo families are often large and extended, which places a great burden on their providers. Labor- and time-saving devices are therefore accepted as a matter of common sense.

One such implement is the snow machine, which has won overwhelming acceptance since its introduction to the Kobuk River Valley about ten years ago. During this time, people have shifted from complete dependence on dog teams to an almost total reliance on machines. Dogs cannot approach the power, speed, and convenience of snow machines. Mechanized hunters can travel farther, increase their chance of finding game, hunt more effectively, haul larger loads, and do it all in less time away from home and family. The machine's disadvantages--noise, high cost, and susceptibility to breakdown--are hardly sufficient to offset its advantages. A snow machine hunter needs the same amount of game (or perhaps less, since he may have fewer dogs to feed) as other villagers, but he procures it more efficiently.

Mechanized travel has not, however, brought extinction of dog teams. Virtually all Kobuk families have at least a few dogs as breeding stock; some have small teams and a few have very large teams. Dogs are used as backup transportation in case the machine breaks down (which is a common occurrence), and they are also the main source of recreation. Dog team races are frequent and important events in the villages, with broad participation among adults and children. For these reasons, between 1965 and 1975 there was little change in the number of dogs per household on the upper Kobuk River. A survey in Shungnak showed 5.3 dogs per household in 1965 (Foote, 1966:28), and in 1975 there were 5.5 dogs per household in Ambler. However, the variation between households is probably greater today, as some have large teams (up to 20 dogs), but many have very small ones (3 or less in half of the surveyed Ambler households).

Kobuk people feel that dog teams should be maintained and that children should know how to use them. The cost of machines and gasoline is increasing rapidly, and future availability of fuel is in question, so Eskimos realize that reversion to exclusive use of dogs is not improbable. In recent years, dog mushing activity has increased markedly. Although machines are still the dominant means of transportation, the future is open.

The fundamental principle is that technology is only the vehicle for subsistence; it does not itself constitute subsistence. In previous centuries, Eskimo subsistence hunting was done afoot. Some 300 years ago they began using dog teams. Very

small teams, 3 or 4 animals at most, were used until well into this century. Large teams of 5 to 15 animals were developed after contact, and this size team persisted until they were replaced by snow machines. At the present time, this pattern shows signs of reversal. Technology is always changing, but in this instance its purpose, to provide a means for subsistence, remains a constant.

Present Trends in Subsistence

It is impossible to measure people's commitment to subsistence. Each individual and family approaches it in a different way, and reliance upon products of the land varies from time to time. A family's head might be employed for an extended period during one year, greatly diminishing his subsistence take; in another year he might have little or no employment, so his subsistence take is very large. Such are the chronic instabilities of life in village Alaska today, which mitigate against permanent classification of any phenomena.

Certain generalizations can be made, however. For example, the diet of Kobuk Eskimos is overwhelmingly dominated by foods from the land. Regardless of technological change, wage employment, time devoted to subsistence activities, or any other qualification, this fact speaks very loudly.

Aside from the physical commitment, there is a life style commitment, which can be assessed only subjectively. In the

upper Kobuk villages, for example, virtually all adults, middle-aged and older, are completely devoted to a subsistence pattern of living. It dominates their lives and takes priority over all else. Adults from about forty to thirty years of age are more varied in their attitudes. Some are heavily committed to subsistence, some only partially so, and others live principally by wage and other income. Below age thirty, the balance swings increasingly away from subsistence, especially among the majority who do not have families as yet. Some of these people will move toward a subsistence livelihood as they grow older, but it is impossible to predict percentages.

Most Eskimo parents appear to favor acquisition of traditional language, culture, and subsistence skills by their children. Indeed, school-age boys are usually fascinated with hunting and fishing, and devote considerable time to these activities.

> During their visit, the two boys (aged nine and eleven) talked almost exclusively of hunting. When they played Eskimo-English word games, testing each other's knowledge, all of the words were for animals. The eleven-year-old boy said he killed his first caribou this fall. It was divided up according to custom, and the largest portions sent to two old women. In celebration of the occasion, the women sent him small gifts of money. Clearly, it was a major event in the boy's life.

Until very recently, children remained in their home villages (where they had ample opportunities to acquire subsistence skills) only up to high school age. Then they were sent away to boarding school, far from home and completely detached from their

traditional pattern of living. After four years in these schools, virtually all interest in subsistence living had been eradicated.

In recent years, however, this trend has begun to change. Regional high schools have been established, so children can remain close to home and involved with their own cultural surroundings. Simultaneously, interest in Native culture and traditions has grown within the schools themselves. This development has caused the young people to value their own way of life more highly, retain greater use of their Native language, and develop some interest in subsistence living. It is still too soon to know what pattern will become established, but surely there are indications that subsistence will not die out when today's adults are too old to carry it on.

There is little evidence, however, that a marked increase in the numbers of subsistence users might occur. At best, the population of hunter-fisher-gatherers may remain stable. Many of the young people are opting or will opt for a basically wage-oriented livelihood, either within the village or somewhere away from it. These persons will involve themselves only partially, if at all, with subsistence. At the same time, village populations will probably remain fairly constant, as the natural rate of increase is compensated for by out-migration of the educated young.

The Future of Subsistence

The most immediate threat to Eskimo subsistence in the Kobuk River Valley is change in the status or well-being of the land. The village people are aware that developments such as roads, mining, and population increases could severely damage their livelihood. Human disturbance might affect vital resources by changing game migration routes, reducing animal populations through overexploitation, destroying fish spawning areas, or adversely changing the Kobuk River waters themselves, and by wholesale alteration of important local resource places.

Beyond these changes, the Kobuk Eskimos fear curtailment of their subsistence activities, either because of game depletion or of changes in status of the land. Open access to localized resources within the entire geographic range of utilization is vital to survival of the subsistence livelihood. Clearly, land-use policies and game-take regulations should place subsistence at the highest level of priority. This position is reinforced by the fact that present subsistence activities have virtually no adverse impact on the environment. Indeed, of all potential uses for this environment, subsistence at contemporary levels is perhaps least detrimental to its pristine qualities.

If land planning and policy does not give priority to subsistence, in recognition of its historical preëminence in the Kobuk River Valley and of its importance to the resident population, the impact could be severe. A viable, active hunting and

gathering life style, one of the last remaining on earth, could dwindle and vanish from existence. With the removal of its vital foundation and of the source of its essential being, Kobuk Eskimo culture would move more swiftly toward extinction.

> The old Eskimo, Siqiñiq, was among the last to hunt bears in the traditional way. This was usually done with a long-shafted spear, tipped with a lance-point made from a bear's foreleg bone. The bear was approached by stalking it, waiting along a trail, or walking up as it fed, then kicking it or throwing a stick at it. This would provoke the animal to attack, which it often did standing on its hind legs.
>
> As the bear approached, the hunter planted his spear shaft in the ground, bracing himself and holding the tip so it would pierce the descending bear's chest. The animal impaled itself as it lunged downward toward its intended victim, and a thick ring of thong behind the lance-point prevented the weapon from passing cleanly through. This way the bear never reached the hunter. But the man had to be powerful enough to hold his spear up, so that the animal remained on its hind feet until it collapsed.
>
> Siqiñiq killed a grizzly this way, but he held the butt of the spear in the crook of his arm instead of planting it in the ground. Then he stood holding the animal up until it died. This incredible feat of strength made him legendary among the Kobuk Eskimos. When the old man heard young hunters bragging of their exploits, he waved them bruskly aside. "Don't talk to me about hunting," he advised, "until you have felt the strength of a bear."

APPENDIX 1

KUUVAŋMIIT CONCEPTS AND GLOSSARY

Nita Sheldon

The Kuuvaŋmiit language incorporates many concepts that relate to the way an Eskimo perceives his or her world. Although it is nearly impossible for a non-Native speaker to understand these concepts fully, a partial understanding nevertheless is possible and can provide some insights into how the Eskimo relates to others, to the animal world, and to the rest of nature. The concepts and terms discussed below are derived from the life histories of the five informants whose stories are recorded in Chapter V, and will serve to provide the reader with some appreciation of the subtleties expressed in some of the ideas.

Many of the words listed are no longer used or clearly understood by the younger Iñupiat speakers, a problem about which many older Kuuvaŋmiit express concern. In order to provide a record of these words the explanations given here are not limited to only how they were used in the context of the life histories, but also include a range of their meanings. Although the base words contain the core meanings, the various post bases determine the specific meanings in the context of the sentences. For example, on page 664 nigi means to eat, and nigitlaitchut means they don't eat. Likewise, nigitliaq means he can't eat, nigisuliq means to get hungry, and nigiruk means they are eating.

The words are categorized into nine sections: 1) traditional education, 2) knowledge of the environment, 3) values, 4) omens, 5) fear, 6) death, 7) supernatural, 8) religious control, and 9) miscellaneous terms. The basis for categorization is the way each word was used in the story or life history; in other contexts some words could be classified differently.

1. Traditional Education

1. Alġaqsruq--to give advice, by explaining right or wrong.
2. Tuvraq--to copy or follow in the same steps.
3. Ikayuq--to help.
4. Nipliq--to speak. Nipliraqunġitchaatigut--they did not want us to speak. Long ago when the Eskimo people had to travel in search of food, they often encountered strangers, referred to as Indians. So whenever one is out berry picking, hunting, or gathering food or material needed in the houses, he is told not to talk too much, but to watch and be careful. Even today the same advice is given.
5. Nalu--to have no knowledge of. Nalupluqu--they did not know about it. One of the elders in the village said that the young people did not know how scary it was to live in earlier days. And young people always say, "I don't care." Nalullapiaqtut--they did not know anything at all. When the missionaries first came the Eskimo people did not know anything about praying or about Christianity. Nalurut--they don't

know anything. Long ago when someone died they just put the deceased on top of the ground and covered it. They did not know anything about coffins or about burying.

6. Ikayuq--to help. Ikayuutiksran--to advise you or to help you. Long ago girls or even boys who did not behave were always killed by shamans (aŋatkuqs). An old woman told me this to advise me.

7. Kiu--to answer. Kiuma--to talk back (at someone). Kiumaraksraugitchut--they should not be talked back at. The older people should never be talked back at; they should be respected. Kiumakłiqman--when he or she talks back to. Anyone who talked back to or argued with the older people long ago, sometimes did not even wake up from their sleep; they died.

8. Qaich--to give away. Qaiññigaaŋa--he gave me away. When one of the women in the village was about fourteen years old her father gave her away to her present husband. That was how marriage was handled long ago.

9. Agliġi--to dislike it. Agliġnaq--to dislike. Shamans or even tuunġaq did not like women who menstruated.

10. Ilitqusnq--habit. Ilitch--to learn. Ilitqutchimnik--what I have learned about or know about. When telling the way of life long ago, the older people tell what they know and learned about their way of life.

11. Iñuguq--growing up. Iñuguġniaqama--when I was growing up. The elders tell stories about their life when they were growing up.

12. Igguq--to wash. Igguqhuni--she always washes. After having a baby the woman always washes herself when her four days are up. Then she can go back into her home.
13. Niġi--to eat. Niġitlaitchut--they don't eat. Long ago the young girls did not eat bear meat. It was the law of Tuunġaq (devil).
14. Naalaktuaq--to listen. Naalaktuatchiaqtuŋa--I listened intently. Long ago some people encountered Indians and they fled from their camp and stayed overnight across the river from their camp. One woman was so scared all she did all night was listen.
15. Israq--to reach. Isratlaitchut--they don't grab or fight. The Indians or warriors long ago didn't fight or take women.
16. Tuqtuq--to call. Tuqłulasruŋaqani--instead of hollering. Long ago people were careful not to make too much noise, so instead of hollering when they gave signals, they sometimes used body signs.
17. Aġiunaq--to play. Aġiunaqsalgitluta--just when we were going to play their moms told them to go inside, because they were going to practice shamanism.
18. Ilitchuġi--to recognize or realize it (from the word ilitch, to learn). Ilitchuġigaluaqtugu--even though he realized it. A man's mother-in-law cursed him by putting something in his berries that he didn't like; he went ahead and took a spoonful, even though he realized it.

19. Matu--to cover or a cover. Matupluta--by putting a cover over us or covering us. The grandmother didn't want the children to see the possessed (cursed) man, so she covered them.

20. Qanuq--how. Qanusruŋatnagu--they did not do anything to him. When a patient of the shamans died nothing is done to the shaman. Qanuġisiruŋa--whatever will happen to me. When his mother-in-law cursed him, even though he knew it, he said whatever will happen to me.

21. Tili--sent to do something. Tillisaatnik--what they had said, something they had said. Long ago when the young people didn't do what the older people said, they were killed.

22. Pigi--to have. Pigisruk--wants to have it. Pigisrukkamiuŋ--when he wants to have it. When a man wants to have (marry) a woman (when he wants her for his own).

23. Nayuq--to watch or stay with. Nayuqsiutiraqtuq--he always goes to stay with them. When a man likes a woman, he always goes to live with her parents.

24. Kipaluk--to help or work for. Kipaluktuagaqsipluni--and then he starts helping or working for them. When he likes the girl, he goes to stay with her family, and then he starts to help them or to work for them.

25. Qaich--to give to. Qaitlugu--give it to him. If her parents like the man, they give their daughter to him.

26. Tasriuq--leading someone by holding a hand. Tasriuqłuya--leading me by holding my hand. When the first white teachers came, the only way they got her to school was by holding her hand.

27. Kaŋiqsi--to understand. Kaŋiqsiuraqtuam--one that understood a little bit. This person's schoolmate understood a little bit of English. She taught her how to speak English. She told her if they say "qaqain" they are saying "come on" and if the teachers are saying "sit down" they are saying "aquvittin."

28. Ilith--to learn. Ilisaq--to practice. Ilisautigaaga--she showed me how to do it. Her schoolmate showed her how to speak English.

29. Atchiq--to name. Atchiutiksraitlugu--they did not know what to name it. When the Kobuk Eskimos got naluaġmiu (white man's) pots, they did not know what to call them.

30. Tuvaaqasriqhuni--he brought along with him or he let him follow. Sometimes when men go to the mountains in the upper Kobuk to hunt, the men would let their sons come along with them.

31. Katit--to gather. Katitchiñiaqhuta--we tried to gather them. When ducks molt, people run all around trying to catch and gather them.

32. Qatchalaraqtuq--he always made a sound like "oui." Long ago every time a man got a duck he made a sound similar to "oui" (uuwi), indicating to the others he got one.

33. Aggiq--to come. Aggiġalaġumiñailgitchut--they won't come early again. Sometimes salmon are late in coming to the headwaters of the Kobuk. Aggiaġaġvikaaŋatni--where they originally come to. Long ago there was a place in the Kobuk River Valley where Indians usually came every summer.

34. Amik--skin or bark. Amiġiuññiaqtuat--those who try to change funny bark. Long ago when Kobuk Eskimos used bark canoes in the summer they used to change the bark of the canoes that had funny bark to get their canoes ready for fishing.

35. Tiguaq--to adopt. Tiguaŋat--their adopted child. An Indian man was adopted into the Eskimo family.

36. Aŋayuqaaq--parent. Aŋayuqaiyaqman--when he lost his parents. When he lost his parents an Indian man was adopted by an Eskimo family.

37. Ilit--to learn. Ilinġitchuŋa--I did not learn any. Although her grandfather was Indian, she never learned how to speak Indian.

38. Sakuuk--to work hard. Sakuugatapiaqhutiŋ--they really work hard. When salmon come they (people) really work hard.

39. Savak--to work. Savaanitlaiġaqłuqit--they can't even finish working on them. Sometimes they get so much salmon, they don't finish working on them.

40. Qaki--to go on top. Qakiplutig--they go on top. Long ago men went to the mountains to hunt during the summer.

41. Unich--to leave. Unisauruat--ones who are left behind. The women who are left behind fish (when the men went into the mountains).

42. Isiq--to go in. Isiqtittaġiqaatigut--they always let us go in. The parents always let the children go in early in the summertime, because they didn't want them killed by Indians.

43. Iġiala--to yell or shout. Iqialatqunġitluta--because they don't want us to yell or shout. The parents would let them go in so they wouldn't holler.

44. Munagi--to watch or take care of. Munaġitlailat--those who don't watch out. In the summer those who don't watch out are always killed by Indians.

45. Nipruaq--to make noise. Nipruaġuuruat--those who always make noise.

46. Malik--to follow. Maligaġigaatigut--they always follow us. An older person always follows when they go to pick berries, so they won't be killed by Indians or bears.

47. Siñik--to sleep. Siñiktuatlaitchut--they don't even sleep. In the fall when they seine, they don't even sleep sometimes.

48. Qiviaq--to turn the head and face. Qiviallaaŋiñaqhutiŋ--all they do is just turn their heads. Long ago (in summertime) they traveled up and down the river. When they saw bears, the bears just turned to look at them.

49. Patna--to get ready. Patnauraġniaqługu--trying to get it ready. People get ready for winter to come; they gather, hunt, and fish.

50. Tugvaq--to store or put away. Tugvaqtuaqsiulgitchaqtut--they always start storing things away. They always store all kinds of food away, so they will have some in wintertime.

51. Usriaq--to carry or take a load. Usrilliunayalgitchut--they would load up again. In springtime, as soon as the ice went out, some people would go to Kotzebue to hunt sea mammals. About this time they would load up their boats again.

52. Niapiqtuq--to watch critically. Niapiqtuġluguguuaq--they said to watch for it closely. One man was telling which way to go to Kotzebue and as there are only certain directions in which they could go, he told them they had to watch closely for this one place.

53. Aŋu--to catch. Aŋŋutisruktugut--we want to catch up with them. There were people who left first for Kotzebue, and the group of people that was behind didn't waste time along the way because they wanted to catch up.

54. Apqun--trail. Apqutiatchutguuq--they had no trail. The group going to Kotzebue to hunt sea mammals was blocked by ice, so they had no trail.

55. Savak--to work. Savaqupmaŋa--when they told me to work. She worked for the schoolteachers in Kotzebue, when she went down to Kotzebue from the upper Kobuk.

56. Malik--to follow. Maligullillapiaqama--when I really wanted to follow. The schoolteachers had asked Jenny to go with them to the States, so when she really wanted to go, she talked to the woman from her area.

57. Uqaq--to talk. Uqautigikka--I told them (meaning two people) when she really wanted to go to the States, she talked to these two people with whom she went down to Kotzebue.

58. Qilamik--quick or in a hurry. In the fall the river always freezes quick, so the people who traveled to Kotzebue would have to leave before freeze-up.

59. Ani--to go out. Animaruŋa--I was born.

60. Aŋilaaq--to go or come home. Aŋilġautriraqtuq--she always brings some home. This lady hunts a lot, and she always brings some rabbits home.

61. Nuut--to move. Nuunniaqtut--they are going to move. People from Aksik heard that Deering people were going to move to Putu, which is now called Noorvik.

62. Aullaq--to go. Aullaqtinniagaqsiñiqmatruŋ--when they were going to let him go. The only child of this older couple was being sent away.

63. Mapkutit--to make a sound of any kind. Mapkutittaġiġiġa--I always let it make a sound. The informant was talking about how, when she was a little girl, she used to carry a rock as a substitute for a baby at her back; whenever she moved it went up her back and would make a hitting sound.

64. Tusraa--to hear. Tusraaliġaġigaa--she or he always hears it. Her friend would hear the rock that hit her back when she moved it up.

65. Iġiala--to holler or shout. Iġiallaksaqtuq--he started hollering or shouting. A man broke his leg, and when he did, he started hollering because of the pain.

66. Aġiñaq--wet. Aġiñaqhuni--because it is wet. Long ago a couple had a caribou skin boat with the fur in so it was warm when they set out, but when it stayed in the water too long it got wet.

2. Knowledge of the Environment

1. Narvaq--a lake.
2. Tatchiq--a lagoon.
3. Taksruk--an oxbow lake (or any long, rather narrow lake).
4. Kuugaatchiaq--a slough connecting a lake to a river.
5. Nuilaŋa--the area at the mouth where two rivers meet; also the outlet of a lake.
6. Paa--the mouth of a river or slough (means the doorway).
7. Kuuk--a river; the word Kobuk comes from the kuuvak.
8. Kuugaq--a tributary river.
9. Atanġat--a rivulet connecting two lakes.
10. Iggiatchiaŋa--another name for the lake outlet.
11. Qitñau--the opposite end of the lake, the other end of the lake outlet.
12. Qikiqtaq--an island.
13. Nuvuk--a point of land.
14. Imiq--water (drinkable).
15. Imaq--water (undrinkable).
16. Iñġiq--a mountain.
17. Iñġiulġuq--a valley between two mountains; literally, it means where there are no mountains.

18. Ipnaq--a cliff (where landslides are possible).
19. Ikpik--a cliff (where landslides are not possible).
20. Qaugruk--a small ridge.
21. Qimiġaq--a ridge.
22. Napaaqtuq--a tree (spruce).
23. Uqpik--willow.
24. Nunaŋaik--an alder tree.
25. Ninŋuq--a cottonwood tree.
26. Qiruk--dry, dead wood.
27. Uummaq--green wood.
28. Amaaq--tree roots.
29. Mumiġnaq--a tree stump.
30. Akiġuq--a branch.
31. Urgiilik--birch.
32. Amiġaq--bark.
33. Nuna--land.
34. Maġġiq--sand.
35. Iyaġak--rock.
36. Akmaaq--flint, chert, firestone.
37. Isiŋnaq--jade.
38. Saviłhaq--iron.
39. Taġiuq--an ocean.
40. Taġium siñaa--a beach.
41. Qiłak--sky, heaven.
42. Siqiñiq--sun.
43. Tatqiq--moon.

44. Uvluġiaq--a star.
45. Kiiġuyat--the northern lights.
46. Katluk--thunder.
47. Nuviya--clouds.

3. Values

1. Pitqusraaq--to tease or mock someone.
2. Piññaqnaq--is beautiful. Piññaqnałallaŋniqsuq--they were very beautiful. The beads that were excavated from an old house site were very beautiful.
3. Kanŋunaq--it is embarrassing. Kanŋugigaluaqługu--even though I am ashamed of it. The storyteller was ashamed to talk about how women were used by shamans as a type of payment.
4. Pillautaq--to do something well or good. Pillautaqamiŋ--when they do something well. When game is plentiful people are doing well because lots of food is gathered. Pillak--to do or take something.
5. Qaġa--to take it easy. Qagauraquplugich--he wants them to have an easy life. The first missionary that went to Deering wanted them to have an easier life, so he moved them to Noorvik. That way they could live where there was wood.
6. Pimaktuq--to be nice. Pimaktullakmaŋa--when they are nice to me. When someone was nice to her, she would call them "mama," because her mom died when she was young.

7. Quŋuu--to be contaminated. Quŋuġusruk--to be hesitant because someone is contaminated. When a woman has her baby, she stays in a shelter for four days. She is quŋuu. People are also quŋuġusruk, when a person's close relative dies.
8. Nakuu--to be good or it is good. Nakuuniraqtuġġuuq--it is said that she is always good. Her mother said she was all right after giving birth and staying in the shelter four days. Nakuuluaragniqman--when it was a little better. When the weather was a little better, when the rain stopped once in a while, they decided to travel on.
9. Atqunaq--lots or plenty. Atqunallapiaq--there was plenty of or an abundance of. Long ago some of the upper Kobuk Eskimos went down to Kotzebue by boat. They made a lot of seal oil before they went back upriver, and some of this oil was traded when they went back upriver.
10. Pigiutch--is bad. Pigiutchuakun--through evil or bad. When people aŋatquliqi (practice shamanism) they are dealing with or living with evil.
11. Nalu--don't know. Nalugikput--we did not know it. Long ago they didn't know what one week was.
12. Saŋŋi--is strong. Saŋŋitluŋniplugu--he said that it was stronger. The first missionary told them that Christ was stronger than the devil.
13. Piqi--to have. Pigisrutlaisaŋanik--something that he doesn't like to have, or something he doesn't like. His mother-in-law gave him something he didn't like, thus cursing him.

14. Taku--to look or go and see. Takusraaaruŋatnagu--trying to look at him. The father-in-law's cursed son-in-law was possessed, and the father-in-law tried not to look at him because he did not want that to happen to him.

15. Taatna--like that. Taatnaqunġitchaluaqpagitlugu--although he did not want that to happen to him. The father-in-law did not want his son-in-law to be cursed or possessed.

16. Qiñuich--to be quiet. Qiñuiññamik--fill him with peacefulness. He wanted the cursed man to be filled with peacefulness.

17. Utiq--to come back. Utiqtit--to return. Utiqtitmiyait--they also gave them back. One divorced lady went to church when missionaries first came to the Kobuk. When she gave an offering, the preacher gave it back because she was a sinner.

18. Ivayaq--to take back or rob. Ivayaŋiñaġaġigaa--he just always takes them back. When the shaman does not cure someone and his patient dies, the relatives of the deceased could take the payment back, but could not do anything to him.

19. Argauŋa--to be egotistical. Argauŋaruaq--one who is egotistical. A person who was egotistical long ago was killed by the shamans.

20. Aiva--to holler or talk back at, in a mocking manner. Aivaraksraunġitchuq--it should not be yelled at or talked back to. Older people are not to be yelled at. Long ago when someone did that, especially younger people, they were killed immediately by shamans.

21. Nakuaġi--to like or love someone. Nakuaqsriruq--shows love. Long ago before contact with the white people they buried the dead on top of the ground, only covering them. When someone covers his deceased relative with ugruk skin, he shows love because they usually cover them with something ragged. Nakuagiamitruq--and when they (meaning two people) like him. When the girl's parents like a man, they give their daughter to him for marriage.

22. Alianaq--is lonely. Alianniuqtuanik--with people that are lonely or sad. Long ago when a lot of people died of sickness introduced by whites, shamanism, etc., they saw a lot of sad people because they were mourning for their dead.

23. Isruma--to think or mind. Isrumaaluk--to worry. Isrumaaluŋnaɬhaiñakun--through worrying all the time. Long ago people lived having to worry all the time and that was the work of the devil.

24. Atnuġaaq--clothing. Atnuġaaqapainġilat--those who don't have many clothes. The style of dressing is different today because of new types of material. For instance, today we substitute man-made material for some of our fur clothing, also the hem lines went up and pants are tighter. One of the elders expressed this as "nowadays we don't wear much clothes."

25. Nagliksaaq--to suffer. Nagliksaaġaqtuq--he always suffers. When men from Kobuk used to go to the mountains for food in summer, they traveled by foot many, many miles and sometimes they suffered.

26. Kisiŋŋuq--to be left alone. Kisiŋŋuqhuta--by leaving us alone. In the upper Kobuk long ago in the summer the men would leave the women alone and go hunt food and skins for clothing.

27. Nutaaq--newness or it is new. Nutaaŋuramik--with something that is new and fresh. Long ago in the summer they always ate fresh fish and ducks.

28. Nau--to grow. Naupmata--when they grow. They eat sourdock and rhubarb when they grow.

29. Suqumit--to take or tear it apart into pieces. Suqummaalaliġaluaġaġigai--it always tears them apart. The ice always tears the caches up, but people always rebuild them.

30. Iqaisruk--to be lazy.

31. Ilaku--to save some or leave some behind. Ilakupqallaaplutiŋ--there was hardly any. Long ago when there were famines, people died off until there was hardly anyone left.

32. Aggiq--to come. Aggiutriyaluaqtitnagit--before they bring any. Long ago the Kobuk Eskimos made their own nets out of willow bark before the white man brought material like twine.

33. Nutuapluŋa--when I was young. This one old lady got married when she was young.

34. Uŋasrik--far. Uŋasriŋniqsuq--it is far. When they were traveling downriver to Kotzebue and they went through all the sloughs and lakes, they said it was far.

35. Aatchuq--to give. Aatchuġuupluta--they used to give her to use. Long ago when flour and white man's food started to

come in, Jenny's uncles liked her, so they used to give her a small amount of flour.

36. Nalu--don't know. Nalugiga--I don't know her (it, him). Lucy's mother died when she was a baby, so she didn't know her.

37. Piqaq--to have. Piqaqłuŋa--I had one. Although she had no mother, she had a father.

38. Utiq--to come back. Utiqhutiŋ--they came back. Long ago missionaries let the Deering people move to Noorvik and some of those people moved back to Deering.

39. Ilit--to learn. Ilitchuġitlaitpagitlugich--they don't know what's wrong with them or they don't recognize it. Long ago before there were doctors and nurses, people would die because they didn't realize what was wrong with them.

40. Aŋaŋŋaa--exclamation for "how cute or pretty" or "how adorable."

4. Omens

Some of the Eskimo people know ahead of time when something good (nausraaqsiruq) or when something bad (kaŋiuñaġalukkut) is going to happen. Here are a few examples.

1. Nausraaqsiruq (good omen):
   a. When the eye twitches (sayuk) that means you will see something good or anything.

b. When the right foot hurts relatives from another village will come and visit.

c. When the teeth hurt someone is going to payuk (bring something) like meat. It means you will be chewing.

2. Kaŋiuñaġalukkut (bad omen):

a. Qaiññarutuuq--the golden-crowned sparrow always makes a sound like "I am going to cry" (qai--to cry). In the springtime they go close to the tent, face it, and make a noise when someone is going to die. For example, one of the older ladies said this type of bird came up to her tent while her panik (daughter) was sick; later when they moved to another village her panik died.

b. Nukuutchiqiq--belted kingfisher. When someone is going to die it flies over the family of the person who will die and makes noise while it's flying. This summer nukuutchiqiq can be heard making noise going from one end of the village to the other and would stop by the store. The two people drowned this summer. It is said the people know ahead of time when someone is going to die. The following are two stories told about kingfishers:

Long ago during a famine people would eat swallows. One time a man went to a place on the side of a cliff to what he thought was a swallow hole (nest), but instead it was a kingfisher's nest. He put his hand through the hole thinking the birds inside were swallows. When he got his hands out they were rotten and decayed. His

five fingers had touched the mouths of five kingfisher babies. The sight horrified him and he fell backwards and drowned. Near the bluff area the water is usually deep.

M.S.'s younger brother went muskrat hunting and he shot a nukuutchiqiq purposely. When he went back to the village he told his friends he shot a nukuutchiqiq and the word got around. And an old lady overheard and she said, "How could you hurt my friend?" and told him he wouldn't live long. He shot the kingfisher that spring and the following winter he died.

c. Dogs make a crying howl sound when someone is going to die. Dogs are like humans, they talk to people. The dog hits the ground with his siyyuk (nose) first and then takes his head off (nasriaq) and talks. Dogs can't talk when there are a lot of people around. He talks when he comes back without his owner and his master is in trouble. Even today dogs are known to talk to people but they apparently don't nasraq.

d. Tulugaq--when someone goes near a raven's nest, making the ravens holler, the weather will get stormy. When ravens are shot or when they are made fun of, it will get stormy. One time it was a really warm summer day out; someone messed with ravens and the river froze up and it got stormy.

e. One time F.J. went to get wood. This was the time the village people depended heavily on wood stoves. He didn't know that the poles that are held up like teepee frame was a graveyard marker and he brought them home and used them for firewood. It got so stormy after that one cannot see the next house. The village got together and renewed or put other poles, and told the old lady that was buried there that they didn't mean to do this. So they put new poles and the weather got better. I remember this incident when I was young and I also remember the storm. It was one of our worst ones.

5. Fear

1. Kapya--to be afraid or scared. Kapyapluta--because we were afraid. In earlier days people were always afraid of a shortage of food. So they worked hard, fishing, hunting, and gathering. Kapyalinqinniqsuq--she did not get scared. When the mother-in-law cursed her son-in-law she did not get scared.
2. Tupak--to be startled or get scared all of a sudden.
3. Tautuk--to see or look. Tautuuraaqtiqataġayagisri--you (meaning three or more people) would be able to see them once in a while. If it wasn't for missionaries, today, like long ago, we'd see serpents crawl on the ground and men would appear and disappear whenever they wanted to.

4. Tatamittug--he gets very frightened. Tamittugut--we get very frightened. A man was cursed by his mother-in-law and he took his shirt off, then his teeth turned into teeth like that of the dog, and the people there got scared.
5. Iqsi--to be afraid or scared. Iqsivagitluŋa--I was so scared. One time when one of the oldest women in the village was talking about her childhood days, she talked about how one time they encountered Indians, so they left camp and stayed overnight across the river. She was telling me how she got so scared. Iqsiñaqtuq--it is scary. Long ago it was scary to be a woman.
6. Uliqqa--haunted by Indians. They don't actually see them, but they hear them. For example, they throw sticks, hear wood cracking in the woods, and make whistling sounds--all this is done when one is away from the village.
7. Nuyuaq--to be afraid or touchy. When you become scared even though nothing serious has happened, then you've become touchy.
8. Taluqsraq--to be afraid of someone else's sternness.

6. Death

1. Tuqu--to die. Tuquniqsut--it is said that they died. People were dying because they were associated with aŋatkuq. Tuqutiġniaġaatigut--they are going to kill us. Long ago kids didn't play outside when shamanism was going to be practiced; if they did, they might be killed. Tuguliqpuq--he dies

instantly. Any person who does not take precautions when the shaman is at work dies instantly. No one is supposed to use knives of any kind or to eat or drink anything. Tuqurriqamiq-simapman--when his relatives have just died. When someone's relative has just died, people feel he is contaminated because of the deceased person.

2. Iñuu--to live or to be alive. Iñuulitniñġitman--when he does not save a life or person. When a patient of an aŋatkuq dies, all the payment that was given to him is returned to the relatives of the deceased.
3. Atniq--to hurt. Atniġñaq--to be sick. Atniġñaliqaming--when they get sick. Long ago when people got sick some used to die because they did not know much about medicine.
4. Iñuaq--to kill or murder someone. Iñuaġuurut--they always kill someone. Long ago when a tonsil would swell up and become full of pus, when they would poke the tonsil to take pus out, this would sometimes kill the person.
5. Ikayuq--to help. Ikayullaktiksraitchuq--there is no one at all to help him or her. Long ago if a woman's husband would die, no one would help her because they quyuqsraq or feel hesitant because of contamination, so the woman did all the work by herself.
6. Unich--to leave. Unitlugu--to leave it. Long ago they would leave the dead on the ground with only a blanket or skin as a cover.

7. Igit--to throw away. Iginniakamiñik--with whatever he or she is going to throw away. He or she drags at the deceased with anything she is going to throw away because she will have to leave it with the dead. Anything she uses to transport the dead will have to be left behind.
8. Pisaq--to try (in the process of) or to pretend. Pisaġniaġumigit--if she is going to try to do that with them. If she is going to use anything, she will have to leave them with the deceased.
9. Kalit--to pull or drag it from behind. Kalinŋuraqlugu--by dragging it. The deceased is pulled and dragged with anything that is going to be thrown away.
10. Igit--to throw away. Igittuni--when it is thrown away. When a child dies, how lonely it must be to leave it or throw it away.
11. Quŋuu--to be contaminated. Quŋuġigaat--they feel he is contaminated. When a person had a deceased relative, they quŋugi him. When people know a person is going to die the relatives usually leave him to die, because whoever is associated with the dead will have to stay away for four days. They are quŋuqsraq. Because they don't want to stay away for four days, they leave water and food with the person who is about to die.
12. Atnuġaaq--clothing. Atnuġaatqigaqhuni--he changes clothes repeatedly. He changes clothes repeatedly because his relative has just died.

13. Iġġuq--to wash. Iġġuqmiut--they even washed. After burying a deceased relative, they washed or bathed themselves and changed clothes.
14. Ulitchiaq--blanket. Ulitchiaqtuurallakługu--by putting it in a blanket. Long ago the people did not know what coffins were and they buried the dead on top of the ground and covered them with a blanket.
15. Piytuq--an event that is not worth mentioning. A. said it would be better if nothing was said about a certain shamanistic event. But she went on and told me the event was the work of the devil. The people who participated in it even started seeing (picturing) the devil; and these people started to eat humans, their mouths drooling with blood. She said it was a terrible sight. That was one of the reasons why Carrie Samm, the first missionary in Kotzebue, did away with dancing. After this event was held, all activities and work ceased for four days.

7. Supernatural

1. Tuunġaq--devil (helping spirit of shaman). Tuunġiqiplutiŋ--they were associated with the devil or practicing the devil's ways. When shamans practice their own medicine, they are dealing or associating with the devil.
2. Agaayun--God. Agaayusriqiruat--people associated with God. The missionaries or people that worked for God were the ones

that took fear away, especially the fear of going away or leaving the house.

3. Aatchuq--to give. When a person is sick and is treated by shamans, a payment has to be given for treating the patient.
4. Satuq--to take back. Satuqpai--he gets them back. When a shaman's patient dies, the deceased person's relatives get all the payment back.
5. Itqaq--to remember. Itqaqtuni--when it is remembered, when one recalls anything on shamanism, it is better to think and talk about it differently.
6. Pisuk--to want. Pisungich--don't want to. Pisungiñŋuraq-niaqtitluni--even though she did not want to. Even though a woman did not want to go to the shaman as part of the payment deal, she goes in order for her husband to get well.
7. Atuq--to use. Atugaksrurrutigigaa--he gives her to be used. As part of a payment deal he gives his wife to the shaman to be used so that he may be cured.
8. Tulugiaƛhaiñanik--all turn into teeth like that of dogs. This one man was cursed by his mother-in-law and when he became possessed, his teeth turned into teeth like the dogs.
9. Akiliq--to pay. Akilliqsugiagagigaa--he always goes and pays him. A sick man or woman goes and pays the shaman whatever they can afford in order for him to cure them.
10. Aŋatkuq--shaman, medicine man. Aŋatkliqipmata--what they are practicing in shamanism. When shamanism is being practiced, no one is supposed to use knives, drink water, or eat anything.

If anyone does, he dies. Shamans don't like women because Tuunġaq doesn't like them.

After working or helping cure someone the aŋatkuq can't do anything for four days. No work, nothing. The Tuunġaq doesn't like young people. Why? Because the girls are too young, because they menstruate.

When a person is injured and no one touches him before the shaman does, he will get better; but if someone touches him before the shaman does, he won't get well.

11. Aalgu ami unnii--even when she menstruates. After she menstruates, she has to wash and change clothes, which is similar to a person whose relative has just died.

12. Women during pregnancy have to stay four days in a shelter away from the family living area. Because a woman bleeds after pregnancy she stays until she stops bleeding. Because men hunt and you can't let women touch weapons. Mamġuq--skin pants with mukluk; they are made as one. The menstruating woman uses this and when it is soaked, she gets another one. A belt is used to hold it up.

8. Religious Control

1. After working beluga in a grassy area, never touch the green grass where you work on beluga because they want to get beluga again and the shaman is helping them get more. If you touch this green grass area you will get food poisoning. (Niġġiqtuk means when you didn't eat right.)

2. When one kills a spider it will rain; if a caterpillar cocoon is turned inside out it will stop raining.

9. Miscellaneous

1. Paamġuq--to crawl. Paamġuuraaqhuni--by slowly crawling. After a woman has her baby outside, she crawls to her shelter made especially for her, where she stays for four days.
2. Uqsruq--seal oil. Uqsruġuaqsiñigamiŋ--when they start wanting seal oil. Some of those Deering people who moved to Noorvik moved back to Deering because they wanted seal oil.
3. Uunaq--hot. Uunaqsiqhugit--by heating them. Long ago when they want boiled meat, they cooked it by heating rocks and putting them into the container with meat and water. It is done repeatedly till the meat is cooked.
4. Nagliksaaq--to suffer. Naqliksaaġniraġigait--it is said they always suffer. Long ago people always suffered because life was harder than it is today.
5. Atniq--to hurt. Atnigñaq--it hurts or to be sick. Atniġnaliqamiŋ--when they get sick.
6. Qauma--to stay bright. Qaummaġiksiḷaaġniraġigaat--they saw everything get brighter or it gets brighter. After bloodletting for headache they said everything got brighter (the sight).
7. Niaquq--head. Niaqunŋupman--when (he, she, it) has a headache. When one has a headache, it is cured by bloodletting.

8. Nappaq--to put up or build. Nappaġniaġataqman--when they were going to build it. Lucy was talking about the building or starting of Noorvik.
9. Qitunġaq--child. Qitunġatuŋak--their only child. These two old people's only child (son) was being sent away.
10. Utuqqaq--old. Utuqqaġuqmatun--like it got old. When a person has headaches and bloodletting is necessary, it is because the blood gets like it's old.
11. Nutaaq--new. Nutaugaluaġaġutnaqtuq--it probably is always new. She said the blood is probably new, but they think it gets old.
12. Mamit--to heal. Mamitlaiqsiqman--when it can't get well or when it can't heal up. Long ago when a cut didn't heal up, they used stickweed to bandage it; the people from the coast used blubber.
13. Puuq--cover on container. Puġutigiraġigaat--they always use it to cover. They use stinkweed to cover the cut.
14. Nakuqsi--to get well. Nakuqsipluni--he or she always gets well.
15. Kiqutinŋu--to have a toothache.
16. Kigi--to bite. Kigimmiraqtuġġuuq--he always bites on it. When one has a toothache he always bites on grayling fin.
17. Tiŋit--to blow away. Tiŋilġautchiq--to put a sail on.
18. Aġith--to get wet. Aġitchiuraaqługich--by soaking them or keeping them in water. Long ago in order for bark not to dry up, they soaked it, so it would be easier to braid for the net.

19. Swan shells were broken in a special way so they could be used for containers. Nauyaq remembers the time her dad got her one and she used it to put her threads, needles, and thimble in it along with other odds and ends. She kept the shell for a long time. It never broke.

APPENDIX 2

ORTHOGRAPHY

Stephen McNabb

The attempt has been made to employ a modified phonemic orthography in the transcription of Iñupiat words throughout this report. Owing to limitations of available time, however, the conversion of phonetic to modified phonemic characters is not complete at the time of the submission of this report. This should not present much of a problem to most readers, however, for reasons that will be delineated in this appendix. We will not present an exhaustive phonological analysis of the Kobuk dialects, but rather conventions that will facilitate the pronunciation of Kobuk Iñupiat words. The written orthography we will employ is a modified phonemic one; that is, we will represent the basic functional units in Iñupiat phonology. As an analogy, we might observe that New England English speakers often drop the "r" in some words, pronouncing "river" as "rivah" (so to speak). The fact remains, however, that "r" is still a functional unit in English dialects, being represented in actual speech as an "r" in some dialects, and represented as a deleted segment (or, depending on the linguistic perspective, as a peculiar mid-low vowel segment, somewhat like an "r") in others. These different forms are allophones of English "r". This kind of distinction will be important in the discussion below.

Iñupiat (North Alaskan and Eastern) Eskimo employs three vowel phonemes, represented by /i/, /a/, and /u/. Each phoneme is a functional segment in Iñupiat phonology; each can be represented in actual speech by a number of different allophones, the distribution of allophones being conditioned (that is, regulated) by the phonological environment (the surrounding "sounds") of the word. In most environments, /i/ appears as the vowel sound in "piece" or "neat". If it is preceded or followed by a uvular consonant (/q/ or /ġ/; see below) the allophonic variant that appears phonetically (that is, in actual sound) is the vowel sound in "pin". The allophone of /a/ that occurs in non-uvular environments is the vowel sound in "but"; preceded or followed by a uvular consonant, however, the allophone of /a/ that occurs is as in the vowel sound in "pot" or, articulated slightly farther back in the oral cavity, as in "father". The non-uvular allophone of /u/ is like the vowel sound in "shoot", but may be articulated lower in the oral cavity to produce a sound approaching the vowel in "pull". The uvular allophonic variant of /u/ is the vowel sound as in "rope", but may be slightly higher in articulation yielding a sound lower than but approaching the vowel as in "pull" or "full".

Most of the Iñupiat Eskimo consonants are pronounced much as in English, with the following exceptions. /l̤/ is a palatal l sound, produced with less closure in the oral cavity and sounding like the l sound in "million" (but with less closure). /ɬ/ is an unvoiced lateral consonant, produced like an English l but with

less closure, heavy aspiration, and no voicing. This often sounds to the English speaker like "tl", "kl", or "hl". /s/ is like English s, but pronounced slightly farther back in the mouth with more of the body of the tongue articulating against the front palate. The sound is much as in English "she", but with a pronounced sibilant timbre midway between the English s and sh sounds. /ñ/ is a post-alveolar or palatal n sound, somewhat like the -ny- sound in "canyon". Iñupiat Eskimo also has a palatal or front velar nasal which we will represent by /ŋ/. The sound is as in "sing", never as in "finger". The front palatal affricate will be represented by /ch/, and is like the sound in "chick"; the sound in "ratchet" will be produced only with the initial closure of a preceding /t/. We realize that our orthographic convention will often depart from that employed by Webster and Zibell (1970) in terms of the -ch- and -tch- combinations, but in our considered opinion the stop-affricate combinations are more accurately represented herein.

/v/ is a voiced continuant as in English, but is bilabial (that is, articulated with both lips together, as in "p") rather than labio-dental. /r/ is produced with a sibilant quality in Iñupiat, and resembles r and z pronounced simultaneously. The unvoiced stops /p/, /t/, /k/ are pronounced as in English, but without aspiration. /q/ is an unvoiced uvular stop consonant, much as in German "ach!", Gaelic "loch", and very close to Arabic "qof" (or "quf"). The uvular voiced consonant /ġ/ is somewhat like English r or g with pronunciation deep in the oral cavity.

To be sure, it "sounds" like English r, but it is a voiced continuant consonant corresponding to /q/ as /g/ corresponds to /k/. /g/ is as in English when before other consonants, but when between vowels it is much less a "hard" consonant and is continuant in nature.

The allophones of the consonants, the variants that appear in certain environments, will not be represented in the orthography employed here. However, if there is a question as to which phoneme appears between vowels, the actual phonetic representation (the allophone) will be given. Thus, if we hear a "g" and are not sure if it stands for /g/ or /k/, we will represent it as a "g". Moreover, there are phonological rules which account for "assimilation" of sounds in certain environments. Normally, an unvoiced stop will alter its phonetic shape when it appears before a voiced consonant, becoming voiced as well. Thus, phonemic /q/ will become voiced before (for instance) /r/, /v/, /m/, or /n/, appearing as "ġ" or (in the case of the latter nasals) a nasal uvular ṅ. This tendency is quite systematic in the Iñupiat dialects farther north and to the east, such that velar stops before voiced stops become velar voiced stops, velar stops before nasal consonants become velar nasals, and so on for other sound combinations. In short, phonemes in certain phonological environments assimilate features of surrounding "sounds". This process of assimilation is a distinctive feature of Eskimo dialects, but is less marked on the Kobuk River than elsewhere.

This is not to say that assimilation does not take place, for it certainly does, but not to the degree evidenced in other Iñupiat dialects. There is a definite tendency for Kobuk Iñupiat consonants to "nasalize" before other nasal consonants, but more often they simply "assimilate" the voiced quality of a following voiced consonant, be it a nasal consonant or non-nasal consonant. Thus, the phonemic transcription ikniq ("match, fire") for example, would actually be pronounced "igniq" in the Kobuk dialect, although it would be pronounced "iŋniq" in far Eastern Iñupiat dialects (as well as in unusual instances on the Kobuk River, especially far upriver; Shungnak and Kobuk).

A character that appears twice in a row signifies double length for that character. Thus, /aa/ or /tt/ would be held twice as long as a single character. Many diphthongs in the Kobuk Iñupiat are flattened, in that the phonological distinctions between the separate phonemes are reduced in the phonetic ("sound") representation. /iu/ sounds like a double length /i/. /ui/ will wound like "quit", and appears phonetically as a true diphthong, although it may approach the vowel quality in the /iu/ diphthong. Both /ia/ and /ai/ are flattened, and will appear phonetically as the vowel sounds (double in length) in "rake", "check", or "rack" depending on the phonological environment and individual speaker. Both /ua/ and /au/ sound like the vowel in "sought" or "bought"; for the English speaker, the vocalic clues to discerning the /k/ and /q/ are often confusing in these diphthong environments, and the /ua/ or /au/ will often sound like a

long "o". On occasion, a vowel off-glide may be discerned in these diphthongs which will expose the actual phonemic quality of the combination.

The orthography employed here, similar to that developed at the University of Alaska Native Language Center, is essentially a compromise between actual spoken, phonetic forms, and economy in printed duplication. The phonemes are the functional phonological units, and with cognizance of the rules of allophonic distribution no difficulties need arise in the use of the orthography. Because the conversion from phonetic to modified phonemic characters is incomplete, we must caution the reader in regard to one point. Because both /q/ and /k/, for instance, have allophones that, in phonetic shape, are also phonemes (/ġ/ and /g/, respectively), in some cases where the conversion is incomplete an apparent phoneme will actually be an allophone of another phoneme (we have already informed the reader on this point in regard to consonants between vowels).

The symbols used are those given above in phonemic slashes (//). In addition to those discussed, others appear in the orthography. These did not receive explicit mention because their pronunciation is as in English and the rules of their distribution are essentially straightforward and need no comment.

The NANA orthographic convention follows English very closely. Those forms which were recorded by NANA officials or under NANA sanction are marked with an asterisk. The primary orthographic difference is that NANA rh stands for our sr, a sound somewhat

like "shr", but with less closure with the tongue against the roof of the mouth. The NANA orthography follows English conventions, and is not strictly a phonemically-based orthography.

APPENDIX 3

Authors' Note

Missing entries--either place names or translations--indicate incomplete information.

PLACE NAMES

1.	Itqiḷiġiaq	"Way to go to Indian people." Itilyiargiok Creek.
2.	Isitguq	"Like coming back." A creek.
3.	Autaiġun	"Like arrowhead." Otirgon Creek.
4.	Qaŋianaq	The upper Colville River.
5.	Isitquq	The Itivilik River.
6.	Aqutuqtuk	"Eating aqutuq." A creek at the head of Anvik River.
7.	Aqutuq	"Eskimo ice cream," so named because the blowing snow there is like whipped fat. Howard Pass.
8.	Quqyuvik	"A bigger lake" and caribou drive area; also called Itivlliq. Itivilik Lake.
9.	Uluksraqtut	"Like an ulu." The upper Aniuk River and campsite.
10.	Igiatiaḷuaraġvik	"Old mountain." A creek.
11.	Agiinaqaq	"Wind hits hard on south side." Aniuk River.
12.	Iliiḷiġaaruk	A creek.
13.	Niaqunuk	A hill.
14.	Sulukpaat	"Like a feather." A campsite.
15.	Alaasruuraq	"Small Alauk." A creek.
16.	Ipnaġruich	"Cliffs on two sides." A creek at the head of Nigu River.
17.	Alaasruk	Alatna River.
18.	Kauknuk	Gull Pass.
19.	Quunruunaq	The Lucky Six Creek and mine.
20.	Alugiivik	"Salt lick place." Twelve Mile Creek.

21.	Ivisaaqtiġnalik	
22.	Utkusrigsaq	"Like a bowl." A steep draw into a mountain west of Portage Creek.
23.	Panaġvik	"Spearing place."
24.	Qaġrum nulimnat	"Arrow breaks." A creek below Papik Mountain.
25.	Auyuukaq	"Always frozen." Oyukak Mountain.
26.	Tupiḷik	"House." Tupik Creek.
27.	Papiaġuq	"Fish tail." Igikpak Mountain.
28.	Tupiḷik	House pass from Reed River to Tupik Creek.
29.	Iyugiña	A creek.
30.	Iyujiña	A creek, named after a person.
31.	Kuugruaq	"Big river." Kugrak River.
32.	Ikniq or Ikniñ	"Chert." Igning River.
33.	Sulukpakchiaq	"Rocks like feathers." Shulak-pachak Creek.
34.	Aŋuniaqsuaq or Aŋuniaqchuaq	"Someone who doesn't hunt animals." The pass from Mauneluk River to Tupik Creek.
35.	Aŋiḷaaġaġiaq	"The way to go home." Reed River.
36.	Unaqtaq	"Hot thing." Hot springs.
37.	Alaqanalik	"A legendary creature half beaver and half marmot" (said to inhabit lakes). The headwater lakes of Beaver River.
38.	Qalukluktuaq	"Big fish." Walker Lake.
39.	Aqusiaqvik	"Beaver place." Beaver River.
40.	Savikiksaaqvik	"Fix a broken knife." A creek between Beaver River and Avarraat Lake.

41. Avaaġaraat — "Something yells." Avarraat Lake.

42. Avagun — "Dividing line." A creek running into Mauneluk River.

43. Uqpikruaq — "Big willow." A creek and campsite.

44. Qupiḷuq — "Ice cracking noise." Kipmik Lake.

45. Ninŋuq — "Cottonwood." Midas Creek.

46. Paaqtiq — "Pass by, meet."

47. Kaniġaq — "Caribou corral," so named because caribou were once driven through here into snares. A tributary of Midas Creek.

48. Isigak — "Foot." Isiak Lake.

49. Qalukpaliq

50. Ninŋuayiaq — "Little cottonwood." A tributary of Midas Creek.

51. Iyaġaq — A campsite, named for a person.

52. Ipnailivich — "Sheep." A mountain.

53. Nasrauraq — "Little parka hood." A mountain.

54. Kisiilit — A creek.

55. Naqsraġluk — Karachurak Creek.

56. Ipnailivich narvaŋat — Sheep Lakes (two narrow lakes near Tunukuchiak Creek).

57. Kavaksuurak — "Two little knolls." Two mountain peaks near Kavachurak Creek.

58. Iġiqłiaq — A creek.

59. Iḷupqauġruuralik — "Somebody left their old underwear." A creek.

60. Ikainaruk

61. Nigiqpalukruuraq — "Strong north wind." A creek.

62.	Tunuuraq	"Way around the mountain." A pass west of Kayachurak Creek.
63.	Akutuqruaq	"Big leaf." A campsite.
64.		
65.	Jiipaulugaqtiaġvik	"Place to use a gee pole." A pass.
66.	Ikiaqsaaġiat	"Walking along a slope." A creek and trail.
67.	Quulrut	A canyon on a tributary of Imelyak River.
68.	Imaiḷaq	"No water." Imelyak River.
69.	Quluruq	A large creek.
70.	Imanigrurat	Several dry lakes.
71.	Auksaqiaq	A mountain near the mouth of Cutler River.
72.	Qalukruich	"Salmon." A site on Natmolirak Creek where salmon spawn.
73.	Siksrikpaktukruat	"Place to hunt marmot."
74.	Quġaġniaq	"Road to Noatak." Ipnelivik River.
75.	Iilailagalik	A tributary of Ipnelirik River.
76.	Qaġaġniaq	"Road to Noatak."
77.	Sisuuqtat	"Killed by snow slide." A pass from Kogoluktuk River to Ipnelivik River. A group of Kuuvaŋmiit were killed there in an avalanche many years ago. The pass is no longer used for fear of avalanches.
78.	Ulaqniŋiaq	A tributary of the upper Ambler River.
79.	Ulaqnigiġaq	A pass used as a trail to the Noatak River.
80.	Nakłakaluktuaq	"High, steep, rocky pass." A pass near the head of Ambler River.

81.	Qavigsugruaq	"Big red mountain." A mountain at the head of Redstone River.
82.	Qavigsuqruaġiaq	"Red mountain creek." A tributary of Amakomanak Creek.
83.	Amaġum anaq	"Wolf feces."
84.	Qalukpilivik	"Place with trout."
85.	Aŋayuk	"A little older than you." Cutler River.
86.	Qalukpiliviuraq	"Trout place." A pass from Cutler River to Amakonamak Creek.
87.	Apqauġaagruk	"Old pass trail." A pass between the Redstone and Cutler rivers. A major pass between the Kobuk and Noatak river drainages.
88.	Nuŋuich	"The last timber." A valley leading to the pass from Redstone River to Cutler River.
89.	Akiḷḷik	"Opposed to (something)." A pass between the Redstone and Cutler rivers too steep for dogs. It is used when men backpack loads from Cutler River to Redstone River.
90.	Siqsiññiq	"Overflow." A braided area of the upper Redstone River subject to extensive glaciering in winter. Also the limit of boat travel up the creek.
91.	Akuliqqat	"Junction." A mountain.
92.	Naparauqichialik	
93.	Akiḷḷiq	"Sitting across from someone." Same as Number 89.
94.	Nasritchuqvik	"Looking around place." A small mountain.
95.	Maŋauq	Nuna Creek.
96.	Nuna	"Land." Akillik River.

97.	Qalukrivik	"Salmon spawning place." A site on the middle of Akillik River where salmon spawn.
98.	Nuqiaqti	"Bow string." Nekakte Creek.
99.	Siqsiññiq	"Overflow." A site of heavy winter overflowing.
100.	Iñukiḷisuq	"Funny-faced man." A campsite, named for a white prospector who lived here long ago.
101.	Kuukruaq	"Big river." Hunt River.
102.	Aqiaġuq	"Tree branch." A tributary of Hunt River.
103.	Siḷḷiñ	"Whetstone."
104.	Saquŋaruqniq	"Not straight."
105.	Sulukpaitchiak	"Two feathers."
106.	Nunaġarich	A person's name.
107.	Qaluksarukturuk	"Lots of little gulches."
108.	Qaluqruaqlik	"Has salmon." The upper Shungnak River.
109.	Iyaġaq	"Rock hill." A mountain at the divide between the Shungnak and Ambler rivers.
110.	Tiŋmiaqsiiġiat	"Look for geese." Lakes on trail to the upper Ambler River.
111.	Qikiġaqtuaq	"Big rock." The site of a large rock in the middle of Ambler River.
112.	Urgiiḷiksuk	"Birch hill." The end of a ridge near the trail to the upper Ambler River.
113.	Avuġaluk	
114.	Nanagiurat	"Dead falls." Kalurrivik River.
115.	Aniuraq	"Small parka." Anirak Lake.

116.	Uluksraurat	"Place to get ulus."
117.	Qaluqtaġim paatuŋa	A pass.
118.	Taɬhiaq	A lake.
119.	Alaqaiḷaq	A lake.
120.	Qalukruivik	"Salmon spawning place." Cross Creek.
121.	Tulɬuk	"Long-haired dog." A campsite and old settlement.
122.	Ataachiaq	A creek.
123.	Tulɬuk	A campsite, named after a person who died there.
124.	Akuliġaq	"Rivers meet." The mouth of Ambler River.
125.	Tigitigaaqtukruaq	"Many Arctic terns." (Tigitigaaq is an old word for Arctic tern.) A lake.
126.	Maġġatchiq or Maggatchiqviuraq	"Stuck in the mud." A place on the east side of Ambler River mouth.
127.	Ukiivikruich	"Winter houses." An island at the confluence of the Kobuk and Ambler rivers, named for an old settlement on the east end of the island.
128.	Quġliqpaat	"Highest one." A high place on an island.
129.	Piquagɬuk	A campsite on an island, named after a person.
130.	Happy Jack's	A cabin site.
131.	Kutvak	A cabin site and grave site, named after a person.
132.	Uŋalukruaq	"Old cache." A small creek.
133.	Ivisaaqpaat or Ivisaaq paa	"Redstone River mouth." The site of Ambler village.
134.	Isigakpak	"Big foot." A point of land.

135.	Kutukatuk	A place on an island, named after a person.
136.	Qaluksiiġayuk	"Young osprey." A place on an island.
137.	Paaƚluk	A lake, named after a child who died there about 1950. Before this it was called Agaigavgluk, "big stomach."
138.	Igmalitchiqviuraq	"Boat slats." A creek.
139.	Nigraq	"Tassle hanging on a parka." A slough; also where the winter trail between Ambler and Shungnak leaves the river.
140.	Iŋaluaqtuḷusrivik	"Place for leaning to eat spruce grouse entrails." A small slough.
141.	Qauriyaaq	"Roasted fish." An oxbow lake.
142.	Miluktuqsrat	"Child breast feeding." A lake and river bank.
143.	Kaŋigaqruaq	"Corral." Kanezrok Creek, named for an old "caribou corral."
144.	Nigiqƚik	A sand bar on Kobuk River.
145.	Kuukpik	"Old channel." The old channel of Kobuk River below Ambler.
146.	Milugiat	"Mudsuckers." Miluet Creek.
147.	Iñġiqsukruich	"Big mountain." Jade Mountain.
148.	Naparuq	"Something standing there." A hill.
149.	Manuḷisat	A mountain.
150.	Ivisaaq	"Red stone." Redstone River.
151.	Niyaliaq	A sharp bend where river turns back.
152.	Iayaġakpak	"Big rocks." A section of Ambler River above Milugiat Creek.
153.	Natmaktuġiaq	"Pack across divide." Ambler River.
154.	Pitauqiq	"Portage." An old portage trail from Ambler village to Ambler River.

155. Qattuniqruaq — "Old hill." A ridge north of Ambler.

156. Qilġiksiin — "Hawk trap." A hill.

157. Pitqiq — An oxbow lake. Pitkik Lake.

158. Siiqaqtuaq — "Used to be sheefish." An old lake bed west of Pitqiq Lake.

159. Ukalliq — "Snowshoe hare." A creek. Also called Uqallim Kurqaa, "has lots of rabbits sometimes."

160. Niyaliaq — "Sharp bend where the river turns back." A river bend and campsite.

161. Kuukvait — A creek.

162. Kuugaachiavak — Long slough. Slough entering Kobuk River below McCair.

163. Maqlin — A campsite, named for McClean, a white man who had a camp there for cutting wood to sell in downriver villages.

164. Kuuŋuluk — "Small channel." A channel of Kobuk River above Ambler village.

165. Ataigautit — "Long lake beside a hill." A lake.

166. Misrak — A creek, named after a person. Misuk Creek.

167. Tunuuraq — "Go behind island." A small channel of Kobuk River.

168. Qupsiksut — "Straight grained trees." A creek, named for the easy splitting of the straight grained spruce that grows along it.

169. Taglukruuralik — "Old snowshoe place." A sand bar.

170. Aŋattaq — A sand bar on the south side of Kobuk River.

171. Aaẓuk — Hills, named after a person.

172. Aumaẓuuraq — Omaluruk Creek.

173. Ikpikruk — "Long high bank."

174. Qaviirat — "Little sands."

175. Niaquqchialik — "Supplied with a new little head."

176. Siqḷauraq — "Little cash."

177. Qayaq

178. Isiŋnam paaŋa — "Jade mouth." The mouth of Jade Creek.

179. Isiŋnaq — "Jade." Jade Creek.

180. Paatitaaq — "Wild chives." Onion Portage.

181. Tunutam paaqtaŋa — "Circles around." A creek below Onion Portage, misnamed Tunutuk.

182. Tunutaq — "Comes back around."

183. Nigaqtuqvik — "Snaring place." Niaktuik Creek.

184. Tunutam akia — "Across from Tunutaq." A large sand bar.

185. Masrutuq — "Eats masru."

186. Pitauqqiq — "Portage." The place where the portage trail across Onion Portage formerly reached the river.

187. Paunġaqtuaqruk — "Crowberry picking place." A slough.

188. Uniq — "Armpit."

189. Maqłuk — Named after a person who died there.

190. Kilvaġiayaaq — "Place for a short walk back away from the water." A new creek.

191. Kilvaġiaqruaq — "Place for a long walk back away from the water." (Kilvage is a portage.) A creek.

192. Apikiilik — Named after a person who is buried there.

193. Paunġaqtuaqruk — "Crowberry picking place." A steep bluff along the inside of Kobuk River; an area known for its powerful north winds.

194.	Israqaġliq	"Molting place." A lake frequented by numerous white fronted geese during summers when the adults are undergoing molt.
195.	Amaaqtuq	"Hump-backed fish." A creek.
196.	Kapuqaaqvik	"Fish spearing place." A cabin site.
197.	Aksraksiaqvik	"Rolling place." A slough.
198.	Miluguivik	A campsite.
199.	Kigaich	
200.	Nuna	"Land." Akillik River.
201.	Israġuqliq	Formerly a lake west of Hunt River, used by molting geese in summer, now overgrown.
202.	Nasrikvik	
203.	Piḷakvik	"Skinning place." A creek.
204.		
205.	Tulukaat	"Young ravens."
206.	Natatqauqtuqvik	"Place for eating willow shoots."
207.	Tunutauraq	
208.	Tunutauraq	"Little one comes back around."
209.	Anuġiatuut	"Strong wind." A creek.
210.	Ataniqtlaigiik	"Two lakes together." Ahnewelut Lake.
211.	Anuġiatuut	"Strong wind."
212.	Quġlut	"Big fall." The upper Kobuk Canyon.
213.	Unaqsiaġaq	"Look for good wood." A tributary of the upper Kobuk River.
214.	Nautauraqti	Nutuvuki Lake.
215.	Aŋiilaġaġiaq	"Going home way." A trapping area.

216.	Minaqoqusa	Lake Minakokosa. (An Indian name.)
217.	Qulaġaasiilat	Mountains east of Narvak Lake. (An Indian name.)
218.	Iggiaq	"Throat." A channel joining Narvak Lakes.
219.	Narvak	Two lakes.
220.	Savikiksaqvik	"To fix a broken knife." A creek.
221.	Anaulaqvik	"Place to hit something." Selby River.
222.	Killaq	"Hole in the bottom." Coal Pass.
223.	Aŋayuqakchiaq	"Two old men." A creek.
224.	Tauditinna	An old Indian village site. (An Indian name.)
225.	Kuukisiana	A grave site, bar, and campsite below Selby River.
226.		
227.	Taqaalauna	A sand bar. (An Indian name.)
228.	Sulupaugaktuaq	"Place with many grayling." A slough and area, just above the mouth of Selby River.
229.	Saiqtuurat	"Rocks standing up." A mountain.
230.	Qilġilikvaichiaq	"Small hawk." A creek.
231.	Quukupaat	"Creek mouth." A creek.
232.	Tinniktauga	A point of a hill where Indians used to live. (An Indian name.)
233.	Taɬɬahiarautit	A gravel bluff. (An Indian name.)
234.	Qulauġaa silat	A small creek.
235.	Quyuuġiilua	A small lake.
236.	Aqpaliq	A creek.
237.	Aqiat	"Round like belly." Hills north of Bear Island.

238.	Qalukpiliviuraq	"Trout spawning place." A tributary of the upper Kobuk River, next to Niunarat Hills.
239.	Niiluŋnaurat	"Hard walking." Nilunorat Hills.
240.	Aqusiaqvik	"Look for beaver." Beaver Creek.
241.	Quġlut	The name of Kobuk River from the lower canyon to its source.
242.	Nauyaat	"Young seagulls." Lower Kobuk Canyon.
243.	Qoġluich	"Big fall." Upper Kobuk Canyon.
244.	Qalukruktuaq	"Lots of fish." A lake west of Norutak Lake.
245.	Nauyaqtuaq	"Young seagull." Norutak Lake.
246.	Uluksiuraq	"Like an ulu." A creek.
247.	Iñgik aqulaq	"Between two mountains." A creek.
248.	Iḷaqusim iñgiq	"Mountain with procupine quills." East Norutak Hills.
249.	Kisimaluat	"Hill by itself." A small hill south of Norutak Hills.
250.		
251.	Kuuġuqpak	"Big river." Hogatza River.
252.	Agaichanuk	Site near a portage to Kobuk River from Hogatza River.
253.	Itivlliq	"Portage place." A portage between the Hogatza and Pah rivers.
254.	Siitiññа	A creek. (An Indian name.)
255.	Tulugaq	Ravens Creek.
256.	Tuqaatqan	A creek, named after a person.
257.	Tigligaqvik	"Like stealing." A large lake.
258.	Niksiksuqvik	"Fish hooking creek." A creek, used in the winter to hook fish.

259.	Tulugaq	"Raven." A campsite at the junction of three creeks.
260.	Atuññagiichiaq	A creek.
261.	Tulukaat	"Young ravens." A campsite and irregularly shaped lake.
262.	Paa	"Mouth of stream." The mouth of Pah River.
263.	Taki	
264.	Killaq	"Hole in the bottom." A creek.
265.	Kayuqtaaqvik	"Young fox." A creek.
266.	Qikiqtaqpak	"Big island."
267.	Manailaq	"Rough mountain." A mountain at the mouth of Maneluk River.
268.	Uuman	"Heart." A creek.
269.	Tavasaa	An Indian word.
270.	Manailat paat or Manailam paaŋa	"Mouth of Maniilik River."
271.	Qalukrivik	"Salmon spawning place." A creek.
272.	Kuukchiaqaruk	"Not a big river." A creek.
273.	Narvaqsugruk	"Big lake."
274.	Aŋutigiik	"Man and wife."
275.		
276.	Tirraqvik	"Big bar." A sand bar.
277.	Agayutłuk	A place named after a person.
278.	Ƚatkuuraq	A lake.
279.	Qargiat	"Big dance house."
280.	Iivaġit	"Something going around."
281.	Taatauraq	A sand bar, named after a person.
282.	Qaluksiiġayuat	"Young osprey."

283.	Qalla	"Water boiling."
284.	Umiaqviuraq	"Little umiak place." The site of a legend about three men in a boat who were turned to stone.
285.	Aaquaksraachiak	"Two old women." A bluff.
286.	Putuchiaq	"Cutoff."
287.	Kaagauk	The channel of Kobuk River.
288.	Kuugchauraq	"Small river."
289.	Tauiiliik	A river bank. (An Indian name.)
290.	Saattuġuksugruaq	"Many flat rocks."
291.	Kaisrualuk	The point of a hill down from Kalla.
292.	Ipnaurat	"Little bluffs."
293.	Saavaayiqsugruaq	"A kind of small fish." The channel of Kobuk River.
294.	Quġluqtuq paakruaq	The old mouth of Qaugluktuk.
295.	Quġluqtuq	"Waterfall."
296.	Kaniniaqsivik	"To scare caribou." A narrow canyon through which caribou were driven for killing.
297.	Qalugiksuk	"One white fish." Kollioksak Lake.
298.	Tulukaaqsiigayuk	"Obtain young ravens."
299.	Sivukkmugiyaq	"Going on a straight course," (i.e., on the way north).
300.	Uquaqliniq	"Below big creek."
301.	Iñġiqvak	"Big mountain."
302.	Qaiqsuq	"Flat place."
303.	Kiiksugaq	Camp Creek.
304.	Qalukrualigauraq	Cosmos Creek.
305.	Isiŋnaq	"Got jade." A creek.

306. Upiniġavaichiaq — A campsite and grave site.

307. Aanaruaġiik — "Grandmother and grandson."

308. Qiruktuqvik — "Wood cutting place."

309. Irikichiut — "Small eye."

310. Pitqiq — A lake.

311. Ayaugaikiaq — A campsite, named after a person.

312. Pitqiq — A creek and lake.

313. Tuutrialuk — A creek, named after a person.

314. Kuugaachiavak — A long slough.

315. Putqaq — A patch of timber in tundra, named after a person.

316. Iñuraqtuqtuat — A stand of timber projecting into tundra.

317. Quluqutait — Patch of trees. Near Kuugaatchaivak Creek.

318. Takiruaq — A long lake.

319. Aqsaaqtuk — "Looping." A large lake.

320. Tunutaq — "Comes back around." A slough.

321. Putuuraq — "A cutoff." Miller Pass.

322. Katuksik

323. Siiliksaqvik — "Pike-catching place." The confluence of two channels of Kobuk River.

324. Imaqluktuaqruk — "Little black water." A small creek just above Black River; part of Kuugaatchiavak Slough.

325. Itivruk — "New channel."

326. Urgiiḷiatchialik — "Got young birch." A creek.

327. Ilaaqauqruaq — An area named after a person.

328. Mitqulagiich — "Duck feathers."

329. Imaqluktuq — "Black water."

330. Aviḷuqtauraq — A grave site.

331. Katyaaqchiaq — "Fork in the river."

332. Takiruaq — A lake.

333. Imaqluktuq — "Dark water." Black River.

334. Katyaaqchiaq — "Fork in the river."

335. Imaqluqtuun kaŋŋisugrua — The head of Black River Lake.

336.

337. Iyaqiqutalliq — A group of lakes.

338. Sikłiksrak — "To cut."

339. Narvaqsugruich — "Lots of lakes." A group of lakes.

340. Paaŋuutitalliq — "Double paddle." A lake.

341. Igaun narvaq — "Igaun's lake."

342. Saliaġauchiik — "First ones." The first mountains one reaches going south from Ambler.

343. Qaluksiiġayuat — "Young osprey."

344. Kuugchauraq — "New river." Kerchurak Creek.

345. Ukallim iñġiq — "Rabbit mountains." The Sheklukshuk Range.

346. Kuugchauraq

347. Iqaipak — Egaupak Lake, named after a person.

348. Aluuraq — A creek at the headwaters of Kugrak River.

349. Ataniqruaq — A large lake.

350. Ukallim kuuġuq — Rabbit Creek.

351. Tuqunaatut — "Everyone who goes this way dies." A lake.

352. Qilġivakluk — "Got a hawk." A creek.

353.	Iqsraitqaqłuk	"Geese in molt." A lake.
354.	Aŋutikruaq	
355.	Nigaqtuqvik	"Place for snare." A tributary of Pah River.
356.	Saġvaqsiiġiaq	"Drifting." Pah River.
357.	Aŋaulaqviuraq	"To hit something small."
358.		
359.		A lake.
360.	Piqniq	"Where creek turns." Shiniliack Creek.
361.	Uunaqtuq	"Hot thing." Selawik Hot Springs.
362.	Quġluqtuq paaŋa	"Mouth of Qauġluktuk."
363.	Kanayim narvaat	"Bull head lake."
364.	Napaaqtuqvik	"Timber place."
365.	Ayaupiivik	"Net pole making place."
366.	Savim kivivia	"Knife sank."
367.	Nuvuvluktuaq	"Broken topped tree."
368.	Akuliġaq	A point of two channels.
369.	Itqiḷiqłuk	"Old Indian." A cut bank.
370.	Akitchiaq	A place named after a person.
371.	Aqtuq	A place named after a person.
372.	Aqpaitchuḷaq	A name given by the Salt-water people.
373.	Iḷuvauraq or Iḷuvaurat	"Little graveyard." A grave site.
373A.	Iqsraqruk	"Big cheek."
374.	Nausrauġniqtukruaq	"Lots of snares."
375.	Sautnaq	A place named after a person.

376.	Ipliqvik	"Somebody fell down." A place where a person died.
377.	Ayaugaichiaq	A place named after a person.
378.	Aqpaitchuḷaq	"Running." A lake.
379.		
380.	Salliñauraq	"Little seining place."
381.	Patiqturuaqsiiqtuaq	"Bone marrow gets too cold or too painful (from icy water)."
382.	Iqsraitchiaq	A grave site.
383.	Naataat	"Young owls."
384.	Isruktauraq	"Muddy water." The mouth of a slough.
385.	Sivulliqsraqti	"To go ahead or to lead." A slough.
386.	Itchauqvik	"Goose blind place." A group of lakes.
387.	Kuuchauraq	A small river.
388.	Qaama	A place named after a person.
389.	Kuugaachiavak	"Big creek."
390.	Qayaitchuq	
391.	Iglaugaachiaq	A place named after a person.
392.	Kuugchiaq	"Big creek."
393.	Kiirim narvat	"Gray jay lake."
394.	Saiyuuq	"Water like tea." A slough.
395.	Umittaq	
396.	Sugliat	"Young hell diver."
397.	Kaŋigaqruk	"Caribou corral."
398.	Kiiraq	
399.	Aŋatkuq	"Medicine man." An island.

400.	Mayuġaiqruaq	"Way to come down hill." The bluff at Shungnak.
401.	Putusaaqpak	"Big hole." A channel.
402.	Saiyuuġiik	"Tea."
403.	Napuuraq	
404.	Aullaqsraugaichiaq	"Way to go pick berries."
405.	Ipnaiqruaqlik	"Used to have sheep." A salt lick.
406.	Quraaq	
407.	Qasruniksiaq	"Somebody bought an eddy." An eddy in the channel.
408.	Pannikaq	A place named after a person.
409.	Sikliksraq paaŋa	The mouth of Sikliksraq Creek.
410.	Qanalik	"Tent frame."
411.	Tayaġaralik	"A wrist band." A lake and creek.
412.	Tikiġaqsugruk	"Big timber." Takeaksakrak Lake.
413.	Kinnaq	"Crazy man."
414.	Itrigusuk	"Cold." A lake, slow to thaw in spring.
415.	Tikigasrugruk	"Bushy." A lake, creek, sand bar, and archeological site.
416.	Imiaqsiqtuaq	"Lake dried up."
417.	Iraaqauqruaq	A place named after a person.
418.	Tulukaat	"Young raven."
419.	Aviratquqruaq	The mouth of Cosmos Creek.
420.	Sugauqliġiayuktuaq	
421.	Paniiyavik	A campsite, named after a person.
422.	Auqauqlik	A campsite.
423.	Nasruk	A grave site.

424.	Siqiñaachailik	A grave site.
425.	Siksrik	"Ground squirrel."
426.	Pauyuuraq	A place named after a person.
427.	Qaqsriglauraq	A grave site.
428.	Igruŋnaqtuuraq	"Has berries with lots of stones."
429.	Sisuaq	"Beluga." A bluff.
430.	Sisuaq	"Beluga." A slough.
431.	Upiŋġaachiaq	A bluff and campsite.
432.	Suvaitaiḷauraq	A sand bar and large eddy, where lots of whitefish can be caught.
433.	Igauna	A place named after a person.
434.	Qipmim naniġiaq	"Trapped dog."
435.	Qaliktuaqrit	"Dragging a boat."
436.	Ikaaqchialik	"Place to cross."
437.	Aġnauraq	"Little lady."
438.	Siqiññaqchiaq	A place named after a person.
439.	Kaŋisugruk	"Head of lake." A lake.
440.	Iriayayut	"Tree place." A lake.
441.	Aniruayayut	"Fish come out."
442.	Uuman	Heart Mountain, near Omar River.
443.	Kiglavaich	"Rough mountains." Mountains near Portage Creek.
444.	Iḷuttugaq	Canyon Creek.
445.	Nunamkugaraug	Timber Creek.
446.	Piluq	Peluk Creek.
447.	Amanigrak	The northern section of a mountain pass.
448.	Taksrukruaq	Portage Creek.

449.	Qaqłiikuuvik	"Sealskin boot place." Kavet Creek.
450.	Sisuaq	"Beluga." A bluff and archeological site.
451.		
452.	Siksrikpak or Siksrikpaich	"Marmots." A bluff at the bend of the river.
453.	Ahteut	A section of the river bank and archeological site.
454.	Niaquq	"Head." A hill on the east bank of the river.
455.	Napaaqtusugruachiaq	
456.	Tuttuluuqvik	A gravel beach.
457.	Qalukruitchauraq	A slough.
458.	Siilikturuaq	A high bank of the river.
459.	Tuttaqsraq	A river. Tutuksuk River.
460.	Qałhaq	A grave site.
461.	Qalukruaq or Qalukruich	"Salmon." A river (Salmon River) and adjacent area on Kobuk River near its mouth.
462.	Nigraq	A slough.
463.	Qalukruivik	
464.	Aŋmaluq	The end of a knoll.
465.	Iḷuliaq	A bend of the river and sand bar.
466.	Pusrimaqtuq	An oxbow lake.
467.	Qusrimmaqtuq	A bend of the river and sand bar.
468.	Qitiqłiuraq	
469.	Kuuġuġaqiatchiaq	A bend of the river.
470.	Kiksraq	"Path." The beach at one of the portages along the winter trail.

471.	Igliqtiqsiiqvikruaq	A section of the river with a swift current.
472.	Tittaaliqsuq	"Pertaining to burbot." A slough.
473.	Qavaġin	A low bluff.
474.	Tuungivik	A river bank; also called Coalmine.
475.	Igliqtiqsiiqvikruaq	A river bank and archeological site.
476.	Tunutaq	A newly dry slough.
477.	Kuvriqvik or Kuukruivik	A bend of the river and fish camp.
478.	Qalukruitchiaq	The portion of Kobuk River at and immediately below the mouth of Salmon River.
479.	Iglukisaaq	A boulder at river edge.
480.	Alalauraq	A river bank opposite the island.
481.	Napuuraq qikiqtaqchiaq	An island.
482.		A cabin site.
483.	Nasrutchauraq	A beach and adjacent bluff.
484.	Alalauraq	A river bank opposite the island.
485.	Sissit	A river bank.
486.	Qaqiaqtuqvik	A slough.
487.	Uliksuq	A creek.
488.	Iḷaġuŋaluk	A creek.
489.	Napuuram qikiqtaŋa or Napuuraq qikiqtaqchīaq	An island.
490.	Napuuraq	A hill.
491.	Tittaġaalik	A hill and creek. Trinity Creek.
492.	Tittaġaalim qikiqtaŋa	An island.
493.		A grave site.

494.	Iñġiaŋaluk	A mountain.
495.	Iyaġakruaq	A mountain.
496.	Kaġuruaq	A river.
497.	Nuna	A hill.
498.	Palitqiun	A slough. Same as Number 736.
499.	Itiqsraq	A slough.
500.	Atchichgut	A slough.
501.	Masrun	A hillside and bluff.
502.	Kaŋisugruk	A lake.
503.	Iigavisi	Bluffs.
504.	Aŋutitut	An area of several lakes and connecting sloughs.
505.	Kiquli	A broad rise of land on the east bank; also a lake and slough.
506.	Amaġut	"Wolves." A slough and the land at its outlet.
507.	Qaluksiiġayuat	"Osprey." A lake.
508.		
509.	Iqsiaqvik	A bank of a slough and archeological site.
510.		A grave site within the area of Iqsiaqvik.
511.	Amaġut	A slough. Same as Number 506.
512.	Siiligaqruk	Bluffs.
513.	Amitchuq	A slough.
514.	Attikun	A lake.
515.	Puttuqruaq	A river cutoff.
516.	Iḷuvilik	A lake and grave site.
517.	Puturuaq	A river cutoff.

518.	Iŋaluŋnat	An oxbow lake.
519.	Apaaġuq	A creek. Cross Creek.
520.	Kuviatchaġuq	A slough.
521.	Apaaġuq	Cross Creek. Same as Number 519.
522.	Nunaviaqchiaq	A hill.
523.	Qaglu	A river bank and fish camp.
524.	Malġutchiaq saputinik	"Twins' fish trap."
525.	Nunaviaqchiaq	A hill.
526.	Iniaqaqlliq	A campsite opposite the mouth of Omar River.
527.	Auraqviuraq	A river. Omar River.
528.	Anirulik	Several lakes.
529.	Qaqiaq	A slough.
530.	Iyaġaq	Bluffs.
531.	Kuviatchaġuq	A slough.
532.	Kuuġuqruaq	A grave site.
533.	Uqaq or Tauqsiqniaqvikruruaq	"Old place where you intend to buy." A river bank and hill. Okok Point; also the location of an old trading post.
534.	Sisuuġaurat	A bluff.
535.	Mitgutaiḷaq	The point of an island.
536.	Qalukruaq	A slough.
537.	Tunutquchuġaq	A small channel of the river.
538.	Tuukun	An island.
539.	Tunutquchuġaq	A channel of Kobuk River.
540.	Immiañakpak	A lake.
541.	Paamaqŋat	A channel of Kobuk River.

542.	Sisuuġauraq	A stream and steep bank near its mouth.
543.	Tunutquchuġaq	A channel of Kobuk River.
544.	Auruq	A grave site.
545.	Taupaachiaq	Bluffs.
546.	Iyaġauritqaqvik	A bank along the channel.
547.	Asrugauraq	A grave site.
548.	Asrialivim kuuġu	A creek.
549.	Taupaachiaġiaq	Bluffs.
550.	Kaŋigaq	A slough, campsite, and former reindeer corral.
551.	Nigaqtuqvik	A slough.
552.	Nigaqtuqvik	A campsite.
553.	Aklatoovik	A campsite.
554.	Aksim kuuġu	Oksik Channel.
555.	Asrigaġaŋnik	Hotham Peak.
556.	Kiglavait	"Big rocky depressions." The southwestern end of Hockley Hills.
557.	Siŋiaqruk	A creek.
558.	Ikpik qikiqtaq	
559.	Ikpich	Bluffs.
560.	Quukupaat	Kokopuk River; also site of a former reindeer corral.
561.	Sauniqtukruaq	
562.	Paiḷat	A dry lake.
563.	Paiḷagiaq	A long channel or lake.
564.	Qapqauraq	Bluff.
565.	Tutturvik	A lake.

566.	Nunaŋaittuaq	
567.	Qanialaaq	A grave site.
568.	Tutipqailuk	A lake.
569.	Qauġaqaqtuaq	A lake.
570.	Nigrat	A slough and nearby lakes.
571.	Kuugauraq	A slough and large lake.
572.	Aki	A slough.
573.	Siiññilikruaq	A campsite on the oxbow lake called Siiññiligruam takrua
574.	Aŋarraaqaqtuaq	A grave site.
575.	Ataŋan taksrua	A campsite area from there to Number 576.
576.	Ataŋan taksrua	A grave site.
577.	Aliqataaq	A channel of Kobuk River.
578.	Aŋaraġaqtuq	A small channel of Kobuk River.
579.	Kuuġuquraq	A small channel of Kobuk River.
580.	Qirġiaqruaq	"Lots of gray hair." A campsite.
581.	Kuuġuq	A grave site.
582.	Siiligalik	A slough formerly open to the lake, but now overgrown.
583.	Iḷḷutmugiayuktuq	A slough and campsite.
584.	Puttuqruaq	A lake.
585.	Putuchiaq	A campsite.
586.	Uukkautrivik	An area of river bank. The name derives from uukkaq, "falling mud from a bluff."
587.	Qayuqruaq	Lakes.
588.	Nauligalik	A slough.
589.	Puttuqruaq	A campsite.

590.	Kuukpik or Nasruuraq	Nazuruk Channel.
591.	Kuviqsaun	A campsite.
592.	Taksruk	A slough or inactive channel.
593.		
594.	Qavlunat	"Eyebrows." Bluffs and rolling tundra.
595.	Ulaqnaq	A campsite.
596.	Imiaqniq	A dry lake.
597.	Kaŋilliq	A hill.
598.	Nuyaqqiq	A slough entering Selawik Lake, and campsite.
599.	Nuyaqqim qaaŋani	Two large lakes.
600.	Taksrum paaŋa	
601.	Quluuraq	A slough.
602.	Makkaksraq	A campsite at the entrance of Mukuksok Channel.
603.	Makkaksraġiaq	Mukuksok Channel.
604.	Iglutuuq	The mouth of Mukuksok Channel.
605.	Iglutuuq	A campsite.
606.	Narvaġiaq	A channel.
607.	Attiniġiaq	A channel.
608.	Attiniq	A bank of the channel.
609.	Imaqrikruaq	Emanvicrok Channel.
610.	Kaasrigailigauraq	A channel.
611.	Kaasrigailigauraq paaŋa	A channel.
612.	Aviññaq	An inactive channel.
613.	Imaaqvik or Paaŋa nasruuram	The mouth of Nazuruk Channel.

614.	Kuusrukruk	An inactive channel.
615.	Tittaaliq	"Burbot." A lake.
616.	Kuuchauraq	An inactive channel in the delta.
617.	Kuuchauraq	A campsite at the mouth of a slough.
618.	Aattam paaŋa	An old campsite.
619.	Saiḷaq	A grave site.
620.	Aliqataaq pakium	A campsite.
621.	Ninŋuġiaq	Lewis Channel.
622.	Taataksraq	A grave site.
623.	Taataksraq	A channel.
624.		A grave site.
625.	Aquliġaġun	Harvey's Camp. A campsite.
626.	Qanaisaaqruk	A grave site.
627.	Takusruiḷaq	A channel, also called Pisik River.
628.	Ataniq	A lake edge campsite.
629.	Nuviḷḷuk	A grave site.
630.	Upinġiviuraq	A campsite.
631.	Kuukikpak	
632.	Akiqqirauraq	A lake and fishing site.
633.	Tuuliqaqtuaq	A lake.
634.	Aġviġiaq	A grave site and campsite.
635.	Iḷavraq nuiḷaŋa	The confluence of two channels.
636.	Akiapak	A grave site.
637.	Aġnaqaiyaaq	A grave site and house site.
638.	Aliqataaq pakium	A campsite.
639.	Sisuruq	A slough and grave site.

640.	Quġluqtauraq	A grave site.
641.	Ikkaninaaq	A creek.
642.	Iḷavraq	A channel.
643.	Qaluksiiġayuich	"Osprey." A grave site.
644.	Akulikitchuaqruich	A campsite.
645.	Uqpim tunua	A part of Riley Channel.
646.	Ninŋuq	A fishing camp.
647.	Nasruum uŋutaat	Hills.
648.		A campsite.
649.	Sivugiachiaq	A site where there was once a store.
650.	Tulugauġnat	"Swallows." A high bluff.
651.	Nauyaat	"Sea gulls." Riley Channel.
652.	Nauyaq	The end of a series of bluffs.
653.	Nauyaq mayuġiaqpak	A campsite.
654.	Naatat	A campsite.
655.	Uqsruqaaluk	
656.	Talluyat	The location of a former fish trap.
657.	Talluyaq	A campsite.
658.	Kaŋiḷiġiaq	A grave site.
659.	Amammnunaaġiaq	A channel of Kobuk River.
660.	Uŋaluqruaq	A grave site with a tipi type grave and a cache.
661.	Ikpitchiaq	A campsite.
662.	Tuunġalik	A channel.
663.	Uutauraq	A grave site.
664.	Iḷavraq	A slough.
665.	Sattu	A lake.

666.	Sattu	A grave site.
667.	Siñaaniqsat	A grave site.
668.	Tuunġalik	A channel. Same as Number 662.
669.	Panitchauraq	A grave site.
670.	Sisuruq	A slough and grave site.
671.	Saaŋaim narvaq	A lake.
672.	Iḷuviq	A grave site.
673.	Taimmali	A grave site.
674.	Taimmali	A grave site.
675.	Cap Nelson's river	A channel and campsite.
676.	Kuurguraq	A channel.
677.		A grave site.
678.	Qiruuraq	A campsite.
679.		A grave site.
680.	Snyder's Camp	A campsite, with a cabin.
681.	Nunaqsraq	A campsite and slough.
682.	Kuuġuquraq	A channel.
683.	Aqiqqaqsiiq	A campsite.
684.	Atiġutim kuugaachiaŋa	A campsite.
685.	Atiġun	A lake.
686.	Ninŋuq	A campsite.
687.	Kuukuchiaq	A campsite.
688.	Amammnunaaq	A campsite.
689.	Amammnunaaġiaq	A channel of Kobuk River.
690.	Amammnunaaq	A lake.
691.	Amammnunaaġiaq	Same as Number 689.

692.	Qaɬhaqpak	A grave site.
693.	Avalliq	Melvin Channel.
694.	Kaŋigaqruaq	A former reindeer corral.
695.	Paalitqiun	A grave site.
696.	Sivugiachiaq	A spruce-covered bank of the river.
697.	Narvaqruuraġiaq	Nulvororok Channel.
698.	Ayaqiaŋuluk kaŋiu	Lakes.
699.	Ayaqiaŋuluk	A channel.
700.	Qimichiat	A series of bluffs and high ground at the edge of Hotham Inlet.
701.	Qimichiat	Same as Number 700.
702.	Narvaqruuraq	Nulvororok Lake.
703.	Ugrivik	Ogriveg Channel.
704.	Ulugaaqruk paaŋa	A grave site.
705.	Putuŋñiqruaq	Potoniek Lake.
706.	Putuŋñiakuk	A campsite.
707.	Kuurguraq	A campsite.
708.	Amaġuat kuuġuq	A creek and cabin site.
709.	Ikitchiaq	A campsite at the edge of a lake by the same name. Ekichuk Lake.
710.	Asrialivik	A bay.
711.	Qikiqtaqchiaq	An island.
712.	Qalġuqvich	"Bird calls."
713.	Qalġuqvik	A slough and point of land.
714.	Puuvlich	An area of campsites.
715.	Qimimisruaq	A series of hills southeast of the river.
716.	Maġġagɬaq	A sandy strip of the river beach.

717.	Suġliuraq	Hills.
718.	Qaliaqruaq	A mountain series of heavily forested hills.
719.	Naluq	"Game crossing." A slough and hill.
720.	Piŋuqsrachiaq	A series of knolls.
721.	Napaaqtuqtuk	Napautokik Creek and Mountain, specifically the northwest side.
722.	Kaġiġuaq	A campsite.
723.	Nauyaqruaq	A sand bar across from an island.
724.	Nuḷḷauraq	The fork of the river where the main channel branches.
725.	Sauniqtukruaq	Bluffs.
726.	Nauyaqrum qikiqtaŋa	An island.
727.	Iñutaq	A hill.
728.	Taimmali	A slough.
729.	Qapaisrualuk	A slough.
730.	Putu	A slough.
731.	Napaaqtuq	A slough.
732.	Sivugauraq	A bluff.
733.	Kaŋuqturuaq	A lake.
734.	Itiqsraq	A slough.
735.	Aqiqqiḷaq	A river bank; also called Aqiqqiḷauraq.
736.	Palitqiun	A slough. Same as Number 498.
737.	Palitqitim qaaŋai	A lake.
738.	Quluuraq	A mountain.
739.	Napaaqsraqniaqvik	"Place to obtain birch for sled stanchions." A former hill, now quarried.
740.	Kitlit	A series of bluffs.

741. Aqsraqsiaqvik — An old river levy and archeological site.

742. Kuvriaq

743. — Lakes.

744. Anat kuuġuurat — A slough.

745. Saliñiq — "The point." A slough.

746. Qikiqtaqchiaq — "Small island." The point at the confluence of the Kobuk and Squirrel rivers.

747. Uqtutaiḷaq — A point of an island.

748. Qayaina — A point.

749. Kuuġuqpak — A slough.

750. Iñġiiḷaq — A small mountain.

751. Kuukpik — The main channel of Kobuk River.

752. Sapusriġiachiaq — A shallow section of the river, suitable for erecting fish weirs.

753. Nigaqtuqvik — A bend in the river and point bar.

754. Iġmalikḷuŋnat — The smaller channel of Kobuk River.

755. Qimimisruaq — The southwestern end of a hill.

756. Sivugauraq — A hill near the river bank.

757. Qasruniqruaq — A bend in the river and adjacent eddy.

758. Kuutchauraq — A slough.

759. Piŋuqsraq — A hill.

760. Kuutchauraq — A slough. Same as Number 758.

761. Tirraqpak — "Mink." A broad bend in the channel and point bar.

762. Sauniqtukruaq — An island.

763. Siksisaat — "Quiver." An island. Also called Qikiqtatchiaq, "new island."

764.	Ayuukruaq	A small channel of Kobuk River.
765.	Quluqutat	A stand of spruce.
766.	Kuutchauraq	A hill.
767.	Taksrukruaq or Siḷaviġiaq	The beginning of the Kiana-Selawik winter trail.
768.	Taksrukruaq or Siḷaviġiaq	A slough.
769.	Aŋmanauraq	Unmanokuk Creek.
770.	Ayuukruaq	A slough or small channel of Kobuk River.
771.	Qariaqiarairuaq	An area of campsites.
772.	Naatat	A bend in the river.
773.	Qiyiaqaqtuaq	A campsite.
774.	Mayuġiaqpak	A cemetery.
775.	Aksik	An old village site.
776.	Kitliqpaat	A point bar at the bend of Kobuk River.
777.	Aġviġiuraq	A slough.
778.	Tapligiaq or Kuurguraq	A slough.
779.	Qupputit	A channel and point bar.
780.	Piquuraq	A grave site and campsite.
781.	Piquuram qikiqtaŋa	An island.
782.	Kaŋisugruk	A lake.
783.	Taisiksraqvik	A cemetery.
784.	Nasruuraq	A cemetery.
785.	Maġġaqtut	A hill.
786.	Aki	A cut bank and campsite.
787.	Quppurauraq	A campsite.

788.	Quppurauraq	A channel.
789.	Katyaurat or Katyaaq	A fork in the river and fish camps.
790.	Iivaqpak	An oxbow lake.
791.	Kuugaaġasugruk	A slough.
792.	Saiyuŋat	A hill.
793.	Kuurakatniq	The entrance to Riley Channel; also the name of Riley Channel.
794.	Attiviak	A slough.
795.	Anaaniraq	A campsite.
796.		A portage along the winter trail to Kotzebue.
797.	Manniksruruaq	A cut bank and campsite.
798.	Qiluqviuraq	A cut bank, campsite, and portage on the Noorvik-Kotzebue winter trail.
799.	Kiŋiktaaq or Nigraqpak	A cut bank and campsite.
800.	Anniviuraq	A slough.
801.	Isruqtuq	A cut bank, slough, and campsite.
802.	Ipnam isruq	A cut bank.
803.	Paiḷagiaq	A lake. Same as Number 563.
804.	Ataniqruaq	
805.	Kaŋisugruk	A lake.
806.	Ukunnaq	A campsite.
807.	Umiivik	A hill.
808.	Nunaqpaq	A cut bank and area between it and a lake.
809.	Qisrakpaich	A cut bank and portage. Also called Qaimitaqliq, the place where one speared sheefish with a qaimitaq.
810.	Nunaqpak	A slough and portage.

811.	Ukiuvikruuraq	A campsite. Same as Number 680.
812.	Milugiuvik	A slough and campsite.
813.	Quġluqtauraq	A slough.
814.	Qemutaġlik	A spring fish camp.
815.	Siiññilikruaq	An oxbow lake. Same as Number 573.
816.	Iḷaat qutchim iñġit	A mountain. (An Indian word.)
817.	Viisfilit	Two mountains. (An Indian word.)
818.	Kunuguit	A mountain in the eastern Norutak Hills. (An Indian word.)
819.	Qutuguigat	The western mountains of the Norutak Hills. (An Indian word.)
820.	Niikilagti	A creek. (An Indian word.)
821.	Siitikqiliq	A group of mountain peaks. (An Indian word.)
822.	Niksiksuq or Niksiksugvīk	Asiksat Creek.
823.	Qauqsilat	A group of mountains.
824.	Uuman	Two mountains.
825.	Vaajatna	Hog River. (An Indian word.)
826.	Kuugaatchiaq naqhuḷauraq	A creek.
827.	Niikilagna	(An Indian word.)
828.	Nuatam qaaŋai	The head of Noatak River.
829.	Kuuvam qaaŋiiḷaq	The head of Kobuk River.
830.	Qitchaġigaq qauqa	Kichaiakaka Creek. (Derived from an Indian word.)
831.	Utquqqžiñiq	The mouth of Dall Creek.
832.	Sugliurat	"Little grebes." A campsite and slough.
833.	Isruqtauraq	

834. Niqaaq "White lichen."

835. Qaniqtuuq "Frost."

836. Alukvik "Licking place."

837. Avvayak "The other half of the pair."

838. Akiġuq "Branch." Akiak Creek.

839. Kitliq "Cut."

840. Quġlut "Waterfalls."

841. Siksrikpak Squirrel River.

842. Imagsuk Hotham Inlet or Kobuk Lake.

Place Names according to NANA Orthography[1]

1. Itkiligiak
2. Isitkok
3. Oataigon
4. Kangainak
5. Isitkok
6. Ahkuutuuktuuk
7. Ahkuutuuk
8. Kokyuvik
9. Ulukrhaktoot
10. Egaitailoaragvik
11. Uneelak
12. Ileelagaarook
13. Nakonuk
14. Soolookpaat
15. Alaarhoorak
16. Ipnagreech
17. Alaarhook
18. Koaknook
19. Kuungnunuk
20. Alugevik
21. Evesaktiknilik
22. Ootkusiksuk
23. Punnavik
24. Kugruum nulimah
25. Oyookak

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[1] For explanation see pp.696-97.

26. Tupilik
27. Papeguuk
28. Tupilik
29. Eyoujinya
30. Eyagona
31. Kuugroak
32. Ignik
33. Soolookpukchak
34. Angunaksoak
35. Angelaagagak
36. Oonaktak
37. Alakanalik
38. Kalugluktoak
39. Akusakvik
40. Savikiksaakvik
41. Avaagaraat
42. Avagun
43. Ookpikroak
44. Kupyuuk
45. Ningnuuk
46. Paaktik
47. Kungeguk
48. Esigak
49. Kalukpalik
50. Ninngoyak
51. Iyagak
52. Ipnaylivich

53. Narhoruk

54.

55. Nakrhagluk

56. Ipnaylivich narvangat

57. Kaviksoruk

58. Igiklhak

59. Eluupkorurali

60. Ikainarook

61. Negekpaluukruruk

62. Tunuutkuchak

63. Akutoagroak

64.

65. Cheepuluguktikvik

66. Ekehksaheht

67. Koalroot

68. Imailyak

69. Kolurok

70. Imanigrurut

71. Oksahkaik

72. Kalugreech

73. Sikrhikpuktoogroat

74. Kognagak

75. Eelailagalik

76. Kognagak

77. Sisuuktut

78. Ulupneak

79. Ulupnegeak
80. Naklhakalooktoak
81. Kaviksogroak
82. Kaviksogroagehk
83. Amakum analik
84. Kalukpilivik
85. Ungayou
86. Kalookpiliveruk
87. Upkugahruuk
88. Noonguich
89. Akilik
90. Siksinik
91. Akulikutt
92. Naparochak
93. Akilik
94. Nurhitchogvik
95. Mungoak
96. Noona
97. Kalugrevik
98. Nokehktee
99. Siksinyik
100. Inyukilyisok
101. Kuukroak
102. Ahkehgok
103. Silyeen
104. Sakungarognik

105. Soolookpetchak

106. Noonagarich

107. Kaluksaruktuuruuk

108. Kaluugrolik

109. Eeyagak

110. Tingmaksiak

111. Kikikaktoak

112. Oorgeliksuuk

113. Ayagehluuk

114. Nanigeht

115. Aneerak

116. Oolookrhorutt

117. Kaluktagim pahtunga

118. Talhak

119. Alakailyak

120. Kalugrevik

121. Toolhook

122. Ataachak

123. Toolhook

124. Akuligak

125. Tigitigaaktugroak

126. Maggatchik

127. Ookevikreech

128. Koglikpaht

129. Pikoaklhook

130. Happy Jack's

131. Kootvuk

132. Oongaloogroak

133. Ivisaakpaht

134. Isigakpuk

135. Kutukatook

136. Kalukseegayuk

137. Paalhook

138.

139. Nigrak

140. Ingaloaktulyurhivik

141. Koriyaak

142. Meelooktokrhut

143. Kangigagroak

144. Nigiklhik

145. Kuukpik

146. Milooget

147. Ingisuugruich

148. Naparuuk

149. Manuilisut

150. Ivisaak

151. Neeyalak

152. Iyagakpuk

153. Nutmuktogiak

154. Pitaokik

155. Kattoonigroak

156. Kilgikseen

157. Pitkhik

158. Seekuktook

159. Ookallik

160. Neahleak

161. Kuugvait

162. Kuahchayvuk

163. Makleen

164. Koongalook

165. Ataigotit

166. Mirhuk

167. Toonoorak

168. Kopsiksoot

169. Tugloogrooralik

170. Angattak

171. Ahlhook

172. Omalurukk

173. Ikpigruuk

174. Kaveerut

175. Naikokchelik

176. Siklyorak

177. Kahyahk

178. Isingnum pahnga

179. Isingnak

180. Paatitaak

181. Toonootum paaktunga

182. Toonootak

183. Negoktukvik

184. Toonootum ake

185. Massutuuk

186. Pitoakkik

187. Pongaktoagrook

188. Oonik

189. Muklhook

190. Kelvageyaak

191. Kelvagegroak

192. Apekelik

193. Pongaktoagrook

194. Irhakaglik

195. Amaatook

196. Kupokaakvik

197. Akrhuksegvik

198. Millugivik

199. Kigaich

200. Nuna

201. Esahkuklik

202. Nurhikvik

203. Pelyukvik

204.

205. Tulukaat or Tuuluukaat

206. Nututkoktogvik

207. Tunutoruk or Tuunuutoruk

208. Tunutoruk or Tuunuutoruk

209. Anuwetuut
210. Atuniktlegeek
211. Anuwetuut
212. Kogloot
213. Oonaksegak
214. Notorakti
215. Ungeelagagak
216. Minakakosa
217. Kolagaaseelut
218. Iggak
219. Nurvak
220. Savikiksagvik
221. Anoliklhikvik
222. Killak
223. Unguyukakchak
224. Todittina
225. Kegutilegoruk
226.
227. Tekahlhona
228. Sooloopogaktoak
229. Sektoorut
230. Kirgavat
231. Koakoopaat
232. Tinniktoaga
233. Tahlhahairotit
234. Kologaa silyat

235. Koyoageelua
236. Akpalik
237. Aket
238. Kalukpiliveerak
239. Neelungnorut
240. Akusagvik
241. Kogloot
242. Noyaat
243. Kogluich
244. Kalugrooktoak
245. Noyaktoak
246. Oolookseerak
247. Ingik akulak
248. Ilyakosim ingik
249. Kisimalot
250.
251. Kuugokpuk
252. Akechanook
253. Itivllik
254. Seetinya
255. Tulugak
256. Tokaatkan
257. Tigligakvik
258. Niksiksogvik
259. Tulugak
260. Atoonyageechak

261. Tulukaat

262. Pah

263. Thlahkik

264. Killukk

265. Kayoktaagvik

266. Kikiktakpuk

267. Mauneluk

268. Oomun

269. Tavasaa

270. Maunelum paht

271. Kalukreevik

272. Kuukchakaruk

273. Narvuksugruk

274.

275.

276. Tirragvik

277. Agayootlhook

278. Puttkuruk

279. Karget

280. Evah-ik

281. Tahloruk

282. Kalukseegayoat

283. Kalla

284. Oomegveerak

285. Ahkokrhachak

286. Putuchak

287. Kaagoak

288. Koogchorak

289. Toaileek

290. Sahtuviksurook

291.

292. Ipnorutt

293. Saavaayiksugroak

294. Kuugluuktuum pahnga

295. Kuugluuktuum

296. Kaninakseevik

297. Kalugiksook

298. Tulukaakseegayook

299. Seevukmoogiyak

300. Okoaklinik

301. Ingigvuk

302. Kaiksok

303. Keeksoogak

304. Kalugroaligoarak

305. Isingnak

306. Oopinigavechak

307. Ahnaroiik

308. Kirooktogvik

309. Erikitchook

310. Pitkhik

311. Uyoagekak

312. Pitkhik

313. Tootrelook

314. Kuahchayvuk

315. Putkak

316. Inyuraktoktoat

317. Kolokotait

318. Takiroak

319. Aksaaktuk

320. Tunutuk

321. Putoorak

322. Katookseek

323. Seligsugvik

324. Imaklooktoagruk

325. Itivruk

326. Oorgeelyetchelik

327. Ilaakogroak

328. Mitkolageech

329. Imaklooktok

330. Avilyoktoarak

331. Kutyaakchak

332. Takiroak

333. Imaklooktok

334. Kutyaakchak

335.

336. Nahrvasuugrochak

337. Eeyakikotallik

338. Siklhikrhak

339. Narvuksugreech

340. Paangootitallik

341. Igaun narvuk

342. Salagoacheek

343. Kalukseegayoat

344. Koogchoruk

345. Ukallim ingik

346. Koogchoruk

347. Ikepuk

348. Aloorak

349. Atanigroak

350. Ukallim koogok

351. Tokonaatut

352. Kilgivakluk

353. Ikrhetkaklhook

354. Angutigroak

355. Nigaktogvik

356.

357. Anoalagveerak

358.

359.

360. Piknik

361. Oonaktok

362. Kuugluuktok pahnga

363. Kanayim narvaat

364. Napaaktogvik

365. Ayoapeevik

366. Savim kivivea

367. Nuvuvlooktoak

368. Akuligak

369. Itkiliklhook

370. Akeetchak

371. Aktook

372. Akpetchoolyak

373. Eelyuvoarak

373A. Ikrhakrook

374. Noarhoagniktugroak

375. Soatnuk

376. Ipligvik

377. Ayoagechak

378. Akpetchoolyak

379.

380. Sallinyoarak

381. Patikturuukseektoak

382. Ikrhachak

383. Nahtaat

384. Erhuuktoruk

385. Seevullikrhaktee

386. Itchoagvik

387. Kuuchoruk

388. Kaana

389. Kuugaachevuk

390. Kayetchok

391. Igloagaachak

392. Kuugchak

393. Keerim narvut

394. Sayoukk

395. Oomittak

396. Sogleat

397. Kungiahkrook

398. Kheegauk

399. Ungutkok

400. Muyogegroak

401. Putusaakpuk

402. Sayuugeek

403. Napoorak

404. Oallakrhoagechak

405. Ipnakrolik

406. Koraak

407. Kasuuniksehk

408. Bonneekuk

409. Siklheukrhuk

410. Khanalik

411. Tayagaralik

412. Tikigahrhuugruk

413. Kinnak

414. Itrigusook

415. Imaksiktoak

416.

417. Erahkuukroak

418. Tuuluukaat or Tulukaat

419. Ahveluutkuukroak

420. Sugoagligeyooktoak

421. Paneeyavik

422. Okoaglik

423.

424.

425. Sikrhik

426. Poyoorak

427. Kukrhikloruk

428. Igroongnaktoorak

429. Sesauk

430. Sesauk

431. Oopingaachak

432. Soovaitailyorak

433. Igauna

434. Kipmim nanigak

435. Kaliktoagrit

436. Ekaakchailik

437. Agnorak

438. Sikinyakchak

439. Kangisoogrook

440. Eraiyayoot

441. Aniroyayoot

442.

443.

444.

445.

446.

447.

448.

449. Kaklhekuuvik

450. Sisauk

451.

452. Sikrhikpuk

453.

454. Niakok

455. Napaaktusuugrochak

456. Tuutuuluukvik

457. Kalugraychorak

458. Selikturauk

459. Tutukrhuk or Tuutukrhuk

460. Kalhak

461. Kalugroak

462. Nigrak

463. Kalugreevik

464. Ungmaloangutt

465. Ilyulak

466. Poorhimaktok

467. Korhimmaktok

468. Ketiklheruk

469. Koogogakatchak

470. Kikrhuk

471.

472. Tittaaliksok

473. Kavagin

474. Doongivik

475. Igliktikseekvigrauk

476. Toonootak

477. Kuvrikvik

478. Kalugraychak

479.

480.

481.

482.

483. Narhutchorak

484. Allalauruk

485. Sissit

486. Kakehktuukvik

487. Ooliksok

488. Ilyagongalook

489. Napoorak kikiktakchak

490. Napoorak

491. Tetaahrik

492. Tetaahrim kikiktunga

493.

494. Ingaingalook
495. Iyagagroak
496. Kagoroak
497. Nuna
498. Palitkheen
499. Etikrhukpuk
500. Atcheechgoot
501. Marhoon
502. Kangisoogrook
503. Eegavisi
504. Ungootitoot
505. Kikoli
506. Amaguat
507. Kalukseegayot
508.
509. Ikseekvik
510.
511. Amaguat
512. Seeligagrook
513. Amitchok
514. Attikoon
515. Pootooroak
516. Eluveiik
517. Poottogroak
518. Ingaloongnut
519. Apaagok

520. Koovaitchagok

521. Apaagok

522. Nunavakchak

523. Kuglu

524.

525. Nunavakchak

526. Enekuglik

527. Oarakveerak

528. Aneroolik

529. Kakahk

530. Iyagak

531. Koovaitchagok

532. Koogogroak

533. Toaksignagvigrooroak

534. Sesoogorut

535.

536. Kalugroak

537. Toonootkochogak

538. Tookoon

539. Toonootkochogak

540. Immanyukpuk

541. Paamagngut

542. Sesoogorak

543. Toonootkochogak

544. Oarok

545. Taupachak

546. Iyagoaritkagvik

547. Arhugauruk

548. Arhailivim koogo

549. Taupachagak

550. Kangigak

551. Nigaktugvik or Nigaktuuqvik

552. Nigaktugvik or Nigaktuuqvik

553.

554.

555. Arhigagangnik

556. Kiglavuk

557. Singagrook

558. Ekpik kikiktak

559. Ekpeech

560. Kukkupah

561. Soaniktugroak

562. Pailyut

563. Pailyagak

564. Khapkoeruk

565. Tuuturvik

566. Nunangaittoak

567. Kanoalak

568. Tootipkailook

569. Koagakaktoak

570. Nigrut

571. Koogoarak

572. Aki

573. Seenyiligroak

574. Ungarraakaktoak

575. Atangan tukrhoa

576. Atangan tukrhoa

577. Ahlikkatok

578. Ungaragaktok

579. Koogokoorak

580. Kirgagroak

581. Koogok

582. Seeligalik

583. Illutmuahyuktok

584. Putugroak

585. Putuchak

586. Ookaatrivik

587. Kayaugrauk

588. Noligalik

589. Putugroak

590. Kookpik

591. Kooviksoan

592. Tukrhook

593.

594. Kavloonut

595. Oolaknak

596. Imagnik

597. Kangillik

598. Nuyahkik

599. Nuyahkim kaangani

600.

601. Koloorak

602. Makagruk

603. Makagrugak

604. Iglutuuk

605. Iglutuuk

606. Narvagak

607. Ahtinigak

608. Ahtinik

609. Imagrigroak

610. Kaarhigailigoaruk

611. Kaarhigailigoaruk paanga

612. Avinyak

613. Imaagvik

614. Kurhuugruuk

615. Tiktahlik

616. Kuchoruk

617. Kuchoruk

618. Aatum paanga

619. Sailyak

620. Ahlikkatok pukeem

621. Ningnuehk

622. Tatuaruk

623. Tatuaruk

624.

625. Akooligagoon

626. Kanesahkrouk

627. Takusuiluk

628. Ahtinik

629. Nuviluk

630. Oopingeveruk

631. Kukikpuk

632. Akikkiroaruk

633. Tuutlikaktoak

634. Agvigak

635.

636.

637. Agnakaiyaak

638. Ahlikkatok pukeem

639. Sesurok

640. Kugluktauruk

641. Ekkaninaak

642. Ilyavrak

643. Kalukseegayueech

644. Akoolikitchoagrueech

645. Okpim toonoa

646. Ninngok

647. Narhoom oongutaat

648.

649. Seevugachak

650. Tuuluugoagnut

651. Noayut

652. Noayak

653. Noayak mayoogakpuk

654. Naatut

655. Okrhokaalook

656. Tallooyut

657. Tallooyak

658. Kangilyak

659. Amammnoonaagak

660. Oongaloogroak

661. Ekpeetchak

662. Tūngalik

663. Ootoaruk

664. Ilyavrak

665. Suttuu

666. Suttuu

667. Sinauniksuk

668. Tūngalik

669. Punitchoruk

670. Seesuurok

671. Songahm nahrvah

672.

673. Taamali

674. Taamali

675. Cap Nelson's River

676. Kuurgurak

677.

678. Kigrurauk

679. Ulagruk or Oolahkrook

680. Ookeevigroorak

681. Nunakpuk

682. Koogokoorak

683. Akikkaksiik

684. Atigotim koogaachainga

685. Atigon

686. Ningoot

687. Kuukuuchak

688. Ahmomnanah

689. Ahmomnanagak

690. Ahmomnanah

691. Ahmomnanagak

692. Kalhakpuk

693. Avallik

694. Kangigagroak

695. Paalitkheen

696. Seevugachak

697. Nahrvagrooragak

698.

699. Ayakaingulook

700. Kimichat

701. Kimichat

702. Nahrvagroorak

703. Oogrevik

704. Uulugaagrook paanga

705. Putungnyigroak

706.

707. Koorgurak

708. Amaguat koogok

709. Eketchak

710. Arhailivik

711. Kikiktakchak

712. Kalgogveech

713. Kalgogvik

714.

715. Kimimirhoak

716. Maggaklhak

717. Sugleerut

718. Kalehkroak

719. Nulloak

720. Pingokrhachak

721. Napaaktoktuk

722. Kargigroak

723. Noyugrauk

724. Nulyoarak

725. Sauniktunguruk

726. Noayagrum kikiktunga

727. Inyutak

728. Taamali

729. Kapairholook

730. Putu

731. Napaaktook

732. Seevugoruk

733. Kangokturoak

734. Etikrhuk

735. Akikkilyak

736. Palitkheen

737. Palitkhitim kaange

738. Koluurak

739. Napookrhagnagvik

740. Kitlit

741. Akrhaksagvik

742. Koovrak

743.

744. Anut koogorut

745. Salinyik

746. Kikiktakchak

747. Oktootailyak

748. Kayana

749. Koogokpuk

750. Ingeelyak

751. Kookpik

752. Sapoorhigaichak

753. Nigaktogvik

754. Igmaliklyoongnut

755. Kimimirhoak

756. Seevugoarak

757. Karhoonigroak

758. Kootchorak

759. Pingokrhak

760. Kootchorak

761. Tirrakpuk

762. Sauniktunguruk

763. Siksisaat

764. Ayoogroak

765. Kolokotut

766. Kootchorak

767. Tukrhoogroak

768. Tukrhoogroak

769. Ungmunorak

770. Ayoogroak

771.

772. Naatut

773. Kiyahkaktoak

774. Mayugakpuk

775. Aksik or Uksik

776. Kitlikpaat

777. Agvigeerak

778. Tupligak

779. Koppootit

780. Pikoorak

781. Pikooram kikiktunga

782. Kangisoogrook

783. Taisikrhagvik

784. Narhoorak

785. Maggaktoot

786. Aki

787. Koppuroarak

788. Koppuroarak

789. Kutyoarut or Kutyaak

790. Eevakpuk

791. Koogaagasoogrook

792. Saiyoongut

793. Kuurakatnik

794. Attivaik

795. Anaanerak

796.

797. Mannikrhuroak

798. Kilogveerak

799. Kingiktaak

800. Anniveerak

801. Erhoktok

802. Ipnum erhok

803. Pailyagak

804. Atanigroak

805. Kangisoogrook

806. Ookoonak

807. Oomeevik

808. Nunakrhak

809. Kirhakpaich

810. Nunakpuk

811. Ookeevigroorak

812. Milugeevik

813. Kogloktorak

814. Pikoarak

815. Seenyiligroak

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