WILD RESOURCE USE OF THE TULUKSAK RIVER DRAINAGE BY RESIDENTS OF TULUKSAK, 1980-1983

by

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ABSTRACT

This study documents contemporary (1980-1983) wild resource use in the Tuluksak River drainage by Tuluksak residents. It identifies which wild resources are used, the scheduling of harvest activities, and the location of use areas. Data reported here provide information needed for an evaluation of potential impacts of future gold mining activities on the uses of fish and game resources in the Tuluksak area. Interviews using a standardized interview guide, informal discussions, the preparation of household use maps, and direct observation were the major research techniques.

Sample households, which were considered by themselves and other village residents as very active in wild resource use, harvest nearly the full range of available wildlife each year. These households are very similar in their sociocultural characteristics. They have older (average age: 62.6) household heads, compared to the community as a whole, at least one adult child (18+) in residence, and are more often three-generation in composition than other village households.

The study demonstrates that the Tuluksak River and adjacent land areas are used intensively for most resource harvesting activities, particularly moose, bear, waterfowl hunting; trapping; berry picking; and whitefish fishing. While most salmon fishing by Tuluksak residents is on the Kuskokwim River, 70 percent of all Tuluksak households participated in subsistence and/or commercial salmon fishing.

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INTRODUCTION

Research was conducted on wild resource use in the Tuluksak River drainage in response to a request from the Division of Habitat, Region IV, of the Alaska Department of Fish and Game (ADF&G). This study was requested to provide information for evaluating the potential impact of future gold mining activities in the drainage on fish and game resources and their uses. Division of Habitat (ADF&G), Division of Commercial Fisheries (ADF&G), and the U.S. Bureau of Land Management (BLM) also conducted environmental studies in the drainage during summer 1983. More specifically, these studies were conducted to provide information to assess the potential impacts of instream mining and channel diversion on resources, habitat, and human uses. A private gold mining firm has requested a permit to undertake such activities in 1984 (Collinsworth 1983). The environmental studies were intended to examine the effects of sedimentation on salmon spawning and rearing habitat in the Tuluksak River and the effects of turbidity from dredging on the production of organisms in the stream beds. This study was designed to identify the types of resources harvested in the Tuluksak River drainages by Tuluksak residents, to record the resource use areas in the drainage on maps and to determine the annual scheduling of these harvest activities. The results of this study are presented in this report.

In 1981 and 1982 residents of Tuluksak and the Division of Commercial Fisheries (ADF&G) expressed concern about the muddied water of the Tuluksak River, which resulted from mining operations which occurred at that time, and the threat of this water condition to spawning salmon (Collinsworth 1983). These reports were verified by observations and documentation (written and photographic) in 1982. A private gold-mining company requested a permit for

instream mining in 1983. This request was denied. The Alaska Department of Fish and Game agreed to conduct environmental studies in the proposed area for mining after which it would reconsider the permit for 1984 (Collinworth 1983).

Tuluksak residents continued to voice their concerns during spring 1983 and requested an informational meeting to be held in Tuluksak. An informal meeting of the Tuluksak City Council and citizens of Tuluksak was held on May 9, 1983 in Tuluksak to discuss the proposal of the private gold-mining firm to divert a channel of the Tuluksak River as part of their mining operations. Residents voiced concerns for the habitat of the salmon spawning grounds and impacts to local natural resources and uses of these resources. Representatives of BLM, ADF&G, and the mining company were present among others. Community residents noted changes in water color due to mining activities and increased shallowness of the Tuluksak River since 1981 (Peterson 1983).

Following this meeting, a representative of the Division of Subsistence met with other Department staff and personnel from BLM regarding proposed studies for summer 1983. The Division agreed to conduct a study of wild resource uses in the Tuluksak drainage, although personnel and funding were limited. With the exception of the Division of Commercial Fisheries (ADF&G) subsistence harvest counts, there has been no systematic documentation of resource activities in this area. A research workplan was developed and discussed with Tuluksak city officials. They endorsed the proposed research with residents of the community.

Tuluksak is situated at the mouth of the Tuluksak River near the Kuskokwim River, approximately 60 river miles above the regional center of Bethel (Fig. 1). In 1980 there were 270 residents in 41 households (U.S. Bureau of Census 1980[a]) and during our study there were 308 residents in 52 households. The

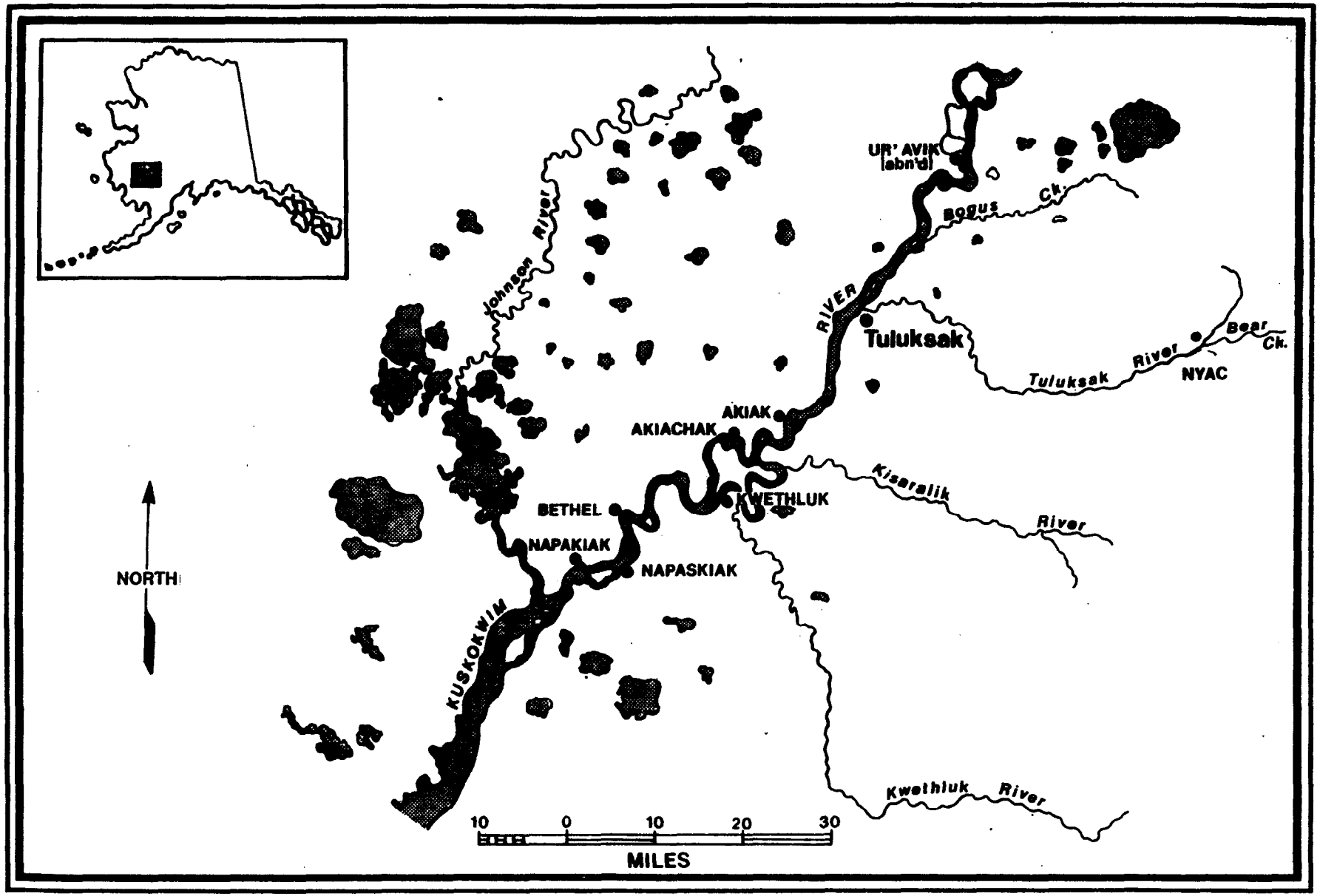

Fig. 1. Location of Tuluksak and lower Kuskokwim River settlements.

settlement has been occupied continuously since the late nineteenth century (Oswalt 1980:84). During the early twentieth century gold was discovered on the upper Tuluksak River and a few claims were worked (Oswalt 1980:67). Dredging for gold was most productive from 1925 to 1929 and after a brief closure continued from 1931 to 1965, with dredging recommencing in the 1970's (Oswalt 1980:67; Collinsworth 1983). These operations were conducted primarily upstream of Nyac, located near the mouth of Bear Creek. In 1981 mining activities shifted to tributaries further downstream.

METHODOLOGY

This research used several data collection techniques. Data were collected through systematic interviewing, informal discussions, direct observation, mapping sessions, and a literature review. The field research was conducted by the junior researcher who is bilingual in the English and Yup'ik languages and who has performed similar research in other Kuskokwim River communities. The senior researcher designed the research project, visited the study site, compiled the data, and is responsible for the content of this written report.

Field data collection focussed on interviewing all households in Tuluksak with members who use the Tuluksak River drainage for harvesting fish and wildlife and who are considered knowledgeable about wild resources in this drainage. The Tuluksak City Council identified 13 individual heads of households who actively utilize the Tuluksak drainage for harvesting a variety of wild resources and have a long (40+ years) history of use of the area.

Systematic interviews and mapping sessions were conducted with 11 of the 13 individuals whom the Council recommended. Scheduling conflicts during the

field aspect of the project prohibited us from interviewing two of the individuals. Six other household heads are known to actively use the Tuluksak drainage for a variety of resource harvest activities. Three of these men use essentially the same area as their fathers, who were interviewed as part of this study. We feel confident that their uses would be adequately included in what is reported below.

Most other households in Tuluksak (33 of 52 households in 1983) were reported to utilize the Tuluksak drainage for some harvest activities, such as berry picking, trapping, or moose hunting, but do not currently harvest a full range of fish and wildlife as do the individuals who were recommended for interviewing. It was on this basis as well as their long-term use that Council members identified key respondents for this study. Because of this, we believe that the description of resource uses and mapped information as presented below most likely incorporates the activities and use areas of these 33 households which are presently more restrictive in their use of the Tuluksak River drainage. Similarly, some members of other communities are known to use the Tuluksak drainage for some harvesting activities. The communities of residence of these people were systematically recorded during the course of the interviews. Because this study was intended to focus on the use of the Tuluksak drainage by Tuluksak residents, these other people were not interviewed.

Data Collection

Key respondents in Tuluksak were systematically interviewed using a survey form which addressed five research questions:

1) What fish, game, and plant resources are obtained from the Tuluksak River drainage?

2) At what times of year are these resources obtained?

3) In what areas of the Tuluksak drainage have these resources been obtained in the last three years and in a person's lifetime?

4) Why are these areas considered important for resource harvesting?

5) What changes in resource abundance have been observed and when did they occur?

During the interview sessions respondents noted on maps areas where they have harvested fish, game, and plants (berries, wood) in the past three years (1980-1983). A three-year time period was selected in order to accomodate yearly variations which may be attributed to unforeseen personal circumstances (such as illness, civic responsibilities, funerals, and equipment breakdowns) resulting in scheduling conflicts. Yet at the same time, the three-year period would provide a contemporary picture of uses. If an individual had used other areas during his lifetime, these were noted to depict historical use of the drainage. Resource use areas were drawn on U.S. Geological Survey (USGS) topographic maps (scale 1:250,000) using acetate overlays and colored markers. A composite map of use areas was prepared to insure confidentiality of individual use areas and to represent use areas in a community context. Draft maps showing use areas were reviewed locally prior to their inclusion in this report.

Demographic information was collected in order to examine resource use within a community context. A household census was compiled during field investigations.

Formal discussions took place with all respondents to elaborate on historical aspects of resource use and personal experience related to harvest activities in the Tuluksak River drainage. Two elders were formally interviewed on the historical development of Tuluksak during the first half of this century. Informal discussions with community residents yielded informa-

tion on the types of uses of the Tuluksak River by individuals who were not formally interviewed.

The harvest of salmon which were taken for subsistence use, and processing techniques were recorded during August. All households which harvested salmon for non-commercial use were interviewed and their king, chum, and red salmon harvests recorded. This survey was conducted because of the Division of Commercial Fisheries previously report of importance of salmon to Tuluksak residents and the Tuluksak River as a major salmon spawning system (Collinsworth 1983). Furthermore, budget restrictions within the Division of Commercial Fisheries eliminated subsistence salmon surveys in most Kuskokwim River communities in 1983. Silver salmon harvests were not recorded, since they are relatively limited and silver salmon were still being harvested when the field study ended.

Historical documents available locally were examined to understand the history of contact and historical development of the community. This aspect of the research included reviewing material from early census reports (Petroff 1884; Porter 1893; and Rollins 1978) and missionaries' and scientific accounts (Schwalbe 1951; Drebert 1959; Hrdlivcka 1944; and Oswalt 1963) for information on population, resources, and community characteristics. Other literature containing historical sites information were examined as well (see Oswalt 1980; Orth 1967).

FINDINGS

Natural Setting

The Tuluksak River drainage includes tributaries which head in the

Kilbuck Mountains and flow south and northwest across the foothills and lake-studded flats into the Tuluksak River. Streams which enter the Tuluksak near its headwaters include Bear, Dry, and Granite creeks, while Otter Creek and Fog River join the Tuluksak on its middle and lower reaches, respectively. The 90-mile Tuluksak River valley traverses three major ecosystems--a bottomland spruce forest near its mouth, an upland spruce-hardwood forest along the middle reaches, and a high brush ecosystem toward its headwaters (Major Ecosystems of Alaska 1973). These three ecosystems provide a variety of wildlife, particularly large and small game, such as bear, moose, beaver, arctic ground squirrel, and ptarmigan which are utilized by area residents as described below. Numerous lakes and small streams are situated within the low-lying areas southeast of Tuluksak. Here moist and wet tundra ecosystems provide habitat for fish species such as whitefish, burbot ("lush"), and blackfish as well as for muskrat, beaver, and migratory waterfowl. The Tuluksak River is a spawning system for king, chum, coho, and pink salmon, and arctic char (Alaska Department of Fish and Game 1983). The Fog River is a spawning system for chum salmon. Currently the settlement of Tuluksak is situated on the left bank of the Tuluksak River near its mouth.

Historical Background

Tuluksak is known to have been occupied continuously since the mid-1800's until the present day. The name for the settlement is derived from the Yup'ik Eskimo term, Tuulkessaq[1], which refers to the yellow-billed loon. The

[1] Yup'ik Eskimo terms in this report are written using the orthography developed by the Alaska Native Language Center, University of Alaska, Fairbanks.

population of Tuluksak was first recorded in the tenth United States census in 1880, when 105 people were reported to be residing there (Petroff 1884) although other individuals may have been away at seasonal camps. At that time, the village was situated opposite the Tuluksak River from its present site where today a clearing of tall grass marks the former settlement. During the following 25 years, the population declined by over 50 percent, due in part to the 1900 flu epidemic (Table 1) (Oswalt 1980:68, 85; cf. also Wolfe 1982), but possibly due also to relocation to other settlements by some families -- a common practice in this region following the death of close relatives.

In 1907, 57 people comprised the population at Tuluksak when Moravian Church workers visited the settlement (Oswalt 1980:85). In the same year gold was discovered on Bear Creek, a tributary of the upper Tuluksak River in the Kilbuck Mountains, and by 1908, 50 miners were mining in the area (Oswalt 1980:67). The mining settlement of Nyac was established in 1915 and took its name from the initials of the New York Alaska Gold Dredging Company (Orth 1967:713).

During this same decade (1913 to 1919) several families from the native settlement of Ur'avik (spelled variously as Ogavik [Oswalt 1980:68], Uknavik [Orth 1967:1005], Ougavik [Schwalbe 1951:46, and Oravik [J. Lott: pers. comm., 1983] moved to Tuluksak and the population of Ur'avik continued to decline (Fig. 1). In the previous year (1912) a Moravian chapel was built at Tuluksak. It was reported to us that a large log store was built by Ike Carlson about the same time. This store was still operated in 1926 by Tony Sumi, a Japanese man who settled in the area and later operated a barge along the Kuskokwim River from Bethel (Hrdlicka 1944; Tundra Drums 1983). Based on interviews with Tuluksak elders, there were four houses and a qasgiq (men's community

TABLE 1

POPULATION FIGURES FOR
TULUKSAK, 1880-1983

Year	Number	Increase/Decrease
1880[1]	150	
1890	62	-59%
1907	57	-8%
1920	73	+28%
1930	96	+32%
1939	88	-8%
1950	116	+32%
1960	137	+18%
1970	195	+42%
1980	271	+39%
1983	308	+14%

[1] The years 1880 to 1970 come from Oswalt 1980.

[2] The 1980 figure is derived from U.S. Bureau of the Census 1980.

[3] The 1983 figure is from a census compiled by the researchers in August 1983.

house) in addition to the store at the older site of Tuluksak. These elders also noted that the log Moravian Church from Ur'avik was moved to the present site of Tuluksak probably in 1918 (Oswalt 1980:69). A native of Tuluksak, John Japhet, was the lay pastor. The population of Tuluksak increased to and was reported as 73 in the 14th U.S. Census in 1920 (Oswalt 1980:85). At that time the Kuskokwim River flowed adjacent to the village site on one side and the Tuluksak River on the other. However, spring flooding prompted relocation of the community to the other side of the Tuluksak River in the late 1920's. This is the current site of the community.

The consolidation of people from other settlements into Tuluksak continued throughout the 1920's and 1930's, based on local reports. Additional families from Ur'avik moved to Tuluksak about 1927, while others moved from Kuigurlurmiut on Bogus Creek in the early 1930's. However, these latter-mentioned people maintained a dual residence and continued to move back and forth from Tuluksak to the Bogus Creek settlement for some time. By 1932 the new Tuluksak site had 11 houses, a Bureau of Indian Affairs school, in addition to the church structure(s). The population had increased nearly 25 percent from the previous decade to 96 in 1930 (Oswalt 1980:85).

At the same time, mining operations in the Tuluksak headwaters developed considerably. The New York Alaska Gold Dredging Company imported and operated a dredge between 1925 and 1929 and a post office was established in 1926 (Oswalt 1980:67; Orth 1977:713). Production declined in 1929 and ceased in 1930, but resumed in 1931; another dredge was imported and by the late 1930's dredges were operating and an airstrip was built at Nyac (Oswalt 1980:67). Between 1940 and 1950 the population of Nyac nearly doubled from 33 to 64. Operations ceased in 1965 following a fire but resumed from 1972 to 1979. In 1981 and 1982 Northland Gold Dredging Company began mining operations below

Nyac (Collinsworth 1983).

Following World War II, the community of Tuluksak also saw continued development and growth. In 1948, a local form of government was established under provisions of federal legislation, the Indian Reorganization Act (48 Stat. 984; 49 Stat. 1250). An armory for the United States National Guard was erected in 1960 (Calista Corporation n.d.; Oswalt 1980:85). By 1960 Tuluksak's population began to approach that of 1880, as 137 people were counted at Tuluksak (Oswalt 1980:85) (Table 1). In 1970 a second class city was estabiiished and a municipal government formed under state law (Calista Corporation n.d.).

Contemporary Tuluksak and the Study Sample

Today, Tuluksak includes such facilities as a grade school and high school 4 stores (3 individual enterprises, 1 corporate), a 2,400 foot gravel airfield, a U.S. Post Office, a laundry-shower facility, and a Moravian Church. Electrical power is supplied by Tulkisarmute Incorporated, a corporation owned by the people of Tuluksak (N. Andrew: pers. comm;, 1983). Water is supplied through a community well, rainwater, and is drawn from the Tuluksak River. There is no sewage system, and honeybuckets and privies are used. Tuluksak's residents harvest and process a variety of fish and wildlife throughout the year. However, major equipment and supplies necessary for participating in these activities (e.g. outboard motors, nets, snowmachines, rifles) must be shipped in by air or transported by individuals from the regional center in Bethel. There is limited barge service to Tuluksak. The cost of shipping a snowmachine by air freight to Tuluksak from Bethel is more than the cost of shipping it from Anchorage to Bethel.

In 1979 each household had at at least one member who worked at a cash-earning job (U.S. Bureau of the Census 1980). In 1980 household income ranged

from less than $2,500 per year to $34,499 a year. However, those earning over $30,000 include non-local schoolteachers who are not native residents of Tuluksak (Fig. 2). The median household income in 1979 was $7,159 dollars compared with $25,414, the median household income for Alaska as a whole, and $13,656 for the Bethel Census area (U.S. Bureau of the Census 1980).

Household Composition

In 1983 Tuluksak's 308 residents were distributed in 52 households. The median household size was 6, although household size ranged from 1 to 12 (Fig. 3). Median household size for those with members who were interviewed was 8, but ranged in size from 4 to 12 (Fig. 3). Tuluksak households were further characterized by the age of the head of household (Fig. 4). The median age class was 40 to 49 years of age for household heads in the community as a whole, while the median age class for men in our sample was 60 to 69 years of age (Fig. 4).

The sample interviewed represented 21.2 percent (11) of the total number of households (52) in Tuluksak during the time of the study (July and August 1983) (Table 2). These 11 households comprised 29.9 percent (92) of the total population (308).

TABLE 2
TULUKSAK POPULATION AND HOUSEHOLDS

	Sample	Community
Number of Households	11	52
% Total Households	21.2	
Number of Household Members	92	308
% Total Population	29.9	

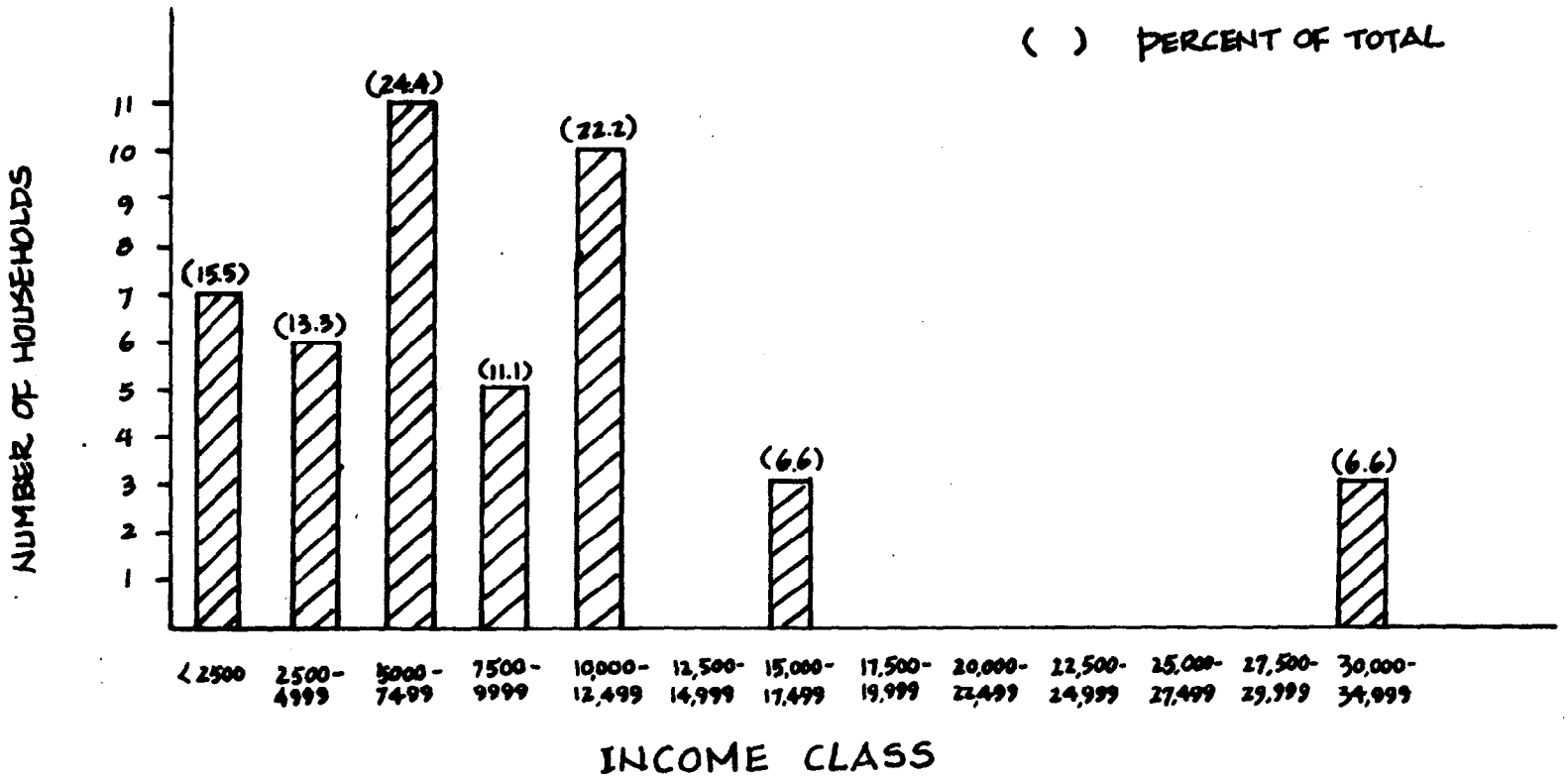

Fig. 2. Median income (dollars) of Tuluksak households (including temporary non-local residents) in 1979 (N=45) (U.S. Bureau of the Census 1980).

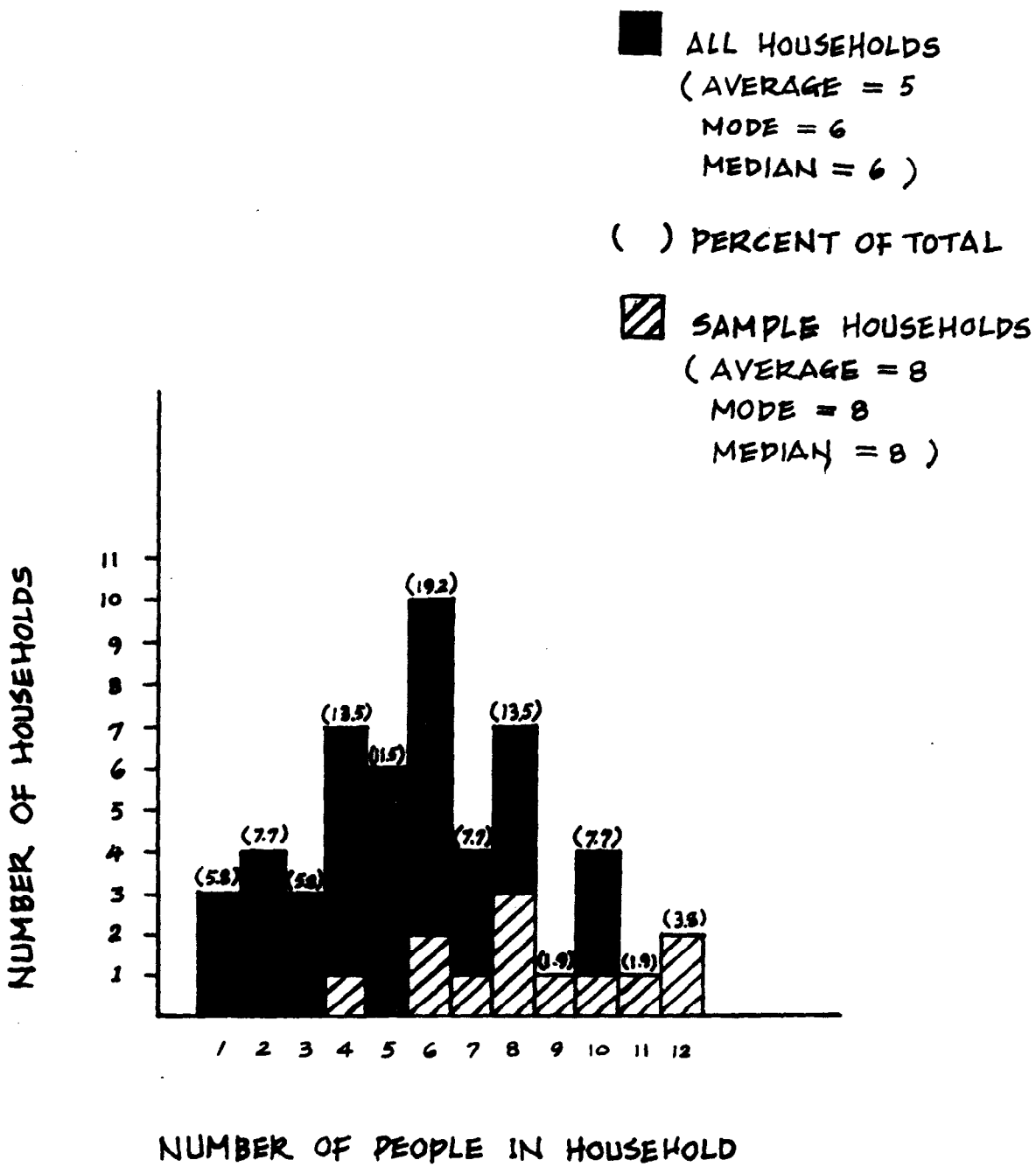

Fig. 3. Size of Tuluksak households (N=52) and sample households (n=11), summer 1983.

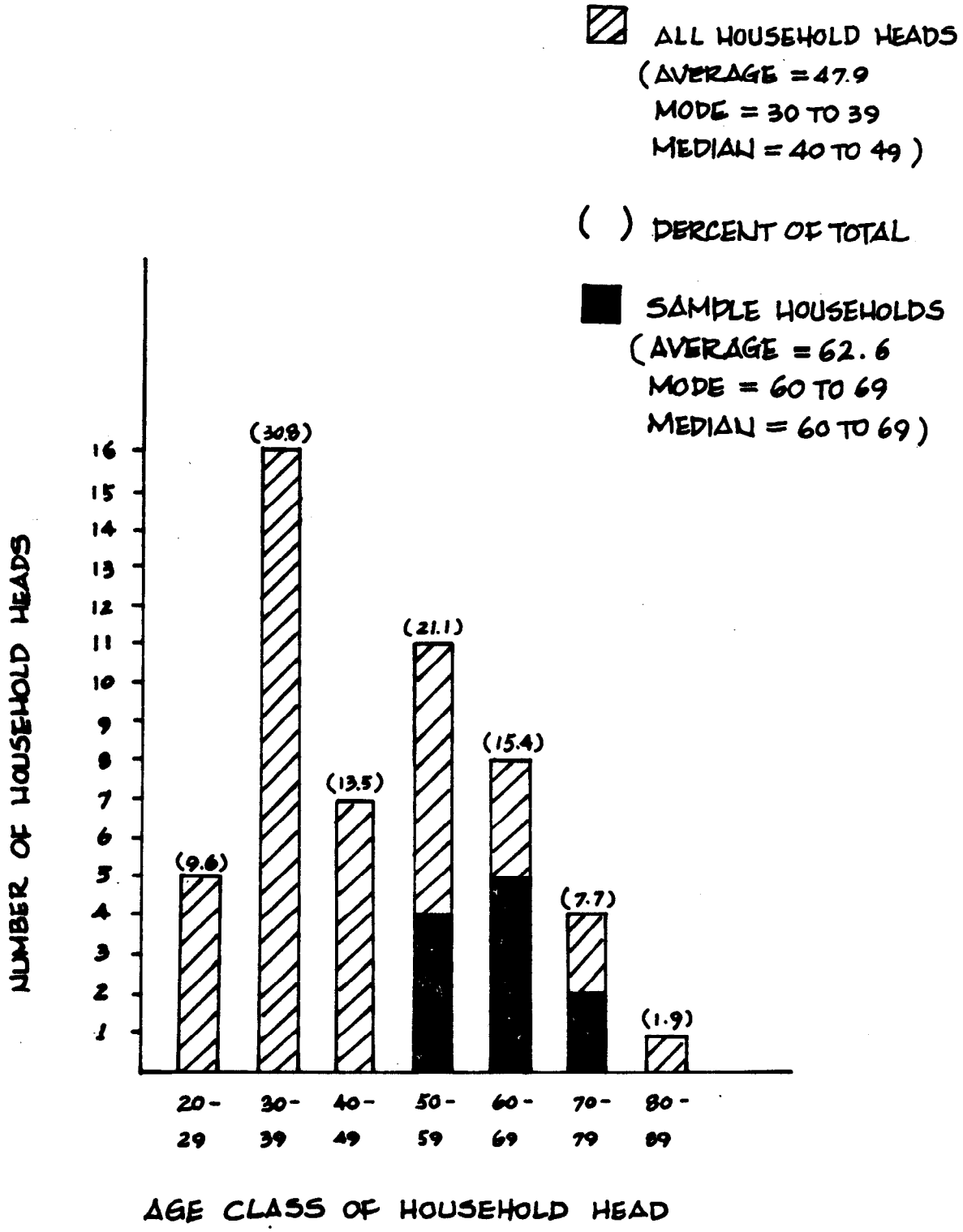

Fig. 4. Age class of Tuluksak heads of household (N=52) and sample heads of household (n=11), summer 1983.

Tuluksak's population is relatively young. Forty-eight percent (148 individuals) of the total population was less than 20 years of age (Fig. 5). The relatively high dependency ratio[2] (95 compared to 78 for the 1970 United States population as a whole) also indicates the youth of the population. Ten percent of the dependent portion of the population is 65 years of age or older. The disproportionate number of females to males is demonstrated in the sex ratio of 87.8. However, as noted above, in spite of Tuluksak's relatively young and growing population, it has only recently obtained the population levels of the late 1800s (Table 1).

In Tuluksak households consisted predominantly of nuclear families (75 percent) with 19 percent being examples of extended families (Table 3). Thirteen percent of Tuluksak households included members from three generations (lineal extended family type). In both groupings married couples with children occurred most often. Only six percent of all households contain solitary individuals and there are no examples of unmarried couples cohabiting. The study sample showed a bias toward married couples with children, the nuclear family type was the predominate type of residential unit. However, the incidence of extended family households in the sample was notably high compared with the incidence of extended families in the entire community (Table 3). Over half (57 percent-4 cases) of all lineal extended families (7) in Tuluksak were included in our sample. Elderly individuals continued to reside with their children even when these children are adults.

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2 The dependency ratio is based on the number of persons 65 and over plus persons aged 18 to 64 (Mausner and Bahn 1974:231t). Other researchers of Yup'ik Eskimo communities of the Yukon-Kuskokwim Delta have based this ratio on the number of individuals under 16 and 65 and over per 100 persons aged 16 to 64 (Jones et al. 1981). Using that approach the dependency ratio of Tuluksak's population is 76.

AGE	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	TOTAL
# of males	10	21	12	19	15	14	18	7	4	2	8	4	4	3	2	1	0	144
# of females	27	21	16	22	19	17	7	5	5	5	6	3	2	3	2	1	3	164
%	12.0	13.6	9.1	13.3	11.0	10.1	8.1	3.9	2.9	2.3	4.5	2.3	1.9	1.9	1.3	.6	1.0	308

(99.8%)

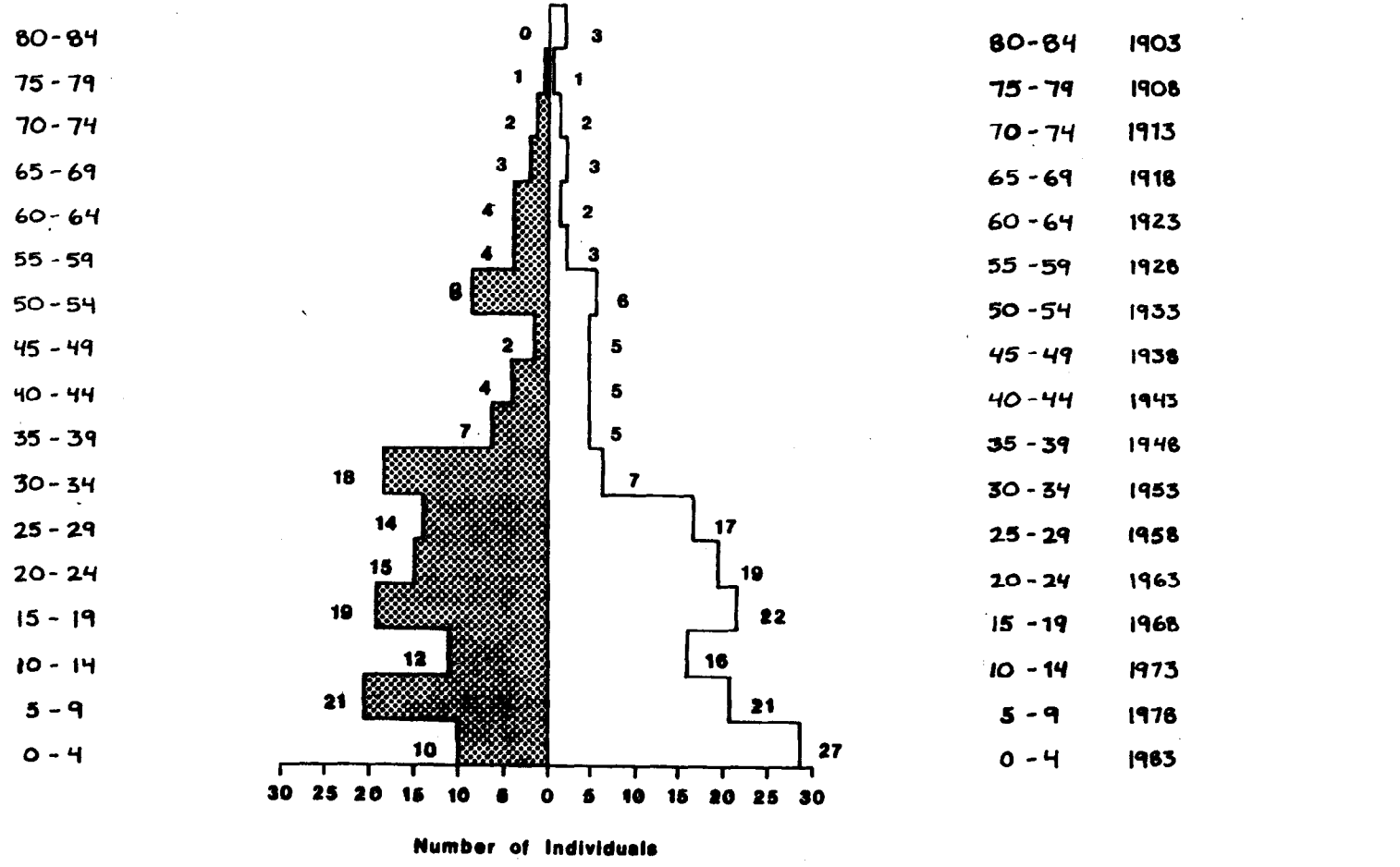

Fig. 5. Age and sex characteristics of Tuluksak's population, summer 1983 (N=308).

TABLE 3

SOCIAL COMPOSITION OF TULUKSAK HOUSEHOLDS
AND STUDY SAMPLE, 1983

Composition	Tuluksak (N=52)	Sample (n=11)
Nuclear Family (2 generations)		
a) parents with children	32 (62%)	7 (64%)
b) single parent with children	6 (11%)	
c) married couple and no children	1 (2%)	
	38 (75%)	7 (64%)
Extended Family		
Lineal (3 generations) a) includes parents, their children, and a parent of one spouse	3 (6%)	1 (9%)
b) includes a single parent (1 case) or parents, their children and grandchildren	4 (8%)	3 (27%)
	7 (13%)	4 (36%)
Collateral (2 generations) a) includes parents, their their children, and one parents' brother or sister	3 (6%)	
Solitary		
Unmarried adult and no children	3 (6%)	
	52 (100%)	11 (100%)

One additional aspect of Tuluksak household composition relates to the presence of adult children (18 years and older) in households. Over one-half (52 percent) of all Tuluksak households had an adult child (male or female) while all but one household (91 percent) of the study sample included at least one adult (Table 4). This characteristic appears noteworthy as a feature of the sample group. When comparing the sample households with an adult child with all Tuluksak households with adult children, we find that the sample was unique in its presence of an adult child in the household (91 percent compared to 52 percent) (Table 4). However, for those households with an adult child, the sex of adult children was consistent among the study sample and the community as a whole (Table 5). Thus, for the study group the presence of an adult child (of either sex) in the household was a distinguishing characteristic.

Characteristics of the Study Sample--Summary

In comparing aspects of household composition of the study sample with the community as a whole, several features stand out. It is important to note these characteristics at this point because they will contribute later to our understanding of resource use patterns described below. The study sample included households with at least one member who is considered active in terms of resource use of the Tuluksak drainage, who uses a relatively wide range of resources in the drainage, and who is knowledgeable (40+ years of experience) about harvesting resources in this area. In examining characteristics of household composition of the households recommended for interview, we find that they are unique in several respects. First, the average

TABLE 4

OCCURRENCE OF ADULT CHILDREN
IN TULUKSAK HOUSEHOLDS AND STUDY SAMPLE, 1983

Households with Children	Tuluksak (N=48)	Sample (n=11)
Adult Child (male or Female)	25 (52%)	10 (91%)
No Adult Children	23 (48%)	1 (9%)
		11 (100%)

TABLE 5

SEX OF ADULT CHILDREN IN
TULUKSAK HOUSEHOLDS AND STUDY SAMPLE, 1983

Adult Child	Tuluksak (N=25)	Sample (n=10)
Male	21 (84%)	9 (90%)
Female	17 (68%)	7 (70%)
Both	13 (52%)	6 (60%)

age of the household head was 15 years greater than the average age of household heads for the community as a whole -- 62.6 years of age compared to 47.9 years of age. Secondly, the size of the households which are headed by the individuals also are relatively larger, with an average size of 8 compared to 5. Thirdly, these households all contained married couples and their children, and in one third of the cases, three generations of individuals made up the residential unit. Finally, these households are noteworthy in that they contained at least one adult child in most cases. Over one-half (54 percent) have at least one male and one female adult child. These features of household composition as a group may contribute to the extensive use of wild resources of these households.

Seasonal Round of Resource Activities and Household Participation

Tuluksak households harvest a variety of fish, game and plant resources throughout the year (Fig. 6). The annual round of activities indicates that Tuluksak residents harvest several species of salmon, (king, chum, coho, and pink); several freshwater non-salmonid fish species (whitefish, "lush," northern pike, blackfish, sheefish and grayling); large game (moose, black and brown bear); small game (beaver, hare, muskrat, porcupine, ptarmigan, waterfowl, and arctic ground squirrel); furbearers (red fox, mink, and otter); berries (salmonberries, blackberries, blueberries, and lowbush cranberries); wild edible plants (wild celery, tall cottongrass, sourdock, wild rhubarb); and wood (including driftwood and timber) All of these resources can be harvested in the Tuluksak River drainage with the exception of brown bear which is generally harvested in the Kisaralik River drainage, although they sometimes occur near the Kuskokwim River and are harvested.

RESOURCE, ENGLISH AND YUP'IK		MONTHS HARVESTED
king salmon	taryaqvak	xxxx
chum salmon	iqalluk	xxxx
red salmon	sayak	xxxx
pink salmon	amaqaayak	--
coho salmon	qakiiyaq	xxxx
smelt	quaquuq	x
whitefish sp.	akakiik	xxxx
Dolly Varden	iqallugpik	----------
sheefish	ciiq	----
northern pike	qalru	xxx xxxxx
blackfish	can'giiq	xxxxxxxx
burbot ("lush")	manignaq	---xxx---xxx
black bear	tan'gerliq	xx xxx
moose	tuntuvak	xx xxx xx
beaver	paluqtaq	xxxx
red fox	kaviaq	xxxxxxxx
mink	imarmiutaq	xxx
land otter	cuignilnguq	xxx
squirrel	qanganaq	xxx
muskrat	kanaqlak	xxx
porcupine	issaluq	----------
snowshoe hare	maqarnaq	xxxxxxxxxxxxxx--
tundra hare	qayuqeggliq	xxxxxxxxxxxxxx--
rock ptarmigan	ellciayuli	xxxxx
willow ptarmigan	qangqiiq	xxxxxxxxxxxxx
spruce grouse	egtuk	----------
duck	yagulek	xxx
geese	lagiq	xxx
crane	qut'raaq	xxx
eggs	peksuq	-
salmonberries	atsalluqpiaq	xxx
blackberries	tan'gerpak	xxxx
blueberries	curaq	xxx
cranberries	tumagliq	xxx
firewood	muragket	xxxxxxxxxxxxxxxxxxxxxxx
driftwood	tep'aq	xxxxxxxxxxxxxxxxxxxxxxx
		J J A S O N D J F M A M

xxxx usual harvest period
---- intermittent or incidental harvest period

Fig. 6. Seasonal round of resource harvesting activities for selected species, in the Tuluksak River drainage by a sample of residents of Tuluksak, 1980-1983.

In examining the seasonal round of resource activities by species and month (Fig. 6) for 1980 to 1983 it is clear that resource use fluctuated from month to month and was often a result of the availability of a particular resource, especially fish species. In June and July almost all harvest activities involved salmon fishing and processing. These activities required the harvest of wood for smoking fish and for the construction and repair of structures related to fish processing, such as drying racks, smokehouses, caches, and dwellings. By late July and during August berry picking was incorporated into the weekly harvest activities. While the fishing activities of the summer were relatively localized and based from fish camps or the village, the gathering of berries usually involved having to travel to more distant areas between fishing and processing activities. Even though resource activities are limited in number during the summer months they were relatively intensive in terms of labor and time involved.

Beginning in late August and during September, several resource activities occurred simultaneously (Fig. 6). Salmon fishing and berry picking continued while people hunted for moose, bear, and waterfowl and set nets to harvest whitefish. This wider range of activities also required the most extensive travel for harvesting resources than any other time of the year, except during trapping. As rivers and lakes freeze over in October, activities become restricted to the harvest of non-salmonid fish species. People harvested whitefish, northern pike, lush (burbot), and blackfish by setting nets, traps, or using hooks and lines ("hooking," "jigging"). Most of these fishing activities persisted into November when moose season and trapping seasons are open again. In mid-winter, resource activities are necessarily limited by availability, regulations, severe low temperatures, and weather to small game hunting, some trapping, and wood collecting. As spring emerges

in March and April activities shifted to fishing for pike and "lush" as well as small game hunting and waterfowl hunting.

Participation in the harvest activities noted above was relatively high for all households interviewed. Over 70 percent of these households harvested all categories of species with the exceptions of arctic ground squirrel and fox/otter/mink (Fig. 7). The greatest participation was in salmon fishing, moose and waterfowl hunting, and berry picking.

Similar patterns of resource use and household participation have been noted elsewhere in Alaska. In a recent study of resource use in Tyonek, it has been shown that, like Tuluksak, salmon fishing was the focus of summer resource activities, with a shift to large game hunting and waterfowl hunting in the fall; and winter activities are focussed on trapping, small game hunting and some fishing (Foster 1982:34). The overall pattern in terms of the extent of major harvest activities is much the same for the two communities, even though one is an Athabaskan community in a coastal setting and the other is a Yup'ik Eskimo community in a riverine setting. Furthermore, the Tyonek resource study shows similar features of household participation to Tuluksak in harvest activities. Like the Tuluksak sample, households were identified for interviewing based on their use of a relatively wide range of wild resources and their relatively active participation in these activities (Foster 1982:33). Over 70 percent of Tyonek households, like Tuluksak households harvested salmon, moose, waterfowl, berries, and wood (Foster 1982:33). Thus, while there ae clear diffeences in the geographic situation and cultural affiliation of these two communities, the overall pattern of wild resource use and household participation is much the same for these rural communities.

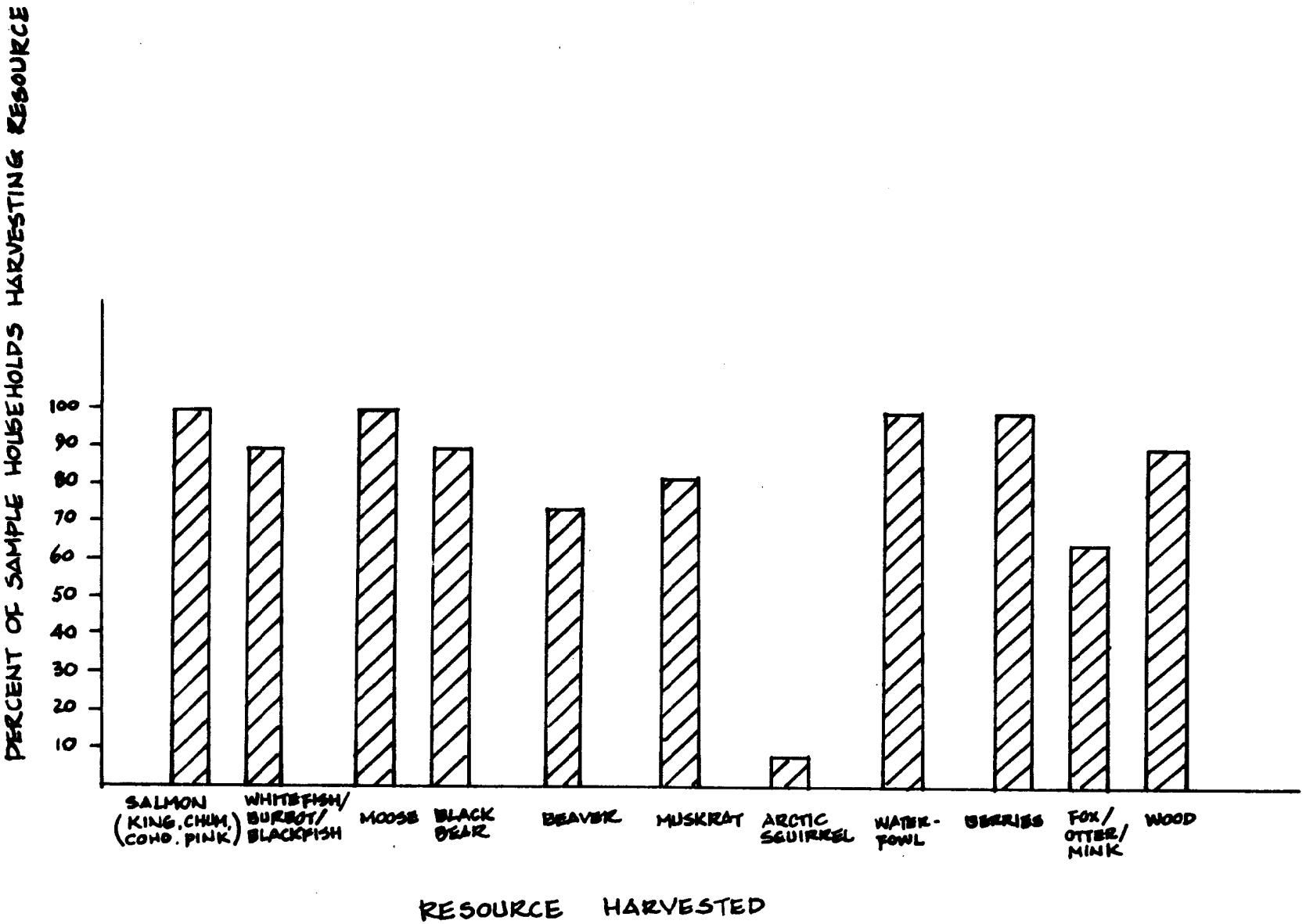

Fig. 7. Tuluksak household participation in harvest activities in the Tuluksak drainage, 1980-1983 (n=11).

Resource Use Areas

The Tuluksak River was the focus of almost all resource harvest activities of Tuluksak residents (Maps 1 through 5 are located in pocket). Most of these activities extended upriver above the mining settlement of Nyac to the lower reaches of Bear Creek (Fig. 1 and Maps 1 through 5). Major tributaries in the Tuluksak drainage which were utilized secondarily include Fog River, Birch Slough, and Otter Creek. The uses of these areas are described below for each category of resource harvesting activities. The degree of participation in these activities was noted in the previous section.

Moose Hunting Areas

The Tuluksak River proper and adjacent land areas within two miles of the stream bed are the most intensively used areas for moose hunting in the Tuluksak drainage (Map 1). During 1980 to 1983, hunting extended along approximately 60 river miles of the Tuluksak River and along the Kuskokwim River within two miles of the community. Simiilarly, residents hunted for moose along almost the entire length of the Fog River (approximately 50 river miles) and in adjacent land areas (Map 1). Use of this area was less intensive for the 1980-1983 period and secondary to use of the Tuluksak River area. The area between the Fog and Tuluksak rivers (including the Otter Creek drainage) and north of the Tuluksak and within 12 miles of it (including the Birch Slough and Little Bogus Creek areas) were also used for moose hunting by Tuluksak residents. These areas were accessed by boat and on foot during the ice-free fall hunting season and by snowmachine during the winter season. Access to hunting areas during the late fall early winter season is often dependent upon whether there is open water and extreme cold temperatures

which restrict hunting activity. Moose were pursued primarily in the fall season but also in other seasons as well (Fig. 6). "Spotting" areas were used and are described below for bear hunting. Hunters who were interviewed reported moose hunting in the Tuluksak drainage by some residents of communities along the Kuskokwim River downriver from Tuluksak (Akiak, Akiachak, Kwethluk, Bethel, Napaskiak, Napakiak, and Tuntutuliak) and from the upriver community of Kalskag.

Bear Hunting Areas

Hunting for black bear, as in the case of to moose hunting, was most intensive along the Tuluksak River and in adjacent areas and near the headwaters of Dry Creek (Map 2). However, unlike moose hunting, most bear hunting took place below and including Granite Creek, along a distance of approximately 45 river miles. Bear hunting ranged slightly further inland from the Tuluksak River than did moose hunting, and generally extended within three miles of the river. However, secondary areas of intensity of use included Fisher Dome (an area within a five-mile radius), the Birch Slough area, and the area between Granite and lower Bear creeks including the Slate Creek area (Map 2). Upper Granite Creek was also used for bear hunting during the past three years. Nine customary "spotting areas" or look-outs were identified within these hunting areas and were recorded (Map 2). Brown bear hunting occurred within the upper Kisaralik drainage and those areas were not recorded during this study.

Trapping Areas

Trapping represented the most wide-ranging resource harvesting activity in the study area by Tuluksak residents during the period 1980 to 1983 (Map

3). The most intensively used trapping areas were within 8 and 12 miles of the Tuluksak River included the headwaters of Fog River. The trapping areas included creeks and lakes which were used for trapping beaver, muskrat, red fox, otter and mink. From 1980 to 1983 these included stream areas noted above as well as Slate Creek, Bear Creek (including East Fork), Birch Slough, Otter Creek, Little Bogus Creek, Dry Creek, and Granite Creek (Map 3). It was noted that some residents of lower Kuskokwim River communities below Tuluksak also trapped beaver in the study area during the 1980-1983 period.

Berry Picking and Wood Collecting Areas

Berry picking and wood collecting took place in approximately the same areas where moose hunting occurred (Map 4). Residents collected a variety of berries, such as blueberries, lowbush cranberries, "blackberries," (Empetrum nigrum) and "salmonberries" (Rubus chaemorus) in season (Fig. 6). The focus of berry picking occurred along the extreme lower Tuluksak River, the middle Tuluksak and the lower Fog River. Secondarily used areas were considerably more extensive and extended above Nyac and to upper Fog River. Berry picking usually occurred within three and four miles of the major tributaries, such as the Tuluksak and Fog rivers (Map 4). Areas adjacent to the Kuskokwim River near the community were used also. Almost all wood collecting took place within the same areas described for berry picking.

Waterfowl Hunting Areas

Waterfowl hunting was the least extensive of the hunting activities, however activities coincided essentially with suitable waterfowl habitat in the area (Map 5--in pocket). Waterfowl hunting extended approximately 30 miles along the Tuluksak and a similar distance up the Fog River. The lake-

studded areas adjacent to and between these two streams were used for waterfowl hunting also.

Fishing Areas

Tuluksak residents harvested a variety of fish species within and adjacent to the Tuluksak drainage during the period 1980 to 1983. Fishing activities were basically site-specific and more concentrated within the area than other harvesting activities. However, fishing occurred during more months of the year than any other activity except for wood collecting (Fig. 6).

Salmon fishing occurred in seven areas (set net and drift net) along the lower Tuluksak River within eight miles of the village and along the Kuskokwim River within five miles of the settlement (Map 5) based on the sample of Tuluksak residents interviewed. Most households (82 percent) interviewed fish for salmon from and process salmon at established fish camps where most household members reside during June, July, and August. These seasonally-occupied camps were situated within 10 miles of Tuluksak on the Tuluksak and Kuskokwim rivers and Mishevik Slough (Map 5). The 1983 salmon harvest is discussed in a subsequent section of this report. Salmon fishing using drift nets occurred only along the Kuskokwim and primarily below the mouth of the Tuluksak River.

Whitefish nets were set in May, and June, August, September, and November (under the ice) at 18 locations within the Tuluksak drainage and along the Kuskokwim (Map 5). In the period 1980 to 1983 whitefish nets were set in the Tuluksak River and at places nearly 25 and 30 miles from the mouth as well as at locations in the lower Tuluksak within 12 miles of Tuluksak. Whitefish nets were also set in lower Otter Creek (approximately 30 miles from Tuluksak),

lower Fog River (about 14 river miles from Tuluksak), a tributary of Birch Slough (about 18 miles distant from Tuluksak), as well as in the lower Tuluksak, lower Little Bogus Creek, the Kuskokwim River, and Mishevik Slough all located within four miles of the village.

The nature of the distribution and availability of "lush" (burbot) influence the location of "lush" traps along the Kuskokwim River. These traps were set under the ice usually in November and December and again in March within four miles of Tuluksak (Map 5) in four different locations. "Lush" were harvested also by ice fishing (or "hooking," "jigging") in areas relatively close to the settlement. Pike were also obtained by ice fishing and occasionally coho salmon and Dolly Varden are harvested by "jigging" through holes in the ice.

Blackfish traps were more widespread than those of other species of fish. Blackfish traps were set in small streams east, southeast, and northeast of the village and within 20 miles of the community (Map 5). The location of the 26 blackfish trap sites was more concentrated in streams near the lower Fog River but were situated also in streams which were tributary to the lower Tuluksak.

Summary

The mapped information depicting resource use areas of Tuluksak residents during the period 1980 to 1983 (Maps 1 through 5) clearly shows that most harvest activities were focused on the Tuluksak River and adjacent land and were usually most intensive in these areas. These activities included moose hunting, bear hunting, trapping, berry picking, waterfowl hunting, and wood collecting. Fishing activities occurred in the Tuluksak River were noteworthy, but also in other water bodies (primarily the Kuskokwim River)

with the exception of setting traps for blackfish and "lush" (burbot). Overall, trapping was the most extensive activity which occurred in the vicinity of the Tuluksak River. This activity took trappers some 70 miles up the Tuluksak River, but also to areas from 8 to 12 miles distant from it. Trapping also took place in the vicinity of two major tributaries of the Tuluksak, unlike any other resource harvesting activity. Moose hunting was secondary to trapping in extent of area used. However, trapping, however, it was still relatively extensive. Moose hunting extended at least 60 river miles up the Tuluksak River as well as along most of Fog River and Birch Slough. The breadth of activity was less than that of trapping generally being limited to within two miles of these streams. Black bear hunting utilized essentially the same areas as moose hunting and trapping but did not include the Fog River area. Waterfowl hunting was restricted to suitable habitat adjacent to the Tuluksak and Fog rivers. Almost all fishing (all species) occurred along the lower Tuluksak and lower Fog rivers and the nearby Kuskokwim River. Thus, most hunting and gathering activities occurred along the entire Tuluksak River below Nyac and most fishing activities took place on the lower Tuluksak below the mouth of Birch Slough.

The Fog River and adjacent areas were secondary in intensity of use and extent of activities. Trapping was equally as intense in the Fog River area as in the Tuluksak, while moose hunting, waterfowl hunting, and berry picking were less intense but nearly as extensive in terms of areas used. Bear hunting only occurred near the headwaters of the Fog River around Fisher Dome, while fishing, particularly for blackfish, occurred near the lower reaches of the Fog River. The Birch Slough ("Birch Creek" in local terminology) area, tributary to the Tuluksak River and Little Bogus Creek were

used for nearly the full range of resource harvesting activities by Tuluksak residents -- moose and bear hunting, trapping, berry picking, and wood collecting.

Salmon Fishing, 1983

Salmon fishing by Tuluksak residents extended from the first week of June into September. Tuluksak residents fished for salmon commercially as well as for subsistence. During the course of our research on wild resource uses of the Tuluksak drainage we conducted a survey of salmon harvests by all households in Tuluksak that fished for subsistence use. For this aspect of the study we interviewed all members of the sample, as well as all other households which fished for salmon. Therefore, salmon fishing activities described below reflect the entire community. We conducted this census of salmon fishing because of the previously noted significance of salmon fishing to community residents and the Tuluksak River as a major salmon spawning stream (Collinsworth 1983).

Subsistence harvests of king (chinook), red (sockeye), and chum (dog) salmon were recorded. Harvest data for silver (coho) and pink (humpback) salmon were not recorded, since we had concluded our field research by the time most people were involved in silver salmon fishing (late August and early September). Pink salmon harvests are extremely low and incidental to chum and coho harvests. We found that 29 households (56 percent) had members who participated in subsistence salmon fishing representing 193 people (63 percent). Twenty-one (72 percent) of the households fished from a fish camp base and 8 (27 percent) from a village base. These households harvested a total of 1,671 king salmon; 1,023 red salmon; and 4,054 chum salmon. Six (21 percent) processed and stored some of their chum salmon harvest for use as

dog food. Most king salmon were processed mostly as "split fish" (cut into 2 halves lengthwise, backbone removed, flesh finely scored, tail not removed) or "blanket fish" (backbone removed but the two halves of flesh connected along the back, flesh scored, tail usually removed). Secondly they were processed as "flat fish" (two halves of flesh connected along the back, backbone cut out but not removed, flesh and backbone scored), or in long "strips" (backbone removed, filets of flesh cut lengthwise into strips). Cut fish then were air dried and smoked. Red salmon were cut equally either as "split fish" or "flat fish" and then dried and smoked. Chum salmon were cut mostly as "flat fish" or "cut for dogs (cut into halves lengthwise, backbone cut out but not usually removed, roughly scored, tail not removed). Seven households (24 percent) also processed some of the salmon by salting it and storing it in wooden barrels.

Eleven of the 29 households (38 percent) who fished for salmon for subsistence also had a member who fished for salmon commercially. The percentage approximates the distribution of households among all Tuluksak households with a member who had renewed their Commercial Fisheries Entry Commission (CFEC) permit in 1983 and fished commercially. Specifically, 37 percent (19) of all households had at least one member who renewed a permit. While the ratio of households with a permit is .42 per household, one household has three members with permits, thereby reducing the actual ratio to .37 permits per household. This ratio is considerably less than the 1.6 per household in lower Yukon River communities (Wolfe 1981:91,129). It is noteworthy, that of the 22 CFEC permit holders in 1983, only 11 (50 percent) were heads of household. The average age of all permit holders was 35.2 years of age with most (32 percent) in the 20 to 29 years of age class. Ten households

(19 percent) had members who fished commercially for salmon but did not participate in salmon subsistence fishing. Ages ranged between 19 and 57 years of age. In 1983, commercial fishermen in Kuskokwim District 1 (which includes Tuluksak) earned an average of $2510 each for the season (D. Huttenen: pers. comm; November 1983). In reviewing the salmon fishing activities of the sample group, we found that all households (100 percent) in the sample fished for salmon for subsistence. Six (55 percent) also had members who fished commercially, which represented a somewhat higher percentage of subsistence salmon fishing households which also fished commercially among the sample than among the community as a whole as noted above. It is worthwhile to note, that household size was largest (7.9 persons per household) among those which had members who fished for salmon commercially and for subsistence. And second largest among households that only fished for subsistence salmon (6.1 persons per household) (Table 6). Similarly, household size was

TABLE 6

AVERAGE HOUSEHOLD SIZE AND TYPES OF SALMON FISHING, 1983

Commercial and Subsistence (n=11)	Subsistence Only (n=17)	Commercial Only (n=10)	Neither (n=13)
7.4 persons per household	6.1 persons per household	5.0 persons per household	5.0 persons per household

smallest among those that only fished for salmon commercially (5.0) and those that did not fish for salmon for sale or home use (5.0). Since an examination of the economic exchange network of Tuluksak was beyond the scope of this study, we are not certain to what extent households not fishing for

salmon for home use might have acquired some salmon through exchange, trade, barter, or sharing.

Resource Issues

Residents of Tuluksak interviewed during the course of this study have observed changes in resource abundance over at least a 40-year period in the Tuluksak drainage. The relatively long history of use and wide range of resources harvested in this area were noted earlier. The respondents noted, in particular, changes in the abundance of moose, beaver, and non-salmonid fish species and the progressive decline in the water level of the Tuluksak River. The river has been especially muddy during the previous two years. Most of these changes have been taking place during the past 20 years but have been noteworthy during the past 10 years.

Tuluksak residents reported that moose have become increasingly scarce along the Tuluksak, while beaver have increased dramatically during the same period of time. The reported increase in beaver numbers has resulted in an increased number of beaver dams, particularly on small streams and lake outlets. Residents reported that because of this, spawning areas of whitefish and blackfish have been blocked and the availability of these species has declined. Specifically, respondents also noted the shallowness of the mouths of the side streams. Beaver dams may also have contributed to the reduced water level of the Tuluksak. It was reported that the Tuluksak used to be deep enough for barges hauling oil and equipment to "Upper Landing."

During the past 10 years, the Tuluksak River water has become less clear, according to local reports. This stream was particularly muddy in the last two years. As noted in an earlier section, mining activities have been occurring in the Tuluksak drainage with some regularity since 1925. It is only in the past 10 years that the Tuluksak River water has become shallower

and more turbid. This is of particular concern to local residents because of the role that fish species play in their economy as described above. Further, some respondents stated that a decline in fish (salmon) has contributed to the lower number of black bear which have been increasingly more difficult to encounter. Similarly, the lower numbers of fish going into side streams has contributed to a reduction in the numbers of mink and otter which utilize fish species (such as blackfish) for food. While Tuluksak residents recognize natural changes and fluctuations in the environment and areas which they utilize for harvesting fish and wildlife, stream pollution due to human activity is perceived differently. Further, respondents noted that whereas in the past mining activities did not infringe upon their hunting and trapping pursuits in the upper Tuluksak, "No Trespassing" signs have been posted in areas associated with dredging activities even though the mining activities occur on public lands. Thus, although mining has been occurring regularly in the upper Tuluksak since the 1920's, recent developments appear to be accompanied by a disregard for the environment, the natural resources, and the customary uses, based on information conveyed during our study and during a public meeting in May (Peterson 1983).

DISCUSSION

The community of Tuluksak is situated at the mouth of the Tuluksak River, a location which provides residents access to resources in the Tuluksak River valley as well as to adjacent areas of the Kuskokwim River. The combination of forested and tundra ecosystems provides a range of wildlife typical of more interior and boreal environments as well as marshland low-lying tundra environments. Thus, Tuluksak residents have access to large terrestrial mammals such as moose and black bear, but also to non-salmonid fish species such as blackfish and to migratory waterfowl. Several species

of salmon spawn in the Tuluksak and residents utilize these species for commercial and domestic use. The Tuluksak River serves as a primary route for gaining access to most wildlife resources which are utilized. Most resources are harvested along the Tuluksak and adjacent land areas. These wild resources are all harvested within 60 miles of the community, although fishing activities occurred mostly within 12 miles of the settlement. Resource harvesting activities occurred during all months of the year in the Tuluksak drainage and were primarily influenced by the seasonal availability of species and regulatory restrictions. Based on a sample of households, participation in harvest activities was relatively high for salmon and non-salmonid fishing; moose, bear and waterfowl hunting; wood collecting and berry picking. Tuluksak residents held a relatively low number of CFEC ("limited entry") fishing permits per household compared with lower Yukon River communities. However, 75 percent of the total number of Tuluksak households participated in some aspect of salmon fishing. Similarly, income by Tuluksak fishermen earned is significantly lower per permit holder.

The settlement of Tuluksak served as a base of operations for almost all harvesting activities except for salmon fishing. Seventy percent of the households which fished for salmon established seasonal settlements or fish camps which functioned as processing, preservation, and residential sites for these households during the summer months. Salmon fishing was the focus of harvesting activity during the summer months with large game hunting the primary activity in early fall (September). In early winter (November and December) and spring (April) several resource harvesting activities occurred simultaneously and included small game hunting and fishing for non-salmonid fish species.

A number of features characterized the households which were interviewed

and considered particularly active in their harvest of fish and wildlife in the study area. These households harvested nearly the full range of available wildlife during the year. They were relatively large (8 persons per household) and headed by a relatively older male (62.6 years of age) compared to other households in the community. While one-third of the sample households included three generations of residents (lineally extended family), the sample also represented 57 percent of all such households which occurred in Tuluksak. The sample group was noteworthy also in that nearly all contained at least one adult child and all consisted of a married couple. To what extent these characteristics might be predictive of household involvement in wild resource harvesting activities is uncertain but could provide a hypothesis to be tested in other studies. Characteristics of productive household units as described compared to the other community households have not been noted in most previously published reports of the Division of Subsistence, and no comparisons can be drawn with similar study communities. The relatively low median household income and commercial fishing earnings may also influence involvement, although household income was not researched in detail.

Descriptions of resource use areas of other Kuskowim River communities are limited, but are currently being compiled or are in press. A 1982 study of wild resource use in the Aniak and Oskawalik river drainages, within 50 miles east of the Tuluksak drainage suggests broad similarities (Charnley 1982). Like resource use in the Tuluksak, moose and bear hunting, trapping, and berry picking focussed on the main tributary and a few secondary streams. Fishing areas were localized, but unlike Tuluksak, were not centered on the lower portion of the streams. Trapping activities were broader in extent for Tuluksak trappers than for trappers who used the Aniak and Oskawalik drainages.

In conclusion, we found that the Tuluksak River and adjacent areas were central to the harvesting of fish and wildlife during the 1980-1983 period. Salmon fishing, either for commercial sale or domestic use, was undertaken by members of most households in the community. Knowledge of the environment and use of the resources in the Tuluksak River valley was demonstrated in the geographic extent of use areas for harvesting large game, waterfowl, berries, and for trapping. This focus on the Tuluksak River for resource harvesting activities over several decades has made many of Tulukşak's hunters and fishers keen observers of fluctuations in wild resources caused by both natural and factors and human influences.

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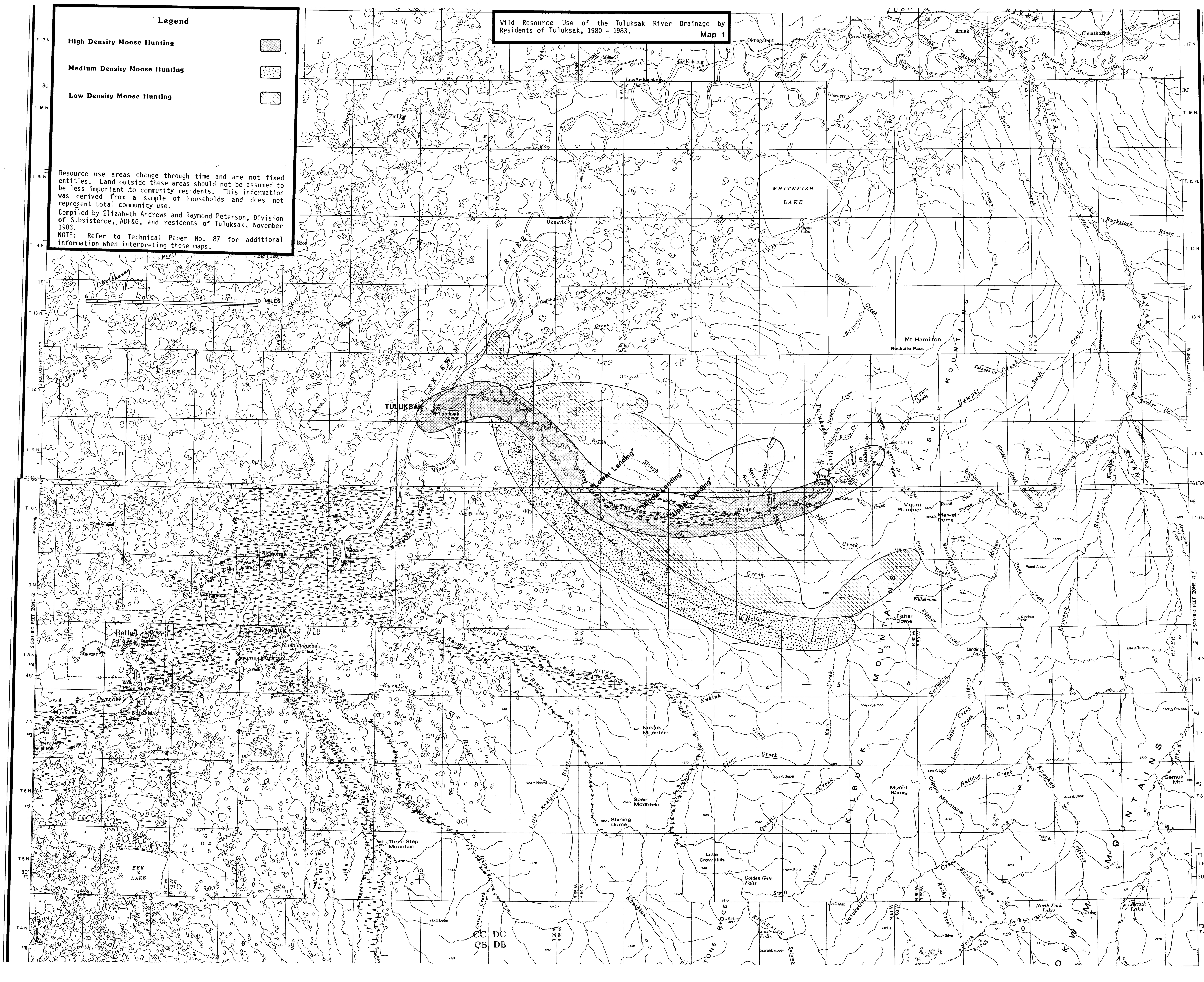
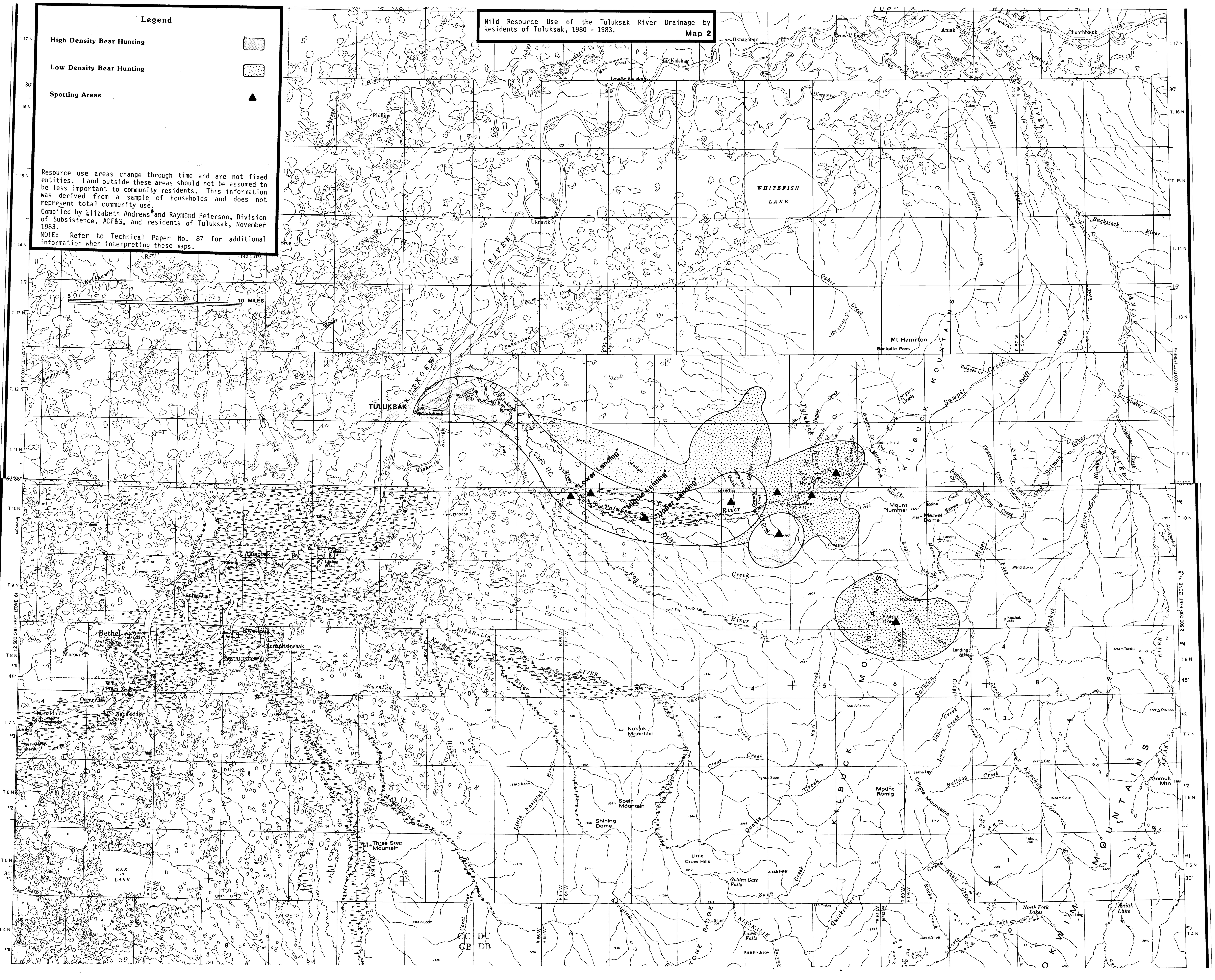
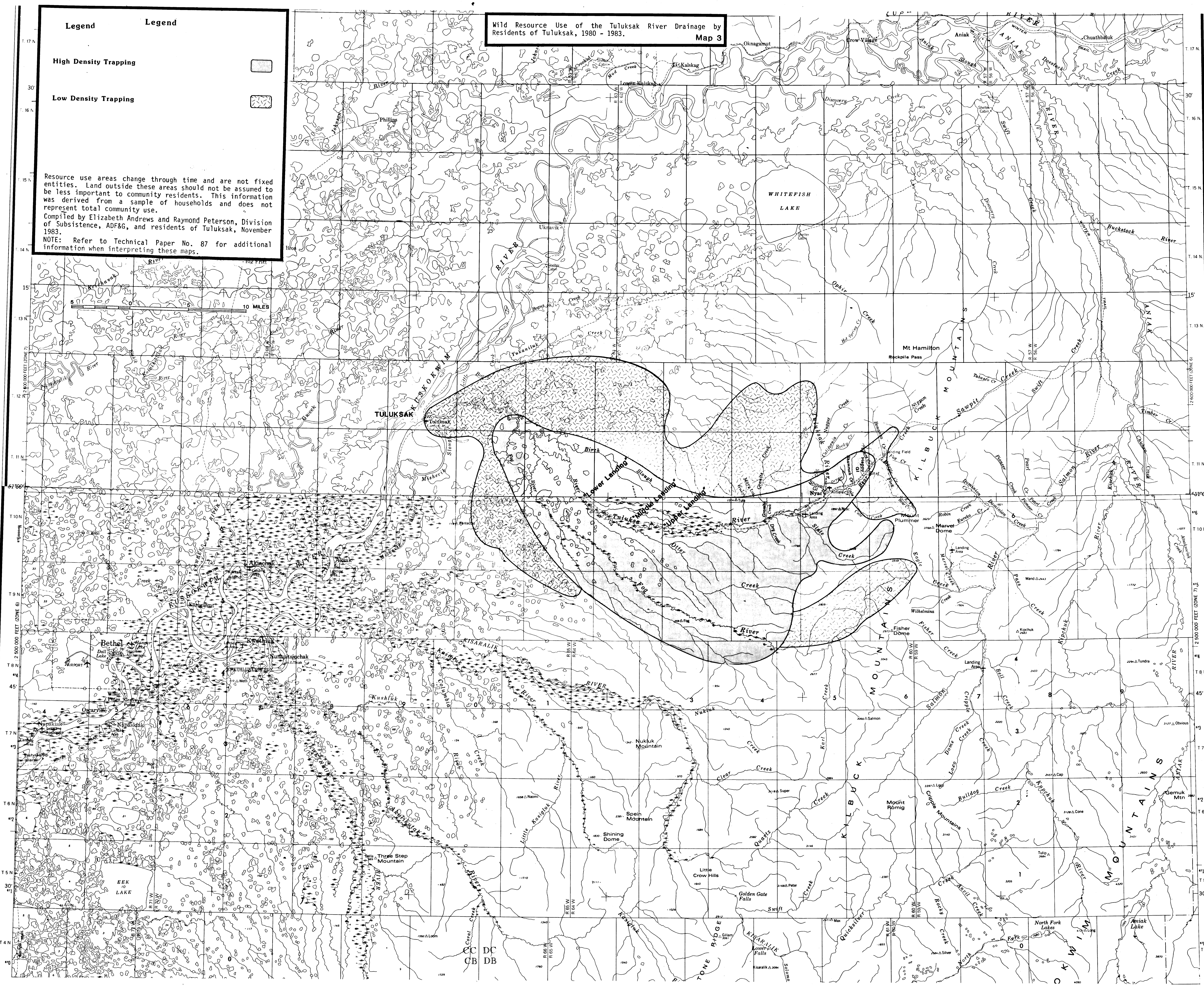
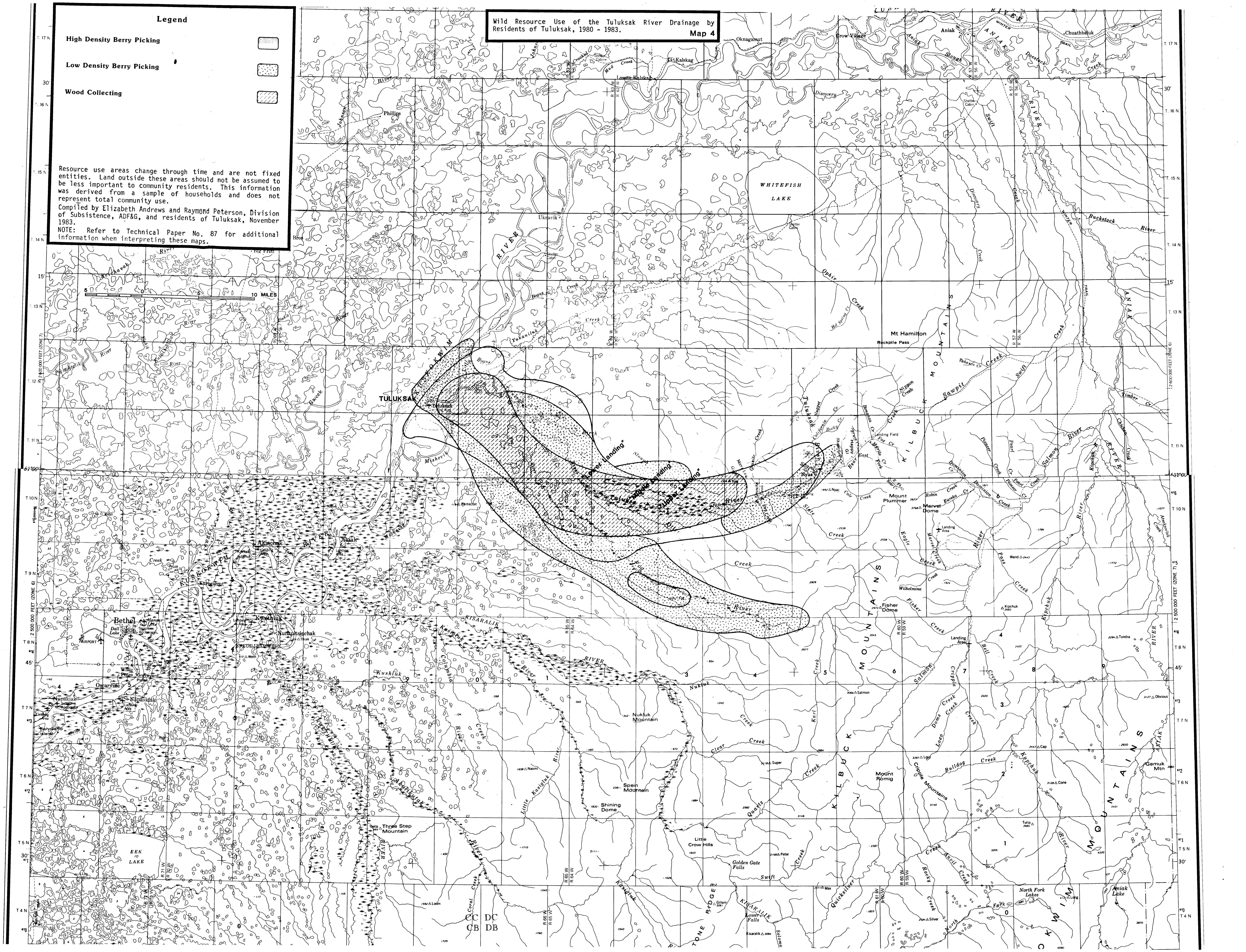
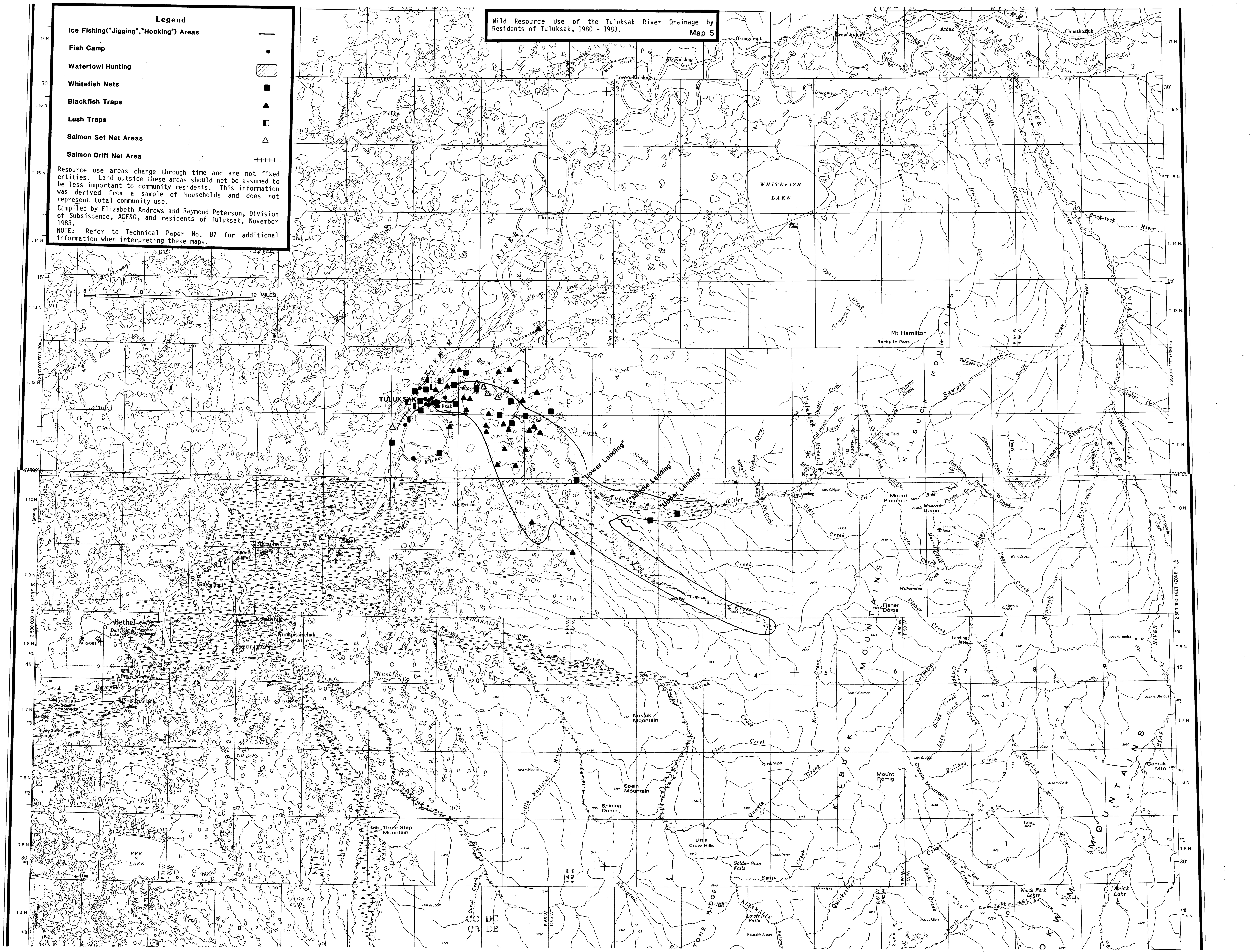

Wild Resource Use of the Tuluksak River Drainage by Residents of Tuluksak, 1980 - 1983.
Map 1
Legend
High Density Moose Hunting
Medium Density Moose Hunting
Low Density Moose Hunting
Resource use areas change through time and are not fixed entities. Land outside these areas should not be assumed to be less important to community residents. This information was derived from a sample of households and does not represent total community use.
Compiled by Elizabeth Andrews and Raymond Peterson, Division of Subsistence, ADF&G, and residents of Tuluksak, November 1983.
NOTE: Refer to Technical Paper No. 87 for additional information when interpreting these maps.
10 MILES
TULUKSAK
Tuluksak
WHITEFISH
LAKE
Mt Hamilton
Rockpile Pass
KILBUCK MOUNTAINS
Lower Landing
Middle Landing
Upper Landing
Nyac
Mount Plummer
Marvel Dome
Fisher Dome
Bethel
Akiachak
Kwethluk
Napaskiak
Oscarville
Aniak
Chuathbaluk
Crow Village
Okhagamut
Kalskag
Lower Kalskag
Ukravik
Nuklluk Mountain
Spein Mountain
Shining Dome
Mount Romig
Cripple Mountains
Three Step Mountain
Little Crow Hills
Golden Gate Falls
Gemuk Mtn
EEK LAKE
KISARALIK
KUSKOKWIM
CC DC
CB DB


Wild Resource Use of the Tuluksak River Drainage by Residents of Tuluksak, 1980 - 1983.
Map 2
Legend
High Density Bear Hunting
Low Density Bear Hunting
Spotting Areas
Resource use areas change through time and are not fixed entities. Land outside these areas should not be assumed to be less important to community residents. This information was derived from a sample of households and does not represent total community use.
Compiled by Elizabeth Andrews and Raymond Peterson, Division of Subsistence, ADF&G, and residents of Tuluksak, November 1983.
NOTE: Refer to Technical Paper No. 87 for additional information when interpreting these maps.
10 MILES
TULUKSAK
WHITEFISH LAKE
Mt Hamilton
Rockpile Pass
KILBUCK MOUNTAINS
"Lower Landing"
"Middle Landing"
"Upper Landing"
Mount Plummer
Marvel Dome
Bethel
Kwethluk
Napaskiak
Oscarville
Nukluk Mountain
Spein Mountain
Shining Dome
Three Step Mountain
EEK LAKE
Little Crow Hills
Golden Gate Falls
Mount Romig
Cripple Mountains
Gemuk Mtn
KISARALIK RIVER
Aniak
Chuathbaluk
Crow Village
Oknagamut
Kalskag
Lower Kalskag
CC DC
CB DB


Wild Resource Use of the Tuluksak River Drainage by Residents of Tuluksak, 1980 - 1983.
Map 3
Legend
Legend
High Density Trapping
Low Density Trapping
Resource use areas change through time and are not fixed entities. Land outside these areas should not be assumed to be less important to community residents. This information was derived from a sample of households and does not represent total community use.
Compiled by Elizabeth Andrews and Raymond Peterson, Division of Subsistence, ADF&G, and residents of Tuluksak, November 1983.
NOTE: Refer to Technical Paper No. 87 for additional information when interpreting these maps.
10 MILES
TULUKSAK
WHITEFISH LAKE
Mt Hamilton
Rockpile Pass
KILBUCK MOUNTAINS
"Lower Landing"
"Middle Landing"
"Upper Landing"
Bethel
EEK LAKE
Spein Mountain
Shining Dome
Nukluk Mountain
Mount Romig
Cripple Mountains
Little Crow Hills
Golden Gate Falls
Three Step Mountain
Gemuk Mtn
Aniak
Chuathbaluk
CC DC
CB DB



Wild Resource Use of the Tuluksak River Drainage by Residents of Tuluksak, 1980 - 1983.
Map 4
Legend
High Density Berry Picking
Low Density Berry Picking
Wood Collecting
Resource use areas change through time and are not fixed entities. Land outside these areas should not be assumed to be less important to community residents. This information was derived from a sample of households and does not represent total community use.
Compiled by Elizabeth Andrews and Raymond Peterson, Division of Subsistence, ADF&G, and residents of Tuluksak, November 1983.
NOTE: Refer to Technical Paper No. 87 for additional information when interpreting these maps.
10 MILES
TULUKSAK
Bethel
WHITEFISH LAKE
Mt Hamilton
KILBUCK MOUNTAINS
Mount Plummer
Marvel Dome
Nukluk Mountain
Spein Mountain
Shining Dome
Little Crow Hills
Golden Gate Falls
Mount Romig
Cripple Mountains
Three Step Mountain
EEK LAKE
KISARALIK RIVER
ANIAK RIVER
Kalskag
Lower Kalskag
Akiachak
Kwethluk
Napaskiak
Oscarville
Nunapitchuk



Wild Resource Use of the Tuluksak River Drainage by Residents of Tuluksak, 1980 - 1983.
Map 5
Legend
Ice Fishing("Jigging","Hooking") Areas
Fish Camp
Waterfowl Hunting
Whitefish Nets
Blackfish Traps
Lush Traps
Salmon Set Net Areas
Salmon Drift Net Area
Resource use areas change through time and are not fixed entities. Land outside these areas should not be assumed to be less important to community residents. This information was derived from a sample of households and does not represent total community use.
Compiled by Elizabeth Andrews and Raymond Peterson, Division of Subsistence, ADF&G, and residents of Tuluksak, November 1983.
NOTE: Refer to Technical Paper No. 87 for additional information when interpreting these maps.
10 MILES
TULUKSAK
"Lower Landing"
"Middle Landing"
"Upper Landing"
WHITEFISH LAKE
Mt Hamilton
Bethel
KILBUCK MOUNTAINS