MODERN FORAGERS: WILD RESOURCE USE IN NENANA VILLAGE, ALASKA

BY

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ABSTRACT

This study examines the relationship between Athabaskan band organization in the past and contemporary organization of society and economy in Nenana, Alaska. Fieldwork in 1981 and subsequent literature review provided most data used in the analysis. Major methods of data collection included systematic interviews, compilation of a household census, village genealogy, and household land use maps. Most data, and all quantitative data, were obtained from a sample of households described by local residents as heavily involved in wild resource use. These households contained one-third of the population of all households in Nenana with an Alaska Native member.

Research findings illustrate that three formerly distinct bands gradually became centralized in Nenana during this century. Individual land use patterns today, in general, do not reflect former band affiliation. Trapping activities, however, show strong continuities with past family/band ties to specific land areas. Band boundaries in the Nenana area have been aggregated; the current resource use area for sample households encompasses that traditionally used by the three bands whose members and descendants now reside in Nenana. In the local view, the contemporary resource use area is bounded relative to other modern villages, just as band territories were bounded in the past.

The organization of most wild resource use today is household-based. A common pattern is the formation of local family economies based on the cooperation of households linked by kinship. The structure of many local family economies is similar to that of former band settlments and local families function very much like band segments. In summary, the study found that traditional principles of band organization that formerly structured society and economy have been adapted to cope with major demographic and economic changes.

The study also found that most contemporary wild resource use is for domestic consumption. Wild resources are important to a large segment of the society; a minimum of one-half of the households in the study population use wild resources, based on the activities of sample households.

Young people, age 20-29, are especially active in wild resource harvesting; 89 percent of this age group in the sample participated in multiple resource harvesting activities. Moose hunting is the most popular activity of sample households among all wild resource uses, reflecting a food preference for large game. Trapping areas, in the local view, are considered to be the private territory of the user; this pattern developed early in this century in connection with the fur trade with non-Natives. State regulations and commercial fishing enterprise in Nenana combine to make close access to the village a critical factor in salmon fishing. Recently, families have begun to claim "ownership" of fishing spots close to the village. Otherwise customary principles, the land use system, in the local view, have not changed in this century. Comparisons of modern foraging communities in Alaska and Canada illustrate broad similarities in society and economy.

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CHAPTER 1

INTRODUCTION

> What is the future of peoples who have maintained a direct and intimate connection with the earth in the period when industrial capitalism has become the dominant world system? It may well be the ultimate question for human survival, for if there is no place left in the world for foraging peoples, is there to be a future for humanity as a whole?
>
> (Politics and History in Band Societies, ed. Eleanor Leacock and Richard Lee, Cambridge University Press, 1982, pg. 2)

This report describes society and economy in Nenana Village, located in the lower Tanana River area (Fig. 1), based on field study conducted in summer and fall 1982. Emphasis is placed on modern foraging activities, their role in the local economy, their social organization, and associated land use patterns. An historical perspective on the use of wild resources today is provided by analysis of data gathered from elderly residents and early historical records. Comparable data obtained from a literature survey on other modern foragers, especially other Northern Athabaskans, are discussed also.

Early historical documents and local oral history record the importance of Nenana as the location of summer subsistence and mid-winter ceremonial activities of Athabaskan Indians (see chapter 3). Indian elders today say that Nenana is a place where people and animals could talk to one another a long time ago, a belief attesting to the significance of this site in local history. By the end of the 19th century, Indians had established a small village with permanent dwellings at Nenana, reflecting their increasing interest in the fur trade with

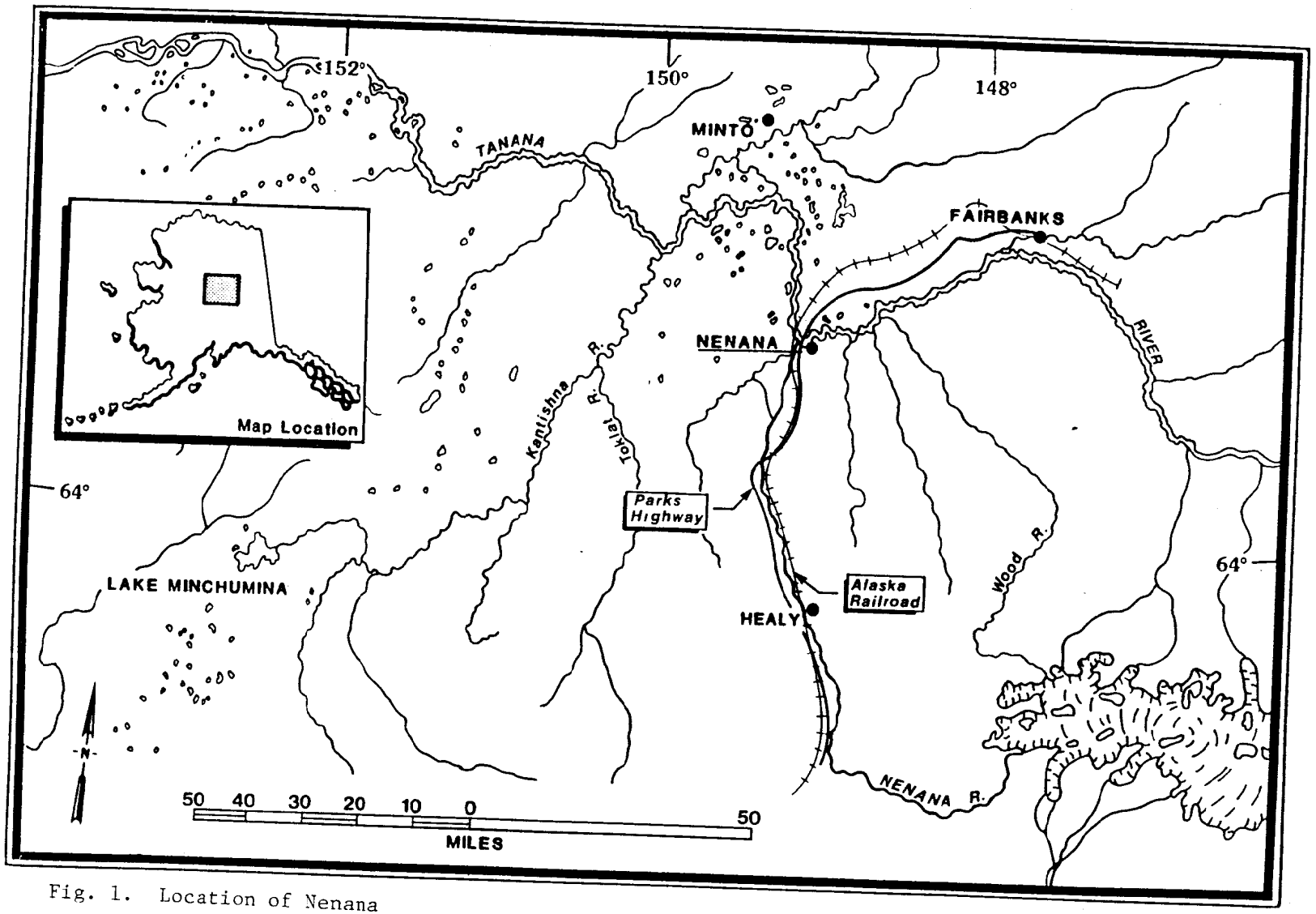


Fig. 1. Location of Nenana

non-Natives and their participation in summer employment related to the onset of steamboat travel on the Tanana River at the end of the century (Brooks 1900, 1903). Nenana Village continued to grow slowly as local Indians built homes there in order to have access to services from the Episcopal mission and the trading post established at Nenana during the first decade of this century.

A major influx of non-Natives to Nenana occurred with the construction of the Alaska Railroad (1916-1923) and permanent settlement of non-Natives in Nenana dates to about this time. Nenana Village, located in the eastern section of the present community, developed along the banks of the Tanana River. Non-Native settlement tended to be away from the river and the railroad tracks, expanding in a westerly direction. By 1920, Indians had elected a council and non-Natives had secured first class status for the entire community, although U.S. Census figures continued to differentiate village and "town" residents until 1950 (Rollins 1978).

Today, Nenana is a large community with 470 residents, according to the U.S. Census in 1980; 46 percent of the population is Alaska Native. Alaska Natives still tend to reside in the original village area of the community although spatial segregation along ethnic lines is far from rigid. The Indian "traditional council," representing Alaska Native residents, and the Nenana city council today reflect the history of this community during the last 60 years.

Prior to the study, limited data suggested that the Indian population in Nenana was made up of members (or descendants of members) of two formerly distinct Athabaskan bands in the area (Andrews, pers. comm. 1982). The setting of Nenana, then, provided an opportunity to examine

the relationship between past Athabaskan band organization and contemporary resource use patterns, especially the social organization of the economy and land use patterns. We hypothesized that former band affiliation would be reflected in individual land use patterns today. We also expected that past band ties would be important in social and economic transactions in the community. These hypotheses were based on a model of band organization derived from anthropological study of society upriver from Nenana (Andrews 1975; McKennan 1959; Guedon 1974). In these areas, bands, as sociopolitical units, were characterized by distinctive annual cycles pursued within a bounded resource use area. Band membership defined the social context of production and consumption. The applicability of the model to lower Tanana River bands was a major area of investigation since the hypotheses hinged on an assumption of comparability in sociopolitical organization along the entire river.

Our research findings indicate that band organization in the Nenana area in this century was the same as that described for upriver groups. We also found that the history of Nenana Village during this period is the history of three, not two, formerly distinct bands. However, neither hypothesis received support. Individual use patterns do not reflect former band affiliation, with the exception of trapping activities. Rather, boundaries between the three formerly adjacent bands have been collapsed; the current resource use area encompasses that traditionally used by the three bands. This area is bounded, however, relative to other contemporary villages.

Band ties do not structure economic activity. Rather, most wild resource use is household-based but often includes the cooperation of closely related households. Individuals without close relatives work

with distant relatives or friends. The pattern is the formation of local family economies based on close kinship ties between domestic groups (households). The structure of many local family economies is similar to that of former band settlements and local families function very much like band segments. The study found that traditional principles of organization have been adapted to cope with economic, territorial, and demographic changes in local societies.

A major finding is that multiple wild resource uses continue to characterize a large number of village households in Nenana. The role of wild resources is extremely important in the maintenance of household economies. Considerable internal adjustments have been made to accommodate involvement in a market economy. This research, like that of others examining modern foragers (cf. Kari 1983; Brody 1982; Wolfe 1981), illustrates the viability today of a dual economy based on cash and subsistence production. The continued existence of foraging societies rests on political decisions external to their local governments. However, the role of local people in affecting these decisions can be considerable (cf. Asch 1982; Feit 1982). This study has been designed to be useful to their representatives and to decision-makers in government.

A number of important questions about wild resource use in the Nenana area were not asked by this research and they demand further study. We know very little about the extent of wild resource use by non-Natives in Nenana and we do not know if the current resource use area of the study population circumscribes that of households with no Native membership. Interview data from a small number of non-Native residents, suggest that perceptions of the role of wild resources in family economies may vary

along ethnic lines in the community. Whether the difference in rhetoric between these populations is primarily symbolic or reflects real differences in the nature and extent of wild resource use is an important research question which, if studied, could inform public policy decisions in the area. In any event, the present study provides a departure for future work and a base for comparison that, with additional research, can more fully elaborate wild resource use patterns in the Nenana area.

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CHAPTER 2

METHODOLOGY

Community Response

Prior to fieldwork, we contacted the chief of the Nenana traditional council and arranged to present a research design to the council.[1] After its presentation, the chief and council members expressed support for the project because of their concern about issues in Alaska relating to the use of wild resources for subsistence. Council members, as well as many residents we interviewed, saw documentation of their subsistence activities as an important step in potentially protecting their way of life which they perceive as heavily reliant on wild resources.

In spite of this support, work was seriously hampered initially by the local suspicion that we were "spies" for the Alaska Department of Fish and Game (ADF&G). Numerous stories were recounted of biologists working for ADF&G, who functioned as researchers and enforcement officers. According to residents, some of these people had been involved in incidents that appeared to be nothing less than ADF&G harrassment. Our association with ADF&G led to the accusation that we were "fish cops." This was particularly disturbing and we had to work hard to dispel this view. Ultimately, the cooperation of people in Nenana with this research project was outstanding and we gratefully acknowledge the many who were willing to establish a trust relationship with us. However, even after repeated contact for over a year, at this writing there is considerable suspicion in the village that the research was a tool in some way for future harassment.

Data Collection

Information was sought for two time periods. One corresponded to that time when the former band organizations still prevailed in the area (until c. 1940). The other was the study year, defined as extending from summer 1981 to summer 1982. Observations in summer and fall 1982 served to elaborate and cross-check data gathered for the study year.

Information was collected on (1) wild resources harvested in the area; (2) the level of household participation in wild resource harvesting today, including the magnitude of harvests; (3) the social organization of wild resource use; (4) the social structure of settlements; (5) the location of resource use areas; and (6) the history of band settlement in Nenana and the early history of Nenana Village.

Major methods of data collection were systematic interviews, the compilation of a household census and village geneaology and the completion of household resource use maps.[2] A literature review provided information on the contact history of the area and contributed data on other modern Northern Athabaskan communities.

Interview data for most categories of information are considered reliable with the exception of those on size of harvests of some species. Respondents had a difficult time estimating the number of fish or small game taken during the study year. Estimates of salmon and whitefish takes are included, but they should be viewed as very approximate. In retrospect, we believe that we never asked the right questions about salmon harvests. People clearly have a notion of how many fish they need and the amount is measured by some standard we did not discover. This measure may well be the fish rack as anthropologists working in other areas

of Alaska have found (Andrews, pers. comm. 1983). Harvest levels for other fish species and for small game are not reported. Difficulties in obtaining harvest data could have been overcome by using subsistence calendars, but the lead time and financing were not available. Data on subsistence salmon harvests based on calendars distributed in Nenana by ADF&G, Division of Commercial Fisheries, are compared with our information. Harvests of large game and furbearers were much more easily recalled and we consider them a fair approximation of actual harvest numbers.

People did not express difficulty in recalling information on the composition of production or consumption units as was the case with harvest data. For this reason and because our observations of fishing activities in 1982 confirmed very well the work units described by respondents for past seasons, we consider the data reliable. At the same time, they are not exhaustive since we have not documented every single task group or consumption unit associated with wild resource use for the study year.

Since research questions focused on general patterns of wild resource use in the Nenana area in the past and today, data on illegal harvests or the effect of government regulations on wild resource harvesting activities were not sought. However, information on certain regulatory issues that were repeatedly raised by respondents was recorded and is included in this paper.

The Sample

The research population was defined to include all households in Nenana with an Alaska Native resident. In this study, these households

are treated as the constituents of Nenana Village; use of this designation distinguishes the study population from households in the community without a Native member. According to our census, the population of Nenana Village in summer 1982 was 234 people, distributed in 76 households.

At the beginning of fieldwork, a strategic decision was made to work with individuals who were most knowledgeable and active in wild resource harvesting. Given limitations of time and money and data requirements of our research goals, this was the most expeditious procedure. Since household involvement in wild resource harvesting is well known in the village, key households were located without difficulty.

Most data were collected from 22 key participating households (Table 1). According to our information, all village households, but two, that intensively harvest multiple species of wild resources are included in the sample. The sample also includes a few households that have a history of such use but are less active today. Key households were repeatedly interviewed and resource maps completed for all but two. Summer activities were also observed. Sixteen additional households were briefly interviewed contributing to our understanding of various qualitative aspects of wild resource use in the village.

Eight of the 22 key households belong to two large families in the village and are related by close consanguineal links (parent-child, sibling, and one example of uncle-nephew). Several other households have more distant (but important) links with each other or one of these two families.

Tables 1 and 2, and Fig. 2, compare features of sample households with total village households. Other characteristics of sample households are described in later chapters on wild resource use.

TABLE 1

NENANA VILLAGE SAMPLE: KEY PARTICIPATING HOUSEHOLDS

	Sample	Nenana Village
Number of Households	22	76
Percentage of Total Village Households	29	
Number of Household Members	75	234
Percentage of Total Population	32	
Percentage of Households Headed by Individuals Aged		
20-29	14	20
30-39	18	20
40-49	0	11
50-59	23	12
60-69	32	18
70-79	5	16
80+	9	4
Number of Respondents	37	
Number of Harvesters	42	

TABLE 2

HOUSEHOLD STRUCTURE, NENANA VILLAGE

Type	Nenana Village		Sample	
	Total	Percentage	Total	Percentage
Nuclear	48	63	16	73
Extended, 3 generations	5	7	3	14
Collateral relatives	1	1	0	
Siblings	2	3	1	5
Solitary	20	26	2	9
	76	100	22	101

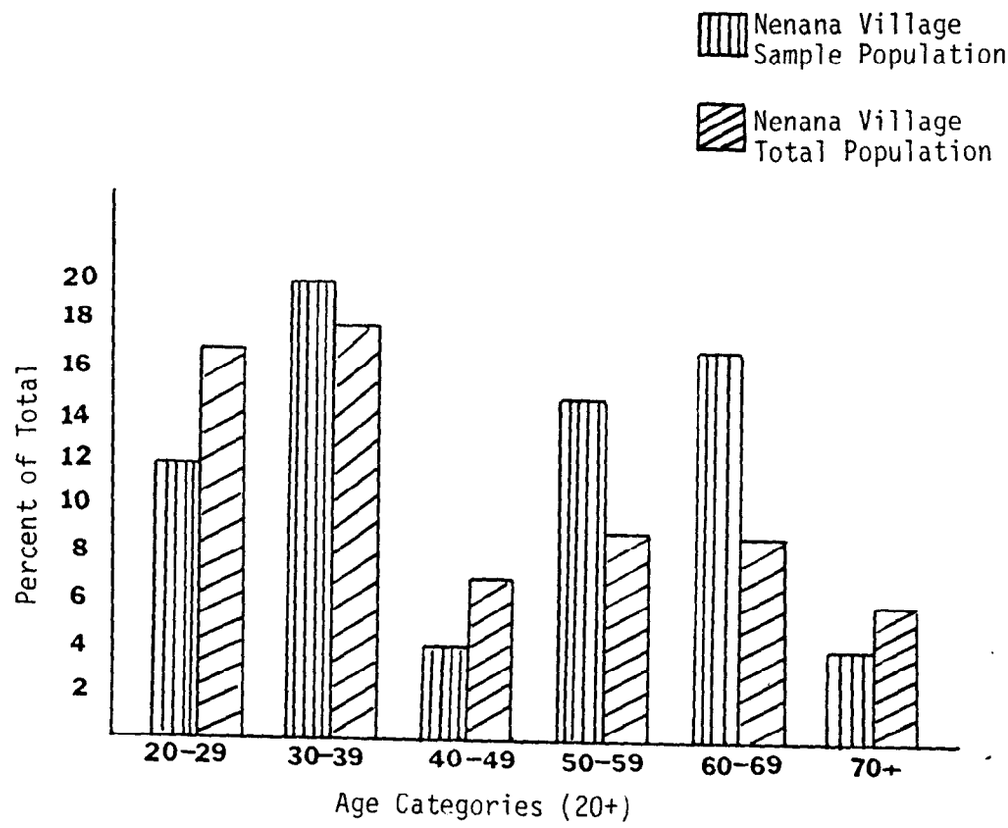


Fig. 2. Age Structure of Sample Population Compared to Age Structure of Nenana Village

Wage employment in Nenana is limited. Although we did not complete an economic survey, interview data indicate that approximately one-third of village households have a person employed full-time. All sample households have some access to cash income, but they use various strategies to obtain cash. Nine sample households (41 percent) have at least one person employed full time. Five of these households also obtain cash from commercial fishing and and three have an active trapper. Nine households without a wage-employee receive cash from pensions. In these households, two subsidize cash income by commercial fishing (1 example) or trapping (1 example). One household relies on a combination of transfer payments, seasonal employment, and commercial fishing and trapping. The last three households in the sample live off the land, obtaining cash and food from fishing, hunting, and trapping. All three are headed by young men and all are supported in their activities by closely related households that contain an individual who has wage-employment.

The disproportionate representation in the sample of some categories of households, ordered by age of household head (Table 1), of household types (Table 2), and of the age structure of household occupants (Fig. 2), compared to the village at large, reflects characteristics of this user group. For example, we found that no household headed by a person 40-49 is heavily involved in wild resource harvesting (Table 1). This age category is markedly depressed in the age structure of the population (Fig. 2) a puzzling feature of the demography that we have not clarified yet. The sample also contains twice as many males (N=36) as females (N=18), age 20+, somewhat more than their proportionate representation in the population at large where the sex ratio is 1.34. Sample households

tend to be slightly larger, averaging 3.68 people, than the average (3.08 people) village household and the sample includes two of the three largest (6-10 people) in the village.

In summary, the sample from which we draw most information and all quantitative data, consists of 22 households, a little less than one-third of the households in the village, containing one-third of the population. As this study will demonstrate, they are a group of people in Nenana Village that is heavily involved in wild resource use in the area.

FOOTNOTES TO CHAPTER 2

1. The assistance of Elizabeth Andrews in arranging this meeting and participating in the presentation of the research design is gratefully acknowledged. Field study was carried out during June, July, and August 1982. Case was resident in Nenana in June and August. Shinkwin visited the community during these months and in July. A follow-up trip in November 1982 by Shinkwin and Case was important in filling in data gaps that emerged during early analysis.

2. Although an interview format was devised prior to field study, it was gradually abandoned for a more open-ended interview. This new interview was guided by a list of the desired categories of information. These categories defined minimum data requirements for the interview of each key participant. Field data were regularly checked for each key household in order to ensure that each information category was addressed by the time interviews were completed. Individual resource use areas were drawn on U.S. Geological Survey topographic maps (scale 1:250,000) using acetate overlays and colored markers to indicate use areas for each wild resource. Individual use area maps provided the data for composite maps of resource use areas representing all sample households. This method insured confidentiality of each household's use area. Draft maps were reviewed locally and each household was an active participant in map preparation.

CHAPTER 3

COMMUNITY HISTORY

The outward appearance of Nenana today, which can be viewed from the George Parks Highway linking Fairbanks and Anchorage, suggests a community that developed recently in conjunction with the highway. The newly paved road leading into Nenana is flanked by a large gas station, an attractive log information center and small arcade of log cabin stores selling local crafts or souvenir items for tourists. This impression of recency is very misleading. The community has a long history, both in record and in oral history, as the site of subsistence and ceremonial activities of Athabaskan Indians. It has also been the permanent home of non-Natives for the last 60 years.

The "contact traditional" (Helm et al. 1975) period in the lower Tanana River area began roughly about 1850 following the permanent establishment of non-Native fur traders first at Fort Yukon in 1847 and later at "Nuklukayet" at the confluence of the Yukon and Tanana rivers about 1860. By the 1870s, the Tanana River had been explored by non-Natives (Brooks 1900:437), presaging the growing, but transient, presence of other non-Natives in the next two decades. The period ends about 1940 when most Indian residents of the area settled permanently, year-round in places like Nenana, although a few families did not abandon their isolated camps until later.

1880-1900. Allen (1900) observed a small fish camp in 1885 at a place very near present-day Nenana, and the site probably had a substantial history of use prior to this time. According to oral tradition, before non-Natives arrived Nenana was a "large" seasonal settlement where Indians

came for mid-winter potlatch and for summer salmon fishing. Like many other traditional in-gathering Athabaskan settlements in Alaska (cf., Guedon 1974:40, 147; De Laguna and McClellan 1981:644; Shinkwin et al. 1980), it was known by the name for an associated large hill. In this case, the hill called Toghotthele ("Tortella" in early reports) was located on the north bank of the Tanana River, opposite present-day Nenana. The current village corporation, created as a result of the Alaska Native Claims Settlement Act (P.L. 92-203), passed in 1971, is named for this geographic feature.

By the end of the 19th century (1898-1899), about 20 cabins used by local Indians had been built at Nenana (Brooks 1900:491; Castner 1900: 693). In 1902, Brooks (1903:467) visited the settlement reporting that one boy knew some English, and that:

> The village consisted of a score of low structures built of spruce logs, each containing two or more families. The fire was built in the center, and a hole in the roof served in lieu of a chimney.

The multi-family log cabins at Nenana reflect an interest in locating on the Tanana River in order to be near access to a supply of non-Native goods. Vistors to the area at the end of the nineteenth century amply recorded the total conversion to guns and the use of western clothing, tools, and some non-Native food staples (Brooks 1900). Employment became locally available with the onset of steamboat traffic on the Tanana in 1897-1898 (Brooks 1900:441) and work on the boats or cutting wood to provide fuel became summer job opportunities.

1900-1920. During the first two decades of the 20th century, Nenana grew continuously. A telegraph, which functioned until 1918, was established in 1902; a mail route, travelled in winter by dog team, was

begun about this time and roadhouses along the trail began to appear. The population of Nenana by 1910 had grown to 190 (Table 3) due to the establishment of a trading post in 1903, an Episcopal mission in 1905-1906, and a mission school in 1907 (Olson 1968:129, 130). This population was apparently predominantly Indian, since one of our local research participants reports there were only eight non-Natives in Nenana in 1912 when he came there as a young boy from Tanana to the mission school.

The ethnic composition and character of the community changed dramatically between 1916 and 1923 due to construction of the Alaska Railroad. This brought an influx of non-Natives to the area as the census figures for 1920 record (Table 3). Although the majority of non-Natives left the town around 1923, railroad construction and associated activities resulted in the beginning of long-term permanent non-Native settlement here, supported by the establishment of two stores in 1917.

TABLE 3

U.S. CENSUS DATA FOR NENANA (ROLLINS 1978)

	1910	1920	1930	1940	1950	1960	1970	1980
Nenana								
Nenana Village	190	172		86				
Nenana Town		634	291	231				
TOTAL:	190	806	291	317	242	286	362	470
% CHANGE:		(+324%)	(-64%)	(+9%)	(-24%)	(+18%)	(+27%)	(+30%)
Toklat Village			44	16				

Formal political organization of the community began with the development of two forms of "representative government." By 1920, Indian residents at Nenana had established their first council, referred to today as "the traditional council" and non-Natives had arranged for Nenana to become a first class city, its current legal status.

The development of the traditional council was the direct result of the now well-known meeting in Fairbanks of Tanana River chiefs with Judge Wickersham to discuss land claims in 1915 (Patty 1971). According to our data, younger men who attended this meeting returned to Nenana and called a meeting to elect a chief, since they said the non-Natives wanted an elected chief. Chief Thomas, the traditional chief from Wood River, who was described to us as having been like the "governor," rose and asked why they needed a chief since he had been their chief for many years. His sons explained that he would always be the real chief but the Indians needed a person to "work for them" in dealing with non-Natives. Chief Thomas said he was satisfied and a "chief" and council were elected. They also appointed a "street cop" who patrolled the village in the evening with a willow stick which he used on miscreant children.

Potlatch descriptions from the lower Tanana between 1910-1920 (Drane 1916:75-79, 1928:242) suggest an abundance of western goods circulating in the Native economy due to excellent fur prices. For example, "high-powered rifles, clothing, dishes, mirrors, and bolts of calico" as well as blankets were distributed at a lavish potlatch given by Nenana Indians in 1915. Settlements along the river, such as Coschacket, Nenana, Tolovana and Tanana, constituted a potlatch circuit, each village a focus for a band or perhaps several bands.

1920-1930. The dramatic decline in population between 1920-1930 (Table 3) was primarily due to the departure of non-Natives with the completion of the railroad in 1923. However, an influenza epidemic in 1920 claimed one-fourth of the Indian population, based on one estimate at the time (Anon. 1920:67). According to stories told to current Nenana residents by their parents, the flu was devastating with four or five people a day dying; children were found in bed with dead parents. The experience of this epidemic encouraged Indians to move out of Nenana, although many maintained a seasonal residence there. The town continued to be important as a supply center and a source of seasonal employment, that could be pursued alongside traditional summer fishing activities. These community features insured the regular summer return of Indian residents in the area. The Nenana traditional council did not function in 1920 due to the general disorganization that resulted from the massive loss of life.

1930-1950. Throughout the 1930s, many Indians continued to live in areas isolated from Nenana coming to the town in mid-winter for holiday celebrations, now associated with the Episcopal Church, as well as for potlatches and in the summer for fishing and employment. Children attended the mission school for varying periods of time, and increasing numbers of the elderly stayed in town because of access to health services, limited as they were, from the mission nurse. With the closing of the store in Tolovana about 1945, the importance of Nenana as a commercial center increased.

Railroad and river freighting activities continued to supply employment opportunities and the economy expanded considerably during World War II because of military activities in the area. By the end of the period

Nenana became the permanent, year-round residence for the local Indian population primarily due to decreasing fur prices, local employment opportunities, and the desire to be with children who were attending school. With the settling-in of the Native population, the traditional council was resurrected in the early 1950s.

1950-1982. Although Nenana experienced some loss in population after World War II, since 1950 the community has continued to grow. In 1980 Nenana had the largest population recorded in the census since 1920 (Table 3), with Alaska Natives representing 46% of the total. A road was built from Fairbanks about 1960 to the north bank of the Tanana River at Nenana. Nenana itself was not on a road until 1967 when the bridge over the Tanana River was constructed, connecting the town with Fairbanks, about 60 miles away. Since 1970, with the completion of the George Parks Highway, Nenana has also been linked with Anchorage, a distance by road of about 300 miles. The town can also be reached by private air service or train (every day in the summer and less often in the winter).

Nenana today is one of the main river freighting centers in Alaska with two local barge companies and associated support services providing limited summer employment for residents. Other employment in Nenana is related almost exclusively to the provision of services, such as the post office, a bank, highway maintenance, gas station (2), cafes (2), bars (2), stores (2), Senior Center, and city positions such as policemen or clerks. In the summer, craft shops are operated and tourism temporarily expands the cash flow into the community. The recent location of the headquarters of the Yukon-Koyukuk school district several miles south of Nenana has substantially increased job opportunities. In general, however, access to local employment for Nenana residents is very limited and

access to local employment for Nenana residents is very limited and most is seasonal. Most Alaska Natives travel to Fairbanks for medical/dental services, although there is a private doctor near Nenana. Since about 1970, nearly all homes have electricity and running water, and many have phone service.

CHAPTER 4

SOCIAL STRUCTURE

Local Bands

Identification. Our data, and Olson's (1968) information from the Minto area, indicate that band affiliation and use of traditional band territories in the Nenana area continued to be important for most Indians throughout the contact-traditional period. As Guedon (1974:129) reports for Upper Tanana communities, we found that band history sets the context for many social interactions today in Nenana, since band history is also family history.

Our field data indicate that the Native history of Nenana during this century is that of three formerly distinct bands. Two contained speakers of Tanana Athabaskan and have been long-resident in the area -- Nenana-Toklat and Wood River bands -- having close connections with the Minto band and other bands upriver along the Tanana. As far as we can tell from our data, their band territories (Fig. 3) corresponded closely with those reported by McKennan (1981:564). However, additional field work is required to better define their northern limits.

Members of the third band, Mouth of Toklat, who lived along the lower Kantishna River (Fig. 3) say they speak like people from Bearpaw, Lake Minchumina, and "downriver" (Tanana village) making them speakers of the Inner Koyukon Athabaskan language (Krauss 1973:908).

Our information suggests that the entire Kantishna River to its mouth was inhabited by Koyukon speakers at the turn of this century, extending well into the last century. Respondents from the mouth of

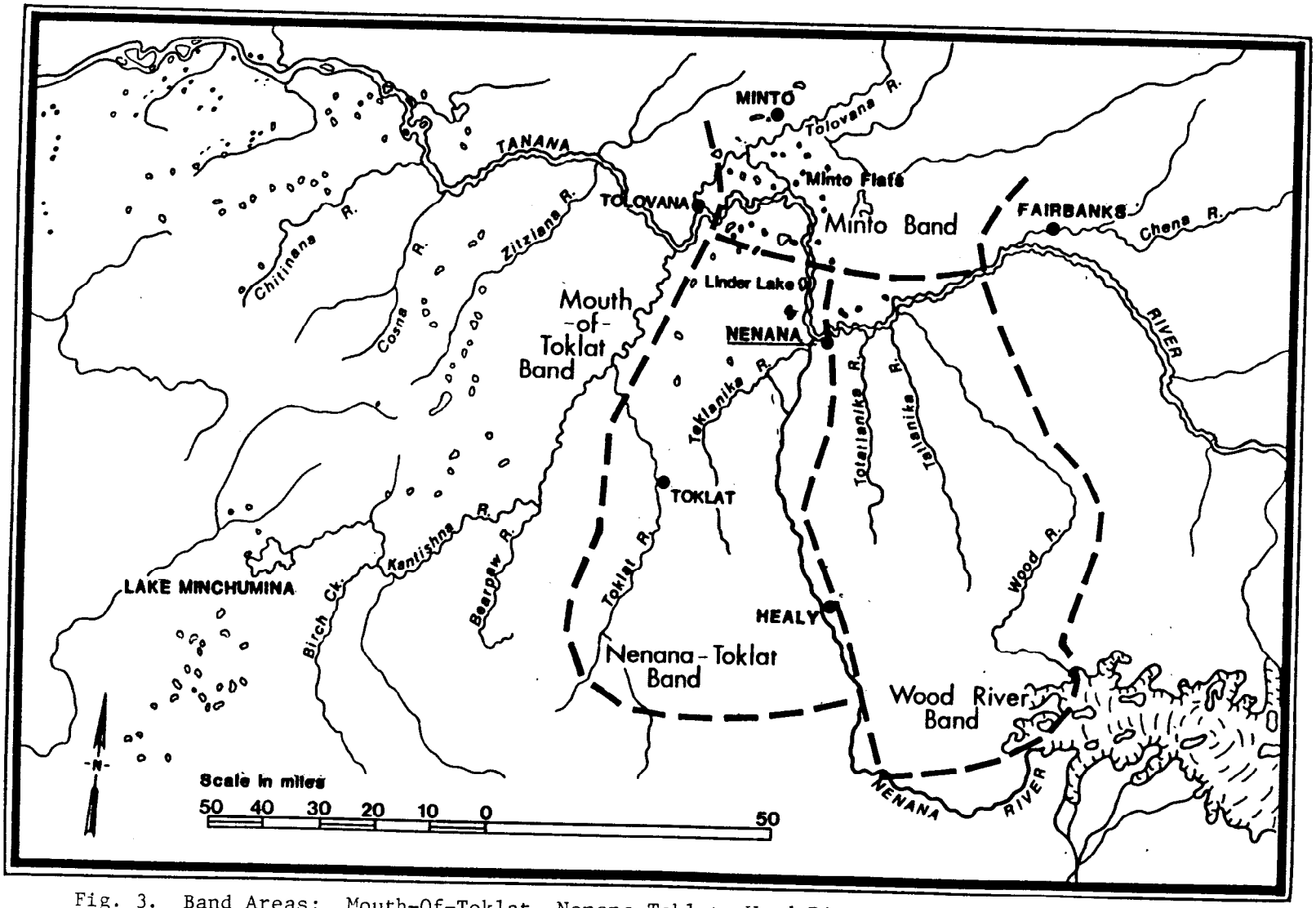


Fig. 3. Band Areas: Mouth-Of-Toklat, Nenana-Toklat, Wood River Bands

Toklat band and former residents of the villages of Bearpaw and Tanana say the Kantishna River had first been used by people from Lake Minchumina. This coincides with Wickersham's (1938) report of his travels up the Kantishna River in 1903. They further say that later in time, "downriver" (i.e., the lower Tanana River) people moved into the Kantishna River area. Our geneaological data for the settlement at the mouth of Toklat in the 1920s and 1930s also support the assignment of the lower Kantishna to Koyukon speakers for this time period, since family ties are primarily with downriver people. We have no record of past use of this area by members of the Nenana-Toklat band.

Krauss' (1973) linguistic classification of the inhabitants of the lower Kantishna River is based on a list of words obtained by Wickersham from an Indian he met on the Kantishna. According to Krauss (pers. comm. 1982), these words clearly represent the Tanana language. However, since martrilocal residence after marriage was widely practiced in the area and the birthplace of the Kantishna man is not known, these data may be misleading. Our ethnographic information seems to conclusively support the inclusion of the entire Kantishna River area in the distribution of Inner Koyukon speakers during this century. Fieldwork with Krauss is planned in order to attempt to resolve the boundary question, since several speakers from the Mouth of Toklat band survive today in Nenana.

We are not able to satisfactorily define band boundaries, other than the eastern one, for the Mouth of Toklat band (Fig. 3). Since there was an Athabaskan village at the mouth of the Cosna River at the turn of the century (Herron 1901), we suggest that in this century Mouth of Toklat people stayed east of this river. To the south, people from the mouth of

Birch Creek to Lake Minchumina, and including those at the lake, probably belonged to another band.

In this century, Mouth of Toklat people, in contrast with Nenana-Toklat and Wood River bands, often traded at Tolovana rather than at Nenana, reflecting their downriver (Tanana) orientation. When the Tolovana store closed in the mid-1940s, Mouth of Toklat people began moving to Nenana.

A fourth band, the Minto Flats band, was also resident in Nenana beginning about 1907 until the 1920s (Olson 1968). The move back to the flats and the establishment of (old) Minto Village began in 1915 (Olson 1968). The departure of this group from Nenana was related to economic (good trapping in the flats area) and political considerations (competing chiefs in Nenana). The 1920 epidemic apparently hastened the process (Olson 1968).

Organization. Our field data on the social organization of settlements varies in completeness and is the best for the Nenana-Toklat and Mouth of Toklat bands. The following discussion focuses on two socio-territorial units associated with these bands in the 1920s. Data on these units were gathered from elders and middle-aged people who were residents in these settlements. Future field work is expected to provide additional details. At this point in our research, we have been unable to determine what portion of the band each settlement represented, since we know some band members were residing permanently in Nenana and other similar service centers.

In the past, family groups in the area were matrilineally organized. De Laguna (1975:115) reports being told in Nenana in 1935 that three exogamous "families" or sibs resided there ("Caribou," "Fish Tail," and

"Middle/Red Paint" people). Since we have limited data on the sib organization, its relation to settlement composition unfortunately cannot be examined. In spite of this limitation our data, discussed below, clearly highlight the importance of close family relationships in settlement structure.

Members of the Nenana-Toklat band decided to establish a permanent winter camp on the Toklat River in the 1920s, a place that is recorded as Toklat Village (Fig. 3) in the 1930 and 1940 census (Table 3). The village was located about four miles from a store and roadhouse, giving residents access to basic staples and an outlet for furs. The actual site was their traditional in-gathering place for obtaining large numbers of fall chum (see chapter 5).

At least ten nuclear households (Fig. 4) that regularly camped here each built a log cabin during one winter, helping one another with construction. An area was chosen as the cemetery and they planned to build a community hall the next winter. When they returned the following year, however, they discovered the cabins had been built on permafrost and were seriously damaged. The idea of permanent residences was abandoned, but the settlement persisted and people returned to their previous practice of using tents here.

Seven of the 10 conjugal pairs who built cabins were linked to at least one other pair by a sibling tie; an eighth couple contained a daughter of one of these unions and her husband (Fig. 4). These households are described by band members as having "followed" a Cantwell man living here who had married a Nenana woman. According to the descriptions, he was an outstanding moose hunter, well-known for his achievements, and

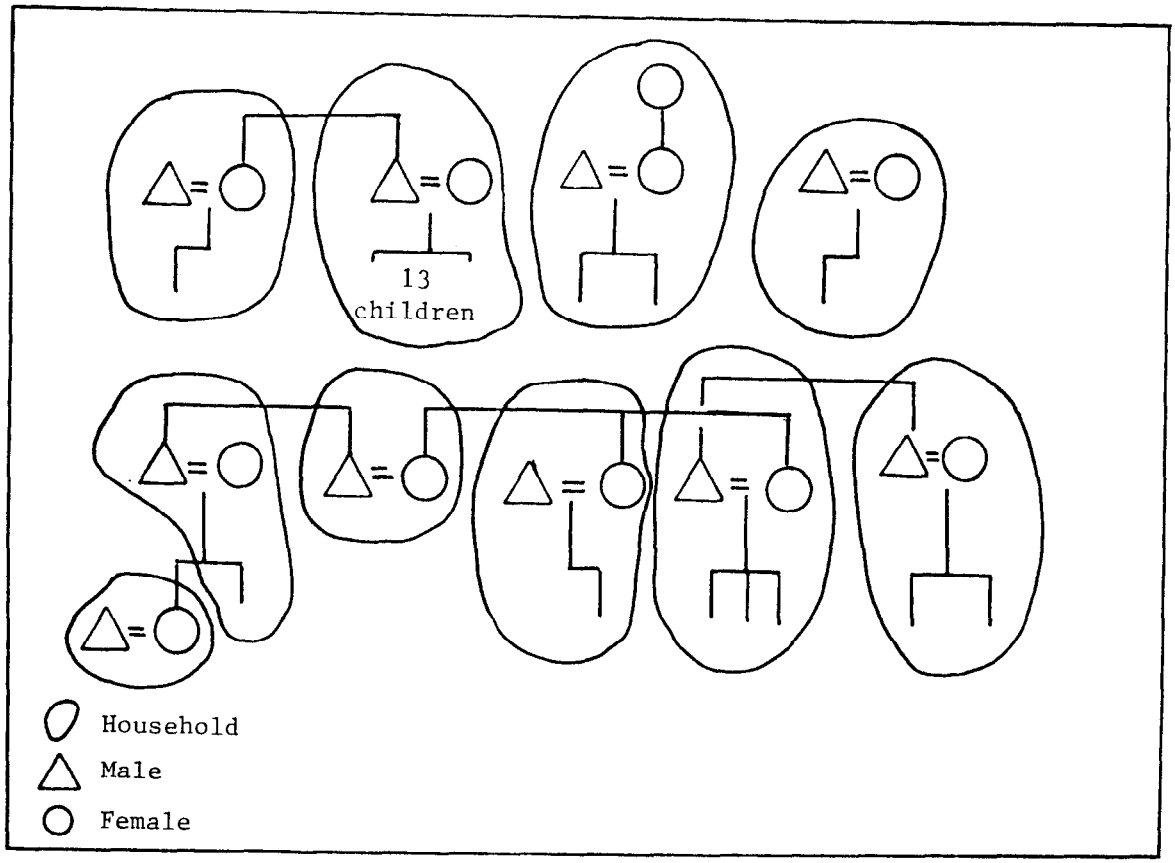


Fig. 4. Nenana-Toklat Band Encampment during the Fur Trade Period

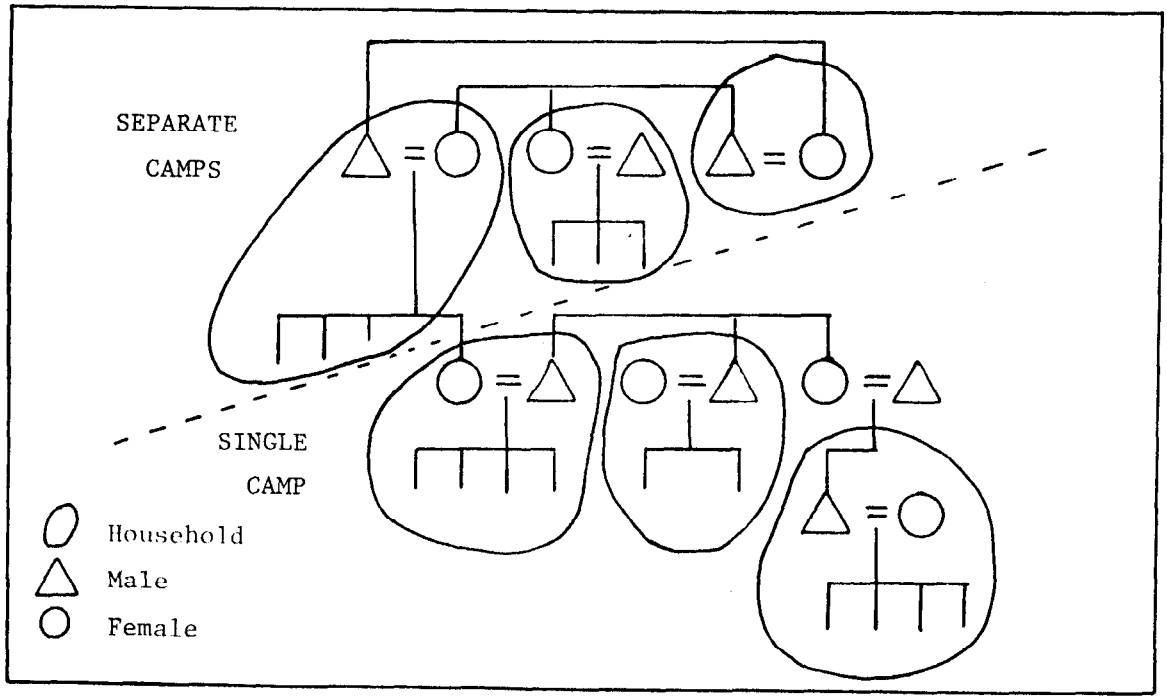


Fig. 5. Mouth-of-Toklat Band Encampment during the Fur Trade Period

very generous with his harvests, sharing food widely within the settlement. Respondents said he was not a "chief" but "like a director."

During the winter in the 1920s and 1930s, members of the Mouth of Toklat band were distributed in four communicating camps along the Kantishna River, near the mouth of the Toklat River. Although separate camps were maintained, occupants were in continuous interaction with one another. For example, they shared food, men hunted together and respondents clearly viewed the camps as one social group. Therefore, for purposes of analysis, the camps are treated as components of one settlement. Emphasis on the dispersion of people in these camps would result in a picture of an atomistic social structure that would distort what was social reality to the occupants of these camps.

Each household camped along the Kantishna River was linked to at least one other by a primary consanguineal tie, most often a sibling relationship. Occupants included two married couples (and children), linked by a cross-sex sibling marriage exchange; a third sibling from one of these pairs and her husband and children; the daughter of one of these unions and her husband and children as well as her husband's brother and their sister's son, each with a spouse and children (Fig. 5). Each couple in the grandparent generation had its own camp with the fourth camp containing three cabins occupied by the married daughter and her husband's relatives.

The Wood River band maintained a permanent camp near the mouth of the Wood River in the 1920s and 1930s. It was made up of four households -- Chief Thomas, his wife and unmarried children and three other households containing children of Chief Thomas.

These limited data demonstrate that Athabaskans in the Nenana area early in this century organized settlements based on close family ties. In both bands, the sibling tie, especially that between "true," not classificatory, siblings was an important framework for settlement structure. This feature of organization, plus the strong tie between participants in cross-sex sibling exchange marriages, have also been noted by several other anthropologists as significant social features of Athabaskan settlements (cf. Hosley 1966:36; Guedon 1974; McClellan 1981:476). Kinship linked all conjugal pairs in the Mouth of Toklat settlement but only 60 percent of those in the Nenana-Toklat camps. The latter probably would be complete (100 percent) with better data. Respondents, including the son of one of the isolated couples, either could not remember or never knew who the relatives of these pairs were, or they knew who some relatives were but did not know the connections. This settlement organization, based on conjugal pairs, each of which is usually linked to at least one other pair by primary consanguineal or affinal relationships, has also been noted for other Alaskan (Guedon 1974) and Canadian (McClellan 1981:476, 500; Helm 1965:365) Athabaskan societies. Some (the Upper Tanana, Inland Tlingit, Tutchone) were matrilineally organized; others (Hare, Slavey, Dobgrib) were bilateral.

Local Families Today

Identification. The population (N=234) of Nenana Village, according to our census, during the study year was made up primarily (ca. 70 percent) of people born in Nenana. Many are descendants of members of the three formerly distinct bands, especially the Mouth of Toklat and Nenana-Toklat

bands, or are linked to them by marriage. Other Athabaskan villages, such as Holy Cross, Tanana, Minto, Ruby, and Stevens Village are represented due to movement to Nenana for employment or marriage. Several Eskimos are married to Nenana Indians and two Eskimo families (two sets of siblings) established residence there many years ago. One family has a very large membership today. In fact, most Alaska Natives born in Nenana who are married (Table 4) have spouses from other areas (22 of 28 marriages). Many in-marrying spouses, especially in recent marriages, have been non-Natives (Table 5). In addition, some Alaska Natives who moved to Nenana also have non-Native spouses. This has resulted in a high proportion, nearly one-half (47 percent), of current marriages containing a non-Native spouse (Tables 4 and 5). This in-marrying spouse is as likely to be male as female (9 of each). Hence, the current social composition of Nenana Village is diverse and complex in terms of individual histories and ethnic identity, combining people of Indian (primarily), Eskimo, and non-Native descent. Locally, the history of the former bands is of interest and some people identify themselves and others in terms of band connections. The number of survivors who are former band members or who represent direct links to the bands is small, however, due primarily to the effects of infectious diseases especially tuberculosis.

Organization. Few people under 50 are familiar with the traditional matrilineal system. Today, people define family as a bilateral descent group. Although we did not explore "family" as a cognitive category, close relatives as well as more distant relatives and affines are included. Importantly, the way a person is viewed depends primarily on whether or not he or she participates in and supports family activities. These

families, which are made up of a number of households, provide the context for most social and economic activities.

TABLE 4

ORIGIN OF CURRENTLY MARRIED COUPLES IN NENANA VILLAGE

	Age of Household Head						
Source of Spouse	20-29	30-39	40-49	50-59	60-69	70-79	Total
Nenana							
Both spouses	1	1	0	2	2	0	6
One spouse	10	4	3	3	2	0	22
Non-Nenana							
Both spouses	0	2	3	2	1	2	10
	11	7[1]	6	7	5	2	38

[1] Sample is reduced by two because of lack of data for one household; the other is a non-Native pair with the Alaska Native offspring of one parent.

TABLE 5

MARRIAGES WITH A NON-NATIVE SPOUSE IN NENANA VILLAGE

	Age of Household Head						
Marriages Between	20-29	30-39	40-49	50-59	60-69	70-79	Total
Nenana Natives and a non-Native	9	2	0	0	1	0	12
Non-Nenana Natives and a non-Native	0	2	2	1	1	0	6
	9	4	2	1	2	0	18

Local families in Nenana Village today are primarily the result of the immigration of five sets of Alaska Native siblings (the present grandparent generation) and one non-Native man to Nenana. These individuals became linked to local residents, who were members of one of the three traditional bands, by their marriages or the marriages of their children. Hence, the significance of the sibling tie in the evolution of the community mirrors its role in settlement organization of the past.

Some of the families are large and visible in the community. The three largest include nearly one-half (49 percent) of all households in the village, based on primary consanguineal (parent-child, sibling) ties alone. Their size is larger when more distant relatives are considered.

The current community structure reflects the past but is more complex. All people interviewed had extensive knowledge of kinship relationships in the community and nearly all (87 percent) households in Nenana Village are linked by kinship to at least one other household. Further research undoubtedly will reveal more connections. However, boundaries between families are socially sharp. Hence, the village can be envivioned as made up of a number of socially bounded local families, each of which is represented by at least two or more households. The structure of each local family of any size resembles bands of the past and some are as large as past bands. Much of traditional ethics that governed band behavior in the past characterizes these contemporary local families. This is particularly obvious in the realm of subsistence activities to be discussed in subsequent chapters.

CHAPTER 5

WILD RESOURCE USE: 1900-1940

Data on past resource use activities were gathered from members of each band. The time period is limited by respondents' memories of their experiences or of their parents' experiences they heard about when young. It roughly corresponds with the first four decades of this century. Since our most complete data are for members of the Nenana-Toklat band, the discussion focuses on their activities. In general, it is brief since we found, not surprisingly, that harvesting activities were nearly identical to those already described for other Tanana River bands (McKennan 1959, 1981; Olson 1968; Guedon 1974; Andrews 1975).

The boundaries (Fig. 3) of a band's resource use area were well defined. Sparse resources, however, could be obtained from a neighboring band's territory, with permission. Kinship ties provided the framework for cooperation. Related nuclear families fished together, camped close to one another, and male members often hunted together. Brothers, brothers-in-law, fathers and sons, and uncles and nephews made up fall and winter hunting groups and set up permanent, seasonally used camps. Mobility throughout the year was high. Camp places shifted with the seasons and with the year since alternate camps were used to avoid resource depletion. The Nenana-Toklat band had two major in-gathering sites, one at Nenana and one on the Toklat River. Each was the location of abundant, seasonally available, salmon.

People took king and chum salmon at Nenana in summer with fish traps in a slough of the Tanana River, opposite the present-day dock area and slightly upriver from the mouth of the Nenana River. They also obtained

salmon from the Tanana River in an eddy (near the current railroad bridge) using dip nets from a platform built out from the south bank in the section of town traditionally and currently used by Indians. The first kings were honored by a ceremonial "potlatch," which was necessary to insure continued harvesting success.

In the first decade of this century, all summer salmon fishing activities were on the Tanana River itself, rather than on a clearwater tributary. This resulted from the introduction of the fish wheel, which made it possible to fish in the cloudy, silt-laden river where large quantities of fish could be obtained. Respondents remembered that, as late as the early 1920s, families used a communal fish wheel on the Tanana River while camping nearby. Individual wheels became current in the 1930s.

Although nets were not mentioned by respondents in connection with summer fishing at Nenana, Wood River residents intercepted whitefish during their spring run with set nets in late spring/early summer in a slough of the Tanana River. A good harvest would be shared with everyone who needed fish since spring was a time of scarce resource availability and stores were low. We assume this was a widespread practice in the area. People also took suckers, sheefish, and pike with set nets at this time. Whitefish were occasionally obtained later in fish wheels as a by-product of salmon fishing.

Acquisition of large numbers of fish became a necessity with the development of dog teams during the fur trade era. During the 1920s and 1930s, women often ran summer fish camps which provided sustenance for people and dogs, while men worked for railroad or steamboat companies. Summer salmon were dried for consumption by humans and dogs throughout

summer and fall hunting seasons. By the 1930s, commercial fishing became an important source of income and people sold king salmon dried and bound in 50-pound bales to the store in Nenana. For example, one man reported that during these years he had five wheels down the Tanana River from Nenana which he operated primarily for commercial fishing. Blueberries and cranberries, harvested in late summer and fall, were stored in birch bark baskets.

In the fall, families moved out from Nenana, following the railroad tracks or taking the train south toward Healy on the Nenana River. They spent much of the rest of the year, until spring, hunting and trapping in the low forested hills and flats between the Nenana and Toklat rivers. This area, and the foothills of the Alaska Range to the south, contained rich habitat for moose, caribou and sheep. People also shot ducks, snared hares and other small game, and clubbed porcupines here during fall.

A major fall moose hunt provided meat for immediate consumption and for the winter. Meat was dried and stored in a cache similar to that described by McKennan (1959:33) for the Upper Tanana. Although most moose hunting by the 1920s was done individually or in pairs, an earlier technique of using a moose fence with snares, reported for other groups (McKennan 1959:49; Andrews 1975), was occasionally employed. Apparently there are remains today of a moose fence near Healy. In the 1930s, fall moose hunting was also a commercial venture for some Indians. Meat was sold to restaurants in Nenana or Fairbanks by shipping it via the railroad, which respondents recalled would stop anywhere to pick up fresh meat and carry it at no charge to town.

In November families camped on the Toklat River at a well-known major chum salmon spawning ("fish gathering") locality where fish were speared or hooked. A former resident of this camp stressed the wealth in chum salmon available here at a time in the year that was cold enough for immediate freezing of harvests. Large piles of fish were frozen for human and dog consumption. The place was also viewed as attractive since ducks were available year-round due to local hot springs.

After fishing and catching fish on the Toklat River, families dispersed to family trapping territories in the area, maintaining contact throughout the winter. Although trapping focused on the acquisition of furs for cash/goods, fur animals, such as beaver, muskrat, and lynx were also valued highly as food animals. Families moved between permanent, seasonal, camps like those described for the Upper Tanana by Guedon (1974). As she also reports, the number of these camps was apparently small for any one family. One Wood River respondent reported that her family maintained three. Also, like the Upper Tanana (Guedon 1974:149), people considered family traplines to be private territory with regard to fur animals that were commercially valuable. People carefully respected these boundaries. In contrast, activities in family trapping areas related solely to subsistence were not restricted to family members. In spite of the scattered distribution of families involved in trapping, large game, such as a moose killed in winter, was always shared between camps. A "stingy" person reportedly would have bad luck hunting.

Although we have no data on bear hunting, one older respondent reported that bears were ritually endowed with considerable power and were avoided unless one had killed a person. In this case, the bear was

hunted and killed because it was considered dangerous to humans. Women of child-bearing age did not eat bear and many women in Nenana today, now beyond this age, will not eat bear.

A discussion of resource use is not complete without mentioning the critical importance of dead wood (primarily spruce) for fuel. Respondents emphasized the significant amount of travel in the winter necessitated by the need for firewood (see also Guedon 1974:28 for the Upper Tanana).

In spring, families moved down the Teklanika River to the Minto Flats for muskrats and ducks, snaring ground squirrels in the hills prior to the move. Wild rhubarb and Indian potatoes were also collected in spring, which occasionally was a time of potential starvation before summer fishing replenished a family's stores.

In general, all harvesting activities were governed by ritually prescribed behavior regarding the treatment of harveted resources. In addition, a person's behavior prior to an activity could affect success. As one respondent commented, "whatever a person thinks, the animal knows." At all time, respect was due the resource which gave sustenance to human society. For example, one person recalled that entry to a tent when people were eating should be on one's knees in order to show respect to the species being consumed. Athabaskan resource use during the contact-traditional period was a complex matter that was not simply a matter of practical skills, as other investigators have noted (cf. de Laguna 1969-1970; Guedon 1974; Nelson 1983).

CHAPTER 6

CONTEMPORARY WILD RESOURCE USE: AN INTRODUCTION

Resource Use Area

Resource use mapping with key participating households and brief interviews with 16 more households provided information on where people go to obtain resources. People who no longer live in Nenana but grew up there primarily those who live and work in Fairbanks also regularly return to harvest resources, especially fish and moose. Limited data suggest this group's user patterns are the same as those of key sample households.

The current resource use area (Fig. 6) is roughly bounded on the north by the upper Tolovana River drainage and on the south by the upper Nenana River drainage in the foothills of the Alaska Range. The area relief is generally less than 1,000 feet in elevation. Higher elevations in the Kuskokwim Mountains and hills west of the Kantishna River and in the Alaska Range to the south are not used by people from Nenana Village.

The area generally is a mosaic of open and closed forests covering the low gradient outwash slope between the Alaska Range and the flats and ridges north of the Tanana River (Major Ecosystem of Alaska 1973). Microhabitats cross-cut the major ecosystems harboring a diverse array of resources.

The focus of most activities is south of the Tanana River in the extensive lowland spruce-hardwood forests between the Kantishna River on the west and the Wood River on the east. This area also contains bottomland spruce-poplar forests along the banks of the Tanana and Kantishna

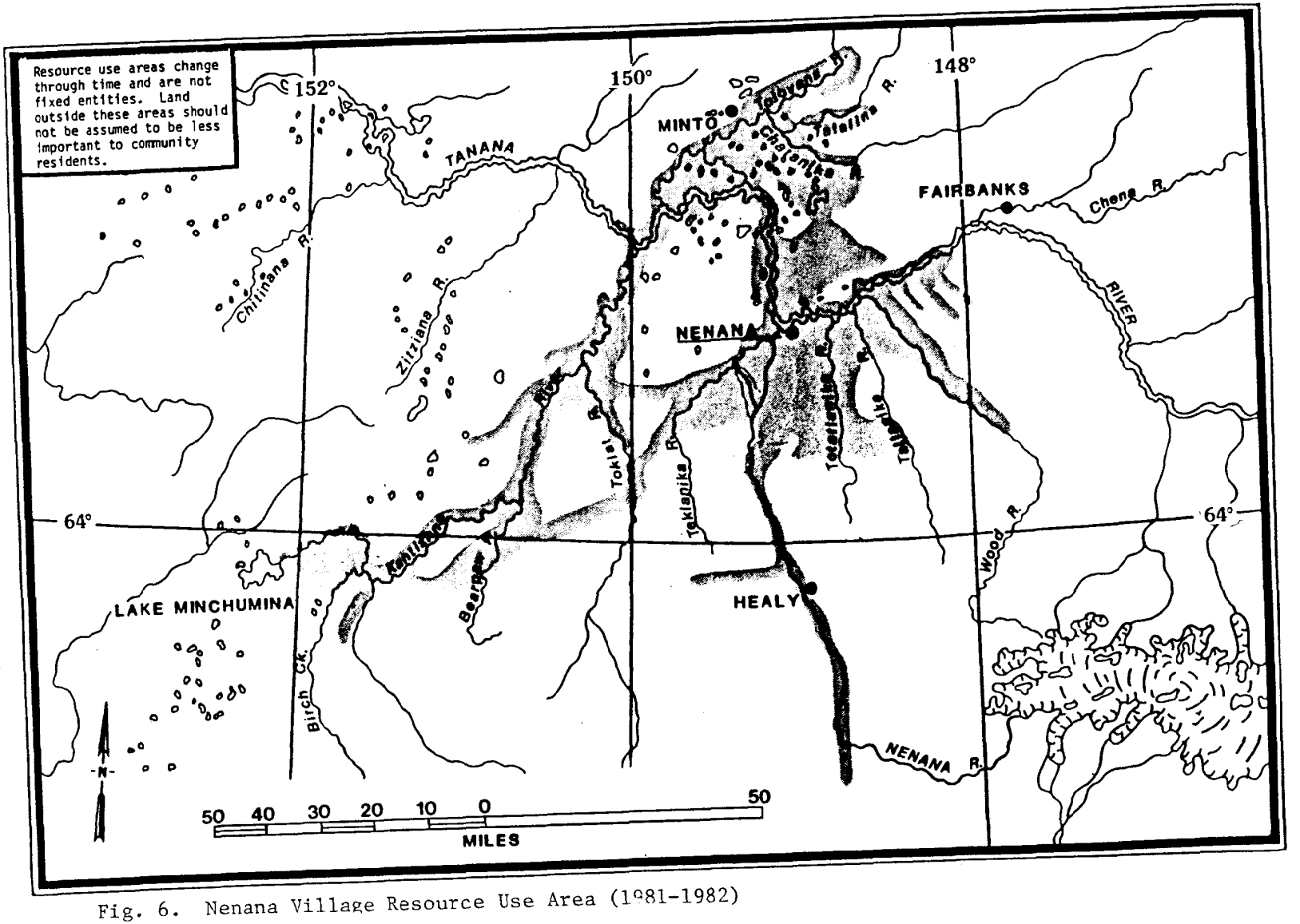


Fig. 6. Nenana Village Resource Use Area (1981-1982)

River is in its lower reaches. The upper river and its tributary, the Bearpaw River, are used exclusively by two families, who formerly resided in these areas. Extensive brush areas in the lake-dotted lowlands of Minto Flats, north of the Tanana River, and scattered flats and lakes along the north bank of the Tanana, east of Nenana for ca. 30 miles, are very important and heavily utilized by Nenana families.

An area of lowland spruce forest just west of Nenana (Fig. 6) was not used by sample households during the study year. It is avoided because of lack of water access but is said to be good moose habitat. An old road there is apparently used by several non-sample households as a route to the Kantishna River area. This forested area was the scene of seismic exploration during the study year.

Major transportation routes are waterways draining the Alaska Range to the Tanana River. These include the Kantishna River and its tributaries (Birch Creek, Bearpaw and Toklat rivers), the Teklanika River and its tributary creeks, the Nenana River and its sloughs, and the Totatlanika, Tatlanika, and Wood rivers (Fig. 6). The George Parks Highway is used primarily as a route to the south, providing access to areas adjoining the Nenana and Totatlanika rivers.

Resources

Nenana residents harvest a variety of wild resources for food, fuel, and building materials, just as they did during the contact-traditional period. Scientific names for these resources are presented in Appendix I. Although resource use is discussed in detail in the following sections of the paper, a brief overview is presented here as an orientation to

harvesting activities in the Nenana area. Resource harvesting activities are scheduled according to state (Alaska Department of Fish and Game) regulations.

Several species of salmon (king, chum, coho) are major food resources obtained in summer. Whitefish, sheefish, grayling, pike, and burbot are sought in other seasons. Edible plant resources gathered in summer are primarily berries.

Moose is the major game resource hunted in fall while ducks and geese are also eagerly sought at this time. Black bear is occasionally harvested but, in contrast with moose, is not systematically pursued. Small game, including snowshoe hares, grouse and ptarmigan are hunted in winter. Trapping of furbearers (beaver, muskrat, mink, land otter, marten, red fox, coyote, wolf, wolverine, lynx) is also an important winter activity. Trees of importance are birch, aspen, white and black spruce, poplar, alder, and willow.

Settlement Pattern

Although all activities begin in Nenana because of the current year-round permanent settlement there, people regularly leave the community for resource harvesting. At these times, they occupy short-term settlements, such as transitory camp sites where tents are pitched or permanent seasonal camps such as hunting and/or trapping cabins or fish camps.

Isolated cabins are used in all seasons but summer when fishing activities take place near Nenana. Twelve were maintained during the study year by seven households. The cabins of six of the seven households are used almost continuously throughout the rest of the year, sometimes

by the owner or sometimes by family members from several other households successively occupying the cabin. All are located on a river or lake. All but two are within a 50-mile radius of Nenana. At each location, food and fuel resources can be obtained within a 12-mile radius of the cabin. The two most distant cabins, on Bearpaw River and Birch Creek, are nearly 100 miles from Nenana. They represent customary use of these particular areas by households originally from these locales.

Five of the seven households with cabins also have fish camps as do four additional households in our sample. Fish camps are close to Nenana and are used for varying periods of time throughout the summer, as discussed in chapter 7.

Participation

Analysis of household involvement in wild resource use indicates the significance accorded these activities in a sample described by its members and other people in the community as a heavy user group. According to our data, the degree of participation is, indeed, high. During the study year, three-fourths (77 percent) of sample households engaged in five or six kinds of major harvesting activities, in addition to berry picking and wood gathering which were also activities in nearly all sample households. Moose hunting was the most popular subsistence activity with harvesting of fish and small game nearly as important (Table 6). Trappping of furbearers for commercial gain was also important (Table 6), although the intensity of this activity varies considerably among sample households, as described in Chapter 9.

Detailed analysis of procurement excludes plant resources since, with the exception of berry picking, limited data were gathered. Most

harvesters in the sample are men (81 percent) and all procurement activities except berry-picking, are primarily male activities (Fig. 7).

TABLE 6

PARTICIPATION IN WILD RESOURCE HARVESTING
BY SAMPLE HOUSEHOLDS

Activity	Involvement of Key Households (N=22) Number	Percent
1. Fishing: Salmon	-16[1]	73
Salmon + other species	18	82
2. Moose Hunting	21	95
Bear Hunting	2	9
3. Snaring/Hunting:		
Small Game: Hare	18	82
Grouse & ptarmigan	16	73
4. Waterfowl hunting	17	77
5. Commercial Fishing	7	32
6. Trapping and Furbearers	18	82

1. One additional household fished salmon in another area.

TABLE 7

AGE STRUCTURE OF HARVESTERS IN SAMPLE HOUSEHOLDS
BY ACTIVITY

Activity	Number of Harvesters	Percent Under 40
Salmon fishing	32	53
Moose hunting	30	60
Hunting/snaring small game	25	48
Hunting waterfowl	27	70
Trapping furbearers	27	63

Women sometimes play an important role in salmon fishing, assisting men with the nets or fish wheel, and 28 percent of those who harvest hare are women. Women may accompany men on moose hunting trips, performing tasks in camp. Two women in the sample have spent extended periods of time at trapping cabins providing general assistance to male trappers. One older woman expressed a strong desire to shoot a moose, but she has not had the opportunity even though she hunts every year. Because of age, she is restricted to areas near the highway, limiting her chance of success. In another sample household, a woman is the major procurer of wild resources, supplying a large part of her family's diet in winter from ice fishing and snaring small game. This Eskimo family, long-resident in Nenana, has never participated in local salmon fishing and through the years the wife has become a specialist in harvesting other local resources. Women, when present, play major roles in all processing activities although a fair number of men cut fish and perform initial butchering tasks of moose.

People of all ages engage in most activities (Table 7; Fig. 7). Most people who hunt waterfowl are young, however, and the relationship between youth and this activity is statistically significant ($x^2=14.19$, $p<.05$). Young people, ages 20-29, are especially active, in general, with 89 percent of this age group in the sample involved in procuring wild resources. The second most active group is that of those aged 60-69 years, with 77 percent harvesting at least one resource. The extent of activity between people in these two age groups, however, differs slightly with that of the older group more restricted in range of activity. Three-fourths of women active in procurement are age 50+ (Fig. 7).

Analysis indicates that the range of a household's procurement activities is not directly related to the number of harvesters in the unit (Table 8). Rather, it is related to the age of occupants. Households headed by young men (under 40), with few harvesters other than themselves, are as active as some headed by older men with considerably more harvesters in residence. The amount of activity in the latter group is related primarily to the presence or absence of teenage and young adult offspring. These support personnel are found in all active sample households headed by individuals aged 50-59, and 70+ years (Table 8). In contrast, the slightly diminished activity in households headed by people age 60-69 reflects the absence of support people in 57 percent of these residences.

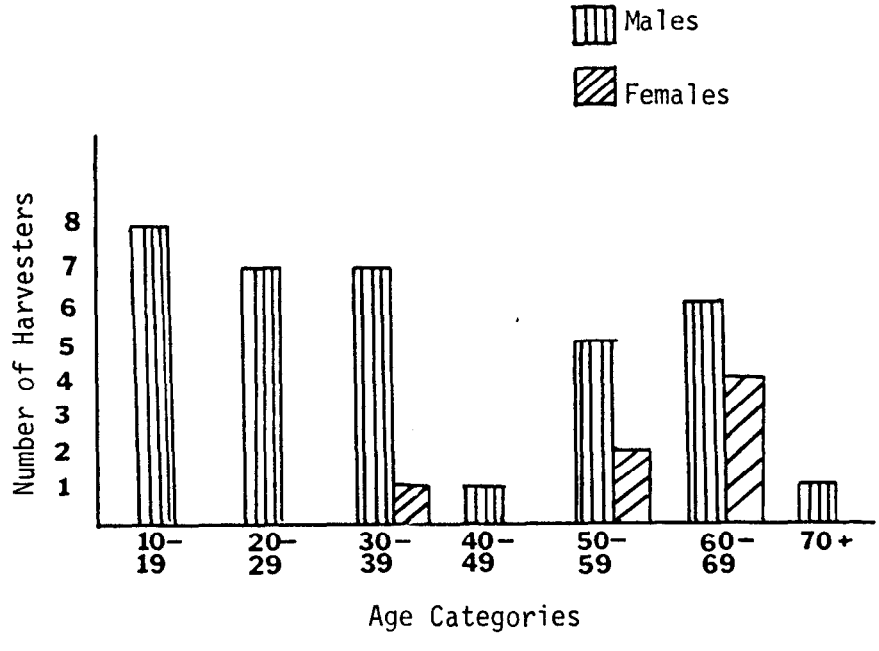


Fig. 7. Age and Sex Structure of Harvesters in the Sample (N=42) (excludes plant gatherers)

TABLE 8

AVERAGE PARTICIPATION AND AVERAGE NUMBER OF HARVESTERS IN KEY SAMPLE (N=22 HOUSEHOLDS), NENANA VILLAGE

Households Headed by Individuals Age	Average No. Harvesters	Average No[1] Activities	Range of Activities
20-39 (N=7)	1.2	5.6	(5-6)
50-59 (N=5)	4.0	5.4	(3-6)
60-69 (N=7)	1.6	4.1	(2-6)
70+ (N=3)	2.3	5.3	(5-6)

[1] Resource harvest categories include moose hunting, fishing or snaring small game, ptarmigan or grouse, hunting waterfowl, and trapping furbearers.

Most producing households are the major consumers of their harvests. However, production often occurs within the context of cooperative units made up of members from different households. Rules which govern the distribution of harvest within these units are discussed in subsequent chapters. Generally speaking, most producing households regularly share wild resources with others in the village that are not participants in their procurement unit. Recipients often are not harvesters.

Data are presented to illustrate patterns of distribution (Table 9). As noted in chapter 2, data are not comprehensive. For example, specific data on distribution outside the procurement unit are available only for 11 of the 15 households that harvested salmon, but all probably participate in some kind of distribution network within the village. However, it is clear that some households share resources widely and others restrict most sharing to their local family. In fact, several respondents deplor-

ed what they perceive as an increase in a narrowing of responsibility in the village for non-family members. Others emphasized their desire to provide wild resources to everyone in the village for subsistence purposes.

TABLE 9

DISTRIBUTION OF SUBSISTENCE RESOURCES TO HOUSEHOLDS OTHER THAN THE PRODUCER'S, NENANA VILLAGE

Resource	Minimum No. of Households that		Receivers			
			Relatives		Non-Relatives	
	Give	Receive	Under 60	60+	Under 60	60+
Salmon	11	26	8%	35%	19%	38%
Moose	14	26	23%	35%	15%	27%
Ducks and Geese	9	17		47%		53%

One strong pattern is the tendency for producers to give food to older people (Table 9). Our data showing waterfowl distribution only to older people reflect, in part, the rare participation of elders in harvesting ducks and geese (Table 7). There may be exceptions to this pattern but we did not record any examples. Moose meat, which is a highly desired commodity, compared with salmon and waterfowl, is usually given to relatives, but a fair amount is also shared with non-relatives (Table 9).

Summary

Resource use activities are centralized in Nenana with regular seasonal dispersion for various harvesting activities. Approximately one-third of the sample households maintain permanent settlement sites away

from Nenana, such as trapping cabins (32 percent of sample) or fish camps (41 percent of sample). The broadest use area is in forests near the village, south of the Tanana River and between and including the banks of the Kantishna and Wood rivers. An important and extensive brush area in Minto Flats, north of the Tanana River, is also used by many households.

Moose hunting is the most popular household activity, followed by fishing, hunting or snaring of small game, and commercial trapping. Analysis of harvesting activities among sample households indicates that, with few exceptions, they are intensive users of wild resources. This supports their initial identification by local residents as a heavy user group. Other households in Nenana Village, except two said to be very active, are viewed by residents as more restricted users of wild resources, compared to sample households.

CHAPTER 7

FISHING

Activities and Harvest Areas

The Tanana River is broad and silty, dotted with islands and sloughs, under-cut banks, gravel bars, and beaches. The river and its sloughs are a focus for intensive summer salmon fishing with fish wheels and set nets. All local runs are exploited, from the first kings in late June or early July, to the subsequent July chums or "dog salmon," fall (late August and September) chums and cohos or "silvers," with activities ending at freeze-up in late September or early October. Summer whitefish, sheefish, burbot, and pike are obtained as a by-product of salmon fishing. An exception is one household that does not harvest salmon but sets nets for whitefish in late summer. This household contains an Eskimo family, long-resident in Nenana, that has never participated in summer salmon harvesting but instead harvests all other fish species year-round. Unlike all other harvesters in the sample, the wife in this household relies heavily on ice fishing to provide a substantial proportion of her family's diet.

In fall, people set whitefish nets and fish for grayling and pike with lines and lures in sloughs west of Nenana. A few residents fish through ice for whitefish and burbot using nets or lines. In early spring, soon after breakup more families participate in whitefish harvesting using nets. As noted in chapter 5, whitefish traditionally were an important food source at a time of dwindling resources, and they are still highly valued as a spring food. At this time, people also fish for

grayling and pike in sloughs west of Nenana and on the Tolovana River as well as to the south and southwest in clear-running tributaries of the Nenana and Teklanika rivers. Fishing is also an activity at spring trapping camps.

Participation and Harvests

Twenty-one (28 percent) of the 76 households in Nenana Village had at least one member who renewed a limited entry permit for commercial salmon fishing in 1981. Ten of these 21 were key participating households in this study. Of these 10, 7 (32 percent of sample) actually fished commercially during the 1981 season. According to figures from the ADF&G, 5 fishermen in the sample sold a total of 241 (4,066 lbs.) king salmon. On the average, each earned almost $1,000 from the sale of king salmon. The seven commercial fishermen harvested 28,066 (180, 491 lbs.) chums and cohos, on the average each making about $13,646.

Fifteen (68 percent) sample households fished for salmon for subsistence. Although most expressed a food preference for kings, only nine sought king salmon, while all harvested chums and cohos. Households that took kings averaged ca. 50 per household, with a total subsistence harvest of ca. 450. All 15 households intensively harvested chums and cohos, with an approximate average household harvest of 1,800 fish. These harvests are 1.4 (kings) to 2.8 (chums) times higher than subsistence harvests for 28 Nenana families reported by ADF&G, Division of Commercial Fisheries. Since sample households are among the most intensive harvesters in the village, the larger harvests are not unexpected. However, as noted in chapter 2, salmon harvest levels are approximate for sample households. They may be somewhat inflated.

The greater involvement in chum fishing as compared to kings is attributed by residents to the relative ease of processing and storing chums and cohos. In late summer when they are running, fish can be dried without the earlier hazards presented by insects. In fall, fish can be frozen outside with little or no preparation.

Sheefish, pike, burbot, and grayling, compared to salmon, are obtained in much smaller quantities. Of the non-salmon species, whitefish harvests are fairly substantial, averaging ca. 50 per household (range: 30-75) for the 10 households which reported taking whitefish. It was not possible to obtain quantified data for other species, which are taken in small quantities, usually consumed fresh (occasionally frozen), and clearly viewed as minor, although enjoyable, supplements to the diet. Since salmon fishing is such an important resource use activity among many Nenana residents, the rest of this chapter is devoted exclusively to this activity.

Salmon Fishing

Procurement and Processing Units. Persons of all ages participate in subsistence salmon fishing (Table 7), which is primarily a household activity. Couples or parents and children work together to procure and/or process fish. The most common experience of sample households is participation in an extended group of relatives formed around middle-aged or older parents (Table 10). In one case a man, his daughter and her husband (representing two households), fished and processed together. In another, parents and children in one household and grown sons in another household worked together; this unit, unlike the others, maintained two

wheels and two processing areas. An exception to groups formed on the basis of a parent-child tie was a pairing of two cousins. Single household operations are those of young couples (or a single man in 1982) without productive offspring and lacking other close relatives who engage in salmon fishing. Three of the four units including friends (Table 10) are also men without offspring in the village. In two of these cases, reciprocal arrangements were made for the exchange of the right to equipment use for fresh salmon. In one, a net was leant and fresh fish were supplied to the lendor whose wife processed it for both households. She then split the fish equally with the borrower. In the second example, a person with a motor cooperated with another who owned a boat and the harvest was split equally between the two households.

TABLE 10

STRUCTURE OF SALMON FISHING PROCUREMENT AND PROCESSING GROUPS, NENANA VILLAGE SAMPLE HOUSEHOLDS

Group Composition	Number and Percent of Household in Group Type	
Household and closely related houselds	9	(60)
Single household	2	(13)
Household and friend	4	(27)
	15	(100)

Consumption Units. First harvests of king salmon are often consumed fresh and shared with other households lacking fresh fish. They are also often not sold by commercial fishermen but kept for domestic use. Widespread sharing and special treatment of first salmon is a traditional pattern associated with the belief that generosity with first catches insures good future harvests. As one respondent commented, "If you keep what you have, nothing comes in."

Harvests are shared generally within the unit that procures and processes. Variation in harvest distribution within the extended cooperative units may exist, but its range remains undefined in this study. Generally, owners of equipment, such as wheels and boats, who are often middle-aged or older parents in sample households, control distribution in an extended unit. Throughout the year, salmon are distributed beyond the production unit, especially to households with elders (Table 9). Elders, especially women, often redistribute their share to other elders.

Salmon is an important component of potlatch gatherings and households set aside salmon for such occasions. Kings are especially appropriate because they are viewed as good eating. They are frozen whole to avoid freezer burn and an efficient use is donation to an occasion where the large fish, once thawed, will be eaten immediately. Most sample households seriously consider potlatch obligations when storing food, whether it be fish or game.

Regulations. Salmon fishing in Nenana, like everywhere in Alaska, is closely regulated by ADF&G (Alaska Board of Fisheries 1981). In this district (Y6), commercial and subsistence fishing must be engaged in at the same time during the commercial fishing season; alternate 48-hour

fishing and non-fishing periods are established. Once the commercial season has closed for the summer, subsistence fishing can be pursued any time except between 6 p.m. and 6 p.m. Friday.

Harvesting. Salmon harvesting equipment includes store-bought pre-hung nets or fish wheels which are constructed locally. Logging for fish wheel components begins in April with logs being floated to Nenana or to camps after break-up. Spruce poles for wheel spokes are peeled and stacked to dry for a few weeks; stacks of drying poles are visible in camps along the river as well as in town. June is a busy month with the construction or repair of fish wheels, and the ordering or repairing of nets. At this time, fish camps are renovated, often having suffered damage from bears over the winter. Drying racks and smokehouses are built or improved and boats and engines readied for the season. Many of these tasks require multiple trips to Fairbanks for supplies or services.

Wheels, in contrast with nets, demand an initial capital outlay of about $1,000 for materials and substantial labor for assemblage. A net costs about $125. According to research participants, a net usually lasts a maximum of five years, although with good care it can last longer. Fish wheels apparently last a long time unless lost accidentally in a spring flood.

Fish wheels, which can be easily stopped and started, are clearly better adapted than nets to demands of state-regulated openings and closings (noted above) during the commercial fishing season. In order to stop fishing with a net, it must be removed from the river and hung (for cleaning). These tasks are difficult for older people because nets, when wet, are very heavy. The productivity of fish wheels is also said to be

greater. This feature of fish wheel technology is of particular importance to the individual who pursues both commercial and subsistence fishing, and all fishermen appreciate good harvests. In addition, the initial cost of a fish wheel can be recovered in one year of commercial fishing. This factor along with its continued productivity over a period of time, and the ease by which it can be operated compared with a net, no doubt explain the popularity of wheels with commercial fishermen (Table 11).

TABLE 11

USE OF FISH WHEELS AND NETS, NENANA VILLAGE SAMPLE

	Households That Fish	
Technology	Commercially & Subsistence	Subsistence Only
Wheels	7	3
Nets only	2	3

Fish wheels, nets, and fish camps are clustered (45 percent) between Nenana and 2.5 miles downriver or upriver of the community (Table 12), based on observations made in August 1982. Another cluster (33 percent) occurs between 2.5 miles and 6.5 miles in either direction. Beyond these points, few spots are used. Respondents viewed downriver areas in excess of ca. 15 miles from Nenana as Minto Village territory.

As these data illustrate, people seek good fishing sites as close as possible to Nenana, usually within seven river miles from the village. Members or their decendants from all three former bands use this area.

TABLE 12

LOCATION OF SALMON FISHING SITESD AND FISH CAMPS
(AUGUST 1982)

Miles from Nenana	Fishing Sites[1] (N=31)			Camps (N=14)	
	Total No.	Wheel	Nets	Associated with Spot	Separate
Downriver					
0 - 2.5	12	10	2	1	3
2.5 - 6.5	6	5	1	2	
6.5 - 12	2	1	1	2	
15	1	1		1	
Upriver					
0 - 2.5	3		3		1
2.5 - 5	5	4	1	1	1
7	1	1		1	
30	1		1	1	
Total	31	22	9	9	5

1. Observed sites and camps; totals include households not in the key sample. Some were not in operation at the time of observation.

According to sample households, this pattern is directly related to the need to conserve boat motor fuel. It is especially critical for commercial fishermen who have to bring their fish to a buyer near town. However, subsistence fishermen also want to be near Nenana because of the alternate 48-hour closed periods. According to respondents, these periods impose inactivity and increase costs of boat fuel, since people return home during closings, preferring to work on chores rather than be inactive at fish camps. These closings are the focus of bitter complaints by some subsistence fishermen. Local fishermen say the river near Nenana is overcrowded and that good fishing spots close to town are limited in

number. As a result, the location and productivity of fishing spots are subjects of considerable discussion throughout the summer.

Fishing sites must be chosen in areas that are well suited to the technology. Nets are set in large eddies (50+ feet) where salmon can be obtained at various depths. In contrast, fish wheels require a strong, steady current to turn the fish wheel and guide the fish near the river bank. Water must be of enough depth for the fish wheel to clear the riverbottom by only a foot or so in order to intercept the salmon swimming close to the bottom. A clear gravel bottom without snags to deter the fish is also important. During summer, fishing sites are altered when the river water rises or falls, changes its course slightly, or causes a bank to cave in or a gravel bar to form. A site that is not producing a good yield will be abandoned. Many fishermen move their wheels frequently, several times during a season, sometimes less than 10 feet at a time. Considerable variation in productivity was observed in 1982. For example, during one two-day period in August, one fish wheel operator obtained 99 salmon, another none, and another two non-salmon species. The productivity of some locations also varies between summer and fall salmon runs. Others appear to be consistently productive for many years.

Fishing sites (for fish wheels and nets) are not "open" for selection each year. Past use establishes a family's claim to a particular site, although these claims are sometimes hotly disputed. People also talk about the right to bequeath a site to another person when they are through using it, although this "inheritance" is sometimes usurped by a third party. These use rights and the histories of different fishing sites, some of which have been the subject of local disputes, are often discussed by fishermen during their summer activities.

Seven (46 percent) of the 15 sample households that fished for salmon in 1981 did so from a fish camp. Five camps are located within 2.5 miles of Nenana and have road access. Two are at distances exceeding 6.5 miles with river access only.

Fish camps contain sleeping or cooking tents or cabins. Often shelters have dirt floors covered with fresh spruce boughs which are changed weekly. Dishes, staple food items, a wood stove, and mattresses with or without bed frames and mosquito netting are usually found in these structures. The major features of a camp are (1) smokehouses, constructed of sheet metal, slab lumber, logs and/or plywood; (2) caches, often on stilts; (3) drying racks of spruce poles with nails for hanging fish; (4) screens for drying roe; (5) tables for cutting and eating; and (6) outside fireplaces for cooking and boiling fish heads for dogs, which are staked beyond the living area. Some households in Nenana have what can be described as miniature fish camps in their house yards which contain all the necessary processing equipment as well as drying racks, smokehouses and fireplaces for boiling fish heads.

Fish camps are used primarily by subsistence fishermen. In this sample, only two of seven who fished commercially used camps in 1981. One maintained a camp close to town, returning home at night. The other, who processes a great deal of subsistence salmon, spent nights at camp which was also a considerable distance (6.5 miles) from town. Commercial fishermen tend to not maintain camps because they must come home regularly to town to sell fish. They usually process subsistence salmon at home. This pattern of not using fish camps if a person fishes for commercial gain was illustrated vividly by one sample household. In 1981 this household fished commercially and for subsistence and did not use a camp.

In 1982 the family built and occupied a camp, some 14 miles from town and fished only for subsistence needs.

Processing Equipment and Techniques. Salmon processing equipment includes an assortment of knives and sharpening stones, rubber aprons, gloves, and sometimes rags, sponges and/or hoses, buckets for uncut fish, scraps, water, and brine (used by some for "king strips"), willow twigs for spreading "split fish," half-rotten "cottonwood" (poplar) for smoking, and a kettle for boiling fish heads.

State regulations require dorsal fin removal of all subsistence salmon. People view this regulation as burdensome, since it must be completed as soon as the fish are retrieved. They point out that it lengthens the time involved in getting the fish home or to camp for processing, thus increasing the possibility of spoilage. The length of time needed to remove the dorsal fin from a catch of some hundred fish is considerable.

Processing begins as soon as fish are brought in or the next morning if brought in late at night. A cutter must decide which fish to cut for "eating fish" and which to dry for dog food (such as the poorest chums). Fish are washed and scraped with the back of a knife to rid them of slime. Fish to be frozen is frozen whole unless the tails are removed to make more freezer space. Eating fish is split down the back, filleted, and cross-hatched with the backbone and guts removed. A small notched willow stick is inserted just above the tail to keep the fish from curling while drying in the sun prior to smoking. Slabs removed for thinning split fish are cooked or dried as "jerky." Backbones are boiled or two may be tied together and hung over the rack for drying. Strips are made from

the belly and sides and usually soaked in brine before drying and smoking. Fish for dog food is filleted and roughly cross-hatched or slit in half or hung whole if the weather is cold. Dried fish is baled and stacked to the side in the smokehouse.

Food Use. Processed salmon are eaten in several ways. Dry fish is eaten without condiments or with roasted moose fat as part of a meal by itself; dry or frozen fish is mixed with crisco and berries; and roe is eaten fried with flour or boiled. Fish heads, dried as well as fresh, or frozen cuts of fish, are often boiled. Some households fry fish hearts.

Summary

Most (68 percent) sample households fished near Nenana for salmon for subsistence purposes. One-third (32 percent of sample) of these subsistence fishermen also took salmon for commercial gain. All species of salmon were harvested, but chums and cohos were taken in much larger quantities than kings because of the relative ease of processing and storing them in late summer and fall. A little less than one-half (46 percent) of sample households also harvested whitefish and, in these cases, this resource is a highly valued food supplement. Other local fish species, such as pike, burbot, and grayling, are obtained by most households in small quantities, with the exception of one household that ice fishes throughout winter, obtaining large quantities of fish.

Salmon fishing is a major subsistence activity that occupies much time during summer and fall. Kinship is the major context for procurement, processing, and consumption, although salmon is also shared with non-relatives, especially elders. Individuals without productive offspring

or close relatives who fish will cooperate with friends. Reciprocal agreements involving exchange of equipment or pooling of equipment occur between friends (non-relatives).

Commercial fishing and state regulations controlling commercial and subsistence fishing have operated to discourage the use of fish camps and encourage nucleation of fishing spots and fish camps near Nenana in order to save on costs of boat fuel.

CHAPTER 8

HUNTING AND GATHERING

Moose Hunting

Activities and Harvest Areas. Moose can be located throughout the resource use area wherever grasses, sedges, willow, birch, or aspen shoots or leaves are found. Moose gravitate to the rivers and lakes in fall, moving back to the flats and hills in winter and these movements are carefully noted by Nenana hunters. Rivers traveled extensively in summer and fall in connection with fishing activities are watched closely for moose to pursue during the fall season.

Most hunters follow local waterways during moose hunting seasons starting from Nenana, either on the Tanana or Nenana rivers (Fig. 8). Travel up the Tanana rarely exceeds a distance of 30 miles but people go downriver ca. 50 miles to the mouth of the Kantishna River. Most hunting is done along rivers, lakes, or sloughs south of the Tanana River or in the Linder Lakes region to the north. The most popular moose hunting areas south of the Tanana River are between the Teklanika and Wood rivers (Fig. 8), an area used by 95 percent of moose hunters in the sample for whom we have data (N=19). People rarely ascend these rivers more than ca. 20 miles. Of these hunters, most (67 percent) also used the Linder Lakes area. A fair number of the total (42 percent) also hunted farther north into the Minto Flats area along the Tolovana and Chatanika rivers (Fig. 8). The Kantishna River is used by one-half of moose hunters (53 percent) but its upper reaches are ascended by only two households (11 percent). All hunters using the Kantishna River, with the possible

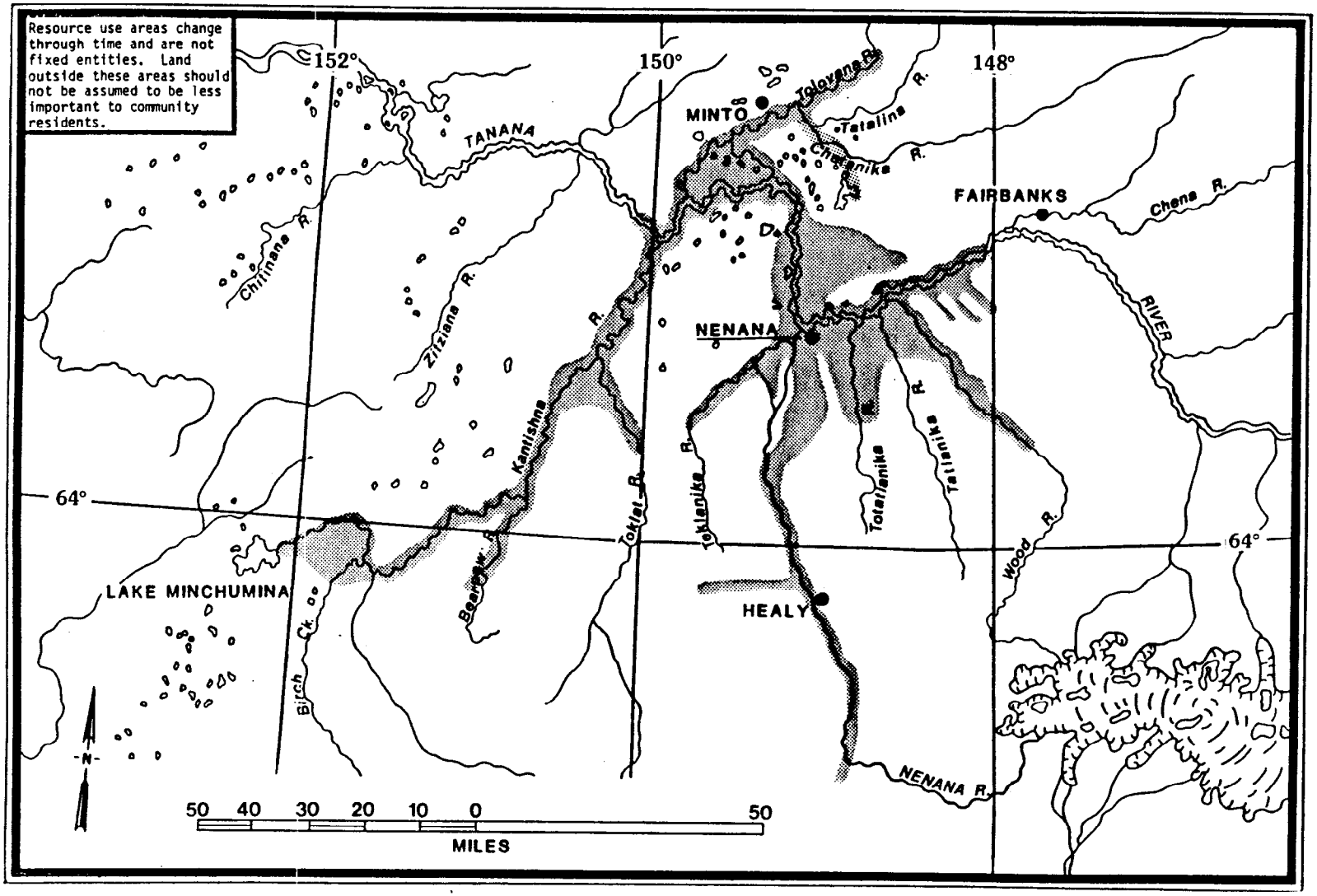


Fig. 8. Nenana Village Moose Hunting Areas (1981-1982)

exception of one, also hunt other areas. In summary, there is a core area for most moose hunting, south of the Tanana River between the Teklanika and Wood rivers, extending north of the river into the Linder Lakes area.

In addition to river travel, cross-country trails and roads are also used to locate moose. Hunters walk or drive (snowmachine) cross-country trails. Some of these trails, like those between the Nenana and Wood rivers, have been in use since the contact-traditional period. Many were established for mining and mail transport most probably on pre-existing trails. The George Parks Highway is also an important hunting route. The road is traversed slowly in cars, trucks or on foot, with people watching for moose in grasses and brush near the roadside. Hunters may leave the road and hike through the forest a mile or so to strategic spots or known moose habitats. Some people drive as far south as Cantwell, stopping around Healy, and then drive the Denali Highway for varying distances. Some follow the George Parks Highway to Summit Lake. The Sanitary Landfill at Anderson is checked for moose heads and other meat discarded by hunters from this area. People also go north as far as "13 or 17-mile Hill" (13 or 17 miles from Nenana on the George Parks Highway), using logging roads to the north towards Minto Flats as well as south overlooking the Tanana River.

Land use near Nenana for moose hunting in areas that formerly belonged to the Nenana-Toklat and Wood River bands does not appear to be related to an individual's family ties. Members of all former bands use this core area. In contrast, 80 percent of hunters using the lower Kantishna River area are from there, and all using the upper river were former residents. Likewise, all hunters but one who use the Tolovana and

Chatanika rivers in Minto band territory, have ties to the Kantishna River; this may be a traditional land use pattern for the Mouth of Toklat band. The exception is married to a woman from Minto.

Participation and Harvests. Nearly all (95 percent) sample households hunted moose (Table 6). Thirteen (62 percent of hunters) were successful. Some had more success than others, obtaining more than 1 moose among the 20 harvested by this sample during the study year. According to respondents, the number of men who are regularly successful in moose hunting is small and certain men are known to be good moose hunters today, just as certain men were singled out in the past as being known for moose hunting success.

Procurement and Processing Units. Moose hunting parties are structured around men with a river boat. Young men, who make up most moose hunters (Table 7), often hunt with friends who possess equipment. In spite of this, most moose hunting parties are composed of closely related people (Table 13). Hunters in their 50s or older (5 examples), who have no offspring in the village, hunt exclusively with a brother-in-law. The same generation of men who have grown sons hunt with them or their sons-in-law. In the past, when sons were young, these men hunted with their brothers, brothers-in-law or a more distant relative.

Although most moose hunting parties are usually all-male, sometimes an entire household, especially one with teenage or young adult male offspring, will make up a party. These groups usually go to a hunting/trapping cabin which is used as a base camp. Members of the procurement unit do initial processing, as described in a later section of this chapter.

TABLE 13

STRUCTURE OF MOOSE HUNTING PARTIES
(N=32 WORK PARTIES)

Composition	Number	Percent
Close relatives[1]	12	38
Close relatives and distant relatives	6	19
Close relatives and friend	9	28
Distant relatives and friend	1	3
Friends	4	12
Total	32	100

[1] Close relatives: close lineal and collateral consanguineal kin (grandparents, parents, children, maternal and paternal aunts, uncles, first cousins) and immediate affines (e.g., child's spouse).

Consumption Units. Moose harvests are divided equally between hunters or distributed on the basis of the relative contribution of each participant in the hunt. Moose meat is an important potlatch food and will be donated, if available. Fresh moose meat (and that of any large game) is distributed widely beyond the procurement unit, especially to older people (Table 9). In part, this is due to the traditional belief that sharing resources insures continued success in harvesting. Respondents speculated that sharing in the past, which they believe was much more widespread, was related to lack of time to prepare (dry) meat for storage before it would spoil; a situation created by the high mobility of people in the past. Sharing eliminated any waste of the harvest and, further, created and maintained reciprocal obligations between families. Widespread sharing in the past, like today, clearly balanced the success of some men with the failure of others in obtaining an important and

highly desired food source. As noted earlier, people do not say that moose are hard to hunt. Rather, they view moose hunting as an activity that some hunters are consistently good at and others are not. People relate the narrowing of distribution networks to the increasing number of freezers in the village.

Harvesting. The distance traveled for moose hunting is a function of the availability of time, money for gas, and the amount of extra fuel a boat can carry. As a rule, people do not travel long distances for moose hunting, generally remaining within a 50-mile radius of Nenana (Fig. 8). The amount of time spent hunting ranges from day trips, especially common when the highway is the only route used, to two-week expeditions. Some hunters who travel the rivers leave Nenana in the evening, camp overnight, and return the next morning. This pattern of evening and early dawn hunting capitalizes on the daily movements of moose out of the brush for eating, at which time they are more visible.

Moose hunters today rely exclusively on rifles for dispatching animals, and among those mentioned by research participants are .444, .264, .30-.06, .30-.30 caliber, and 7 mm. Riverboats are the major means of transportation for most moose hunters, and canoes are transported in the boat if portage to a lake is planned.

Hunters who travel rivers camp in tents, lean-tos, boats or on the ground. Camps are made on sand bars or on the river bank, usually places recommended by past experience. Camping out-of-doors is preferable to sleeping in a cabin, according to some hunters, who explain it is easy to miss a moose wandering by at night if the hunter is inside. Thus, hunting parties may be near a trapping cabin but choose to camp elsewhere.

Hunters who stay away from town for long trips will often use a family camp (cabin) as a home base and range daily to small lakes, up and downriver, or traverse streams. If a whole family has gone on the hunting trip, some stay at the cabin during the day while others hunt.

While on the river, hunters watch the banks for moose or moose signs, sometimes stopping to climb a tree or hill, or hike inland on game trails to look around. At such times, someone may make tea and the party can take a break from river travel. The ideal situation, of course, is to kill moose at the river bank, in order to minimize packing. However, it is rare that moose are killed in such an efficient location. During fall rut, the widespread Athabaskan technique of scraping a dried moose scapula on the bark of a tree, simulating the sound of a bull moose rubbing the velvet off his antlers, is used to attract another bull (cf. Nelson 1973). Some hunters also have success calling moose by voice.

Skinning and butchering is done at the kill site, so the moose can more easily be "packed," sometimes over rough muskeg or through dense forest, to the riverboat. Hunters butcher the moose by cutting at major joints rather than quartering it. The skin is removed prior to butchering and may be used to carry organ meats or to keep meat dry. It may also be left behind. If many hunters are present, all help pack. In an instance when a moose was harvested only four miles downriver from Nenana, but two miles from the river bank, others came from town to help pack the moose to the boat.

The dressing and packaging of moose for freezing is often done at camp by the hunter, his wife or another relative. If a moose is not brought immediately into Nenana, each hank is taken to camp and hung

outside for a day or two until an outer crust forms which serves to keep the inner meat fresh. If moose is dried, it is sliced thinly and put on a rack over a wood stove or smoked along with fish in a smokehouse.

Use. Some parts of the moose are eaten immediately. These include organ meats and meat of the head, including the nose and tongue. The head is commonly diced and boiled for soup to be eaten at potlatch or at home. Bones are boiled for the marrow and for "bone grease" ("tallow"), which is eaten with berries and dried meat. Hooves are boiled (with onions) for several hours and the flesh extracted. Fat of muscle meat is saved to be fried with meat or dry fish, and one household devotes a large portion of a freezer to moose fat. Bones are used for various purposes. The scapula and other bones are given to dogs. Scapulas are then dried. Ankle bones are sanded and decorated with beads and sold as letter openers.

Skins are sometimes donated to craft classes for tanning or cut for rawhide. No one in our sample presently tans moose hides, as the effort involved is considered too great even though the price of commercial skins is prohibitive to many (ca. $500 for one large skin). Some trade finished products, such as beaded boot trim, to a fur buyer for tanned skins.

Sinew is occasionally twisted into thread. At least two respondents make webbing from rawhide for sleds and snowshoes of birch wood. In one family, the husband makes the frames and the wife fills in the webbing from rawhide made by her husband. These items are used by their family. Fur is sometimes removed from the skin and sewn into canvas dog harnesses and used as padding for dog beds in the winter.

Bear Hunting

Activities and Harvest Areas. Bears occur ubiquitously in the forested lowlands near Nenana, and black bears are the only species of large game, other than moose, currently harvested by Nenana residents. The only particular resource areas targeted for bear hunting are forested sites within 20 miles of Nenana accessible from logging or seismic exploration roads.

During the study year, four black bears were harvested by four of the sample households. Two were chance-encounters and two were sought. An additional household received the meat from two bears harvested by non-Native local hunters for distribution. Nearly all this meat was donated to potlatches.

Bears are not actively hunted as are moose, and we have limited data on their use. They are usually harvested only if they become a threat, although at least one hunter in the sample will shoot a bear if it is in close proximity and can be easily harvested. In part, and especially for older hunters, this pattern appears to be related to traditional beliefs about bear power, and many local women will not eat bear. Bear meat is immediately processed by smoking or freezing. It is given to people who visit or to friends and relatives and is often donated to potlatches as it was during the study year.

Caribou and Sheep Hunting

During the baseline year, no one sought or harvested either caribou or Dall sheep. Nenana-Toklat, Wood River, and Minchumina band hunters formerly (1920-1960) hunted for caribou, sheep and moose in the Alaska

Range south of the current use area, both east and west of the George Parks Highway. Nenana hunters have also driven interior Alaska Highways (Steese, Elliot) looking for caribou within the last 10 years. Currently, caribou and sheep are received from non-Nenana friends or obtained in the Sanitary Landfill at Anderson where it has been discarded.

Hunters cite such reasons as expensive equipment (all-terrain vehicles, "swampbuggies"), drawing permits, and depletion of the resource as factors which inhibit caribou and sheep hunting. In addition, the timing of the legal season for caribou (August and September) requires smoking or artifically freezing the harvest. This is considered impractical given the simultaneous effort in fishing at this time and the anticipated harvest of moose and waterfowl in the fall which will fill available freezer space.

Overhunting in recent years by increasing numbers of non-local hunters in the area is the only reason cited to explain resource depletion, although people were not consistently asked to explain their understanding of depletion. Whether or not this is accurate, it reflects the local perception of a human population increase in the area and its impact on local game resources.

Small Game Hunting

Activities and Harvest Area. Nenana residents hunt snowshoe hare, several species of grouse (spruce, ruffed, and sharptail), at least one species of ptarmigan (willow), and porcupine. These resources contribute a relatively small, but significant, portion of food to the diet of most households in our sample. Hare and grouse are the most important species,

since ptarmigan and porcupine are rarely sighted and ptarmigan are often perceived as too small to eat. During the study year, 82 percent of sample households harvested hare, 73 percent took grouse or ptarmigan, and at least 14 percent obtained porcupine (Table 6). Respondents noted that people made more use of ptarmigan in the winter in the 1920s and 1930s when these animals were abundant in willow thickets that formerly flourished around Nenana. Today elders, in particular, watch for porcupine and will take all they can. However, this is usually only a maximum of three per year per person.

Hare are usually sought individually and are hunted or snared by people of all ages (Table 7). Men may shoot or snare hare on the trapline as a source of fresh food, while teenage boys and women regularly snare hare close to the village. Hare are consumed within the producer's household or shared with close relatives.

Hare and grouse hunting, which are pursued in fall and winter, tend to be confined to areas close to Nenana which can be reached on foot or by snowmachine. Hunters use established trails, a logging road going eastward, the George Parks Highway in both directions, and various dry sloughs, all within six or seven miles of Nenana. Hare and grouse are also harvested away from Nenana in the course of moose or waterfowl hunts or at trapping camp.

The amount of time spent setting snares and harvesting hare varies from casual involvement to intensive harvesting activities. In general, the intensive harvesting pattern includes hunting or snaring for a few days or a week at a time, stopping for an unspecified amount of time (especially if the weather is very cold), and then beginning again with

alternate periods of activity and inactivity over a period sometimes as long as six months. Others snare consistently for a month or so and then stop until the following year. Hare were very abundant during the study year and intensive harvesters reported they could obtain two per day if desired. In trapping camps, women tend snare lines for hare (and sometimes grouse) while men check traplines. Sometimes a man in a trapping party will occupy this role, providing the trapping party with fresh meat. People report that while grouse are often seen on traplines, they are not taken since the trapper is too busy to engage in this activity.

Harvesting, Processing, and Preserving. Most hunting and snaring of hare and grouse is done with low caliber rifles or shotguns and commercial wire snares, although some people occasionally use slingshots. Porcupine are clubbed to death with any makeshift club available. Shooting is said to drive the quills into the muscle.

Hare and grouse are eaten fresh and frozen, although many prefer them fresh, for they "dry out" in the freezer. Porcupine is usually eaten fresh. One method of preparation is to expose the animal to a fire to burn (melt) off the quills, and then roast the meat.

Hare skins are either discarded or used for mitten and boot linings, although they wear out quickly. The fur is delicate and the light skins stretch easily. Pieces of fur are also used as trapping bait. Porcupine quills are either discarded or saved for use in crafts.

Waterfowl Hunting

Activities and Resource Area. Lakes, ponds, sloughs, streams and rivers are nesting and breeding habitats as well as migration stop-overs

for many species of waterfowl. Ducks, geese, and other migratory birds (swans, loons, grebes) are common to local waters, but Nenana hunters primarily seek the larger ducks, such as mallards, widgeons, pintails, goldeneyes, and scoters, and the Canada goose.

The largest concentration of waterfowl near Nenana occurs in Minto Flats, the broad lake/pond system north of the Tanana River, and on a large lake opposite this area south of the Tanana River (Fig. 9). Not surprisingly, the Linder Lakes area is the most popular hunting place, with 75 percent of hunters for whom we have data (N=16) using these lakes. Other places farther north in Minto Flats were nearly as popular, with 63 percent of hunters extending their hunting this far. About one-half used the Wood River area (56 percent) or the Kantishna River (50 percent). The most limited use occurred close to Nenana, with one-fourth hunters reporting activity here.

Access to Minto Flats is usually by riverboat, portaging with canoe to lakes from the Tanana River, or using one of its tributaries, such as the Tolovana River or Swanneck Slough. Most enter the Flats about nine miles downriver from Nenana. People also walk along the Alaska Railroad track or drive the George Parks Highway north from Nenana and then hike into the Flats.

Members of all former bands engage in waterfowl hunting near Nenana in the Linder Lakes area. In contrast, three-fourths of hunters using the Kantishna River have family ties to the area. Hunters using the Tolovana and Chatanika rivers are also primarily (70 percent) from the Kantishna River. This is probably a traditional pattern like that described for moose hunters who use the Kantishna River and Minto Flats.

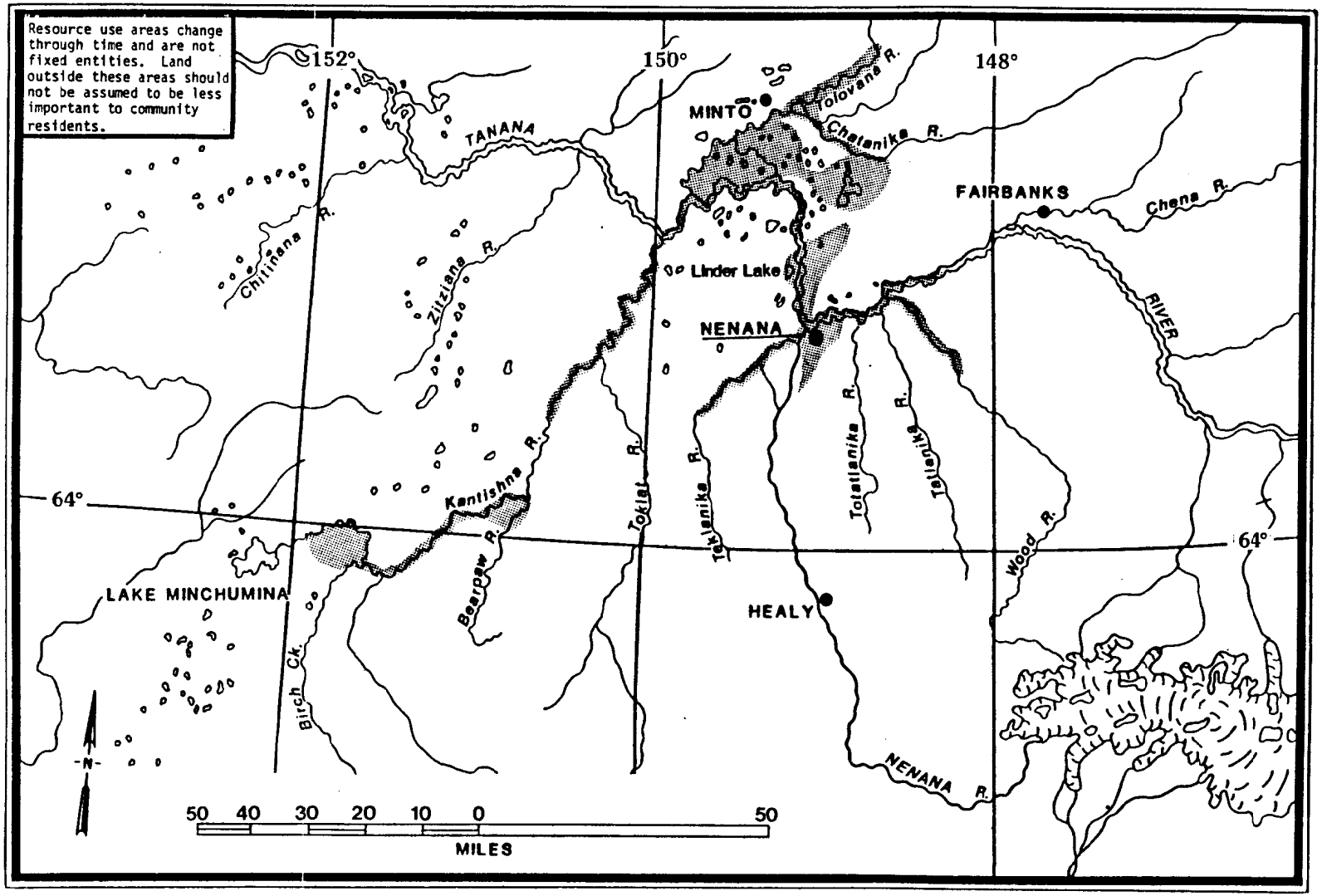


Fig. 9. Nenana Village Waterfwol Hunting Areas (1981-1982)

Waterfowl hunters who are not from the Kantishna River, but use that river, belong to one family. This same family hunted moose there.

Waterfowl are highly regarded as food and three-fourths (77 percent) of sample households hunted ducks and geese (Table 6). Most hunters are successful.

Procurement and Processing Units. Waterfowl hunting is primarily an activity of young men, and the statistically significant relationship between youth and this activity was noted in chapter 6. Waterfowl hunting parties described to us were always formed around a core of relatives (Table 14). However, in most cases friends are included (Table 14). Ducks and geese are brought home and prepared fresh or processed for storage by the hunter, the household, or recipient of the harvest.

TABLE 14

STRUCTURE OF WATERFOWL HUNTING PARTIES (N=8)

Party Composition	Number	% of Total
Close relatives	3	38
Close relatives and friend	5	63
Total	8	101

Consumption Units. Each hunter usually keeps his own ducks and geese for distribution. However, brothers from different households may pool their harvest. In addition, ducks and geese are sometimes obtained for elders not related to the hunter through reciprocal agreements in which shotgun shells are supplied for fresh waterfowl. Ducks and geese

are widely distributed to elders in the village by a small number of young, ardent, hunters (Table 9).

Harvesting. People hunt waterfowl in fall after the opening of the legal season. When lakes freeze, birds fly to open rivers and hunters concentrate their efforts there. Hunting trips made exclusively to obtain waterfowl range from day trips to three week ventures. Many people only travel out as far as 6 or 7 miles and few travel more than ca. 30 miles. Ducks and geese are also obtained during moose hunts, which vary in duration as noted earlier.

Equipment needed for waterfowl harvesting includes riveboats, 12-gauge shotguns, and .22 caliber rifles which are carried for killing wounded ducks. According to the hunters, the high price of shells demands a high return in order to make the activity economical.

Men hunting from a river bank sit and watch, occasionally using a duck blind which is also used in lake habitats. Hunting groups may or may not stay at established camps. Spontaneous camps are made at hunting spots for short periods (a few days) for small numbers of hunters, sleeping either under a sheet of plastic covering in a "grass house" (duck blind), or in the open. Camping spots are freely selected. Hunting parties in the same area often camp together and share roast duck over the campfire.

Use. Waterfowl obtained while moose hunting are usually eaten immediately. Most waterfowl obtained in hunts devoted exclusively to the acquisition of ducks and geese are stored. Ducks and geese are either frozen whole (with feathers) and skinned when thawed before cooking, or plucked and then frozen. Some are smoked for three days or so before freezing.

Birds are roasted over open fires, in ovens, or in underground fire pits on hot coals covered with earth for two or three hours. The heads, including the brains, are relished in soup. The heart, liver, and intestines are roasted. Feathers are saved in gunny sacks for use as pillows and mattresses laid over spruce boughs in winter camps.

Plant Gathering

Resources and harvest areas. Edible plant species harvested by Nenana Village residents are primarily berries, especially highbush and lowbush cranberries, raspberries, and blueberries. People also collect salmonberries, dewberries, crowberries, wild strawberries, and black and red currants. "Indian potatoes," wild rhubarb, Labrador tea, rosehips, chamomile, fireweed, and mushrooms are also harvested. These resources are usually collected within a two-mile radius of Nenana or within walking distance from trapping cabins. Favorite berry picking spots along the river banks west of Nenana and east along the Tanana River are returned to year after year. Some restriction in berry picking has occurred with recent settlement in the area removing formerly used spots from the range of desirable picking areas.

People of both sexes in all sample households excluding several with all male personnel pick berries; women are the primary harvesters of other edible plant resources. Women process plant goods which are valued highly by local residents.

Important tree species are white spruce and poplar, locally called "cottonwood." Birch, aspen, willow, alder, and black spruce are also used. Firewood cutting takes place in fall and winter, while logs for fish wheels and construction projects are cut in spring. In the past,

large groves of spruce within a few miles south of Nenana, accessible by the George Parks Highway, supplied much wood to Nenana Village residents. This area is no longer exploited since it has come under the jurisdiction of the city of Nenana. Now trees are cut from slash piles of the Nenana Native Corporation (Toghethele Corporation) logging firm (Wilderness Builders Inc.). Most of these areas are within 15 miles of Nenana and are reached by logging roads giving access to wood lots or slash piles. The corporation also sells and occasionally gives away firewood.

Uses and Preservation. Berries are frozen for later use or converted to jams, jellies, or syrups. Many, along with wild rhubarb, are consumed fresh or in pies and desserts. Fireweed leaves and mushrooms are added to salads and rosehips and leaves of chamomile and Labrador tea are dried. "Indian potato" is boiled or fried.

Limited data were gathered on the use of the tree species. However, all sample households use local wood. All sample households that we have data for (N=18) rely heavily on wood for fuel. Most, if not all, homes have wood stoves. Trees also supply raw materials for construction of dwellings and fish wheels and for smoking fish. Bark for crafts (such as baskets), as well as covering for dried fish and meat that is being stored, is also collected.

CHAPTER 9

TRAPPING

Activities and Harvest Area

Residents of Nenana Village trap beaver, muskrat, mink, land otter, marten, red fox (including the cross and silver-grey phases), coyote, wolf, wolverine, and lynx. A few take weasels, while others leave them alone since they are said to "eat mice" and are considered valuable to the local ecology. The fur from nearly all harvests is sold and several species are eaten.

Individual trapping areas were mapped to include the entire area used by a trapper. This land stretch is referred to by the trapper as "my area." It may include lines lying fallow, as well as currently used ones, or a beaver pond left untapped within a series of trapped adjacently situated lakes. Our mapping procedure reflects a desire to compile maps of maximum land usage that recognize the dynamic aspects of trapping activities including non-use of portions of an area at certain times. Trappers expressed a need for documentation of their use areas, since there is no system for registering traplines that legally protects a person's lines. Many viewed the research project as a means of having their use areas on record with at least one state agency. Some have registered their traplines with the Alaska Trapper's Association, a private organization. Others have taken advantage of a new system of registering trapping cabins with the Alaska Department of Natural Resources as a means of demonstrating land use for trapping.

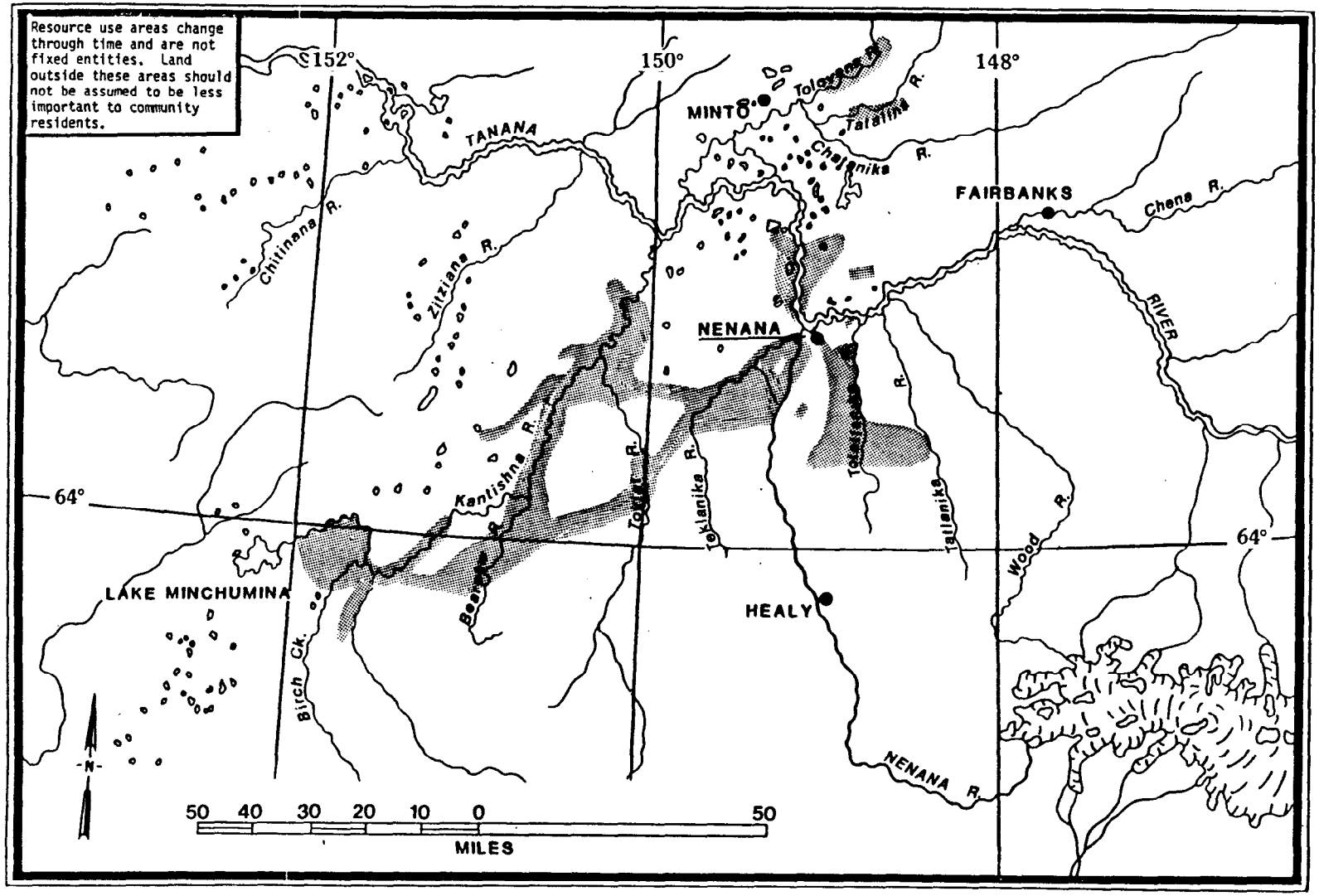


Fig. 10. Nenana Village Trapping Areas (1981-1982)

Trapping activities are located in an area between the Kantishna and Tatlanika rivers, with some extensions north of the Tanana River into the Minto Flats (Fig. 10). Most (82 percent) trappers for whom we have data (N=17) trap in a core area east of the Kantishna River. A large number of main lines there are associated with a former mail trail that runs south from Nenana along the lower reaches of the Teklanika River, then west to the Toklat River. Men from 6 households (35 percent of trapper sample) representing 4 families trap west of this core area along the Kantishna River, including the Bearpaw River. Of these six, three households of one family also trap in the core area. However, like most trappers, they maintain one main winter trapping area and their use of the core area occurs while enroute to their main lines near the Kantishna River. Two households belonging to one family trap north of the core area in the Minto Flats. Spring trapping patterns contrast with those of winter. During this season, most (65 percent) trappers use the Linder Lakes area in the Minto Flats to obtain muskrat and beaver.

Analysis of individual use illustrates that the Kantishna River area, including Bearpaw River, is used exclusively by members (or their spouses and/or children) of the two former bands resident in this area. The Nenana-Toklat band area, containing the extensively trapped mail trail, is used by two families for main lines. Both have family ties to this area. Others who use this area include two households trapping close to the village and several with main lines elsewhere (Kantishna River users). The Wood River band area is trapped by men from four families (five households). Of these, two households (first cousin trappers) are associated with the band area. The remaining users are two

teenagers trapping close to the village and a man new to the area who also traps close to home. Nenana Village trappers avoid the Minto Flats band area, although many hunt it for moose and waterfowl. The family that traps here in winter has no close ties to the area that we are aware of. The senior member of this family is an extremely active harvester of wild resources and has many partners in adjoining and distant areas. His use of Minto Flats may reflect some political arrangement on his part, but verification of this interpretation requires more fieldwork. Members of all former bands use the Linder Lakes area in spring.

In summary, trapping areas, especially the locations of main lines, reflect the family histories for trappers whose families have been long-resident in the area. Exceptions are newcomers to Nenana Village and teenagers who trap close to the village. The activities of these users may fall in Nenana-Toklat or Wood River former band areas. People from all bands use one area (Linder Lakes) in spring for two species of fur-bearers.

Trapping areas today, like those in the past, are viewed by Nenana Village residents as being individually "owned," ownership being established by use. An Alaska Native trapper in Nenana will not use another trapper's (Native or non-Native) area that is currently being trapped by a recognized user or has been trapped customarily by someone during the last five years. The use of trapping cabins is also restricted to owners unless permission has been obtained.

Trappers learn the locations of lines through observation or word of mouth. For example, a well-travelled access trail used by several men is marked clearly indicating individual use of different sections by sets

identified by variously colored bits of cloth. Bait is an index of local use, according to one respondent, who observed that Indians do not use moose meat for bait, a practice he observed on some new sets near his lines recently.

This local land use system for trapping worked well as long as the use area was occupied by people familiar with the system. In recent years, it has been the source of misunderstanding between Nenana Village residents and new residents in the area. For example, men who trap along the Kantishna River report conflicts with new non-Native trappers in the area, and they link the increasing number of newcomers with recent remote parcel allotments. In addition, one trapper reported loss of his long-used area south of Nenana between the Nenana and Toklat rivers to a new trapper who moved into an area that had been purposefully left fallow. According to Nenana Village trappers, some of these newcomers seem unaware of state regulations and are certainly ignorant of the traditional land use system in the area with regard to trapping.

Participation and Harvests. Most (82 percent) sample households had an individual engage in trapping during the study year (Table 6). However, the amount of activity between households varied considerably, as discussed below.

Harvest data reflect market value as well as availability of various species. During the study year, trappers sought marten rather than beaver which had dropped dramatically in cash value (Table 15). People continued to trap beaver, however, due to its food value. Lynx, wolverine, and wolf bring high prices but are rarely encountered.

Procurement Units. Trapping is primarily an activity of young men (Table 7) and it is often a household-based activity. Men in the household normally go out alone; sometimes they are accompanied by their wives. Closely related households may cooperate in trapping. Most often, links are those of close kinship (father-son; brothers; uncle-nephew; first cousins). Two teenage boys, who are distantly related, operated as partners during the study year. Friendship was the basis for the partnership. Exceptions to the pattern of kinship-based trapping parties are rare.

In spite of the number of young men involved in trapping, older men are important personnel, especially in households where trapping is an intensive activity. These men supply equipment (e.g. a snowmachine) and cash for gas or staples used in camp. Closely related households may also share equipment, gas, or cash needed for trapping activities.

Consumption Units. Harvests remain within the procurement unit. Pelts obtained by a son are sometimes given to his mother to use for the family, especially if the family has sponsored the trapping in any way. Two unrelated younger men who trapped together near the village pooled their harvest, sharing equally in any profit. In some households, beaver is a favorite food. It is also an item sometimes donated to potlatches.

Harvesting. Most trappers report they use one area for many years. This area is usually (12 of 17 households) that which was trapped by their parents, their wife's parents, or another close relative, a feature of trapping reflected by analysis of individual land use patterns discussed above. Several have purchased land they trap from Native or non-Native trappers or traders who settled near Nenana with small trading posts in

the 1930s. Unfortunately, we have no data on the details of these transactions.

Trapping schedules follow the natural prime fur seasons which generally correspond with the legal seasons, beginning in November for most species and continuing as late as April for beaver and otter and June for muskrat. Analysis of the amount of time people spend trapping, the number of species harvested, and harvest levels suggests two patterns which we call "occasional trapping" and "intensive trapping."

Occasional trappers are represented by eight (47 percent) of the 17 trappers for whom we have data. These men trap on a short-term basis, going out on weekends or a day at a time, with a few staying out sometimes for a week. On the average, they seek less than three species and, compared to intensive trappers, their harvest levels are modest (Table 15). Intensive trappers (N=9) usually devote long, continuous periods of time to trapping, and all but one live away from Nenana in cabins during this time. Five trap for about six to nine weeks and three sustain their activities for nearly six months. In one case an employed father and his sons alternate activities so that someone is nearly always at the cabin. The intensive trapper who stays in Nenana uses a snowmachine to check lines daily. These trappers seek most species of furbearers available in the area (Table 15).

Intensive trappers, in contrast to occasional trappers, claim that trapping for commercial sale is a viable economic strategy. However, they emphasize that it is not usually productive unless a person is willing and able to stay away from town for long periods of time.

TABLE 15

TRAPPING HARVEST DATA, 1981-1982[1]

Species	Intensive Trappers (N=8)[2]		Occasional Trappers (N=8)	
	Number	Average	Number	Average
Marten	700	87.5	69	8.6
Beaver	222	27.8	5	<1.0
Mink	68	8.5	7	<1.0
Fox	20	2.5	0	0
Lynx	22	2.8	1	<1.0
Otter	9	1.1	0	-
Wolverine	3	<1.0	0	-
Wolf	2	<1.0	0	-
Average Number of different species trapped:	4.6		2.6	
(Range)	(1-6)		(1-4)	
(Mode)	6		1,3	

[1]Minimum counts.

[2]One trapper in this category did not trap during the study year because of a long illness.

Trapping requires an array of equipment and knowledge significantly different from, but not mutually exclusive of, that associated with hunting large and small game or waterfowl. Hunting and trapping activities reinforce each other, for both allow the user to increase his familiarity with the local environment and geography. One trapper/hunter, who recently returned to Nenana after an absence of several years, describes trapping and hunting as mutually beneficial to his own process of relearning the terrain and local game habits.

Commercial sets and snares are used for trapping. Bait is primarily a "food" rather than a non-food lure. Much bait comes from local natural sources such as rotten fish, rabbit fur, and carcasses of red squirrel or muskrat. Beaver sets may be baited with birch or "cottonwood" saplings placed under water.

Most trappers travel by snowmachine, although many also keep dog teams which are occasionally used for trapping. Snowshoes are used to break trail as well as for short hikes to set rabbit snares and shoot grouse. Some trappers also walk their traplines. While on the trapline, a trapper is occupied with clearing and maintaining trails, repairing weathered cabins, and building new cabins.

Trappers living away from Nenana rely on a combination of fresh or processed wild food and store-bought items. They transport dried and smoked fish and "dry meat" (moose) as well as canned and dried staples from the store for themselves and dried fish for their dogs. The only furbearers regularly eaten are beaver and muskrat. Beaver meat is dried, smoked, or frozen. The entire animal is eaten. Lynx is occasionally eaten. The carcasses of marten, mink, fox, and other species are usually

discarded or fed to dogs. All carcasses must be disposed of in order to keep bears away.

Animals may be skinned at the trapping cabin or at home in Nenana. The pelt is stretched, sealed, or tanned depending on its destination. The trapper, his wife, or a female relative, will do all skin processing. Most pelts are sold but some are kept for sewing clothing and/or making other crafts.

CHAPTER 10

SUMMARY AND DISCUSSION

The Fur Trade Era

Society

Study data indicate that the early history of the Nenana area is that of three formerly distinct bands. Early in this century, band organization provided a framework for social, economic, and ceremonial interaction; it defined use areas appropriate for its members. Bands in the Tanana River region shared certain features with many other foraging groups around the world (cf. Leacock and Lee 1982:7-8 for a summary of these features). For example, among these northern Athabaskans, band membership was flexible but not random; social relations within the band were basically egalitarian, although, as far as we know, women were not decision-makers in the public sphere. Social control was through informal means such as gossip. The economic system was characterized by widespread sharing.

Band social structure included a matrilineal family system[1] that regulated marriage and was important ceremonially. Residence at marriage was preferentially matrilocal. Early sources describe closely related families sharing dwellings in major in-gathering settlements (McKennan 1959:72; Brooks 1903). The exact structure of residence units within a settlement or during dispersion is poorly known at this point in our research.

Our limited data for band encampments in the Nenana area in the 1920s and 1930s (Figs. 4, 5) illustrate a social structure based on

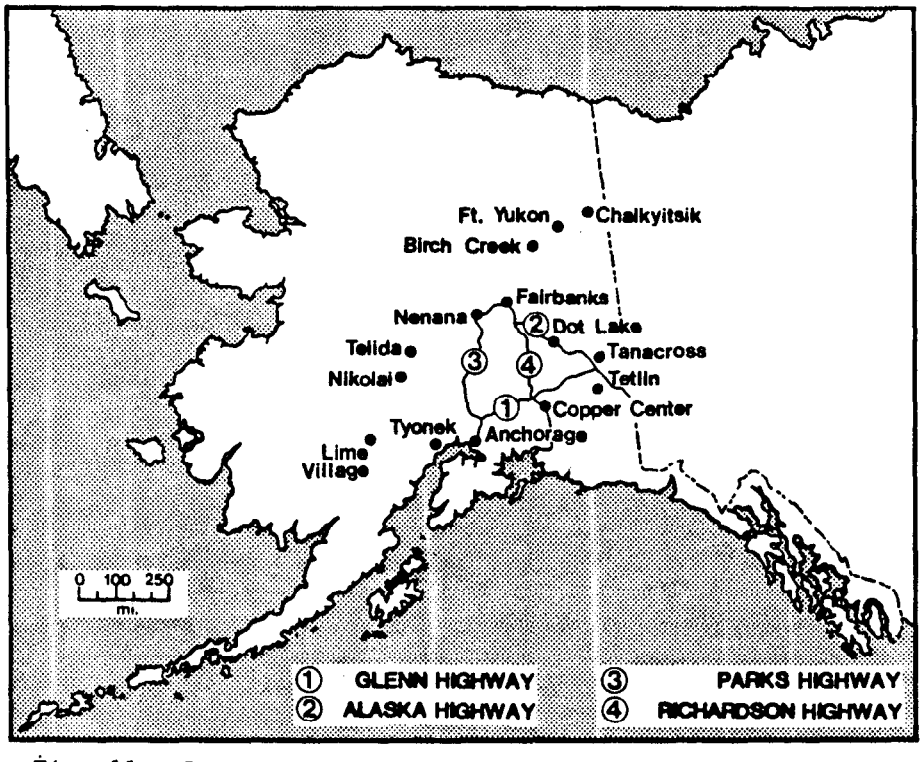


Fig. 11. Locations of Villages Mentioned in the Text

continuous kinship ties between conjugal pairs in a camp; close consanguineal ties (parent-child, sibling) were important in settlement structure. Nuclear family residences were common. This settlement organization has been reported for other Alaskan and Canadian Athabaskans (Guedon 1974; McClellan 1981:476; Helm 1965:365). Unfortunately, we have no field data on the ideology of the residential groups, such as that reported by Asch (1980) for Slavey society. Additional field work is anticipated to clarify this and other aspects of social organization during these time periods, just preceding centralization in Nenana in the 1940s.

Economy

The recorded history of Indian economy in the Nenana area is similar to that for many other northern Athabaskan groups (cf. Hosley 1966; Helm et al. 1975; Andrews 1975; Guedon 1974; Sharpe 1977; Asch 1977, 1982; Reckord 1983; Brody 1982). Analysis indicates that the only major changes in the lower Tanana Valley that can be documented by the end of the nineteenth century are in the domain of technology. The local economy quickly incorporated imported items, such as guns, steel traps, some food staples and non-Native clothing, as they became available. Acceptance of these goods, as well as others, assured Indian involvement in the fur trade with non-Natives. The introduction of the fishwheel early in this century occasioned a minor change in the settlement pattern and a major change in the efficiency of salmon fishing. Fish camps were shifted from tributary clearwater streams to the Tanana River where larger numbers of fish could be harvested with the new technology.

According to historical sources (cf. Brooks 1900) and oral history, trapping for commercial use and other income-producing activities, such as wood cutting for the steamboat companies, were important aspects of the economy by the turn of this century. According to our field data for the 1920s and 1930s, many Indian men were engaged in wage labor in Nenana in summer while women maintained the family fish camps. The use of resources (especially salmon) other than furbearers for commercial purposes also dates to this time period. In spite of commerical activities early in this century, Indian families still continued to live in the bush and wild resources provided most of their food, fuel, and building materials.

Harvesting activities in the first 40 years of this century (1900-

1940), like those of other northern subarctic bands, were closely articulated with seasonal resource availability and required considerable mobility and adaptation to fluctuations in major resources (cf. Nelson 1978 for an overview of Athabaskan subsistence practices and their relationship to boreal forest ecology). In the Nenana area, families dispersed in fall as band groups to hunting camps as they had in the past. Winter activities continued to be hunting and trapping, with trapping more intense than before. Spring still occasioned a group move as bands slowly moved toward summer fish camps.

According to our field data, band boundaries (Fig. 3) during this century defined a band's resource use area. Boundaries in the Nenana area were not altered due to commercial trapping as they were in some places in interior Alaska--such as the upper Kuskokwim (Hosley 1966:45) and the Koyukuk River (Clark 1975:155). Land use within band areas,however, was changed by the development of family trapping areas, a phenomenon noted for other Alaskan Athabaskans (cf. Hosley 1966:46; Guedon 1974:149). Families became associated with specific areas on which they claimed exclusive right to use furbearers for commercial purposes. All other resources on these land tracts were considered available to any band member. Family trapping areas necessitated dispersed settlements in winter so that families could be near their traplines. However, our data for winter band settlements during the 1920s and 1930s illustrate that separate trapping camps maintained close communication through winter.

Information on the organization of production within these band settlements is limited at this point in our research. It is clear, however, from interview data, that related conjugal pairs cooperated in

production. In addition, traditional principles of sharing fish and game prevailed. For example, fresh moose was widely shared within a band encampment.

Centralization

By the 1940s, members of three local bands resided in Nenana. Band aggregation such as this also occurred in many other areas in Alaska (cf. Hosley 1966; Clark 1975; Kari 1983). Disease in 1920 had seriously decreased the local population in the Nenana area, increasing the dependence of some people (orphans and elders in particular) on the services provided by the Episcopal mission in Nenana. Although our data are incomplete, it appears that orphans, school-age children, the old, and the sick were among the first Indians to become permanent, year-round residents in Nenana. Gradually, other family members moved to Nenana.

The importance of the traditional unilineal family organization rapidly diminished with village settlement, as it did in most other areas (cf. Clark 1975; Hosley 1966). One investigator (Hosley 1966:71) has linked this change to changes in the marriage system, imposed by a western church, especially the elimination of cross-cousin marriage. This may well have been an important factor in the Nenana area.

Indian economy became increasingly linked to cash-producing activities as a result of permanent residence in Nenana. However, most, if not all, families continue to harvest wild resources. Trapping declined due to low market prices and, more importantly, because of the obligation of parents to have their children in school (see also: Martin 1983:57; Hosley 1966:98; Nelson 1973:149). Everywhere in the North, school has

been a major factor in the centralization of foraging populations and a gradual restriction of time spent isolated in bush areas (see also: Reckord 1983:54; Rushforth 1977:33; Asch 1977:53, 1980:47; Smith 1970:61).

Indian settlement in Nenana in the 1940s gradually resulted in dependence on cash that outstripped earlier needs. It also insured the continuing importance of subsistence hunting, fishing, and gathering as long as Nenana remained fairly isolated and had limited wage employment opportunities. In addition, people retained a strong preference for wild food. From this decade on, however, the local economy became more and more controlled by factors external to Indian society. Prices of goods and services reflected market fluctuations and wild resources used for food or for commercial purposes became closely regulated by outside government agents. In response primarily to these two factors, the economy today in Nenana, like that in many other Alaskan Athabaskan villages is characterized by a resilient mix of cash and subsistence sectors. It compares closely with the economic adaptation of Eskimo societies in the Yukon delta, as described by Wolfe (1981).

The Contemporary Period

Society

The growth of Nenana Village, apparently like that of many other Athabaskan villages (cf. Martin 1983; Kari 1983), has been based on kinship which has functioned as a major means of recruitment or affiliation. As a result, kinship ties are widespread in these villages. (Figure 11 locates modern villages in Alaska referred to in this chapter.) Most Nenana Village households (87 percent) are linked to at least one

other by kinship. In this feature, the village resembles former band organization, but its modern organization is more more complex and less integrated.

The current social structure of Nenana Village incorporates people of Indian, Eskimo, and non-Native descent. Limited information for other Indian communities (Martin 1983; Kari 1983; Reckord 1983) suggest this ethnic mix and the high proportion (47 percent) of current marriages between Natives and non-Natives are uncommon community features. Many non-Natives who have joined Nenana Village through marriage have become incorporated in the local social and economic system, a pattern also reported for two other Indian villages (Martin 1983; Kari 1983). Interestingly, in-marrying non-Natives are as likely to be male as female in Nenana, an apparent contrast with other Athabaskan communities (cf. Kari 1983:13), although data on this subject are difficult to locate.

Today, local families are the broadest, permanent, continuing social frameworks for social and economic activities within Nenana village. These families have a structure similar to that of former bands; they incorporate one or more households related through bilateral consanguineal or affinal links. Some are as large as traditional bands and social boundaries between families in the village are sharp, as they were between bands. Local families provide the context for much economic activity and their role in the organization of production and consumption of wild resources is discussed in the next section of this chapter.

Upper Tanana River villages, such as Tetlin and Tanacross, which have replaced former in-gathering villages of bands in the area, apparently have undergone changes in social organization similar to those that have occurred in Nenana. In the past, former bands were thought of in

terms of kinship, as a "big family" (Guedon 1974:129). Although kinship connections are widespread today in these villages, most interaction is between closely related people rather than throughout the community. "In the present society the kin ties have to be closer and consanguineal relationship is preferred as a basis for the development of interpersonal relations; but then the society is less integrated and each family lives more on its own" (Guedon 1974:132).

Economy

The economy of Nenana Village is a mixed cash-subsistence system, like other modern foraging economies in Alaska. Cash is often a rare commodity in foraging economies, because of lack of employment opportunities or perceived conflicts in the demands of wage employment and subsistence harvesting activities (cf. Stickney 1981; Behnke 1983; Fall et al. 1983; Martin 1983; Kari 1983; Reckord 1983). In Nenana, for example, only about one-third of village households have a regularly employed member; 41 percent of sample households are in this category. All households, however, have some form of cash income from pensions, transfer payments, or commercial fishing/trapping in the absence of wage employment.

Cash and Subsistence. The relationship between cash-producing and subsistence activities in contemporary northern foraging economies has been discussed by a number of investigators (cf. Wolfe 1981; Behnke 1982; Asch 1982, Feit 1982; Reckord 1983; Kari 1983; Brody 1982). Most portray the two as mutually supportive. Without question, modern foraging communities are reliant to varying degrees, but always to some degree, on subsistence activities, since everywhere access to cash is limited.

Conversely, although data are scant, access to a fair amount of cash income clearly does not function to reduce a household's involvement in subsistence activities. These activities have high symbolic value to northern foragers which cannot be measured in economic terms. A recent study in Copper Center found that medium- to high-income households were more active in subsistence activities than those with low incomes (Reckord 1983:69, 73). This study reaches a related conclusion, discussed below. These findings reflect the significance of cash in supporting, rather than eroding, traditional subsistence activities. Cash provides access to the subsistence system for producers and occasionally for non-harvesters who contribute capital in expectation of a portion of the harvest. Producers and non-producers who are kin both benefit from subsistence activities.

Household Participation. Although data were not gathered on every household in Nenana Village, information on sample households as well as interview data from these units and non-sample households indicate that a minimum of one-fourth of village households regularly attempt to harvest multiple species of wild resources. A fair number of non-sample households participate in some wild resource harvesting , especially moose hunting; in the the absence of more complete data, their number will not be specified in this report.

Comparison of Nenana household participation in wild resource harvesting[2] with other Athabaskan villages is difficult. Many reports are resource-specific or lack such information. Studies using sample households, however, provide minimum levels of participation. Comparing highway communities, the proportion of Copper Center households (Reckord 1983: Tables 4-6) that fish for salmon and hunt moose is about the same

as that for Nenana, based on our minimum figures.[3] Data on the extent of multiple resource harvesting by households are not available. Households in Dot Lake, compared with those in Nenana and Copper Center, may be more active in moose hunting; apparently 93 percent of village households regularly hunt this species (Martin 1983:37-38). Data on Dot Lake household participation in salmon or whitefish fishing or multiple resource use are not quantified. Isolated communities tend to be more active. A recent study of Tyonek reports participation levels in multiple resource harvesting like those in Nenana; one-fourth of village households are extremely active, participating in the harvesting of many species of wild resources, distributing food widely in the community (Foster 1982: Abstract:pg. 2). However, considerably higher proportions of households engage in subsistence activities such as salmon fishing and moose hunting (Fall et al. 1983; Fall 1983).[4] Qualitative data in several reports indicate that multiple wild resource harvesting occurs to a high degree in the communities of Lime Village, Nikolai, and Telida (Kari 1983:15; Stokes personal communication 1983).[5]

In summary, while there are some variations, all studies indicate that wild resource harvesting is an important activity of a large number of village households. As discussed below, patterns of sharing in these villages vastly increase the degree of community involvement in wild resource use.

Distribution of Harvests. The distribution of harvests in Nenana Village follows rather regular rules, as described in chapters 7-9. Subsistence food is regularly distributed outside the procurement unit, primarily to relatives and elders (Table 9). The strength of the traditional principle of sharing subsistence food, however, varies within

the community. Clearly, most families adhere to very traditional principles, widely distributing food whenever possible within their family and within the community, especially where need exists. Others have drawn their social boundaries more sharply and sharing is more restricted. In general, however, twice as many households that produce receive some portion of subsistence food from harvesters (Table 9). Recipients of wild food often are non-producers.

Descriptions of sharing in Birch Creek, Dot Lake, Telida, Nikolai, Lime Village, Tyonek, and Copper Center suggest that wild food, particularly large game, is widely shared within each community, especially with relatives (Caulfield 1983; Martin 1983; Stokes and Andrews 1982; Kari 1983; Fall et al. 1983; Reckord 1983). For example, in Tyonek in 1981, an average of three households shared a moose, with a range of 1 to 9 households sharing a moose (15 harvested moose) (Foster 1982b:14). Everywhere kinship functions to disperse subsistence resources throughout a village. In smaller villages where everyone can trace a relationship to other members, such as Telida and Lime Village, the entire village membership shares in harvests. In Nenana, as discussed below, most wild food circulates within a rather well-defined family economy. Upper Tanana communities, such as Dot Lake and Tanacross, also appear to have restricted sharing networks. In structure, they appear very similar to those in Nenana.

Primary Use of Wild Resources. Analysis of sample households in Nenana illustrates that the primary use of wild resources is domestic. For example, while only one-third of the sample fished for salmon commercially during the study year, two-thirds harvested salmon for subsistence (Table 6). Four-fifths had a commercial trapper in residence,

only one-half of whom were intent on realizing a substantial profit. Finally, no sample households harvest wild resources strictly for commercial purposes, i.e., a portion of the total activity always includes harvest for subsistence.

Commercial fishing and trapping patterns are controlled primarily by external factors. The state's limited entry system, operational by 1974, limits the number of available permits for commercial salmon fishing. In Nenana, about one-third of households have a permit. Most (70 percent) sample households with a permit used it during the study year. Those with a permit that did not fish commercially, did fish for subsistence. Market prices for furs affect the intensity of trapping; when price drop, activity drops. Trapping, however, is not a popular activity with many men, because they do not like to be away from family for a long time; families are tied to the village primarily because of school.

Wild resource use in many other Athabaskan villages is overwhelmingly for domestic consumption, since commercial fishing is absent (Martin 1983; Reckord 1983; Kari 1983; Nelson 1973). In Tyonek, where commercial salmon fishing is an activity, subsistence needs are considered more important and salmon is removed from the commercial catch to meet local food needs (Foster 1982a:40). With the exception of Lime Village (Kari 1983), trapping for cash income does not seem to be intensive or widespread (cf. Martin 1983; Foster 1982a) although data for most communities are lacking. In recent years, poor yields and low prices discouraged trappers in the Nikolai-Telida area who either did not trap or engaged in very limited activity (Stokes 1983:6). However, trapping activities have reportedly increased in recent years at Chalkyitsik in the upper Yukon River area due to good prices and lack of alternative sources of cash

(Caulfield:133).

Moose hunting is the most common resource harvesting activity among sample households in Nenana (Table 6), with nearly all seeking moose. Moose hunting is always a popular activity in modern Athabaskan communities because of the meat's economic value and a food preference for large game (cf. Reckord 1983; Martin 1983; Kari 1983; Foster 1982a, 1982b; Stokes and Andrews 1982; Stickney 1981; Caulfield 1983). The differential success of moose hunters in Nenana, resulting in a small number supplying meat to a substantial poortion of the community, has also been noted in other villages (Behnke 1982:62-63; Foster 1982b:14). Fishing and hunting or snaring small game are also important subsistence activities in most sample households in Nenana (Table 6) as they are in other villages.

Procurement Units. All ages participate in harvesting in Nenana; however, young people, age 20-29, are especially active, followed by those age 60-69. Type of harvesting activity is not age-related except for waterfowl procurement, which is an activity of young men (Table 7). Caulfield (1983:71) reports the same pattern in upper Yukon-Porcupine River communities. In general, the range of harvesting activities in Nenana sample households is related to the presence or absence of young men. Households headed by young men (under 40) or those with young males in residence are most active.

The structure of harvesting groups varies somewhat by activity in Nenana, but kinship provides the method of recruitment and context for most production units (Tables 10, 13, 14). Salmon fishing is a household activity and closely related households often work together. Other studies describe similar work units for salmon fishing (Martin 1983:74;

Kari 1983:109-112; Reckord 1983:74; Foster 1982a:19; Stickney 1981:9-11; Caulfield 1983:117). Interestingly, in 1981, chum salmon obtained in abundance from two family fishwheels in Nikolai was given by the fishwheel owners to other households in need in the village (Stokes 1982a:16). Otherwise, salmon fishing in this village, like that in other villages, was primarily family organized (Stickney 1981).

Moose hunting in Nenana, compared to salmon fishing, is more variable in the organization of procurement units, since parties are often formed around men with equipment. Young men, in particular, may participate in many different groups. These seem to be patterns in other villages (Martin 1983:39; Kari 1983:79; Stokes 1983:3). Waterfowl parties in Nenana, described to us, were always formed around close relatives but, compared to other procurement units, more often contained friends as well. An expanded sample in Nenana might record parties formed on the basis of friendship, but limited data suggest they are rare. Trapping is nearly always a household based activity or a cooperative venture of one or more households in a family. Trapping in Dot Lake is apparently a household activity (Martin 1983:53-60). It was also primarily a household-based activity in Lime Village in 1982-1983 (Kari 1983:100). Interestingly, trapping and muskrat harvesting are the only activities in Birch Creek, a small Kutchin community near Fort Yukon, that are household oriented; they do not include members from most people in the village working together (Caulfield 1983:117).

Local Family Economies. In Nenana, production units often make up or are part of a larger bilateral group we have called a "local family." Members cooperate in commercial and subsistence activities. For example, parents may supply a snowmachine and money for gas to an adult son in

their household or another, who uses these commodities for trapping. He, in turn, shares his harvest. Moose and waterfowl hunting, more often pursued by people from several local families, provide food that is circulated among the respective local families of the producers. Salmon catches are controlled by the household or households that produce and process. Harvests are often shared with closely related households.

The structure of these family economies varies to accommodate demographic factors and the position of adults in the domestic cycle. Within large family groups, e.g., one centered on a set of married siblings with offspring, a man's family of procreation assumes the greatest importance in production and consumption, although it is not a closed unit. Other lineal and collateral relatives, as well as affines, may play important roles. Men who formerly cooperated in subsistence activities with brothers or brothers-in-law today prefer to participate with offspring who are now young adults. The closest cooperation usually occurs within this group. Production and consumption, however, may be expanded to include other members of the family (e.g., cousins may work together). These relatives constitute a pool of potential work-mates or a source of subsistence food. The constituent households in a family economy nearly always contribute in some way to subsistence production, although activities may vary between households. Elders often straddle two or more local economies, each centered on a close relative. Elders sometimes contribute labor or knowledge, and always receive subsistence food from close relatives.

Within the sample and within the village at large, the opportunity to participate in a local family economy varies. Individuals without offspring or other close relatives who are active in harvesting activities

tend to operate within very restricted social units and are at a clear disadvantage compared to people with relatives. They lack a pool of labor and equipment to draw on. Guedon (1974:129) also notes the marginal position of a person without close relatives in upper Tanana villages. "Anybody who has few connections within his village may have difficulty in finding help or simply in enjoying social life." This disadvantage can be offset by having access to enough cash to afford one's own equipment. However, in most sample households, cash flow was clearly a problem. Given the lack of local jobs, it is likely that many other households have the same problem. On the other hand, access to cash, does not appear to limit a household's desire to cooperate with other closely related units in subsistence activities. Sample households with considerable income were as active as those without in family economies and expended much energy in maintaining the cohesiveness of their local family economy. A major factor in cohesiveness is clearly a household's interest in harvesting wild resources. Related households that do not participate in these activities or lend support in some way are peripheral to those that combine to form an economic unit which is focused on the seasonal harvesting of wild resources.

In some cases, the absence of relatives with whom a person can cooperate in subsistence activities leads to formal reciprocal arrangements, which insure access to wild food. Equipment may be exchanged for labor or the harvest split. Sample households reported such agreements for salmon and ducks.

Other studies suggest the presence of family economies, but details are usually lacking. However, Guedon (1974:132-135) describes what can be considered local family economies for Upper Tanana communities that

are very similar to those discovered in this study in Nenana Village. The "primary family" is an ego-centered unit made up of people who have lived together; it includes parents, children (ego), children's spouses and their children. This group cooperates in production with subsequent widespread sharing of products, including fish and game and occasionally cash. The "secondary family" also includes ego's lineal and collateral consanguineal relatives (grandparents, parallel cousins, aunts and uncles, nephews and nieces). These people represent a social network within which most social interaction for an individual occurs and we suggest it most probably represents the usual limits of wild food distribution.[6] Guedon (1974:129) relates what she views as a narrowing of socioeconomic units in recent decades to technological changes allowing hunters to be more self-reliant and to their increasing involvement in a cash economy. According to her data, cash and furs are individual properties; meat, however, is shared (Guedon 1974:129).

An earlier study in the Nikolai area (Hosley 1966:106) also recorded a similar narrowing of kinship responsibility and a core group of kin, like the primary family described for the Upper Tanana.

> There has been a shift from dependence upon the larger kinship group of former times to that of close consanguineal kin. The extended family of parents, sons, daughters-in-law, and grandchildren is the maximum effective cooperative group within which there continues to be much sharing and cooperation. This group often has attached to it the unmarried siblings of the parents (Hosley 1966:106).

Although the structure of families is not presented, the Dot Lake (Martin 1983) report implies that three local families, bilaterally extended including close affines, are the major units of production and consumption within that society. Large game hunting parties in this village often include unrelated individuals but the meat is shared

primarily within each hunter's local family as is salmon and whitefish. Data from Tyonek (Foster 1982a, 1982b) also suggest family economies similar to those in Nenana. Although most detailed examples are restricted to fishing, a few are also described for moose hunting. According to these case examples, sibling and parent ties are important in cooperation between households in salmon harvesting. Moose sharing networks also reflect the significance of these kinship connections. In this village, like Nenana, unrelated households may be included in production units and single households may be self-sufficient procurement units. One particularly active single household is reminiscent of some Nenana sample households. It contains four sons, teen age or older, who work with their father. This unit distributes spproximately 60-80 percent of its harvests to other village households (Foster 1982a:52); the connections (or lack of) between this household and those it supplies are not specified.

Studies of modern Athabaskan villages in Canada record a narrowing of kinship in the definition of production and kinship units, with emphasis placed on close lineal (parent-child) or sibling ties. For example, Asch (1982:358-359) reports that the basic economic unit in modern Slavey communities "...typically consisted of an older adult couple, their juvenile offspring, and their adult married children--a grouping of perhaps 10-12 individuals." Likewise, Smith (1970:63) describes the most important economic unit in Caribou-Eater Chipewyan villages as one based on close lineal or collateral ties, also noting variation associated with the domestic cycle of each male. Other arrangements are made to adjust to the absence of close consanguineal relatives, as in Nenana. Both investigators link the formation of this socioeconomic unit to sedentism

associated with the development of permanent year-round villages. Smith (1970) also suggests that the recent narrowing of kinship units that function in terms of mutual assistance is related to the inability (or unwillingness?) of larger bodies of kin to respond to the multiple obligations inherent in this group in the past. Summarily, with permanent settlement, and I would suggest with better health care, the number of consanguineal and affinal relatives in close proximity to an individual is vastly magnified today, compared to the past. From this point of view, family economies based on close kinship ties, but flexible enough to accomodate non-relatives in the absence of close relatives, represent an effective response to village life.

Land Use. Analysis of contemporary land use patterns illustrates that all sample families reside year-round in Nenana, with one-third maintaining isolated trapping/hunting cabins and about the same proportion (two-fifths) using fish camps away from the village. Dispersion from the village for various subsistence and/or commercial harvesting activities occurs regularly for nearly all sample households. Dispersion is controlled by state fish and game regulations, which designate specific hunting/fishing time periods as well as bag limits for some species.

Analysis of land use patterns indicates that the total land use area for harvesting wild resources (Fig. 6) combines that of three former bands in the area, the remnants of which reside in Nenana. Core areas for fishing, hunting, and spring muskrat trapping, located near the village (e.g., in the Linder Lakes area), are used by members and their descendants of all three bands. Although the Minto Flats, viewed as Minto Village territory, is penetrated for moose and waterfowl hunting,

trappers avoid this area. The lower Kantishna River and adjoining Minto Flats area along the Tolovana and Chatanika rivers are used nearly exclusively by members (and their relatives) of the former band (Mouth of Toklat) in the area. This pattern may be traditional. Use of the upper portion of the Kantishna River is the domain of two families from the area. However, people who use the Kantishna River also use much of the rest of the total resource use area. The nearly exclusive use of the Kantishna River area by former residents or their relatives apparently reflects their familiarity with the area's resources and a strong attachment to these lands, rather than any exclusive land rights.

In summary, former band boundaries remain important and the margins of the total land use area for Nenana Village encompasses lands of the three former bands, as noted above. These margins define the contemporary use area for Nenana Village, just as the traditional Minto Flats band boundaries define a use area for Minto Village. Nenana residents avoid Minto Village's area and, as far as we know, Minto residents do not use Nenana's area unless hunting or fishing with close relatives living in Nenana.

Other studies using resource use mapping techniques in modern Athabaskan communities also indicate that traditional band boundaries outline contemporary areas (cf. Caulfield 1983). They also illustrate that modern use areas associated with a village (Caulfield 1983) or a reserve in Canada (cf. Brody 1982) do not overlap those of other villages in Athabaskan areas.

According to our analysis, co-residence in Nenana Village permits access to nearby hunting anf fishing areas just as co-residence in a band in the past defined a resource use area for its members. Family trapping

areas, however, often illustrate ancestral band areas of the inhabitants of Nenana Village (see also Hosley 1966:46). Within the Nenana Village use area, however, there is growing evidence that fishing spots and/or fish camps, like trapping areas, are being claimed by families on the basis of prior use; they are also "inherited."

Family "ownership" of fish camps and fishing places in the Copper River area (Reckord 1983), like Nenana, may also reflect a restricted number of good sites. In both areas, good access and resource productivity are important considerations. According to a recent report (Reckord 1983:74, 78), fish camps in the Copper River area apparently are claimed by women on the basis of their matrilineal family connections. Other data on the Ahtna do not suggest that resource use areas were "owned" by particular sibs in the past (see de Laguna 1975:90-91). If land use today in this area includes access to fish camps based on matrilineal family ties, it may be that changing conditions resulting in social disorganization and population movement in the area have led to this development. In any event, this interesting possibility cannot be explored in the absence of more data. Family-"owned" fish camps in the Tyonek area reflect long-term use and a considerable investment in permanent structures and other material goods kept at camp; they are also base camps for multiple resource harvesting activities (Foster 1982a). Whether or not good locations are limited is not reported.

The development of family "ownership" of salmon fishing spots and/or fish camps was noted in the upper Kuskokwim River region (Nikolai-Telida area) by Hosley (1966:95) some years ago. Today, access to some fishing spots for king salmon in the Nikolai area are viewed as "owned" by several families (Stokes personal communication 1983). These are places where

fish fences traditionally intercepted substantial numbers of salmon. Today, since regulations prohibit the use of fish fences and stream conditions inhibit the use of nets or fish wheels, these fishing spots are associated with rod and reel technology. They remain the most productive for this species. Good set net sites for chum and coho salmon are rare and these places are also family-owned (Stokes personal communication 1983). In contrast, fish wheel sites for chum, coho, and an occasional king, which are more available and more productive than net fishing, are not as rigidly managed by families as are rod and reel sites for king salmon and set net sites for other species (Stokes personal communication 1983). Hence, in this area access to a highly valued food source (king salmon) is closely managed by families. The system of land usage also accommodates variations in production related to technology, allowing for family protection of the limited number of good sites for set nets.

Summary Conclusions. This study illustrates the significance of wild resources to a substantial proportion of the residents of Nenana Village. One-fourth of village households are multiple-resource harvesters. Data on minimum number of households that consume wild food, based on activities of sample households, indicate one-half of village households obtain salmon and moose (Table 9) and the real proportion is unquestionably larger. Most resource harvesting is for domestic consumption. Importantly, young men, compared with other age groups, are extremely active harvesters. Land use patterns in the Nenana area, like those of other Indian communities (cf. Brody 1982; Caulfield 1983), have remained relatively stable over the last century with the aggregation of three

band areas in the Nenana area due to social consolidation of band members in that community.

An interesting finding of the study is that isolation today is not necessarily an important variable in predicting the degree of community involvement in wild resource use. Nenana Village and Dot Lake (Martin 1983), situated on major highways, exhibit heavy involvement. In general, however, isolation contributes to a higher degree of wild resource use, as illustrated by Lime Village, for example (Kari 1983), an isolated village, lacking a store. Communities such as Lime Village are not subject to the degree of surveillance of hunting and fishing activities experienced by villages on roads, such as Nenana. Although we have no data on illegal harvests in Lime Village or elsewhere for that matter, this factor must be considered when looking at village variation, especially with regard to large game which formerly were hunted when needed. In addition, isolation reduces competition for local resources.

The modern foraging economy of Nenana Village, then, contains two intertwined sectors--cash and subsistence--which combine to produce a substantial amount of wild food for consumption as well as the other necessities of life. At base, however, it is cash-dependent. Cash contributes to the efficiency of modern foraging activities (cf. Feit 1982).

The hypothesis that former band affiliations would be reflected in individual band use patterns is only partially supported. One of the most interesting interpretations emerging from our analysis is the conclusion that the village has replaced the band today, not only as the residential local group, an obvious feature of villages, but as the resource-holding group. It appears that co-residence in the village,

whatever the background of the resident, permits access in the local view to nearby areas for the exploitation of wild resources. In this case, these areas formerly belonged to two bands. Trapping areas, in contrast, seem more closely related to family/band background. However, newcomers or young trappers have free access to land close to the village for trapping activities. Salmon fishing spots, or perhaps more accurately a certain stretch of the Tanana River, are also village-associated. However, within this area, families have recently begun to claim "ownership" of spots, especially those close to the village. The same trend has occurred in other areas. It develops where modern conditions, such as state regulations, have created competition for fishing spots by effectively narrowing the range of favorable sites. In Nenana, state regulations and commercial fishing enterprise combine to make close access to the village a critical factor in the economies associated with salmon fishing.

The resource-holding group, then, for most resources is the local residential group (village). Within this group, families make claims to trapping areas and fishing spots and, in this sense, act as resource-holding groups. Claims to trapping areas are never disregarded by members of the village. However, claims to fishing spots, a newer development, appear to be still open for negotiation in some cases, although more data are needed before we can draw a firm conclusion. Ultimately, however, trapping areas and fishing spots are also associated with the local residential group, since, without question, all lands associated with village use are avoided by other villages. Conflicts in land use have occurred with non-Natives over trapping areas, illustrating the clash of two very different approaches to land use. Invariably, the Indian trapper

moves his lines in order to avoid conflict. In the view of our sample respondents, a system of registered traplines should be developed.

The social structure of the resource-holding group (village) today shows clear continuity with the past when kinship was continuous or nearly continuous between conjugal pairs in band settlements. Residence units, as earlier in this century, are primarily nuclear families. Although we did not study the system of kinship specifically, data suggest that close relatives today are reckoned bilaterally, unlike the former matrilineal system.

Bilateral kinship today provides an individual with a large number of relatives that make up a local family. The domestic group, or several related domestic groups, are the basic economic units in society, representing local family economies. In general, a family economy preferentially includes households bound by parent and/or sibling ties. The structure varies to accommodate a person's place in the domestic cycle or the absence of close relatives. Basic economic units are not necessarily coterminus with the bounds of one's close relatives; size is a factor and in large families several discrete economic units may be formed. This same sort of economic unit has been described for some Canadian Athabaskans (Asch 1982; Smith 1970) and literature on Alaskan groups implies its existence in several other places (Foster 1982a, 1982b; Martin 1983). Within these units, equipment is shared and labor pooled for various resource activivies. Cash in one household may support wild resource harvesting in another. Although individuals may cooperate with a person from another similar unit for some harvesting activity, harvests are then circulated through each person's respective family.

The extent of sharing a wild food varies somewhat by household in

Nenana Village. It is guided by kinship considerations, but some families try to share with the broadest range of people (related or not) which their supply can support. Village-wide sharing, however, outside the context of potlatch, is rare or non-existent. However, this ethic is important within local families.

The hypothesis that former band affiliation would be important in economic transactions today was not supported since such activities occur in the domestic group or larger family. Although we are on firm ground with regard to economic behavior today, comparisons with the fur trade era are difficult. We view our information base on the social organization of economy during this time period as inadequate; a deficiency we hope to rectify in summer 1984. The similarity in structure between former band settlements during the fur trade era and the structure of today's local family economies, however, is striking and illustrates obvious connections to the past. The major difference appears to be in the scale of sharing and cooperation, which has been narrowed. Although this has certainly occurred as a result of increasing involvement in individualized technology and cash economy, as so many have suggested, it is also an obvious accomodation to demographic factors, just as the earlier system was.

In summary, the village, as the residential local group, is also the resource-holding group relative to other similarly constituted groups (villages). Within the village, use rights to trapping areas or fishing spots may be expressed by a domestic group or several related domestic groups, and these rights are respected by other village residents. The domestic group most often is a nuclear family. Bilateral kinship is the basis for the formation of family groups of varying size and composition,

which cooperate in economic activities. Sharing within these family groups is most intense between close relatives, especially parents and siblings. Sharing extends to the margin of the group, to other groups in the village, and sometimes to relatives in other villages or towns, when possible.

Comparisons of Nenana Village with other modern Athabaskan communities illustrate or suggest striking similarities in society and economy. Detailed ethnohistorical analysis as an adjunct to studies of modern villages, and more serious attention to social organization in contemporary communities, are essentially prerequisites to an understanding of the factors that have affected, and will continue to affect, the response of modern foragers to capitalism. Such research can play an important role in the resolution of the inevitable conflicts that arise from the differences in goals between modern foragers and representatives of non-foraging societies.

FOOTNOTES TO CHAPTER 10

1. A matrilineal descent rule defines a person's family as that of his/her mother. In such family systems, one's father's family is important but is not one's family. Societies with matrilineal descent systems often have matrilocal residence rules; at marriage, the couple resides with the family of the bride.

2. This study examines household participation in wild resource harvesting as one index of the importance of these activities in a village. Since harvests are shared with people outside the procurement unit, involvement in wild resource use is, of course, much greater than that represented by procurement units alone. Data on consumptions units are also presented. Harvest levels among modern villages are not compared since our data base for Nenana Village is inadequate in this regard.

3. According to data reported by Reckord (1983: Tables 4-6), 24% of sample households or a minimum of 20% village households regularly participate in both salmon fishing and moose hunting. Participation in moose hunting alone, however, is much more common; 48% of the sample or a minimum of 40% of village households hunt moose.

4. For example, Fall (1983:210) reports that 92% of sample households fished for salmon and 87% hunted moose during 1978-1982. Eighty-five percent of sample households, or a minimum of ca. 43% of village houeholds, had participated in both activities over this time span. The proportion of sample households that annually participate in both activities is probably also high; king salmon fishing has only been permitted locally by the state since 1980, after a closure of ca. 12 years (Fall 1983: 211).

5. A report by Stokes containing quantitative data on Nikolai and Telida is forthcoming (Ellanna, personal communication 1984).

6. Guedon (1974:134-135) also describes a "tertiary family" that includes sib relatives and cross cousins. This group is important in ceremony (potlatch) and in the regulation of marriage. She does not explore its role in the local economy.

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APPENDIX 1

SCIENTIFIC NAMES OF RESOURCES
DISCUSSED IN THE TEXT

Fish

King salmon	*Onchorynchus tshawytcha*
Chum salmon	*Onchorynchus keta*
Coho (silver) salmon	*Onchorynchus kisutch*
Burbot (louche)	*Lota lota*
Grayling	*Thymallus arcticus*
Northern pike	*Esox luscius*
Sheefish	*Stenodus leucichthys*
Sucker	*Catastomus* sp.
Whitefish	*Coregonus* spp.

Game and Furbearers

Beaver	*Castor canadensis*
Black bear	*Ursus americanus*
Caribou	*Rangifer tarandus*
Coyote	*Canis latrans*
Lynx	*Lynx canadensis*
Marten	*Martes americana*
Mink	*Mustela vison*
Moose	*Alces alces*
Muskrat	*Ondatra zebithecus*
Otter	*Lutra canadensis*
Porcupine	*Erithizon dorsatum*
Red Fox	*Volpes fulva*
Snowshoe hare	*Lepus americanus*
Wolf	*Canis lupus*
Wolverine	*Gulo gulo*

Waterfowl and Game Birds

American wigeon	*Maneca americana*
Bufflehead	*Bucephala albeola*
Canada Goose	*Branta canadensis*
Common Scoter	*Melanitta nigra*
Goldeneye	*Bucephala clangula*
Mallard	*Anas platyrhynchos*
Pintail	*Anas acuta*
Teal	*Anas* spp.

APPENDIX 1

Continued

Waterfowl and Game Birds (cont.)

Ruffed Grouse	Bombassa umbellus
Sharp Tailed Grouse	Pedioecetes phasianellus
Spruce Grouse	Canachites canachites
Willow Ptarmigan	Lagopus lagopus

Wood and Edible Plants

Alder	Alnus sp.
Aspen	Populus tremuloides
Birch	Betula sp.
Black spruce	Picea mariana
Cottonwood	Populus sp.
White spruce	Picea glauca
Willow	Salix sp.
Blueberry	Vaccinium sp.
Crowberry	Empetrum sp.
Dewberry	Rubus hispidus
Currents	Ribes sp.
Highbush cranberry	Viburnum edule
Lowbush cranberry	Vaccinium vitis-idaea
Raspberry	Rubus sp.
Salmonberry	Rubus spectabilis
Wild strawberry	Fragaria sp.
Cammomile	Matricaria sp.
Fireweed	Epilobium sp.
Indian potato	Hedysarum alpinum
Labrador tea	Ledum palustre
Rose hips	Rosa sp.
Wild rhubarb	Polygonum alaskanum