THE *AKULMIUT*: TERRITORIAL DIMENSIONS OF A YUP'IK ESKIMO SOCIETY

by

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Technical Paper No. 177

Alaska Department of Fish and Game
Division of Subsistence
Juneau, Alaska

May 1989

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This research was partially funded
by ANILCA Federal Aid Funds,
administered through the U.S.
Fish and Wildlife Service,
Anchorage, Alaska

SG-1-3, SG-1-5,
SG-1-9

1989

ABSTRACT

This monograph is an ethnohistoric and ethnographic study of 19th and 20th century land and resource use of the *Akulmiut*, a Yup'ik-speaking Eskimo society that occupied the inland tundra region between the Yukon and Kuskokwim rivers of western Alaska. The study examines the relationship between the patterns of spatial organization and wild resource utilization and resource distribution. Ethnographic studies have shown there is considerable variability in socioterritorial organization, which, according to one recent theory applied in this study, can be accounted for by examining the distribution of critical food resources in terms of density and predictability.

The *Akulmiut* were selected for this study because of their unique situation among Alaskan Eskimos in terms of their subsistence economy and geographic location. With an economy based on fishing, utilizing non-salmon species of the low, marshy moist and wet tundra ecosystems, the adaptation of the *Akulmiut* is distinct among Alaskan Eskimos. Using data for the *Akulmiut*, this study tests the hypothesis that a territorial system occurs under conditions of high density and predictability (in time and space) of critical resources.

Between groups or societies, the *Akulmiut* exhibited a territorial system of land use and occupancy as predicted when critical resources are dense and predictable. The study found that

the key resource species of whitefish (*Coregonus* sp.) and northern pike (*Esox lucius*) exhibited resource distribution parameters characterized as predictable in time and location, and were abundant or dense. Spatial organization showed that all primary villages and storage and processing facilities were situated where pike and whitefish could be readily intercepted during their annual migrations. The *Akulmiut* maintained exclusive use through overt defense, but also by means of cultural principles of land and resource use, ceremonial activities, and naming conventions. Dispersion of the population at other times ensured maintenance of a broader area for use in harvesting another key resource, blackfish (*Dallia pectoralis*). Dispersion was an efficient means of signaling areas used by the group, but also served to monitor incursions throughout the territory. This type of analysis was found to hold promise for explaining the diversity of socioterritorial organization among Alaskan Eskimos.

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ACKNOWLEDGEMENTS

Throughout the six-year period of this study many people contributed to and assisted in the gathering of data reported here as well as its presentation. First, I am grateful to the people of Nunapitchuk for their cooperation and interest during this study. At least one member of nearly two-thirds of Nunapitchuk households in 1983 contributed to this work. Their voluntary participation during the administration of survey questionnaires and during systematic interviews on topics related to land and wild resource use is greatly appreciated. It would not be possible to mention them all by name.

Several individuals deserve special recognition for the many hours they spent working with me and teaching me about the *Akulmiut* way of life in historic and contemporary times. Andrew Tsikoyak is due special thanks for the invaluable information he provided while recording Yup'ik place-names. This information formed the basis for much of this research. I am especially grateful to several other elder Nunapitchuk residents who also spent many hours educating me: Nastasia Keene, Golka Maxie, Sinka Toopelook, Evan and Mary Wassillie, and John and Anna Wassillie. In addition, several elder residents of Napakiak made similar contributions: Anna Alexie, and the late John and Martha Parka.

Second, I also wish to thank the Nunapitchuk Indian

Reorganization Act (IRA) Council for its support of the project. Zechariah Chaliak, Sr. and Ivan Wassillie were especially helpful in discussing the project with council members and, subsequently, with community members from time to time. Similarly, city mayors Robert Nick and Lloyd Andrew, Sr. are acknowledged. Without their support, this work would not have been possible. The hospitality of Jeanie Toopelook and Gertrude Jacobs was most welcome.

Third, several field assistants and coworkers deserve special note as they assisted with data collection and processing. These include Vernon Chimegalrea, Rebecca Napoleon, Raymond Peterson, Pauline Walter, and the late Ruth Southern (who always reminded me of the jovial aspects of Yup'ik life). Special thanks go to Mary Pete, Dr. Anne Shinkwin, and Dr. Robert J. Wolfe for their assistance and many conversations discussing and reviewing the data during its collection and analysis. I profited greatly from their personal experience with and anthropological knowledge of other Yup'ik societies. The work of Mary Pete, Vernon Chimegalrea, and Oscar Alexie in editing and translating Yup'ik were invaluable. Cheryl Scott's competence in programming and statistical analyses was a major asset and is gratefully acknowledged, along with her assistance in formatting and printing this document.

Fourth, I express my gratitude to Dr. Linda J. Ellanna, for her patience and guidance throughout the writing and preparation of my research findings. I have been fortunate to benefit from her expertise in research among other hunting-gathering societies.

The Division of Subsistence, Alaska Department of Fish and Game, my current employer, provided logistical and financial support during much of this study. Without that support, this research could not have been completed in such a timely fashion. The moral support and encouragement of the director, Steven Behnke, and deputy director, Carol Jorgenson have been important. I am grateful to coworkers who made every effort to allow me to work on this monograph with few interruptions. Betsy Sturm, a private contractor, produced most of the graphics. Dr. David Murray and Dr. Leslie Viereck provided identification of plant specimens.

Finally, the person who shares a home with someone completing a work such as this deserves special recognition. I express my heartfelt gratitude to Marina C. Day for her enduring encouragement, good humor, and companionship throughout the analysis and writing of this work.

NOTE ON THE USE OF CENTRAL YUP'IK

The reader will note that many Central Yup'ik words are included in this study. Throughout, these words are spelled using the modern orthography developed and used by the Alaska Native Language Center, University of Alaska Fairbanks (see Jacobson 1984). To avoid confusion with previous spellings using earlier orthographies and other spellings noted in the historic and ethnographic literature, italics have been used throughout to distinguish words written using the currently accepted orthography. For example, *Akulmiut* is the proper spelling as used in this work compared to earlier spellings, such as Agulmiut and Akolmiut, used elsewhere. The former is italicized, whereas the latter are not.

Central Yup'ik translations in this monograph are the work of Mary C. Pete, Vernon Chimegalrea, and Oscar Alexie, all former students of the Alaska Native Language Center.

CHAPTER 1. INTRODUCTION

This monograph is an ethnohistoric and ethnographic study of 19th and 20th century land and resource use of a Yup'ik-speaking Eskimo society that resided in the inland tundra region between the Yukon and Kuskokwim rivers of western Alaska. The *Akulmiut* were a hunting, fishing, trapping, and gathering society of about 1,000 people who resided in three year-round villages in 1983. Although these communities were located within 10 miles of each other as the primary *Akulmiut* villages were in the past, the people have utilized an area approximately 2,500 to 3,000 square miles in size for harvesting a variety of fish and wildlife resources historically and in more recent times. This subarctic inland tundra region is 25 to 75 miles from the Bering Sea coast. In 1983, the *Akulmiut* villages were about 500 miles by air west of Alaska's largest metropolis, Anchorage, and 26 miles by air northwest of the regional service center of Bethel (Fig. 1). None of these communities were linked to one another by road; air and water transportation are the primary means of access.

In 1983, as in the past, fish was the basis of the *Akulmiut* subsistence economy. Northern pike, several species of whitefish, and Alaska blackfish were the primary fishery resources in the 19th century, and the harvest of several species of salmon also became important during the 20th century. In the early 19th century a diet

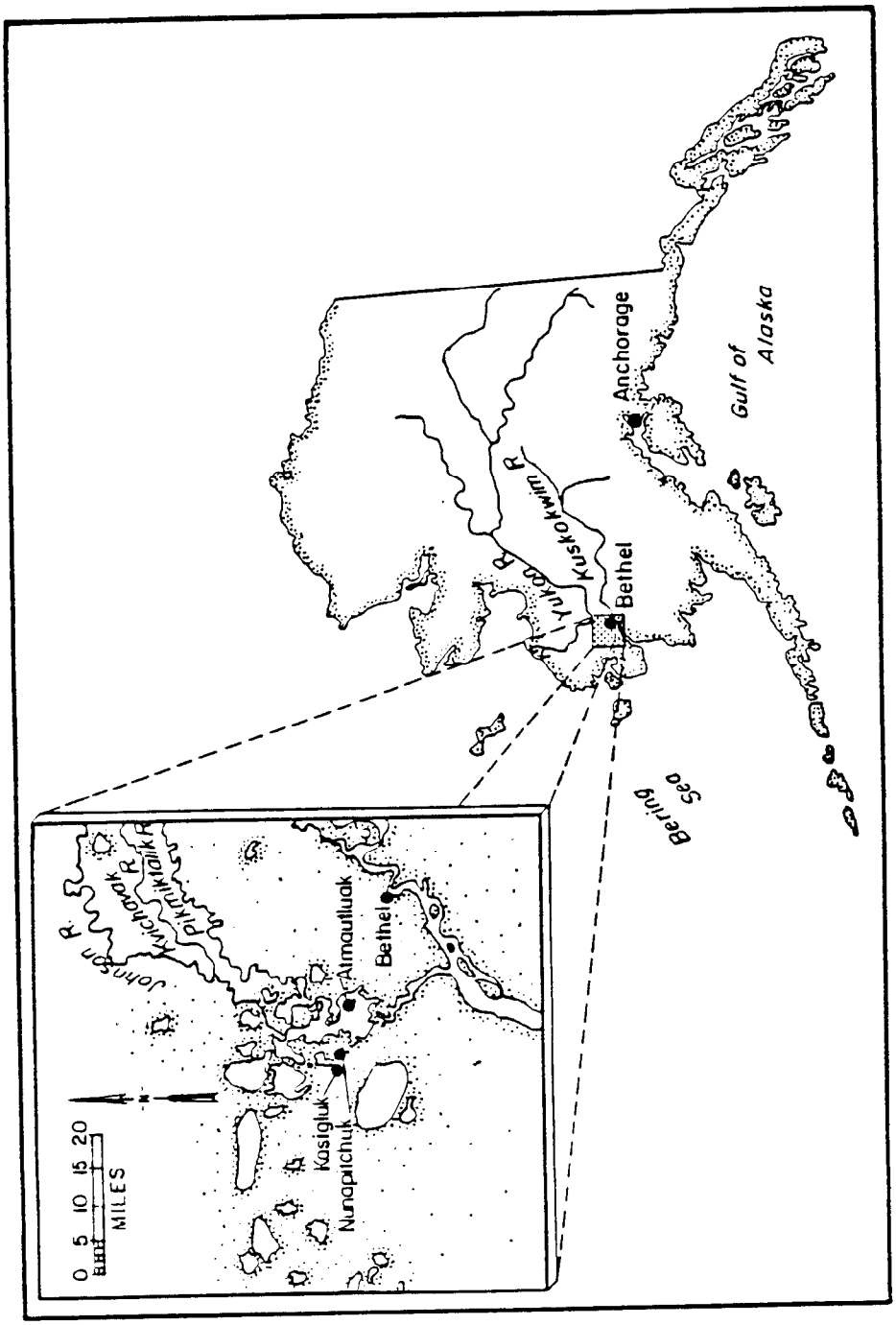


Fig. 1. Location of Akulmiut villages, western Alaska, 1983.

of fish was supplemented by caribou, no longer present in the area for over 100 years. Throughout, waterfowl and furbearers such as mink, land otter, and muskrat augmented the basic fishing economy. Both trapping and fishing have been, and continued to be important in the local market economy. Additionally, since about the mid 1950s, cash income has been derived from limited wage employment opportunities as well as from the sale of fish, furs, handcrafted items, and state and federal public assistance programs.

SCOPE OF THE STUDY

This research examines the relationship between the patterns of resource utilization and spatial organization and resource distribution among the *Akulmiut*, a western Alaska Yup'ik hunting-gathering society. This relationship is analyzed from an ecological perspective to address broader issues of hunter-gatherer territoriality. This view recognizes the nonrandom and noncontinuous distribution of resources and people across the landscape, and maintains that patterns of resource utilization are related to resource distribution parameters. A territorial system of spatial organization and resource utilization is one outcome of the interaction between a human population and wildlife resources under certain conditions.

The question of territoriality among hunting-gathering societies has revolved around the concepts of rigidity and flexibility in territorial organization. The traditional view of a rigidly

delimited group occupying and using a discrete area gave way to an emphasis on seasonal variation in group composition, mobility, and land use in response to changes in available resources. However, the concept of flexibility is misleading as resource utilization is patterned and there exist sociocultural mechanisms which operate, at times, to allow access to resources and, at other times, to constrain use of land and resources. Instead, there is variation in hunter-gatherer territoriality which, according to one recent theory, can be accounted for by examining the distribution of critical food resources in terms of density and predictability. This is the framework used in this study.

Specifically, this paper addresses the question of territoriality among the *Akulmiut*. Three aspects of human-environment interactions are considered in the analysis (after Smith 1987):

> 1) resource distribution of the area in question in terms of predictability and abundance of key resources;
>
> 2) patterns of resource utilization by the population; and
>
> 3) spatial organization of the population in terms of dispersal, nomadism, and territoriality.

Using data for the *Akulmiut*, the study tests the hypothesis that a territorial system will occur under conditions of high density and predictability (in time and space) of critical resources (Dyson-Hudson and Smith 1978). The model which tests this hypothesis is described below in more detail.

The *Akulmiut* were selected for this study because of their unique situation among Alaskan Eskimos in terms of their subsistence economy and geographic location. The *Akulmiut* subsisted on fish and wildlife resources characteristic of the low, marshy area of moist and wet tundra ecosystems between the Yukon and Kuskokwim river deltas. Ethnographic literature on Alaskan Eskimos describes human adaptations centered around the harvest of marine mammals (Burch 1980, 1981; Ellanna 1983; Rainey 1947; Burgess 1974; Lantis 1946), large game (Gubser 1965; Spencer 1959), or major fish runs such as salmon and sheefish (Giddings 1961; Oswalt 1963; VanStone 1967). No ethnographic descriptions exist for the *Akulmiut*, whereas they are available for other Yup'ik societies directly to the north, west, and southeast (Wolfe 1979; Lantis 1946; Fienup-Riordan 1983; Oswalt 1963). Further, the ethnographic literature on Alaskan Eskimo socioterritorial organization contains some very good information on the north Alaskan Eskimo or Inupiat (Ray 1967; Burch 1980), but similar data have been very limited for the Yup'ik-speaking Eskimo of the Yukon and Kuskokwim river deltas (Wolfe 1981; Shinkwin and Pete 1984; Pratt 1984; Fienup-Riordan 1984). The inland tundra, nonriverine adaptations, such as that of the *Akulmiut*, are undocumented. Patterns of spatial organization and resource utilization and their relationship to resource distribution were unrecorded.

In 1983 the *Akulmiut* resided in three year-round communities in the Johnson River drainage -- Nunapitchuk, Kasigluk, and Atmautluak. Each was known to have a subsistence-based economy, even though

residents were involved in cash-earning activities through commercial fishing, trapping, and wage employment. Nunapitchuk was selected as a case study of human-environment interactions of the *Akulmiut*.

In this study the territorial dimensions of *Akulmiut* resource utilization are examined first in terms of historic occupancy and social and geographic delineations of the society (Chapter 3). Historical influences on *Akulmiut* population size and settlement and resource use that occurred subsequent to contact with Euroamerican culture are also described in general in Chapter 3. Ethnohistoric and ethnographic data for the *Akulmiut* community of Nunapitchuk are used as a case example to describe historic and contemporary spatial organization, land and resource use, and social organization (Chapter 4). Chapter 5 describes the historic and contemporary pattern of settlement and seasonal round of subsistence activities. Included also are data relating to historic spatial organization and mechanisms for maintaining land and resource use by the *Akulmiut* as exemplified by data collected at Nunapitchuk. In Chapter 6, indigenous and external influences on *Akulmiut* land use and resource utilization are described as they are important in addressing continuity and change in the territorial dimensions of *Akulmiut* resource utilization since contact with Euroamerican society. The study concludes with an evaluation of the relationship between *Akulmiut* patterns of resource utilization and spatial organization and the distribution of critical food resources. It addresses the question of whether the *Akulmiut* have been and continue to be territorial. The results relate directly to questions of Alaskan

Eskimo settlement patterns and socioterritorial organization, their similarities and differences.

CONCEPTUAL FRAMEWORK

The ultimate goal of anthropology is to describe the culture of human societies or populations and to explain their similarities and differences -- that is, to account for their variation and diversity. The approach or paradigm of ecological anthropology focuses on the interrelationships between a population or society and its habitat and explains much of cultural behavior and sociocultural patterns within human groups as adaptations to environmental conditions (Hardesty 1977; Netting 1977; Gross 1983; Moran 1984).

The following discussion begins by focusing on different theoretical perspectives derived from ecological anthropology, as this is the general conceptual framework within which territoriality is examined. Next, there is a discussion of how the question of territoriality among hunting-gathering societies has been addressed in anthropological studies. Third, and more specifically, is a review of the anthropological literature of Alaskan Eskimo societies as it pertains the notion of territoriality. The chapter concludes with a description of the theoretical approach used in this study for examining territoriality among the *Akulmiut*.

In anthropology, Julian Steward (1955) was first to put forth a systematic approach to the study of the interrelationships between culture and environment. He examined cultural adaptation in terms of

the technology and productive arrangements of resource utilization. Although others had been concerned with correlating geography and cultural patterns of settlement, subsistence, and land use (Boas 1888; Wissler 1926; Kroeber 1939), Steward (1955) was interested in developing cross-cultural principles or explanations for the interaction of cultural behavior and environmental processes.

Steward (1955) referred to the study of cultural-environmental adaptations as cultural ecology. Proponents of the cultural ecological perspective studied cultural adaptations that provided basic solutions to environmental problems (Hardesty 1977:24). From this theoretical perspective, the notion that similar conditions produce similar effects on society and culture could be empirically tested by "analyzing environmental adaptations to show how new cultural patterns arise" (Steward 1955:34). The methodology of cultural ecology sought to link particular aspects of sociocultural life, such as technology and economy, to local ecology. Subsequently, this orientation was termed ecological anthropology.

More recently, some of the approach and subject matter of subfields termed socioecology, evolutionary ecology, and behavioral ecology have become part of ecological anthropology for the purpose of explaining the diversity of sociocultural adaptations. Socioecology has been broadly defined as "the comparative study of social structure in relation to ecology" (Crook 1970:198). In anthropology, socioecology more specifically refers to the study of "the interrelationships between environment, economic strategies, and social interactions," especially particular patterns of settlement,

land use, and subsistence (Smith 1984b:66). Sociocultural patterns of human groups are treated as being central in mediating the interaction of human groups and the natural environment.

Another approach to the relationship between society and ecological adaptation is that of evolutionary ecology. The methods and theory of evolutionary ecology have been applied primarily to the study of human foraging strategies and spatial organization (Winterhalder and Smith 1981; Heffley 1981; Smith 1981). Food-getting strategies of human populations are examined in relation to environmental opportunities using general animal behavior models as analogies to human patterns. Evolutionary ecology is derived from natural selection and neoDarwinian theory. According to such theoretical perspectives, adaptation is by means of natural selection in a finite environment and is the primary causal force of interactions between organisms and their environment (Pianka 1978:4; Smith 1984a:69). Adaptation is a process that yields individual varieties (variation) which are acted upon by natural selection which results in new forms (Gross 1983:166). The evolutionary principle is that selection acts upon this phenotypic variation in human groups rather than producing new forms.

Anthropologists using the concept of evolutionary ecology view cultural behavior strategies as adaptive responses of individuals and populations to changes in environment (Hardesty 1977:24; Smith 1987:3). The primary methods of study developed by this branch of ecological theory are the development and application of simple deductive mathematical models "to represent the variability in a set

of environmental and behavioral parameters" (Smith 1984a:66). Hypothetical solutions to adaptive problems, such as spatial organization and foraging behavior, are developed and represent the variation of the possible strategies (Harpending and Davis 1977; Alcock 1984; Pianka 1978). Empirical data are then used to test the predicted variation (Winterhalder and Smith 1981; Smith 1984a; Heffley 1981; Dyson-Hudson and Smith 1978).

The approach of behavioral ecology uses the concepts of risk and uncertainty in the study and explanation of the variability in socioecological behavior (Krebs and Davies 1984; Davies and Houston 1984; Smith 1987). These concepts have been used to refine the theory of territory economics by focusing on variation in outcomes or the degree of "payoff" of certain behavior. This orientation uses a partnership or contractual model for analysis where certain terms and conditions apply to the use of land and resources. This approach has been applied to studies of resource sharing and reciprocity (Wiessner 1982a, 1982b; Cashdan 1985; Smith 1987). This theoretical perspective encompasses political mechanisms governing access to land which may account for diversity in hunter-gatherer territorial behavior.

The study of spatial organization includes the subject of territoriality. Ecological anthropology examines this topic in terms of how people in a society come together into groups or disperse to utilize resources given the distribution of those resources within space and over time. Evolutionary ecological models of spatial organization are used to explain the diversity of human settlement

patterns. They predict the strategy an individual or group of individuals should use given key factors of their environment such as resource distribution (Winterhalder and Smith 1981; Smith 1984a; Heffley 1981). The evolutionary ecological approach is used in this study for examining the territorial dimensions of the *Akulmiut*.

Territoriality in Anthropological Theories of Hunting-Gathering Societies

The issue in the anthropological study of spatial organization among hunter-gatherers is to answer questions relating to variability in hunter-gatherer socioterritorial organization. Territoriality among hunting and gathering societies is not uniform and is complex. In anthropological studies of hunting and gathering societies from the mid 1950s and 1960s, two principal theoretical generalizations about territoriality were advanced. One held that the territorial band (grouping of hunters and gatherers of wild foods) was the characteristic form of hunter-gatherer social organization (Service 1962), while, in contrast, the other stated that the pattern of spatial organization of hunting-gathering groups was flexible and fluid, its form varying due to ecological factors (Lee and Devore 1968; Damas 1968). Others have even questioned whether boundaries existed at all among hunting and gathering societies (Lee *et al.* 1968). As will be discussed below, the early discussions were hampered by a lack of clear definition of "territoriality" and were complicated by the variation discovered in the ethnographic

descriptions of the spatial organization of particular hunting-gathering groups.

In this area of inquiry, ethnographic description of particular hunting-gathering systems are more developed in the anthropological literature than general theoretical principles to explain the variation observed in the socioterritorial organization of hunting and gathering societies. Descriptive characteristics of band organization have been delineated and typologies developed for classifying the observed variability in resource utilization and settlement pattern (Chang 1962; Damas 1968; Graburn and Strong 1973). One typology classified circumpolar societies as having settlement patterns with simply either a year-round settlement or a "complex" of seasonal settlements with subtypes in each category (Chang 1962). A typology of hunting-gathering Athabaskan societies classified the subsistence economy of bands into three groups -- inland riverine, inland hunting-snaring, or intensive riverine/maritime -- even though not all ethnographic examples could be classified as such (Graburn and Strong 1973).

Central Arctic Eskimo societies were shown to have a band organization characterized by extensive bilaterally structured kinship with multifamily groups aggregating annually (Damas 1969b). An analysis of arctic drainage Indians described distinguishing aspects of band composition using concepts considered useful for examining the socioterritorial organization of hunting-gathering societies (Helm 1975). Band organization of the Dene was found to consist of the "linked-family" band and the larger "regional" band.

These types of organization were midway along a continuum with the subsistence "task group" at one extreme and the enduring "tribe" at the other. The tribe, the most encompassing level of organization, was characterized by a "shared orientation...to an extensive exploitative zone or territory -- its biotal resources, their sites, and the routes of access...to those sites..." (Helm 1975:376).

A few anthropologists have addressed the issue of how to account for the variation and diversity of spatial organization and its relationship to resource utilization (Steward 1955; Martin 1974; Dyson-Hudson and Smith 1978). Steward's studies of patrilineal bands ("loose aggregates of comparatively independent families" [Steward 1955:122]) showed that members habitually used a certain area where customary use led to the concept of ownership and where multifamily groupings were united through cooperative hunting and common land ownership (Steward 1936, 1938, 1955). The organization of the band and its pattern of subsistence production or resource utilization was explained by ecological variables, specifically the primary resources used -- game animals which were limited and scattered (Steward 1955:123). Steward viewed the area regularly used by the band as the territory. He did not attempt to explain territoriality *per se*, but he observed that the organization of the band varied with the primary resources utilized. This ecological explanation was also used to explain other forms of socioterritorial groupings in band societies, such as the "composite hunting band," which was composed of unrelated nuclear families that were integrated "on the basis of constant association and cooperation rather than of actual or alleged kinship"

and occurred where large game herds were present or where a greater population density was produced by more abundant wild resources (Steward 1955:143-44; 150).

Following Steward's 1955 publication and for the next 20 years, studies in ecological anthropology show little interest in testing the predictive and explanatory aspects Steward's cultural ecological theory. Instead, anthropologists developed typologies of hunter-gatherer spatial organization based on settlement pattern and use of fish and wildlife resources (Chang 1962; Damas 1968; Graburn and Strong 1973) or focused on the structure and function of features of cultural adaptation (Vayda 1969). In the 1960s, ethnographic studies and conferences addressing the topic of hunter-gatherer organization essentially were limited to descriptions of the numerous patterns of spatial organization, lists of criteria to delineate bands, and more comprehensive typologies of hunting and gathering societies (cf. Lee and DeVore 1968; Damas 1968, 1969b; McKennan 1969; Slobodin 1969). Settlement pattern, resource availability, and group composition were the key elements. For instance, at the 1965 Ottawa "Conference on Band Organization" (Damas 1969a), participants described the occurrence of annual fluctuations in group organization and resource utilization. That is, they discussed seasonal patterns of dispersal and congregation, population densities, and group sizes. Steward (1969a, 1969b), however, focused on formulating crosscultural principles of socioterritorial organization and argued for a systematic method of study to produce empirical data for explaining crosscultural similarities.

The 1966 Chicago "Man the Hunter" conference began to address the question of whether hunting and gathering societies had territories (Lee and DeVore 1968:156-57). Case studies showed there was a close relationship between patterns of resource utilization and spatial organization, such as settlement pattern. The concept of territory was linked to geographic areas used habitually by a population. Causal relationships between resource distribution and resource utilization were not examined. Research focused on the variability in the relationships observed and revising classifications to accommodate the diversity (Damas 1968). The focus of study was in describing the variation of hunter-gatherer spatial organization and resource utilization rather than attempting to explain how to account for the diversity.

In contrast, Steward (1968) sought causal explanations. He contended that hunter-gatherer territoriality ("habitual use of a delimited territory") could be explained by ecological adaptations and the types of resources available. Whether territories were defended was still open to question and the issue of territoriality was hampered by a the lack of agreement on the meaning of the term (Steward 1968).

Subsequently, anthropological studies of hunting and gathering societies began to pay more attention to the relationship of spatial organization to variations in resources (Lee 1976; Thomas 1973; Helm 1975; Heinz 1972). With this objective in mind, topics of study and description became focused on the social and geographic characteristics of hunting-gathering societies. Many studies

examined the way in which seasonal changes in dispersion and consolidation of people; the social organization of the group; and subsistence practices were linked to the local ecology (Marshall 1976; Lee 1976; Balikci 1968; Rogers 1969). Composition of the subsistence group, annual patterns of movements, customary rules governing use of key resources, access to and defense of resources were studied also. Several anthropological studies focused on ecological questions related to land use by mapping areas used for subsistence by hunting-gathering societies in North America (Ellanna *et. al.* 1985).

In these studies, the notion of territory generally referred to a more or less delimited area within which a population or society carried on its resource harvesting activities over the course of the year (*e.g.*, Steward's "habitually used area"). Rarely was the concept of territory defined, nor was there agreement on its definition. However, the data collected contributed a broad theoretical framework that linked subsistence patterns with patterns of the natural environment. These studies showed that land and resource use was patterned; that these patterns were closely linked to patterns of the natural environment; and that customary law recognized distinct geographic areas associated with particular human groups (Ellanna *et al.* 1985:56-58). In general, territory was viewed as a discrete area that was inhabited and used, but not necessarily occupied exclusively nor defended against all outsiders (Service 1962). In these cases, societies were said to be territorially

"open," whereas those which were territorially "closed" had observed boundaries which were defended (Lee 1976).

The existence and maintenance of boundaries became a topic of interest. Rather than describing hunter-gatherer socioterritorial organization as simply being either open or closed it was seen as being a continuum. It was found that societies had both geographic and social boundaries and these varied in time and space, and within the same group in different contexts (Helm 1975; Riches 1982). Social boundaries varied from open systems with random movement to closed systems with no interchange. Geographic boundaries varied from being overlapping or shared to being nonoverlapping or exclusive (Lee 1976). Although these descriptive typologies tended to accommodate the diversity found in the ethnographic record, they did not explain their diversity nor the interrelationship between boundary maintenance (or lack thereof) and resources utilized.

Other studies showed how cognitive models of socioterritorial organization functioned to maintain boundaries, but at the same time enabled flexibility (Peterson 1975, 1979; Blundell 1980). These studies focused on the function of cognitive models in the adaptive process. However, they did not explain what gave rise to territorial behavior.

While it was universally recognized in the literature that most hunting-gathering groups had geographic "use areas" (of various types and complexities), the extent to which these use areas were exclusively occupied or defended against intrusion by outsiders is not clearly described or understood within the literature.

More recently, beginning in the 1970s, human territorial behavior began to be examined in relation to the access to and control of resources; that is, how use areas were identified and maintained. Access to resources was restricted by one of two types of defense -- social boundary defense and perimeter defense (Hockett 1973; Acheson 1975; Peterson 1975; Cashdan 1983). Perimeter defense referred to defense of resources in an area exclusively used by residents (Acheson 1975) or where "territory boundaries are advertised and marked, [and] social units correspond to territory units" (Cashdan 1983:49). Social boundary defense occurred where territorial use was nonexclusive, but access continued to be controlled. By defending the boundaries of the social group the resources in the territory were defended (Cashdan 1983; Acheson 1975; Peterson 1975). Naming systems, greeting ceremonies, trading partnerships, and fictive kin ties were examples of social boundary defense mechanisms (Peterson 1975; Cashdan 1983). Regardless of the type of defense exhibited, the issue remained as to how to explain what conditions gave rise to territorial behavior. Criteria used to define the territorially-based group included "the greatest extension of population throughout which there is sufficient intermarriage to maintain many-sided social communication" (Helm 1985), membership in the local land using group (through kinship, marriage, clan affiliation) (Peterson 1975), and families integrated "on the basis of constant association and cooperation" (Steward 1955:143).

Until recently, there were no models using ecological variables for explaining the presence or absence of exclusive, defended use

areas (territoriality) among hunting-gathering societies. Dyson-Hudson and Smith (1978) developed a model to predict when territorial behavior was expected in hunter-gatherer spatial organization and to explain its diversity. They approached the issue of territoriality by analyzing the effects of different patterns of resource abundance and distribution on spatial organization using a cost-benefit model developed in the biological sciences. The model has been used to explain variability in avian and terrestrial mammal territorial organization (Brown 1964; Krebs and Davies 1984; Davies and Houston 1984; Alcock 1984). The model has successfully accounted for the occurrence and development of exclusive and overlapping territories, defended and undefended, seasonal and permanent, and differences in patterns of resource utilization. Because of the apparent variability in spatial organization among Alaskan Eskimo societies, this type of model holds promise for explaining the observed diversity. It served as a framework for the analysis of data for the *Akulmiut* and is described after the following review of the Alaskan ethnographic literature.

Territory and Alaskan Eskimo Societies

Most studies of Alaskan Eskimo societies, like those of other hunter-gatherer societies, have paid little attention to the spatial parameters of adaptation and the question of whether territoriality exists and how it relates to other aspects of culture such as sociopolitical organization and settlement pattern (Vickers

1983:451). The notable exception is Oswalt's (1967:87-115) synthesis of Alaskan Eskimo settlement patterns in which the diversity of resource use and settlement pattern among Alaskan Eskimo societies is noteworthy. Other studies have noted that differences in patterns of resource use are correlated with discrete societies among the Inupiat and Yup'ik (Burch and Correll 1972; Fienup-Riordan 1984).

Territorial concepts related to maintaining exclusive use or the interrelationship of territorial space and associated resources have not been addressed. Many anthropologists have focused on ecological aspects of Alaskan Eskimo adaptation in the "harsh" arctic and subarctic environments by describing the seasonal round of subsistence activities; extent of land, river, and sea use; settlement pattern; and hunting and fishing methods (Nelson 1973; Spencer 1959; Wolfe 1979, 1981). Generally, the notion of territory ("habitually used area") is alluded to if only in the presentation of maps that depict where people go during the course of a year to harvest resources and by identifying specific drainages and areas with a particular group or society (Spencer 1959; Gubser 1965; Burch and Correll 1972; Alaska Department of Fish and Game 1987). Questions related to the relationship between boundary defense and the predictability and density of resources remain. Rarely has it been noted how these boundaries were identified (either by the researcher or the society), whether they were formal or informal boundaries, and whether they delineated home ranges or exclusively used geographic divisions (see Ellanna *et al.* 1985 for a discussion of methodological problems associated with mapping land use areas).

Diversity is evident, however, as noted in population densities which varied from .13 to .40 persons per square mile, number of months resident in the "winter" village which ranged from 4 to 9 months per year; and number of seasonal moves from 2 to 6 annually (Oswalt 1967:90). This "central-based" hunting-fishing-gathering pattern appears to be characteristic of Alaskan Eskimo spatial organization (Oswalt 1967:88; Chang 1962). According to Chang's (1962:32) typology, Alaskan Eskimo settlement was characterized by groups of people who lived in permanent settlements in winter and were scattered from spring until fall when they hunted and fished and resided in small camps.

Froelich Rainey's study of the whaling culture of the Point Hope Eskimo of north Alaska noted that each north Alaska coastal village had "a definite territorial range" (Rainey 1947:236). Each village group composed of "independent family groups" remained together "because of common interest and a need for protection" (Rainey 1947:240). Although Rainey (1947) described the annual cycle of subsistence activities noting periods of dispersion and consolidation with seasonal variations in resources, he did not address the relationship between resource distribution and utilization or spatial arrangements.

In a later study of the north Alaska Eskimos, Spencer (1959:22-23), using a culture area approach, identified two cultural groups on the basis of "ecological orientation" -- the coastal people ("tareumiut") and the inland residents ("nuunamiut"). The ecological area within which a group "habitually moved" and "customarily

resided" was considered their common territory "defined by familiarity with its resources and possibilities" (Spencer 1959:132). Spencer did not believe there was a sense of ownership of the territory, nor was trespass enforced. In fact, he (Spencer 1959:128-31) noted that members from one ecological area harvested resources in an other's area "and even at times traversed the area passing each other by."

The territorial groupings of the inland people functioned primarily when members aggregated for caribou drives. At other times of the year families were dispersed, but joined one of several inland territorial groups during the major caribou migrations (Spencer 1959:132-33). The groupings were not ephemeral, but were integrated through ceremonial activities associated with the "karigi" (communal, religious, ceremonial structure) which were constructed at sites where families grouped together for the caribou drives (Spencer 1959:132-33). When caribou movements became unpredictable, resource utilization changed as nuclear families dispersed. Spencer's (1959:146) work led him to recognize that the larger question was how the two ecological orientations (coastal and inland) operated and how they were activated. In this sense, Spencer (1959) acknowledged that some relationship existed between resource distribution and resource utilization. There was no framework, however, for analyzing the different coastal and inland patterns from this standpoint nor to explain the differences and similarities in territorial behavior among north Alaska Eskimo groups. Furthermore, no criteria were applied for ascertaining group identification which could have helped

to answer questions about the relationship of spatial organization to resource use. Genealogical data could have been used in such an analysis.

Gubser's (1965) ethnography of the north Alaska Eskimo focused on the inland group or "Nunamiut." Gubser was first to identify by name the numerous north Alaska Eskimo groups and the areas they used and occupied. He noted that each group occupied a "recognized hunting territory" and that the basis of group formation was "kinship and a sense of territoriality" (Gubser 1965:165-66). Again, as Spencer (1959) noted, this association was reinforced biannually when members joined together to construct the communal house or "karigi" (*qalgi*) and cooperatively operated a caribou drive. These twice-yearly formations had economic as well as political functions. A sense of territoriality was conveyed through discussion and accounts of battles and conflicts with Indians as well as encroachments of non-Natives and federal authorities in more recent years (Gubser 1965:166).

Nunamiut territorial behavior was linked in space and time to the caribou migrations. At other times of year, when caribou and people were dispersed, territorial boundaries were permeable as members from one group sometimes joined those of another group in a different region. In summer inland people lived along the coast in areas occupied during other seasons by coastal people ("Tareurmiut"). The multitude of north Alaska Eskimo groups identified by geographic location and kinship became termed "regional groups" in subsequent anthropological analyses (Burch and Correll 1972; Burch 1980).

The north Alaska Eskimo of the Kobuk River grouped together for midsummer and fall fishing and caribou hunting (Giddings 1961). Groups of families settled at stream mouths along the Kobuk River and were associated by name with these fishing grounds (Giddings 1961:123). Although family groups did not guard their "territory" (the associated tributary and drainage), these multifamily groups composed the larger group or "regional group." This group was referred to as the "Kobuk River people" by Giddings (1961) and they were distinguished from other groups. They were delineated as a unit in their ceremonial obligations and alliances with the neighboring people of Hotham Inlet and those of the Selawik River. They were differentiated by their potential for hostility with people of the Noatak River and other Nunamiut groups of the north slope of the Alaska Range (Giddings 1961:24, 123, 152). Recent research has suggested three distinct societies in the Kobuk River drainage, each with its unique set of place-names and resource use areas (Ellanna, pers. comm. 1989).

Other studies of northwest Alaska Eskimo groups in the 1960s, although ecological in perspective, did not address the distribution of resources and correlated patterns of resource utilization. Foote's (1959, 1961) intensive studies of land use depicted geographical extent and location of wild food harvest without speaking to the concept of territory. One study of foraging efficiency, however, found a differentiation in land tenure associated with gill netting and beach seining sites among the

Inupiat at Shungnak along the Kobuk River (Foote and Greer-Wooten 1966:25).

Other ethnographic studies during the 1960s in coastal arctic communities of north Alaska focused less on spatial organization and land use. Chance's (1966:35) study of the coastal Eskimo at Barter Island merely commented that economic and social life "had to adapt to seasonal variation of the environment." Nelson's (1969) study of the hunting behavior of the Eskimos at Wainwright aimed at human adaptations to the environment in terms of hunter knowledge and skills rather than the organization of hunting as a behavioral adaptation. Even though Nelson's (1969) study dealt with human behavior in an ethological sense by viewing hunters as predators, it did not address territoriality or hunting behavior as they related to competition for resources.

More recent analyses of land use and kinship among north Alaskan Eskimo groups has revealed variability in the concept of territory among these groups (Burch and Correll 1972; Burch 1980, 1981). As Gubser (1965) and Spencer (1959) noted earlier, there were times when different groups of north Alaska Eskimo shared areas for resource use although at different times, joined together, or passed each other by when traversing regions. This was also the case among mid 19th century Eskimos from Point Hope (Burch 1981). This variability points to questions that directly bear upon the issue of explaining the diversity in hunter-gather territoriality, but which are unanswered in the descriptions and analyses. As Dyson-Hudson and Smith (1978:23) noted:

> There is variability in "structural categories" such as whether territories are exclusive or overlapping, defended or not, geographically stable or mobile, seasonal or permanent and variability in "functional categories" since there are many different patterns of resource utilization. Territoriality can come and go seasonally or may come or go with nonseasonal changes in resource distribution.

Studies of the Inupiat, as well as those described below for Yup'ik societies further south, were directed at delineating social groups by identifying characteristics that enabled them to be distinguished from one another. Like Gubser (1965) and Giddings (1961), Burch and Correll (1972:21) noted that each regional group could be defined on the basis of association with "a particular territory, or 'region'," and that "each group was associated with a territory as its 'home' district." At times during the course of a year, groups of people were dispersed throughout the home range and at times they were consolidated. During certain periods some members left the region for ceremonial and trading purposes and were permitted to travel across and into the range of another group. In addition, a regional group was distinguished by a specific annual cycle with a geographic range, dialect, and marriage universe (Gubser 1965; Spencer 1959; Burch and Correll 1972).

In spite of the identification and delineation of north Alaska regional groups, each study was at a loss in explaining either why boundaries (geographic and societal) were as they were or why at certain times of the year neighboring groups had "gentlemen's" agreements which gave the appearance that boundaries were

"permeable." Furthermore, although Burch's (1980:275, 1981:61) data seemed to indicate a correlation between environmental factors, such as increased resource abundance and predictability (even though these terms were not used) with the location of population centers, the fact that boundaries were located where resource productivity was low could not be explained in the analysis (Burch 1980:276).

In a more detailed study delineating the geographic region of the 19th century Point Hope Eskimo, Burch (1981) described structural and functional variation in their territorial behavior during the course of a year. Apparently, for the Point Hope Eskimo, the mid 19th century home range coincided with the territory, in that exclusivity was maintained by placing the right to exclude in members of the society thereby conveying a sense of "ownership" (Myers 1982). Point Hope Eskimos exercised this right, particularly with regard to key resources (Burch 1981:61). Yet, at other times of the year and for certain resources, Burch (1981) found that the Point Hope Eskimo waived this territorial behavior in favor of the "gentlemen's" agreement or truce.

Dorothy Jean Ray's (1967) work among the Eskimo of the Bering Strait region was the first to point systematically to territoriality among some Alaska Eskimo groups in the sense of maintenance of an area for exclusive use, if not by overt defense, then by some means of communication: "[e]very tribe of the Bering Strait was aware of its boundaries as if fences had been erected" (Ray 1967:373). For Ray (1967), communication came in large part through the sociopolitical institution of the "kazgi" (*qasgiq*) where chiefs

corroborated with other leaders in crucial times and sponsored interregional ceremonies. In particular, they "would orate principles of conduct, which included reminders of territorial limits to which a person could safely go" (Ray 1967:378-79). With other key individual residents of the *qasgiq*, the leaders "granted permission to other tribes for territorial use, and admonished their own tribal members about trespass into foreign territory" (Ray 1967:379). Again, a sense of ownership prevailed in that groups held the right to be asked permission for use of resources (cf. Myers 1982) in their territory. Permission was asked of allied, but rarely of enemy, tribes. In addition, there existed "alliance sanctuaries" where people of allied groups could fish and hunt seals (Ray 1967:385-86). Like the north Alaska Eskimo, there were certain times during the year when neighboring groups could freely harvest specific resources in the territory of another group. Again, how this pattern of resource utilization correlated with resource distribution is left unexplained. Yet it is apparent that Bering Strait Eskimo had territories with boundaries that were sometimes permeable.

Since 1980, studies of land and resource use for subsistence by residents of numerous north Alaska and Bering Strait communities have depicted geographic areas used by community residents (for example, Thomas 1982; Magdanz and Olanna 1984; Pedersen *et al.* 1985; Schroeder *et al.* 1987). Similar to Foote's (1959, 1961) human geographical studies in previous decades, they depicted the geographic range of harvesting activities. They did not, however, analyze territorial behavior nor how it correlated with resource distribution parameters.

Territorial limits are implied, however, in the extent of land use even though there were areas of overlap. Under what circumstances areas were shared or overlapped has not been analyzed, and, in fact, may indicate that shared areas were for the harvest of only specific resources at certain times of year.

Among the Yup'ik of western Alaska, societies, like those of north Alaska, were differentiated by territory, speech patterns, clothing details, annual cycles, and ceremonial life (Correll 1972; Shinkwin and Pete 1984; Shinkwin 1985; Fienup-Riordan 1984; Pratt 1984). The fact that each society represented a unit in war (Shinkwin and Pete 1984:101) points to overt defense which may have functioned in part as a means of maintaining exclusive use of an area. Even after warfare ended in the early 1800s, intruders were kept at bay with land and water use dictated by the indigenous group (Shinkwin and Pete 1984:104). One example described the use of the Messenger Feast ceremony by one group as a means to assert its claim to use of a specific territory and challenged another group's ability to sustain their claim (Shinkwin and Pete 1984).

Other means of territorial exclusion among the Yup'ik was through language, specifically the geographical naming system and speech patterns (Correll 1972). Ownership was maintained by physical presence as well as named locations frequented by the indigenous group. Boundaries were formed "by the termination of place-names relating to one group and the beginning of those of another" (Correll 1972:95; see also Pete 1984). It was by means of direct usage of names that "an Eskimo has access to the universe of things that have

been named" (Correll 1972:153). Transgressions were communicated by means of narratives of ongoing conflicts through the structured forum of the *qasgiq* where the accounts were retold (Correll 1972:163).

Elsewhere in the Yukon and Kuskokwim river deltas region, the ethnographic record is very limited in addressing territorial behavior among Yup'ik societies. Lantis' (1946:250) study of the Nunivak Island Eskimo stated "[t]here was no ownership of territory, hence no infringement was possible...[a]ll the animals and fish that were considered of most value ranged over considerable territory, whether land or sea, and the people ranged with them." At the same time, Lantis' study (1946) mentioned there were chiefs who, as Ray (1967) reported for the Bering Strait Eskimo, occupied a specially allocated place in the *qasgiq* recognizing their important role. Even though "no one had right to any territory, anyone could fish or hunt anywhere" aboriginally, intergroup warfare occurred (Lantis 1946:168). Also, there were formalized trade relationships with certain neighboring groups on the mainland specifically those with whom they were "friends" (Lantis 1946:169-70). Based on her study, it can be inferred that within and between villages of Nunivak Island there was no exclusive use of resources or areas. However, between Nunivak Islanders and other Yup'ik societies, some mechanisms appear to have operated for restricting access. This is apparent in that nearby mainland groups received resources and products by means of trade rather than self-acquisition.

Wolfe's (1981) study of the Kuigpagmiut of the lower Yukon River identified principles of resource use that operated within the

regional group. Similar to the Nunivak Yup'ik, exclusive rights to or uses of particular areas were not maintained for members of the group. Within the group access was neither granted nor denied to members (Wolfe 1981:240). However, five principles guided resource use among the Kuigpagmiut. Individuals and groups claimed rightful occupancy and use of certain areas through participatory use, geographic affiliation, kinship affiliation, deference to first users, and optimization (Wolfe 1981:240-252). Possibly, some of these principles operated for maintaining a territory even when there was joint use of an area or resources during particular times of the year as noted by Ray (1967) and Burch (1981). Wolfe (1981) also reported cases where the Kuigpagmiut and neighboring groups shared certain geographic areas for the harvest of particular species at discrete times of the year.

Studies of Nelson Island Yup'ik and those of other coastal areas of the Yukon and Kuskokwim river deltas by Fienup-Riordan (1982, 1983, 1984, 1986) depicted the flexibility and diversity of fish and wildlife utilization. These studies focused on the structure of the ideological system and its function in maintaining a cultural value system. Group cohesion and differentiation were seemingly maintained by means of a system of shared symbols and meanings expressed through naming, marriage, and ceremonial systems (Fienup-Riordan 1984, 1986). Like other cognitive models of socioterritorial organization (Peterson 1975; Blundell 1980), this approach did not explain how Yup'ik societies were at once "territorially centered," had social and geographic boundaries, and yet shared resource use areas with

other groups (Fienup-Riordan 1984) In Fienup-Riordan's (1983, 1986) view, ecological parameters did not explain the diversity of Yup'ik societies and their unique development. Rather, it was the unique "structural coherence" of each Yup'ik village and society that differentiated them from other villages and groups. Territorial behavior, according to this view, was not necessarily correlated with resource distribution parameters; instead, it occurred under a unique set of circumstances with the purpose of maintaining structural cohesion in order to differentiate one group from another.

Similar to recent studies of subsistence in north Alaska communities, the geographic use studies of areas in western Alaska by Yup'ik communities depict the shared and discrete use of areas for harvesting fish and wildlife. This applied both to the use of areas by individual communities within a regional group and between regional groups (Wolfe 1981; Charnley 1984; Pete 1984; Kari 1983, 1985; Brelsford *et al.* 1986; Alaska Department of Fish and Game 1987).

Economic Defendability Model of Territoriality

The review above shows that the anthropological literature on Alaskan Eskimo societies consists essentially of ethnographic descriptions and assumes that territories exist in some sense. In general, the territory refers to the "exploitative zone" (Helm 1975). Differences and similarities in spatial organization and resource utilization are apparent. The extent to which territories were

exclusive or defended has not been examined. How to account for the apparent variability remains an important question.

The economic defendability model of territoriality developed in evolutionary ecology to explain the diversity in territorial behavior and spatial organization among avian and terrestrial mammal species and to explain why selection favors maintenance of an exclusive area (Davies and Houston 1984). In animal ecology, definitions of territory focus on exclusive occupancy by some means of repulsion (Wilson 1975; Brown 1964; Pianka 1978). Repulsion or defense can be overt and along a boundary or more subtle with exclusive areas maintained by mutual avoidance by means of advertisement (communication) or "keep-out" signals such as scent or song (Wilson 1975; Davies and Houston 1984).

The distinguishing characteristic of territory, and hence territoriality, is defense. Territory refers to areas where exclusive use is maintained by some means of defense (Wilson 1975). Territorial behavior can be absolute and fixed in space or can "float" in space and time and change with seasons and individual life cycle (Wilson 1975). "Home range" refers to an area that an individual or members of an integrated social group habitually patrol or cover during the course of daily sojourns and is not used to the exclusion of others of the same species (Wilson 1975; Pianka 1978). "Core area" refers to "the area of heaviest regular use within the home range" (Wilson 1975:256).

The economic defendability model predicts that territoriality is expected to develop when the benefits of exclusive use outweigh the

costs of territorial defense where some food resource is in short supply and is defendable (Brown 1964; Pianka 1978). That is, territorial organization will occur where the benefits of increased availability of certain resources exceed the costs of defending use of those resources. Territoriality will not evolve where food resources are sparse or very mobile because the cost of defense would exceed benefits gained. Factors that influence the economic defendability of food resources include resource quality and distribution in space or resource density; resource distribution in time or resource predictability; competition for the resource; territory size; time allocation; risk; and foraging efficiency (Brown 1964; Davies and Houston 1984; Dyson-Hudson and Smith 1978; Cashdan 1983, 1985; Smith 1987).

As noted earlier, the ecological model of territoriality was adapted to the study of hunter-gatherer spatial organization to analyze and explain crosscultural diversity (Dyson-Hudson and Smith 1978). Anthropologists recognized the adaptive relationships of spatial organization to food resources, but lacked a theory to analyze and explain it. Defining territory as "an area occupied more or less exclusively by an individual or group by means of repulsion through overt defense or some form of communication," territoriality is expected when "critical resources are distributed so that exclusive use and defense of a resource area produces a net benefit in resource capture" (Dyson-Hudson and Smith 1978:22, 36). The cost-benefit ratio of a territorial strategy depends upon the pattern of resource distribution primarily in terms of resource predictability

and resource abundance or density. This model predicts that the occurrence of a territorial system (maintenance of exclusive use) is associated with the ecological parameters of predictability and abundance of critical food resources (Fig. 2). Four hypotheses are suggested:

> Hypothesis 1. A territorial system (exclusive use) will occur under conditions of high density and predictability (in time and space) of critical resources. Defense costs (in time and energy) are reduced when the area to be defended is reduced and resources are abundant, so that it "pays" to space out into exclusive areas. Clumped resources may be easy to defend, but at very high levels of abundance, there is little benefit to be gained from defense. (Quadrant C)
>
> Hypothesis 2. With dense and unpredictable critical resources, information sharing about location of resources will be the most effective means of utilization. Even if resources are dense or clumped their unpredictability in time or space makes a territorial tie to a fixed area costly. Communal sharing of information leads to increased movement or nomadism to secure critical resources. (Quadrant A)
>
> Hypothesis 3. Large home ranges occur when critical resources are predictable but are scarce or patchy in distribution. Predictable but sparsely distributed resources may be worth defending when defense costs are shared. Conversely, defense can be costly when resources are dispersed. Sharing can be costly because it can deplete the food supply. (Quadrant D)
>
> Hypothesis 4. Dispersion occurs when critical resources are unpredictable and scarce. Nomadism is very high. Patchy resources that are unpredictable in time or space have high defense costs as the territory size to defend increases. Land and resources are treated as a commons. (Quadrant B)

The purpose of Dyson-Hudson and Smith's (1978) model is to explain diversity in hunter-gatherer land tenure by attempting "to

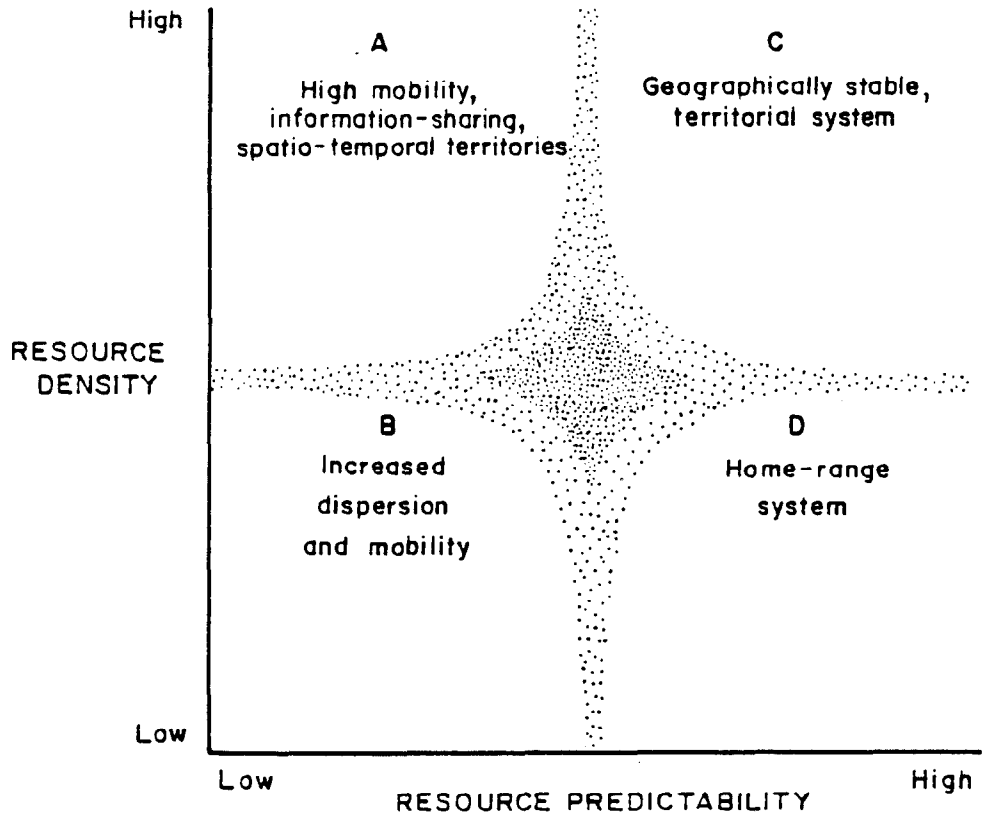


Fig. 2. General predictions of the economic defendability model for spatial organization (from Dyson-Hudson and Smith 1978:26).

predict the presence or absence of territoriality in terms of the spatiotemporal density and predictability of key resources" (Smith 1987:18). If it is shown that a change from a nonterritorial system to a territorial system occurs without correlated increases in key resource density and/or predictability, then the model would have to be rejected for a particular cultural group (Dyson-Hudson and Smith 1978:37). A crosscultural comparative analysis of many societies might show a statistically significant tendency for this theory's predictive validity.

The utility of the model developed by Dyson-Hudson and Smith (1978) was shown in their test of it using data from two hunting and gathering and one pastoral group described in the literature. Their examples show that under some circumstances, groups occupied certain areas more or less exclusively through overt defense or through social interactions (Dyson-Hudson and Smith 1978:36). Their analysis showed that exclusive use was correlated with the distribution of key resources which were predictable and dense. Where key food resources were unpredictable or scarce, the cultural group exhibited patterns of resource utilization based on dispersion, information sharing, and nomadism rather than exclusive use.

Similar tests of Dyson-Hudson and Smith's (1978) model by anthropologists have been lacking. However, several anthropological studies and at least one geographical study have applied the concept of economic defendability to understanding territorial dimensions of spatial organization (Vickers 1983; Sack 1983; Richardson 1982; Cashdan 1983, 1984).

The economic defendability model provides a useful means for analyzing the relationship between *Akulmiut* spatial organization and resource utilization and resource distribution. Questions related to the territorial organization of the *Akulmiut* are addressed by testing the hypothesis that exclusive use of resources occurs when critical resources are dense and predictable in time and space. Further, the model provides a basis for crosscultural comparisons of spatial organization and resource utilization among Alaskan Eskimo societies. This analysis is presented in the final chapter.

CHAPTER 2. METHODOLOGY

This study used primarily an ethnographic, field-based approach in the collection of data on historic and contemporary land and resource use and occupancy. Nunapitchuk was selected as the study community to record data on the *Akulmiut*.

Data collection methods included direct observation combined with systematic interviews with censused and sample households and key, knowledgeable residents of the community. All interviews were conducted in the Yup'ik language. The majority of the field research was conducted by the author, although the assistance of Yup'ik research assistants-translators was necessary since Yup'ik is the first language for all residents and the only language spoken by many. Interview guides and questionnaires were developed by the author. Field work began in June 1983 and extended through October 1983 and also took place periodically from November 1983 through February 1984 and from October 1987 through July 1988. In addition, published and unpublished materials on the economy, history, and culture of the Yukon and Kuskokwim river deltas area were examined. Because of the importance of salmon fishing both for subsistence and as a source of income, salmon catches and earnings for the community were recorded.

DATA COLLECTION

Procedures

Through the assistance of a key community member, a meeting was arranged with the Nunapitchuk tribal or (Indian Reorganization Act) IRA council to discuss a proposed study to be conducted in that community. The proposed study was presented in the Yup'ik language through a translator. After considerable discussion of the topic of study, proposed field methods for data collection, and safeguards for handling data provided in confidence, the study was endorsed. Suggestions were made for contacting key, knowledgeable and elder community members and procedures recommended on the order of field work.

The author and three Yup'ik research assistants-translators were resident in Nunapitchuk during June, July, and August 1983. During this time field work was supplemented by the assistance of a University of Alaska anthropology professor and a Yup'ik graduate student. Subsequent field visits of several days duration during September 1983 through February 1984 and between October 1987 and July 1988 were made by the author and one research assistant, two different individuals. All assistants-translators were Yup'ik residents of the region, were fluent in the Yup'ik language, and were college students at the time. One was related to several individuals in the study community. Each had a basic knowledge of sociocultural anthropology. Survey questionnaires administered for recording

salmon fishing and trapping information described below are the only interviews that were sometimes administered by research assistants-translators in the absence of the author.

Several data collection methods were used dependent upon the information needs of the study and the time available to collect the information given the availability of researchers. Information on the following types of variables was collected:

1. fish and wildlife species used historically and at present;

2. types, timing, and methods of hunting, fishing, trapping, and gathering historically and at present;

3. land use and occupancy historically and at present for harvesting fish and wildlife;

4. detailed characteristics of two major subsistence pursuits -- salmon fishing and trapping -- in terms of location, timing, technology, property relations, composition of work groups; and harvest levels;

5. demographic information including ages, number, size, composition of households, and genealogy for the present community; and number, size, and household kinship information of early 20th century settlements;

6. number, types, and characteristics of paid employment in the community including commercial fishing, trapping, and wage employment;

7. public and private facilities and major equipment related to the village economy;

8. quantitative information on the amount of wild food harvested by a sample of households during the study period; and

9. ethnohistoric and historic information on the development of the community related to the economy.

The methods used to collect data for each set of variables are described in the following sections.

Population and Employment Census

Information on population, household composition, kinship, and wage employment for 1983 was collected at the beginning of the study with the assistance of key respondents and city and health clinic employees. This information was collected for members of all households. Each household was assigned an identification number and each individual within the household assigned a unique number. Census information included date and place of birth and sex or each individual. Social composition of all households was recorded. Genealogical information was recorded for all community members but necessarily included kinship information for deceased persons as well as individuals who no longer resided in the community. Yup'ik names for all male and female household heads were recorded as well as the Yup'ik name of each person's mother and father. This was necessary for insuring accuracy of kin relations and for constructing genealogies of historic settlements. In most cases, elderly key respondents were familiar only with an individual's Yup'ik names(s). Community census information does not include individuals who were not year-round residents such as teachers and principals who were not otherwise permanent residents of the village.

Wage employment information for 1983 recorded consisted of the type of job, employer, hourly wage, and duration of job in terms of

number of hours per week and number of months per year. Individuals, both primary and alternate, who held each position were recorded.

Commercial salmon fishing self-employment was documented using state of Alaska Commercial Fisheries Entry Commission records based on "fish ticket" information that documents the number of pounds per species of salmon purchased by company from a permit holder. For each permit holder, extent of participation, timing, species and quantities harvested, and earnings were recorded for 1982 and 1983.

Earnings from trapping were estimated using current prices paid for pelts and number of furbearers reported harvested by trappers during individual interviews described below.

Fish and Wildlife Resources and Use

Information on fish and wildlife species utilized and seasonal round of subsistence activities historically and at present were recorded through key respondent interviews at the onset of the study. Key respondents were identified during discussions with members of the IRA council. Five elder key respondents were interviewed. Field identification guide books (Morrow 1980; Armstrong 1983; Alaska Magazine 1982) for waterfowl, berries, and fish species aided in identifying local species utilized and facilitated recording Yup'ik terms used by the *Akulmiut*. Plant species were identified during a field trip with an elderly Nunapitchuk man to collect specimens which were subsequently sent for identification to specialists at the University of Alaska Museum and the Institute of Northern Forestry in

Fairbanks. When possible during the course of the study local terms for different species were crosschecked by direct observation of the harvested species.

Yup'ik terms for calendar months were crosschecked several times with three elderly key respondents recognizing the variability apparent in extant Yup'ik literature. Historic and current use of resources, timing, and methods were similarly recorded with five key respondents. Current timing and methods were also recorded by direct observation.

Public and Private Facilities and Structures

In addition to the community census and initial key respondent interviews, the author was oriented to the people and their community and activities by censusing various facilities, structures, and major equipment in the community by direct observation. This type of census was also performed later in the study while conducting interviews at salmon fishing camps. In the community, residential dwellings, subsistence storage and processing facilities (caches, drying racks), steambath houses, public and commercial facilities, and major equipment used for subsistence activities such as boats and snowmachines were recorded. Distribution of dwellings and public and commercial structures by occupants and owners were plotted on blueline copies of existing aerial photographs and an electrical distribution map. Food and fuel costs were recorded by conducting a cost survey of selected items at the general store and fuel facility.

Costs for the use of electricity were derived from the Alaska Village Electric Cooperative (AVEC) which provides electrical service to community households.

Subsistence Outputs

Quantitative data on household fish and wildlife harvests constituted the second major component of data collection. At the request of the IRA Council in May 1983, systematic surveys using questionnaires (Appendices 1 through 5) commenced after background information on seasonal round, historic settlement pattern, and kinship relations had been recorded. This served the purpose of orienting the author and translators-assistants to the culture and people of Nunapitchuk.

A census of all (N=36) subsistence salmon fishing households was undertaken for collecting detailed information on that activity to address research questions related to customary principles of land and resource use and historic involvement in the salmon fishery by the *Akulmiut*. Systematic interviews were conducted with all subsistence salmon fishing households using a survey instrument (Appendices 1 and 2) to record information on species and quantity harvested; fishing location; persons involved in salmon fishing and processing and their kin relationship; processing and storage methods and facilities; household history of salmon fishing and locations through time; and major equipment used in salmon fishing (boats, outboards, nets). Either the male or female head of household was

interviewed. In some cases, both contributed to the interview. Physical structures (smokehouses, drying racks, tents, cabins, and other structures) associated with salmon fishing activities at fish camps were recorded by direct observation and plotted on a sketch map showing the physical layout of each fishing camp. All fish camps and fishing areas were located on U.S. Geological Survey (USGS) topographic maps (scale 1:63,360) after direct observation. Interviews took place at salmon fishing camps along the lower Kuskokwim River and at homes in the village. Surveys were conducted during July and August of the 1983 fishing season with subsequent visits as necessary to record salmon harvests during the 1983 fishing season.

Current game management issues related to trapping directed the content of interviews of all (N=18) trappers in Nunapitchuk. A list of current trappers was generated with the assistance of key respondents and each identified trapper of mink or beaver was systematically interviewed using a survey instrument (Appendices 3 and 4). Information on harvest, use, trapping methods and means, and trapping areas was recorded for the 1982-83 trapping season. Other information recorded included natural history comments on trapped species, areas previously used by the interviewee, and other trappers known to have used a trapping area in previous years. Trapping areas were indicated on mylar overlays of USGS topographic maps (scale 1:63,360) during interviews with trappers. Other areas used prior to the study year during the lifetime of the trapper were noted. As the primary species trapped were also used for food, the amount

edible meat from beaver, mink, and land otter contributed to the overall subsistence output. Surveys with identified trappers took place in their homes during August 1983. Harvest information for additional trappers not identified by key respondents (N=5) was derived from Alaska Department of Fish and Game fur sealing and fur dealer export records.

Estimates of quantities of fish and game harvested for subsistence was recorded for a 24 percent sample (n=17) of Nunapitchuk households (N=70). These households represented an opportunistic sample selected first on the basis of household participation in subsistence salmon fishing activities (no salmon fishing [N=30, n=6]; village-based [N=17, n=5]; and fish camp-based [N=23, n=6]). Within each major category, households were selected to represent different extended family groups and a cross section of cash-earning activities (seasonal and full-time wage employment, no wage employment, no cash-earning income).

Subsistence information for sample households was collected using an interview guide (Appendix 5) to record subsistence harvests of fish and wildlife and mylar overlays of USGS topographic maps (scale 1:63,360) to record geographic areas used for hunting, fishing, and gathering during 1983. Other contemporary use areas were recorded by direct observation of subsistence activities during various field trips. Historical depth of land use was recorded during these interviews as respondents were also asked to indicate other areas used during their lifetime, but not in 1983. Additionally, place-name information and Native allotment selections

and date of first occupancy were used to compile land use during the 20th century. Interviews were generally conducted with the male household head in the IRA council meeting room or at the repsondent's home. In some cases we were directed to other household members who were knowledgeable of the quantity harvested of a particular species.

Harvest information of sample households was based on retrospective recall for the 12-month period from January through December 1983. Salmon fishing and trapping data were previously recorded for some sample households during earlier interviews. In the case of Alaska blackfish, quantities were estimated in terms of 100-lb. gunny sacks or washtubs (size 0 or 1); and for berries quantities were estimated in terms of five-gallon buckets.

The retrospective recall method of estimation necessarily results in a certain amount of error, but is the only feasible method in a research project of comparatively short duration. Even for researchers resident in a community throughout a 12-month period, for example, it is difficult to record daily or weekly harvests for sample households without devoting considerable time to the activity. Both the author and research assistant-translator had previous experience in conducting harvest surveys and were familiar with harvesting activities and local units of measure for fish and wildlife in the area. Waterfowl harvests were recorded by species using a field guide (Armstrong 1983) as an aid in recalling harvest. Freshwater fish harvests were recorded by seasonality of harvest when different types of gear are used. This aided in more providing more precise estimates.

There have been no independent estimates of subsistence output for Nunapitchuk by state or federal agencies with two exceptions -- annual subsistence salmon and furbearer harvests recorded by the Alaska Department of Fish and Game. Salmon harvest estimates by the state have been based on postseason door-to-door surveys or the return of catch calendars distributed to primary salmon fishing families. Poor return rates, incomplete and out-of-date lists of fishing families, and inexperienced interviewers result in relatively unreliable estimates of household and community harvest levels. Sealing requirements for furs do not apply to all trapped species. In the case of trapping, furs retained for home use are oftentimes not sealed and therefore are not accounted for in either sealing or fur dealer export records. As a result, these records provide only a minimal count of furs taken by trappers. A regionwide study of waterfowl harvests by a University of Alaska professor reported 1964 Nunapitchuk waterfowl harvests (Klein 1966). Finally, a local native environmental advocacy organization conducted a harvest study in the neighboring *Akulmiut* community of Atmautluak in 1983 (Nunam Kitlutsisti 1984). Survey results for sample households, however, are not readily comparable.

Because of the opportunistic sampling method, estimates of subsistence outputs serve to only illustrate general levels of household production for the study year. They should not be used to extrapolate total community harvests (for example, by multiplying average sample household outputs by total number of households). Similarly, they should not be considered typical of annual household

harvests. The sampled households reveal considerable variability in household subsistence production, not unlike that revealed for communities where harvests were recorded for all households. This broad range of variability, in fact, points to the desirability of using a stratified random sampling design for estimating community output. At the time of this study, a suitable method for stratifying Nunapitchuk households or other lower Kuskokwim River communities to document fish and wildlife harvests had not been developed, nor was a simple random sample deemed appropriate for this study because of the extreme variability of household subsistence output demonstrated in other Alaskan Native communities (Walker 1988). Determining "typical" harvest levels requires developing a tested methodology for sampling lower Kuskokwim community households as has been done for other regions of the state (Walker 1988). Total community salmon and furbearer harvests resulted from separate surveys by censusing all participating households as noted above and are considered complete.

Harvest numbers of edible resources (Appendix 6) were converted into their dressed weight equivalents (Appendix 7). These were generally determined by identifying "average" weights for each species (or species category, such as ducks) generally by using recorded biological information. In some cases, estimates were made by the author or a research assistant by actually weighing the wild species.

Land Use and Occupancy

Information on land use and settlement was gathered using several methods. As noted above, contemporary use areas were recorded during interviews with sample household members and in some cases by direct observation. Historic land use areas and settlement were noted also during those interviews in reconstructing an individual's history of use of an area. At that time, other areas used previously were noted. In addition, historic land use and settlement were noted during interviews primarily with five key respondents recommended by IRA council members as being considered particularly knowledgeable about historic subsistence activities. They included four men and one woman, all over 60 years of age, who were born and raised in an *Akulmiut* village, and who were long-term residents of Nunapitchuk (60+ years). These individuals were also elderly heads of the primary local families. Four other elderly people, two men and two women, were consulted for more specific information about a particular settlement, family settlement history, or place-names verification.

Historic land use and occupancy information was also derived from the Native allotment case files of the U.S. Department of Interior (1988a), Bureau of Land Management. All applications for Native allotment parcels were reviewed for the area identified as being customarily used by the *Akulmiut*. Information on applicant's name, residence, date of first occupancy, and location of parcel were recorded. Since applications had to be filed prior to December 1971

and stipulated a measure of previous use, they indicate historic use to some extent. Furthermore, applications submitted by deceased individuals remained on file.

Other documents used for reconstructing historic land use and settlement were various published and historic sources. These included reports of decennial censuses in Alaska, explorations, and reconnaissances as discussed in the following chapter.

A primary means of recording historic land use and occupancy was through recording Native place-names, Yup'ik terms used by the *Akulmiut* for natural features, settlements, and other places of record. These names (Appendices 8 and 9) were recorded for the area used by the *Akulmiut*. Community officials recommended an elderly man, born in 1901, who grew up in the formerly occupied *Akulmiut* settlement of *Nanvarnarrlagmiut*. This man had been active in subsistence activities throughout his life and, at the time of the study, was still able to fish for himself. He was considered a local expert on Yup'ik ways and the *Akulmiut*; traditional use areas; subsistence activities; and place-names. He spoke only Yup'ik.

One hundred sixty-one Yup'ik place-names were recorded within a 3,000 square-mile area. In addition, any subsistence use of the place or associated event was recorded. Information was elicited in Yup'ik and recorded on audio cassette tapes and index cards by one of the research assistants, a young Yup'ik man from the lower Kuskokwim River area. This young man was considered by linguists in Alaska as especially talented in writing Central Yup'ik. Questions and the approach used for eliciting the names were initiated by the author

who has used a similar methodology in other place-names studies (Andrews *et al.* 1980, Andrews and Kari [1981] field notes; Andrews 1988; Stokes 1984). The list was reviewed and edited by two other Yup'ik-speakers who were professionals in the field of Yup'ik linguistics. While recording the place-names, their geographic location was plotted on USGS maps (scale 1:63,360). Most locations were subsequently reviewed with the respondent. During the course of other interviews in Yup'ik with key respondents, place-names that were mentioned and were previously recorded by us were clarified as to location as another means of review. In the field, travel by boat to some of the areas by the translators and myself also confirmed the location of many places noted on the maps during field work. The author, however, accepts responsibility for any errors in locating places on the maps. The few discrepancies in the location of some places north of Baird Inlet were clarified by additional work with another elderly *Akulmiut* man (born 1907) who had lived many years in that area. The few changes in location testify to the primary respondent's expert knowledge of the area and his ability to apply that knowledge to USGS maps.

Finally, because this key respondent was raised in one of the four primary *Akulmiut* settlements of the early 20th century and after marriage moved to another, his experience reflects the land use area of those communities. Named places customarily used by residents of the other communities may be omitted from the list. In recording information about use of these places for subsistence, however, it is clear that he also identified places used primarily by residents of

one of the other communities (such as the former settlements at *Paingaq* and *Nunacuaq*), although there may be some omissions.

Monetary Income Estimates

Estimates of total monetary incomes of residents were derived using several methods. Commercial fishing incomes for all Nunapitchuk permit holders (N=36) were recorded from fish buyer records of the Commercial Fisheries Entry Commission. Confidentiality of individual and household information was safeguarded by means of a numbering system to prevent identification with any individual fisher and household. These figures represented gross monetary incomes in the commercial fishery. Individual incomes were assigned to appropriate households for determining household income.

Commercial trapping earnings were estimated based on individual trapper reports of number harvested by species multiplied by the average price paid in 1983 per pelt by local fur buyers. These figures may overestimate actual earnings as not all furs were sold, but some were retained for home use. Again, potential cash value of furs were assigned to the appropriate household.

Wages paid for most public and service employment positions were on file in the city office and provided with their assistance. Number of hours paid per week, duration of job, and individual(s) working in the position were identified by the same method. Confidentiality of this information was maintained in the same manner

described above as it was for all quantitative information. Wages paid for positions with the federal and state-operated schools were derived from standard pay schedules for the school district for similar positions. Most hourly wage earnings for individuals employed in the private sector were determined by individual questioning. Total earnings for these positions were extrapolated (multiplying hourly wages by number of hours per week by number of months per year). Income from cannery employment was estimated by contacting the few individuals engaged in that type of employment. In all but 9 cases (61 of 70 households) it was possible to estimate household annual cash earnings.

Transfer, dividend, food stamp, unemployment, and retirement payments and National Guard earnings were not recorded due to the size of the community and the necessity of contacting each household for reasonably estimating annual income from these sources. Records of these payments are not readily available from state agencies or the military on an individual or household basis. However, average per capita income from transfer payments for the region are presented.

DATA ANALYSIS

Data analysis was conducted at the individual, household, and community level for income information, salmon fishing, and trapping. Quantitative data -- socioeconomic, demographic, and harvest data -- were entered onto computer files which were analyzed using the

Statistical Package for the Social Sciences (SPSS) and Lotus 1-2-3 software programs. Confidentiality of information was safeguarded by assigning a unique number to each household and to each member within the household.

Average individual and community earnings and range were computed for commercial salmon fishing, trapping, and wage employment. Total community earnings from each of these cash-earning activities was also calculated. Wage employment positions were analyzed also in terms of type of employment (full-time, part-time, and seasonal), age of employed individual, average earnings per individual for each job type, and average wages for each employer category (city, state, federal, private). An analysis of cumulative percentage of total wages by cumulative percentage of total households depicted the distribution of earned income across the community. The relationship between earned household income and federal poverty income guidelines was computed to show the percentage of households above and below the guideline.

Commercial salmon fishing earnings were analyzed in terms of average earnings per permit holder for each species of salmon harvested for 1982 and 1983. Two analyses revealed the cumulative percentage of income by cumulative percentage of permit holders and cumulative percentage of periods fished and showed the distribution of commercial fishing earnings across fishermen and amount of time fishing.

Potential earnings from trapping were analyzed to show average trapper earnings and total community earnings from trapping in

addition to trapping harvests. Total income from wages, commercial fishing, trapping was examined to reveal the percentage contribution to households from each of these earned income sources. Total household earned income was calculated and the range and average income described.

Subsistence output was analyzed at the household level for sample households as described above. Percentage of households harvesting each species, average household harvest (in pounds edible weight), and per capita harvests were computed. Total sample harvest and percentage contribution to total harvest by species showed the relative production. The cumulative percentage of total pounds harvested by the cumulative percentage of households showed the distribution of the harvest across sample households.

Subsistence salmon harvests were analyzed for a 13-year time period, 1971-83, using Alaska Department of Fish and Game records and data from this study. Average harvests per fishing family by species were computed for each year and reflected the trend in subsistence salmon harvests during the period prior to the commercial fishery and since its development. Further, subsistence salmon production was analyzed in terms of geographic location of fishing operations and relationship to participation in the commercial salmon fishery.

Census and demographic information were organized to reveal household social composition in terms of age and kinship, and for comparing age of household heads and household size. Frequency of household sizes and frequency of age of household head were determined for 1983. Household kinship type (nuclear, extended

family, solitary) was also established for community households. Analysis of other demographic characteristics of households included the relationship between age of household head and number of dependents and adult offspring residing in the household. Marriage patterns were analyzed to show the extent of village and regional endogamy. Village social composition for 1983 was described from an analysis of genealogical relationships of households and extended family groupings across households.

Information on territorial dimensions of subsistence for the study year and the 20th century was organized to reveal geographic extent of land use, types and characteristics of species harvested, seasonality, settlement type, and customary principles of land and resource use. Land use and occupancy was analyzed by using information recorded from Yup'ik place-names, historic census records, Native allotment applications, and maps developed during interviews with sample households. The analysis of intersocietal relationships was influenced by Shinkwin and Pete (1984) who examined the structure of Yup'ik society and the role of ceremonialism in sociopolitical relations of the *Taprarmiut*.

Customary principles of land and resource use were analyzed following a format developed by Wolfe (1982) for another Yup'ik society, but was applied also to rules governing land and resource use between groups. This analysis focused on the principles of geographic affiliation, first-users, kinship affiliation, participation, and optimization.

Changes in *Akulmiut* land use and subsistence were analyzed by examining the major endogenous and exogenous influences on these activities over time (*ca.* 1830-1983). The endogenous influences were the cultural principles of land and resource use described above. The exogenous influences were categorized in terms of market economy (fur trade and salmon fishing); technology (hunting, fishing, transportation, storage); centralization (allotments, school attendance, Native claims, public lands act, wage employment); and fish and game regulations (hunting, fishing, trapping, use).

Identification of critical food resources and their abundance and predictability was accomplished primarily by two means. Biological information on the distribution and characteristics of the species was used to determine relative abundance and predictability. In addition, accounts of key respondents contributed to the emic point of view of species abundance and predictability. Identification of critical resources was established by analyzing the relative percentage of contribution of each species to total subsistence production for sample households in 1983.

CHAPTER 3. THE *AKULMIUT*: THE PEOPLE OF THE TUNDRA

THE NATURAL SETTING

Geomorphology

The Yukon-Kuskokwim Lowland spans the region between the Yukon and Kuskokwim rivers from their closest point about 200 miles from their respective mouths to the Bering Sea coast. The Yukon and Kuskokwim river deltas create a triangular-shaped, alluvium-floored marshy plain. Unconsolidated and older coastal deposits are interlain with alluvial and marine sediments (Selkregg 1975:59). Quarternary sand and silt occurs to an unknown depth (Wahrhaftig 1965:32). The area was not glaciated during the Pleistocene. As part of the Bering Shelf physiographic province, this lake-dotted lowland is abundant in thaw sinks because of the thick loess cover (Wahrhaftig 1965:29). It is estimated that 30 to 50 percent of the lowland is lake surface (Wahrhaftig 1965:32).

The numerous meandering streams of low gradient include many that flow into the Bering Sea, some of which are former channels of the Yukon River. Others are part of the Kuskokwim River drainage which at its mouth is a marine estuary that is probably a drowned river mouth (Wahrhaftig 1965:32).

In the *Akulmiut* area (Fig. 1) relief is low, generally sea level to 50 feet in elevation. The highest elevation is in the Ingakslugwat (*Ingerrlugaq*) Hills whose highest peak is 620 feet above sea level. These are basaltic hills with cinder cones and shallow volcanic craters (Wahrhaftig 1965:32). Among the numerous lakes occur 3 of the 11 largest lakes in the Kuskokwim Bay Subregion: Kayigayalik Lake -- 19 square miles, Takslesluk Lake -- 31 square miles; and Nunavakpak Lake -- 53 square miles (Selkregg 1975:106).

The entire area contains discontinuous permafrost which begins several inches to 40 inches below the surface (Hinton and Girdner 1968:7, 10). The area consists of poorly-drained silty soils with a thick peaty surface layer. Silt loams are frozen at less than one foot (Hinton and Girdner 1968:11-12). Permafrost in this region has greatly influenced the formation of pingos, thaw lakes, and polygonal ground patterns (Burns 1964:9). Pingos, in turn, play a key role in the distribution and abundance of mink in the area (Burns 1964), as described below, and are important to the subsistence economy because of the wildlife they foster. The region is noteworthy because of its flatness and extremely low elevation: it is frozen, wet, and contains innumerable lakes and meandering waterways that appear like an insolvable maze to all but experienced navigators and local inhabitants.

Nunapitchuk is situated at 60°53′ north latitude and 162°29′ west longitude within a 3/8-mile wide bend of the Johnson River and along the opposite bank (Fig.1). It is 26 air miles northwest of the regional center of Bethel and 425 miles west of Anchorage. The area

is low and marshy with few suitable areas for construction. All structures on both sides of the Johnson River are accessed by a network of wooden boardwalks. The two areas on opposite sides of the river are separated at their narrowest point by a 330-foot expanse of water.

Climate

The climate in the noncoastal portion of the Yukon and Kuskokwim river deltas northwest of Bethel is primarily influenced by the Bering Sea, 100 miles west and southwest, and the Kilbuck Range of mountains, 40 miles east and southeast (U.S. Department of Commerce 1987:7B). Secondarily, the Aleutian Chain further influences the climate of the Bethel area. Both mountain ranges direct storms into the Bering Sea. These storms often result in wind speeds greater than 50 mph. A foehn effect is often produced in winter when strong southerly winds are affected by the mountains to the south and result in temperature increases up to 50 degrees in less than 24 hours (U.S. Department of Commerce 1987:7B). Winter foehn effects can bring about major changes in subsistence activities discussed in Chapter 5. Average wind speeds in the Bethel area have been north northeast at 11.1 knots over one 20-year recording period, with extreme winds south southeast at 54 knots (Selkregg 1975:15).

The climate in the vicinity of Bethel is transitional, being somewhat more maritime than continental (U.S. Department of Commerce 1987:7B). Daily temperature extremes are modified because of the

more maritime character of the climate. In June and July as well as late December and early January, continental air dominates and the climate is drier with more extreme daily temperatures (U.S. Department of Commerce 1987:7B). In January, the mean daily maximum temperature has been 13.7°F. and the mean daily minimum temperature -0.6°F. (1957-86) (U. S. Department of Commerce 1987:4B). In July, the mean daily maximum temperature has been 62.2°F. and the mean daily minimum temperature 47.1°F. Average annual temperature has been 29.1°F. The lowest temperature recorded was -54°F. in 1947 and the highest was 90°F. in 1926 (U.S. Weather Service, Bethel, 1988; pers. comm.). Lowest annual temperatures usually have occurred in January, but occasionally occurred in March. Warmest annual temperatures have tended to occur in July, but have occurred in June.

August has been the wettest month with 20 percent of the annual precipitation occurring during this month, on the average (1957-87) (U.S. Department of Commerce 1987:4A). Average annual precipitation has been 17.1 inches with an average annual snowfall of 45.7 inches (1957-87). During the study year, 1983, snowfall was the lowest in 30 years (1957-87).

The climate of the Bethel area has been getting warmer and drier overall during the 1960-84 period (Table 1). In the early 1980s, temperatures were less extreme and the average annual temperature was warmer with considerably less snowfall (Table 1). These changes affect both summer and winter subsistence harvesting and processing.

Other factors which affect subsistence activities are the freeze-up and breakup of river and lake ice. In the early 1970s, the

TABLE 1. AVERAGE TEMPERATURE AND PRECIPITATION DATA FOR BETHEL, ALASKA FOR THREE TIME PERIODS, 1960-84*

5-YEAR PERIOD	AVG. PRECIPITATION (inches)				AVG. SNOWFALL (inches)	AVG. EXTREME LOW TEMP. (deg. F.)	AVG. EXTREME HIGH TEMP. (deg. F.)	AVG. ANNUAL TEMPERATURE (deg. F.)
	June	July	Aug.	Annual	Annual			
1960-64	1.5	2.2	3.5	16.0	52.2	-34.4	80	27.6
1970-74	0.6	2.6	3.1	14.8	51.3	-37.6	79	27.2
1980-84	1.7	2.6	2.5	15.5	37.9	-27.2	76	30.8
30-yr. average 1957-87				17.1	45.7			29.1

*U.S. National Weather Service Office, Bethel; 60° 47′ N, 161° 48′ W; elevation 125′

Johnson River had a mean fall date of October 22 when river ice was safe for humans and October 29 when it was safe for vehicles (such as snowmachines, trucks, and small aircraft). This has been slightly earlier than the average freeze-up date of October 29 at Bethel on the Kuskokwim River (Selkregg 1975:21, 32). In spring, the Johnson River was unsafe for vehicles by May 13, on the average, and unsafe for humans on May 17. This has been slightly later than the average breakup date of May 15 at Bethel (Selkregg 1975:21, 32). On the Johnson River, at Nunapitchuk, there are approximately 206 days during which river ice is safe for human travel. This is an important factor for subsistence and other activities, particularly since the community is dispersed along both sides of the river.

The lower Kuskokwim River is affected by tidal influences. This, in turn, has some affect on river travel on the lower Kuskokwim, but also on the lower Johnson River. At Bethel, the maximum high tide generally is 3.9 feet and the maximum low tide is 0.3 feet (Selkregg 1975:32).

Plant and Animal Communities

Two vegetation types or ecosystems occur in the area of the *Akulmiut*. Predominate is the "wet tundra" ecosystem characterized by vegetation which is primarily "a sedge and cottongrass mat, usually not formed into tussocks" (Viereck and Little 1972:22). A small portion of the area consists of "moist tundra." In these areas the slightly higher relief varies from "developed cottongrass tussocks with sparse growth of other sedges and dwarf shrubs to stands where tussocks are scarce or lacking and dwarf shrubs are dominant" (Viereck and Little 1972:21). The wet tundra ecosystem supports several species of low-growing willow, dwarf and resin birch, bog-rosemary, narrow-leaf Labrador tea, bog cranberry and blueberry (Viereck and Little 1972:22). Grasses and sedges are rooted in mosses and lichens with dwarf shrubs on slightly raised ridges. In standing water, along shorelines, and in shallow ponds rooted aquatic plants such as horsetail, pondweed, bur reed, and mare's tail are common (Selkregg 1975:156, 162). In the month of June, there are 24 hours of continuous sunlight and civil twilight, whereas in December

there are 7.5 hours and in September and March there are 13 hours (Selkregg 1975:18).

In the area used by the *Akulmiut* there is one particular type of natural feature that influences the occurrence of plants and some species of wildlife. Pingos or "frost-mounds" result from the freezing and refreezing of water-rich ground. They occur throughout the area immediately north of Nunapitchuk and along the north side of Baird Inlet. They are 15 to 200 feet across and usually less than 30 feet high (Burns 1964:13). They also occur within the village of Nunapitchuk. Pingos are important in this area because "they are the only land features which provide suitable natal den sites for mink" and are utilized by other wildlife such as waterfowl and muskrat, in part owing to their being surrounded by or adjacent to water (Burns 1964:13). Plant succession on newly established pingos contributes to their use by wildlife (Burns 1964:17).

Wildlife species include large game including black bear, moose, and muskox; small game such as snowshoe and arctic hare; game birds such as willow ptarmigan and snowy owls; numerous species of waterfowl including dabbling and diving ducks, geese, brant, and swans; and furbearers such as beaver, mink, muskrat, otter, red fox, and weasel. Fish include several species of freshwater fish such as sheefish, burbot, whitefish, pike, and blackfish. Several other species of fish, wildlife, and birds occur in the area which are not used for subsistence. The species harvested by Nunapitchuk residents are described in Chapter 5 and also are identified in Appendix 6.

THE CULTURAL SETTING

The *Akulmiut* are the people of the tundra. More specifically, the term refers to those who inhabit the lowlying, lake-studded, treeless basin between the Yukon and Kuskokwim rivers; the area between these two great rivers at the points where the Yukon begins to flow north and the Kuskokwim begins to broaden and flow into Kuskokwim Bay. In a generic and literal sense, the term refers to "inhabitants of the settlements of the area in between" which is derived from the base *akula* meaning "area between" or "that which is in the middle." As discussed below, *akula* is commonly used as a geographical term referring to areas or places situated between two topographical features. It is commonly used in place-names. Today, the term *Akulmiut* specifically refers to the people who inhabit the communities of Nunapitchuk, Kasigluk, and Atmautluak situated in the basin between the Kuskokwim and Yukon rivers (Fig. 1).

Historically the term also was used appropriately to designate another tribal group situated between two geographical features of the lower Yukon River region. This designation or "name" is discussed later as it pertains to the identification of the *Akulmiut* in the historic literature of the Yup'ik of the Yukon and Kuskokwim river deltas.

Because *Akulmiut* refers to both the people and the land, or more precisely a settled land, the discussion which follows describes both the cultural context of the *Akulmiut* and the natural setting of the area they occupied (historically and in 1983) and the natural

resources they used. The cultural setting includes their language, territory, and the historical development of the region. These sections provide the basis for identifying the *Akulmiut* as a Yup'ik society (Shinkwin and Pete 1984) and for describing the historical context of their subsistence economy and culture. The historical development of Nunapitchuk and a description of the modern community are described in the following two chapters.

Language

In Alaska there are two Eskimo language groups: Yupik Eskimo and Inupiaq Eskimo (Krauss 1980). The Yupik language is thought to have become distinct from an earlier form of Yupik-Inupiaq sometime between 1000 B.C. and A.D. 1000 (Woodbury 1984:61). Yupik is spoken in communities along the Bering Sea coast and further inland from Unalakleet on Norton Sound south to the southern shores of Bristol Bay, as well as in communities situated along the North Pacific Ocean from the Alaska Peninsula to Prince William Sound in the Gulf of Alaska and Kodiak Island (Fig. 3). Yupik is also spoken on St. Lawrence Island situated in the northern Bering Sea.

Three Yupik Eskimo languages historically and currently are spoken in Alaska: Central Alaskan Yup'ik, Siberian Yupik, and Alutiiq (Krauss 1980; Jacobson 1984; Woodbury 1984). (The apostrophe which indicates germination of the [p] is used by some linguists in the word "Yup'ik" to distinguish Central Alaskan Yup'ik from the other Yupik languages [Reed *et al.* 1977:iii; Jacobson 1984:1).

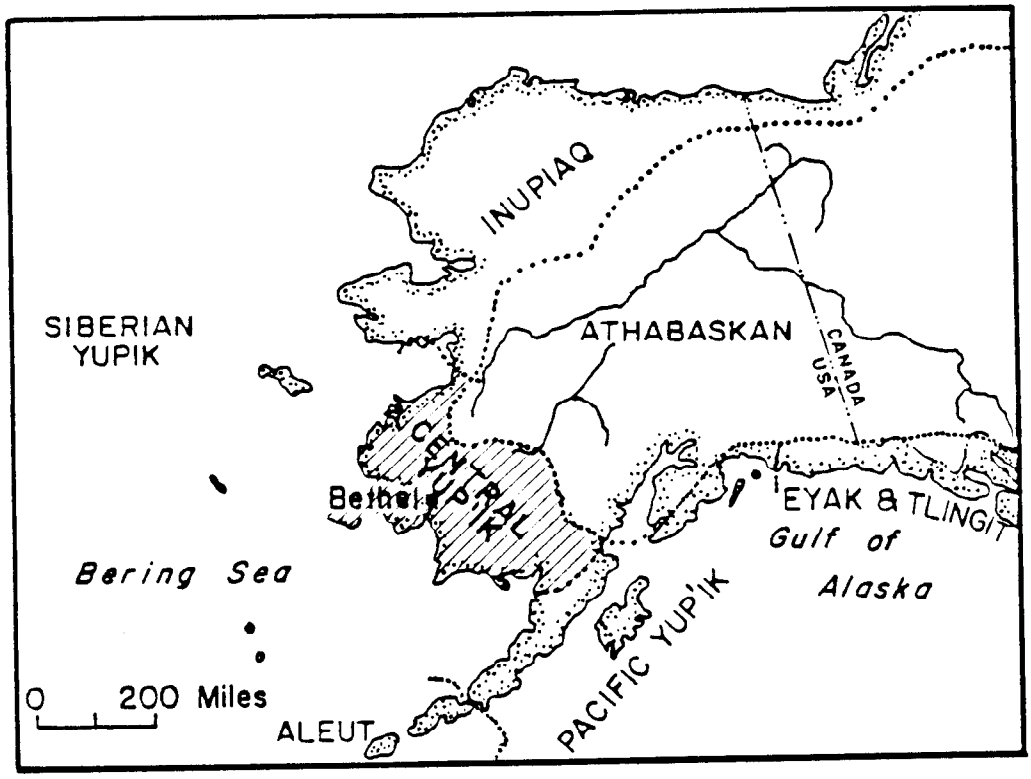


Fig. 3. Distribution of major Alaska Native languages including Central Yup'ik.

Central Yup'ik is spoken in communities from Norton Sound to the southern shores of Bristol Bay including Nunivak Island and the lower portions of the Yukon and Kuskokwim rivers (Fig. 4). The greatest linguistic diversity in the Eskimo language family is found in this area (Krauss 1980:91). Within this area 10 dialects of the Central Alaskan Yup'ik language have been identified (Jacobson 1984:28).

Central Yup'ik consists of the seven dialects which form "General Central Yup'ik" (GCY) (Jacobson 1984:28; Woodbury 1984:52) and the three other dialects which form another group (Fig. 5). Subdialects of General Central Yup'ik form three groups: Core, which includes the Kuskokwim River area below Aniak and south along the coast to southern Bristol Bay; Peripheral, which includes the Kuskokwim River area above Aniak, the lower Yukon River area, and Lake Iliamna; and Mixed, which includes Nelson Island and the Nushagak River area (Woodbury 1984:52). Linguistic studies of the General Central Yup'ik dialect and subdialects suggest that the General Central Yup'ik dialect spread rapidly and relatively recently from the region of the lower Yukon (Woodbury 1984:53).

The Kuskokwim subdialect (Fig. 5), spoken by the people of Nunapitchuk and the other *Akulmiut* communities, has the greatest number of speakers among all Yupik dialects. In Nunapitchuk as in the other *Akulmiut* and lower Kuskokwim River communities, Yup'ik is the first language spoken by virtually all inhabitants. Similarly, among all Native languages in Alaska, Eskimo and non-Eskimo, Yup'ik is numerically strongest (Krauss 1980:45). In the past two decades,

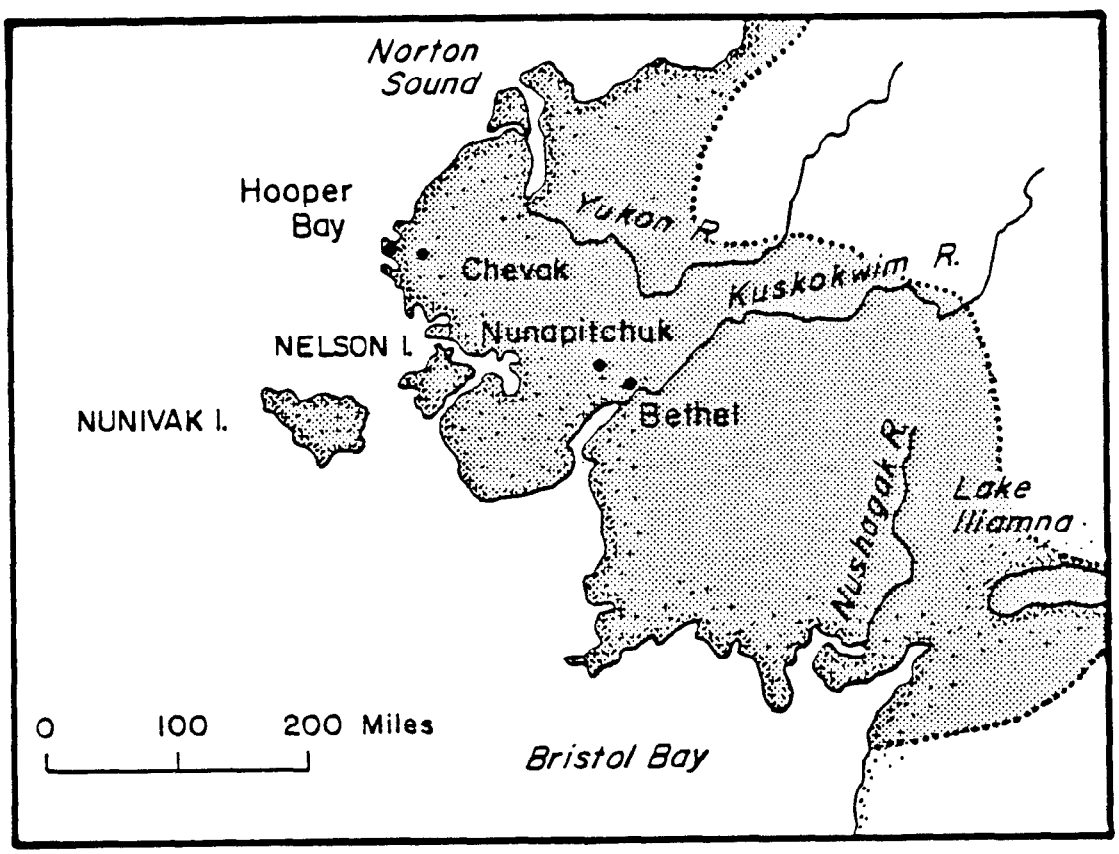


Fig. 4. Geographic extent of the Central Yup'ik language of western Alaska.

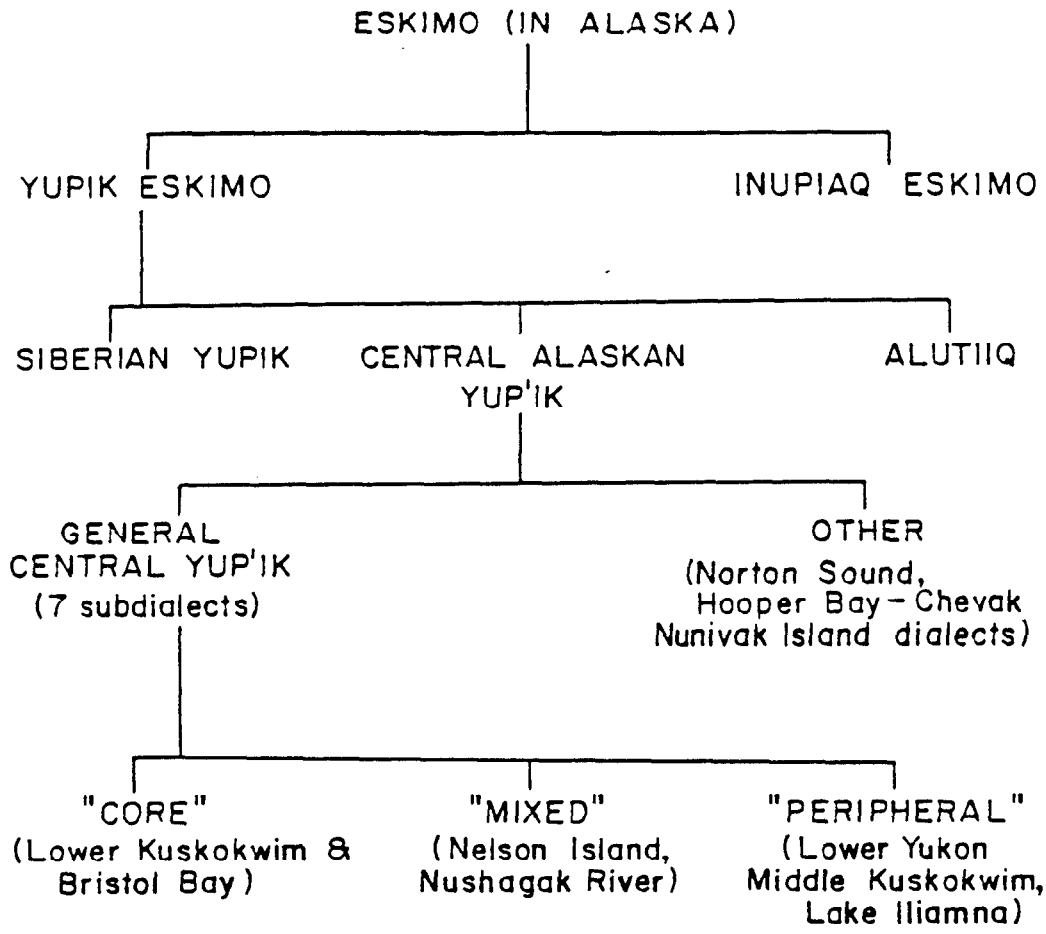


Fig. 5. The Central Yup'ik language among Eskimo languages in Alaska.

several *Akulmiut* have contributed to linguistic studies of General Central Yup'ik and to the Yup'ik writing system which was in use in 1983 (Reed *et al.* 1977; Jacobson 1984). The first written record of the Yupik language was made over 200 years ago in 1778 by a member of Captain James Cook's expedition (Jacobson 1984:1), although Yupik writing systems were not developed until beginning in the late 1800s (Reed *et al.* 1977:iii).

The Akulmiut: People and Territory

The *Akulmiut* are and were one of several Yup'ik societies in western Alaska. Like others, they constituted a socioterritorial unit -- a group of people who are associated with a particular geographical area as much as they are recognized as an individual polity. The *Akulmiut*, similar to other western Alaska Yup'ik societies consisted, as they do today, of a society made up of inhabitants of several permanent settlements with a core of related individuals who were linked to neighboring *Akulmiut* villages by marriage (Fig. 1) (Shinkwin and Pete 1984:101). These societies were further characterized by having members who shared a distinct territory, "shared a core of personal names," and represented a unit in war (Shinkwin and Pete 1984:101). Furthermore, like other Eskimo societies in Alaska, Yup'ik and Inupiat, they were "self-governing, autonomous, and resource-holding groups" (Shinkwin and Pete 1984:109; cf. also Ray 1967, 1975; Burch 1975, 1980, 1981). Their distinctiveness can be found not only in the unique geographic area

they used for subsistence, but also in their clothing styles, material culture, and ceremonies. The *Akulmiut* were a relatively homogeneous society, but again, like other Yup'ik societies, especially after 1900, also contained families from other regional groups that had become fragmented (Shinkwin and Pete 1984:109) as shown in subsequent chapters.

Identification of the *Akulmiut* as a society and the geographic extent of the land they used and occupied is derived by several means. Current usage of the term *Akulmiut* is one means of delineation. Historical references to the *Akulmiut*, either the people or the area they occupied, are another means of delineating this Yup'ik society. Oral accounts of neighboring societies and accounts by *Akulmiut* themselves which demonstrate the historical extent of geographic areas they used are others (Burch 1984). Each of these means of identification is used below to delineate this society. How this society was and is bounded or maintained as a socioterritorial unit is discussed in the final chapter.

Modern Use of the Term *Akulmiut*

In the 1980s visitors to the lower Kuskokwim region quickly learned that nearly any reference made to one or several of the villages immediately west of Bethel usually yielded a response which referred to those communities as "the tundra villages" and the area as "the tundra." The phrases are heard on the local public radio station and are used in the local weekly newspaper and in various

written correspondence. This has sometimes been confusing to strangers to the area as laymen and scientists alike have commonly referred to the entire vast treeless area as "tundra." However, the local inhabitants have more refined designations. These terms of reference for *Akulmiut* villages and the area they use are not simply modern conveniences to avoid using their longer proper names -- Nunapitchuk, Kasigluk, or Atmautluak -- or to avoid a lengthier description of the Johnson River drainage and the area west to Baird Inlet. Instead, these terms have historical depth and social meaning to Yup'ik residents of the region. Both in Yup'ik and English specific community names are used secondarily to the regional term, such as *Akulmiut* or tundra, when referring to the area, the communities, or the inhabitants.

These phrases apparently were used first by the Moravian missionaries from the onset of their work in the area in the 1880s (Henkelman and Vitt 1985). They appear to be derived from local usage when translating the Yup'ik reference for *Akulmiut* into English: *akula* meaning "the land between two topographical features" or "tundra" and *akulmiu* meaning "a person who lives on the tundra...in contrast to those who live along major rivers or the coast" (Jacobson 1984:153). Anderson and Eels' 1930 study of Alaska Natives used the phrase "tundra village" to refer to one of the *Akulmiut* villages they traveled to by dog team during their research (Anderson and Eels 1935). They probably visited the village of *Nunacuaq*. This village was reported in early school records as

"Nunachuk" or "Tundra" (McElroy 1939), although this was one of three major settlements within three miles of one another at the time.

Even the modern community names of the *Akulmiut* reflect their tundra orientation. Nunapitchuk was settled in the early 20th century and its Yup'ik name *Nunapicuaq* literally means "little tundra" or "little real land" (Jacobson 1984:270). The recently developed housing subdivision of the *Akulmiut* community of Kasigluk is called "Akula Heights" and its new school named "Akula School." In 1967, when Kasigluk and Nunapitchuk joined to form a second class city, the name selected for this municipality was "Akolmiut," simply an orthographic difference from *Akulmiut*. In the 1970 United States census, population data for either Nunapitchuk or Kasigluk as individvual communities were not reported. Instead, the census only listed the population of the municipality of Akolmiut (U.S. Department of Commerce 1972) as noted in the section on demography below.

Historical Context

The earliest recorded reference to the *Akulmiut* people or territory by name come from the account of Lieutenant Zagoskin's explorations for the Russian-American Company from 1842-44 (Zagoskin [1847]1967). This "tribe" or Yup'ik society was one of several identified by Zagoskin in the Yukon and Kuskokwim river deltas.

Zagoskin ([1847]1967:197, 253, 275) did not travel to the area where the *Akulmiut* (or "Agulmyut" using Zagoskin's spelling) resided, but he was aware of their trading activities both at the Russian station at Ikogmiut along the lower Yukon River and at Kolmakovskiy Redoubt along the middle Kuskokwim River. The types of things they traded for at Ikogmiut and what they brought to trade were recorded. In particular, Zagoskin ([1847] 1967:197) noted the lucrative trade that the Ikogmiut people (*Iqugmiut*) had with the *Akulmiut*, buying from them furs, especially beaver, in exchange for dressed sea mammal hides. The *Akulmiut* were identified by Zagoskin both in his writings and on the accompanying maps. He correctly translated the term *Akulmiut* as "those who live between the mouths," and understood that they generally resided between the mouth of the Kuskokwim and the mouth of the Kashunuk River, which at that time the Russians believed to be north of Cape Romanzof rather than south of Hooper Bay, according to Zagoskin ([1847]1967).

Zagoskin ([1847]1967:103) had a knowledge of the distribution of Yup'ik societies, even if sketchy, and the geographic situation of the *Akulmiut*, specifically, between the "Magmyut" (*Imarmiutarmiut* or *Mararmiut*; people of the Black River and Scammon Bay area) and the "Kuskokvigmyut" (*Kusquqvagmiut*; people of the lower Kuskokwim area). The Yup'ik groups mentioned by Zagoskin appear to be only those which he was aware of from trade contacts at the Russian settlements at Fort St. Michael, Ikogmiut, or Fort Kolmakov (Zagoskin [1847]1967:103

197, 210, 253, 275, 306). Yup'ik societies in the vicinity of Hooper Bay, Nelson Island, Nunivak Island, and Kuskokwim Bay were noticeably absent. However, this is probably accounted for by the fact that there was limited development of the Russian fur trade in this region at the time of Zagoskin's travels.

The maps which accompany the English translation of Zagoskin's travels show the limited knowledge he had on hand of the vast area between the mouths of the Yukon and Kuskokwim rivers. One map clearly shows the erroneous belief that the Kashunuk ("Kizhunok" in Zagoskin [1847]1967) flowed into the Bering Sea north of Cape Romanzof rather than south of Hooper Bay. Nevertheless, Zagoskin's description of the *Akulmiut* area noted above is approximately correct, based on the *Akulmiut* place-names distribution described below. This distribution shows *Akulmiut* use of the area between Aropuk Lake about 30 miles east of the Kashunuk, and the lower Kuskokwim River.

Furthermore, Zagoskin's erroneous belief that the "Kvinchagak" or Johnson River flowed into the Bering Sea rather than the Kuskokwim also accounts for the depiction that the *Akulmiut* occupied an area closer to the Bering Sea coast (Zagoskin [1847]1967:250; maps). Many *Akulmiut* settlements were located near the mouth of the "Kvinchagak" (*Kuicaraq* or Johnson River above Nunapitchuk) near the Kuskokwim River west of Bethel (Fig. 6). Given the geographical knowledge

Zagoskin had available to him at the time, his approximation of the area of the *Akulmiut* was generally correct.[1]

H. J. Holmberg, a naturalist and mining specialist, collected

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1 To avoid confusion among readers, it is worth noting that the *Akulmiut* people and territory described here and described by Zagoskin ([1847]1967) are not the same Yup'ik society also referred to in some sources as "Agul'miut" (Netsvetov [1845-63]1984) and "Agulmute" or "Agulmiuts" (Wrangell [1839]1980). The Yup'ik group referred to by Wrangell and Netsvetov was one of the Yup'ik societies which occupied and used the area of what is now called the "Middle Mouth" or Kawanuk Pass and Kwikpak Pass of the Yukon River delta mouth (M. Pete and A. Shinkwin, pers. comm. 1988). This group's formal name was *Qerauranermiut*, but they were alternatively referred to by their "nickname," *Akulmiut*, by adjacent Yup'ik groups because of their geographic situation between the other mouths of the Yukon River--Apoon Pass ("North Mouth") and Kwikluak Pass and Kwiguk Pass ("South Mouth").

The geographic position of the *Qerauranermiut* is confirmed on a map in Wrangell ([1839]1980). It was based on map produced by Glazunov for the Russian-American Company from 1833-39 in the Yukon River mouth. Wrangell, in referring to the *Akulmiut*, or "Agulmiuts" as he called them, correctly noted they occupied one of the mouths of the Yukon River (Wrangell [1839]1980:61).

Furthermore, Netsvetov, a Russian Orthodox priest at Ikogmiut from 1845-1863, named several villages located along the lower Yukon River and its mouths (Netsvetov [1845-63]1984). Some of these were *Qerauranermiut* or *Akulmiut* ("Agul'miut") villages, at least one of which is known to have been on the "Middle Mouth" or Kawanak Pass. Today, there are few *Qerauranermiut* survivors. Currently, they reside in communities formed from the remnants of societies of the "North" and "South" mouths (M. Pete and A. Shinkwin, pers. comm. 1988). There are no contemporary communities along the "Middle Mouth."

Finally, the *Qerauranermiut* or *Akulmiut* of the Middle Mouth of the Yukon were distinct from the *Akulmiut* who are the subject of this study and occupied the inland area between Baird Inlet and the Kuskokwim River. This is contrary to the speculation by one author (Fienup-Riordan 1984) that the Akulmiut of the Yukon River mouth relocated to the inland tundra. In fact, the Akulmiut of the tundra were present as a distinct society at the same time that the *Qerauranermiut* (alias *Akulmiut*) occupied the Yukon River "Middle Mouth" as shown above.

some ethnographic data on the Tlingit and Yup'ik groups of Alaska during his work on Kodiak Island. In a paper he delivered in 1854, Holmberg identified several Yup'ik societies. One of these was the "Agulimiuts" or "Agulmjuten" -- "the inhabitants between the estuaries" -- who he reported "occupy the coastline as well as the inner lands between the estuaries of the Kuskokwim and Kashunuk" (Holmberg [1855]1985:6, map). This essentially reflected the description provided by Zagoskin 10 years earlier, although it is uncertain whether Holmberg based his description on Zagoskin's work or from firsthand evidence. The map which accompanies Holmberg's work showed the *Akulmiut* occupied the same area as reported by Zagoskin and shown on Zagoskin's map. However, the location of the Kashunuk River was correctly shown south of Hooper Bay rather than north of Cape Romanzof, as it appeared on Zagoskin's map. The location of the mouth of the Johnson River (*An'arciiq*) was recorded as "Kvinchagak" (*Kuicaraq*) in Zagoskin [1847](1967) and "Kwischaakh" in Holmberg ([1855]1985), and was incorrectly noted as in Zagoskin ([1847]1967).

In 1861, an *Akulmiut* chief trading at Ikogmiut requested that the Russian Orthodox priest, Hieromonk Illarion, travel to one of their villages to meet with local inhabitants. Illarion's journal described this overland trip in winter in November 1861 (Oswalt 1960). Illarion's account (Oswalt 1960:113-14) of his trip from Ikogmiut on the lower Yukon to the village of the *Akulmiut* chief showed that he traveled in the vicinity of the Johnson River from its

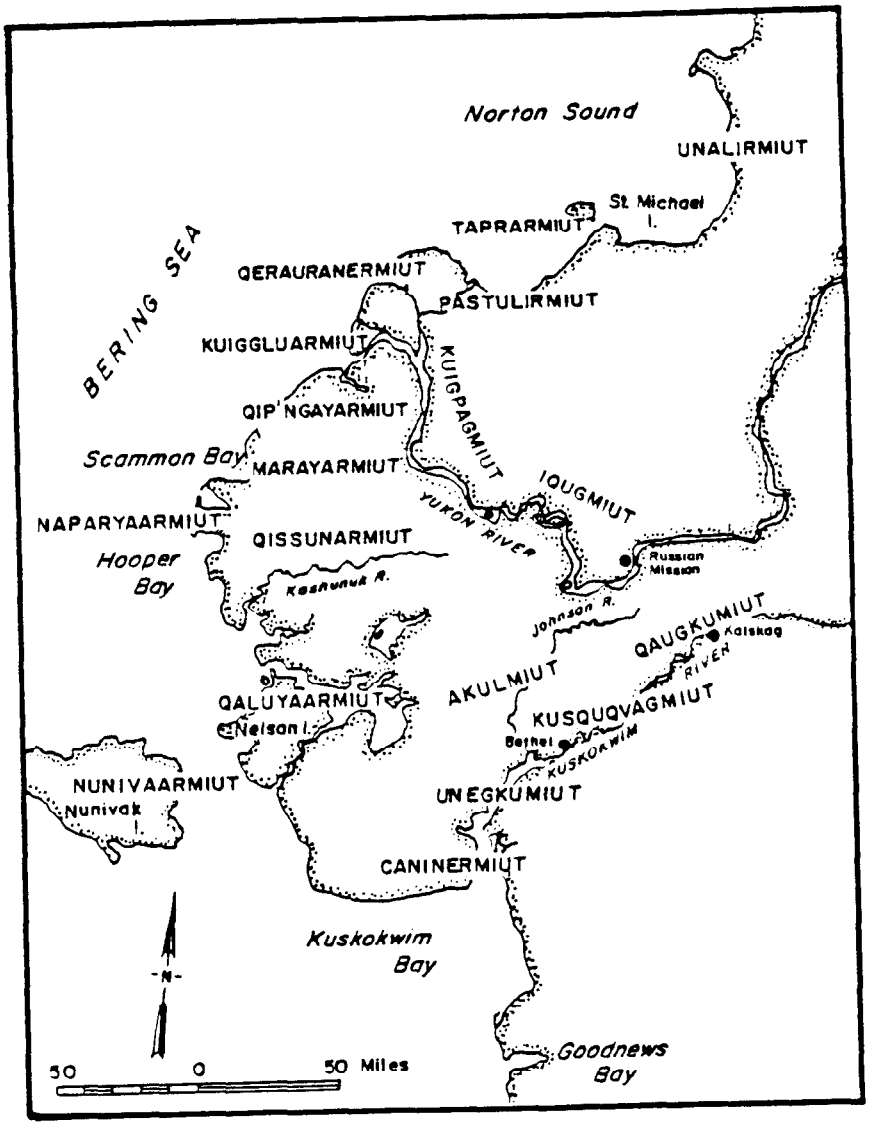


Fig. 6. General location of the Akulmiut among Yup'ik societies of western Alaska, ca. 1900-present. (adapted from Shinkwin and Pete [1984])

headwaters near the Yukon River to one of several *Akulmiut* villages located along the large lakes which the Johnson River flows through. Although Illarion did not describe the extent of distribution of the *Akulmiut* population, there is no question that he preached to a group of *Akulmiut* men who gathered in a *qasgiq* of one of the villages very near contemporary *Akulmiut* settlements. Illarion's trip was probably the first trip of a non-Native into the area of the *Akulmiut*.

In the late 1860s, naturalist William Dall similarly reported that the "Agulmuts" occupied the area from near Cape Avinof on Kuskokwim Bay to Cape Romanzof, but also had some settlements on Nunivak Island (Dall 1870:406). Dall's (1870) description corresponds with Zagoskin's ([1847]1967) and contains the same erroneous information about the mouth of the Kashunuk River and the north and west limit of the *Akulmiut*, as noted above. Without explanation, Dall (1870) stated that Holmberg's ([1855]1985) boundaries were incorrectly noted, although Holmberg's map and written description are nearly identical to Dall's with one exception. Dall (1870) mistakenly identified *Akulmiut* settlements on southern Nunivak Island which according to Wrangell ([1839]1980) were actually settlements of the *Kusquqvagmiut*. Dall *et al.* (1877:18) subsequent ethnological work on the Native tribes of Alaska correctly noted the settlements on southern Nunivak Island as those of the *Kusquqvagmiut*.

In winter 1878-79, Edward Nelson (1882) traveled by dog sled in the area between the mouths of the Yukon and Kuskokwim rivers. Nelson (1882:669) reported that fur traders referred to the area of

the *Akulmiut* as "the Big Lake Country," a phrase which Nelson (1899) himself subsequently used and others adopted (Petroff 1884, 1900; Hrdlicka 1931). Nelson (1882, 1899) clearly understood that the *Akulmiut* were a distinct Yup'ik population, although he never used or recorded the term, but instead used the phrase "Big Lake Country" in reference to the area occupied by the *Akulmiut*. In addition, Nelson (1882:669) identified this as the area where the largest *Akulmiut* villages were located. He visited several *Akulmiut* villages along these large lakes and knew of several villages others as indicated on the map accompanying his account of the journey (Nelson 1882).

The uniqueness of the "Big Lakes Country" in the Johnson River ("Kivvichavak" or *Kuicaraq*) drainage were noted, such as its abundant wildlife resources, specifically whitefish and blackfish. From the *Akulmiut* villages Nelson (1882) traveled along a customary travel route used by the *Akulmiut* to reach the Yukon River. Nelson's ethnographic collections included many articles of material culture from the "Big Lake Country" which he often described in terms of their uniqueness compared to those of coastal groups (Nelson 1899).

Even though Nelson recognized the distinctiveness of this area, he did not ascertain the name for the Yup'ik society that inhabited the Big Lake Country, the *Akulmiut*. In fact, it is surprising to find that the map accompanying Nelson's (1899) subsequent report erroneously showed this area as being occupied by three different Yup'ik societies whose boundaries intersected within the large lakes of the Johnson River drainage. Unfortunately, Nelson's (1899) map which shows the distribution of western Alaska Yup'ik societies is

erroneous and incomplete not only for the *Akulmiut* but for other groups as well. In fact, none of the groups were distributed as extensively as shown: there were many more Yup'ik societies occupying smaller areas in the region (Zagoskin [1847]1967; Dall 1877; Waskey 1950; Shinkwin and Pete 1984; Fienup-Riordan 1984; Pratt 1984).

Following Nelson's journey through the region west of Bethel between the Kuskokwim and Yukon rivers, Moravian missionaries began to have contact with some of the indigenous people of this area. A Native American Indian, John Kilbuck, was among the Moravian missionaries stationed at Bethel during the late 1800s and early 1900s (Henkelman and Vitt 1985). In a paper prepared on the Native inhabitants of the region, Kilbuck (n.d.:3) identified several Yup'ik societies which he noted were "broadly designated by the sections they inhabit". Specifically, Kilbuck (n.d.:3) also recorded the name of the *Akulmiut* as "Akoulimiut" and "Tundra People" who were distinct from those who occupied the Kashunuk River ("Kashunamiut" or *Qissunarmiut*) and the coastal and inland areas west of the lower Kuskokwim River ("Tshananayamiut" or *Caninermiut*). The designations reported by Kilbuck clarified the broader designations reported by Zagoskin ([1847]1967) and Holmberg ([1855]1985).

In the 1930s and possibly earlier, Frank Waskey, a former resident of Minnesota who served as the first territorial delegate to Congress in 1906-07, traveled and trapped in the area between the Yukon and Kuskokwim rivers (Waskey 1950). Waskey also operated a trading post in Dillingham from 1930-56, and prospected in the region

near Marshall along the lower Yukon River. In addition, Waskey was an amateur anthropologist and archaeologist who was interested in Yup'ik folklore, place-names, and artifacts and regularly communicated with the University of Alaska Museum in the early 1950s (Waskey 1950). In an unpublished manuscript Waskey (1950) delineated the Yup'ik societies of the lower Yukon and Kuskokwim rivers area, including the *Akulmiut*, based on his experience from living in the area and trading with the people. This is supported by references to Frank Waskey made by elderly Yup'ik residents while conducting field work in Nunapitchuk during this study, but also during field work in 1988 in Tununak by another anthropologist (M. Pete 1988, pers. comm.). These individuals did not speak English nor did they have knowledge of the archival materials of Waskey's referred to here. Waskey (1950) described the area of the *Akulmiut* as well as that of neighboring groups and noted the distinctiveness of the *Akulmiut*:

> That they [the "Akulamut"] were and are an important division of the Yut [Yup'ik] is unquestionable. In a broad sense the term Akulamut [*Akulmiut*] included all the Yut [Yup'ik] between the Kuskokwim water shed, one village whose lakes outlet to Baird Inlet, and the village of Chukaktolik on the head of the Kashunok [Kashunuk] River... That they are an outstanding distinct division of the Yut [Yup'ik] is evidenced not only by their physical characteristics, but by their present day well built and well kept dwellings and orderly communal life....In practice the term Akulamut [*Akulmiut*] did not extend to the coast dwellers between the two great rivers [Kuskokwim and Yukon].

Oral Accounts and Place-Names

The recording of Native place-names is one of the most reliable means of documenting the extent of historical and contemporary land use areas of Native Alaskan Eskimo and Indian societies (Kari and Kari 1982; Kari and Fall 1987; Andrews 1987; Andrews *et al.* 1980; Burch 1981; Stokes 1984; Pete 1984). Yup'ik place-names used by Nunapitchuk residents were recorded as part of this study as noted in the previous chapter and appear in Appendices 8 and 9. Yup'ik names for villages, landmarks, lakes and streams, and other natural and manmade features were recorded, along with any other information the key respondent recalled pertaining to the place in question. For previously occupied settlements, information was noted concerning the occupants, which Yup'ik society they were a part of, and/or which other settlements they were associated with.

The distribution of Yup'ik place-names showed that the *Akulmiut* occupied and used areas from the Kuskokwim River near Bethel west to Baird Inlet and north to the Izaviknek River (Appendices 8 and 9) (Fig. 7). The Johnson River drainage from near its headwaters to its mouth was also used and occupied by the *Akulmiut* based on the place-names work. Similarly, the maps which depict areas used for hunting, fishing, trapping, and gathering as shown in Chapter 5 correspond to the same region delineated by place-names distribution. Finally, based on interviews with several elderly key respondents in Nunapitchuk, the *Akulmiut* of the late 1800s and early 1900s included inhabitants of the following settlements, each included in the place-

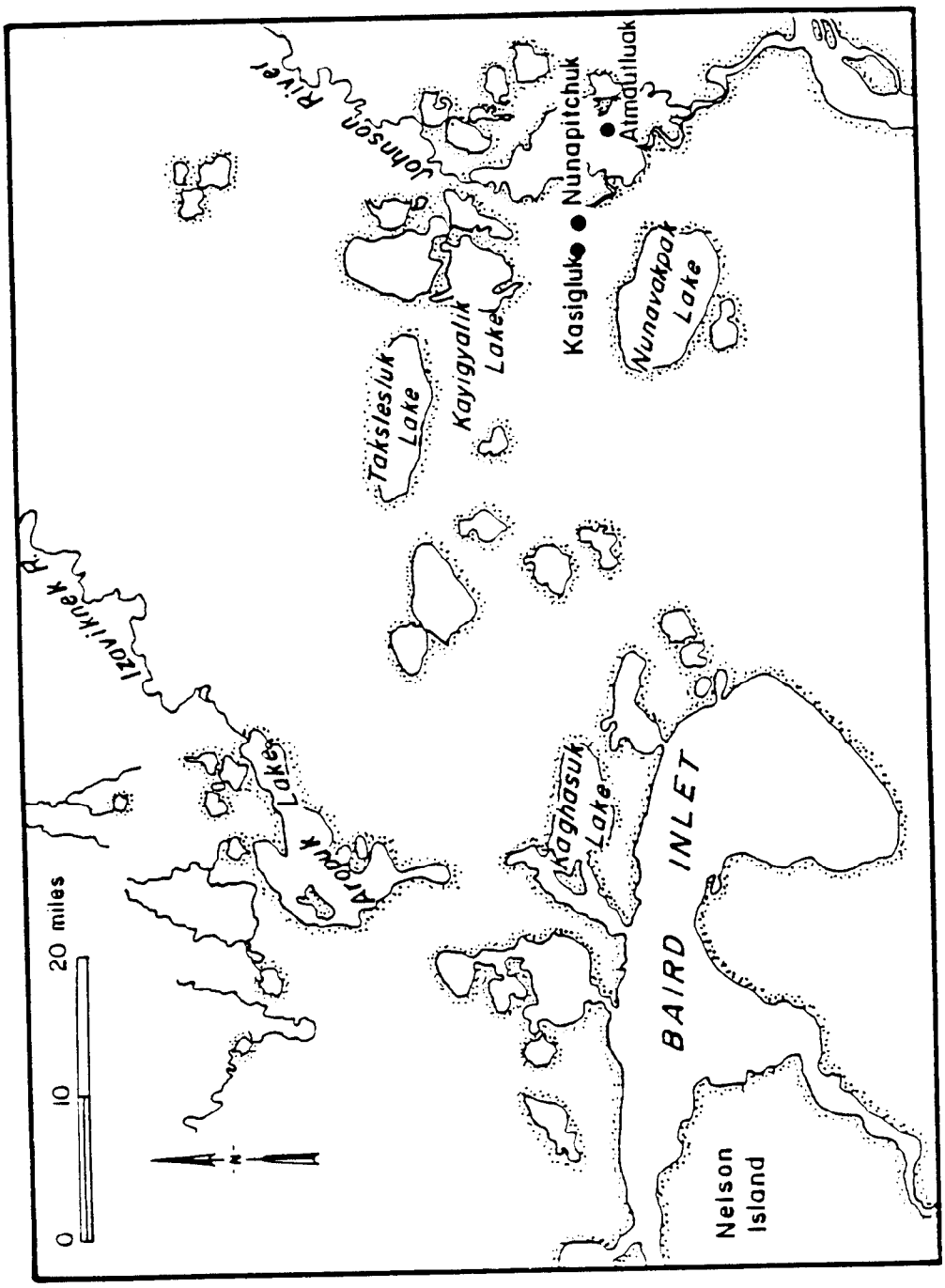


Fig. 7. General area used and occupied by the Akulmiut, 1839-present.

names list in Appendices 8 and 9: *Kuigaallermiut*, *Naavan* or *Naavatmiullret*, *Nanvarnarrlagmiut*, *Nunacuarmiut*, *Nunapicuarmiut*, *Paingarmiut*, *Pupigmiullret*, *Qasqirayarmiut* or *Qasqirayarmiullret*, *Qeleqcuuqtulirmiut*, *Qerrulurpak*, and *Uuyarmiut*. In 1983, year-round *Akulmiut* settlements were Nunapitchuk (*Nunapicuaq*), Kasigluk (*Kassigluq*), and Atmautluak (*Atmaulluaq*).

Akulmiut Demography

The distribution of the *Akulmiut* population during the 1800s extended from the Kvichavak River in the east to Baird Inlet in the west and the extent of the Johnson River from south to north (Fig. 7). The largest and most permanent settlements, in general, were situated around the large lakes through which the Johnson River and its tributaries flow, roughly 20 miles west of Bethel. In spite of their size and proximity to the Kuskokwim River, the first record of any *Akulmiut* village by name came from Edward Nelson's 1878-79 winter journey between the Yukon and Kuskokwim River mouths (Nelson 1882). Although Nelson is often cited as the first white man to visit the area, the first published account is that of the Russian Orthodox priest, Father Illarion (Oswalt 1960) noted above. However, Illarion did not mention any *Akulmiut* village by name.

One of the most difficult aspects of reconstructing the distribution and size of the *Akulmiut* population is not only the incompleteness of the historic and modern records, but also the distortion of the Yup'ik names for settlements and geographic

features, such as lakes and rivers. Table 2 shows the contemporary Yup'ik spelling of *Akulmiut* places noted in the historic and modern literature used to describe *Akulmiut* demography. The location of settlements, too, was often erroneous. Maps of the area, prior to the use of satellite photography, were elementary and crude. With the exception of the contemporary *Akulmiut* communities of Nunapitchuk, Kasigluk, and Atmautluak, the locations of abandoned sites and settlements shown on the most recent maps are in error. To the nonresident, the area appears nearly featureless -- it is flat with countless lakes, creeks, and other waterways which are often indistinguishable as their grassy margins merge into one another.

Nelson (1882:670) estimated the population of the area between the Kashunuk River and the Kuskokwim River as well as the adjacent sea coast at 3,000 people. This estimate included the *Akulmiut* or people of the "Big Lake Country" area. In particular, he noted that the area of the *Akulmiut* "is perhaps the most thickly peopled district of Alaska north of the Kuskokwim river" (Nelson 1882:669). Nelson noted six villages in the vicinity of the Johnson River and adjacent lakes which form part of its drainage. He recorded the names of three of these villages: "Kvigathlogamute" (*Kuigaallermiut*); "Nunochogmute" (*Nunacuarmiut*); "Nanvogalokhlagamute" (*Nanvarnarrlagmiut*) (Fig. 8) (Nelson 1882). The location of each of these on his map is erroneous. Errors on the map in terms of geographic features and settlements are apparent for other regions as well, but the map remains useful by providing a general picture of the area. The location of "Kvigathlogamute" and

TABLE 2. CURRENT YUP'IK SPELLING OF *AKULMIUT* PLACES NOTED IN HISTORIC AND MODERN SOURCES USED IN TEXT

Current Yup'ik Spelling*	Spelling in Historic and Modern Sources
Akulmiut	Akolmiut (U.S. Dept. Commerce 1972)
Akularaarmiut (also known as Nunacuarmiut)	Akularpagameut (Robaut 1891)
Akuliqutaq	Kvichavak River (Orth 1967)
An'arciiq	Ankitaktuk Creek (Jarvis 1899; Spurr 1900) Johnson River (Orth 1967)
Atmaulluaq	Atmautluak (U.S. Dept. Commerce 1984)
Cuukvagtulirmiut** Cuukvagtuliq**	Chokfoktoleghagmiut (Porter 1893) Chukwoktulieugamute (Jarvis 1899) Chokfactoly (U.S. Dept. Commerce 1942) Chukfaktoolik (U.S. Dept. Commerce 1952) Chakwaktolik (Orth 1967)
Kassigluq	Kaseglok (U.S. Dept. Commerce 1942) Kasiglook (U.S. Dept. Commerce 1952, 1963) Kasigluk (Orth 1967; U.S. Dept. Commerce 1984) Akolmiut (Orth 1967; U.S. Dept. Commerce 1972)
Kuicaraq	Kvinchagak (Zagoskin [1847]1967) Kuichavak River (Raymond 1900) Kivvichavak (Nelson 1882) Kvichavak (Nelson 1882; Porter 1893) Kvichivak (Baker 1902) Johnson River (Orth 1967)
Kuigaallermiut	Kvigathlogamute (Nelson 1882) Kwigathlogamute (Petroff 1884) Kvigatluk (Baker 1902; Orth 1967)
Nanvarnarrlagmiut Nanvarnarrlak	Nanvogalokhlagamute (Nelson 1882) Nauvogalokhlagamute (Petroff 1884) Nunavoknak-chlugamiut (Porter 1893) Nannavarorok (Robaut 1891) Nanevaranarlegamiut (U.S. Dept. Commerce 1921) Nanvagnalak (U.S. Dept. Commerce 1942) Nanvarnarluk (U.S. Dept. Commerce 1952; Orth 1967) Nunavakanukthluk (Orth 1967) Nangavohamuk [Lake] (Porter 1893) Nunavakanukakslak Lake (Orth 1967)

TABLE 2. continued

Current Yup'ik Spelling*	Spelling in Historic and Modern Sources
Nanvarpak	Nunavakpak Lake (Orth 1967)
Nunacuarmiut Nunacuaq	Nunochogmute (Nelson 1882) Nunochogamute (Petroff 1884) Nunachanaghamiut (Porter 1893) Nunatschuagamiut (U.S. Dept. Commerce 1921) Nunochok (U.S. Dept. Commerce 1942) Nunachuk (U.S. Dept. Commerce 1952; Orth 1967)
Nunapicuarmiut Nunapicuaq	Nunatpichuk (U.S. Dept. Commerce 1942) Nunapitchuk (U.S. Dept. Commerce 1952, 1963; Orth 1967; U.S. Dept. Commerce 1984) Akolmiut (U.S. Dept. Commerce 1972; Orth 1967)
Paingarmiut Paingaq	Tiengaghamiut (Porter 1893) Pinak (U.S. Dept. Commerce 1942) Paingakmeut (U.S. Dept. Commerce 1952; Orth 1967)
Paqpaalaq	Takhalak (Porter 1893) Puk Palik Lake (Orth 1967)
Qasqirayarmiut Qasqirayaq	Kaskerayak (U.S. Dept. Commerce 1942)
Qayigyalek	Kagahik (Porter 1893) Kayigyalik Lake (Orth 1967)
Taklirrlak	Dah-lakak (Porter 1893) Taksleslуk Lake (Orth 1967)

*Orthography developed by Alaska Native Language Center, University of Alaska, Fairbanks.

**Villages are commonly designated with -miut postbase but may also be designated without this postbase. For example, "Chukfaktoolik" is the same place as Cuukvagtuliq which is the same place as Cuukvagtulirmiut.

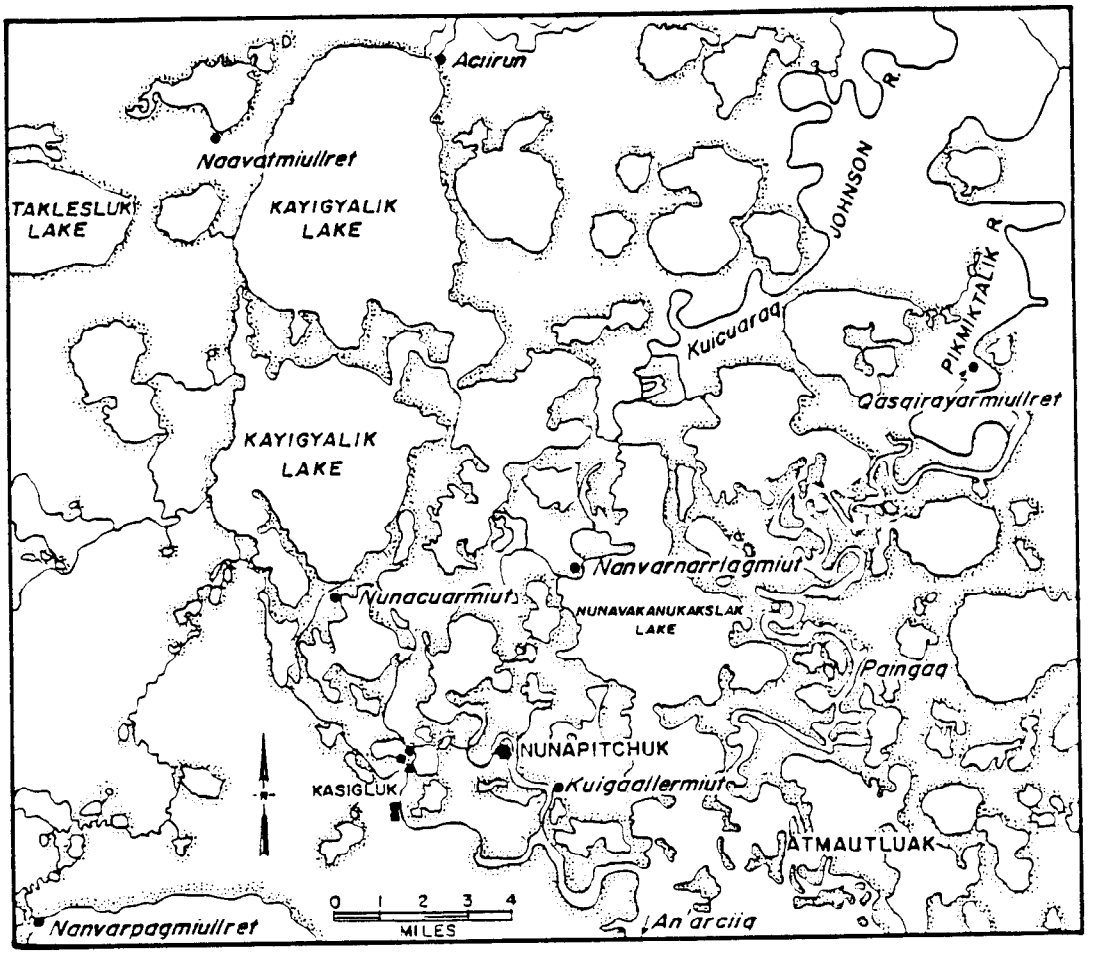


Fig. 8. Akulmiut villages noted in historic and modern records, 1882-1950.

"Nunochogmute" were approximately correct, whereas the location of "Nanvogalokhlagamute" was actually the site of another village, *Naavatmiulleret* (Fig. 8). *Nanvarnarrlagmiut* was located a few miles to the east. The three villages noted on Nelson's map, but which were not labeled with names, were in the approximate location of villages that are called *Nanvarnarrlak*, *Paingaq*, and *Aciirun* (Fig. 8). Neither the size of each community, nor the combined population for all six were reported by Nelson (1882).

The first reported population for any *Akulmiut* village appeared in the 1880 census which apparently was derived from the results of Nelson's (1882) journey. The 1880 census listed 3 *Akulmiut* villages -- "Kwigathlogamute" (*Kuigallermiut*), population 30; "Nunochogamute" (*Nunacuarmiut*), population 40; and "Nauvogalokhlagamute" (*Nanvarnarrlagmiut*), population 100 (Table 3) (Petroff 1884:11-12, 1900:68). Other *Akulmiut* villages were noted as a group, "Villages on Big Lake region," with a combined population of 166 (Table 3) (Petroff 1884:12, 1900:68). All were listed in the Yukon census division rather than the Kuskokwim, even though Petroff's 1882 map showed the area to be within the geographic boundaries of the Kuskokwim division (Petroff 1884). Village size ranged from 30 to 100 persons with a total population of 336, presumably for the 6 communities noted on Nelson's (1882) map (Table 3). The area of the Yukon and Kuskokwim river deltas shown on Petroff's 1882 map of Alaska was taken from Nelson's 1878-79 work (Petroff 1884; Nelson 1882).

TABLE 3. RECORDED *AKULMIUT* VILLAGE POPULATIONS, 1880-1985*

Village	1880	1890	1900	1910	1920	1930	1940	1950	1960	1970	1980	1980	1983	1985
Kuigaallermiut	30													
Nunacuarmiut	40	135			134		76	44						
Nanvarnarrlagmiut	100	105			95		73	116						
Paingarmiut		60					17	44						
Qasqirayarmiut							14							
Cuukvagtulirmiut		18					34	59						
Other villages	166													
												(all Native)		
Nunapitchuk							121	125	327	**	299	295	340	356
Kasigluk							66	111	244	**	342	325		405
Atmautluak											219	206		234
TOTAL	336	318			229		401	499	571	526	860	826		995

*For sources of data contained in this table see text.

**At the time of the 1970 census, Nunapitchuk and Kasigluk were incorporated as a single municipality -- "Akolmiut city"; individual community populations were not reported.

The 1890 census recorded a population of 240 for 2 of the villages mentioned by Nelson (1882) and Petroff (1884) (Table 3). These were "Nunachanaghamiut" (*Nunacuarmiut*) and "Nunavoknak-chlugamiut" (*Nanvarnarrlagmiut*) (Porter 1893:6, 134). A third *Akulmiut* community, "Tiengaghamiut" (*Paingarmiut*), had a population of 60. The 3 *Akulmiut* villages listed in Porter's (1893) census had a combined population of 300. All were included in the "Kuskokwim district" or census division.

In addition, "Chokfoktoleghagmiut" (*Cuukvagtulirmiut*), north of Baird Inlet on northern Aropuk Lake (Fig. 7), had a population of 18.

This community traditionally was not considered an *Akulmiut* settlement, but key respondents could not specify which regional group that settlement was considered part of. However, since the 1950s, when it was abandoned, many of the residents relocated to one of the modern *Akulmiut* villages. In 1983, there were people living in Nunapitchuk, Kasigluk, and Atmautluak who formerly resided at *Cuukvagtuliq*.

The 1890 census referred to four other settlements in the area, no names cited, but did not record their population (Porter 1893:111). Although Porter (1893:111) erroneously referred to the inhabitants of the area as "Magmiut," his written description conformed to the region occupied by the *Akulmiut*. In addition to the *Akulmiut* settlements noted above, Porter (1893:111) noted four major lakes and one stream along which *Akulmiut* settlements were situated: "Nangavohahamuk (*Nanvarnarrlak* or Nunavakanukakslak Lake); "Kagahik (*Qayigyalek* or Kayigyalik Lake); "Dah-lakak" (*Taklirrlak* or Takslesluk Lake); "Takhalak" (*Paqpaalaq* or Puk Palik Lake); and the "Kvichavak" (*Kuicaraq* or Johnson River) (Fig. 8; Appendices 8 and 9). Finally, the 1890 census is unique because it provided information on the composition of the population by sex, number of "families" per settlement, and number of houses. Late 19th century Yup'ik social organization, in part, can be described using these statistics.

In 1891, Catholic priest Aloysius Robaut traveled from the mouth of the Yukon River to the mouth of the Kuskokwim River through the tundra region and along the lower Yukon River (Robaut 1891). His

notes of the trip include a hand-drawn map which is a rendition of Nelson's (1882) map. On it, Robaut showed several settlements in the *Akulmiut* region for which the names of three were noted on the list accompanying his map: "Akularpagameut" (possibly *Akularaarmiut*, an alternate name for *Nunacuarmiut*); "Nannavarorok" (*Nanvarnarrlak*); and "Kegetmut" (no known settlement corresponding to this name) (Appendices 8 and 9). In comparing Robaut's map and list with that of Nelson and the Yup'ik place-names, it is apparent that Robaut mistakenly located these places on his map because he misunderstood the actual location of Kayigyalik Lake (*Qayigyalek*) and Nunavakanukakslak Lake (*Nanvarnarrlak*). The three places he noted corresponded in location to three places shown on Nelson's map. Like Nelson, Robaut did not correctly label the names of the settlements shown on the map. Two other *Akulmiut* settlements were shown on Robaut's map, but were not identified. One of these corresponds in location to a place called *Nanvarpagmiullret* (Fig. 8).

In 1898, geologist Josiah Spurr surveyed the Kuskokwim River. Although he did not travel into the *Akulmiut* area, he was the first to accurately locate the mouth of the Johnson River which he called "Ankitaktuk Creek," a corruption of the Yup'ik name, *An'arciiq*, for the lower Johnson River (Fig. 8) (Spurr 1900). Spurr noted the location of three *Akulmiut* villages which he probably derived from discussions with a Moravian missionary, John Kilbuck, while at Bethel. The three villages appear to correspond to *Kuigaallermiut*, *Nunacuar*, and *Nanvarnarrlagmiut* (Fig. 8) whose names were noted by Nelson (1882) 20 years earlier. The population of Kuigaallermiut was

almost completely eliminated by the 1900 influenza and measles epidemic, and, after 1898, was not shown on maps or included in the census or other written accounts.

The 1900 census was meagre compared to that conducted for 1890. Only two lower Kuskokwim River communities and one between the Kuskokwim and Yukon rivers were listed: "Naparegarak" (now Napakiak [*Naparyaraq*]); "Kesuna" (Kashunuk [*Qissunaq*] near modern Chevak); and "Kinak" (*Qinaq* near modern Tuntutuliak) (U.S. Department of Interior 1902:426). *Akulmiut* settlements were not included.

The United States census for the year 1910, like the previous one, did not contain population information on communities between the Kuskokwim and Yukon rivers except for "Kashunuk." Napakiak and Bethel were the only lower Kuskokwim River communities listed (U.S. Department of Commerce and Labor 1913:573).

In 1920, the population of two *Akulmiut* settlements was included in the census. It reported a population of 95 in one and 134 in another (Table 3) (U.S. Department of Commerce 1921:681). The combined population of the two was similar to that reported in the 1890 census which preceded the devastating 1900 influenza and measles epidemic. However, the two villages listed in the 1920 census were not the only *Akulmiut* villages at the time. There were two others which were occupied during that decade -- Nunapitchuk and *Paingaq*. Based on genealogies recorded as part of this study for 3 of the 4 settlements, their combined population was 172 as described below.

The United States census for 1930 included the populations of only three lower Kuskokwim River communities -- Tuluksak, Bethel, and

Akiak (U.S. Department of Commerce 1932:9-11). Village populations for the *Akulmiut* region were not included.

The 1940 census was the first census of the 20th century that included virtually all occupied *Akulmiut* settlements and recorded each by name (U.S. Department of Commerce 1942:1193-1194) (Table 3). Six *Akulmiut* villages were noted, as well as the community of *Cuukvagtuliq* north of Baird Inlet. Their total population was 401 (Table 3). This was the first census year that showed reduction in the population for two major *Akulmiut* settlements, *Nunacuarmiut* and *Nanvarnarrlagmiut*. Also, the populations of the communities of Nunapitchuk and Kasigluk appeared for the first time in the census (Table 3). This decade marked the emerging consolidation of the *Akulmiut* population into the two villages of Nunapitchuk and Kasigluk. Factors associated with this consolidation are discussed below.

The 57 Native villages recorded in the 1940 census for the "Bethel district" were, by 1950, consolidated into 26 communities (U.S. Department of Commerce 1942 1193-1194; 1952:51-6). The emigration of people from *Nunacuarmiut* to Kasigluk is apparent in the 1950 census. Nunapitchuk had virtually no growth in population from 1940 to 1950 (Table 3). *Nanvarnarrlagmiut* , *Paingarmiut*, and *Cuukvagtulirmiut* had an increase in population from 1940 to 1950 and their largest population in recorded history.

Within 10 years, however, *Nanvarnarrlagmiut*, *Paingarmiut*, and *Cuukvagtulirmiut* were abandoned as semipermanent settlements and their inhabitants relocated to the settlements of Nunapitchuk and

Kasigluk. Both communities more than doubled in size from 1950 to 1960 (Table 3) (U.S. Department of Commerce 1963:3-10, 3-11). Based on oral accounts, these two villages were the only year-round *Akulmiut* settlements at the time. The total *Akulmiut* population was 571 (Table 3). Similarly, the 26 Native villages in the area as recorded in the 1950 census were coalesced into 18 by the time of the 1960 census (U.S. Department of Commerce 1963:3-10, 3-11). By 1985 their increased to 20 (Alaska Department of Labor 1987:54-55).

By 1970 the *Akulmiut* population declined to 526 (U.S. Department of Commerce 1972:3-10). Nunapitchuk and Kasigluk were incorporated as a single municipality, "Akolmiut city," in 1969 and individual community censuses were not reported. From 1968-71, many former residents of *Nanvarnarrlagmiut*, who initially relocated to Nunapitchuk, again relocated at a new village site, Atmautluak, three miles east. In 1982, "Akolmiut city" was dissolved and Kasigluk incorporated as a municipality as Nunapitchuk did in 1983.

The *Akulmiut* population which was consolidated into 2 communities between 1955 and 1970, expanded by 1980 into 3 communities: Nunapitchuk, population 295; Kasigluk, population 325; and Atmautluak, population 206 (Table 3; U.S. Department of Commerce 1984:28-29). The total Native population was 826, whereas the total population including non-Natives was 860. The characteristics of Nunapitchuk's population at the time of this study in 1983 are described in detail in Chapter 4. The 1985 population estimate for the 3 *Akulmiut* communities was 995: Nunapitchuk 356, Kasigluk 405, Atmautluak 234 (Table 3; Alaska Department of Labor 1987:54-55).

Population trends for the *Akulmiut* are difficult to describe based on recorded accounts during the historic period. The first census in the area recorded 336 people for 6 *Akulmiut* villages (Table 3). The population was certainly higher because it is known that other *Akulmiut* settlements were occupied at the time. The threefold increase in the population of *Nunacuarmiut* between 1880 and 1890 demonstrates the change in settlement that occurred. Other *Akulmiut* village populations consolidated in *Nunacuarmiut*, but it is unclear which were abandoned and which occupied settlements simply were not reported in the census.

The first nearly complete census of *Akulmiut* villages was not until 1940. The recorded population was 401, only 20 percent greater than the 1880 census, 60 years earlier. Given the incompleteness of the 1880 census, there was likely little change from 1880 to 1940, primarily because of the major reduction in population due to disease: the 1900 influenza and measles epidemic (Wolfe 1982).

After 1940, the *Akulmiut* population grew and increased between 14 and 57 percent each decade, except from 1960 to 1970, when it decreased 8 percent from the previous census (Table 3). In the 35 years from 1950 to 1985, the *Akulmiut* population doubled. During that time improved health care has been a leading factor in human survival, although settlement in the village and reduced mobility has probably contributed also. Influences on reduced mobility include centralization factors such as mandatory school attendance, as well as technological changes in transportation which reduce travel time. These and others are considered and discussed in Chapter 6.

Social Structure

The *Akulmiut* were dispersed among a number of settlements through the mid 20th century. Not only were they spatially distinct from other Yup'ik societies, but they were also socially distinct. Villages were organized in certain ways and cultural rules of kinship served to define relationships among the individuals of the group. A description of the structure and organization of three historic *Akulmiut* villages which follows shows how this distinctiveness appeared among the *Akulmiut* in the early 1920s.

Residence

One of the main features of *Akulmiut* society and villages, as in other Yup'ik societies, was the *qasgiq*, commonly termed in English the "men's house" or "community house." Each *Akulmiut* village and hamlet had a *qasgiq* which was used and occupied from November through March. The *qasgiq* housed all adult males in the community and male youth about seven years and older. Near the turn of the century villages such as *Nunacuaq* and *Nanvarnarrlak* were so large that there were two *qasgiq* (sing.) or two levels of benches in order to house all the males.

Meals prepared by women in their houses were taken to the males in the *qasgiq* by young women and girls (Kilbuck n.d.:19). The *qasgiq* was also a workshop for use by men when constructing various

items used in hunting, fishing, trapping, and gathering. In addition, it was a bathhouse (or "firebath") for men where hot fires and rocks produced heat which aided body cleansing. Thus, the *qasgiq* was a residence, bathhouse, and workshop for all but the youngest male community members. Finally, the *qasgiq* was a ceremonial and spiritual center for the community.

In primary villages, such as those noted above, all ceremonies and gatherings (within and between villages among the *Akulmiut* and neighboring groups) took place in the *qasgiq*. During the early 20th century, Christian church services were held in the *qasgiq* before churches were constructed. Virtually all official business, within the group, between groups and villages, and between villagers and non-Yup'ik (such as early missionaries) was conducted in the *qasgiq*. Male visitors to the community were expected first to report to the men in the *qasgiq* (Nelson 1882; Netsvetov [1845-63]1984; Zagoskin [1847]1967; Kilbuck n.d.).

Although there were no formally recognized leaders or offices to be held, men and boys were assigned specific places within the *qasgiq* that distinguished rank of males by age and residence:

> ...custom places the aged directly over the entrance....[T]he next in age occupy places on the right and left of the oldest and on down the years to the youngest. Generally speaking, the side of the kashigi [*qasgiq*] over the entrance is for the old men, the side opposite for the young men, and two remaining sides are occupied by the middle-aged, while the floor is for the boys (Kilbuck n.d.:18-19).

Furthermore, young men from other villages had certain duties in the *qasgiq*:

> The young men particularly those who have come from other villages, and have entered a trial marriage with one of the village damsels, are expected to keep the snow shoveled at the entrance, and keep the main path open, and to keep the kashigi [*qasgiq*] generally tidy (Kilbuck n.d.: 20).

Informal leadership was practiced by or in the men who held the title "nukulpiagtak" or "*the* man!" (*nukalpiaq* "man in his prime" [a good hunter or provider] or *nukalpiartaq* "young man in his prime") (Kilbuck n.d.:22). This man was consulted "[I]n any affair of importance affecting the village in general," particularly in determining participation in the *Kevgiq* and *Itruka'ar* ceremonies. He was said to be a major contributor in those ceremonies and provider to orphans and widows (Kilbuck n.d.:22). During this study an elderly man in Nunapitchuk clarified that the *nukalpiartaq* role was actually from the time of wars. It was noted that this man headed subsistence activities and warfare. Those who were grieving for their relatives killed in war and wanted to put together a war party would employ the *nukalpiaq* to handle logistics and strategize attacks (see also Shinkwin and Pete 1984). The informant added that [translated] "when warfare ended, the elders took over everything." Kilbuck (n.d.:19) noted that the elder men were monitors of *qasgiq* living and disseminators of knowledge which bore "on every phase of life" and covered every state of living, including public and private behavior, rules, and land and water travel.

Women and children lived in houses that served as residences for two to five women and their children (Kilbuck n.d.:13). Raising children was the women's responsibility until young boys left the home to join other males in the *qasgiq* to learn discipline and how to make a living (Kilbuck n.d.:18). Among the *Akulmiut*, the residential pattern of separate houses for women and children and a single residence for men and boys persisted until about 1930.

Village Social Composition

The social composition of three *Akulmiut* villages was reconstructed for the year 1920. This date is approximate and was selected because it represented the time by which Nunapitchuk (*Nunapicuaq*) was becoming established as a new primary village following the devastation and disruption of the population after the 1900 influenza and measles epidemic. The year 1920 also preceded the outmigration of many families from other *Akulmiut* villages during the following 15 years. (The population of Nunapitchuk tripled in the 20 years from 1920 to 1940.) By using the 1920 time marker, the social composition of an emerging *Akulmiut* community can be contrasted with two other long-standing settlements.

About 1920, *Nunapicuaq* was the smallest in population of the three primary *Akulmiut* villages whose populations were reconstructed (Table 4). A fourth, *Nunacuaq*, was the largest based in the 1920 U.S. census (Table 3). The reconstructed population of *Nanvarnarrlak* was 82 (compared to the 1920 U.S. census figure of 95) and 48 for

TABLE 4. ESTIMATED POPULATION OF THREE *AKULMIUT* VILLAGES BASED ON VILLAGE GENEALOGIES, CA. 1920

VILLAGE	# FAMILIES	# MARRIED COUPLES	# OTHER ADULTS	# CHILDREN	TOTAL PERSONS
NANVARNARRLAK	7	25	2	30	82
PAINGAQ	5	13 (2)*	2	20 (8)	48 +(12)
NUNAPICUAQ	3	9 (2)*	1	23 (8)	42 -(12)

*Two related married couples and their children left Paingaq ca. 1918 and settled by 1920 at *Nunapicuaq*. Number of families did not change as a result of this move.

Paingaq (not reported in the 1920 census). In approximately 1918, 12 people, consisting of two related married couples and their children, left *Paingaq* and moved to *Qaleqcuugtuli* about one mile below Nunapitchuk. By 1920 they relocated to *Nunapicuaq* and joined close relatives of one man to become one of the "founding" families of *Nunapicuaq* (Table 4). Prior to this move, the village populations would have been about 82 at Nanvarnarrlak, 60 at Paingaq, and 30 at Nunapicuaq (Table 4).

The largest village, *Nanvarnarrlak*, also had the most families. Extended family groups included sets of siblings, their parents, spouses, and children, but also any cross cousin, their spouse and children. Some families were simply a nuclear family that consisted

of a married couple not related to other community members and their children (see also Shinkwin and Pete 1984). The core of the largest family consisted of a set of siblings -- a brother and two sisters. That family, which included their spouses, children, sons- and daughters-in-law, and one daughter-in-law's two siblings, accounted for nearly one-half of the village population (Table 5). A second and extended family, also consisted of a set of siblings -- two brothers and three sisters -- and their spouses and children (married or unmarried). It accounted for 22 percent of the village population. Together these two families made up over two-thirds of Nanvarnarrlak's population in 1920 (Table 5).

Similarly, at *Paingaq*, families consisting of sets of siblings formed the core of the families. Again, two families accounted for nearly two-thirds of the village population. In one, the male cross cousin and his spouse joined two brothers. That family made up nearly one-third of the population (Table 5).

In contrast, in 1920, the fledgling community of Nunapicuaq had a single family that accounted for nearly two-thirds of the population (Table 5). Like the other two Akulmiut villages, a set of siblings, and, in this case joined by two male cross cousins, formed the core of the family. Another set of siblings, two sisters, and their husbands and children formed nearly one-fourth of the population.

TABLE 5. CORE FAMILY COMPOSITION OF THREE *AKULMIUT* VILLAGES, CA. 1920

VILLAGE		NUMBER (%) OF VILLAGE POPULATION
NANVARNARRLAK		
Family 1:	1 brother, 2 sisters	38 (46%)
	adjunct: 1 daughter-in-law and her siblings	
Family 2:	2 brothers, 3 sisters	18 (22%)
Family 3, 4, 5:	husband and wife (from another village)	4 (5%) 5 (6%) 5 (6%)
Family 6:	wife and husband (from another village)	3 (4%)
Family 7:	husband and wife (both from village)	9 (11%)
		82 (100%)
PAINGAQ		
Family 1:	1 brother, 2 sisters	9 (19%)
Family 2:	3 brothers, 2 sisters	16 (33%)
Family 3:	2 brothers, 1 male cross cousin	15 (31%)
Family 4:	1 brother, 2 sisters	5 (11%)
Family 5:	husband and wife both from village	3 (6%)
		48 (100%)
NUNAPICUAQ		
Family 1:	2 brothers, 1 sister, 2 male cross cousins adjunct: 1 sister-in-law	27 (64%)
Family 2:	2 sisters and their husbands all from another village	10 (24%)
Family 3:	husband and wife	5 (12%)
		42 (100%)

Marriage

Marriage patterns contributed to understanding the structure of *Akulmiut* society and villages around 1920. Marriages were grouped according to the origin or home village of the spouse based on interviews with key respondents and then the village was identified as being an *Akulmiut* village or not. Table 6 shows the source of spouse for each of the three villages.

At *Nanvarnarrlak*, most married couples (52 percent) had spouses who were both from the community. Two-thirds of all marriages had spouses from within *Akulmiut* society. For marriages involving a spouse not a member of *Akulmiut* society, more often it was the husband that was from outside *Akulmiut* society (Table 6). These men were either from a lower Kuskokwim River community or from among the *Cuukvagtulirmiut* of the Aropuk Lake area.

At *Paingaq*, there were the same number of marriages with both spouses from the community as there were with one spouse from outside *Akulmiut* society. Each accounted for 38 percent of the marriages (Table 6). Marriages including a spouse from within *Akulmiut* society accounted for the majority, 54 percent. More husbands than wives were from outside *Akulmiut* society. They were from the lower Kuskokwim River communities of Akiak and Napaskiak.

Marriages in the incipient community of *Nunapicuaq* contrasted notably with the long-term villages of *Nanvarnarrlak* and *Paingaq*. There were no marriages in which both spouses were from the settlement or its antecedent, *Kuigaallermiut* (Table 6). The brothers

TABLE 6. SOURCE OF SPOUSE FOR COUPLES OF THREE AKULMIUT VILLAGES, CA. 1920

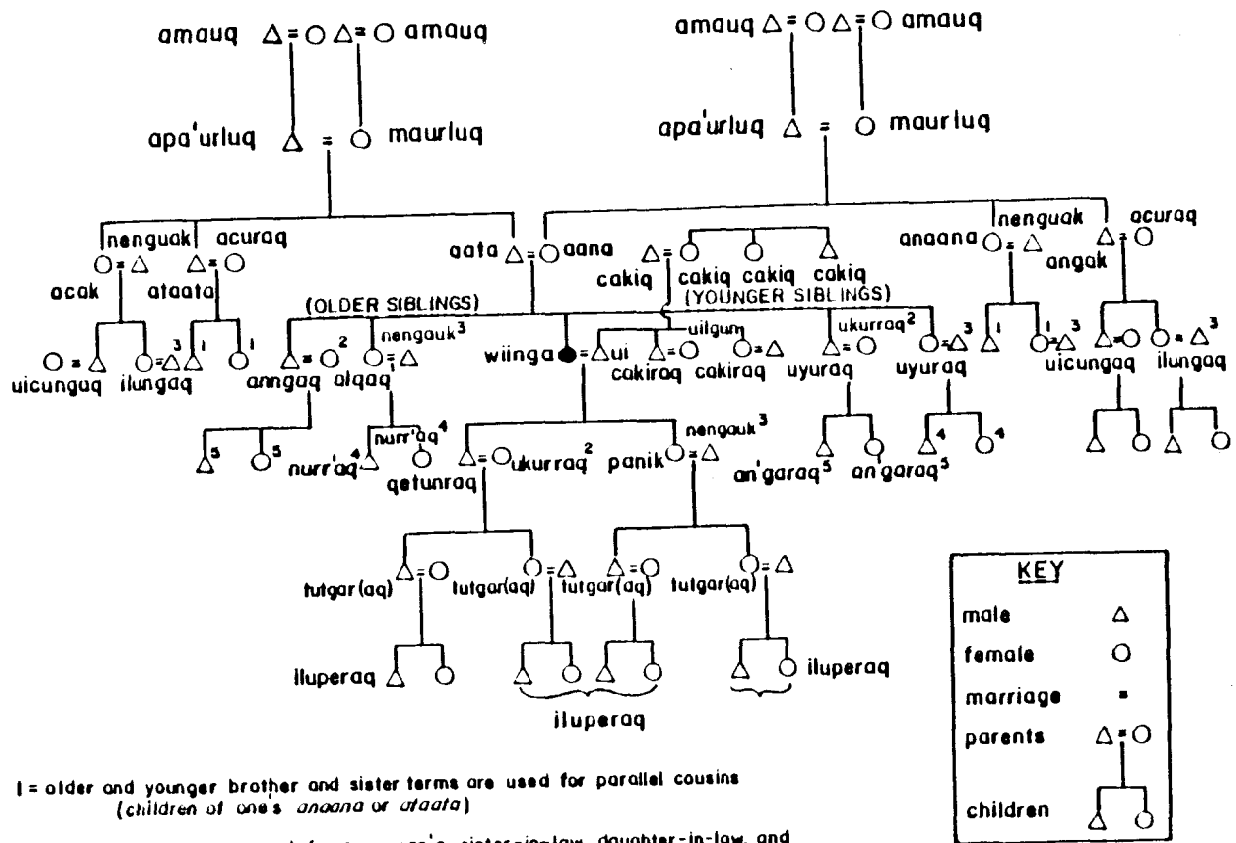
VILLAGE	# MARRIED COUPLES	BOTH SPOUSES FROM VILLAGE	WOMAN FROM VILLAGE, AKULMIUT MAN	MAN FROM VILLAGE, AKULMIUT WOMAN	WOMAN FROM VILLAGE, MAN NON-AKULMIUT	MAN FROM VILLAGE, WOMAN NON-AKULMIUT	ONE SPOUSE FROM VILLAGE; OTHER UNKNOWN	OTHER
NANVARNARRLAK	25	13 (52%)	2 (8%) [Nunacuaq]	(4%) Paingaq]	5 (20%) [Cuukvagtuliq; Kwethluk; Napaskiak; Tuntutuliak	2 (8%) [Bethel; Kuskokwim R.]	1 (4%)	1 (4 %) [Nunacuaq woman and Cuukvagtuliq man]
PAINGAQ	13	5 (38%)	1 (8%) [Kuigaallermiut]	(8%) Nunacuaq]	3 (23%) [Akiak, Napaskiak]	2 (15%) [Eek, Napaskiak]	1 (7%)	1 (7%) [Bethel or Russian Mission man and Napaskiak woman]
NUNAPICUAQ	9	0	0	5 (55%) [Nanvarnarrlak; Paingaq; Akulmiut]	1 (11%) [Eek]	0	1 (11%)	3 (33%) [Paingaq woman and Napaskiak man;Paingaq man and Nunacuaq woman;Nunacuaq woman and man

and male cross cousins who settled there, however, each had a spouse from another *Akulmiut* village. In this way, *Nunapicuaq* was like the other *Akulmiut* villages in that the majority, 55 percent, of the marriages had spouses from within *Akulmiut* society. Unlike the other villages, one-third of the marriages were couples in which neither spouse was from the community or its antecedent, but almost all were *Akulmiut*. At both *Nanvarnarrlak* and *Paingaq* all but one couple had at least one spouse from the community (Table 6).

Kinship

Kinship reference terms in *Akulmiut* society exhibit a Yuman type of social organization with bilateral descent and Iroquois cousin terminology (Figs. 9 and 10). Bilateral descent provides each individual with his or her own unique set of relatives or kindred which includes some consanguineal members from the father's kin group and some from the mother's with all four grandparents affiliated equally to the individual (Figs. 9 and 10; Murdock 1949:44, 56). Parallel cousins are referenced by the same terms as siblings and cross cousins are differentiated. In addition, an *Akulmiut* individual in 1983, as in earlier times, was related to at least one deceased person, his or her namesake. This resulted in a special relationship with the namesake's closest living relatives (see also Shinkwin and Pete 1984; Fienup-Riordan 1983; Morrow 1984).

Given the marriage patterns described above, it appears that there was a tendency for the larger bilateral kin group, termed the



1 = older and younger brother and sister terms are used for parallel cousins (*children of one's anaana or ataata*)

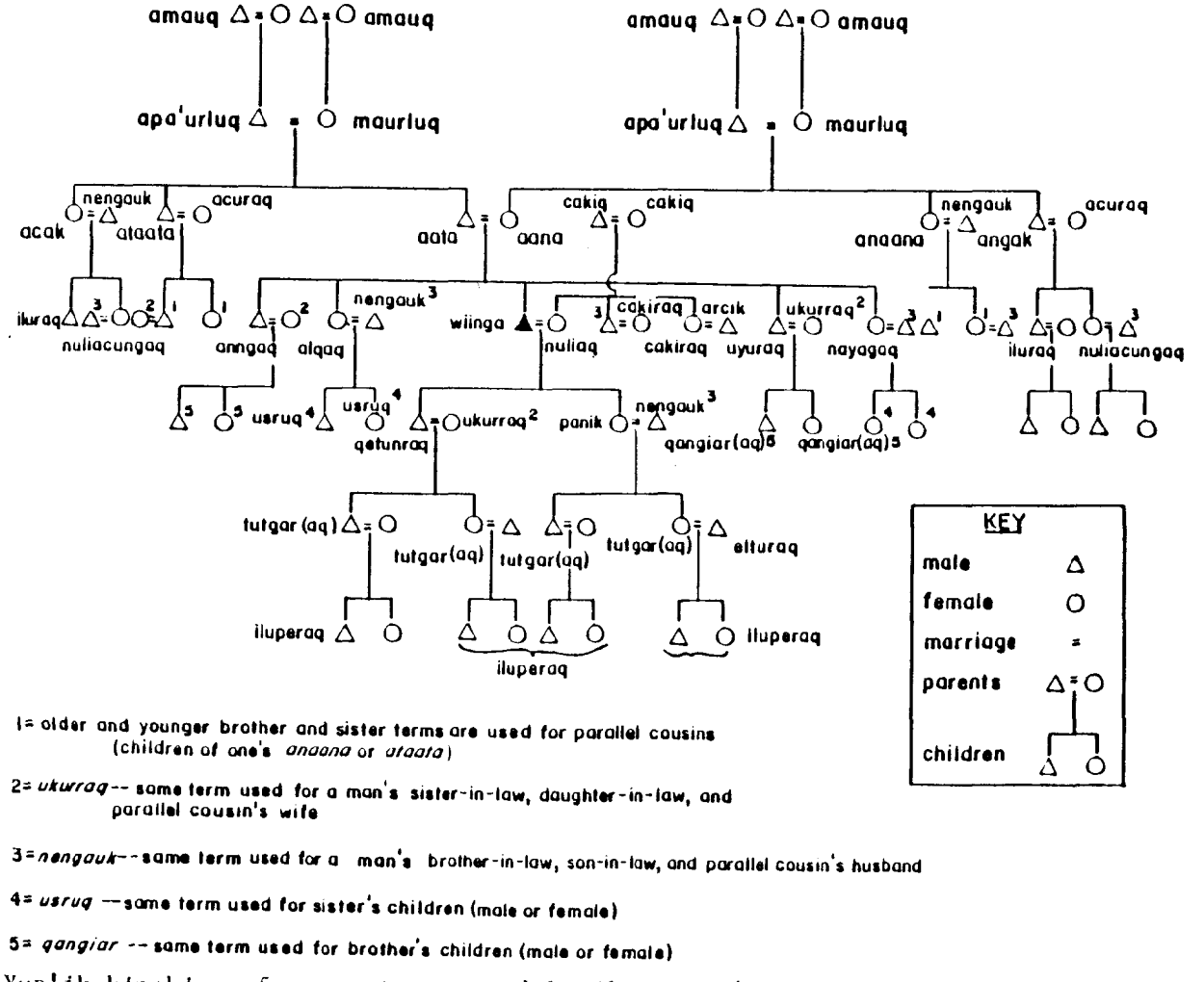
2 = *ukurraq* — same term used for a woman's sister-in-law, daughter-in-law, and parallel cousin's wife

3 = *nengauk* — same term used for a woman's brother-in-law, son-in-law, and parallel cousin's husband

4 = *nurr'aq* — same term used for sister's children (male or female)

5 = *an'garaq* — same term used for brother's children (male or female)

Fig. 9. Yup'ik kinship reference terms used by Akulmiut (from point of view of female). (adapted from Jacobson [1984])



1= older and younger brother and sister terms are used for parallel cousins (children of one's *anaana* or *ataata*)

2= *ukurraq*-- same term used for a man's sister-in-law, daughter-in-law, and parallel cousin's wife

3= *nengauk*--same term used for a man's brother-in-law, son-in-law, and parallel cousin's husband

4= *usruq* --same term used for sister's children (male or female)

5= *qangiar* --same term used for brother's children (male or female)

Fig. 10. Yup'ik kinship reference terms used by Akulmiut (from point of view of male). (adapted from Jacobson [1984])

"endogamous local community" (Murdock 1949:62), or society to be characteristic of *Akulmiut* social structure. *Akulmiut* social structure showed that family organization, especially extended and collateral, was a key feature of each community. The extension of sibling terminology to parallel cousins and family structure shown in the same term for daughter-in-law as sister-in-law and for son-in-law as brother-in-law are additional characteristics of the "endogamous local community." These features point to the particularly important family structure which is characteristic of the endogamous localized kin group or "deme" identified by Murdock (1949:63, 159). This type of structure does not divide the community or society into members and non-members. Instead, it reinforced village identity. These features persisted in 1983 as shown in Chapter 4.

Historical Context

The preceding sections have described the distribution of *Akulmiut* settlement as shown in historic records and derived from oral accounts. Oral accounts indicated there was occupation of the area by *Akulmiut* at least as far back as the late prehistoric period (ca. 1820). Although there have been no archaeological excavations in the area, one archaeological site in the nearby Kashunuk River drainage was occupied as early as 0 to 600 A.D. It has been suggested that there are sites in the *Akulmiut* area which are likely to be as old (Stern 1983:9). Changes in population and settlement showed the dynamism that has characterized *Akulmiut* land use and

occupancy since about 1880. The size, nature, and composition of early 20th century settlements revealed the endogamous structure of *Akulmiut* society. The following sections depict the context within which *Akulmiut* society came into contact with Euroamerican society and its expansion into Alaska and the lower Kuskokwim River region in particular. The subsequent chapter describes this context with specific reference to *Akulmiut* communities, especially Nunapitchuk.

The Russian Period to 1867

Russian exploration of the Kuskokwim River area began nearly 200 years ago in the 1790s, although it was another 40 years before a Russian trading post was established along the Kuskokwim River (Chernenko 1967; VanStone 1973; Black 1984). In the Bristol Bay region immediately south of the Kuskokwim River area, a Russian trading company, Lebedev-Lastochkin Company, controlled commercial activities of the area in the 1790s. In the early 1790s the same company sent an expedition overland in winter on skis under the leadership of Vasiliy Ivanov. It reached the Kuskokwim River by means of the Holitna River along the middle portion of the Kuskokwim River drainage (Davydov [1810-12]1977:201; Chernenko 1967:10, 29-30) (Fig. 11). Members of the expedition traveled down the Kuskokwim River about 150 miles to Ohagmiut near which they crossed the Kalskag portage to the Yukon River (Davydov [1810-12] 1977:201). The intent of that expedition, and the several which followed, was to expand the Russian trade for furs.

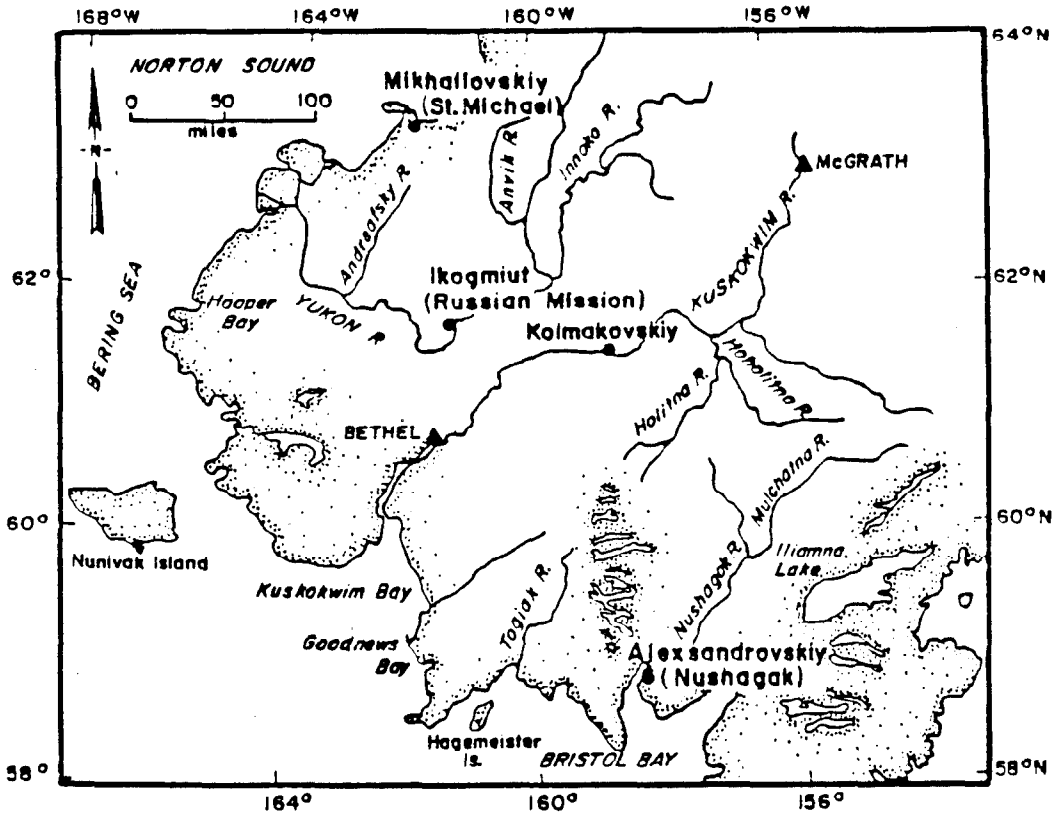


Fig. 11. General area of Russian exploration in western Alaska, ca. 1790-1866.

In 1799, it has been speculated that the commander of the Lebedev-Lastochkin post, an outstanding navigator named P.K. Zaikov, likely explored the coastal areas of Bristol Bay during that time (Black 1984:27). Such exploration probably brought Zaikov into contact with the Yup'ik-speaking people of adjacent Kuskokwim Bay, as did subsequent explorations of coastal areas noted below. By 1800, Russian traders were knowledgeable about both the Kuskokwim and Yukon River valleys, the portage between the two, and part of the coast of the between the Yukon and Kuskokwim river mouths. Even before Ivanov's winter expedition in the 1790s, indigenous people in the Kuskokwim River valley had used established routes to obtain metal knives and axes in trade (Davydov [1810-12]1977:201).

The year 1799 also was marked by the establishment of the Russian-American Company which created a monopoly in commercial activity that required independent companies, like Lebedev-Lastochkin Company, to merge or liquidate their holdings (Zagoskin [1847]1967:284). To the south, the Russian-American Company's trade for furs was declining and, in the early 1800s, the Company sought new sources for trade in beaver pelts (VanStone 1973:7). The Company looked further north of the Alaska Peninsula and dispatched several expeditions to both coastal and inland areas. The trade incentive was complemented with an interest by the Russian government to extend their sphere of influence into areas in the far north of northwestern North America being explored by other nations (VanStone 1973:7,10).

Three expeditions of the Russian-American Company during the ice-free seasons of 1818 and 1819 provided the Company with

sufficient information on the potential fur trade in the Kuskokwim River drainage and Bristol Bay areas. This resulted in the construction of the first Russian-American Company post north of the Alaska Peninsula. From this post, called Alexsandrovskiy Redoubt, located near the mouth of the Nushagak River, originated the expeditions to the Kuskokwim River area during the next 15 years. These resulted in Russian occupation and direct trade in the Kuskokwim River valley.

In 1818, the Russian-American Company sent Peter Korsakovskiy and Fedor Kolmakov with three other Russians and 20 Aleuts to explore the coast of Bristol Bay north to Goodnews Bay (VanStone 1973:7) (Fig. 11). The purpose was to open new areas to the fur trade. The lower Kuskokwim River was explored as well (Black 1984). Results of that expedition yielded a list of 10 lower Kuskokwim River settlements and knowledge of a portage from the Kuskokwim River to the Yukon River in the vicinity of present-day Bethel (Black 1984:29). It was the first of several efforts of the Russians from 1818 to 1821 to explore the lower Yukon and Kuskokwim rivers area and marked the first major pursuit by the Russian-American Company for commercial monopoly of the fur trade in the region (VanStone 1973; Black 1984). Five explorations of the Bering Sea coast between the mouths of the Yukon and Kuskokwim rivers occurred during that time, with trading activities the major purpose of the expeditions (VanStone 1973; Black 1984).

After the coastal expeditions, Korsakovskiy, without Kolmakov in his company, sought to explore inland areas. He explored several

Bristol Bay tributaries, including the upper Mulchatna River, a tributary of the Nushagak River. From there, he ventured across the divide into the Holitna River drainage of the Kuskokwim River. He met a local trader, Eremy Rodionov, who took a small group over the divide to the mouth of the Holitna River and thence downstream about 150 miles to the area near present-day Kalskag (VanStone 1973:8). During summer 1819, Korsakovskiy again explored northern Bristol Bay, including Togiak Bay and nearby Hagemeister Island, and traveled north of Cape Newenham into Goodnews Bay (VanStone 1973:8). That same summer, Kolmakov was directed to construct a post for the Russian-American Company on Bristol Bay near the mouth of the Nushagak River. There were Kuskokwim River Eskimos already living near the Nushagak post when V.S. Khromchenko's expedition visited there in 1821 (VanStone 1973:32). In addition, the exiled Yup'ik tribe, the *Agaligmiut*, formerly of the lower Kuskokwim River-Kuskokwim Bay area, were residing near the site of the Russian post. Kolmakov provided the *Agaligmiut* with some protection from their adversaries, the Yup'ik of the Nushagak and Kuskokwim rivers (Oswalt 1980:10). Later, the *Agaligmiut* played a key role in advancing the Russian interest in trade into the Kuskokwim River valley described below.

In summer 1821, Russian-American Company coastal explorations continued along the Bering Sea coast between the mouths of the Yukon and Kuskokwim rivers. Four Russian expeditions sailed for Norton Sound that summer. The expeditions of A.K. Etolin and V.S. Khromchenko met at Goodnews Bay, but soon became separated. M.N.

Vasilev and A.P. Avinov, in separate ventures, also followed the coast from Goodnews Bay to Norton Sound (Fig. 11). Although all reached Norton Sound, only Etolin had succeeded in contacting Yup'ik residents of the Kuskokwim River and Nunivak Island (VanStone 1973:14-16). Again, in summer 1822, Khromchenko headed a coastal expedition from Bristol Bay to Norton Sound. Bad weather and shallow inshore waters prevented his party from contacting many of the Yup'ik for trading purposes. His journal of the 1822 expedition, however, provided the earliest descriptions of the Yup'ik of southwestern Alaska, including brief remarks about the lower Kuskokwim River Yup'ik (VanStone 1973).

The late 1820s also marked the time of coastal and inland explorations. I. Ya. Vasilev explored the area between Nushagak Station and Norton Sound north of the Yukon River and the lower Kuskokwim River during that time (Chernenko 1967:10). In summer 1829, Vasilev encountered Kuskokwim River Natives near Togiak Lake, some of whom had copper icons which they had presumably received from the Russians, indirectly if not directly (Black 1984:28). In summer 1830, Vasilev headed an overland expedition that included Kolmakov accompanied by Yup'ik guides from the Kuskokwim, among others including an interpreter, Semen Lukin (Oswalt 1980:10). The journey originated from the Russian post at the mouth of the Nushagak River to the headwaters where they crossed the divide to the headwaters of the Holitna River, descended that river to its mouth along the middle Kuskokwim, and then continued down the Kuskokwim River to Kuskokwim Bay. From there they returned overland to the Nushagak station

(Oswalt 1980:10). Vasilev's explorations confirmed the abundance of fur resources north of the Nushagak River, but demonstrated that trade relations were not entirely secured, as Vasilev's party was sometimes met with hostility (Oswalt 1980:10).

Soon thereafter, the Russian-American Company sent two parties inland to the middle Kuskokwim River at the mouth of the Holitna River to obtain furs. In 1832, Fedor Kolmakov again took a party as far as the mouth of the Holitna River using the same route as Vasilev had two years earlier (Oswalt 1980:10-11). There, he established the Kuskokwim River valley's first trading post, an *odinochka* or outpost, of the Russian-American Company (Zagoskin [1847] 1967; VanStone 1973; Oswalt 1980). Although the party did not venture downriver, they traveled upriver about 100 miles (in the vicinity of Vinasale below McGrath) into the area occupied by upper Kuskokwim Athabaskan Indians (Fig. 11). The Holitna outpost served as a way station to the Nushagak station and also as a collection point for furs from the middle and upper Kuskokwim drainage, if not other areas as well. The following year, the Russian-American Company sent another trading party under Kolmakov's leadership to the middle Kuskokwim River to obtain furs. At that time, they established an *odinochka* about 90 miles below the Holitna River mouth at the mouth of what is now called the Kolmakof River (Oswalt 1966:125-126; 1980:11). The interpreter, Lukin, operated the outpost.

Within 10 years, the coastal expeditions of the early 1820s and the overland explorations between 1829 and 1832 drew the inhabitants, Eskimo and Indian, of the Kuskokwim River valley into direct contact

with Russian trading activities by means of Alexsandrovskiy Redoubt. The outposts established along the middle Kuskokwim River in 1832 and 1833 secured the fur trading interest of the Russians. The seminal explorations of Russian traders in the 1790s into the Kuskokwim River drainage set the stage for the Russian-American Company to produce, in one decade (1822-1832), a commerce in furs with the Yup'ik Eskimos and Athabaskan Indians of the Kuskokwim River valley and the Bristol Bay region.

As the Yup'ik of the Kuskokwim River area were drawn into the Russian fur trade from south, they were also engaged, about the same time, into trading with Russians from a post to the north. Subsequent to their coastal explorations, the Russian-American Company established a redoubt north of the Yukon River mouth to promote trade among the Eskimo (Yup'ik and Inupiat) population of that region and the Athabaskan Indians in the adjacent inland areas. Mikhailovskiy Redoubt, or Fort St. Michael, was founded in 1833 with that intent. An outpost of this redoubt was founded in 1836 along the lower Yukon River at "Ikogmiut" (present-day Russian Mission), near the portage to the Kuskokwim River (Fig. 12). Thus, for a period of time in the 1830s, lower and middle Kuskokwim River Yup'ik had contact with agents of the Russian-American Company through their first outposts along both the Yukon and Kuskokwim rivers. The former was linked to a redoubt to the north on Norton Sound at Fort St. Michael and the latter to the south on Bristol Bay at Fort Alexander (Fig. 12). Traders from those outposts traveled extensively to obtain pelts (Oswalt 1980:84).

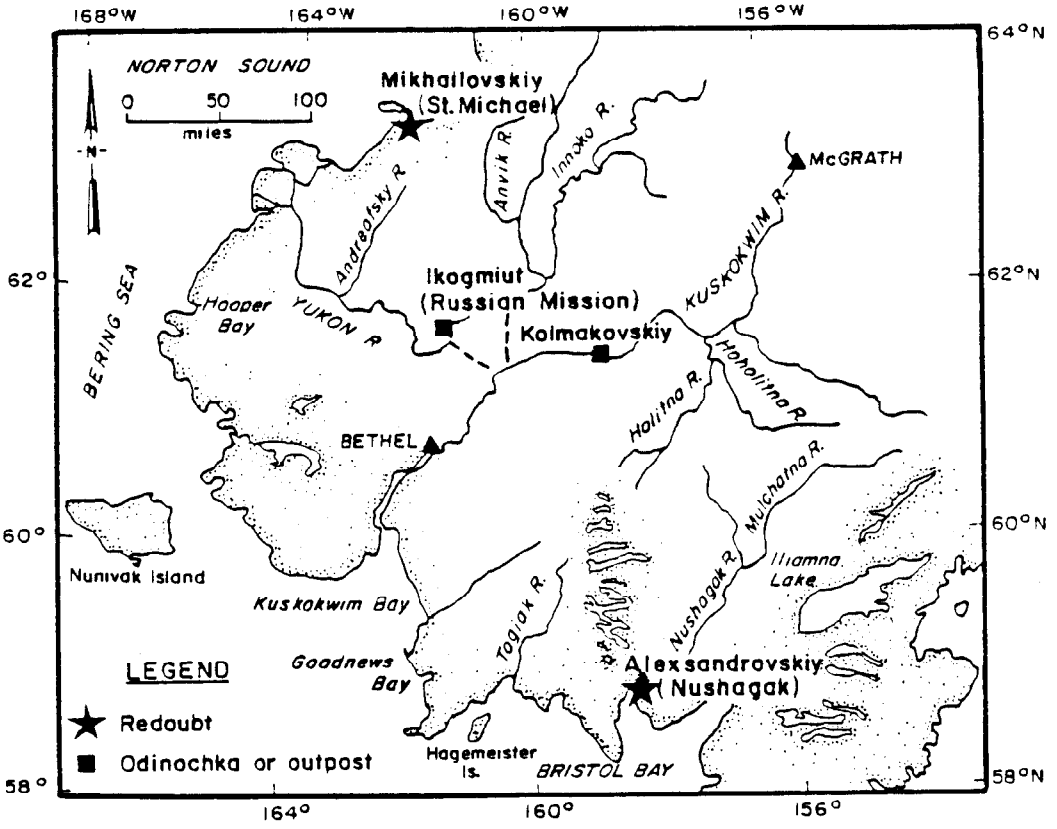


Fig. 12. Russian redoubts and odinochka in western Alaska, ca. 1833-1844.

The initial flurry of trade subsided in 1838 when an epidemic of smallpox struck the indigenous population of Eskimos and Indians (Zagoskin [1847]1967). The disease first struck the Nushagak station in March 1838, then spread to the Kuskokwim River area, and by May 1838 reached Mikhailovskiy Redoubt, where it persisted through fall 1838 (Arndt 1985:4, 5). The next year, a Yup'ik group, the *Mamterillermiut*, from the lower Kuskokwim River near Bethel, burned the Russian post at Ikogmiut and held the foreign agents as responsible for the introduction and spread of the disease that devastated the Native populations of the region (Zagoskin [1847]1967:200]; Oswalt 1980:12). It is probable that the *Akulmiut* were also afflicted by the spread of the disease like their neighbors at Bethel due both to their proximity to the Ikogmiut post and their trading activities there.

In the aftermath of the smallpox epidemic, the Russian-American Company was concerned with maintaining their commerce in furs and adjusted their operations to deal with the new circumstances. First, the Russian-American Company began the practice of outfitting Eskimos and creoles to hunt furbearers, a practice which continued until the mid 1840s (Oswalt 1980:84). The marked loss of population substantially reduced the number of individuals able to procure furs for trade, including the *toyons* (or *tuyuq* [sing.] in Yup'ik) and assistants who, prior to the epidemic, were instrumental to the Russian enterprise. The Russians had instituted a system of local leadership by appointing certain men in major communities as company representatives or *toyons* for promoting the village harvest and trade

of furs (Zagoskin [1847]1967:80, 102, 332). By 1838, Kolmakov had already established this practice in the Kuskokwim River area (Oswalt 1980:11; Zagoskin [1847]1967:102). Following the epidemic, a new system was necessary for obtaining furs. Second, the company rebuilt the post (*odinochka*) at Ikogmiut in 1840. It was important to continue to have a post in the area where furs, especially beaver, could be obtained in quantity. Third, in 1841, a year-round redoubt was ordered to be constructed along the Kuskokwim River across from Lukin's *odinochka* at the mouth of the Kolmakof River (Oswalt 1980:13, 35, 84). The improved trading context represented by Fort Kolmakov or Kolmakovskiy Redoubt signaled increased Russian-American Company efforts to exploit the furbearing potential of interior southwest Alaska as the post at Nushagak diminished in importance.

In 1844, Alexsandrovskiy Redoubt lessened in importance and was reduced to an *odinochka* as Kolmakovskiy Redoubt became supplied as an independent station within the Russian-American Company trading network (Oswalt 1980:42) (Fig. 13) (Table 7). This restructuring of fur trade operations increased trade and contact among Kuskokwim River Natives, Eskimo and Indian, but apparently had the effect of drawing in trade from the lower Yukon River as well. In 1845, the post at Ikogmiut on the Yukon, roughly 100 miles distant by trail from Kolmakovskiy Redoubt along the Kuskokwim River, was abandoned because of the reduction in local trade possibly in favor of trade at Fort Kolmakov (Table 7) (Oswalt 1980:81). Instead, the Russian-American Company established a new *odinochka* about 110 miles below

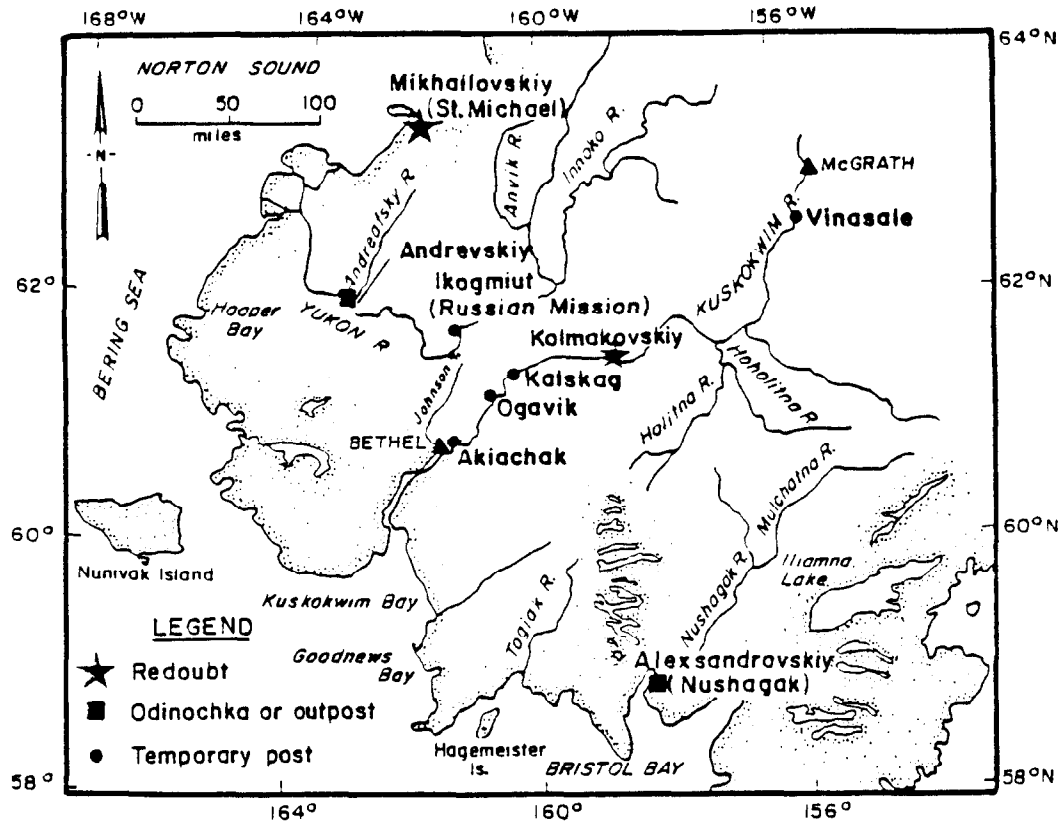


Fig. 13. Russian redoubts, odinochka, and temporary posts in western Alaska, ca. 1844-1866.

TABLE 7. FURS PURCHASED BY RUSSIAN TRADERS FROM KOLMAKOVSKIY AND MIKHAILOVSKIY, 1842-1860*

Fur species	LAND OTTER	BEAVER	FOX	A.FOX	BEAR	MINK	MARTEN	MUSKRAT	LYNX
1842 Kolmakovskiy	0	0	0	0	0	0	0	0	0
Mikhailovskiy	240	2088	532	549	0	73	58	300	36
1843 Kolmakovskiy	0	0	0	0	0	0	0	0	0
Mikhailovskiy	274	3004	300	424	0	0	11	64	33
1844 Kolmakovskiy	0	0	0	0	0	0	0	0	0
Mikhailovskiy	250	3180	278	174	2	0	29	0	5
1845 Kolmakovskiy	76	1646	135	0	3	0	0	0	10
Mikhailovskiy	320	2607	504	138	6	0	149	0	27
1846 Kolmakovskiy	52	2091	79	0	10	0	0	0	5
Mikhailovskiy	227	3623	408	132	3	0	47	0	33
1847 Kolmakovskiy	100	2395	236	0	8	0	0	0	49
Mikhailovskiy	179	3404	293	161	5	0	0	0	111
1848 Kolmakovskiy	75	1949	333	0	14	0	0	0	20
Mikhailovskiy	207	2749	469	13	3	20	96	490	110
1849 Kolmakovskiy	78	1436	298	0	8	0	0	0	15
Mikhailovskiy	269	2543	637	41	2	0	175	0	124
1850 Kolmakovskiy	73	1077	285	0	7	0	0	0	28
Mikhailovskiy	124	2505	793	24	22	0	64	686	196
1852 Kolmakovskiy	45	1166	339	0	0	0	0	0	19
Mikhailovskiy	157	3169	259	12	1	29	67	692	106
1853 Kolmakovskiy	48	2640	163	113	0	0	0	0	0
Mikhailovskiy	250	3174	454	30	3	70	122	568	15
1854 Kolmakovskiy	42	1472	105	0	0	0	0	0	1
Mikhailovskiy	442	3855	288	4	3	1	254	0	10
1855 Kolmakovskiy	67	965	12	0	0	0	0	0	3
Mikhailovskiy	347	1594	470	36	2	33	502	235	4

Continued

TABLE 7. Continued

Fur species		LAND OTTER	BEAVER	FOX	A.FOX	BEAR	MINK	MARTEN	MUSKRAT	LYNX
1856	Kolmakovskiy	88	1161	260	99	16	0	450	0	10
	Mikhailovskiy	248	1207	673	138	19	104	396	220	26
1857	Kolmakovskiy	0	0	0	0	0	0	0	0	0
	Mikhailovskiy	375	2683	1059	159	0	0	1387	52	33
1858	Kolmakovskiy	95	1280	128	8	7	0	352	0	95
	Mikhailovskiy	286	1449	506	150	24	0	1394	69	53
1859	Kolmakovskiy	103	1717	757	63	10	0	346	0	52
	Mikhailovskiy	333	1982	995	267	37	0	1946	140	32
1860	Kolmakovskiy	79	969	398	37	10	0	950	0	9
	Mikhailovskiy	313	1950	895	54	46	0	1536	0	28

*Source: Petroff 1900: 129-33

Ikogmiut, called Andrevskiy, along the Yukon River near the mouth of the Andreafsky River (Fig. 13).

Moving the site of the post to Andrevskiy may have been desired so as to avoid interference in trading operations between the Ikogmiut post and Fort Kolmakov. At the time of Zagoskin's 1842-44 explorations in the area, he did not believe that the two posts were competing for trading activities. Rather, there was a separation of clientele. The Ikogmiut post, according to Zagoskin ([1847]1967:197, 275), serviced the lower Yukon River and *Akulmiut* villages, and possibly other lower Kuskokwim River communities. However, the Yup'ik of Ikogmiut monopolized the Native trade. They purchased from the *Akulmiut* furs which were exchanged for dressed hides of sea

mammals and oil that the Ikogmiut Native traders obtained from coastal residents at Pastolik on Norton Sound (Zagoskin [1847]1967:197).

By relocating the Russian-American outpost from Ikogmiut to Andrevskiy, competition would more readily be avoided between the redoubt at Mikhailovskiy and at Kolmkovskiy. At the same time, trade with lower Yukon River and *Akulmiut* villagers could continue. More important, the move also allowed the Russian-American Company to more easily supply their lower Yukon River outpost overland and by water from Mikhailovskiy Redoubt. The Ikogmiut post was not well stocked and Zagoskin ([1847]1967:197) reported that trade at the Ikogmiut post could only succeed in buying furs from the Natives if the post had a constant supply of "native products" such as dressed sea mammal hides to trade and if the post were made a year-round redoubt. Zagoskin ([1847]1967:102) also observed that Russian influence was not secured and recommended that the Russian-American Company purchase all types of fur. Shortly after Zagoskin's explorations, other types of fur, particularly marten and arctic fox, were purchased by the Kolmakovskiy traders beginning in 1853 and several other fur species by Mikhailovskiy traders beginning in 1855 (Table 7).

The transfer of the *odinochka* from Ikogmiut downriver to Andrevskiy appears to have improved Russian trade in the area. Placing the post closer to the source of sought-after Native products eliminated the Ikogmiut as middlemen in the trade of furs and sea mammal products, particularly between the *Akulmiut* and coastal

Yup'ik. The location also saved the company the expense of establishing and maintaining a redoubt or year-round trading station and fort, but enabled it to have a well-supplied outpost which could be more easily stocked from the redoubt at Mikhailovskiy. It would have been superfluous for the Russian-American Company to have a third redoubt in the region without an abundant source of fur available for harvest in the adjacent area.

Kolmakovskiy Redoubt, like that of Fort St. Michael north of the Yukon River, sustained a major role in the Russian fur trade and influence in this region during the subsequent 20 years until the end of the Russian period in Alaska. The success of Kolmakovskiy is partly attributed to the Yup'ik-speaking manager of the fort, Semen Lukin. Lukin was appointed shortly after the fort was established and he managed it for about 15 years. The fort was staffed primarily by creoles and the Yup'ik-speaking *Agaligmiut* who previously worked at the Nushagak station (Oswalt 1980:35,60).

The role of the *Agaligmiut* in advancing Russian enterprise was not insignificant. For at least 20 years, they were directly involved in Russian trading operations at Alexsandrovskiy Redoubt to the extent that the Russians provided them protection from their Yup'ik adversaries of the Nushagak and Kuskokwim River areas. Their knowledge of Russian commerce in furs, fluency in the Yup'ik language, and ability to subsist from the natural fish and wildlife resources must have been advantageous to Russian-American Company business. The Russians quickly recruited *Agaligmiut* men for employment at the fort along the Kuskokwim River when their own

nationals had to be replaced because of "disruptive behavior" (Oswalt 1980:60). The *Agaligmiut* were among those whom the company previously outfitted from Alexsandrovskiy Redoubt to hunt for furs in the middle and upper Kuskokwim river area and adjacent drainages of the Yukon River (Oswalt 1980:12-13). The *Agaligmiut* further integrated themselves by marrying Kuskokwim River area women (Oswalt 1980:59), presumably those from the vicinity of the redoubt.

Lukin and others from Kolmakovskiy traveled to villages and trading sites annually to secure furs, but Natives, Yup'ik and Athabaskan, of the region increasingly came to the fort to trade as well (Oswalt 1980:84). The pattern of trade for furs in the Kuskokwim River valley no longer entailed outfitting hunters, but was built upon an operation based at Kolmakovskiy Redoubt which sent agents out to remote areas to collect furs. In establishing Kolmakovskiy Redoubt, the Russian fur trade was brought roughly 250 miles closer to the Kuskokwim River valley as the Nushagak station on Bristol Bay waned in importance.

The 12 years from 1832 to 1844 resulted in opportunities for direct trade with the Russians in the home territory of the Yup'ik of the lower Yukon and Kuşkokwim rivers. More specifically, the *Akulmiut*, and others in communities along the adjacent Kuskokwim River, could readily trade with agents of the Russian-American Company along either or both the Yukon and Kuskokwim rivers. By 1844, the *Akulmiut* were less than 75 miles by trail from either of the Russian posts at Ikogmiut on the Yukon or Ogavik on the Kuskokwim (Fig. 13) (Zagoskin [1847]1967:254). Trade products from

the lower Kuskokwim River continued to appear at Fort Kolmakov as noted in two accounts. Sea mammal fat was purchased by the fort from lower Kuskokwim Yup'ik in 1844 (Zagoskin [1847]1967:253).

From the 1790s, Russian contact with the lower Kuskokwim River Yup'ik was principally, but not entirely, through traders and their agents until the end of the Russian period in 1867 with the sale of Alaska to the United States. The Russian Orthodox Church also contacted Yup'ik through their travels and teachings, generally using the trading posts and redoubts as their bases.

Officially, Orthodoxy in Alaska began in 1794 "when eight Russian monks arrived at St. Paul's Harbor, Kodiak..." (Henkelman and Vitt 1985:25). Thirty-five years later, in 1829, Father Ivan Veniaminov became the first Russian priest to visit the Yup'ik of southwestern Alaska at Alexsandrovskiy Redoubt along Bristol Bay (Oswalt 1980:60). Yup'ik men who had come to the post to trade were baptized and given a small copper cross (Oswalt 1966:143-144). Kolmakov, the manager of the fort, and Semen Lukin were given authority by Veniaminov to baptize Eskimos interested in Christianity (Oswalt 1980:60). On Veniaminov's second trip to the Nushagak station in 1832, he specifically noted that numerous *Agaligmiut* and a few men and women from the Kuskokwim River area had been baptized. Subsequently, in 1838, the Russian priest G. Golovin visited the Nushagak post and reported on Christian Natives from along both the Kuskokwim and Yukon rivers (Black 1984:xiv).

From about 1843 through 1866, the Russian Orthodox Church had the greatest contact of the 19th century with the Kuskokwim area

Natives. I. Petelin, appointed resident missionary for the Nushagak post in 1842, established the first Russian mission in southwestern Alaska. He was the first Orthodox priest to travel in 1843 to the Kuskokwim River area(Oswalt 1980: 60-61). Semen Lukin, who managed Kolmakovskiy Redoubt at that time, held Orthodox services weekly at the fort. In the same year, Father Golovin visited Mikhailovskiy Redoubt. Following that trip, the decision was made to establish a Yukon River mission (Black 1984:xiv). Iakov Netsvetov was selected as resident missionary and became the first Orthodox priest stationed in the region. He personally selected at site at Ikogmiut along the lower Yukon River for the mission (Fig. 13) (Black 1984:xiii, xvii). His influence was almost entirely among the lower Yukon River Natives. He periodically traveled to Kolmakovskiy Redoubt until his departure in 1862 (Netsvetov [1845-63]1984).

In the 1860s, Kolmakovskiy Redoubt also served as a base for Russian Orthodox church activities when Father Illarion was stationed there from 1861 to 1866. Illarion traveled as well to the Russian mission at Ikogmiut which fell under his jurisdiction after Netsvetov's departure (Oswalt 1966:143-144). Z. Bel'kov, one of Netsvetov's students assisted Illarion and remained in Alaska after the purchase by the United States becoming a priest in 1876 (Black 1984:xvii). Illarion traveled both up and down the Kuskokwim River from Kolmakovskiy Redoubt, although lower Kuskokwim River Yup'ik including the *Akulmiut* were not receptive to his teachings.

Illarion also documented the trading activities of the Natives and the Russian-American Company at Fort Kolmakov. Routine trading

in winter 1861-62 at Kolmakovskiy Redoubt involved lower Kuskokwim River Yup'ik as well as Indians from the lower Yukon and upper Kuskokwim rivers (Oswalt 1980:84). Some lower Kuskokwim River Yup'ik and their trading chief traded with the manager from Kolmakovskiy at Kalskag in fall 1861 (Oswalt 1960:102). The manager had obtained certain items from Mikhailovskiy Redoubt to trade for seal blubber and seal, beaver, fox, and land otter skins from the lower Kuskokwim River Yup'ik. In return, they received "deer skins, Circassian tobacco, calico...glass beads, Yakut knives, needles, etc...." (Oswalt 1960:102). Illarion noted that fall trading at Kalskag was an annual occurrence.

In addition, employees from the fort made a sled trip in November 1861 about 200 miles down the Kuskokwim River for the purpose of trading (Oswalt 1980:84). This is in the vicinity of the Johnson River mouth, 20 miles below present-day Bethel, adjacent to the area occupied by the *Akulmiut* (Figs. 6 and 13). Finally, also along the lower Kuskokwim River, the Russians had a temporary trading post near present-day Akiachak, roughly 140 miles below the fort (Fig. 13). White fox pelts were traded to the Russians there in 1863 (Oswalt 1980:62, 82).

In 1866, the Russian-American Company abandoned Kolmakovskiy Redoubt. After the sale of Alaska to the United States in 1867 Illarion departed from the lower Yukon and Kuskokwim River valleys and chose to return to his homeland in Russia.

The Anglo-American Period, 1867-1917

Following the purchase of Alaska by the United States, commerce in the Kuskokwim River valley remained essentially the same throughout the duration of the century. Hutchinson, Kohl & Company purchased the holdings of the Russian-American Company and, by 1872, became the Alaska Commercial Company. The Kolmakovskiy post, in 1870, continued as the center of Kuskokwim River trade operated by Reinhold Separe with an outpost further upriver at Vinasale (Oswalt 1980:26). At the same time, along the lower Yukon River, the former Russian-American Company station at Andrevskiy was reportedly abandoned by 1869 and established again at Ikogmiut (Raymond 1900:30). Other stations along the Kuskokwim River during the 1870s included one that was operated near Ogavik and another, opposite Kolmakovskiy, at the former site of the Russian-American Company's *odinochka* (Fig. 10) (Oswalt 1980:91). The latter was operated by the Western Fur and Trading Company, presumably in competition with the Alaska Commercial Company, and continued until 1883. Separe became somewhat of an independent trader in 1875. It is believed that about that time he had a storage building constructed along Kuskokwim Bay called "Warehouse" (Oswalt 1980:91). Supplies for the upriver stations were transported from Warehouse in Native watercraft. For nearly 40 years supplies were lightered from freight ships that unloaded at Warehouse because of the presumed shallowness of the Kuskokwim River. Warehouse itself became something of a trading station when the Alaska Commercial Company ship anchored offshore.

In 1890, it was reported that nearby villagers exchanged waterfowl, eggs, and fish for powder, tobacco, and lead at the site (Porter 1893:101).

During the early American period, the influence of the Russian Orthodox church was at a near standstill. Unlike the Russian-American Company station managers before them, American traders played no role in proselytizing. In spite of the Russian church and company efforts until 1866, American explorations in 1869 and 1880 both reported scant evidence for Russian Orthodox influence in the lower Yukon and Kuskokwim valleys (Raymond 1900:35; Petroff 1900:69).

By 1880, the United States census enumerator recorded 29 people at "Mumtrekhlagamute station" (present-day Bethel) and 41 people at "Mumtrekhlagamute village" (Petroff 1884:17). The station, like the one at Vinasale along the upper Kuskokwim river, was an outpost of Kolmakovskiy. It was managed for Separe by Nicholai A. Komolkoshen who had been raised by Lukin at Kolmakovskiy Redoubt. He had worked for the Russian priest Illarion (Oswalt 1980:91), presumably at both Kolmakovskiy along the Kuskokwim River and Ikogmiut along the lower Yukon River. He was probably knowledgeable both of the trade and people of the region from the late Russian period. In winter 1884-85, Komolkoshen died and Edward Lind was hired for the station at "Mumtrekhlagamute." Lind was also familiar with the people and commerce of the region having traded during the early Anglo-American period at St. Michael and Ikogmiut (Oswalt 1980:91).

"Mumtrekhlagamute station" continued to be subsidiary to Kolmakovskiy, even though, in 1884, 44 percent of the furs exported

from the Kuskokwim River area came from the Bethel station (Oswalt 1980:92). Competition among trading companies probably contributed to the flurry of trading activity. Although prices increased, the purchasing power of money reportedly did not decrease proportionately. This enabled indigenous people to purchase imported goods more extensively than ever possible during the Russian period (Petroff 1900:134). By 1887, preferred items to receive in trade were "tobacco...tea, drilling, needles, powder and lead, knives and axes, net twine, sugar and flour, and cooking utensils" (Oswalt 1980:99). The trading emphasis which had shifted to the lower Kuskokwim River also had some bearing on the decision by the Moravians, in 1885, to establish a mission at "Mumtrekhlagamute" which they named Bethel.

The following year the Russian Orthodox church reviewed conditions along the Kuskokwim River. An Orthodox church was constructed in 1887 at Kolmakovskiy, but was relocated downriver at Little Russian Mission (now Chuathbaluk) several years later (Oswalt 1980:27).

Commerce at Bethel also increased because coastal people, lacking marketable furs, exchanged seal and belukha oil and blubber, seal hides and thongs, and walrus ivory for marten, land otter, fox and bear skins brought by the upriver people (Porter 1893:104, 253). By 1892, Separe had sold most of his business to Lind, who moved to Kolmakovskiy in spite of the shift in commerce to the lower Kuskokwim River. Native Kuskokwim traders further extended the trade network, for example, by traveling in winter to Goodnews Bay where they traded

imported goods such as tobacco, powder, and lead to Yup'ik from the Togiak region further east (Fig. 11) (Porter 1893:99). Nonetheless, the Natives of the Kuskokwim River region reportedly had been the least influenced by non-Natives and their commercial activity of any region in Alaska (Porter 1893:99).

During the 1890s, the influence of the Moravian and Russian Orthodox churches became more pronounced in the Kuskokwim River valley. The Moravians established a mission site at the village of Ogavik (Oswalt 1980:93) (Fig. 13) where both Russian and American traders had an outpost earlier in the century. It continued until 1898. The Moravians extended their contact among the indigenous people of the lower Kuskokwim River from their Bethel mission. Medical care also came by means of the Moravian mission when trained medical personnel, including a nurse in 1893 and a doctor in 1896, were added to the mission staff (Henkelman and Vitt 1985:133). By 1898, patients came from 200 miles above and below Bethel for treatment (Spurr 1950:84).

The Moravians also had an economic influence in the area as they worked in 1896 with the United States Bureau of Education to reach an agreement for the introduction of reindeer into the Bethel area several years later (Henkelman and Vitt 1985:306). There were years of exceptional salmon runs in the lower Kuskokwim River, but also especially poor seasons, as in 1897, when many people died of starvation the following winter (Spurr 1950:85).

During the late 19th and early 20th century period, the Russian Orthodox church began to extend and increase its influence into lower

Kuskokwim River communities. The Russian Orthodox church maintained a presence with a priest at the Ikogmiut mission along the lower Yukon River and one at Little Russian Mission (Chuathbaluk) along the middle Kuskokwim River (Oswalt 1980:27, 93). By 1895, Little Russian Mission became the headquarters of the Russian Orthodox church for the Kuskokwim River valley until World War I when authority returned to the Ikogmiut mission (Oswalt 1963:7).

The most dramatic influence of this earlier American period was the 1900 influenza and measles epidemic that devastated the indigenous population of Alaska. Peoples of the Kuskokwim and Yukon River drainages were hit the hardest (Wolfe 1982:108). Moravian mission staff close to the local populations estimated that the population was reduced by about 50 percent (Oswalt 1980:95). The redistribution of the population was significant as innumerable villages were abandoned.

The search for gold brought an influx of people into both the Yukon and Kuskokwim River drainages. Miners and traders contributed to the increase in traffic of people and supplies. Lind bought the remainder of Separe's holdings in 1898 (Oswalt 1980:91). Soon thereafter, he sold a portion of his interest to Frank Joaquin. Joaquin, along with Adams H. Twitchell and Charles A. Fowler, purchased the remainder of Lind's interest in the Alaska Commercial Company in 1906 (Oswalt 1980:94). This sale ended the commercial activity of the Alaska Commercial Company in the Kuskokwim River valley for many years to come. Incorporated in 1909 as the Kuskokwim

Commercial Company, Joaquin, Twitchell, and Fowler's business operated until 1916 (Oswalt 1980:94).

Both the Moravian and Orthodox churches continued to work among the people of the lower Kuskokwim River after the turn of the century. Having signed an agreement in 1896, the Moravian mission arranged for reindeer to be brought to the Bethel area in 1901. The herd of 175 animals was the basis for reindeer herding in the lower Kuskokwim River area which was centered at Akiak, 40 miles above Bethel. Reindeer herding in the area continued until the 1930s (Henkelman and Vitt 1985:307; Oswalt 1980:94).

The introduction of reindeer provided some relief as the initial herd increased to 2,700 animals in three herds by 1909 and the mission was able to sell some of the excess stock (Henkelman and Vitt 1985:310). Twitchell purchased 100 bulls which he then took to the Iditarod mining district and sold to the miners as food.

Mining activity along the middle and upper Kuskokwim River continued to bring people and supplies through the lower Kuskokwim valley. Steamboats and schooners made their way into the Kuskokwim River in summer 1906 and trade flourished at Bethel. The market value of mink, for example, rose dramatically from 25 cents per pelt in 1900 to four dollars by 1906 (Henkelman and Vitt 1985:190). This economic surge prompted the Moravian mission in 1907 to open its own store in order to obtain in trade the necessary local products such as sealskin boots and soles and fish (dried) at an uninflated price (Henkelman and Vitt 1985:191).

In summer 1908, an oceangoing ship maneuvered the river channel and was the first to deliver "hundreds of tons of freight directly to Bethel" (Oswalt 1980:90). The channel was charted by the United States government, so that after 1914 ships were able to regularly make deliveries at Bethel (Oswalt 1980:91). This secured the prominence of Bethel as the center of commercial activity in the Kuskokwim River valley. Wood-burning sternwheelers then transported supplies as far as McGrath, 450 miles distant, along the upper Kuskokwim River (Oswalt 1980:41). Continued increased fur prices enabled more local Native involvement in the market economy until World War I when fur prices dropped by about 75 percent (Oswalt 1980:94).

The Anglo-American Period After 1917

Bethel continued to be the commercial center of the lower Kuskokwim River area after World War I. John Felder and Maurice Gale purchased the Kuskokwim Commercial Company in 1918 and operated it until its sale to the Northern Commercial Company in 1928 (Lenz and Barker 1985:65). The United States government built a hospital at Akiak upriver from Bethel in 1918, but in 1940 a new facility was constructed at Bethel shifting regional medical services to the commercial center of the lower Kuskokwim River area.

Notable changes affecting the regional economy in the 1920s were the increased market and prices for furs, the use of aircraft for transportation, and the development of an export fishing industry.

By 1920, fur prices had increased two to fourfold from pre-World War I levels (Wolfe 1979:73). Even though the price of imported goods rose as rapidly, trapping in western Alaska, for the first time, became a major activity and continued as such until World War II (Wolfe 1979:73). After 1926 when the first airplane landed at Bethel, the marketing of furs for export was furthered by the introduction of airplanes:

> Open cockpit planes with bags of fur tied to the wings soon became a familiar sight. The airplane meant traders no longer had to wait for the annual supply boat to send furs to the Seattle market. With the airplane came fur buyers, who flew in to buy directly from natives and trading posts. (Lenz and Barker 1985:83)

Similarly, the marketing of salmon locally, as a dried product, and for export, as a salted product, contributed to the development of local industries in the lower Kuskokwim River area which took hold in the 20 years prior to World War II. These industries marked the first significant involvement of lower Kuskokwim River Yup'ik in a market economy. Changes in the seasonal round of subsistence activities enabled families and individuals to incorporate the harvest of local wildlife resources for export into annual round of wild resource harvesting for domestic use (Wolfe 1979:79).

After World War II, the regional economy again was marginal:

> Bethel after the war was a cash-poor town. Job opportunities were limited and most people still lived off the land. The average annual income in the Yukon-Kuskokwim Delta was about $2,000, but the average annual income for Yup'iks was $913. If you don't count government spending, economic development along the Kuskokwim stood at about the same level in the 1950s as

> it did under the Russians 100 years before. (Lenz and Barker 1985:104)

In the 1960s and 1970s, trapping activity declined with reduced prices being paid on the fur exchange. Simultaneously, however, commercial salmon fishing in the lower Kuskokwim River began to increase as fish buyers and processors recognized the potential for exporting salmon from the Kuskokwim River to markets outside of the state. In 1983, commercial fishing in the lower Kuskokwim River accounted for 98 percent of all salmon taken for commercial sale from the Kuskokwim River (Alaska Department of Fish and Game 1984:33).

CHAPTER 4. THE COMMUNITY OF NUNAPITCHUK

HISTORICAL DEVELOPMENT

During the early and mid 1800s, ancestors of the *Nunapicuarmiut* had little direct contact with non-Natives described in the previous chapter. However, the influences of Christianity, market trade, reindeer herding, developing salmon fisheries, and a western educational system all bore upon the historical development of Nunapitchuk during the 20th century. These influences are described in each of the following sections, particularly as they pertain to continuity and change in land and resource use and culture change and persistence. The remainder of the chapter focuses on a description of the community of Nunapitchuk in 1983 in terms of its social and economic dimensions, including the wage and subsistence sectors of the economy.

Christian Religious Influences

During the late 1800s, the Moravian church was the first to make an organized or consistent effort to travel to the "tundra villages" and encompass the *Akulmiut*. In 1887, within two years of the founding of the Moravian mission at Bethel, the *Akulmiut* village of *Paingaq*, even though they had been visited previously by a Russian

Orthodox priest, requested a chapel be built by the Moravian church with their donated labor (Henkelman and Vitt 1985:100). The chapel was not built, but the Moravians continued to make regular trips to the tundra villages at least twice in 1891 and three times in winter 1895-96 (Henkelman and Vitt 1985:143, 148). The Orthodox church reestablished itself around 1892, with its headquarters at Little Russian Mission (now called Chuathbaluk) along the middle Kuskokwim River (Oswalt 1980:83).

About this time the Moravians denounced the traditional religious ceremony which they called the "mask festival" (probably referring to *Kelek*; see Chapter 5). They felt it "was not compatible with the Christian faith" and reported, in 1894, that for the first time, the ceremony was not performed in six lower Kuskokwim River villages from Bethel to Ogavik (*Uravik*) above Tuluksak (Henkelman and Vitt 1985:146). At *Paingaq*, people resisted Moravian pressure to discontinue the ceremony. Although some favored Moravian prayer meetings, the desires of the majority and those in other *Akulmiut* villages prevailed. At that time the Moravians at Bethel, according to missionary John Kilbuck, did not oppose the Bladder Festival (*Nakaciuryaraq*; see Chapter 5), although they reported the Russian Orthodox priests forbade its performance (Henkelman and Vitt 1985:16). The importance of these ceremonies in relation to land and resource use is described in the following chapter and is discussed in the final chapter.

Competition for church members increased along the lower Kuskokwim River and inland tundra with Moravian, Roman Catholic, and

Russian Orthodox church representatives traveling throughout the area. In winter 1903-04, it was reported that no significant changes in religious affiliation came about, but the Moravians stated that their "missionaries would not visit them or provide the free medical care as previously had been done" to those who joined another church (Henkelman and Vitt 1985:160). At the time, the Moravian mission at Bethel had the only resident doctor and dispensary along the Kuskokwim River. This must have been viewed as advantageous in the wake of the devastating 1900 influenza and measles epidemic a few years earlier. Nonetheless, in 1905 and 1906 the Russian Orthodox priest was successful in baptizing all of the people at nearby Napaskiak (Oswalt 1963:132).

In winter 1904-05, the Moravians, including a Native "Helper" (lay pastor) denounced the celebration of the Native "play" (possibly referring to the *Elriq* ceremony; see Chapter 5) in December-January at *Uravik* because they felt "the people relinquished much of their Christian faith during this time" (Henkelman and Vitt 1985:171). For the next three years the Moravians reported division among community residents over the performance of Yup'ik religious ceremonies and traditional rituals in Tuluksak, Eek, and one of the *Akulmiut* villages. Some wanted to continue the ceremonies, whereas others "wanted them modified, so they were more a form of amusement and in less conflict with their Christian faith" (Henkelman and Vitt 1985:173, 191). Even in 1914, however, the Moravians continued to place special emphasis on the *Akulmiut* and Kuskokwim Bay villages in

an effort to contend with the traditional Yup'ik belief system (Henkelman and Vitt 1985:204).

A Yup'ik, Helper David, was stationed at *Paingaq* in 1903, although the other *Akulmiut* villages did not have a Helper assigned to them (Henkelman and Vitt 1985:160). Helper Neck (*Uyaquq*), a former shaman from near Akiachak, began to work for the Moravian church in lower Kuskokwim River villages in the early 1890s. In 1907-08 and again in winter 1908-09, he went with some men from Akiachak to the *Akulmiut* villages in an evangelical effort and answered questions about the power of shamans (Henkelman and Vitt 1985:192). In December 1910, in spite of a visit from Rev. Hinz, ordained minister of the Moravian church, the people at *Paingaq* still made plans for the 10-year feast for the dead (*Elriq*) to be held in January when it took place. About 1916, *Angaassanguluk* of *Paingaq* was assigned as the Helper in that village. In 1918, Helper Neck (*Uyaquq*) settled at nearby *Nanvarnarrlak* to take up his ministry there where he spent the few remaining years of his life.

The Moravian objective to preach the Gospel and declare the Will of God in the vernacular of the people (Henkelman and Vitt 1985:25) was aided by the efforts of the Helpers to develop a writing system for the Yup'ik language. Helper Neck (*Uyaquq*) was instrumental in that work. The pictographic system he developed, beginning about 1894 and refined about 1905, showed his concern for consistency of interpretation when reading the pictographic script. By 1889, the Moravians published the first Yup'ik grammar and dictionary (Henkelman and Vitt 1985:39). Later, around 1910, letters from the

Latin alphabet were added to *Uyaquq*'s pictographic system. His system, however, was supplanted by a Yup'ik language writing system using the Latin alphabet. In 1929, the Moravians published the gospels and a hymnal in Yup'ik which was also used by the Russian Orthodox Church (Henkelman and Vitt 1985:29).

The Moravian missionaries viewed the *Akulmiut* as being particularly intent upon maintaining their traditional beliefs. Helper Neck's (*Uyaquq*) extensive ministerial experience and expertise in translating the Bible was probably considered advantageous to church work among these people. He tried to bring them "to a Christian way of life without forsaking what was truly valuable in their own heritage" (Henkelman and Vitt 1985:372). In 1923, he reported progress at both *Nanvarnarrlak* and nearby *Nunacuaq*, where he noted changes and requested permission of his superiors in Bethel to remain stationed among the *Akulmiut* for another year, in spite of his rapidly declining health (Henkelman and Vitt 1985:373). The people of *Nanvarnarrlak* requested a chapel be built in their community. *Uyaquq* died the following year.

After Helper Neck's death, the Moravians were concerned about reports that the Natives were using hymnals and Sunday school pictures as icons for healing. Soon thereafter, the Moravian church provided lumber for constructing a chapel, which subsequently was built by the villagers. It was the first chapel built in an *Akulmiut* village. *Uyaquq*'s son continued his father's work in service of the church and became the first ordained Moravian Native minister in Alaska (Henkelman and Vitt 1985:372).

Prior to 1920, most of the residents of Nunapitchuk were Moravian. Two families who came from *Paingaq* at that time, however, were Russian Orthodox and later some of the original Nunapitchuk settlers or their offspring became Russian Orthodox. An elderly woman of Russian Orthodox faith at Nunapitchuk recalled that when she was married (about 1924), she and her husband-to-be were taken to Kwethluk where they were married by Father Ipchook, the resident priest.

In Nunapitchuk, both Moravian and Russian Orthodox services were held in the *qasgiq* up until 1934 when the first Moravian Church at Nunapitchuk was built. A Nunapitchuk man, *Cikuyaq*, was the Helper. After 1934, when men no longer lived in the *qasgiq*, the Russian Orthodox services were held in the home of the *tuyaq* (First Chief) of that church. Father Matfi and another Russian Orthodox priest from Russian Mission, along the lower Yukon River, occasionally conducted church services at Nunapitchuk. About 1945, the first Russian Orthodox Church at Nunapitchuk was built and named St. Mary's after the mother of the *tuyaq*. Later, by the mid 1950s, an *Akulmiut* man from Kasigluk was ordained and became the first resident priest in an *Akulmiut* village.

A Pentecostal church group began in Nunapitchuk in the early 1970s and continued to be active in 1983. In 1972, a new Moravian Church was constructed and, in 1985, a new Russian Orthodox Church. Each denomination had a resident lay pastor who was a lifelong resident of the community. In 1983, 42 Nunapitchuk households (60 percent) were affiliated with the Moravian Church, 21 (30 percent)

with the Russian Orthodox Church, and 6 (10 percent) with the Pentecostal (one unknown). Community residents commonly attended services and/or participated in church-sponsored events of other denominations than their own.

Market Trade Influences

Trade with Non-Natives

In the early 20th century, the *Akulmiut* continued to travel primarily to the Kuskokwim River to trade at posts in Bethel, but other trading opportunities became available with increasing development in the lower Kuskokwim River region of transportation, fur, and fisheries. The earliest report of a resident trader among the *Akulmiut* was in summer 1903 at *Nunacuaq* where a man set up business for the purpose of buying fur pelts (Henkelman and Vitt 1985:160).

From about 1908 until 1922, Oscar Samuelson, a Norwegian man married to a Yup'ik woman from Bristol Bay, had the contract for carrying mail from Bethel to the lower Yukon River near Holy Cross (Lenz and Barker 1985:76). On the return trip, Nunapitchuk residents reported he traveled across the portage from the lower Yukon River to the upper Johnson River, went down the Johnson River to the *Akulmiut* villages, thence to the lower Kuskokwim River, and returned upriver to Bethel. Samuelson established a store about 1912 across the river from Napaskiak where the settlement came to be called Oscarville. He

maintained a trading post there until his death in 1953 (Oswalt 1963:10). Samuelson's store at Oscarville was frequented by people from Nunapitchuk, who traded furs and dried salmon for imported foods and goods. No cash was exchanged, but a credit system was maintained.

At *Paingaq*, *Qaguysak*, a man of Yup'ik and non-Native ancestry with relatives at *Paingaq*, had a small store there beginning about 1918. He operated it for a few years before moving to Bethel, but his adopted son continued to operate it for another year or so.

From around 1918 until about the early 1930s, Frank Waskey, a trader with a store in Dillingham, traveled throughout the *Akulmiut* and Baird Inlet area by dog team in winter and by three-holed *qayaq* in summer and bought furs. The grandfather of some current residents of Nunapitchuk was one of the Yup'ik men he hired to paddle him from place to place buying furs. It is possible that it is Waskey who had a storehouse and dwelling at the mouth of the Johnson River noted in 1930 by archaeologist Ales Hrdlicka (1944:294) when he traveled downriver to the mouth of the Kuskokwim River. Further down the Kuskokwim River, Hrdlicka (1944:297, 303) reported a trading post at Akulurak, north of the Eek River mouth, and at Apokak (*Aprukak*), south of the Eek River.

In 1927, Oscar Samuelson's son, John, opened a store in Bethel. Another store at Bethel, Felder's, was bought in 1928 by the Northern Commercial Company (Lenz and Barker 1985:187). Nunapitchuk residents reported trading at both of these stores.

At Nunapitchuk in the early 1930s, a non-Native man called "McCann" had a store and house, although it is uncertain for how many years he operated it there. This was followed by John Samuelson's store in about 1935, which was built about one mile downriver from the village site. According to one Nunapitchuk man, two other non-Natives, Al Wallace and Willard Olsen, traded with the *Akulmiut* about the same time. Olsen had a store at the neighboring village of *Nunacuaq*. In 1935, Olsen went into business with a Mrs. Smeaton in Bethel (Lenz and Barker 1985:84). About 1939, Samuelson returned to Bethel and periodically returned to Nunapitchuk opening the store for business. His store. although not operating, was still at its original location in 1983.

Along with Olsen, Wallace, Samuelson, and possibly Waskey, who traded with the *Akulmiut* in the mid 1930s, there were other fur buyers who started flying into the area buying directly from Natives and trading posts (Lenz and Barker 1985:83). Traders, such as Samuelson and Olsen, continued to conduct much of their fur trading business traveling by dog team. Locally, it was reported that noted Alaskan pilot, Ray Peterson, was the first to land a plane on the river ice at Nunapitchuk about 1939. This method of transportation soon replaced dog teams for hauling mail as well as furs and other freight. Beginning in the 1940s, freight and fuel was hauled by barge into the tundra villages in summer. In 1983, this continued to be a primary means of transportation for bringing bulk products and large equipment, such as snowmachines, outboard engines, and aluminum

boats. Airplanes had to land on river ice or water at Nunapitchuk until an airstrip was built in 1986.

In the early 1950s, through the Bureau of Indian Affairs, the Alaska Native Industries Cooperative Association (ANICA) opened a store at Nunapitchuk which was managed by a local resident. In 1959, the former manager of the store began his own business by opening a general store which was still in business in the 1980s. By 1970, the ANICA store was no longer in business. Another much smaller store, was opened by a resident of Nunapitchuk, but closed in 1985. In 1983, the privately-owned general store at Nunapitchuk was the largest and one of three stores in private individual ownership in all of the lower Yukon and Kuskokwim rivers area, excluding Bethel and Aniak. Its prices for imported goods, food, equipment, and prices paid for furs were competitive with those of Bethel. In 1983 the business operated on both a cash and credit system. In 1959 at Bethel, Swanson's Brothers opened a store which Nunapitchuk residents reported was the first store they did business with on a cash basis.

Reindeer Herding

Another commercial enterprise in which the *Nunapicuarmiut* were involved was reindeer herding. In 1891, reindeer were introduced to Alaska ostensibly as a relief measure to provide food and clothing for the Native people. The U.S. Department of Interior, Office of Education, administered the program until 1929 with school teachers as local supervisors of the herding operations. After that time, the

Governor of the Territory's office administered the operations, but still had the assistance of local teachers who were employed in Native schools by the U.S. Department of Interior, Office of Indian Affairs (Parks 1932). In the late 1920s, the Kuskokwim Reindeer Company was formed with Yup'ik owners of small herds joining together to pool their resources (Henkelman and Vitt 1985:311). In the mid 1930s, two male youth from Nunapitchuk and three from Bethel worked herding nearby reindeer herds under a Yup'ik foreman from *Nanvarnarrlak*. They herded about 2,000 reindeer between the Baird Inlet-Aropuk Lake area and the upper Johnson River drainage. The settlement of *Qasqirayarmiullret* was used as a camp by herders. Herding in the wet tundra area in the ice-free months was particularly arduous and required wearing specially-made sealskin boots that enabled water to leak out the soles, as men and boys frequently had to move through chest-deep water. Dogs were used to help herd the animals.

Slaughtered reindeer could be purchased for $15 or traded for by previous arrangement with the U.S. Reindeer Service. Permits for receiving slaughtered reindeer could be obtained from the Office of Indian Affairs teacher at neighboring *Nunacuaq* (called "Tundra" and "Nunachuk" in their records), as it was an authorized station of the reindeer service (Martin 1940). Two reindeer per permit could be obtained. The reindeer herders themselves were only paid in reindeer and reindeer products. It was noted by one Nunapitchuk man, who was a herder as a youth, that one attraction of being a herder was being

able to obtain the legskins of the reindeer as they were the local fashion for women's footgear. Hides were used as mattresses.

By the early 1940s, herding was discontinued, in part due to reduced herd size resulting from wolf predation. It also became more difficult to find people interested in herding for a business that was becoming less lucrative (Henkelman and Vitt 1985:311).

Commercial Salmon Fisheries

The commercialization of Kuskokwim River salmon fisheries began in 1913 when 7,800 king salmon were taken for commercial export (Regnart and Geiger 1968:147). Small operations continued from 1916 through 1925 processing between 949 salmon in 1916 to 34,853 in 1920 (Regnart and Geiger 1968:147). Concern over declining salmon runs in the Kuskokwim River led to a special investigation in summer 1922, which documented the commercial and subsistence salmon fishing activities along the river for the first time (Bower 1923). In 1922, there were four salteries along the lower Kuskokwim River between Bethel and Kuskokwim Bay which produced king salmon for export (Bower 1923:50-57). Beginning in 1926, however, commercial fishing in "Kuskokwim waters" was prohibited by regulation of the U.S. Secretary of Commerce (Public Law 298, Chapter 3547 [1906] amended as Public Law 204, Chapter 272 [1924]). The law clarified that the prohibition "shall not prevent the taking of fish for local food requirements or for use as dog feed" (Bower 1925:81; Public Law 204 [1924]). During the 1920s, some families from the *Akulmiut* villages sailed down the

Johnson River to the Kuskokwim River for subsistence salmon fishing. People regularly traded in fish, as in furs, at posts along the lower Kuskokwim River, such as Samuelson's at Oscarville and the Northern Commercial Company in Bethel, and received credit. Steamboats took dried salmon upriver to McGrath when dog teams were used for freighting overland before airplanes came into regular use for transport (Sara in Lenz and Barker 1985:58; Bower 1929:251).

In 1934, the Alaska Fisheries Act was again amended to permit commercial fishing for king (chinook) salmon for export from the Kuskokwim and Yukon rivers by "native Indians [which included Eskimos] and bona fide permanent white inhabitants along the said rivers," and was regulated by the Secretary of Commerce (Bower 1935:5; Public Law 106, Chapter 146 [1934]). Some limited commercial fishing had been allowed in Kuskokwim Bay in 1930-32, but export was prohibited in 1933 (Bower 1931, 1932, 1933, 1934). The regulations restricted the methods and means of salmon fishing and placed a limit on the commercial harvest. However, taking salmon for local food requirements or for use as dog feed was allowed (Bower 1935:5, 8). Coincidentally, 1935 marked the time when several Nunapitchuk families first established fish camps along the lower Kuskokwim River for seasonal use on a regular and annual basis. At least one family also traveled from *Cuukvagtuliq* along Aropuk Lake for salmon fishing on the lower Kuskokwim River.

In 1935, two salmon export companies operated near the mouth of the Kuskokwim River. The commercial export market apparently was not reliable or stable. From 1936-41, there was only one commercial

operation, and this was set up one mile below Bethel (Bower 1937, 1938, 1940, 1941, 1942, 1943). That sole commercial operator produced pickled salmon for export. From his camp below Bethel, Robert Gierke processed 9,600 lbs of pickled king salmon in 1936; 9,600 lbs pickled king salmon plus 4,800 lbs coho in 1938; 2,000 lbs pickled king salmon in 1939; 3,700 lbs king plus 3,000 lbs coho in 1940; and 2,800 lbs king and 4,040 lbs coho in 1941 (Bower 1937, 1940, 1941, 1942, 1943). No commercial operations were reported for 1942 and 1943 (Bower 1944a, 1944b).

During the same period of time, beginning about 1938, some Nunapitchuk residents and others in the region took advantage of the wage opportunities available in the development of salmon fisheries in the Bristol Bay region by going to work at the canneries for three months each summer. Some Nunapitchuk men did this for nearly 25 years. In 1983, a few middle aged Nunapitchuk men continued to earn wages by working for Bristol Bay salmon processing companies. As one elderly Bethel man described:

> The cannery [people] came in early in the spring with boats as soon as the ice went out. The first ones I remember were back in the early Thirties. They came up the Kuskokwim with ships and barges and stuff, and they hauled everybody over to Bristol Bay. Those of us that got the tail end of the cannery work, we flew over in planes [beginning ca. 1949], and the first planes we got on were the DC-3s. (Gregory in Lenz and Barker 1985:121)

In 1956, Oswalt (1963:93) reported for the lower Kuskokwim River village of Napaskiak that:

> The workers are flown to and from the Bristol Bay packing factories by the hiring company. They usually work for a six-week period and earn from $300 to $6000. This type of employment began in the early 1940's, when, as a result of World War II, canneries could no longer transport migrant workers from the United States. During the war and for a few years thereafter, local men were assured a source of cash for short-term labor, but with the decline of the Bristol Bay salmon catch, this work has become less lucrative and less predictable.

Continuing from 1943 through 1958, there were only three years with any commercial production reported for the Kuskokwim River area (Regnart and Geiger 1968:147).

In the late 1950s, the commercial fishing industry along the lower Kuskokwim River developed again. This coincided with the onset of regulation and management of salmon fisheries by the State of Alaska when Alaska achieved statehood in 1959. In 1959, the Kuskokwim Packing Company operated along the lower Kuskokwim River. In 1960, Arctic Alaska Fisheries also operated (Alaska Department of Fish and Game 1960:47). These operators processed king salmon as fresh fish which were flown to Anchorage. This type of processing was possible because, in 1958, "Northern Consolidated cut its air freight rates. Larger and faster turboprop planes could deliver fresh salmon to Anchorage and Seattle" (Lenz and Barker 1985:123). In 1961, there were three commercial operators from Bethel processing king and coho salmon as fresh, frozen, and mild cure products from fish which was purchased from 143 local fishermen (Alaska Department of Fish and Game 1961). One Bethel commercial fisherman recently noted:

> Back in the 1960s, commercial fishing income was much lower. But it was the first cash many people in the Delta had ever seen...[before that] People didn't get money. They got credit from the store because there was nothing to spend money for. Whatever you traded would be subtracted from the credit. You brought $500 worth of furs and it was subtracted from the credit. It was a paper economy with no cash. (Aloysius in Lenz and Barker 1985:124)

By that time, several Nunapitchuk families already had established fishing camps between Bethel and Napakiak along the lower Kuskokwim River as described below.

About 1963, a commercial processor in Bethel spearheaded the formation of the Kuskokwim Fisherman's Cooperative (KFC) with a group of salmon fishermen from the *Akulmiut* villages of Kasigluk and Nunapitchuk (Atmautluak was not established at the time). The purpose was to provide a way for local fishermen to market fish and to provide jobs for cooperative members (G. Neck, pers. comm. 1984). Membership was lifetime with a one-time fee. The original seven-member board of directors consisted of two men from Nunapitchuk, four from Kasigluk, and the processor. Around 1971, the cooperative contracted with a major Bethel processor who had to meet any competitor's higher price for the purchase of all salmon caught by KFC members. However, KFC members, were not obligated to sell to the contracted processor. A postseason dividend was distributed to each member. In 1983, KFC had over 500 members and the seven-member board consisted of all Yup'ik men, most of whom were from one of the *Akulmiut* villages. In 1987, the cooperative began the process of

purchasing the largest fish processing operation along the lower Kuskokwim River.

From 1966 to 1977, prices paid for salmon in the Kuskokwim River area increased steadily, although the number of processors remained stable (Tables 8, 9, 10). Average earnings per fisherman nearly doubled in a seven-year period (Table 9).

In 1973, the State of Alaska limited participation in the commercial salmon fisheries throughout the state (Ch. 79, SLA 1973). Along the Kuskokwim River, entry for commercial salmon fishing was limited beginning in 1976. Applications were accepted through 1977 from individuals who wanted to fish commercially and had to qualify for a limited number of permits. Over 700 permits have been issued for the lower Kuskokwim River commercial salmon fishing district (District 1), including 43 to residents of Nunapitchuk, 43 to Kasigluk, and 28 to Atmautluak (Table 11) (Twombley 1986). In 1983, 41 Nunapitchuk residents (39 men, 2 women) held permit for commercial drift gill net fishing in District 1 along the Kuskokwim River and fished commercially. The majority (56 percent) of Nunapitchuk fishermen fished commercially based at salmon fishing camps along the lower Kuskokwim River (Table 12). This tended to be more economical, as the activity was done in conjunction with subsistence salmon fishing and was closer to the fishing grounds and fish buyers. Most commercial fishermen also fished for salmon for subsistence (Table 12). Three individuals had a permit for drift gill net fishing in Bristol Bay, but it was not determined whether they fished there.

TABLE 8. AVERAGE PRICE PAID PER POUND FOR SALMON IN THE KUSKOKWIM FISHERIES MANAGEMENT AREA, 1964-88*

YEAR	KING (Chinook)	SOCKEYE (Red)	CHUM (Dog)	COHO (Silver)	PINK (Humpy)
1964	$.14	$.09	n/a	$.05	n/a
1965	n/a	n/a	n/a	n/a	n/a
1966	.13	n/a	n/a	.06	n/a
1967	.13	.05	.04	.09	n/a
1968	.16	.10	.04	.09	.05
1969	.19	.15	.07	.10	.06
1970	.20	.21	.08	.14	.08
1971	.17	.10	.08	.13	n/a
1972	.20	n/a	.08	.16	n/a
1973	.25	n/a	.19	.26	n/a
1974	.46	.34	.25	.27	.23
1975	.54	n/a	.26	.31	n/a
1976	.64	.43	.27	.40	.25
1977	1.15	.45	.45	.65	.25
1978	.50	.49	.32	.40	.12
1979	.66	.53	.37	.75	.11
1980	.47	.31	.24	.64	.12
1981	.87	.61	.23	.63	.11
1982	.82	.41	.22	.53	.05
1983	.54	.51	.33	.39	.05
1984	.89	.52	.28	.55	.07
1985	.71	.59	.25	.59	.05
1986	.80	.70	.25	.60	.05
1987	1.10	1.30	.27	.73	.10
1988**	1.30	1.30	.40	1.30	.10

*Source: Alaska Dept. of Fish and Game 1988:105

**Source: K. Francisco, pers. comm. 1988

The 1977 fishing season not only marked the first season after which commercial salmon fishing was limited, but was characterized by the highest prices paid to date for salmon from the lower Kuskokwim River and consequently the largest earnings (seven times that of

TABLE 9. COMMERCIAL OPERATIONS AND GROSS VALUE OF SALMON FISHERIES, KUSKOKWIM AREA, 1961-84*

YEAR	NUMBER OF COMMERCIAL PROCESSORS	TYPE OF PRODUCT	NUMBER OF COMMERCIAL FISHERS DISTRICT 1	NUMBER OF COMMERCIAL FISHERS ALL DISTRICTS	GROSS VALUE ALL DISTRICTS	AVERAGE EARNINGS PER FISHER ALL DISTRICTS
1961	3	Fresh, frzn., mild cure (king, coho)	143	174	n/a	n/a
1965	5	Fresh, frzn., mild cure (king, coho)	237	268	$90,950	$383
1971	7	Fresh, frzn. (all species)	486	589	$371,220	$764
1977**	7	Fresh, frzn. (all species)	653	707	$3,852,900	$5,400
1983**	6	Fresh, frzn. (all species)	679	757	$2,481,900	$3,300
1984**	5	Fresh, frzn. (all species)	654	772	$6,445,000	$8,300

*Source: Alaska Department of Fish and Game 1961, 1965, 1972, 1977, 1984, 1985 unless otherwise noted

**Number of fishermen and earnings derived from Commercial Fisheries Entry Commission statistics (Twombley 1986).

TABLE 10. COMPARISON OF NUNAPITCHUK COMMERCIAL FISHING EARNINGS AND KUSKOKWIM DISTRICT 1 EARNINGS, 1982 AND 1983

	Number of Commercial Fishermen (percentage)	Total Gross Earnings (percentage)	Average Earnings Per Fisherman
1982			
ALL DISTRICT 1* (including Nunapitchuk)	686 (100%)	$2,840,672 (100%)	$4,214
NUNAPITCHUK COMMERCIAL FISHERMEN**	41 (6%)	$191,211 (7%)	$4,664 range $341-11,606
1983			
ALL DISTRICT 1* (including Nunapitchuk)	679 (100%)	$1,704,372 (100%)	$2,510
NUNAPITCHUK COMMERCIAL FISHERMEN**	41 (6%)	$123,568 (7%)	$3,014 range $76-6,108

*Source: Alaska Dept. of Fish and Game 1983, 1984

**Source: Commercial Fisheries Entry Commission Statistics [data files for 1982 and 1983]

1971) (Tables 8 and 9). Since then, up to and including 1983, prices paid have never been as high and have fluctuated with the exception of record prices paid for coho in 1979 and sockeye in 1981 (Table 8). Average gross earnings for fishermen in 1983 were two-thirds of the 1977 earnings (Table 9). Gross earnings, however, are not only affected by prices paid per pound, but also by run strength and allowable harvest as determined by the Alaska Board of Fisheries and

TABLE 11. NUMBER OF KUSKOKWIM COMMERCIAL GILL NET FISHING PERMIT HOLDERS FOR LOWER KUSKOKWIM RIVER COMMUNITIES, 1977 AND 1983*

VILLAGE	1977	Percentage Of Total For Lower Kuskokwim	1983	Percentage Of Total For Lower Kuskokwim
Nunapitchuk**	42	(7%)	43	(6%)
Kasigluk	37	(6%)	43	(6%)
Atmautluak	24	(4%)	28	(4%)
Akiachak	42	(7%)	46	(7%)
Akiak	20	(3%)	27	(4%)
Bethel	154	(25%)	165	(25%)
Eek	37	(6%)	40	(6%)
Kipnuk	7	(1%)	13	(2%)
Kongiganak	22	(4%)	24	(4%)
Kwethluk	73	(12%)	70	(11%)
Kwigillingok	15	(2%)	15	(2%)
Napakiak	49	(8%)	41	(6%)
Napaskiak	27	(4%)	28	(4%)
Oscarville	6	(1%)	7	(1%)
Tuluksak	20	(3%)	24	(4%)
Tuntutuliak	48	(8%)	50	(8%)
Total	623	(100%)	664	(100%)

*Source: Twombley 1986

**Official records indicate all fishermen with a Nunapitchuk mailing address whereas this study (Table 10) included only fishermen who were year-round residents.

TABLE 12. LOCATION FOR SUBSISTENCE AND COMMERCIAL SALMON FISHING BY NUNAPITCHUK HOUSEHOLDS, 1983

Fishing Location	All Subsistence Fishing Households*	Households That Combined Commercial & Subsistence Fishing	Households That Only Fished Subsistence	All Commercial Fishing Households	Households That Only Fished Commercially
FISH CAMP	23	19	4	18	0
VILLAGE	17	11	6	18	6
Total	40	30	10	36	6

*Includes households that fished for salmon for subsistence including those that also fished commercially.

the Alaska Department of Fish and Game. This was reflected in the average gross earnings of District 1 fishermen (Table 9) compared to the entire management area (Districts 1, 2, 4, and 5) (Table 9) which included the more lucrative fishing districts 4 and 5. For example, in 1983, average earnings for a fisherman were $2,510, three-fourths of the average of $3,300 for all districts. Average earnings of Nunapitchuk commercial fishermen tended to be slightly greater than the District 1 average (Table 10), as shown by 1982 and 1983 earnings. In 1982 their earnings were 10 percent greater and, in 1983, were 17 percent greater.

Similarly, the value of a "limited entry" (Commercial Fisheries Entry Commission [CFEC]) permit fluctuates on the open market as permits can be bought and sold. However, no permits had been sold by

Nunapitchuk fishermen through 1985. In 1978, the value of a lower Kuskokwim River fishing permit was $6,100 increasing to $10,222 in 1983 (Twombley 1986). In 1988, record catches and record prices combined to make 1988 earnings the largest on record. It is probable that Nunapitchuk fishermen continued to have earnings slightly above those of their fellow District 1 fishermen. The role of individual and household earnings from commercial fishing compared to other sources of income for Nunapitchuk residents is discussed at the end of this chapter. It is an important element in the overall fabric of earned income in the community.

Subsistence Salmon Fisheries

Fishing for salmon for subsistence use has occurred among the *Akulmiut* since the 1920s, although some families were likely involved in salmon fishing prior to that time. Some families relocated among the *Akulmiut* after the reduction of some lower Kuskokwim River village populations, such as at Napakiak, resulting from the 1900 influenza and measles epidemic. For them, salmon fishing in summer probably continued as part of their seasonal round in spite of their relocation. As in 1983, they probably shared fishing camps with other Nunapitchuk families. From the 1950s, changes in the seasonal round have resulted from external influences. In particular, mandatory school attendance appears to have contributed to salmon fishing for subsistence by Nunapitchuk residents as family fall and

spring subsistence activities based from remote camps has had to be discontinued. This is discussed further in Chapter 6.

Salmon were taken for family use and dog feed, but also for the purpose of trade and barter. Dried salmon were traded in the 1920s by Nunapitchuk residents to stores at Napakiak, Oscarville, and Bethel. As fur trapping became more scrutinized in the Bethel area by game wardens working for the Bureau of Biological Survey from about 1918 through 1931, it is likely that salmon fishing for family needs including some surplus for trade, contributed to the incorporation of salmon as a subsistence resource for the *Akulmiut*. While salmon were prohibited from being exported from the Kuskokwim River area from 1926 to 1934, they could be taken for family use and dog feed as previously noted. After that time, the possibility of harvesting some salmon for sale to commercial processors was probably another factor in the inclusion of salmon fishing into the seasonal round.

In the 1920s, Nunapitchuk families that traveled to the Kuskokwim River for salmon fishing fished near Napakiak (*Naparyaramiut*) which was becoming resettled following the devastation of the 1900 influenza and measles epidemic. Beginning about 1935, specific sites for salmon fishing used by Nunapitchuk families were at or near Napakiak, *Nalqigluq*, an island below Napakiak, and at *Kuiggaam Painga* (#1), about three miles below Bethel (Fig. 14, Table 13). These camps also included families from other *Akulmiut* settlements -- *Nanvarnarrlak*, *Nunacuaq*, *Paingaq* -- and *Cuukvagtuliq* along Aropuk Lake. Salmon fishing for subsistence

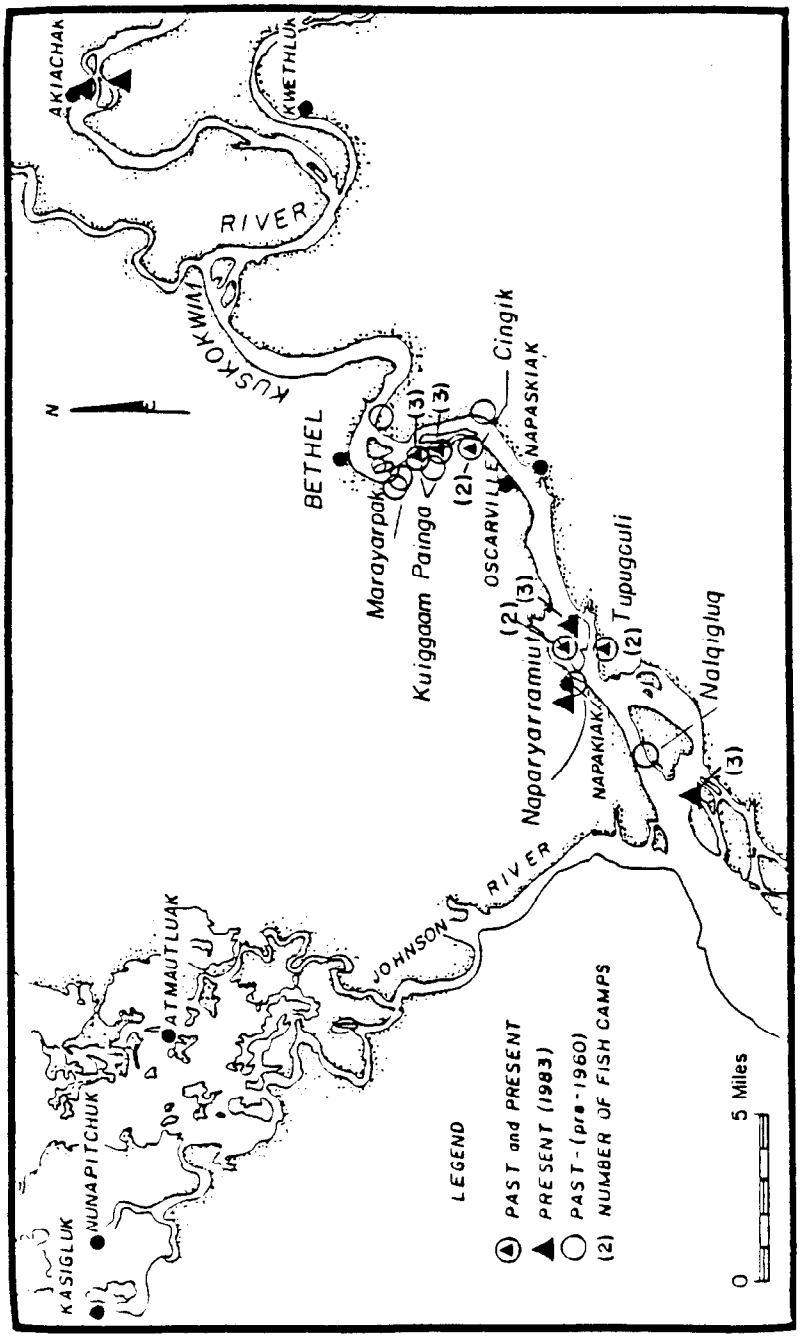


Fig. 14. Locations of Nunapitchuk salmon fishing camps, ca. 1920-83.

TABLE 13. LOCATIONS OF NUNAPITCHUK SALMON FISHING CAMPS, 1920-1983

YEAR(S)	LOCATIONS
1920s	near or at Napakiak (*Naparyaramiut*)
ca. 1935	*Kuiggaam Painga* (#1) *Nalqigluq* Napakiak
1950s	"Bethel Bluffs" and *Marayarpak* *Kuiggaam Painga* (#1, #3) Napakiak near Oscarville *Tupugculiq*
1960s	*Kuiggaam Painga* (#1, #2) Napakiak near Oscarville *Tupugculiq*
1970s-83	Akiachak island opposite Napakiak island opposite Johnson River mouth ("Tuntutuliak Fish Camp") *Kuiggaam Painga* (#1, #2) Napakiak Nunapitchuk near Oscarville *Tupugculiq*

continued in spite of the unstable and small commercial salmon market between 1935 and 1959 noted above.

By the 1950s, Nunapitchuk families had summer fishing camps at six locations between Bethel and Napakiak (Fig. 14, Table 13). Three were within three miles of Bethel, one just above Oscarville, one opposite Napakiak, and the village of Napakiak continued to be used by some families. Two of these locations were no longer used by the

1960s, due to erosion at one and relocation to the other side of a peninsula at another. A Moravian church was constructed at the latter site (*Kuiggaam Painga* #2). These sites, with the exception of the ones near Napakiak, were also shown on a 1963 map of salmon fishing camps between the Johnson River and Akiachak (Alaska Department of Fish and Game 1963).

From the early 1970s into the 1980s, Nunapitchuk families maintained salmon fishing camps at the same locations as they did during the 1960s, some of which were used since 1935 or 1950. In addition, they also established camps on an island opposite Napakiak and on an island opposite the mouth of the Johnson River (Figs. 14 and 15; Table 13). Other families made facilities in the village for processing salmon for subsistence and commuted to salmon fishing areas during summer. Napakiak continued to be used by one or two families in 1983, and two other families made their fish camps near Akiachak with the wive's parents and family.

In 1983, 40 of 70 Nunapitchuk families fished for salmon for subsistence; 23 from fish camps along the lower Kuskokwim River and 17 from the village. Three-fourths of all subsistence fishing households fished commercially also, and most commercial fishing households also fished for subsistence as noted above (Table 12). No fish camps were used solely for commercial fishing, but a few were used solely for subsistence fishing (Table 12).

Since 1971, subsistence salmon harvests by Nunapitchuk have remained relatively stable for king salmon and fluctuated for red and chum salmon (Table 14, Fig. 16) During the 13-year period which

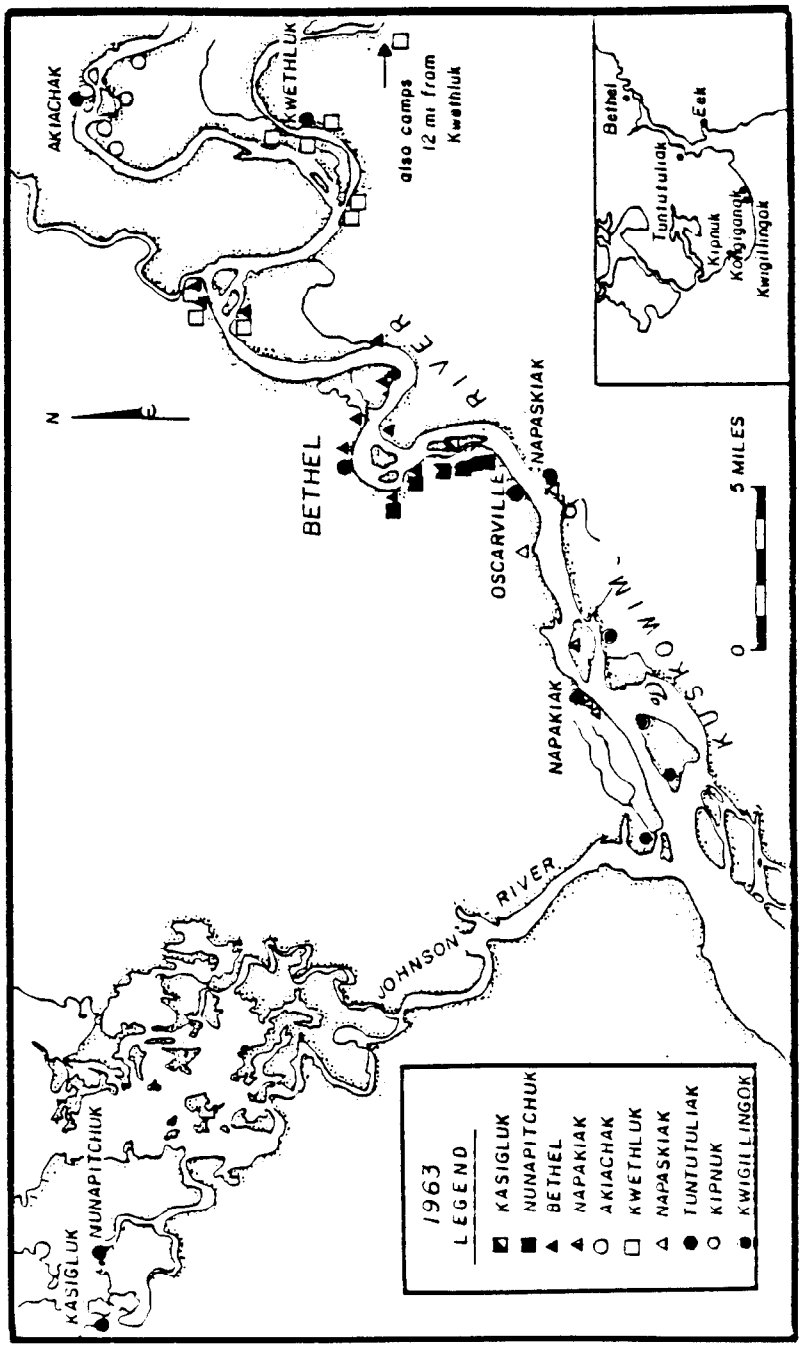


Fig. 15. Locations of lower Kuskokwim River area salmon fishing camps, including Nunapitchuk, 1963. (adapted from Alaska Dept. of Fish and Game 1963)

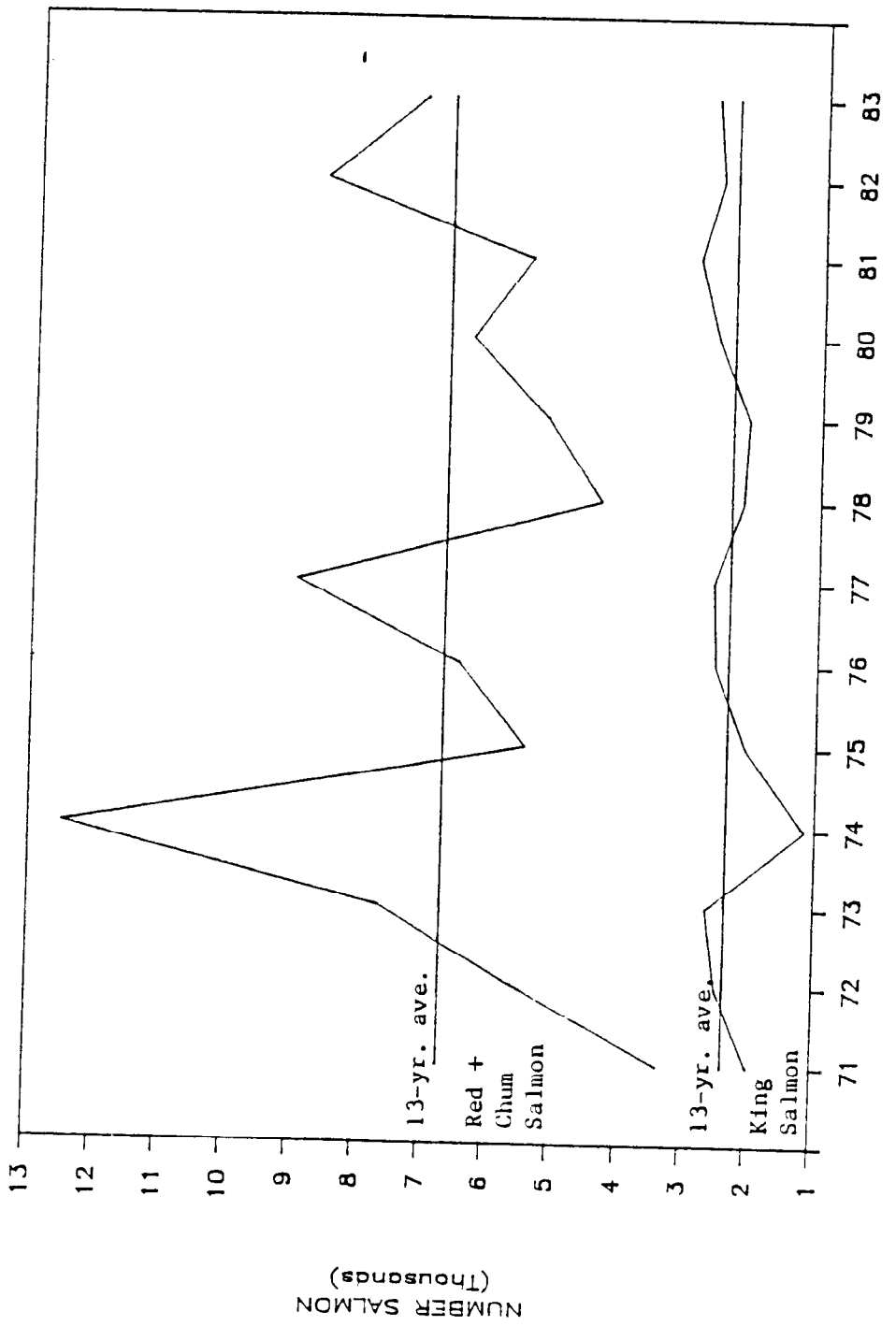


Fig. 16. Nunapitchuk subsistence salmon harvests, 1971-83.

TABLE 14. NUNAPITCHUK SUBSISTENCE SALMON HARVESTS, 1971-83*

Year	Number Families Fishing	Number King Salmon Harvested	Average Number Kings Harvested Per Family	Total Number Reds + Chums Harvested	Average Number Reds + Chums Harvested Per Family
1971	35	1,978	57	3,375	96
1972	35	2,496	71	5,600	160
1973	27	2,663	99	7,663	284
1974	33	1,165	35	12,498	379
1975	29	2,092	72	5,447	188
1976	33	2,578	78	6,466	196
1977	27	2,622	97	8,991	333
1978	32	2,178	68	4,369	137
1979	35	2,109	60	5,189	148
1980	40	2,612	65	6,354	159
1981	27	2,918	108	5,465	202
1982	40	2,577	64	8,646	216
1983	40	2,688	67	7,137	178
13-Yr. Average	33	2,360	73	6,708	207

*Source: Walker and Brown 1988

began after the relocation of many families to the new village site of Atmautluak, the number of "families" (generally households, but included some multihousehold units) fishing for salmon has been relatively stable, ranging from 27 to 40 with an average of 33 (Table 14). Average family harvests for king salmon have ranged from 35 to 108 per fishing family whereas red and chum harvests have ranged from 96 to 379 (Table 14, Fig. 17). Since 1981, red and chum salmon harvests have shown stability compared to the wide fluctuations of previous years.

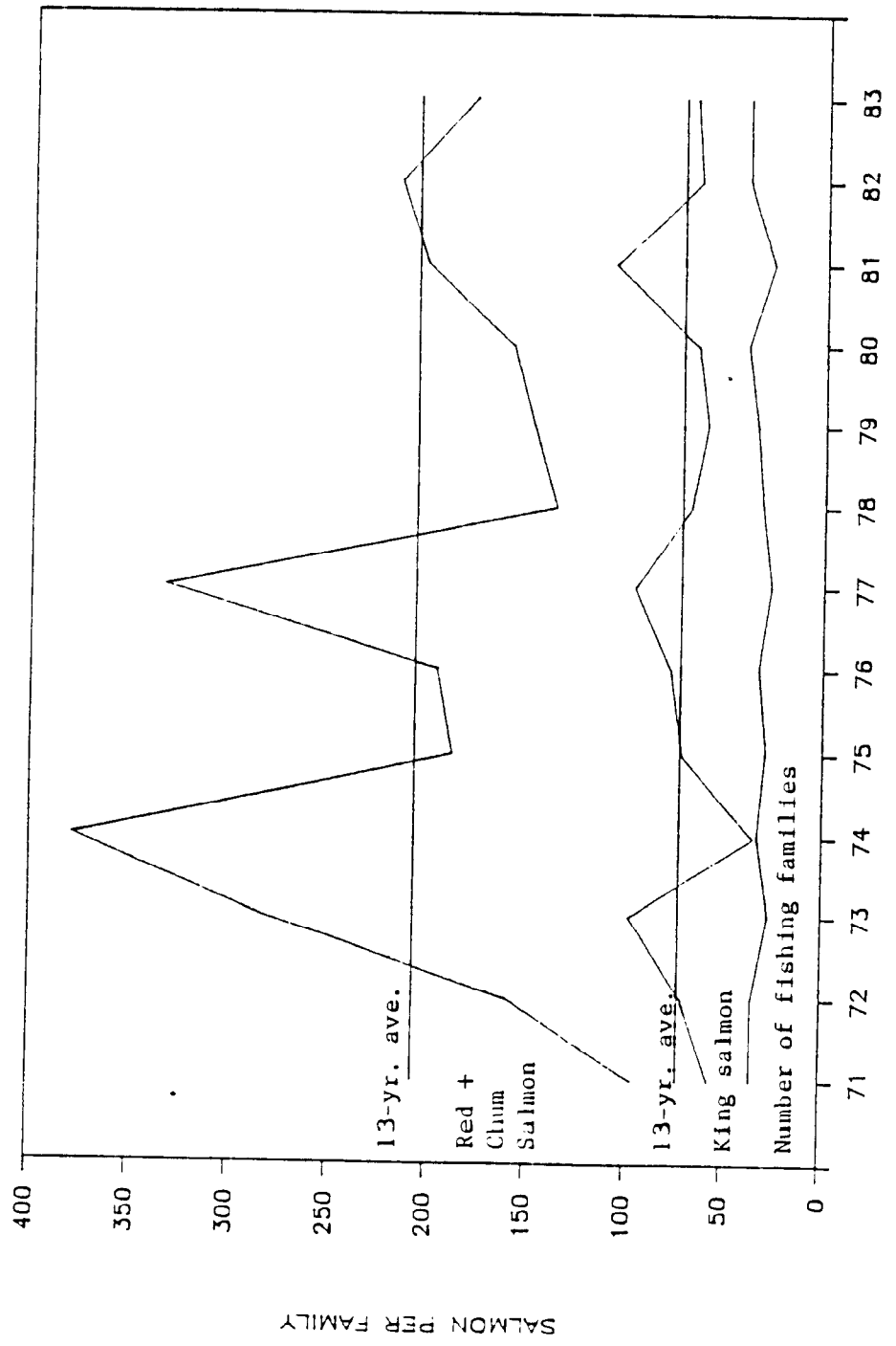


Fig. 17. Nunapitchuk average fishing family subsistence salmon harvests, 1971-83.

Education and Settlement

The establishment of day schools in Native communities in Alaska was the policy set forth in 1883. They were intended to be "the pivot of progress for the community" and to prepare people "to benefit from the changing economic conditions" through the appointment of "teachers who were able to bring to the villages the best of the white man's civilization" (Parks 1932:92-93). It was almost 40 years before a day school was established among the *Akulmiut* at *Nunacuaq* in 1921 with the intent of bringing "civilization" to the *Akulmiut*:

> In the delta between the Yukon and Kuskokwim Rivers, a country of lakes and marshes, there are hundreds of Eskimos living in abject squalor and not hitherto reached by any civilizing influence. During the summer of 1921 a teacher and his wife were sent into this region [to *Nunacuaq*], taking with them the materials for the erection of a school building, the equipment necessary for opening a school, and the supplies needed for a year. (Bone 1922:47048)

Formal education for children at Nunapitchuk began in the mid 1930s when classes were held in the newly constructed Moravian Church. In 1937, the Office [now Bureau] of Indian Affairs, after conducting a survey of schools along the Kuskokwim River, decided to establish a school at Nunapitchuk (Troy 1937:38-39). Sam Anaruk, an Inupiat Eskimo educator married to a Yup'ik woman, was the first teacher assigned to Nunapitchuk by the Office of Indian Affairs. Both were fluent in the Yup'ik language. In the early years, the

school year was relatively short, as it did not begin until enough families had returned from fishing camps in fall. The school year ended earlier than conventional schools when families left in spring to go to muskrat hunting and spring camps. For example, in 1937, school began in early October; there were 34 students enrolled by December 30, but school closed on April 15, 1938 when only 9 students were left (Anaruk 1937, 1938). Families that went to winter trapping and hunting camps in October, November, and December also reduced enrollment. In some years, enrollment declined in late March if earlier than usual spring weather necessitated an earlier departure to spring camps.

The Office of Indian Affairs, through its school and teacher at *Nunacuaq* ("Tundra" or "Nunachuk" in their records), made an effort in March 1939 to have the people of *Nunacuaq* relocate at Nunapitchuk (McElroy 1939), even though *Nunacuaq* already had a schoolhouse and Nunapitchuk did not. The reason for the move was unclear. The following year, the Acting Director of Education met with the men of Nunapitchuk to discuss moving Nunapitchuk to another site, but the consensus was to remain at Nunapitchuk "unless some unforeseen change of the river affecting the fish supply should develop" (Dale 1940:3).

A school was constructed at Nunapitchuk and, by June 1941, the community's first school facility consisted of two classrooms and a two-bedroom apartment and utility room (Butler 1941:3). The Anaruks remained for a year or two until Mr. Anaruk's poor health prompted him to retire about 1942.

Between 1941-46, after the school at Nunapitchuk was built, some families from the nearby settlement of *Nanvarnarrlak* began to relocate at Nunapitchuk. The Office of Indian Affairs decided not to construct a school at *Nanvarnarrlak*, where erosion and filling in of the river made summer fishing and transportation difficult. The last family relocated at Nunapitchuk about 1961. Those *Nanvarnarrlak* villagers settled at Nunapitchuk #2 about one mile downstream from the original Nunapitchuk village site (Nunapitchuk #1). School enrollment and village population also increased when people from *Cuukvagtuliq* on Aropuk Lake relocated at Nunapitchuk (#2) after the Office of Indian Affairs declined to build a school at their village.

At *Nunacuaq*, also, the river bank was eroding and filling in, which prompted the move of that community about 1946 to Kasigluk several miles downstream. The villagers moved both their school and church to the new location, although some people had already settled there in the 1930s. By the mid 1980s, the site of *Nunacuaq* was covered by water.

The reorganized Office of Indian Affairs, as the Bureau of Indian Affairs (BIA), continued to influence the composition of Nunapitchuk's population through the 1960s. In May 1965, after a meeting with community residents, the village vice president wrote to U.S. Senator Gruening and requested construction of a second school at Nunapitchuk to be located at Nunapitchuk #2 (Andrew 1965). The distance from that housing site to the school located at Nunapitchuk #1 was considered by villagers to be hazardous for young children going to school in the frequently stormy weather. Drifting snow,

wind, and whiteout conditions then, as in the 1980s, made travel dangerous. The BIA later responded that the funding for construction of another school was not forthcoming, but they would keep the request on record.

In May of the following year, the BIA reported that the people at Nunapitchuk #2 were planning to move down the Johnson River to a site where the old reindeer corral was located (*Nacessvik*)(Gordon 1966). The people cited better ground for building and an airport (there was none at Nunapitchuk), closer proximity to Bethel, and overcrowding at Nunapitchuk as reasons, and requested a school be built at the new site. By the end of the summer, the BIA completed an investigation into the matter and reported the former residents of *Nanvarnarrlak* and *Cuukvagtuliq* consisted of about 29 families with 68 school age children living at Nunapitchuk #2 (Reader and Graves 1966). A site seven miles east southeast along the Pikmiktalik River was inspected and determined to be navigable by barges up to that point. In spite of the BIA's recommendation against the move, a new village site was established at Atmautluak along the Pikmiktalik River, seven miles east of Nunapitchuk. Most families that relocated there did so from about 1968 to 1971, although about seven households chose to remain at Nunapitchuk.

The BIA continued to provide elementary school education at Nunapitchuk until 1985 when the State of Alaska Department of Education assumed the responsibility. After 1976, the state had already assumed authority over high school education.

CONTEMPORARY NUNAPITCHUK

Nunapitchuk (*Nunapicuaq*, "small real land") has been occupied as a settlement since about 1915. Since that time and up until the 1960s, people from other *Akulmiut* settlements and the Aropuk Lake area relocated there, abandoning their home villages. Individuals and families have come from the *Akulmiut* settlements of *Kuigaallermiut*, *Nanvarnarrlak*, *Nunacuaq*, *Paingaq*, and *Qasqirayak*, and from the Aropuk Lake settlements of *Cuukvagtuliq* and *Akulurpak* (Fig. 18). In this sense Nunapitchuk represents a consolidation of families from other major settlements as services and public facilities became established during the 20th century.

Nunapitchuk is situated at 60°53′ north latitude and 162°29′ west longitude within a 3/8-mile wide bend of the Johnson River and along the opposite bank (Fig. 19). It is 26 air miles northwest of the regional center of Bethel and 425 miles west of Anchorage. The area is low and marshy with few suitable areas for construction. All structures along both sides of the Johnson River were accessed by a network of wooden boardwalks. The two areas on opposite sides of the river were separated at their narrowest point by a 330-foot expanse of water (Fig. 19).

Spatial Arrangement

In 1983 within Nunapitchuk, there were four geographically distinct residential areas which also reflected the historical

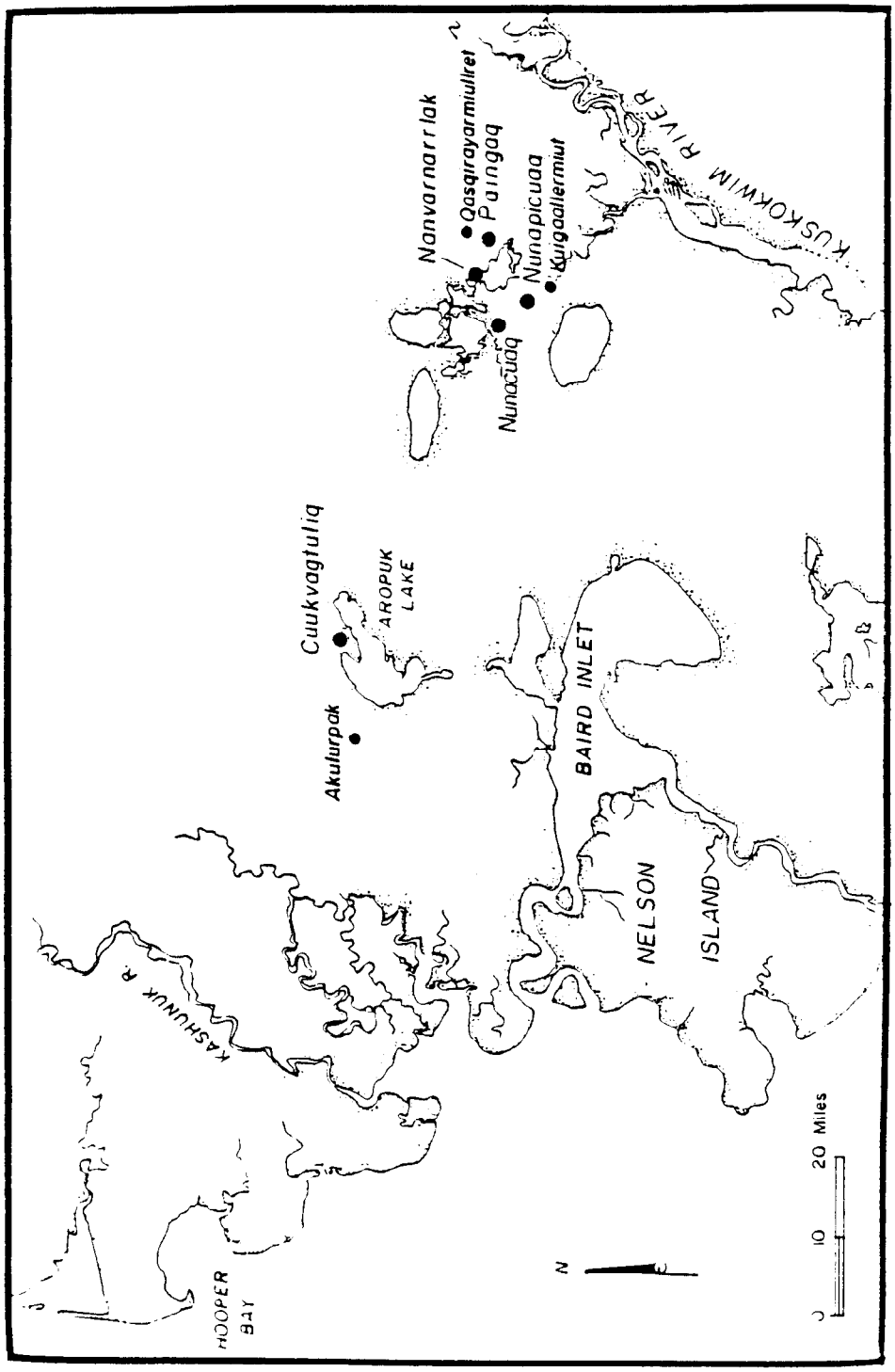


Fig. 18. Settlements occupied during the 20th century by contemporary Nunapitchuk families.

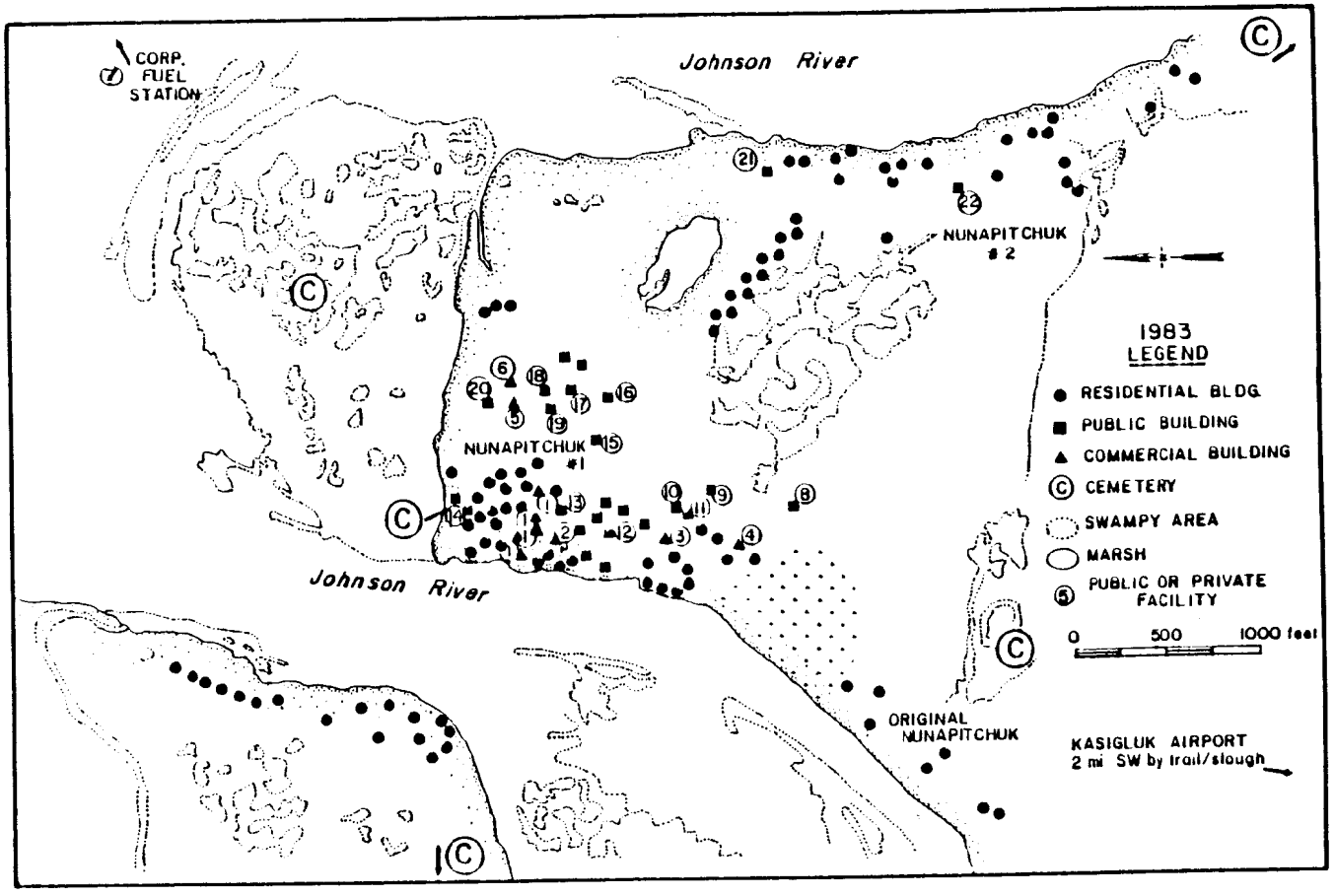


Fig. 19. Physical layout of Nunapitchuk showing locations of residential, commercial, and public buildings and facilities, 1983. (facilities are keyed to numbers on the following page)

Legend for Figure 19 (preceding page)

1. Store and warehouses
2. Store
3. Electrical power plant and fuel storage
4. Old theater
5. Telephone utilities
6. Corporation offices
7. Corporation fuel station
8. National Guard armory
9. Community workshop
10. Headstart building
11. Old health clinic
12. BIA day school complex (grades K-8)
13. Old Moravian Church
14. Russian Orthodox Church
15. Moravian Church
16. Anna B. Tobeluk Memorial high school
17. PHS water utilities and washeteria
18. IRA council offices and health clinic
19. City offices
20. Dog pound
21. Post office
22. Pentecostal Church

development of the community (Fig. 19). There was the site where the first homes and *qasgiq* were constructed preceding 1920 ("original Nunapitchuk"); an area where the first churches and school were built from 1935-1945 (designated "Nunapitchuk #1" in many official government documents); an area where the first year-round store was located around 1935, followed by the relocation of the villages of *Nanvarnarrlak* and *Cuukvagtuliq* in the 1940s and 1950s (designated "Nunapitchuk #2"); and a fourth area along the opposite side of the river used since the early 1960s for additional residences. A fuel station facility, and since 1986 an airstrip, were situated in another location which could only be reached by boat in ice-free months from any of the four residential areas.

Along the southwest margin of the village was the original site of Nunapitchuk, where the earlier sod houses and *qasgiq* were situated. In 1983, this continued to be to be a residential area with several houses, steambath houses, and caches. A cemetery was located along a knoll east of the residences.

A marsh separated the original village site from "Nunapitchuk #1," an area that has residential, commercial, and public buildings. Along the riverbank were docking areas for the Bureau of Indian Affairs elementary school complex, the Alaska Village Electrical Cooperative power plant, two general stores, and the warehouses and workshop of one store (Fig. 19). The area also included a National Guard armory, Headstart school building, and community workshop. The residential areas were situated primarily south of the school complex and north of the stores and warehouses. In the past, a health clinic

and a theater were located in the area. Since 1983, a public safety building and new post office were built adjacent to the school complex along the river bank. New housing units were planned for construction in 1989 to be located immediately south of the armory.

Nunapitchuk #1 was the town's center and also included the Russian Orthodox Church and cemetery in the north, and the former and current Moravian Church. The area first developed with the construction of the Moravian church in 1934 and the Office of Indian Affairs school in 1940-41, with new construction in 1965. More recently, to the east, additional public buildings have been constructed, most during the 1970s. These included the Moravian Church; the high school complex and teacher quarters; a U.S. Public Health Service water facility, with a laundromat, showers, and water tap; a city office building; the tribal council building which included the health clinic; and the dog pound. Commercial facilities in that area were the village corporation headquarters office and the telephone utility service building. Since 1983, a couple of new residences, a general store operated by the corporation, and a recreation center have been constructed in the area.

In 1982, 12 housing units were constructed further east between the high school complex and Nunapitchuk #2 (Fig. 19). Up until that time, the residential groupings tended to reflect extended family groups that resided in several discrete households. Household groupings persisted in 1983, but with population growth and limited space for constructing new homes, extended family groups were also more dispersed throughout the village.

Nunapitchuk #2 developed as a residential area during the 1940s and 1950s as noted earlier. In 1983, the post office and Pentecostal Church were the only public buildings located in that part of town. The farthest downriver structure was the abandoned store and house of trader John Samuelson from the 1930s (Fig. 19). Another cemetery was located on some knolls along the riverbank just beyond.

Along the riverbank opposite Nunapitchuk #1 was an entirely residential area (Fig. 19). The area was developed when homes were built there beginning in the early 1970s. In 1982, six new housing units were constructed. Since 1983, additional owner-built and occupied homes have been constructed, as well as a new Russian Orthodox Church, to the southwest. Several extended family groups in separate residences shared common subsistence facilities, such as smokehouses and caches. A cemetery was located near the church, but predates its construction.

On the outside bend of the Johnson River northeast and opposite the main part of the village is a fuel station. In 1983, there was no airstrip at Nunapitchuk, but in 1986 construction of a gravel runway was completed. It was situated east of the fuel station, along the opposite side of the river from the village. Another cemetery was situated within the bend of the Johnson River on a small knoll surrounded by marsh and water, or ice in the winter months.

Population and Household Characteristics

Changes in the population of Nunapitchuk since 1920 also revealed its historical development, consolidation, and relocation of *Akulmiut* settlements mentioned earlier. At Nunapitchuk, the estimated population of 42 in 1920 (Table 4)) grew to 121 by 1940 when schooling had begun and one of the churches had been constructed. There was little change until after 1950 when most families from *Nanvarnarrlak* and *Cuukvagtuliq* relocated at Nunapitchuk and their home villages were abandoned as year-round settlements (Fig. 20). By 1960, the population more than doubled to 327 people. By 1970, most of the former *Nanvarnarrlak* residents had again relocated at Atmautluak and the population dropped to about 263 people. Since then, Nunapitchuk has grown steadily to 341 people in 1983, slightly beyond the 1960 level of 327 (Fig. 20).

During 1983, Nunapitchuk had a population of 341 distributed among 70 households. The population structure of Nunapitchuk by age and sex is shown on Figure 21. The population was nearly evenly divided among females and males, although this was not the case for each age group. For example, males accounted for 58 percent of all individuals age 20 to 39, whereas females accounted for 56 percent of all individuals up to and including those 19 years of age. There were nearly equal numbers of males and females 40 years and older (Fig. 21).

Average ages were nearly the same, 25.9 years among males and 23.6 years among females. Three-fourths of Nunapitchuk's population

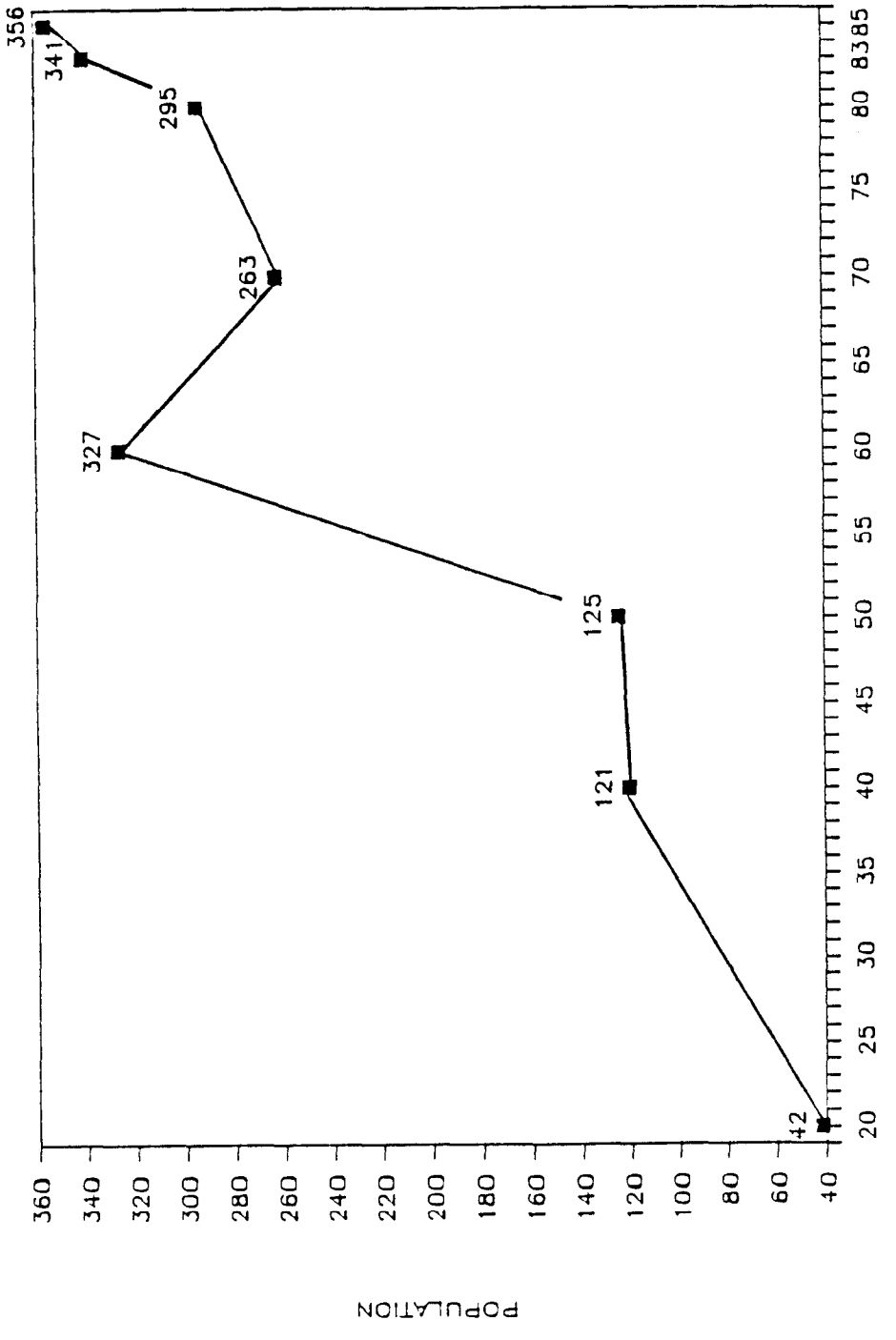


Fig. 20. Nunapitchuk population, 1920-85.

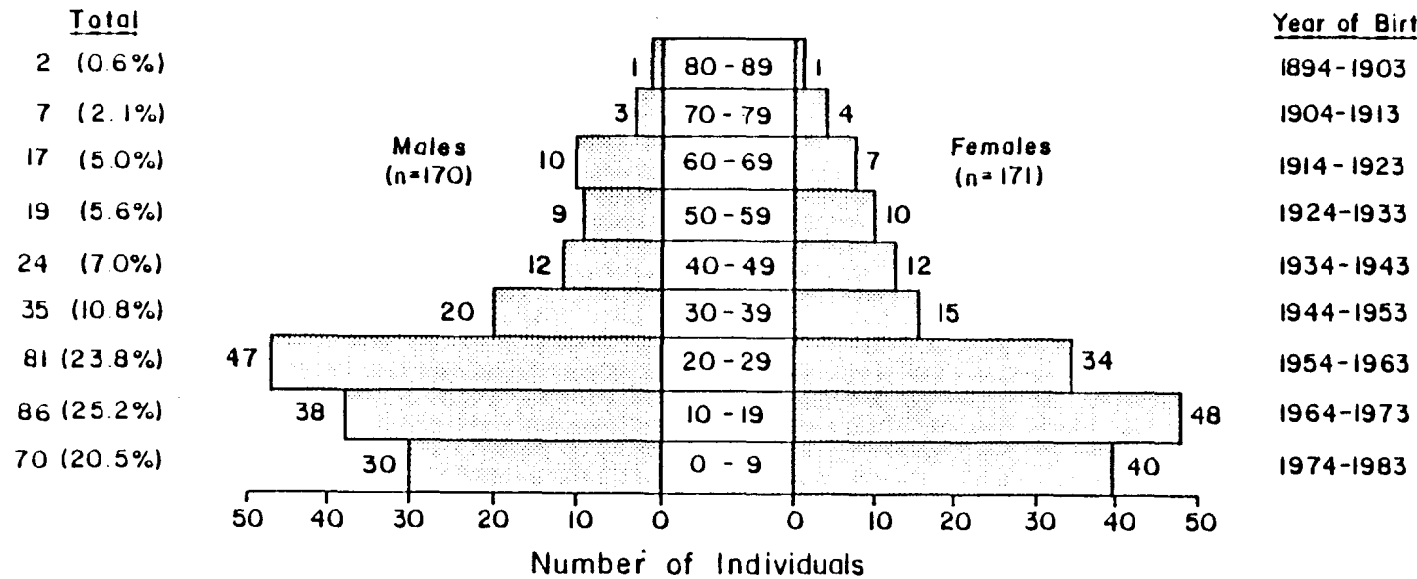


Fig. 21. Age and sex composition of Nunapitchuk population, 1983.

in 1983 was born since 1950, and were 33 years of age or less (Fig. 21). The largest percentage (25.2 percent) of the population was 10 to 19 years of age, those born from 1964 through 1973.

Dependents, those less than 18 years and those 65 years of age and older accounted for 46.3 percent of the population, whereas those 20 to 64 years accounted for 53.7 percent. The dependency ratio was 0.86:1.

Nunapitchuk households ranged in size from 1 to 9 persons with an average household size of 4.9. The largest percentage of households had 6 persons (Table 15) and were headed by individuals who had an average age of 49 years. Household heads ranged in age from 21 to 87 years with most 30 to 39 years (24 percent) (Table 16) followed by those 65 years and older (20 percent). Household heads in the 3 age groups 20 to 29, 40 to 49, and 50 to 59 represented nearly equal percentages of the total. Sixty-one of 70 households were headed by men (51 married men, 9 single men); 1 by a man and a distant female relative; and 9 by women (all with one or more children in residence).

One-third of all households had 3 or more dependents and most of these were headed by individuals 30 to 49 years of age. The households with the fewest dependents were those headed by individuals 20 to 29 years and those 65 years and older (Table 16). Dependents included individuals less than 18 years of age, as individuals 18 years and older were considered adult by state law. For Nunapitchuk households with children, the percentage of those only with children less than 18 years of age (41 percent) was nearly

TABLE 15. FREQUENCY OF NUNAPITCHUK HOUSEHOLD SIZES AND AVERAGE AGE OF HOUSEHOLD HEADS, 1983

HOUSEHOLD SIZE	NUMBER	AVERAGE AGE HOUSEHOLD HEAD
1	7 (10.0%)	53 years
2	4 (5.7%)	76
3	12 (17.1%)	31
4	10 (14.3%)	40
5	6 (8.6%)	44
6	13 (18.6%)	49
7	6 (8.6%)	48
8	8 (11.4%)	54
9	4 (5.7%)	53
TOTAL	70 (100%)	

Average household size = 4.9 persons
Median household size = 5 persons

TABLE 16. FREQUENCY OF AGE RANGES FOR HOUSEHOLD HEADS, NUMBER OF ADULT CHILDREN, AND NUMBER OF DEPENDENTS, NUNAPITCHUK, 1983

AGE RANGE OF HOUSEHOLD HEAD	NUMBER OF HOUSEHOLDS	ADULT CHILDREN* IN RESIDENCE						NUMBER OF DEPENDENTS**							
		0	1	2	3	4	5	0	1	2	3	4	5	6	7
20-29 years	12 (17%)	12						1	6	5					
30-39	17 (24%)	15	2					2	3	3	3	4	1		1
40-49	11 (16%)	5	4			1	1	2	3		1	2	2	1	
50-59	11 (16%)	1	3	1	1	1		1	2	4		3	1		
60-64	5 (7%)	1	1	1	1		1			2	2	1			
65+	14 (20%)	4	3	4		1	2	9	4	1					
Total	70 (100%)	38	13	6	6	3	4	15	18	15	6	10	4	1	1

average = 47 years

*Age 18 or greater

**Age less than 18 years

the same as for those with at least 1 child 18 years and older (46 percent). Households headed by individuals 50 years or older most often had adult children in residence (Table 16). Other studies have shown that older maturity of household units and the occurrence of adult children in the household are important factors that contribute greater subsistence production at the household level (Wolfe 1987; Shinkwin and Case 1984; Andrews 1988). In 1983, Nunapitchuk households with adult children constituted the largest percentage (46 percent) of households with children (Table 17).

Nunapitchuk households were typically composed of nuclear families (64 percent), most often a married couple with children (60 percent of all households) (Table 18). Extended families with 3 generations of family members residing together, accounted for 18 percent of all Nunapitchuk households. In two cases, siblings resided together. Adult individuals living alone, all men, were either widowed and elder men (3 cases) or unmarried men (4 cases) almost all of whom were over 35 years of age. The household unit appeared to be the functional domestic unit, although this was not systematically studied. However, the few elderly residents living alone were aligned with the domestic unit of a child and his or her household.

Nearly three-fourths of all households consisted of a married couple with children. All married couples had either children or grandchildren in residence. Adopted children occurred in 29 percent of the homes. Married couples accounted for 30 percent of the population with 51 married couples. All single parents were female.

TABLE 17. OCCURRENCE OF ADULT CHILDREN OR ADULT GRANDCHILDREN IN NUNAPITCHUK HOUSEHOLDS, 1983

NUMBER ADULT CHILDREN OR GRANDCHILDREN	NUMBER (Percentage)	
No children of any age	9 (13%)	
No adult children (18+ yrs.)	29 (41%)	
One or more adult children	32 (46%)	
1 adult child		13 (19%)
2 adult children		6 (9%)
3 adult children		6 (9%)
4 adult children		3 (4%)
5 adult children		4 (5%)
Total	70 (100%)	

Women of any age did not reside alone and men rarely did, especially young men. In most cases males or females 18 years or older resided in households in which they were either married and had children or resided with 1 or both parents or grandparents. Eleven individuals were widowed; 7 adult males not living with a parent have never married, and 1 was divorced.

The ethnic composition of Nunapitchuk was almost entirely Yup'ik (99.4 percent) in 1983. Transient residents, such as schoolteachers, were not included. All residents were fluent in Yup'ik and many, but not all, were bilingual with different degrees of fluency in English. One individual was non-Native and one a Native American, both female. Most individuals (69 percent) were raised in one of the *Akulmiut* settlements or *Cuukvagtuliq*, with the remainder from Akiachak,

TABLE 18. SOCIAL COMPOSITION OF NUNAPITCHUK HOUSEHOLDS, 1983

HOUSEHOLD COMPOSITION	NUMBER	PERCENTAGE OF TOTAL
Nuclear Family		(64%)
Married couple with children	42	60%
Married couple, no children	0	0%
Single parent with children	3	4%
Extended Family--Lineal		(20%)
Married couple, children, grandchildren	8	12%
Single parent, children, grandchildren	4	6%
Married couple, grandchildren	1	1%
Single parent, grandchildren	1	1%
Extended Family--Collateral		(6%)
Siblings	2	3%
Other	2	3%
Other		(10%)
Solitary Adults	7	10%
Total	70	100%

Bethel, Eek, Kwigillingok, upper Kashunuk River, Napakiak, Napaskiak, Nelson Island, Oscarville, St. Mary's, Tuluksak, or Tuntutuliak.

Social Structure

In 1983, Nunapitchuk's 70 households represented people who were descendants of or married to descendants of 1 of 7 unrelated families. The eldest in three of these families were the offspring (or spouse) of the three founding families of Nunapitchuk described in Chapter 3. The remainder were families that moved to Nunapitchuk

from the Aropuk Lake area, *Nunacuaq*, or *Nanvarnarrlak*, and had no close relations already at Nunapitchuk. Two of these families had intermarried with each other and all four had offspring who intermarried into one of the three major families.

The three major families of Nunapitchuk comprised 81 percent of all households and 79 percent of the population in 1983 (Table 19). Each of these families consisted of a set of siblings, although other close relatives (cross cousins or uncle) contributed to the family's core composition (Table 19). The other four families were considerably smaller and were based on fewer or more distant kin ties. The siblings and offspring of these smaller families typically married into one of the larger families, although marriages between members of the larger families were common. The pattern of core family composition in 1983 was similar to that described earlier for the communities of Nanvarnarrlak and Paingaq in 1920. Two or three families comprised at least two-thirds of the village population and each had a set of siblings as its core.

Marriage patterns in Nunapitchuk in 1983, also, were similar to *Akulmiut* settlements earlier in the century and described in Chapter 3. As in the analysis for the historic villages, married couples were grouped according to the home village of the spouse and the village then was identified as being an *Akulmiut* village or not. Table 20 shows the source for each spouse of each married couple in Nunapitchuk in 1983. Fifty-three percent of all marriages involved men and women who were both from Nunapitchuk or one of the villages (*Nanvarnarrlak* and *Cuukvagtuliq*) whose members relocated there

TABLE 19. CORE FAMILY COMPOSITION OF NUNAPITCHUK, 1983

COMPOSITION		NUMBER HOUSEHOLDS (Percentage of Total)	AND PEOPLE (Percentage of Total)
Family 1:	3 brothers, 2 sisters adjunct: 2 sisters-in-law, 1 married to a cross-cousin	27 (39%)	123 (36%)
Family 2:	5 brothers adjunct: mother's brother and brother-in-law	17 (24%)	74 (22%)
Family 3:	2 brothers, 2 sisters	13 (19%)	71 (21%)
Family 4:	wife and husband, woman's 1st cousins (2 brothers) once removed	5 (7%)	25 (7%)
Family 5:	man and his sister's son	4 (6%)	24 (7%)
Family 6:	half-brother and sister adjunct: 1st cousin (male) once removed	3 (4%)	19 (6%)
Family 7:	woman (her sister, mother, mother's sister, father's brother and 2 sisters all married into Family 1, 3, or 4)	1 (1%)	5 (5%)
	Total	70 (100%)	341 (100%)

TABLE 20. SOURCE OF SPOUSE FOR NUNAPITCHUK MARRIED COUPLES, 1983

# MARRIED COUPLES	BOTH SPOUSES FROM VILLAGE	WOMAN FROM VILLAGE, AKULMIUT MAN	MAN FROM VILLAGE, AKULMIUT WOMAN	WOMAN FROM VILLAGE, MAN NON-AKULMIUT	MAN FROM VILLAGE, WOMAN NON-AKULMIUT
52 (100%)	27 (53%)	3 (5%)	2 (4%)	8 (15%)	12 (23%)
		[Kasigluk]	[Kasigluk]	[Akiachak, Bethel, Eek, Kwigillingok, Napakiak, St. Mary's, Tuluksak]	[Akiachak, Bethel, Napakiak, Oscarville, Tuntutuliak, Native American, non-native]

between about 1941 and 1965 as described previously. Nearly two-thirds of all marriages involved spouses from within *Akulmiut* society. The large percentage of village endogamous and *Akulmiut* endogamous marriages was nearly identical to those aspects of marriage patterns described for *Akulmiut* villages in 1920.

Slightly more than one-third of marriages included a spouse from a non-*Akulmiut* community but in most cases these individuals were from a lower Kuskokwim River community, usually where a parent had some close kin relations (Table 20). More often, the woman was from a non-*Akulmiut* community, unlike the pattern of *Nanvarnarrlak* and *Paingaq* in 1920 when men were more often from outside of the local society. It is likely these two categories fluctuated in response to the overall male-female ratio of marriageable individuals in the

community, while the combined contribution of non-*Akulmiut* spouses remained relatively stable. In 1983, the marriage pattern of Nunapitchuk had developed to the point that it resembled that of the long-standing community of *Nanvarnarrlak* in 1920, both being very different from Nunapitchuk in 1920 when it was first being settled as discussed in Chapter 3. A similar pattern has been shown for another contemporaneous Yup'ik community of western Alaska, Goodnews Bay (Ellanna 1988), indicating the persistence of a kin-based social structure that characterizes modern settlements.

As in other Yup'ik societies, permanent settlements were made up of a core of people who were relatives or several groups who were relatives (Shinkwin and Pete 1984). They were sharply distinguished from neighboring societies as a polity and also geographically, sharing a common territory and resources within the area. Group affiliation and kinship were primary principles that guided land and resource use as discussed in Chapter 6.

Land Ownership

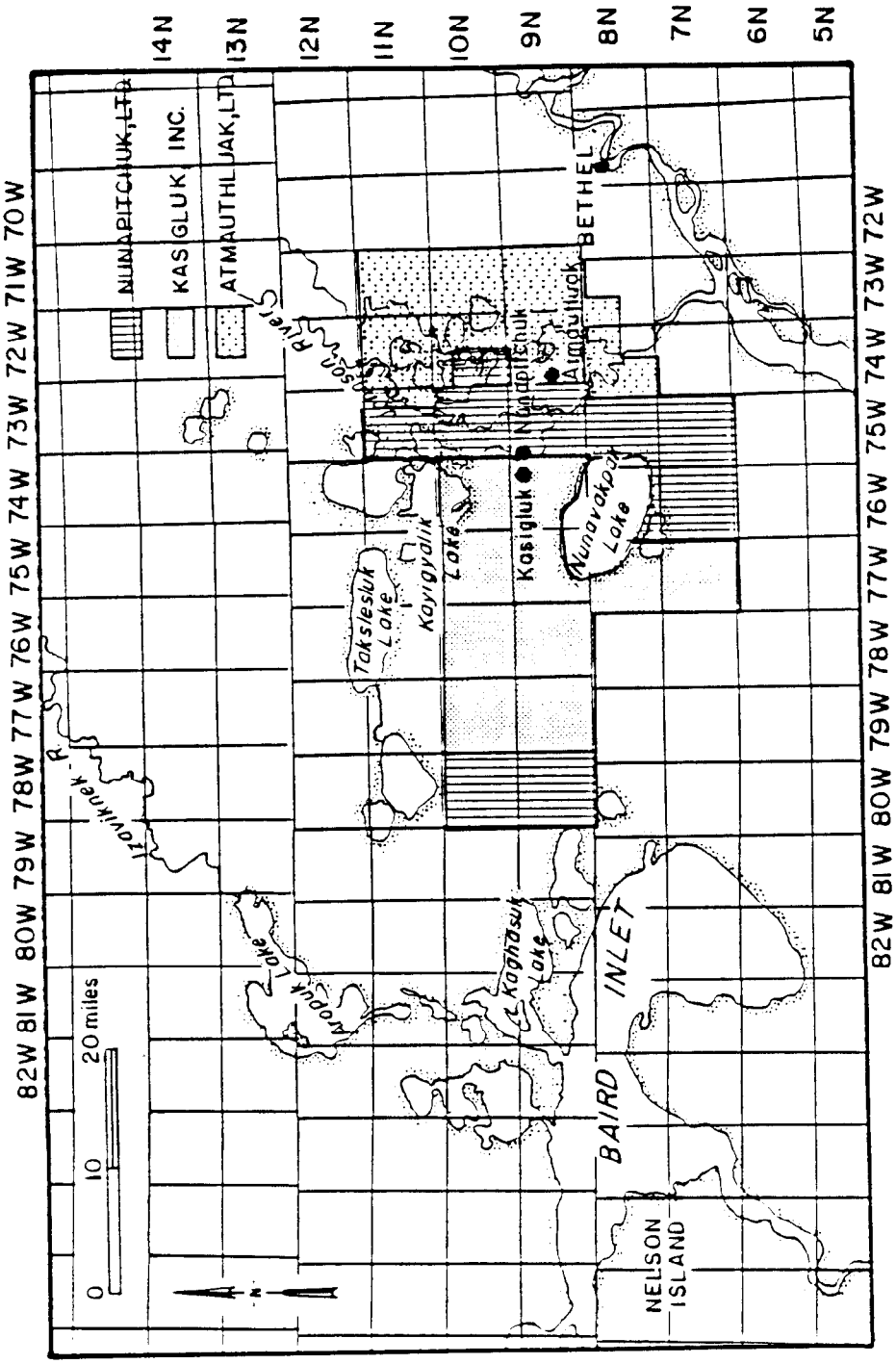
Pursuant to the Alaska Native Claims Settlement Act (ANCSA, 85 Stat. 706) of 1971, the Nunapitchuk village corporation, Nunapitchuk, Ltd., was entitled to 115,200 acres of federal land equivalent to 5 townships (Fig. 22). Title to the surface estate of land occupied or used by Natives or non-Natives as primary places of residence, or business or subsistence campsites, must be reconveyed to those individuals (Section 14[c] of ANCSA). A minimum of 1,280 acres (2

square miles) must be reconveyed from Nunapitchuk, Ltd. to the City of Nunapitchuk for community expansion and public purposes.

Nunapitchuk, Ltd. had 325 shareholders in 1974 (Arnold 1974), most of whom were current Nunapitchuk residents born prior to December 18, 1971 as required by statute. In 1983, seven Nunapitchuk residents also were shareholders in the Bethel Native Corporation, having inherited stock from deceased shareholders. Nunapitchuk, Ltd. was governed by a nine-member board and employed a land planner. A single, one-room structure in the village served as the corporate headquarters.

After lands are conveyed to Nunapitchuk, Ltd. the subsurface estate of them will be owned by the regional Native corporation, Calista Corporation, as required by statute. Lands immediately adjacent to Nunapitchuk, Ltd., lands on the east and west, will be owned by Kasigluk, Inc. and Atmauthluak, Ltd. (Fig. 22). The remainder of the area used by Nunapitchuk residents historically, and at present, described in subsequent chapters, was owned by the federal government. These lands were within the 19.6 million-acre Yukon Delta National Wildlife Refuge and were managed by the U.S. Fish and Wildlife Service (U.S. Department of the Interior 1988b). Within Nunapitchuk are 3.46 acres held by the federal government for the Bureau of Indian Affairs school complex (U.S. Survey No. 4049), approved in April 1962.

Nunapitchuk Ltd. has several local businesses. In 1983, it owned and operated a fuel facility opposite the village (Fig. 19) and constructed an eight-unit apartment complex in Bethel on land it


82W 81W 80W 79W 78W 77W 76W 75W 74W 73W 72W 71W 70W
14N
13N
12N
11N
10N
9N
8N
7N
6N
5N
82W 81W 80W 79W 78W 77W 76W 75W 74W 73W 72W
NUNAPITCHUK, LTD.
KASIGLUK INC.
ATMAUTHLUAK, LTD.
BETHEL
Akulmiut
Nunapitchuk
Kasigluk
Tuntutuliak
Eek
Tuluksak
Napaskiak
Oscarville
Bethel
Akiachak
Akiak

owned within the City of Bethel. Since 1983, it has constructed and operated a general store in the village.

In 1985, an area for an airport was leased to the state and was located within Nunapitchuk, Ltd. land selections. However, the surface estate must be reconveyed to the federal, state or local government (Section 14[c] ANCSA).

The Alaska Native Allotment Act was extinguished with the passage of ANCSA (December 18, 1971). Only those individuals who had applied for an allotment prior to that date were entitled to make a claim. Prior to the date of passage, 166 individuals in Nunapitchuk had applied for patent to land as provided for by the Allotment Act (see also Chapter 5). Most had not received patent to the land by 1983, even though it had been 20 years since the most recent application was filed. Several applicants had died before their lands were surveyed.

Government, Public Facilities, and Services

Nunapitchuk was incorporated as a second class city, along with neighboring Kasigluk, in 1969 to form the municipality of Akolmiut. In 1981, each community reorganized forming individual second class municipalities. The City of Nunapitchuk was governed by a mayor appointed from the seven-member city council. In 1983, the city had several employees -- a city administrator; clerk; clinic manager; two health aides; janitor; two police officers; washeteria manager; several seasonal construction and laborer positions; and several

part-time positions. By ordinance the city set wages for the positions. Beginning July 1, 1982 the City had a cash balance (including revenues) of nearly $334,000. Authorized expenditures were for administration; planning and zoning; public safety; ice roads and other transportation-related services; parks and recreation; and other public works (such as sidewalks [boardwalks] and street lights). In 1983, the city had a planning and zoning committee, and a recreation committee. Public and commercial services are shown in Table 21.

Nunapitchuk was incorporated on January 2, 1940 under the provisions of the Indian Reorganization Act (IRA) applied to Alaska in 1936 (Act of May 1, 1936; 49 Stat. 1250) when village members voted in favor of the organization and its constitution and by-laws (Anaruk 1940). In 1983, Nunapitchuk's five-member IRA council was active and received and administered grants for capital projects, as well as other programs. In 1985, the IRA council voted to join the Yupiit Nation, a regional organization dedicated to protecting the tribal rights of local IRA governments.

The Nunapitchuk IRA council had a one-story structure which housed its offices; a meeting room; two rooms for let; and a health clinic, which was leased to the Yukon-Kuskokwim Health Corporation. In 1983, the IRA council employed a tribal director and a janitor.

The Association of Village Council Presidents (AVCP) formed in 1965, of which Nunapitchuk was a member, was the regional Native non-profit organization which administered certain social services, such as youth employment and training; housing; and village police.

TABLE 21. PUBLIC AND COMMERCIAL SERVICES AVAILABLE IN NUNAPITCHUK, 1983

SERVICE	AVAILABLE
Airfield	no
Boat dock (public)	no
Electricity	yes
Telephone	yes
Television (cable)	no
Television (public)	yes
Fuel sales	yes
General store (2)	yes
Lodging (2 rooms)	yes
City offices	yes
Community workshop	yes
Fire station	no
Garbage collection	yes
Health services	yes
Laundromat/Showers	yes
Library	no
Police station/officers	yes
Postal service	yes
School system (K-12)	yes
Sewer system	no
Water system	no
Church (3)	yes
Corporate offices	yes
Tribal offices	yes

Nunapitchuk was the recipient of funds from each of these programs, although the city employed two police officers as well. In 1983, eight youth had summer employment in the village through one of the programs and some Nunapitchuk high school students have worked in Bethel as well. The environmental protection services of Nunam

Kitlutsisti were provided to member villages in the region, including Nunapitchuk.

Transportation within the village usually was on foot, along the network of boardwalks that traversed the marshy and moist tundra. This restricted the use of motorized vehicles to months when the ground was frozen and to areas where boardwalks did not have to be crossed. At those times, trails connected portions of the village enabling the use of snowmachines and three-wheeled motorized vehicles for transportation. Nevertheless, immense snowdrifts and the boardwalks restricted use of motorized vehicles to areas away from the central city area.

The residential area and fuel station along the opposite side of the river were accessed only by boat or, in winter, on foot or by motorized vehicle. During freeze-up and breakup, when conditions were unsafe or impossible for crossing the river, transportation by any means was curtailed. Children who lived on the opposite side of the river could not get to school, nor could people reach other public and commercial services of the city center, such as the post office or store. No one could access the fuel station at those times, as it was remote from all residential areas as well as the airport at neighboring Kasigluk.

Located along the Johnson River, Nunapitchuk could be reached in ice-free months by river-going vessels and barges from mid May through mid October. A survey of two-thirds of Nunapitchuk households showed that there were at least 88 private boats used in 1983 by village residents for intervillage transportation and for a

variety of subsistence activities. About 50 were used for commercial fishing along the lower Kuskokwim River. Nearly two-thirds of the 88 boats were locally crafted wooden skiffs that ranged in length from 18 to 24 feet.

The river in front of the village was used by float-equipped aircraft on a chartered basis for transporting passengers and their cargo. When the river was frozen, wheeled aircraft were used. When the river was unsafe or impossible for landings by aircraft, helicopters were sometimes chartered to and from Bethel for transporting mail and passengers during each two-week period when river conditions were poor. However, helicopters were not always available with Bethel flight service companies.

In 1983, there was no airstrip at Nunapitchuk, so individuals had to arrange to charter aircraft in order to be picked up or dropped off right at the village. Otherwise, they had to travel to the airstrip at the neighboring village of Kasigluk for scheduled or chartered flights. That also required making arrangements for transportation to and from the Kasigluk airport. Again, during two periods of the year, surface or river travel was not possible to get to and from that airport. The 100 x 2,500-foot gravel runway at Kasigluk was constructed from 1974-75 (B. Iverson, pers. comm. 1988). In 1983, there were three scheduled flights daily, except Sunday, on two carriers between Kasigluk and Bethel. Seat fare was about $20 one way. Charter rates were about $60 round trip, depending upon the type of aircraft (30 minutes flight time), to be either picked up or dropped off.

In 1985-86, a 100 x 2,200-foot gravel runway was constructed on the opposite side of the Johnson River from Nunapitchuk. This airstrip, like the one at Kasigluk, could only be accessed by boat during ice-free months and could not be reached during freeze-up and breakup when river conditions made travel unsafe or impossible. In addition, spring thaw sometimes softened the runway surface making it unsafe for landings even by very small aircraft. Neither the Nunapitchuk nor Kasigluk airports had navigational aids, so air transport and travel were restricted by weather, especially fog and wind, in addition to daylight.

Trails connected Nunapitchuk with neighboring Kasigluk and Atmautluak, and the regional center of Bethel, 26 miles distant. When conditions permitted, travel by snowmachine to and from Bethel took about 1 1/2 hours. There were trails to other areas including Kuskokwim Bay, Nelson Island, the lower Yukon River, and the lower Kuskokwim River. By river, Bethel was 35 miles distant and required about 2 to 2 1/2 hours travel time by boat, depending upon conditions and the type and power of the boat. In winter, it was sometimes possible to drive by car or truck to and from Bethel on the frozen river ice by means of the ice road. In 1983, six households had lightweight trucks.

The federal Bureau of Indian Affairs operated an elementary school at Nunapitchuk providing education from kindergarten through the eighth grade. The elementary school has been operated at Nunapitchuk by the Bureau (formerly Office) of Indian Affairs since 1937 with the first school constructed in 1940-41, as noted earlier.

The community had a six-member elementary school advisory board. Since 1985, the State of Alaska has provided elementary education at Nunapitchuk. In 1983, there were about 49 students enrolled in elementary school.

The state's Lower Kuskokwim School District operated a secondary school to provide education for grades 9 through 12. There was a five-member high school advisory board. The first graduating class was in 1982. Prior to 1981, high school students were sent to boarding schools at Mt. Edgecumbe in Sitka and, more recently, to Bethel. A young Nunapitchuk woman and high school student was named plaintiff in 1976 in a class action lawsuit, originally filed in 1972, against the state of Alaska for the right under the state's constitution to be educated in her (their) own community (Anna B. Tobeluk, *et al.* v. Harold Raynolds; No. 3AN-72-2450). Although the case had not been dismissed as of 1988, a consent decree in 1976 called for the establishment of high schools in Alaska's rural communities (J. Bush, pers. comm. 1988). At Nunapitchuk, the Anna B. Tobeluk Memorial High School was constructed in 1981, although a much smaller structure was used for a couple of years prior. In 1983, the high school had an enrollment of about 43. Nunapitchuk has been directly involved in the school district. In the 1980s the chairman of the Lower Kuskokwim School District was a lifetime Nunapitchuk resident.

There were three church congregations in Nunapitchuk -- Moravian, Russian Orthodox, and Pentecostal. The largest percentage of households were affiliated with the Moravian church as noted

earlier, but all three churches had active parishioners, weekly church services, and usually a weekly evening meeting. A lay pastor for each church was resident in the community. The church played a central role in the community as many of the church leaders and members of the church councils were also leaders in civic duties and public offices.

The majority of the 70 occupied houses in Nunapitchuk in 1983 were constructed by the owners or close relatives, such as parents, who previously occupied the houses. Forty-eight houses (68 percent) were constructed by owners, 18 (26 percent) in 1982 through the AVCP housing authority, and 4 (6 percent) by the Bureau of Indian Affairs in the early 1970s. There were several unoccupied houses which served various uses, primarily as storage buildings or workshops. Houses were of frame and plywood construction and varied in size from about 10 x 14 feet to 24 x 30 feet. All but one were one-story. Two Nunapitchuk households also maintained a house in Bethel. Houses were heated with oil-fired forced air furnaces or cast iron, oil combination cooking/heating radiant stoves. A few houses had wood-burning stoves, but wood was rare in the area and none were used as the sole source of heat. Cooking was done on either propane gas stoves, Coleman white gas camp stoves used in the home, or oil stoves also used for heating. None of the homes had plumbing as there was no water or sewer system. Residents hauled water from a central water facility, but more frequently used rainwater collected in barrels. In spring, water was sometimes taken from the river through holes in the ice or produced by melting snow. Household sewage was

collected in "honeybuckets" or chamber pots which were dumped at one of several disposal sites situated throughout the village. Solid waste was collected and hauled to a disposal site about one mile west of the village.

A coin-operated laundry facility was located in the water facility/well building where there were also coin-operated showers and a dry sauna available. The many steambath houses (*Maqiviit* [pl.]) throughout the village were used regularly for personal hygiene and health care. Many households had wringer washers that were used in the home or out-of-doors for doing laundry.

Two primary health aides provided basic health care and emergency services. A health clinic was located in the IRA building. An itinerant nurse, dentist, and doctor occasionally traveled to the village, although major medical and dental care was provided for in either Bethel or Anchorage.

Public safety was provided for by the two city police officers and one Village Public Safety Officer (VPSO), all resident in the village. A fire chief inspected home fire extinguishers and smoke alarms and the water pump on a monthly basis.

United Utilities, Inc. provided local and long distance telephone communication service. In 1983, the second or third year in which telephone service was made available, 51 (73 percent) of the households paid for telephone service. In addition, virtually every home, business, and public service had communication within the village by means of a citizens band (CB) radio. Many also had the more powerful VHF radio which enabled communication also with people

in neighboring villages, at fish camps along the lower Kuskokwim River, and in commercial fishing boats. By 1988, CB units had almost entirely been replaced by VHF units. Television signals from the public television and radio station, KYUK, in Bethel could be picked up in Nunapitchuk. In 1983, no cable television channels were available.

The Alaska Village Electrical Cooperative (AVEC) operated a power plant in Nunapitchuk and all occupied houses were connected to the facility. Electricity was first available in 1969. There were three diesel generators -- 300 kw, 330 kw, and 440 kw. Power cost 43 cents per kilowatt hour, but was partially subsidized by the state's "power cost equalization" program.

Personal and Household Facilities and Equipment

An inventory of major equipment owned by households was made in summer 1983 (Table 22). Forty-four (63 percent) of the households were included in the inventory. These households included all but one salmon fishing (commercial and/or subsistence) household (n=39) and several non-salmon (n=5) fishing households. Although it was not possible to gather complete lists of major equipment in working order for each household, the inventory is considered representative as nearly all salmon fishing households were included as well as other households identified locally as active in subsistence activities. All sample households had at least one boat, but as many as eight in one. The average was two. Sixty-three percent of the boats were

local handcrafted wooden (plywood) skiffs which ranged in size from 16 to 24 feet in length. Most were 24 feet long. Aluminum boats ranged from 14 to 22 feet with most 20 feet long. Eighty-six outboards were inventoried ranging from 9.9 horsepower to 115 horsepower with most 50 or 70 horsepower. Households had from 1 to 8 outboards, averaging 1.95.

Most of the inventoried households (39 of 44) had at least 2 salmon fishing nets, but as many as 8, 50 fathoms in length. There were 96 salmon nets or 2.18 per household. All had at least 1 snowmachine and as many as 8. There was a total of 108 snowmachines or 2.45 per household. Plywood sleds used with snowmachines for transporting passengers and cargo totaled 87 or 1.97 per household, with a range of 1 to 4. Five of these households had a pickup truck (.11 per household) and 5 a three-wheeled motorized vehicle. Two households also had a truck in Bethel for use when in that community. One had a small airplane.

There were few dog teams in Nunapitchuk in 1983. Many households had no dogs and several had 1 to 3. The largest team consisted of 17 dogs and 2 others had 14 and 9 dogs. Dogs were used for trapping, recreation, and for competition in local intervillage races.

Nunapitchuk households also maintained outdoor storage and processing facilities in the village related to the subsistence use of fish and wildlife. Fifty-five percent of inventoried households had a combination cache-fishing drying rack. The caches were elevated and the area below was used for processing fish -- cutting,

TABLE 22. INVENTORY OF OUTDOOR EQUIPMENT FOR NUNAPITCHUK HOUSEHOLDS, SUMMER 1983

TYPE OF EQUIPMENT	TOTAL NUMBER SAMPLE HOUSEHOLDS (n=44)	RANGE	AVERAGE
Boats	88	1-8	2.00
Outboards	86	1-8	1.95
Salmon Nets	96	0-8	2.18
Snowmachines	108	1-8	2.45
Sleds	87	1-4	1.97
Trucks	5	0-1	0.11
3-Wheelers	5	0-1	0.11
Airplanes	1	0-1	0.02

drying, and smoking. The processing area was enclosed by wire fencing or chickenwire. Meat from wild animals was also processed in those areas. Dried fish was stored in cardboard boxes in the cache. Some households had additional racks which were covered for drying fish. In addition, the 24 salmon fishing households that operated from a fish camp in 1983 had facilities, such as smokehouses and drying racks, at the camps. Virtually all households had at least one small freezer, but not all had a refrigerator.

COMMUNITY ECONOMICS

Cost of Living

The costs of goods and services in Nunapitchuk was high compared to either the regional center of Bethel or to the urban city of Anchorage. The larger of the two general stores carried a limited supply of food staples and frozen foods (in winter months), but also sold hardware, apparel, snowmachines, and outboards. It also provided a small engine repair service and was a local fur dealer. The fuel station sold gasoline, white gas, propane, and heating oil. A price listing of selected food and nonfood items is shown in Table 23. In 1983, food items averaged 1.60 times the cost of the same items in Bethel, 2.01 times those in Anchorage, and 2.14 times the national average (Stetson 1988).

Many individuals occasionally purchased groceries in Bethel. However, access was not easy or inexpensive by either surface, river, or air transportation, as noted above. Electrical service, at a cost of 43 cents per kilowatt hour, was 2.25 times greater than Bethel and 7.11 times greater than Anchorage for 1,000 kw ($430 at Nunapitchuk, $191 at Bethel, and $60 at Anchorage). Subsidies through the state's "power cost equalization" program provided some relief. For 14 households that reported their heating fuel use, the average use was 15 55-gallon drums per year with a range of 8 to 20 drums which cost between $691.68 and $1,729.20 annually. Heating fuel cost $86.46 per drum (1.2 times the cost at Bethel and 1.4 times that at Anchorage).

TABLE 23. PRICE LISTING FOR SELECTED GOODS AVAILABLE AT A NUNAPITCHUK GENERAL STORE AND A FUEL STATION, SUMMER 1983

ITEM	COST ($U.S.)
POTATOES	
White potatoes, fresh (10 lbs)	6.25
VEGETABLES	
Onions (each)	.30
Corn, canned whole kernel (12 oz)	1.30
Tomatoes, canned (16 oz)	1.20
VEGETABLE CONDIMENTS	
Catsup (32 oz)	3.40
FRUIT	
Apples, fresh (each)	.40
Bananas, fresh (lb)	.70
Oranges, fresh (each)	.40
Fruit cocktail, canned (16 oz)	1.60
Peaches, canned (16 oz)	1.45
Pears, canned (16 oz)	1.45
Grape juice, canned (1 qt. 14 oz)	3.95
BREAKFAST CEREAL	
Ready-to-eat, cornflakes (18 oz)	2.60
Oatmeal (42 oz)	3.95
FLOUR, RICE, PASTA	
All purpose white flour (5 lbs)	3.95
Rice (10 lbs)	6.75
BREAD	
White bread, enriched (1.5 lbs)	2.40
OTHER BAKERY PRODUCTS	
Crackers, pilot bread (2 lbs)	3.45
Cookies, vanilla wafers (14 oz)	3.20
MILK	
Dry milk (for 10 qt.)	5.80
Canned, evaporated (13 oz)	.80

Continued

TABLE 23. Continued

ITEM	COST ($U.S.)
CHEESE	
Natural cheese, cheddar (3 lbs)	12.85
RED MEAT, VARIETY MEAT	
Round steak (lb)	5.50
Ground beef (lb)	3.35
Bacon (1 lb can)	4.20
Frankfurters (lb)	3.70
POULTRY*	
Chicken, whole (3 lbs)	4.25
FISH*	
Tuna, canned (6.5 oz)	2.09
MIXTURES, MEAT, POULTRY, FISH	
Canned chili with beans (26 oz)	1.70
EGGS	
Eggs, large (doz)	1.90
DRY BEANS AND PEAS, NUTS	
Beans, dry, kidney (2 lbs)	2.50
Peanut butter (36 oz)	4.75
FATS, OILS	
Butter (lb)	2.40
Margarine (lb)	1.45
Shortening (3 lbs)	9.45
Mayonnaise (qt.)	3.85
SUGAR, SWEETS	
Sugar, granulated (10 lbs)	7.45
SOFT DRINKS	
Soda pop (6-12 oz cans)	4.50
PETROLEUM PRODUCTS	
Gasoline (55-gal.)	93.39
Heating Oil (55-gal.)	86.46

*Available only in winter months

Gasoline cost $93.39 per 55-gallon drum (1.08 greater than at Bethel and 1.45 greater than at Anchorage) in 1983 (Stetson 1988).

Income

Sources of income for Nunapitchuk residents in 1983 included wage employment, commercial fishing, trapping, other self-employment, and transfer payments. Wage employment was limited and fluctuates dramatically from year-to-year, in part dependent upon state and federal revenues. Seventy-two percent of all wage employment opportunities in Nunapitchuk in 1983 were directly or indirectly funded through the federal or state governments. Commercial fishing was a source of income for about 50 percent of the households, but as noted earlier, income derived from commercial fishing fluctuates considerably from year to year. Similarly, trapping furbearers was influenced by market prices and resource abundance, as well as weather conditions during the trapping season. In 1983, one-third of Nunapitchuk households had trapping as at least one source of income. Many households received income from one or several social service programs such as aid to families with dependent children (AFDC), supplemental security income (SSI), social security, veterans benefits, longevity bonus, adult public assistance, and food stamps. Virtually all residents received State of Alaska Permanent Fund dividends in 1983. For this study, unearned income was not systematically recorded. However, regional estimates reported for 1979 and 1982 are noted below. Some residents earned income from the

sale of handcrafted items such as mink hats and other fur apparel, building boats, hanging salmon nets, babysitting, and repairing small engines. Also, men in the National Guard earned some income by participating in the required number of drills and two men were self-employed as store owners. Income from other than the three primary sources (wage employment, commercial fishing, and trapping) was not recorded, but estimates of unearned income have been made.

Wage Employment

During 1983, there were 115 wage employment opportunities from which village residents earned income. The wage employment positions are shown in Table 24. Twelve of the positions were with the school district, all 9 months or less in duration; 12 with the federal government including 9-month positions with the Bureau of Indian Affairs (BIA) school or part-time positions with the U.S. Postal Service; 3 with state government, including 1 police officer; 55 with the City of Nunapitchuk, all but 10 being seasonal, part-time, or on an as-needed basis; 2 with the IRA council; 3 with AVEC; and 27 with another commercial enterprise, such as the general stores, Nunapitchuk, Ltd., United Utilities, Inc., or a fish processing company in Bristol Bay. There were three lay pastors, one with each of the three churches. In addition, two individuals were self-employed as store owners. All positions were service-oriented or service-related and, with the exception of the private and commercial

TABLE 24. WAGE EMPLOYMENT POSITIONS HELD BY NUNAPITCHUK RESIDENTS, 1983

EMPLOYER AND JOB	NUMBER POSITIONS	WAGE/HOUR* (in dollars)
Lower Kuskokwim School District**	(12)	
Certified teacher	2	15.14
Teacher aide	4	9.32
Cook and assistant	2	10.80
Clerk	2	11.79
Janitor	1	11.02
Maintenance	1	15.14
Federal Government	(12)	
U.S. Postal Service		
Postmistress	1	8.00
Mail carrier	1	20.00/load
Bureau of Indian Affairs***		
Certified teacher	1	12.50
Teacher aide	4	7.39
Bilingual aide	1	5.25
Cook	1	14.45
Janitor	1	11.98
Maintenance	2	15.70
State Government	(3)	
Alcoholism Counselor	1	1558.00/month
Fee agent	1	15.00/application
Village Public Safety Officer	1	
City	(55)	
Administrator	1	10.70
Clerk	1	9.00
Clinic manager	1	5.50
Construction and laborers	26	5.50-10.50
Fire chief	1	6.00
Garbage collector	3	6.00
Health aide, asst., and alternate	4	5.50
Janitor	2	5.50
Planner	1	8.00
Police officer	2	6.00
Recreation coordinator	1	6.00

Continued

TABLE 24. continued

EMPLOYER AND JOB	NUMBER POSITIONS	WAGE/HOUR* (in dollars)
City, Continued		
Treasurer	1	50.00/month
Washeteria mgr., asst., and alternate	3	6.00
Youth training program	8	4.50
IRA Council	(2)	
Janitor	1	5.50
Tribal director	1	n/a
Private	(31)	
Alaska Village Electric Cooperative		
Meter reader	1	37.50
Power Plant optr., asst., alt.	3	12.50
Assistant manager	1	7.50
Bookkeeper	1	9.00
Clerk	4	5.50
Carpenter	2	10.00-25.00
Fish processing worker	1	2000.00/month
Heavy equipment operator	1	10.50
Laborer	8	7.50
Mechanic	2	15.00
Gas station manager	1	1275.00/month
Lay pastor	3	n/a
Land planner	1	9.50
Secretary	1	9.50
Telephone repair	1	200.00/month
Self-employed	(2)	
Store owner	2	n/a

*Wages per hour unless otherwise noted

**School district "base" wages for position

***Federally paid wages cited are "base" wages to which 25% cost of living allowances and 25% staffing differential allowances are added

enterprises, all were directly or indirectly funded by the state or federal government.

One-third of the wage-earning positions were full-time year-round positions which included all jobs 30 or more hours per week for at least 9 months per year (Table 25). These included schoolteachers and aides; health aides; a city clerk; business and public facility managers; janitors; and police officers. The greatest percentage of jobs (45 percent) were seasonal, ranging from 1 to 4 months per year and 30 to 40 hours per week. These included jobs working on seawall and sidewalk construction; an electrical meter reader; the city treasurer; and alternates for several full-time managerial positions. Part-time positions were 9 or 12 months per year and 20 hours or less per week. These included positions such as the postmistress, a mail carrier, and a store clerk.

Employed individuals ranged from 15 to 66 years of age with an average age of 33. Over three-fourths were less than 50 years of age. Average income for those earning wages was $7,711. However, most wage income, however, was supplemented by commercial fishing and trapping income as described below. These additional sources of earned income probably would result in a comparable wage income of $10,195 (gross income was $9,894 with 2.59 exemptions), as reported by the Alaska Department of Revenue (1988:55, 129) based on 1983 Nunapitchuk tax returns. Two years later, in 1985, average wage income had declined to $9,210 and gross income to 9,178 (Alaska Department of Revenue 1988:79, 153).

TABLE 25. AGE RANGES FOR EMPLOYED INDIVIDUALS BY TYPE OF EMPLOYMENT, 1983

AGE RANGE	TOTAL (n=117)	# FULL-TIME	# PART-TIME	# SEASONAL
10-19 years	16	0	1	15
20-29	47	16	7	24
30-39	25	11	7	7
40-49	17	11	3	3
50-59	10	1	6	3
60-69	2	0	1	1
Total	117	39	25	53
avg. age	31 years	33	37	27

Some individuals held more than one position during the year which was possible due to the high number of seasonal and part-time positions. On a household basis, several members of a single household worked for wages in some instances. The analysis of total earned income from wage is described first on an individual basis followed by a household analysis.

Full-time positions paid the largest annual salary, $7,500 or more and averaging $15,248 (Table 26), nearly twice the average salary for part-time and seasonal positions. Most full-time positions paid between $10,000 and $15,000 per year. Full-time year-round jobs accounted for 66 percent of all individuals earned income.

TABLE 26. INCOME FROM WAGES FOR EMPLOYED INDIVIDUALS BY TYPE OF EMPLOYMENT, 1983

EARNED WAGES	# PEOPLE EARNING (n=115)	NUMBER FULL-TIME POSITIONS	NUMBER PART-TIME POSITIONS	NUMBER SEASONAL POSITIONS
$1-2,499	37	0	7	30
$2,500-4,999	13	0	1	12
$5,000-7,499	8	0	3	5
$7,500-9,999	9	3	6	0
$10,000-12,499	16	11	1	4
$12,500-14,999	12	10	0	2
$15,000-17,499	3	3	0	0
$17,500-19,999	3	3	0	0
$20,000-22,499	3	3	0	0
$22,500-24,999	0	0	0	0
$25,000-27,499	0	0	0	0
$27,500-29,999	2	2	0	0
$30,000-32,499	1	1	0	0
Total Earned Wages	$825,089	$548,937	$93,854	$182,298
Average	$7,711	$15,248	$5,214	$3,439

Full-time positions were held mostly by individuals 20 to 29 years of age (41 percent), although those 20 to 49 accounted for nearly all full-time positions (Table 25). Males held three-fourths of all full-time positions.

Part-time positions paid, on the average, two-thirds less than full-time positions, averaging $5,214. Most paid either less than $2,500 or between $7,500 and $10,000 a year (Table 26). Part-time positions were distributed more evenly among the age groups than

full-time positions (Table 25). Women held 36 percent of part-time positions.

Seasonal wage employment provided the most number of jobs, but most positions paid less than $5,000 (Table 26) with average earnings of $3,439. Seasonal positions were held mostly by those 20 to 29 years of age. Virtually all individuals less than 20 years of age earning wages were employed as seasonal workers (Table 25). Men held 81 percent of all seasonal positions.

Total earned income for 107 wage employment positions was $825,089. Salary could not be determined for 10 positions that were part-time or seasonal (such as store owners and lay pastors). Fifty-one percent of all wage-earning positions in 1983 were with the city, the majority seasonal (Tables 26 and 27). As a result, average earnings for city employees was the lowest of all categories. In 1983, the city accounted for the large percentage (34 percent) of wage income for the community and employed the largest number of individuals. Private and commercial enterprise (the general stores, village corporation, telephone and electrical utilities) accounted for nearly one-fourth of wage paying positions (Table 27).

The state, through the school district and other agencies, was the third largest employer and contributed about one-fourth of the earned income (Table 27). Average earnings from the state were the greatest, averaging $15,894, primarily because the state also provided the most full-time year-round positions.

The federal government contributed about as much as the state in terms of jobs and with similar average earnings, primarily because in

TABLE 27. TOTAL WAGES PAID BY EMPLOYER CATEGORY, 1983

EMPLOYER*	TOTAL WAGES PAID (% of total)	AVERAGE	# POSITIONS (% of total)
City	$276,847 (34%)	$5,126	54 (51%)
State (incl. school district)	$222,512 (27%)	$15,894	14 (13%)
Federal (incl. BIA, USPO)	$172,444 (21%)	$14,370	12 (11%)
Private	$141,742 (17%)	$5,670	25 (23%)
IRA	$11,544 (1%)	$5,772	2 (2%)
TOTAL	(100%)		107 (100%)

*Salary was not determined for 10 positions, all part-time and seasonal

1983 the jobs with the elementary school were funded through the federal Bureau of Indian Affairs (Table 24). Since 1983, the elementary school functions have been transferred to the state, so that since then the state probably contributed the most income to the community of any category, particularly since city revenues have declined dramatically. In 1983, the tribal council was the smallest employer.

An analysis of household wage earnings was done in addition to the individual wage earnings analysis. In 1983, 80 percent of Nunapitchuk households had at least 1 member who worked for wages at some time during the year. Fourteen (20 percent) had no earned income, although some of these had income from commercial fishing and

trapping as described below and others had income from transfer payments.

Average household income from wages ranged from 0 to $58,964, with a mean household income of $12,507 based on information for 61 of 70 households (87 percent) where all jobs and salaries were known. Most households had earnings from 1 (30 percent) or 2 (27 percent) jobs, but as many as 6 in a single household. Average number of jobs per household per year was 1.7. Wage income, however, was not evenly distributed among households (Fig. 23). About one-third accounted for 60 percent of wage income and 60 percent accounted for about 92 percent of all wage income (Fig. 23).

Most households earned wages between 0 and $2,500, followed by those $12,500 to $15,000 (Table 28). Fifty percent earned less than $12,500. Based on poverty income guidelines, 39 (64 percent) Nunapitchuk households fell below the poverty income guidelines for Alaska in 1983 based on income from wages alone (Table 29). Fewer households qualified when commercial fishing and trapping income was included as described below.

Unearned Income

Although unearned income was not recorded during this study, it was estimated from other sources. A study based on data for 1979 indicated the per capita expenditure for transfer payments was about $807 in the lower Kuskokwim and Yukon rivers region compared to about $785 statewide (Kreinheder and Longenbaugh 1982:48). A similar level

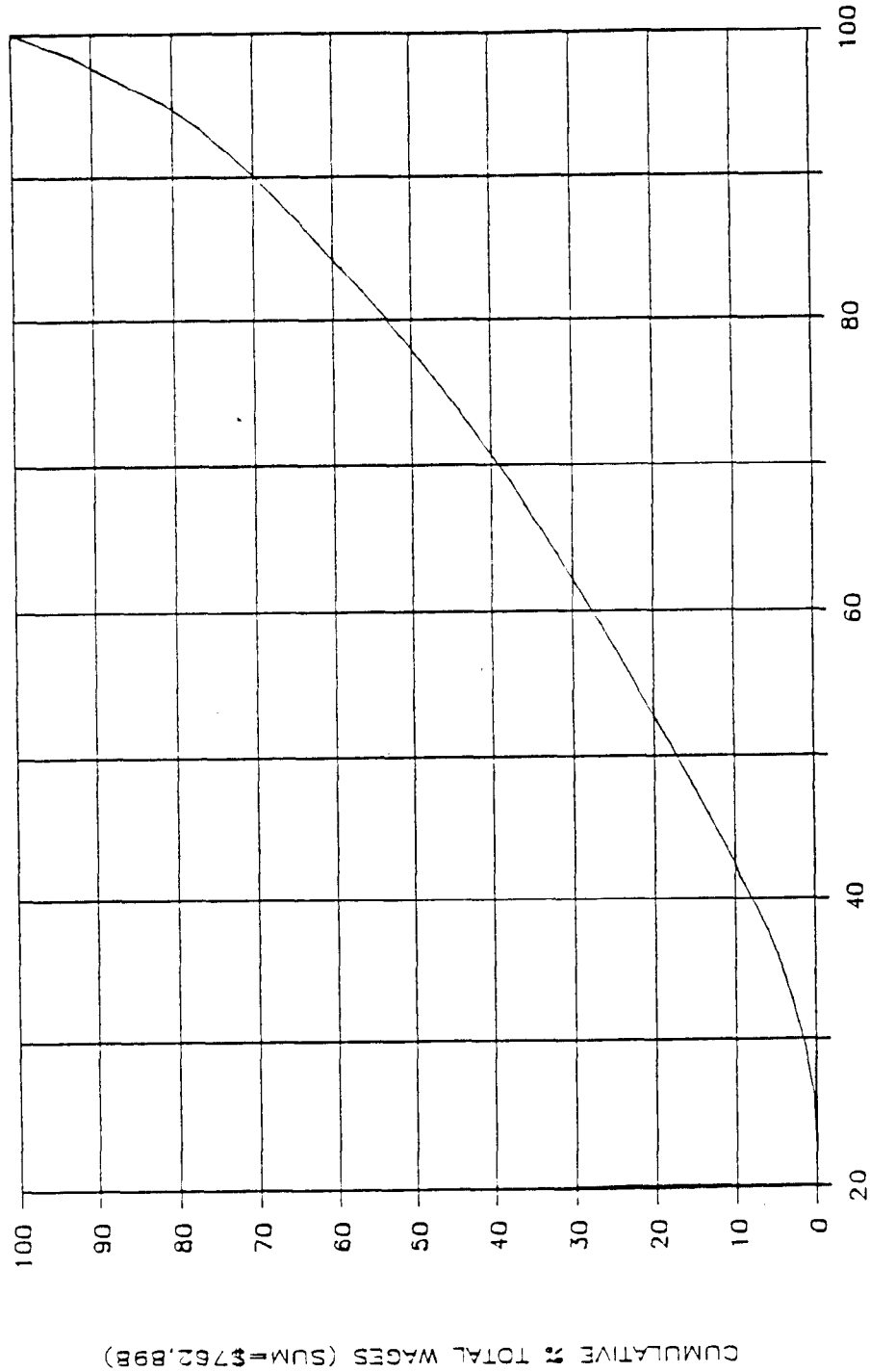


Fig. 23. Nunapitchuk wage income distribution (cumulative percentage of households by cumulative percentage of earned wages), 1983.

TABLE 28. EARNED HOUSEHOLD INCOME FROM WAGES, 1983

INCOME RANGE	# HOUSEHOLDS EARNING (n=61)	PERCENTAGE	CUMULATIVE PERCENTAGE
0	11	18.0	18.0
$1-2,499	5	8.2	26.2
$2,500-4,999	2	3.3	29.5
$5,000-7,499	3	4.9	34.4
$7,500-9,999	2	3.3	37.7
$10,000-12,499	8	13.1	50.8
$12,500-14,999	11	18.0	68.9
$15,000-17,499	4	6.6	75.4
$17,500-19,999	4	6.6	82.0
$20,000-22,499	5	8.2	90.2
$22,500-24,499	1	1.6	91.8
$25,000-27,499	1	1.6	93.4
$27,500-29,999	0	0.0	93.4
$30,000-32,499	1	1.6	95.1
$32,500-34,999	0	0.0	95.1
$35,000-37,499	0	0.0	95.1
$37,500-39,999	0	0.0	95.1
$40,000-42,499	0	0.0	95.1
$42,500-44,499	2	3.3	98.4
$57,500-59,999	1	1.6	100.0
average=$12,507			

of expenditure was noted in 1982 for the Kuskokwim Bay community of Quinhagak (Wolfe *et al.* 1984:233) where transfer payments accounted for 13.4 percent of the community's income. For qualifying households, this would have averaged about $4,000 per year. In addition, a dividend payment from the Alaska Permanent Fund of $326.15 was made to each resident, roughly $1,600 per household per year, based on an average household size of 5, as noted above.

TABLE 29. POVERTY INCOME GUIDELINES COMPARED TO HOUSEHOLD INCOME FROM WAGES BY HOUSEHOLD SIZE, 1983

HOUSEHOLD SIZE	POVERTY INCOME GUIDELINE, 1983*	# HOUSEHOLDS BELOW GUIDELINE	# HOUSEHOLDS ABOVE GUIDELINE
1	$ 6,080	6	1
2	8,080	2	2
3	10,280	6	6
4	12,380	4	5
5	14,480	5	1
6	16,580	8	2
7	18,680	0	4
8	20,780	4	1
9	22,880	4	0
	Total (n=61)	39 (64%)	22 (36%)

*Source: Federal Register, Feb. 17, 1983, p. 7010-11.

Commercial Fishing Income

Commercial fishing was another source of income for Nunapitchuk residents who owned a Commercial Fisheries Entry Commission (CFEC) "limited entry" permit for salmon fishing. In 1983, 41 individuals in 36 households owned a permit which allowed them to fish commercially for salmon in the Kuskokwim River with gill nets. For four households, this was the household's sole source of earned income. Commercial fishing has not been a stable source of income and has fluctuated dramatically from year to year (Tables 8-10). For example, in 1982 the average income for Nunapitchuk commercial

fishermen was 1.5 times greater than in 1983 (Table 10). Salmon run strength and better market prices accounted for the difference as fishing effort was nearly the same. Uncertainty of salmon abundance and prices for each species further contributed to making it an unpredictable source of income. In 1982, coho salmon contributed the greatest overall income and prices were much higher than in 1983 (Table 30). In 1983, chum and red salmon contributed over 60 percent of the income, even though similar prices were paid (Table 30). In 1982, king salmon accounted for nearly one-third of the earnings but fell to 11 percent the following year when market prices were considerably lower as well (.82 lb compared to .54 lb).

The uncertainty of commercial fishing earnings, given this type of fluctuation, was somewhat mitigated by fishermen if they fished during virtually all possible fishing periods. Seventy-six percent of all fishermen fished 2/3 or more of all periods, fishing 11 or more of the 17 openings (Table 31). Since it was uncertain which species was going to bring the best price and which species would have the most allowable harvest, it was advantageous to fish for each species during each possible fishing period. Figure 24 shows that earnings increased gradually with each period fished. That is, the bulk of the income was not derived from fishing a few periods, but was relatively evenly distributed throughout the fishing season. Similarly, income from commercial fishing was evenly distributed among commercial fishermen (Fig. 25). There was not a small percentage of fishermen earning the majority of the income. Fifty percent of the income was earned by 65 percent of the fishermen.

TABLE 30. COMMERCIAL FISHING EARNINGS OF NUNAPITCHUK CFEC PERMIT HOLDERS, KUSKOKWIM DISTRICT 1, 1982 AND 1983

	1982 EARNINGS	(Percentage)	1983 EARNINGS	(Percentage)
KING SALMON				
Total	$54,925	(29%)	$13,289	(11%)
Average	$1,340		$324	
Range	$0-3,332		$0-866	
CHUM AND RED SALMON				
Total	$46,278	(24%)	$77,246	(62%)
Average	$1,129		$1,884	
Range	$0-2,935		$0-3,606	
COHO SALMON				
Total	$90,008	(47%)	$33,033	(27%)
Average	$2,195		$806	
Range	$0-5,630		$0-2,147	
ALL SALMON SPECIES				
Total	$191,211	(100%)	$123,568	(100%)
Average	$4,664		$3,014	
Range	$341-11,606		$76-6,108	

This implies that, based on commercial fishing, there was not stratification among households or village fishermen based on wealth.

Eighty-four percent of households with commercial fishing as a source of income earned less than $5,000 in 1983 (Table 32). Household commercial fishing earnings ranged from $76 to $8,694 with

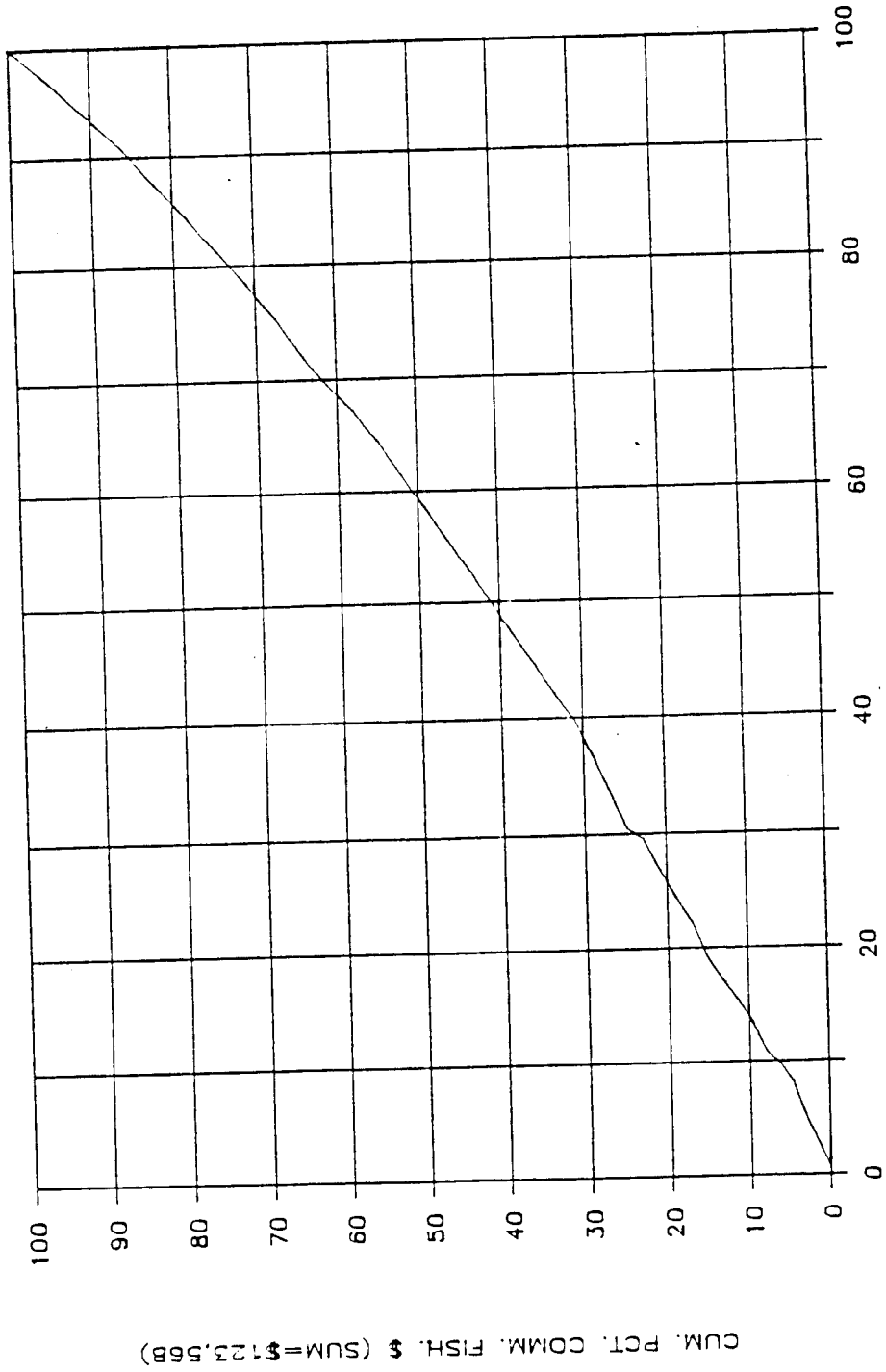


Fig. 24. Nunapitchuk commercial fishing income distribution (cumulative percentage of periods fished by cumulative percentage of income earned), 1983.

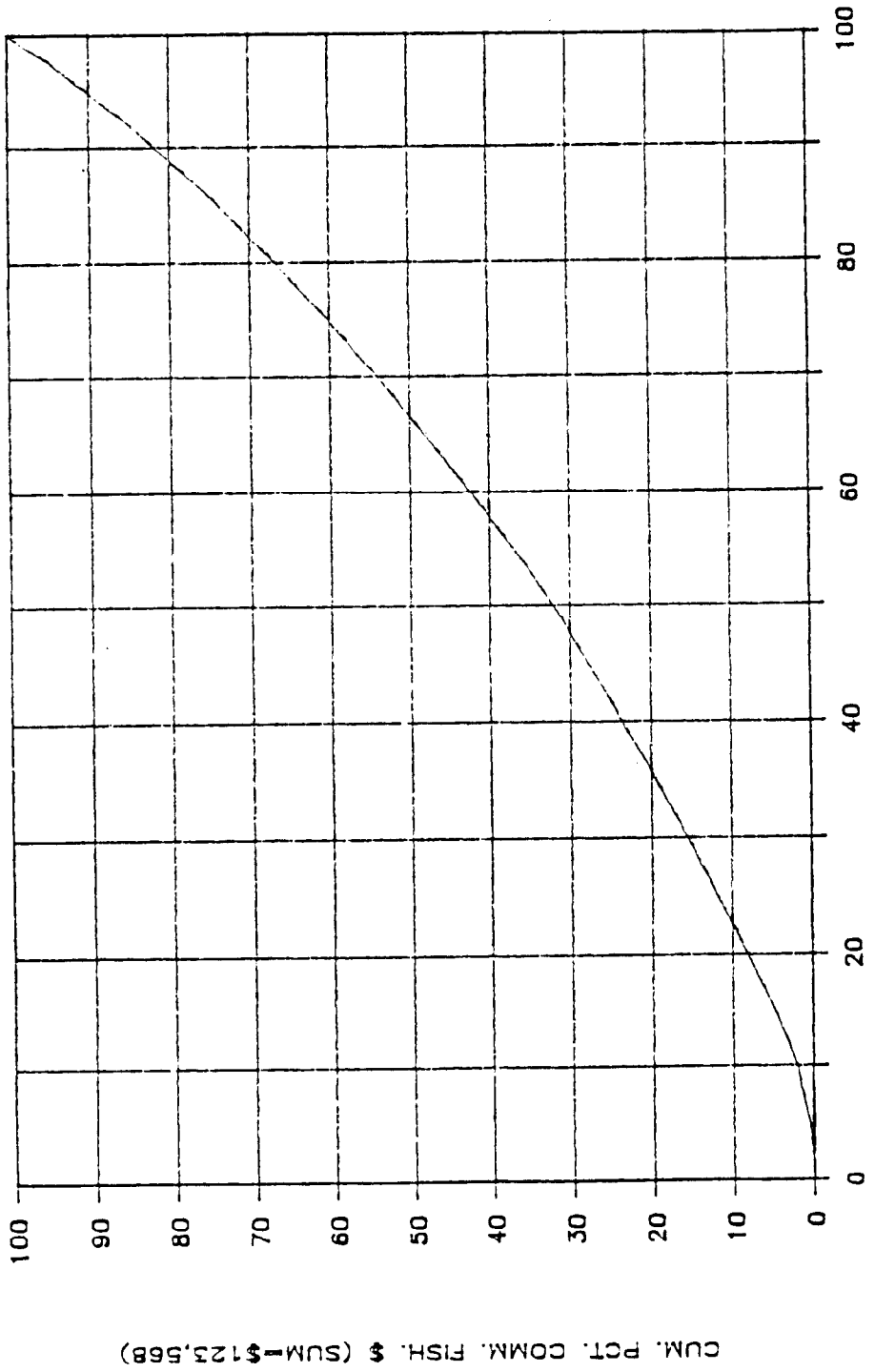


Fig. 25. Nunapitchuk commercial fishing income distribution (cumulative percentage of permittees by cumulative percentage of income earned), 1983.

TABLE 31. NUMBER OF COMMERCIAL FISHING PERIODS FISHED BY NUNAPITCHUK FISHERMEN, 1983

RANGE OF PERIODS FISHED	# FISHERMEN FISHING (N=41) (Percentage)
1- 5	3 (7%)
6-10	7 (17%)
11-15	17 (42%)
16-17	14 (34%)

TABLE 32. HOUSEHOLD AND INDIVIDUAL EARNINGS FROM COMMERCIAL FISHING, 1983

INCOME RANGE	# HOUSEHOLDS EARNING (N=36) (Percentage)	# PERMIT HOLDERS EARNING (N=41) (Percentage)
$1-2,499	15 (42%)	18 (44%)
$2,500-4,999	15 (42%)	20 (49%)
$5,000-7,499	4 (11%)	3 (7%)
$7,500-9,999	2 (5%)	0 (0%)
average	$3,432 (100%)	$3,041 (100%)

an average of $3,432, whereas individual earnings ranged from $76 to $6,108 with an average of $3,041.

The uncertainty of commercial fishing as a source of income was evident during the 1988 fishing season as well, when outstanding market prices for all salmon species on the lower Kuskokwim coincided with a season of especially abundant fish runs for each species. That fishing season yielded income which averaged about $15,000 per Lower Kuskokwim River fisherman, nearly five times than of 1983 (Tundra Drums, September 1, 1988).

Trapping

Trapping was a third source of income for Nunapitchuk households. In 1983, 23 men in 23 households (33 percent) earned income from trapping furbearers. For one household, trapping was the sole source of earned income. Estimated earnings from trapping ranged from $180 to $4,095 and averaged $1,316. Nearly 3/4 of all households with income from trapping earned less than $2,000 from trapping (Table 33). Similar to commercial fishing, earnings from trapping were influenced by market prices and resource abundance. Whereas most furs were sold, sometimes they were retained for use in making traditional women's parkas and other clothing and footgear.

Most trappers (74 percent) also had a commercial fishing permit and were involved in utilizing the salmon resource as a source of income as well. Most trappers (96 percent) trapped mink which yielded between $135 and $2,700 per mink trapped (Table 34), with a

TABLE 33. ESTIMATED EARNINGS FROM TRAPPING, 1983

INCOME RANGE	NUMBER HOUSEHOLDS (N=23)* (Percentage)
$1-999	10 (43%)
$1,000-1,999	7 (31%)
$2,000-2,999	5 (22%)
$3,000-3,999	0 (0%)
$4,000-4,999	1 (4%)
average=$1,316	23 (100%)

*There were no cases where two or more trappers were in a single household.

TABLE 34. FURBEARER HARVEST AND POTENTIAL ECONOMIC VALUE OF PELTS, 1983

FURBEARER SPECIES	NUMBER TRAPPERS* (N=23) (percentage)	TOTAL HARVEST (range)	POTENTIAL VALUE OF PELTS PER TRAPPER	AVERAGE PRICE PAID/PELT
Mink	22 (96%)	549 (3-60)	$135-$2,700	$45
Beaver	6 (26%)	139 (14-40)	$420-$1,200	$30
Red fox	3 (13%)	17 (1-3)	$65-$195	$65
Land otter	3 (13%)	7 (1-4)	$40-$160	$40

*Percentage trappers harvesting each species. Total does not add up to 100% since several trappers harvested more than one species.

total of 549 mink taken. Six men trapped beaver which produced an estimated $420 to $1,200 per trapper. These men trapped 139 beaver. Three men each trapped land otter and red fox which produced from $40 to $160 for otter and from $65 to $195 for fox per trapper (Table 34). Trappers had an average age of 41.5 years, and in all but 2 cases, were heads of households.

Combined Wage Income

Income from wage employment, commercial fishing, and trapping are the three primary means of earning income for Nunapitchuk residents. The latter two sources of income have been termed "simple commodity production" referring to the small-scale production of goods for sale on non-local markets (Wolfe *et al.* 1984). A study of economics in other Yup'ik communities of western and southwestern Alaska found this type of production to be less disruptive of subsistence-based societies compared to other types of cash production such as monetary remuneration with wages for a person's labor and transfer payments (Wolfe *et al.* 1984).

In 1983, gross wage income totaled $825,089, commercial fishing $123,568, and trapping $30,260; nearly one million dollars; less than $3,000 per capita. Unearned income was estimated at about $807 per capita as noted above (or $275,187). Total earned income estimates from this study were similar to those reported for Nunapitchuk in 1983 which totaled $1,182,616 on 125 tax returns (Alaska Department of Revenue 1988:92). Wage income accounted for 84 percent of all

earned income. Some households (18.5 percent) had no income from wages, whereas for others (23 percent), this was the sole source of earned income (Table 35). The greatest percentage (45 percent) were households that supplemented wage income with another source of income, most often commercial fishing. Commercial fishing, trapping, or a combination of the two as the sole source of income was not common (Table 35). Income was derived primarily from wages only or a combination of wages and commercial fishing and trapping. Average wage income per Nunapitchuk tax payer in 1983 was $10,195 (Alaska Department of Revenue 1988:129), in contrast to an average of $26,641 for the State of Alaska and $24,344 for the nearby regional center of Bethel. Nunapitchuk average earned income was among the bottom fourth for Alaskan communities (Alaska Department of Revenue 1988), but was similar to that of other communities in the lower Yukon and Kuskokwim rivers area (outside of Bethel).

Total household income from all sources ranged from $1,769 to $64,129 for households earning income (Table 36). Eleven households had no earned income. Whereas income was less than $12,500 for 51 percent of households income based on wages alone, this was reduced to 43 percent when combining all sources of income (Tables 28 and 36). Average household income from wages was about $2,000 less than average household income from all earned sources ($14,500). Similarly, slightly fewer households fell below the poverty income guideline when gross earnings from wages, commercial fishing, and trapping were combined (57 percent compared to 64 percent) (Tables 29 and 37). Income from transfer payments were not included in this

TABLE 35. SOURCE OF HOUSEHOLD EARNED INCOME, 1983

SOURCE OF EARNED INCOME	# HOUSEHOLDS (N=70)	PERCENTAGE OF TOTAL
None	13	18.5
Wages only	16	23.0
Commercial fishing only	4	6.0
Trapping only	1	1.0
Wages and fishing	14	20.0
Wages and trapping	4	6.0
Wages, fishing, & trapping	13	18.5
Fishing and trapping	5	7.0
	70	100

determination, as it was uncertain whether government analysts would determine them to be "regular" income (see definition in Federal Register, Feb. 17, 1983), for households applying for relief.

The majority of households (59 percent) derived earned income from a combination of wage and the harvest of fish or wildlife for commercial sale or solely the commercial sale of harvested fish and/or wildlife. Regardless of involvement of household members in wage employment, households continued to utilize the natural resources of the area. These types of production occurred in areas customarily used by *Akulmiut* for harvesting using a similar pattern of settlement. In fact, cash derived from the wage sector has had a limited influence on *Akulmiut* land use and subsistence compared to other factors as noted in Chapters 5 and 6. Studies of subsistence-based economies in other western and southwestern Yup'ik communities have also shown that cash derived from several sources has a positive

TABLE 36. TOTAL EARNED HOUSEHOLD INCOME FROM WAGES, COMMERCIAL FISHING, AND TRAPPING COMBINED, 1983

INCOME RANGE	# HOUSEHOLDS EARNING (n=61)	PERCENT	CUMULATIVE PERCENTAGE
0	11	18.0	18.0
$1-2,499	2	3.3	21.3
$2,500-4,999	3	4.9	26.2
$5,000-7,499	4	6.6	32.8
$7,500-9,999	3	4.9	37.7
$10,000-12,499	3	4.9	42.6
$12,500-14,999	7	11.5	54.1
$15,000-17,499	4	6.6	60.7
$17,500-19,999	7	11.5	72.1
$20,000-22,499	7	11.5	83.6
$22,500-24,499	3	4.9	88.5
$25,000-27,499	1	1.6	90.2
$27,500-29,999	2	3.3	93.4
$30,000-32,499	0	0.0	93.4
$32,500-34,999	1	1.6	95.1
$35,000-37,499	0	0.0	95.1
$37,500-39,999	0	0.0	95.1
$40,000-42,499	0	0.0	95.1
$42,500-44,499	1	1.6	96.7
$45,000-47,499	1	1.6	98.4
$62,500-64,999	1	1.6	100.0
average=$14,500			

relationship with the level of household subsistence production (Wolfe 1979, 1982; Wolfe *et al.* 1984).

TABLE 37. POVERTY INCOME GUIDELINES COMPARED TO HOUSEHOLD INCOME FROM WAGES, COMMERCIAL FISHING, AND TRAPPING COMBINED, BY HOUSEHOLD SIZE, 1983

HOUSEHOLD SIZE	POVERTY INCOME GUIDELINE, 1983*	# HOUSEHOLDS BELOW GUIDELINE	# HOUSEHOLDS ABOVE GUIDELINE
1	$ 6,080	6	1
2	8,080	2	2
3	10,280	6	6
4	12,380	4	5
5	14,480	4	2
6	16,580	7	3
7	18,680	0	4
8	20,780	2	3
9	22,880	4	0
	Total (n=61)	35 (57%)	26 (43%)

*Source: Federal Register, Feb. 17, 1983, p. 7010-11.

SUBSISTENCE ECONOMY

In addition to the wage sector, Nunapitchuk exhibited a subsistence sector as a major component of its economy. Because of Nunapitchuk's mixed economy, a sample of Nunapitchuk households were interviewed to record their harvest of fish and wildlife resources used for subsistence. The continued use of wild foods is an important dimension of land and resource use of the *Akulmiut*, as shown by the example of Nunapitchuk. Households harvested all categories of the available major fish and wildlife resources --

freshwater fish, salmon, berries, big game, small game, waterfowl, furbearers (Appendix 6). Households of all sizes and age composition participated in subsistence activities and represented households with different income levels. The degree of fish and wildlife harvest varied. Factors contributing to the variation included household size, income, age of household members, employment, mandatory education for school age children, weather, equipment holdings, compliance with hunting and fishing regulations, and personal circumstances, among others. Because of time and personnel limitations described in Chapter 2, a 24 percent sample of households was interviewed for recording total household fish and wildlife harvests. Community-wide harvest data for salmon fishing and trapping were described earlier. Below is a description of the sample households characterized in terms of their socioeconomic aspects. This is followed by quantitative data on their harvest of fish and wildlife for subsistence use. The seasonal round of subsistence activities and the geographic areas used are described in the following chapter.

Socioeconomic Characteristics of Sample Households

The sample households were characterized in terms of household size, age of household head, number of dependent children in residence, social composition, and income. Sample households ranged in size form 2 to 9 persons with an average size of 6.5 (Table 38). The household heads ranged in age from 32 to 87 years, averaging 51.3

TABLE 38. NUNAPITCHUK SAMPLE HOUSEHOLDS DEMOGRAPHIC CHARACTERISTICS IN COMPARISON TO THE COMMUNITY, 1983

CHARACTERISTIC		SAMPLE HOUSEHOLDS (n=17)	COMMUNITY HOUSEHOLDS (N=70)
Household Size	range	2-9 persons	1-9
	average	6.5	4.9
Age of Household Head	range	32-87 years	21-87
	average	51.3	46.9
Number of Dependents*	range	0-7 dependents	0-7
	average	2.9	2.0
Number of Adult Children**	range	0-5 adult children	0-5
	average	1.7	1.1

*Age less than 18 years

**Age 18 years or greater

years. Some households had no dependent children in residence, but others had up to seven. The average number of dependent children or grandchildren (those less than 18 years) was 2.9. Children 18 years and older (adult children) were also resident in most sample households. They ranged in number from 0 to 5 per household and averaged 1.7. Compared to the community as a whole, sample households were slightly larger in size and were headed by somewhat older household members (Table 38), generally a characteristic of larger households. There were no single person households in the

sample, nor households with heads in the age 20 to 29 year old age class. Both number of dependent children and number of adult children in residence were greater in sample households than in others in the community.

Sample households included predominantly nuclear families consisting primarily of a married couple and their children, or an older single parent with an adult child or children in residence (Table 39). This was the same for the community as a whole. Extended families accounted for roughly 30 percent and included parents, children, and grandchildren. Extended family households were represented more in the sample than in the community as a whole.

The source of income for three-fourths of the households in the sample was from a combination of wages and fishing and/or trapping (Table 40). Wage employment, as the sole source of income, accounted for 12 percent of the sample and none derived their income solely from commercial fishing or a combination of trapping and fishing. Most often, sample households (41 percent) derived their earned income from a combination of three sources -- wages, commercial fishing, and trapping (Table 40). For the community as a whole, 35 percent of households derived their income from a combination of wages, fishing, and/or trapping; 23 percent from wage employment only; and 20 percent from wages and commercial fishing. There was no earned income for 6 percent of sample households in contrast to 19 percent of all households. Even though the source of earned income differed between the sample and the community, the average total income was similar -- $15,738 for the sample and $14,500 for the

TABLE 39. NUNAPITCHUK SAMPLE HOUSEHOLDS KINSHIP TYPE IN COMPARISON TO THE COMMUNITY, 1983

HOUSEHOLD KINSHIP TYPE	PERCENTAGE OF SAMPLE HOUSEHOLDS (n=17)	PERCENTAGE OF COMMUNITY HOUSEHOLDS (N=70)
Nuclear family (parents and children)	65%	64%
Extended family (lineal)	29%	20%
Extended family (collateral)	6%	6%
Other (solitary adult)	0%	10%

community (Table 41). Average wage income was similar, but commercial fishing and trapping income were higher. The per capita income of sample households which were larger, however, was about $750 less than the per capita income of the community as a whole, $2,410 compared to $3,148.

Sample Household Fish and Wildlife Harvests, 1983

Household harvests of fish and wildlife species were recorded during interviews with members of sample households. These harvests were converted into pounds edible weight using region-specific live

TABLE 40. NUNAPITCHUK SAMPLE HOUSEHOLDS SOURCES OF INCOME IN COMPARISON TO THE COMMUNITY, 1983

SOURCE OF EARNED INCOME	PERCENTAGE OF SAMPLE HOUSEHOLDS (n=17)	PERCENTAGE OF COMMUNITY HOUSEHOLDS (N=70)
None	6%	19%
Wages only	12%	23%
Commercial fishing only	0%	6%
Trapping only	6%	1%
Wages and fishing	29%	20%
Wages and trapping	6%	6%
Wages, fishing, trapping	41%	9%
Fishing and trapping	0%	7%

weights multiplied by a conversion factor (Appendix 7). The sum of all harvests is an estimate of each household's total subsistence output. All sample households harvested some wild foods during 1983 and all participated in at least two subsistence harvesting activities, specifically, freshwater fishing and berry picking.

During 1983, Nunapitchuk households harvested over 25 species of fish and wildlife. Over 82 percent of sample households harvested each of 5 categories of resources -- freshwater fish (100 percent), berries (100 percent), waterfowl (94 percent), small game (94 percent), and furbearers (82 percent) (Fig. 26). Although household participation in salmon fishing was less (65 percent), salmon was a major contributor to resource harvests as described below. Roughly

TABLE 41. NUNAPITCHUK SAMPLE HOUSEHOLDS EARNED INCOME IN COMPARISON TO THE COMMUNITY, 1983

TYPE OF INCOME		SAMPLE HOUSEHOLDS (n=17)	COMMUNITY HOUSEHOLDS (n=61)*
Wage Income	range	0-$20,760	0-$58,964
	average	$11,723	$11,978
Commercial Fishing Income	range	0-$8,694	0-$6,108
	average	$3,171	$2,026
Trapping Income	range	0-$4,095	0-$4,095
	average	$845	$496
Total Earned Income (all sources)	range	0-$26,437	0-$64,129
	average	$15,739	$14,500
Per capita income		$2,410	$3,148

*Income could not be estimated for 9 households.

35 percent of sample households harvested big game and 29 percent marine mammals.

More specifically (by species or species group rather than larger resource categories), pike, salmonberries, and blackberries were harvested by all sample households. Birds, including ducks, geese, and ptarmigan, were all harvested by more than 80 percent of households. The largest percentage of total wild food harvest by

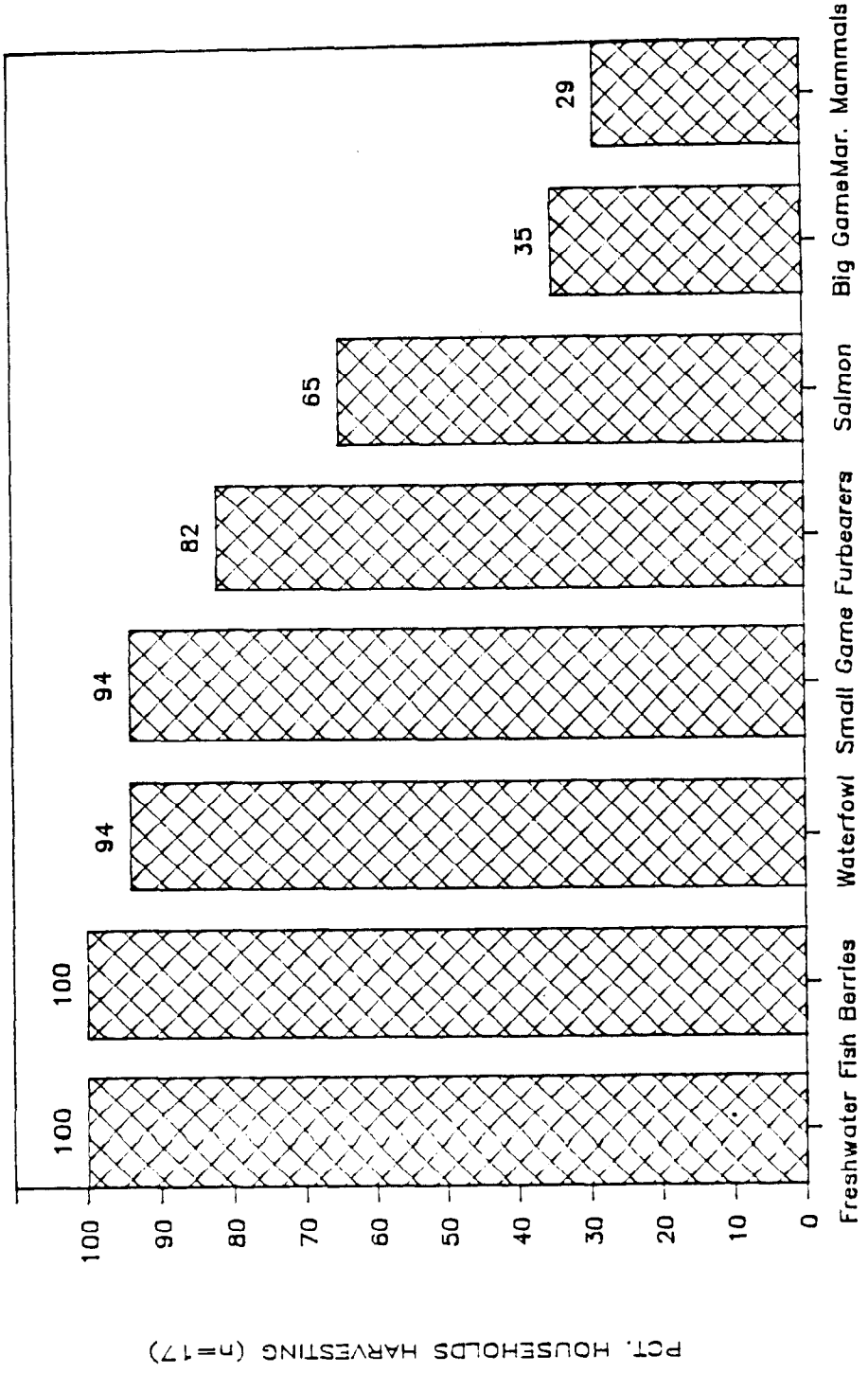


Fig. 26. Percentage of Nunapitchuk sample households harvesting activities by fish and wildlife resource category, 1983.

edible weight (in pounds) was derived from harvesting pike (22.04 percent) followed by king salmon (17.44 percent) (Table 42). Freshwater fish species accounted for about 46 percent of the total wild food harvest and salmon species for 36 percent (Table 43). Fish, therefore, accounted for 82 percent of all fish and wildlife harvested (Table 43, Fig. 27). The remaining 18 percent of wild food harvests was made up of berries, waterfowl, meat from furbearers, large game, marine mammals, and small game, in that order.

Average household harvests are also shown in Tables 42 and 43. The mean household harvest of all species was 5,236 in 1983. For households that harvested king salmon that species made the greatest contribution in terms of edible weight followed by blackfish, even though pike was the single largest contributor to the wild food stores for the sample as a whole. Freshwater fish comprised the largest amount of food for all sample households on the average (Table 42).

Total subsistence output for sample households was 89,012 pounds of wild foods in 1983, with a per capita harvest of 802 pounds (Table 42). The per capita harvest was among the highest in the state (Wolfe and Walker 1987). Household harvests ranged from 1,358 to 14,294 pounds (Fig. 28). Two households (12 percent) harvested more than 10,000 pounds each and 7 (41 percent) harvested more than 5,000 pounds. Thirty percent of the sample households accounted for 60 percent of the total pounds harvested (Fig. 29). This indicates that a relatively small percentage of households accounted for little more than one half of all wild food harvested by sample households. This

TABLE 42. LEVELS OF SAMPLE HOUSEHOLDS HARVEST AND PER CAPITA HARVESTS OF FISH, GAME, AND PLANT RESOURCES, NUNAPITCHUK, 1983

FISH OR WILDLIFE RESOURCE	PERCENTAGE OF HOUSEHOLDS HARVESTING	MEAN HARVESTING HOUSEHOLD HARVEST (pounds)	MEAN HOUSEHOLD HARVEST (pounds) (n=17)	PER CAPITA HARVEST (pounds) (n=111)	TOTAL POUNDS	PERCENTAGE OF TOTAL POUNDS	TOTAL VILLAGE SAMPLE HARVEST NUMBERS
Pike	100.0	1,153.94	1,153.94	176.73	19,617.0	22.04	6,539
Salmon, king	64.7	1,411.36	913.24	139.86	15,525.0	17.44	1,035
Salmon, chum	64.7	1,021.82	661.18	101.26	11,240.0	12.63	2,248
Blackfish (gal.)	52.9	1,185.47	627.60	96.12	10,669.3	11.99	1,146
Whitefish sp.	94.1	548.81	516.53	79.11	8,781.0	9.86	2,927
Salmonberries (gal.)	100.0	208.76	208.76	31.97	3,549.0	3.99	507
Salmon, red	58.8	305.00	179.41	27.48	3,050.0	3.43	610
Beaver	52.9	255.11	135.06	20.68	2,296.0	2.58	82
Seal sp.	29.4	437.00	128.53	19.68	2,185.0	2.45	19*
Salmon, coho	41.2	307.71	126.71	19.41	2,154.0	2.42	359
Moose	23.5	525.00	123.53	18.92	2,100.0	2.36	3
Duck sp.	88.2	103.20	91.06	13.95	1,548.0	1.74	1,032
Burbot (loche)	76.5	112.85	86.29	13.22	1,467.0	1.65	326
Goose sp.	82.4	78.11	64.32	9.85	1,093.5	1.23	243
Blackberries (gal.)	100.0	51.29	51.29	7.86	872.0	0.98	218
Mink	47.1	82.81	38.97	5.97	662.5	0.74	265
Ptarmigan	88.2	38.50	33.97	5.20	577.5	0.65	770
Cranberries (gal.)	76.5	37.23	28.47	4.36	484.0	0.54	121
Hare	58.8	30.66	18.04	2.76	306.6	0.34	73
Crane	58.8	27.90	16.41	2.51	279.0	0.31	31
Black bear	11.8	125.00	14.71	2.25	250.0	0.28	2
Swan	41.2	28.77	11.85	1.81	201.4	0.23	19
Eggs (gal.)	35.3	5.83	2.06	0.32	35.0	0.04	25
Sheefish	11.8	11.25	1.32	0.20	22.5	0.03	3
Land otter	11.8	15.75	1.85	0.28	31.5	0.03	3
Muskrat	17.6	5.13	0.91	0.14	15.4	0.02	22
Fox**	23.5	---	---	---	---	---	8
		8,114.26	5,236.01	801.90	89,012.2	100.00	

*An additional 8 seals and 70 gal. of seal oil were purchased

**Fox are not eaten and therefore pounds edible weight was not calculated

TABLE 43. LEVELS OF SAMPLE HOUSEHOLD AND PER CAPITA HARVESTS BY FISH AND WILDLIFE RESOURCE CATEGORY, NUNAPITCHUK, 1983

FISH OR WILDLIFE RESOURCE CATEGORY	PERCENTAGE HOUSEHOLDS HARVESTING	MEAN HARVESTING HOUSEHOLD HARVEST (in pounds)	MEAN HOUSEHOLD HARVEST (in pounds) (n=17)	PER CAPITA HARVEST (in pounds) (n=111)	TOTAL POUNDS	PERCENTAGE OF TOTAL POUNDS
Freshwater Fish	100	2,385.69	2,385.69	365.38	40,557	45.56
Salmon	65	2,906.27	1,880.53	288.01	31,969	35.92
Berries	100	288.53	288.53	44.19	4,905	5.51
Waterfowl	94	197.31	185.70	28.44	3,157	3.55
Furbearers	82	213.57	175.88	26.94	2,990	3.36
Big Game	35	391.66	138.24	21.17	2,350	2.64
Marine Mammals	29	437.00	128.53	19.68	2,185	2.45
Small Game	94	56.19	52.91	8.10	899	1.01
Total		6,876.22	5,236.01	801.91	89,012	100.00

is similar to findings of subsistence output in other rural communities in the state (Wolfe 1987).

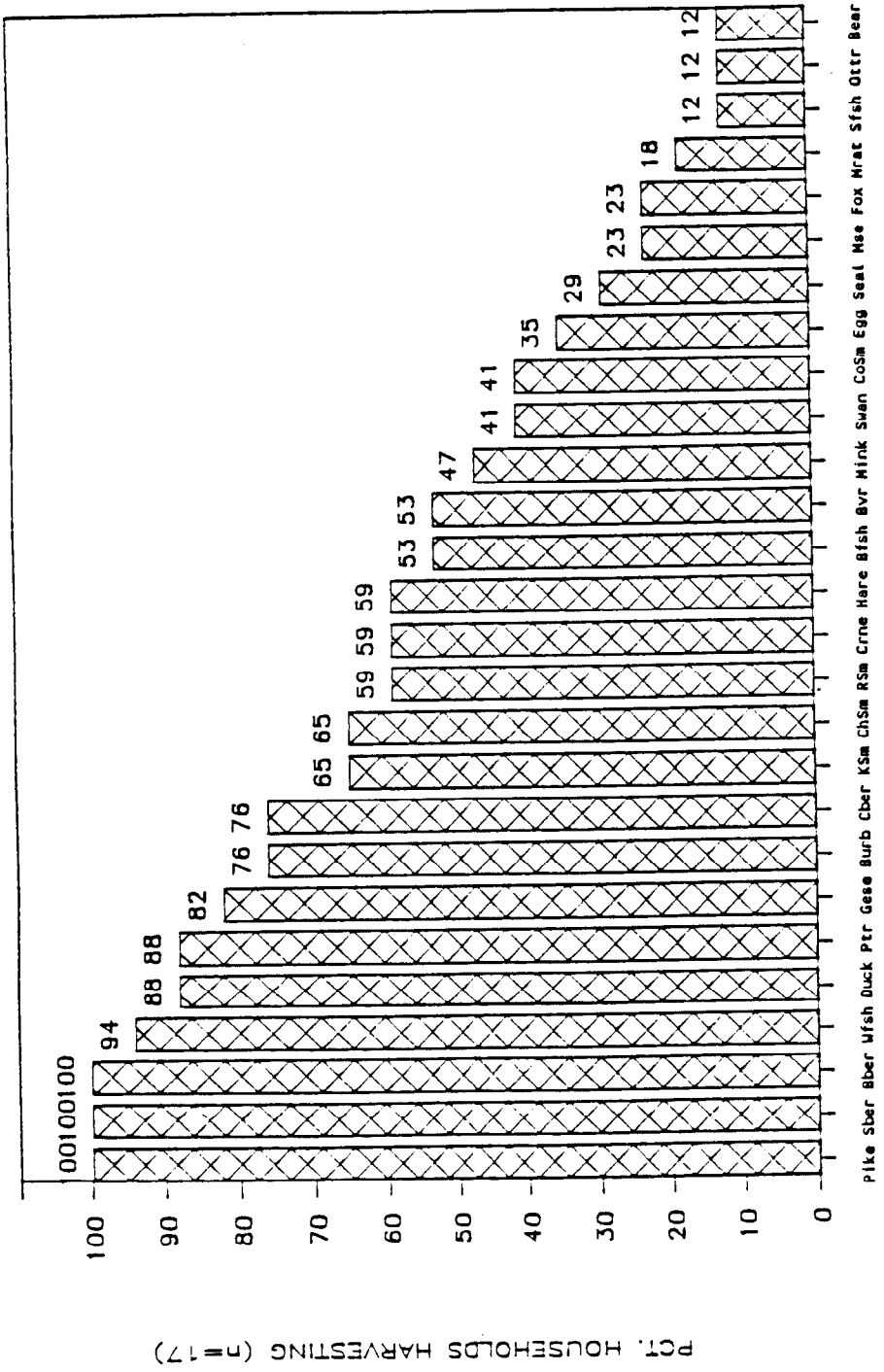


Fig. 27. Percentage of Nunapitchuk sample households harvesting activities by species, 1983. (legend on following page)

Legend for Figure 27 (preceding page)

Pike	pike
Sber	salmonberries
Bber	blackberries
Wfsh	whitefish species
Duck	duck species
Ptr	ptarmigan
Gese	goose species
Burb	burbot
Cber	cranberries
Ksm	king salmon
Chsm	chum salmon
Rsm	red salmon
Crne	crane
Hare	hare
Bfsh	blackfish
Bvr	beaver
Mink	mink
Swan	swan
Cosm	coho salmon
Egg	waterfowl eggs
Seal	seal species
Mse	moose
Fox	red fox
Mrat	muskrat
Sfsh	sheefish
Ottr	land otter
Bear	black or brown bear

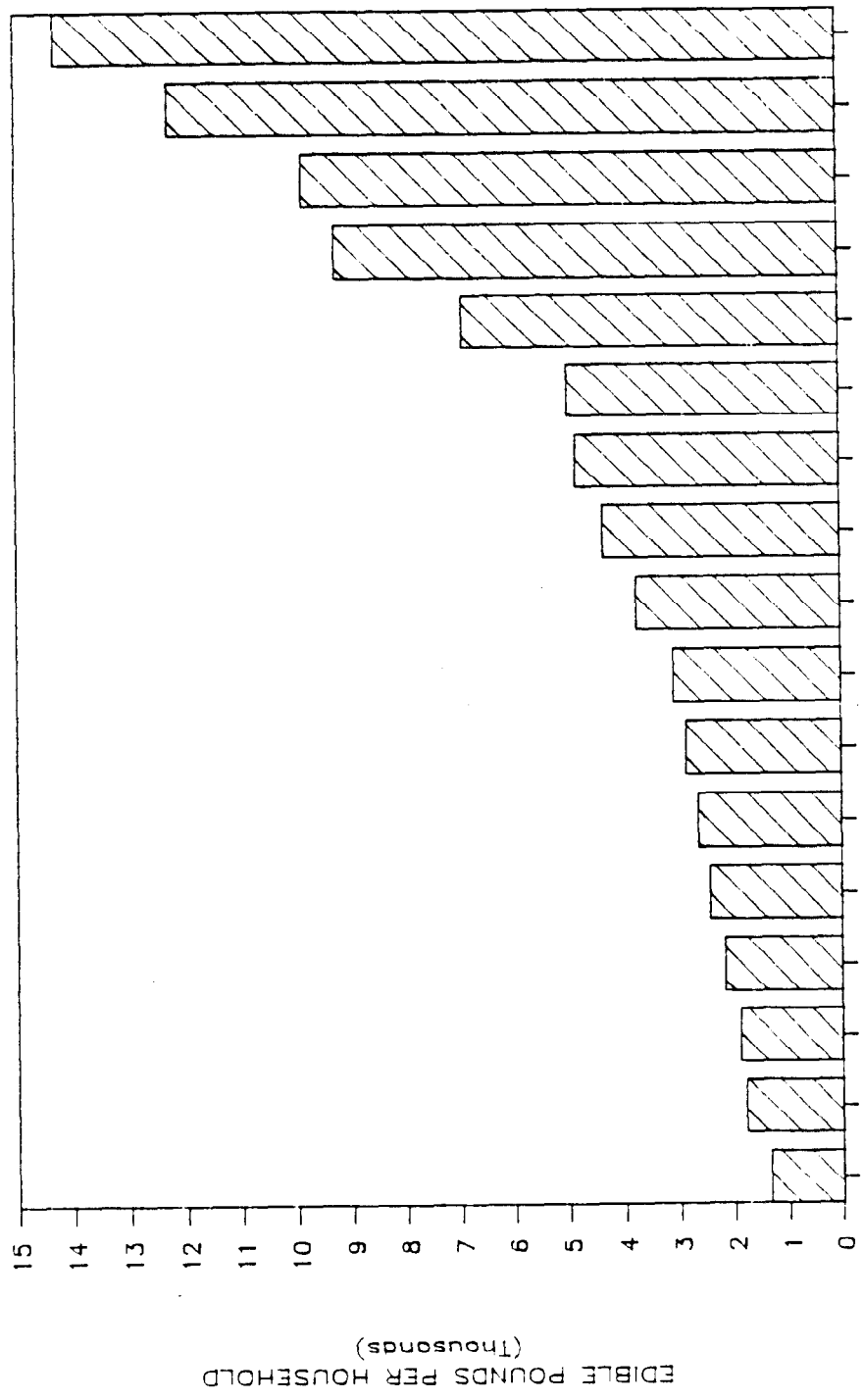


Fig. 28. Edible pounds of fish and wildlife resources harvested by sample Nunapitchuk households, 1983.

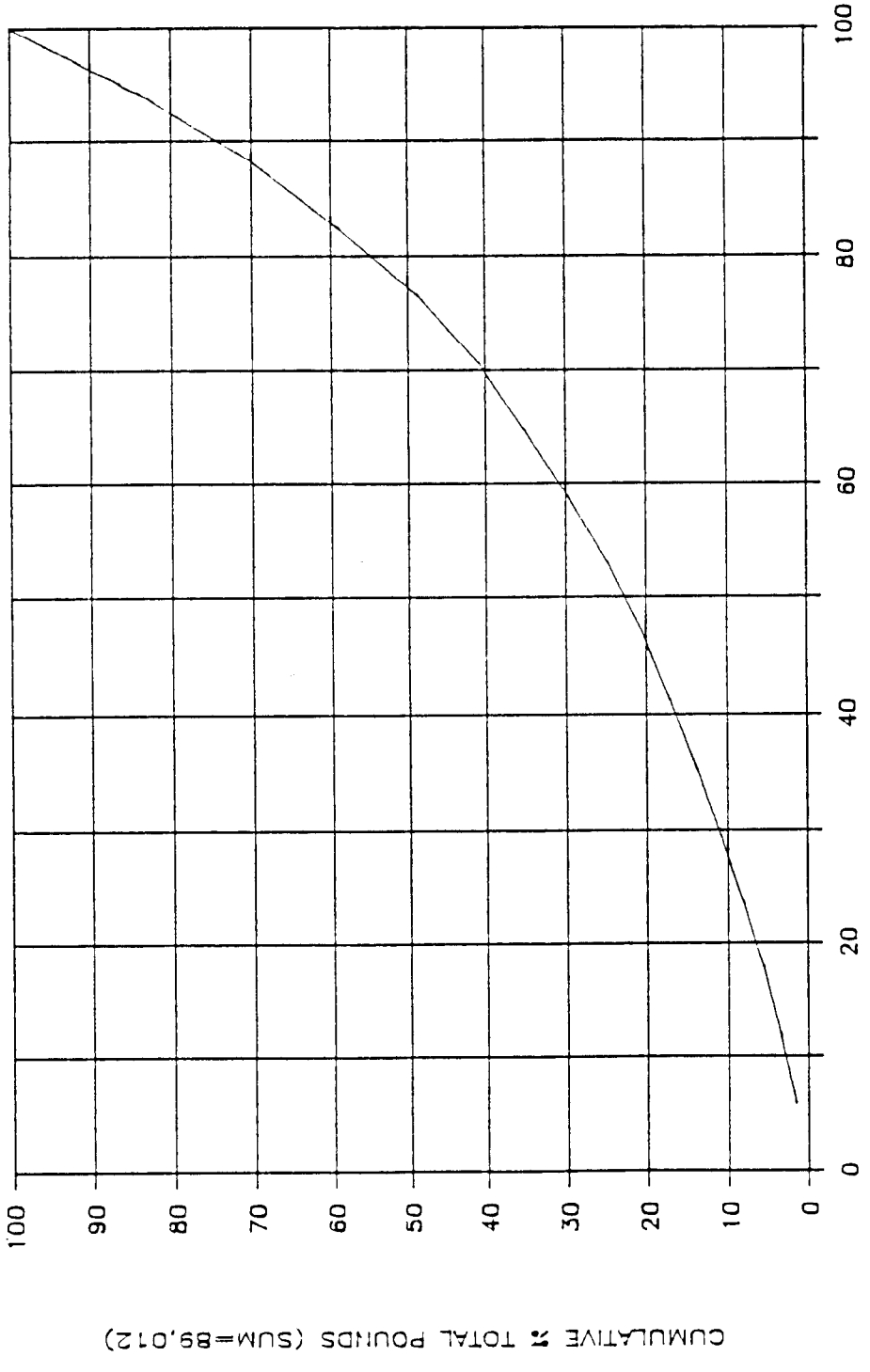


Fig. 29. Cumulative percentage of total edible pounds harvested by cumulative percentage of Nunapitchuk sample households, 1983.

CHAPTER 5. SUBSISTENCE ACTIVITIES AND SETTLEMENT

The seasonal round of subsistence activities required movement by groups of people at certain periods during the year to harvest a variety of fish and wildlife species in the area between the Kuskokwim and Yukon rivers. Aboriginally, and in the earlier part of this century, activities were conducted from permanent winter villages, seasonal settlements, such as spring camps and summer fish camps; and from temporary settlements and campsites. As noted in Chapters 3 and 4, the shift to permanent year-round settlements occurred about the middle of the 20th century. In the 1980s, the harvest of fish and wildlife for subsistence use continued to require the use of seasonal settlements and temporary camps.

Historic and contemporary patterns of subsistence activities and land use of the *Akulmiut*, and Nunapitchuk specifically, are described below. These activities reflect the distribution of fish and wildlife resources and help to determine the critical food resources of the *Akulmiut*, past and present. The settlement pattern shows how people came together at certain times of the year and dispersed themselves at other times for hunting, fishing, trapping, and gathering for subsistence. The historic pattern of settlement and the annual cycle of subsistence are described first. Included in that section is information on the annual round of ceremonial activities because of its relationship to land and resource use, and

its importance to the maintenance of group identity and access to resources. This is followed by data on the historic occupation of villages and seasonal settlements; their formation, distribution, and relationship to resource use. This aids in defining the area used by the *Akulmiut* and to which they maintained exclusive use for the harvest of critical food resources.

The second component of this chapter describes contemporary land and resource use within the area of the *Akulmiut* using data from Nunapitchuk as a case example. The seasonal round of subsistence activities and the geographic areas used in 1983 are described. Internal and external influences on *Akulmiut* land and resource use, historically and in more recent times, are the subject of the following chapter.

HISTORIC SETTLEMENT PATTERN AND SEASONAL ROUND

Aboriginally, the *Akulmiut* moved in extended family groups between seasonal semipermanent settlements occupied primarily in spring and summer and the permanent winter settlement (*uksuryaraq*). The winter settlement was residence for many extended family groups, whereas the seasonal settlements included one or several families as shown below. It is useful to review the *Akulmiut* calendar (Fig. 30; Table 44) which reflected historic monthly subsistence activities. The use of a 12-month calendar is somewhat artificial in that the year was likely divided into the 13 moons or *iraluq* (sing.) of the year. However, all historic and modern accounts (Table 44) reflect

TABLE 44. WESTERN ALASKA YUP'IK TERMS FOR THE MONTHS, 1830-1987

	Nunapitchuk[1] (1983)	Kuskokwim[2] (1984)	Kuskokwim[3] (1987)	Kuskokwim[4] (1830)
January	Kanruyauciq (base) frost	Kanruyauciq (base) frost	Iralull'er the bad month	"Igalulch"
February	Kepnerciq waiting for it to be cut	Kepnerciq cutting time	Kanruyauciq (base) frost	"Kypnychtschack"
March	Tengmiirviguaq fake time of geese	Tengmiirviguaq fake time of geese	Kep'nerciq cutting time	"Tynwagwack"
April	Tengmiirvik geese come	Tengmiirvik geese come	Tengmiirvik geese come	"Jakulygik"
May	Maniit anutiit coming of eggs	Qusiirvik smelt run	Kayangut anutiit coming of eggs	"Kalawat Igalwit"
June	Kaugun "start of"	Kaugun hitting (of fish)	Kaugun hitting (of fish)	"Galwat" "Tagjakwat"
July	Ingun molting (of birds)	Ingun molting (of birds)	Ingun molting (of birds)	"Nykyt" "Schakt Igalwat"
August	Amirairun shedding of velvet	Amirairun shedding of velvet	Tengun flight (of birds)	"Amaigagun"
September	Amiraayaaq little shedding	Amiraayaaq little shedding	Amirairvik (caribou) shed velvet	"Nuligun"
October	Qerrlurcarturvik time to set baited hooks under the ice	Nulirun mating (of caribou)	Qaariitaarvik masked festivals	"Kangujan"
November	Cauyarvik time of drumming	Iralull'er the bad month	Cauyarvik time of drumming	"Kangujagutschik"
December	Iralull'er the bad moon	Uivik time of going around	Uivik time of going around	"Igalulch"

[1]this study [2]Jacobson 1984 [3]LKSD 1987 [4]Wrangell [1839]1980

the perspective of Euroamericans by use of the 12-month Gregorian calendar and its influence. During this study, even the most elderly respondents divided the year into 12 parts. The 12 periods, however, did not always constitute a full four-week period. Rather, their duration depended upon the natural fluctuations in the environment. The *Akulmiut* year began in spring after the conclusion of the annual ceremonial round.

Historically, ceremonial activities were integrated into the annual round of subsistence activities and influenced the movements and settlement of the *Akulmiut*. Ceremonial events were closely associated with subsistence pursuits because they called attention to the feats of hunters, recognized "first kills" of boys and youth, honored the animals taken during the year, and served to propitiate the spirits of the animals important to *Akulmiut* livelihood. Furthermore, the fruits of the harvests were displayed, food was shared and redistributed among the population, and sociopolitical relationships were expressed. Material goods including clothing necessary for subsistence pursuits were distributed also. Ceremonies and subsistence were closely linked.

The following presentation supports and adds to existing information on Yup'ik ceremonialism (Morrow 1984; Mather 1985). The entire annual cycle of *Akulmiut* ceremonies (Table 45) is included below. The description of activities during summer includes a description of *Ingulaq* which marked the onset of the ceremonial cycle. The ceremonial cycle ended in later winter with *Itruka'ar* which closed the ceremonial round (Table 45).

TABLE 45. THE *AKULMIUT* CEREMONIAL CYCLE

Ceremony	Time of Year	Duration	Frequency	Intra-Village	Intra-Regional	Inter-Regional	Last Performed
INGULAQ	Late Summer	1 day/ night	on-demand	yes	some-times	no	ca. 1923
intent: Food sharing.							
QAARIITAAQ	Oct.-Nov.	8-10 days	annual	yes	no	no	ca. 1907
Qaariitaaq intent: To honor the deceased.							
Qaarpak intent: Intra-village social entertainment.							
Aaniq intent: Food distribution; to honor hunters; to honor the deceased; to honor the animals taken.							
NAKACIURYARAQ ("bladder festival")	Nov.-Dec.	10 days	annual	yes	no	no	ca. 1907
Elciq intent: Preparation to honor animals.							
Nakaciuryaraq intent: To propitiate animals' spirits; to honor hunters; to honor children's first kills; to acknowledge marriageable females; distribution of food and goods.							
ELRIQ ("feast for the dead")	Dec.-Jan.	5-10 days	every 10 yrs.	no	yes	no	ca. 1907
intent: To honor the deceased; distribution of food and goods (no specifications).							
KEVGIQ (includes Petugtaq) ("messenger feast;" "trading festival")	Mid-Winter	3 days	annual	no	yes	yes (only certain villages)	ca. 1918
intent: Distribution of food and goods (by specification); to honor couples' first-born; to honor the harvest; to honor children's first kills.							

Continued

TABLE 45. Continued

Ceremony	Time of Year	Duration	Frequency	Intra-Village	Intra-Regional	Inter-Regional	Last Performed
ITRUKA'AR ("inviting-in feast") or KELEK	Feb.-Mar.	3-4 days	annual (as host, guest, or both)	no	yes	no	ca. 1907

intent: Distribution of food and goods (no specifications); to honor the harvest; to honor children's first kills; to propitiate animals' spirits.

Up'nerkaq (Spring)

This season referred to the "process to become summer" and extended through May. As ice was breaking up, men in kayaks speared pike and ducks for food. Men hunted muskrat, mink, and land otter, and women fished. Muskrat meat was dried for future use but also cooked. Few ptarmigan were hunted after early spring. Families hunted waterfowl using three-pronged arrows or bows and arrows made with metal points. Waterfowl, surplus to immediate needs, were dried for future use. However, because powder and lead were not readily available in the late 1800s (Porter 1893:103), and the use of spears and arrows was relatively inefficient, waterfowl were not taken in large quantities at this time of year. Waterfowl were taken in larger numbers in later summer when drives were made in certain lakes

to "round-up" molting birds which were taken in nets. Bird skins were used for clothing.

There were no *qasgit* or men's houses at spring camp, as these sites were of a more temporary nature. For some families, however, the fall, winter, and spring camp were one and the same in some years. Although not usual, after breakup in late spring, some families rowed or sailed down the Johnson River to the Kuskokwim in preparation for summer fishing:

> [translated] When spring came around me and my family would 'sail' to our [late] spring camp near *Naparyararmiut* [Napakiak]. We would sail to our camp. This boat was made out of wood and skin and when skin wasn't available we'd use cloth. This sailboat would tow another wooden and skin boat, without the sail, loaded with dogs and food. This was pretty common for the people at that time. We'd paddle down the Johnson River with these boats.

After breakup, cotton twine gill nets were set in the rivers and lakes for whitefish and pike.

April (*Tengmirvik*, "where geese arrive" or "geese come") (Fig. 30; Table 44) marked the time the "real" birds, or waterfowl, arrived. Generally, by mid April ducks, geese, swans, and cranes began to appear. This marked the onset of the major migration of birds to the lower Yukon and Kuskokwim rivers region, the major nesting ground of Pacific flyway species in North America. Wrangell ([1839]1980:68) recorded this month as "Jakulygik" (*Yaqulegik*, "those with wings"), referring to the arrival of birds (Table 44). With the spring thaw, blackfish were available again beginning in late April as water developed between the river ice and the river's bed. They

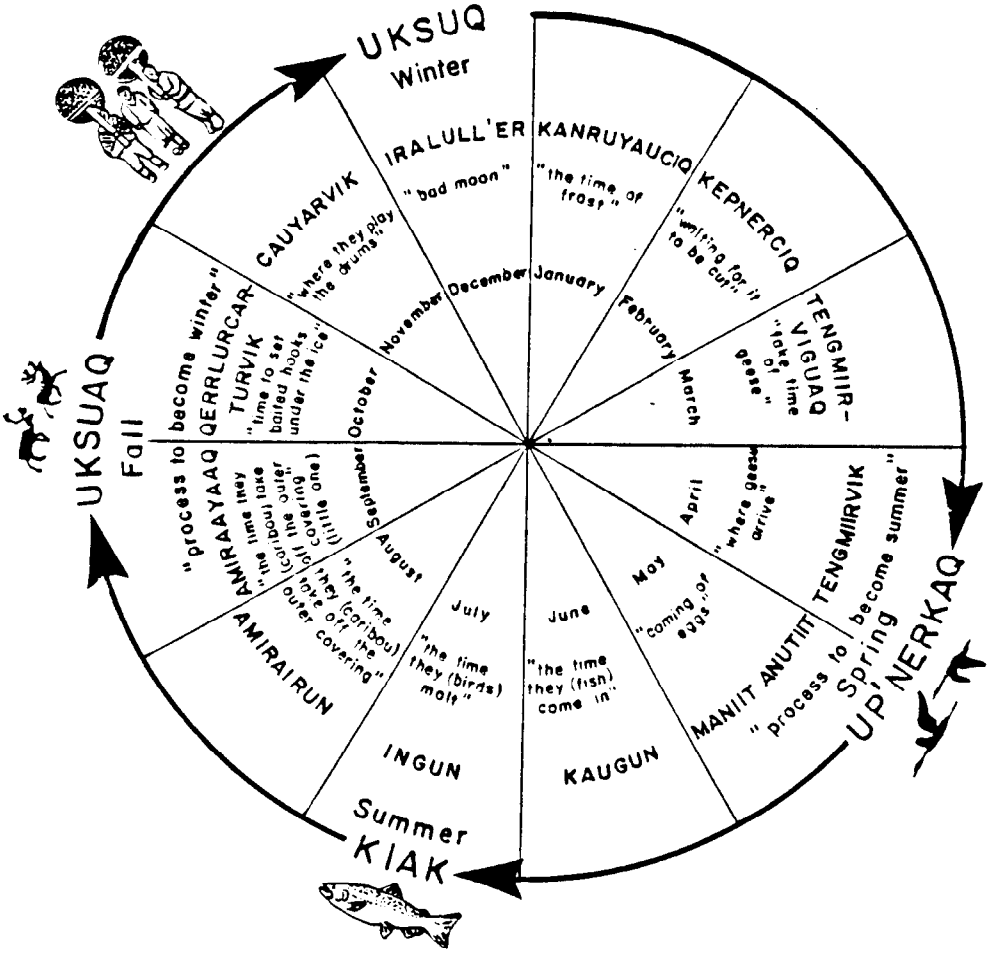


Fig. 30. An Akulmiut calendar showing Yup'ik names for seasons and months, ca. 1900-1983.

were taken until about mid May. The return of blackfish was soon followed by pike migrating into the area streams. Reindeer were herded by men in the area north of Takslesluk Lake and Baird Inlet, but this was particularly difficult during spring thaw.

May (*Maniit anutiit*, "the coming of eggs") signaled the time when the migratory birds nested and laid their eggs. Hundreds of eggs were collected. These were boiled then stored in seal skin pokes with oil and then were eaten at other times of the year. In addition, animals had their young at this time. Wrangell (1980:68) recorded the name for this month as "Kalawat Igalwit" (possibly *Kayangut Iraluit*, "the time when eggs come"). Jacobson (1984:670) (Table 44) recorded the name *Qusiirvik* referring to the smelt run in the lower Kuskokwim River during this month. The *Akulmiut* did not harvest smelt.

Kiak (Summer)

Some families ("those with workers [*calistet* pl.]," that is, those capable of assisting), moved from their spring camps to seasonal salmon fishing camps along the Kuskokwim as earlier. The 1890 U.S. census reported *Akulmiut* summer activities at that time:

> It is the custom of many Eskimo communities inhabiting the vast tundra and lake country drained by the Kvichavak [Johnson] river to repair annually to this section [Akiak vicinity] of the banks of the Kuskokwim to prepare their supply of dried fish [salmon] for the winter. This movement begins toward the end of June, and for a time the shores are lined with camps and kayaks of the tundra people mingling with the bark canoes of the permanent

> residents....At the same time the lakes and swamps are fairly alive with wild fowl, ducks, geese, and swans, affording both eggs and meat to the hunter, while the ground is covered with berries of various kinds.... (Porter 1893:105)

Families that wanted to harvest king salmon generally had to move by early June to places along the Kuskokwim River. A late June relocation insured preparatory time prior to the chum and sockeye salmon runs of July. Other families stayed in the Johnson River area and harvested whitefish and pike. In August, coho salmon began their upriver migration. Cloudberries ("salmonberries") generally were available in late July through August followed by crowberries ("blackberries") and lowbush cranberries. Blueberries were picked in August and September. Berries were stored in grass baskets. Mink were hunted. Molting waterfowl were taken by driving or "rounding up" the birds from groups of boats in certain lakes. Men in *qayat* (pl.) and boats forced the birds to the east end of the lakes. The birds were speared with three-pronged spears, or smaller men and boys were in the water awaiting the birds which were then poked or grabbed. One drive was said to produce about four boat loads of ducks. Later, nets were used to take the birds which were then shot or grabbed as they were in the 1980s. The birds were stored in pits and covered with wood, grass, and then sod. In the tundra lakes and streams, whitefish and pike began to migrate into the area. Some family groups remained in the tundra area to harvest these fish along with the available berries and waterfowl. In addition, a variety of

wild edible plants were gathered such as sourdock. Most of the plants collected are noted in Appendix 6.

June (*Kaugun*, "hitting" [as in marking the beginning of] or "start of;" and "the time 'they' [fish] come in" [to a slough or river]) introduced the season when king salmon begin their annual migration up the Kuskokwim. Occasionally, seal and belukha followed the run of salmon and were taken near the mouth of the Johnson River. Wrangell ([1839]1980:68) used the terms "Galwat" (probably *Kaugun*) and "Tagjakwat" (*Taryaqvak*, "king salmon"), the latter in reference to the king salmon run. Alternatively, *Kaugun* referred to "the time when birds wing feathers begin to show."

July (*Ingun*, "molting" [of birds] or "the time 'they' [birds] molt") marked the time when migratory birds begin to molt at the end of the month. Molting birds are called *ingtaat*. Wrangell (1980:68) also reported that this month was called "Nykyt" (*Neqet*, "fish") and "Schakt Igalwat," possibly in reference to the arrival of sockeye salmon (*sayaq*).

August (*Amirairun*, "shedding of velvet" or "the time 'they' [caribou] take off the outer covering") was the final month of the short summer season. Wrangell ([1839]1980:670) and Jacobson (1984:670) (Table 44) recorded the same term which referred to the onset of the shedding of velvet from caribou antlers.

The *Ingulaq* (meaning unknown) ceremony took place in late summer and marked the onset of the ceremonial round (Table 45). This short, one day and evening, event culminated many of the summer food gathering activities such as berry picking. Generally, this event

took place "on demand" each summer among participants of a single village, but occasionally a neighboring *Akulmiut* village was invited. For example, the community of *Paingaq* was noted to have invited people form either *Nanvarnarrlak* or *Nunacuaq* for this ceremony of food sharing.

Ingulaq was described as [translated] "a casual get-together; [with] no exchanges; it was like to keep you in practice." It could be arranged for in a day as it did not require much preparation. Whichever community decided to put it on, shared their food. Sometimes men in kayaks which were lashed together floated downstream beating their skin drums to announce the preparation of *Ingulaq*. Different kinds of food from late summer, such as whitefish and waterfowl, were prepared and shared. Also, different types of *akutaq* were served and there was dancing which accompanied songs sung to a characteristically slow beat of skin drums.

Ingulaq could occur several times in late summer. The "rehearsal" aspect of this ceremony was in preparation for the subsequent and more ritualistic ceremonies. The last preparations for *Ingulaq* were about 1923.

Uksuaq (Fall)

In fall, families hunted ducks and geese and gathered berries during the early part of the season. Each of these activities were a continuation of those of late summer. Crowberries and lowbush

cranberries were gathered and caches of roots ("mousenuts," "mouse food," *anlleq* and *qetek*) collected by voles were dug up and used.

Fishing for whitefish was a major activity. Fish fences made of willow branches were constructed across certain streams before freeze-up. The fence was initially placed in the stream in late June. Dip nets were used, both from boats prior to freeze-up, and after freeze-up, through holes made in the ice to catch fish as they made their migration out of the lakes and streams. A site along the Johnson River at the settlement of Nunapitchuk was a major site for harvesting large quantities of whitefish in this fashion.

Broad whitefish were the first to migrate downstream followed by concentrations of fish consisting mostly of pike and later primarily cisco, a whitefish species. Some sheefish were available and taken also. Fish fences were also constructed near the present site of Kasigluk and near the historic site of *Nanvarnarrlagmiut*, as they were at all primary villages and hamlets as discussed in the following section. Whitefish were a major food source of the *Akulmiut* and were preserved by drying and freezing for use throughout the winter. Pike and burbot were also harvested incidental to the whitefish at that time. Related Kuskokwim River families, particularly from the vicinity of Bethel (*Mamterilleq*), came inland to harvest whitefish at those locations in fall.

After fishing in late fall, families returned to camps they used in spring, but for the purpose of "hunting" mink, otter, muskrat, fox, and beaver. From fall camps, wicker traps made of split spruce wood with willow or spruce root lashing (*kevraarciq*),

were set under the ice to harvest blackfish. The carcass of furbearers such as beaver, mink, and land otter, as well as blackfish were sources of food for humans and dogs.

Based on the *Akulmiut* calendar, fall refers to the "process of becoming winter." It ends when streams are no longer navigable due to ice forming, generally in late October. During September velvet on caribou antlers was shed (*Amiraayaaq*, "shedding of velvet" or "little *amirairun*" [see August]) and caribou entered the rut (*Nulirun*, "mating" [of caribou]) (Fig. 30; Table 44). This large game species was a source of red meat, fur, bone, and antler in aboriginal times, as indicated by the local Yup'ik term for this month first recorded in 1830 (Wrangell [1839]1980:68). The 1890 U.S. census reported that

> [N]ot many years ago large droves of reindeer [caribou] grazed over the lowlands and hills on both sides of the river and their meat and skins were made an important item in the domestic economy of the Kuskwogmiuts.... (Porter 1893:103)

By the end of the 19th century, caribou were no longer present and the Moravian church officials in Bethel attempted to introduce reindeer into the area as described in Chapter 3. In the 1920s and 1930s, several Nunapitchuk families were engaged as reindeer herders.

In October, people were at their fall camps (*uksuryaraq*) and continued activities begun in September. As the name *Qerrlurcarturvik* ("place [time] to set baited fishhooks under the ice [for burbot]" indicates, people fished through the ice for burbot. Wrangell ([1839]1980:68) reported the Yup'ik name for this month as

"Kangujan" (meaning unknown), whereas Jacobson (1984:670) recorded *Nulirun* referring to the mating of caribou.

The end of October was marked by the religious ceremony called *Qaariitaaq* (meaning unknown). It was an 8 to 10-day event which occurred annually in later October or early November when [translated] "the ground starts to get hard" and "crystalline-like ice begins to form" (Table 45). It took place among members of a single village. It preceded the important and ritually significant bladder ceremony later in November and early December. Similarly, it was "a ritually dangerous" time "during which precautions had to be taken against entry into the spirit world" (Morrow 1984:123). It was important that participants not stumble and fall, as one informant noted, because doing so caused you to become like an "horrific animal" that had some human attributes as in one incident recalled. The ceremony was similar to the "Asking Festival" of the lower Yukon River Yup'ik described by Nelson (1899:359-60). Among the *Akulmiut*, it consisted of three ceremonial components: *Qaariitaaq*, *Qaarpak*, and *Aaniq*. Each had its purpose (Table 45).

The *Qaariitaaq* ceremony began with women gathering in the entryway of the *qasgiq* with bowls of *akutaq*. The bowls had ownership markers etched into them to indicate to whom among the boys the food was to go. Men also ate part of what was brought. What remained was given to the women.

Qaariitaaq involved ritualistic behavior to honor the souls of the deceased. Boys, with their faces painted white, went with adult men as guardians from house to house with wooden bowls. They asked

for and received food and akutaq. Some of the painted boys represented a certain deceased person. These aspects have resulted in this ceremony being likened to the activities associated with All Souls' Day and the Russian Orthodox Christmas or *Selavi* (in Yup'ik) or *Slavit* (in Russian). For this reason, the misnomer "masked ceremony" has been applied to *Qaariitaaq*. The boys and men with their collected foods then returned to the *qasgiq* and ate together. The boys, having slept with their faces painted, awoke with only patches of paint remaining and were told that "the spirit of *Qaariitaaq* had licked their faces during the night," as one informant stated. *Qaariitaaq* was repeated on two other days with a day of rest in between, as noted above.

Rev. Drebert (1959:67) observed this ceremony at the Kuskokwim Bay village of Kwigillingok in 1916. His description of "Aanek" (*Aaniq*) (actually the last day of *Qaariitaaq* among the *Akulmiut* and described below) bears a similarity to *Qaariitaaq* of the *Akulmiut*. At Kwigillingok, the young men who went house to house asking for food "wore big aquiline shaped noses, carved from wood and held on with a string" (Drebert 1959:67). According to Drebert, this ceremony was a time during which a shaman used his power of divination to foretell who would die during the coming year. The prophetic aspects of *Qaariitaaq* have more recently been described by Morrow (1984).

Qaariitaaq was followed by *Qaarpak* (meaning unknown). This aspect of the ceremony involved men exchanging their clothing and masks, and going to visit the women, particularly their cross cousins

or those with whom they had a joking relationship, at their houses. The women tried to identify the men, but sometimes could only do so by recognizing the smell of the man's breath!

The final day, *Aaniq* ("to provide someone with a mother") (Table 45) served to honor hunters, to honor the deceased, to honor the animals taken, and to distribute food. A pair of men, with a third man crouched down behind them, would go house to house asking for food. *Akutaq* was pitched between the two men to the crouching man behind. The goal was to get the food into his mouth. The crouching man was termed *aviukaq*, a word which is derived from the verb *aviuke* meaning "to feed the dead." Again, *akutaq* was taken into the *qasgiq* to the men whose faces were painted. This concluded the 8 to 10-day ceremony.

Uksuq (Winter)

Winter marked the return of dispersed family groups to the winter village or permanent settlement and the performance of the most important ceremonies (Kilbuck n.d.:11). These occurred in November, December, and early January. Blackfish were caught in traps at key locations relatively near the winter settlement. These were the only fresh fish available in winter. Snares were set for ptarmigan and hare. By the end of the season, many families returned to their fall camps; hunted and trapped fur animals, such as mink, land otter, and beaver; and fished for fresh food. Primarily, people

relied on wild foods which had been harvested earlier, preserved, and stored.

November (*Cauyarvik*, "time of drumming") (Fig. 30; Table 44) signaled the time when animals' fur got prime, a significant time marker, especially as the *Akulmiut* became involved in the fur trade beginning about the mid 1800s. It also heralded the *Nakaciuryaraq* ceremony toward the end of the month, hence the term *Cauyarvik* or "time of drumming" in reference to the ritualistic drumming characteristic of these religious ceremonies. Wrangell ([1839]1980:68) recorded the term "Kangujagutschik," referring to the time when drift ice forms in the rivers. Whereas this term was applicable to the Kuskokwim River proper, streams of the tundra region, being more sluggish and shallow, were generally frozen by then. The mean fall date of freeze-up in recent times has been during the third week of October.

The bladder festival, *Nakaciuryaraq* ("something done with bladders"), was a 5 or 10-day annual ceremony which took place within a single village, as did *Ingulaq* and *Qaariitaaq* (Table 45). This was the primary religious ceremony to end the year and to return the spirits of animals before the new year began. As one respondent noted, [translated] "You couldn't finish the year without doing this. You had to have it every year." It was held in late November or early December. In some lower Kuskokwim River areas, it was referred to as *Cauyaq* because of the drumming associated with this ceremony (Morrow 1984:123). The names for the months of November and December were termed *Cauyaq*, "time of drumming" or "where they play the

drums," by some lower Kuskokwim River societies because the event took place annually in those months as noted in the previous section.

Nakaciuryaraq began with *Elciq* ("the act of deflating [bladders]"). This involved deflating the bladders of mink and land otter taken during the previous year. The bladders of any seals taken on the coast were also deflated.

Nakaciuryaraq served primarily to propitiate the spirits of animals, but also to honor hunters, to honor boys' first kills, to acknowledge marriageable females, and to distribute food and goods. In the late 1800s, this ceremony, as practiced by the lower Kuskokwim River area Yup'ik, was described by a Native American missionary of the Moravian church in Bethel in the following way:

> Every hunter preserves the bladders of all the important animals he has killed throughout the year. The first birds killed by boys are cut open and dried with the wings outstretched...the Bladder Festival furnishes the occasion for authoritative rehearsal of tradition, war stories, keeping alive the memory of heroes and some of their particular deeds.

and

> Things are distributed to others. A little of the [*akutaq*] from each [*kalukaq* or bowl] is thrown against the [*qasgiq*] wall opposite the door -- a gift to the spirits of the dead. Then the distribution takes place....Sometimes a father distributes oil, because his little boy had killed a bird, or a daughter had put away her dolls....Then the final dance. Four couples of young men are chosen -- and to each pair is given one of the bundles of [*ikiituk* or wild celery]. After lighting them the young men rush out doors, and carry them some distance away from the village to an unfrequented spot. Each pair of young men goes in a different direction. When they return, the festival ended. (Kilbuck n.d.:24-25)

According to a key respondent, the last Bladder Festival in the Akulmiut area corresponded with a resident Moravian "helper" or lay pastor being assigned to the village of *Nanvarnarrlak*. That occurred in 1918 (Henkelman and Vitt 1985:371).

December (*Iralull'er*, "the bad moon") (Fig. 25; Table 38) was characterized by extreme cold and there are few hours (7 1/2) of daylight (Selkregg 1975:18). As one respondent described, this was "the time of the harshest winter weather." In adjacent areas, this month was referred to as *Uivik*, "the time of going around" (Table 44). The 10-year feast for the dead (*Elriq*) was held in late December-early January.

The feast for the dead took place in late December or early January as a memorial ceremony. Along the lower Yukon River, it took place every 10 years according to Nelson (1899), but more recent research indicates that it occurred in 5-year cycles (Morrow 1984). It was not specified how often it occurred among the *Akulmiut*, but its occurrence was reportedly not common, unlike other ceremonies whose frequency was specified (Table 45). *Elriq* lasted 5 to 10 days. Individuals from a village gathered together to honor a close relative who had died by distributing food and goods through the living namesakes of the deceased. Namesakes were individuals both from within the village and neighboring *Akulmiut* villages. Hosts gave gifts and food to guests. Typically, namesakes were dressed in a new suit of clothes, that is, parkas, honoring the deceased. Because namesakes were not gender specific, a man or boy might be dressed in women's clothing, if his namesake was female. The purpose

of the special clothing, according to one key respondent, was [translated] "to make the living represent the dead....They pretend that the dead are on their feet and can eat and be taken care of."

Elriq was held among communities within the regional group. This would be expected since the extent of the use of certain names often defined the social universe of the group:

> [translated] When a child was born and received the name of a person who had died, the dead person's relatives...treated the child as if it were the dead person....Thus the names of people are passed down. Names from Bethel do not go as far as the Yukon. When anyone hears a name, he knows where the person is from by his name. (Beaver 1982:61, 63)

The distribution of food and goods beyond one's own community, but within your own society, was a feature of *Elriq*. Among the *Akulmiut*, the ceremony never occurred solely within one village, but occurred with neighboring villages within your own society. The last reported *Elriq* among the *Akulmiut* took place about 1907 when *Nunacuaq* invited people from *Nanvarnarrlak*. That particular ceremony included people who came from lower Yukon River villages and from the Kuskokwim River village of Akiachak, although it was stated that was not typical. People other than *Akulmiut* were said to have come because the ceremony was not common and it was stated that this was the last time *Elriq* would be celebrated among the *Akulmiut*.

At Kwigillingok, in 1916, Drebert (1959:68) observed the "Ilere" ceremony. It took place in the *qasgiq* as all ceremonies did and took place six days after *Aaniq*. There the spirits were presented with food that was pitched over the shoulder of the donor. The food was

later distributed to the "guests of honor" who were young (men?) who bore the name of the deceased being honored. Each child when born received the name of a recently deceased person (male or female) and then became like a relative of the deceased. Drebert (1959:68) noted that *Elriq* enabled the living to feed the dead because of their "belief that the spirits of the departed were continually suffering from hunger and privation and needed the sympathy and help of their relatives on earth."

January (*Kanruyauciq*, "the time of frost" from the base *kaneq* meaning frost) (Fig. 30; Table 44), historically, was marked by the coldest temperatures of the year. Heavy frost forms on virtually everything exposed to the cold. Travel was and is hazardous because of the short amount of daylight, and blowing snow often resulted in "whiteout" conditions. Wrangell ([1839]1980:68) reported the same name, *Irallul'er*, being used to refer to January as December (Table 44).

February (*Kepnerciq*, "waiting for it to be cut" or "cutting time") signified the time when the tunnel entrance of the semisubterranean earthen houses were so filled with drifting snow and frost that meltwater formed in the entryway and a break in the house wall had to be made to serve as the new entrance/exit. About that time of year *Kevgiq*, or the messenger feast, was held.

The "Messenger Feast" or *Kevgiq* (derivative of *kevgak*, or messengers) was a ceremonial trading or exchange ceremony that occurred between two villages (Table 45). Among the *Akulmiut*, in contrast to other Yup'ik societies, *Petugtaq* and *Kevgiq* were not

separate ceremonies (Morrow 1984; Shinkwin and Pete 1984), but were combined. The three-day event occurred annually. In some years, a village might be the host community and, in others, the guest.

Kevgiq was initiated when two adult men from the host village were sent as messengers to the guest community. They carried wooden replicas of the gifts people from the host village requested of a named person in the guest village. The replicas were attached to a string which was tied to a stick. Thus, items were specified and requested on behalf of someone else, otherwise through, or in the name of their children. The messengers taking the requests also returned with requests for the hosts to fulfill. The person to whom you were obligated to make or get a gift for was called your *agyuk* ("one that wants to come over"). People asked for items like clothing, such as a parka or boots, or a boat or sled. It was said that the larger items required special songs and dances to accompany their presentation. Thus, the presenter had to be skilled in song or dance, or have the larder to commission a song or dance for this. As one key respondent stated:

> [translated] But the big items were the perogative of the givers -- if they knew someone in the host village who needed stuff, they would let it be known they would be giving the big items away and then the receiving community would know to ask.

In that context, a newly established couple with a newborn child often prompted community representatives to ask the guests for large

items on their behalf. The ceremony was unique in that items were meant for particular people. The same respondent added:

> [translated] The stores were very supportive and extended credit to those who were to be involved in ceremonies. The store provided trade items from the coast. At one [*Petugtaq*], I saw there were so many seal skins to give out that the skins covered the inside of the *qasgiq*, so none of the walls were visible.

The *Petugtaq* referred to the tying-on to a stick of replicas of desired items. In that way *Petugtaq*, as used by the *Akulmiut*, was an alternative term for *Kevgiq*. In other areas, such as the along the lower Yukon River, *Petugtaq* was a separate ceremony which occurred within the community and usually between males and females (Shinkwin and Pete 1984).

Feasts were given by families who wanted to acknowledge a son's first catch or a daughter's first gathering of berries. Often these were lavish affairs which required large stores of food to feed and distribute to guests. In the early 1830s, Wrangell described one of these affairs along the lower Kuskokwim River:

> The preparations for the feast are important, for its purpose is to exhibit the tribe's gains from hunting and celebrate the deeds of all, great and small....During the year, the mothers of families carefully collect the birds, mice etc. caught or killed by their young sons. The creatures are stuffed and strung together; in the middle of the string hangs a carved wooden bird, its wings outstretched. This is hung in the kazhim [*qasgiq*] and an oil lamp placed beneath the wooden bird. There are many strings and oil lamps. The men and women now gather and take their places on the benches, seated in order of rank. The best hunter goes to the center, his relatives gather beside him and they stand together in a row. The dance begins....After the final dance...the best hunter divides the fruits of his labors among all

> those present. He gives something to everyone, a piece of skin, or lavtak [sea mammal skin], a garment, food, trinkets and the like and he provides particularly for the old men and women and for the poor.... (Wrangell [1839]1980:65-66)

In the late 1880s, a Moravian missionary in the lower Kuskokwim River area, noted:

> An unusually large supply of food -- especially frozen fish -- is the first requisite for a play [challenge; *petugtaq*] between two villages ....People...put up food, oil, furs, deer tallow, berries. Fall fish are sacked by the ton, oil is brought by the boat load. (Kilbuck n.d.:25)

As noted above, among the *Akulmiut*, *Kevgiq* was basically an exchange ceremony between villages. The exchange characteristic of the ceremony was evident in the following description provided by one elderly Nunapitchuk man:

> [translated] [After their arrival] the guests would sing a song about the things that were requested by the hosts. At the same time, they would slowly bring in [to the *qasgiq*] the gifts. The next morning, the hosts would make available to their guests all the things they would need during their stay. This is the second day. [*kalukaq* -- eating food part of the ceremony] [On] the third day, hosts and their guests changed places. The guests would do the receiving and the hosts the giving. This is called *Mumigulluuteng* [exchanging places or positions].

One key respondent noted that he had heard that *Kevgiq* replaced warfare. It reflected "a new foreign policy," that is, an intersocietal policy, whereby the Yup'ik started competing through dancing and gift-giving. The new policy began before Euroamericans were in the area, presumably sometime prior to 1800 or 1820 (see

Chapter 3). In some Yup'ik areas, this ceremonial competition was called *Curukaq* in reference to the guests, who were called *curukat* meaning "opponents" or "attackers" (Shinkwin and Pete 1984:106; Morrow 1984:133). Among the *Akulmiut*, it was stated that *Curukaq* was a phase, or component, of *Kevgiq*. Based on a study of *Curukaq* among the *Tacirmiut* of Norton Sound, Shinkwin and Pete (1984:106) concluded that the *Curukaq* ceremony in the late 19th century was used to express political relationships between groups and that "*curukaqs* replaced warfare as a means of expressing inter-societal hostility during the contact period...."

Among the *Akulmiut*, the ceremonial exchange occurred between *Akulmiut* villages, but also between an *Akulmiut* village and certain non-*Akulmiut* villages of a neighboring regional group (Table 45). Specific examples noted that the *Akulmiut* village of *Nanvarnarrlak* played host and guest with the *Akulmiut* villages of *Nunacuaq* and *Paingaq*, as well as the *Kusquqvagmiut* villages of *Mamterilleq* (now Bethel) and *Napaskiaq*. Only one village would be invited at a time for the ceremony. The *Akulmiut* village of *Nunacuaq* was reported to have invited the *Akulmiut* villages of *Nanvarnarrlak* and *Paingaq* (Figs. 7 and 18). Other examples recalled the *Akulmiut* village of *Paingaq* inviting the *Akulmiut* villages of *Nanvarnarrlak* and *Nunacuaq*, and the *Kusquqvagmiut* villages of *Mamterilleq* (now Bethel) and *Napaskiaq*.

On occasion, a village was helped by a closely-related or satellite village. For example, the small *Akulmiut* settlements of *Qasqirayarmiut* and *Qecuiyagmiut* "helped" *Paingaq*, and Oscarville

helped *Napaskiaq*. One time, the two *Akulmiut* villages of *Nanvarnarrlak* and *Paingaq* together hosted *Mamterilleq*, although each had also independently hosted Bethel. One informant noted that the ceremony was performed the same way by the *Akulmiut* villages of *Nanvarnarrlak*, *Nunacuaq*, *Paingaq*, and the *Kusquqvagmiut* villages of *Mamterilleq*, *Akiaq*, and *Napaskiaq*. Nunapitchuk was cited as a community that neither hosted nor was a guest. This was because it was not a permanent settlement with a sufficient population size at the time the ceremonies still took place -- up to about 1918, among the *Akulmiut* (see Chapter 4). Nunapitchuk respondents did not recall the villages of Napakiak or Kwethluk participating in *Kevgiq*. One respondent believed that those communities had ceased holding this ceremony about 1910. Another noted that Napakiak, like Nunapitchuk, was "too small" or did not have a sufficient population size for hosting one.

The frequency of the *Kevgiq* ceremony varied as one elder man noted:

> [translated] *Kevgiq* didn't happen all the time. You would take what you had even though the host, as a joke, could ask for something special of his cross cousin or joking partner. You were supposed to share what you had. That's what people did at the ceremony. You took what you could, what you had, from your area.

The last *Kevgiq* held among the *Akulmiut* was said to have been with *Nanvarnarrlak* and *Nunacuaq* in 1918. It was the conditions during that same year that caused the Moravian missionary Rev. Frederick Drebert to launch a campaign several years later to

eliminate this ceremony among the Yup'ik people of the lower Kuskokwim River:

> Rev. Drebert was a major force in suppressing native 'potlatches.' Drebert said the villagers [at one village on Kuskokwim Bay] had gathered more than enough fish, meat, oil and fur to last through the winter of 1917-18. But then they invited two other villages to a feast. (Lenz and Barker 1985:49)

> The feast lasts three days. But then a snow storm came up and the guests were forced to stay three more days. With more than 200 extra people and 400-500 extra dogs in the village, it practically cleaned them out of all food. (Drebert 1959:79)

An unusually late and harsh spring contributed to hunger and devastation at Kwigillingok. Several years later, at a Moravian church conference, the topic of *Kevgiq* was debated. Local church officials agreed to discourage the ceremony "because of its excesses" and interference "with the proper observance of the Lord's Passion" which occurred at the same time of year (Drebert 1959:83). One lower Kuskokwim area resident recently recalled:

> It got to the point where they were asking for sailboats. In those years sailboats were hard to get. When the missionaries said, well, you have to replace this with something the people can get together with, well that's when the [church] rallies started. (Ray Christiansen in Lenz and Barker 1985:49)

In mid winter, some families returned to their fall camps, hunted and trapped furbearers, fishing and hunting for fresh food, such as blackfish, hare, ptarmigan, and possibly caribou. In

February, reindeer herders were at a corral along the lower Johnson River where reindeer were slaughtered.

In late winter, the final ceremony of the cycle was held. *Itruka'ar* ("fare to pay to go in") has also been called the "Inviting-In" ceremony because the spirits of the wildlife were invited into the *qasgiq* and were represented by the masked *nangertellria* (literally, "that who is standing up"). Songs and dances paid homage to the animals, represented the success of the harvests, and appealed to the spirits for bountiful wildlife in the future.

This three- or four-day ceremony was held in alternate years since a village would be host one year and, in the following year, go as guest to the reciprocating village. Whether as guest or host, people might be involved in as many as three in a single year.

Itruka'ar included the distribution of newly made goods; practical items necessary for day-to-day living. These included bowls, tools, grass mats for placing on kayak bottoms, hunting clothes, parka trim, boats, rifles, traps, cloth, and caribou skins. Unlike *Kevgiq*, items were not made for particular individuals. Rather, a person made new things and guests could choose from among them. Sometimes a parent celebrated a child's first catch by contributing a large portion of the goods (Table 45).

Often an *Akulmiut* village was host to two other *Akulmiut* villages. It was stated, for example, that *Nanvarnarrlak* would invite *Paingaq* and *Nunacuaq* and, in the following year, *Paingaq* might invite *Nunacuaq* and *Nanvarnarrlak*. The three *Akulmiut* village

alternated as host. The last *Itruka'ar* were reported to have been about 1918.

In 1898, Josiah Spurr, a geologist for the U.S. Geological Survey (USGS), attended "Igrooskie" held in the *qasgiq* of the lower Kuskokwim River village of "Apochagamute" (*Aprukaarmiut*; *Aprukaaq* or Apokak on USGS maps) near the contemporary site of Eek. Interestingly, it was held in late August, an uncommon time for *Itruka'ar* to be held. "Igrushka" became a general word applied to Yup'ik ceremonies and it was not clear whether the gift exchange described was associated with *Itruka'ar* or part of another intraregional ceremony (P. Morrow, pers. comm. 1988). Nevertheless, Spurr's (1950) description of the event which follows was based on firsthand observation. It was unique not only for that reason, but also because it was included in an unpublished document (Spurr 1950:92-96). His published work of his geological survey (Spurr 1900:74) contained simply a brief description which preceded the unpublished work:

> ...Their greatest festivals consist of so-called "igrooskies," which are simply contests in giving away. One village challenges another to a contest of this sort, and the one that succeeds in giving the most to the other is pronounced the victor and is very proud of the honor, even if they have impoverished themselves. In division of the gifts obtained at such a festival, moreover, the very old receive the larger part, while the young, who have given the presents to the opposite side, receive hardly anything. (Spurr 1900:74)

> ...[M]y diary records this custom as practiced among the Kuskokwim Eskimo....The game is to outgive one another. It may be played singly or in teams. Whole villages challenge and play one another, and often a village is

thus stripped of all its possessions: traps, guns, fish, calico, and provisions of all sorts. Yet if it has given away more than its opponent, the opponent feels humiliated, while the side which has beggared itself is correspondingly elated. In the division of the gifts, the old men get the most, the midddle-aged ones next, while the young men, who have given away the most in the game, get hardly anything. The missionaries do not discourage this game...[at "Apochagamute"]. In the evening we attended an igro-oski. It was the second evening of this particular celebration, the evening when the visitors from the challenged village were received. It was held in the portico of the kashima [*qasgiq*], since the inside was not large enough for the crowd which amounted to several hundred. (The kashima was a large community hut of logs, with the usual large hole in the middle to let out the smoke from the fire kindled on the ground. It was used as a sort of gathering place or town hall; also men slept in it at night.) The gathering was lighted by three chandeliers of wooden hoops holding clay saucers filled with seal oil, in which were burning wicks made of moss. In the back of the throng sat a sort of orchestra; about a dozen young men holding large tom-toms, or flat drums, mounted on sticks. These were varied in size, so as to secure a variety of timbre.

The meeting opened with singing, which was accompanied by incessant beating of the tom-toms. The songs were rendered in resonant metallic voices, well timed and tuned together. There was little range of pitch; it was rather a chant, with sudden wild swells, and pauses as sudden. The general result was effective and pleasing. Then from among the visitors six young men stripped and sat down in front, putting on caps girdled with a circle of feathers sticking upright. All bore wooden wands ornamented with carved figures, representing chiefly the things in which the visiting village excelled. For example, some of the carvings represented birds, for the visitors were from a village in the tundra, or great marshy region which borders the Behring [sic] Sea, and birds were abundant where they dwelt. These wands they moved from side to side in time with the music. As they swayed their wands, they sang. One led, as a soloist, and all came in in a loud and musical chorus of

A-ya'--a-ya'--a-ya'--ya-ya-ya--a-ya'
Ay-a'--Ay-a'--Ay--A'.

As they sang, they called for gifts, as I knew from having Mr. Kilbuck to interpret. Each request, which was in the nature of a challenge, took them a quarter of an hour to deliver properly, musically and poetically. They called first for calico and other cotton cloth material.

> When they thus had concluded a request, men from the home team came up forward to the center of the scene. These went through comic gestures and motions, rolled their eyes, and pretended to eat the fire out of the oil-lamps; efforts which evoked roars of laughter from the assembled crowd. Then the presents were brought in by the givers. As they gave them they danced, chiefly with the arms, head, body and knees, rarely changing the position of the feet. The gifts were formally presented to the visiting team by the chief funny man, or clown, with many grotesque gestures, expressive of the disdain in which he held his possessions and how they were given freely and without regret.
>
> The visiting team, with their long-drawn out chants and choruses, and amid the incessant beating of the tom-toms, called next for a sleigh with iron runners, then for more cloth, and then for a bidarka with a sea-lion skin for a sail, an axe for a rudder, and a gun for a mast.
>
> After the receipt of each gift, the visitors set up the wild A-ya-aaa-ya chorus, swaying their wands with incessant muscular vibrations of the body. So in the course of the evening a pair of iron sled runners, much cotton cloth, steel traps, fish-nets, and many other things were brought forward and presented. It was a wild and picturesque scene. The monotonous chant and the incessant beating of the tom-toms hypnotized us and finally made it difficult to keep our eyes open, so about midnight we went out to our sloop, but all night we heard in our sleep the drumming of the tom-toms and snatches of the chorus, borne to us on the wind. We slept on the deck. (Spurr 1950:92-96)

At the end of winter, families began to haul equipment needed for the upcoming season to their spring camping sites. They transported food for themselves and their dogs, kayaks, equipment needed for furbearer hunting (particularly muskrat), and fishing equipment for harvesting blackfish and pike.

March (*Tengmiirviguaq*, "fake time of geese") with its noticeably longer daylight (13 hours) and warming temperatures, produced conditions similar to the time when migratory birds arrived

in April. Ptarmigan ("not the 'real' birds," as one respondent noted) flocked together in willow thickets on the tundra during spring when their concentration made them more readily accessible to harvest. As Wrangell recorded in the 1830s (Table 44) this month signaled the "herald of the birds" (waterfowl) which arrived the following month during their annual migration north to their nesting grounds.

By the start of the 20th century, and for about the first 25 years, some changes in resource availability of certain key species and the market economy resulted in modifications to the seasonal cycle, although they do not appear pronounced as discussed in the following chapter. However, one key respondent succinctly described the *Akulmiut* lifestyle of the early 20th century thus:

> [translated] Those people of old were extra ordinary -- *capernarkeq*. They would hunt anything edible for themselves and their dogs. They stayed here in Nunapitchuk [i.e. the winter village], but went out anywhere, daily.

HISTORIC LAND USE AND OCCUPANCY

The designation of the area used historically by the *Akulmiut*, was reconstructed in several ways. Written records contained references which identified groups of people with certain places. In some cases, these records were based on direct observation, such as Edward Nelson's (1882) record of his travels in western Alaska in winter 1878-79 (see Chapter 3). In other cases, they were derived

from someone's account of another person's observations, such as Porter's (1893) description of *Akulmiut* villages for the 1890 census, which was based on the travels of Ivan Petroff and John Kilbuck. Finally, the historic record sometimes noted where people said they resided, even though they were observed at another location. Russian explorer Lt. Zagoskin ([1847]1967) and the Russian priest Illarion ([1861-68] in Oswalt 1960) both reported *Akulmiut* at the Russian-American post at Ikogmiut along the lower Yukon River. *Akulmiut* visiting the post said they came from the tundra area between the Yukon and Kuskokwim rivers. Reconstruction of the area of the *Akulmiut* from historic sources was the approach used in Chapter 3 to identify the *Akulmiut* and the general area they were associated with during the 19th century.

Another method for reconstructing historic land use and occupancy was to record Native place-names and plot their location on maps. At a minimum, this approach indicated the extent of a geographic area an individual or society was familiar with. This approach has been used for delineating territories associated with certain Native Alaskan groups (eg. Andrews *et al.* 1980, 1988; Pete 1984; Kari and Fall 1987; Burch 1981). This method also yielded information as to the location and types of settlements described below.

Finally, applications for Native allotments applied for under the 1906 Alaska Native Allotment Act (May 17, 1906, 34 Stat. 197) and 1956 amendment (20 Stat. 954) (U. Department of the Interior 1988a),

indicated land use and occupancy during the 20th century, but preceding the 1970s (see also Caulfield 1983).

Place-Names

Yup'ik place-names were recorded for the area considered to be that of the *Akulmiut*. They were distributed within the area of the Johnson River drainage west to Baird Inlet and Aropuk Lake (Fig. 31). Generally, these names referred to those used from the mid 19th century to the 1980s. One hundred sixty-one Yup'ik place-names were recorded an occurred within an area approximately 3,000 miles square (Fig. 31). These names, along with their translation and location, appear in Appendices 8 and 9. The Yup'ik place-names are numbered and keyed to the maps contained in Appendix 8 (Figs. 47-55).

In a community where Yup'ik was the primary language of all adults, Yup'ik place-names were used frequently, if not exclusively. There were only two English place-names (Johnson River and Baird Inlet) shown on U.S. Geological Survey maps for the area under study. The few other names that appeared on maps were corruptions and misspellings of the Yup'ik place-names. In an area such as this, with a myriad of lakes and sloughs and virtually no relief, the knowledge of place-names to identify portages, land and water travel routes, and landmarks was and is mandatory for orientation and surface travel, if not survival. Without this knowledge, an individual has virtually no access to the area and its resources.

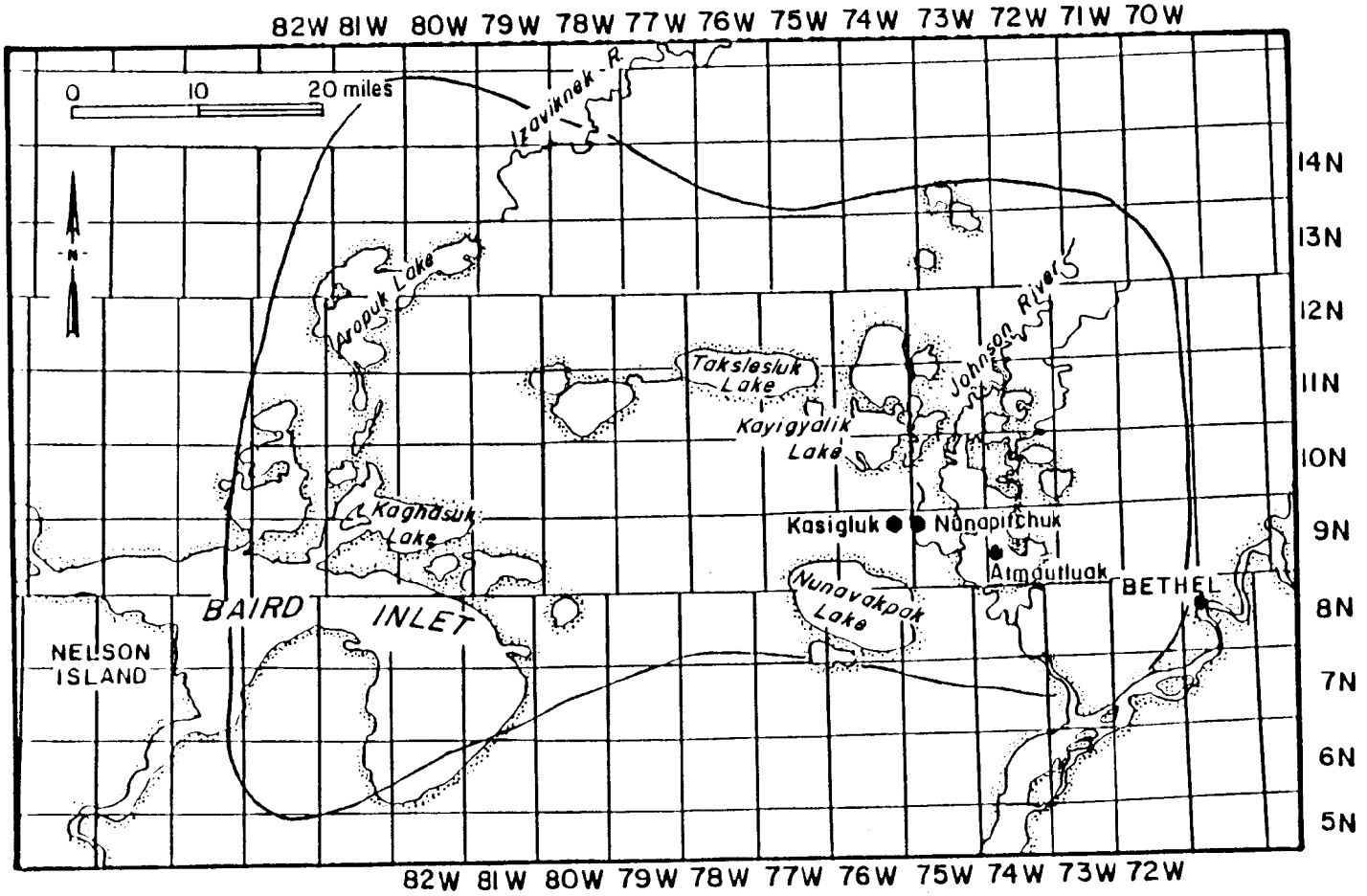


Fig. 31. Extent of historic Akulmiut land use and occupancy based on Yup'ik place-name distribution, late 19th and 20th centuries.

The analysis of the place-names yielded information on *Akulmiut* settlement pattern since about the mid 1800s. Changes in the occupancy of villages reflected the dynamism of the settlement pattern. The use of seasonal settlements and other places, for harvesting fish or wildlife, revealed the importance of dispersion in response to resource distribution during the year. The reported uses of named places also contributed to understanding *Akulmiut* subsistence and land use.

Villages

The distribution of place-names recorded indicated the area used by the *Akulmiut* during the late 19th and early 20th centuries. The names reflected those that the key respondent learned and, therefore, were based on his personal experience and knowledge. For example, there were places along the Kuskokwim River where *Akulmiut* families from Nunapitchuk have maintained summer salmon fishing camps since about the 1920s as described in Chapter 4. Although historic use and occupancy was the focus of the place-names work, recent use of places was noted also. For example, the respondent indicated places that were used in the late 1970s, early 1980s when moose hunting (moose are a relatively recent arrival in the area). Places that could no longer be used for setting blackfish traps were also reported. Time periods for occupancy of villages during the 19th and 20th centuries was recorded also. Use of seasonal settlements was reported for the 20th century as their prior use was unclear, except

in a few cases. Use of places, other than settlements, for subsistence activities was recorded for the 20th century.

The place-names indicated 13 *Akulmiut* villages of the 19th and 20th centuries. Not all were occupied simultaneously. These are shown in Table 46 and on Figure 32 and are included in Appendices 8 and 9. In addition, three primary villages in the northern Baird Inlet-Aropuk Lake area were noted. These places, although not occupied permanently by *Akulmiut*, were used for various subsistence activities on a seasonal basis. Many people from Aropuk Lake village of *Cuukvagtuliq* either married *Akulmiut* and later moved to an *Akulmiut* village, or relocated to an *Akulmiut* village. Others reportedly moved to Hooper Bay or lower Yukon River villages. As recently as 1955-57, the remaining residents of *Cuukvagtuliq* relocated to Nunapitchuk. The northern Baird Inlet villages of *Arayiit* and *Akuluraacuarmiut* were occupied in the 19th century, but probably not by *Akulmiut*. *Arayiit* was abandoned first; its occupants relocated to *Akuluraacuarmiut*. The *Akuluraacuarmiut* later relocated to *Akulmiut* villages to the east. However, in the 20th century, both villages became seasonal settlements of the *Nunacuarmiut* as described below.

Of the 13 *Akulmiut* villages, all but one had a *qasqiq*, in addition to houses. However, six villages had a *qasgiq* that was used as a residence-firebath-workshop for men, but not for ceremonies. Members of those villages went to other villages to participate in ceremonies held in the *qasgiq*, as was customary. This was characteristic of settlements that were reported to be hamlets of

TABLE 46. HISTORIC OCCUPATION OF *AKULMIUT* VILLAGES IDENTIFIED THROUGH PLACE-NAMES

VILLAGE	QASGIQ	OCC. AT WARS	OCC. <1900	OCC. >1900	WHEN ABND.	RESIDENTS MOVED TO:	HAMLET OF
Atalriarmiut	Yes*	?	Yes	Yes	ea.1900s	Nunacuaq	Nunacuaq
Kuigaallermiut	Yes	No	Yes	No	1900	Paingaq	
Naavatmiullret	Yes*	?	Yes	Yes	?	Nanvarnarrlak	Nanvarnarrlak
Nanvarnarrlagmiut	Yes	Yes	Yes	Yes	1940-60	Nunapicuaq*	
Nanvarpagmiullret	Yes	Yes	No	No	1800s	Nunacuaq	
Nunacuaq/ Akuluraarmiut	Yes	Yes	Yes	Yes	1940-55	Kassigluq	
Paingaq	Yes	Prob.	Yes	Yes	c.1955	Nunapicuaq	
Pupiqmiullret	Yes*	?	Yes	Yes	ea.1900s	Nunacuaq & Nunapicuaq	Nunacuaq
Qasqirayarmiullret	Yes*	?	Yes	Yes	c.1930?	Nunapicuaq	Paingaq
Qecugiyugmiut	No	?	?	Yes	ea.1900s	Qasqirayarmiut	Paingaq
Qemirrarmiut	Yes	Yes	No	No	?	?	
'Sevtarmiut	Yes*	No	?	Yes	ea.1900s	Nanvarnarrlak	Nanvarnarrlak
Uuyarmiullret/ Uuyarmiut	Yes*	No	No	Yes	c.1930	Kassigluq	Nunacuaq
MODERN AKULMIUT VILLAGES							
Atmaulluaq	No	No	No	Yes	--	Currently Occupied	
Kassigluq	No	No	No	Yes	--	Currently Occupied	
Nunapicuaq	Yes	No	No	Yes	--	Currently Occupied	

*Not used for ceremonies

Continued

TABLE 46. Continued

VILLAGE	QASGIQ	OCC. AT WARS	OCC. <1900	OCC. >1900	WHEN ABND.	RESIDENTS MOVED TO:	HAMLET OF
NORTHERN BAIRD INLET-AROPUK LAKE VILLAGES							
Akuluraacuarmiut	Yes	?	Yes	No	?	Akulmiut Villages	
Akulurpak	Yes*	?	Yes	No	c.1900	Hooper Bay; Pilot Station	Cuukvagtuliq
Arayiit	Yes	Yes	Yes	No	?	Akuluraacuarmiut	
Cuukvagtuliq	Yes	Prob.	Yes	Yes	c.1955	Nanvarnarrlagmiut; Nunapicuaq; Kassigluq	
Isviiqmirmiut	Yes*	No	Yes	Yes	ea.1900s	Cuukvagtuliq	Cuukvagtuliq

*Not used for ceremonies

other villages (Table 46). Two villages, *Nanvarnarrlagmiut* and *Nunacuarmiut*, were so large during the late 19th century that they each had two *qasgit* (pl.).

Five villages were said to have been occupied also "at the time of wars" (late 18th century; prior to Russian presence in the region). Three, *Nanvarnarrlagmiut*, *Nunacuarmiut*, and *Paingaq*, were occupied at the time of wars, during the 19th and 20th centuries, and were abandoned between 1940-60 (Table 46).

In the early 19th century, there were at least five *Akulmiut* villages. These are the villages identified in the place-names work that were said to have been occupied at the time of wars.

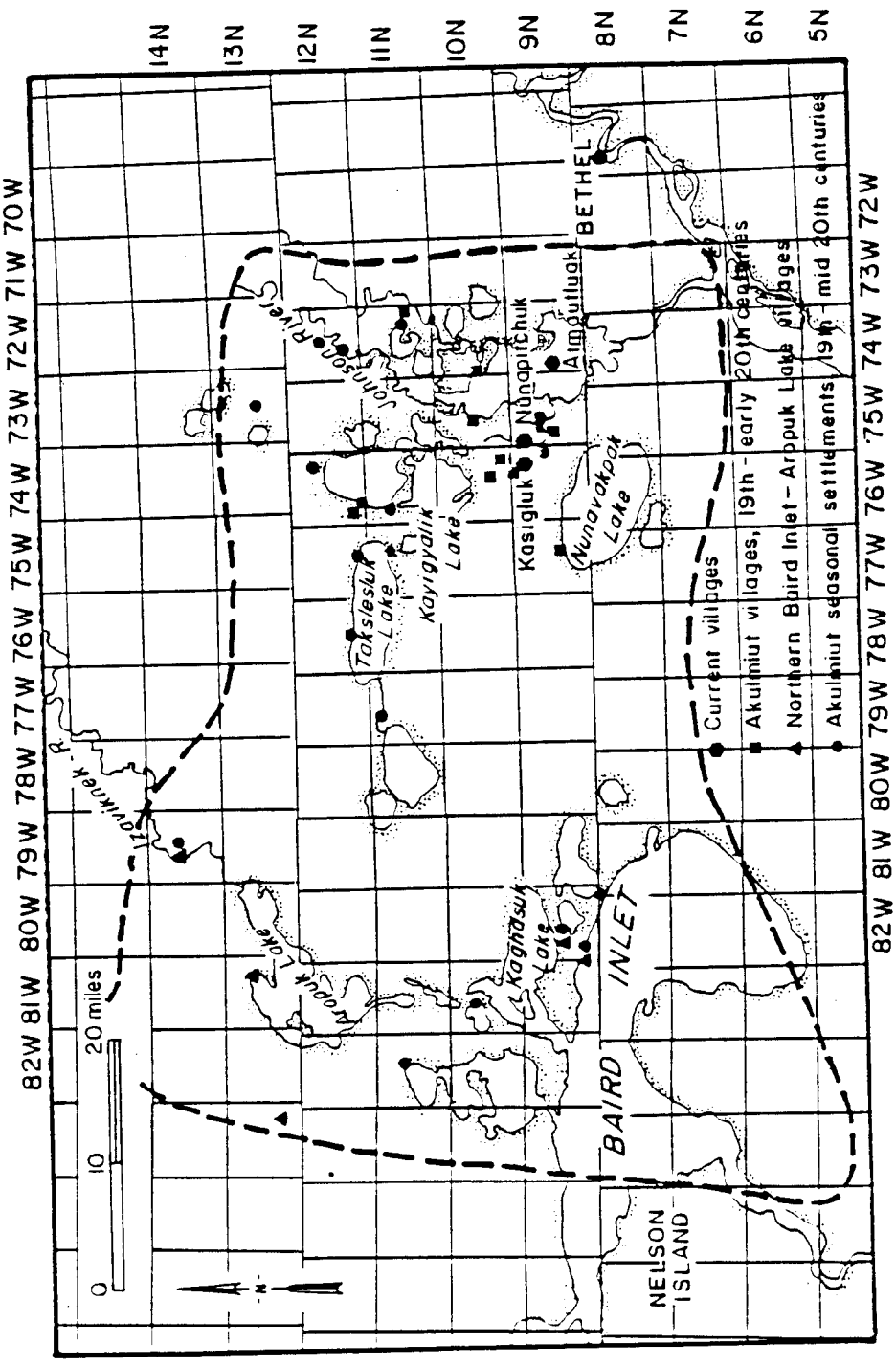


Fig. 32. Nineteenth and twentieth centuries Akulmiut villages and seasonal settlements identified through Yup'ik place-names.

Four primary *Akulmiut* villages were identified as being occupied in the late 19th century along with four satellite villages associated with the primary villages (Tables 46 and 47). These were termed *nunacuaq* (meaning hamlet or literally, "little village") by the key respondent, who described them by noting that their residents participated in and assisted with ceremonies of the primary village. Intravillage ceremonies such as *Ingulaq*, *Qaariitaaq*, and *Nakaciuryaraq* were described above. Only primary villages had a *qasgiq* that was used for ceremonial purposes, in addition to being the men's residence, firebath, and workshop.

Each the four primary *Akulmiut* settlements were noted in the historic literature for the 1880-90 period (see Chapter 3; Nelson 1882; Henkelman and Vitt 1985). By the early 20th century, Kuigaallermiut was abandoned; its population decimated by disease. There remained three primary Akulmiut villages and associated hamlets (Tables 46 and 47). *Nanvarpagmiullret* was occupied at the time of wars, but was decimated as a result of interregional warfare. Some of the survivors moved to Nunacuaq, but died before 1900. Kuigaallermiut was reduced by the 1900 influenza and measles epidemic. Its survivors relocated at *Paingaq* and to the upper Kialik River (*Kialiq*), but later settled at Nunapitchuk, and were among its founding families between 1915 and 1920.

Three primary *Akulmiut* villages survived into the 20th century -- *Nanvarnarrlagmiut*, *Nunacuarmiut*, and *Paingaq* -- as well as the Aropuk Lake village of *Cuukvagtuliq* (Fig. 33). By 1920, *Nunapicuaq* was settled by families that previously resided at *Nunacuaq* and

TABLE 47. NINETEENTH AND TWENTIETH CENTURY *AKULMIUT* AND CUUKVAGTULIRMIUT VILLAGES IDENTIFIED IN PLACE-NAMES

Early 19th Century	Late 19th Century	Early and Mid 20th Century	Mid and Late 20th Century
	KUIGAALLERMIUT		
NANVARNARRLAGMIUT	NANVARNARRLAGMIUT Naavatmiullret	NANVARRLAGMIUT	ATMAULLUAQ
NANVARPAGMIULLRET			
NUNACUAQ	NUNACUAQ Atalriarmiut Pupiqmiullret	NUNACUAQ Atalriarmiut Pupiqmiullret	KASSIGLUQ
PAINGAQ	PAINGAQ Qasqirayarmiullret	PAINGAQ Qasqirayarmiullret Qecugiyugmiut	
QEMIRRARMIUT			
		NUNAPICUAQ	NUNAPICUAQ
		UUYARMIUT	
* * * * * * AROPUK LAKE REGION			
	CUUKVAGTULIQ Akulurpak Isviiqmirmiut	CUUKVAGTULIQ	

Paingaq, in addition to those who went to the upper Kialik River. At least two families had previously resided at the abandoned and nearby settlement of *Kuigaallermiut*. Around 1925, another primary settlement emerged temporarily at *Uuyarmiut*, two miles below *Nunapicuaq*. Some families from *Nunacuaq* moved there, reportedly, as

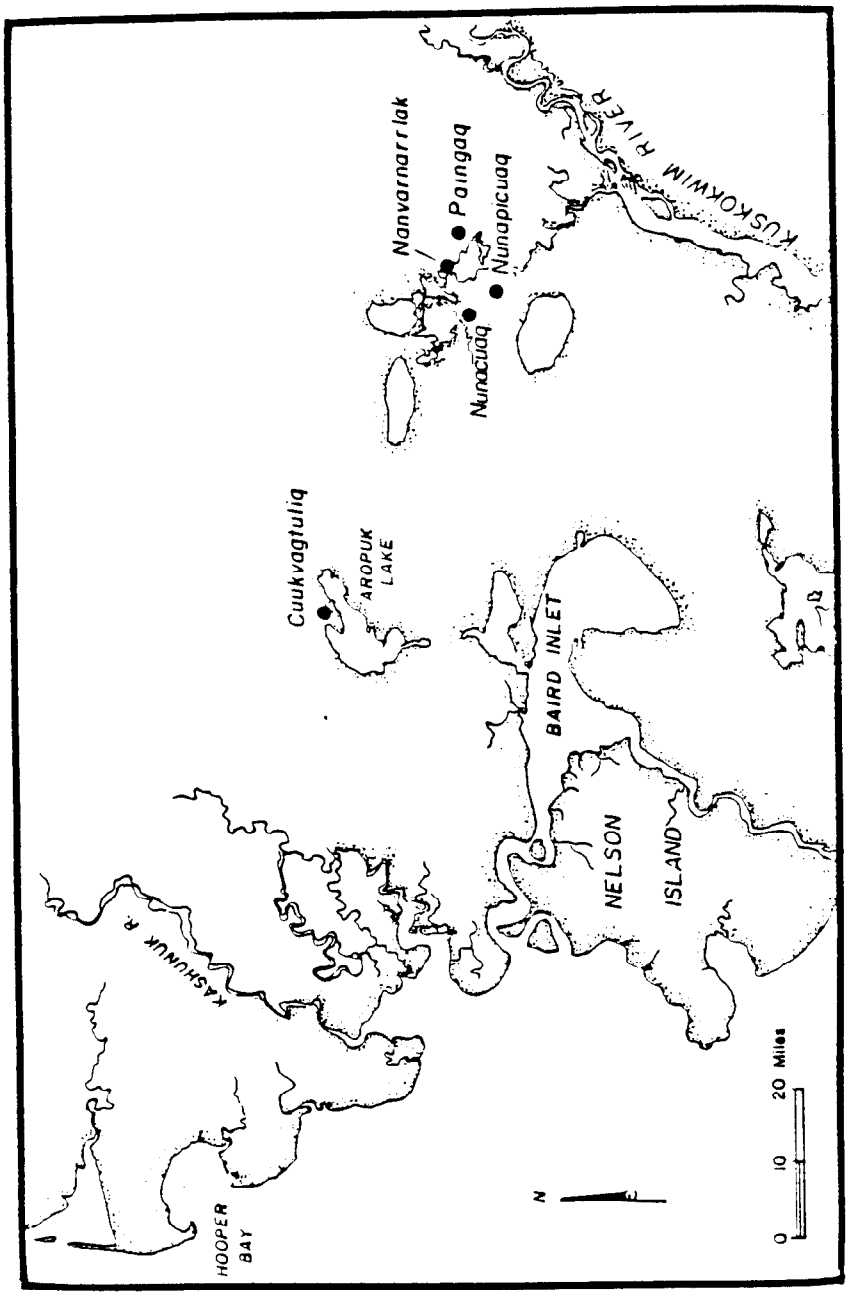


Fig. 33. Primary Akulmiut and Cuukvagtulirmiut villages, ca. 1920-1955.

a response to the increasing size of that village and for fishing for whitefish. At about the same time, two families from *Nunapicuaq* moved there and at least one other from *Nanvarnarrlagmiut*. By about 1930-35, each of these had settled at Nunapitchuk.

The single characteristic of each late 19th and early 20th century *Akulmiut* village and hamlet was its situation at a place suitable for constructing a fence used to intercept large quantities of whitefish during their annual migration. These were places all situated along the relatively narrow streams below the large lakes of the lower Johnson River drainage. This funnelling aspect of the geography was important for intercepting not only whitefish, but also pike during their migrations into and out of the complex of lakes and sloughs.

By 1950, there were two primary villages, *Kassigluq* and *Nunapicuaq*, and three hamlets (formerly primary settlements), *Nanvarnarrlagmiut*, *Nunacuaq*, and *Paingaq*. By 1970, the *Akulmiut* and the Aropuk Lake population occupied three year-round villages -- *Atmaulluaq*, *Kassigluq*, and *Nunapicuaq* (Fig. 32).

Changes in village locations during the late 19th and early 20th century resulted from several factors. First, as noted elsewhere, population decimation due to disease prompted relocation. Cultural taboos against occupying sites where people have been ravaged by disease, and the need for a larger social group, led to changes in village location within *Akulmiut* society.

It appears that a population of at least 40 to 50 was necessary for a primary village. People from *Paingaq*, *Nunacuaq*, and

Cuukvagtuliq gradually began to relocate as the number of individuals fell to less than about 40 to 50 (Tables 3 and 4), although other factors influenced relocation as described below. For communities decimated by disease, surviving families often settled at places in areas that had previously been used seasonally and were productive in terms of resources. Some *Kuigaallermiut* first relocated to the nearby village of *Paingaq*; next to a site called *Qaleqcuugtuli*, immediately upriver from *Kuigaallermiut*; and finally settled permanently at *Nunapicuaq*, another mile upriver. Earlier, in the 19th century, relocation due to famine was also cited. In the 1980s, some families in Nunapitchuk had relatives in lower Yukon River communities because in earlier times an *Akulmiut* family had to relocate due to famine.

Second, the increasing size of some settlements resulted in fission and, consequentially, some families relocated to other places that had been used seasonally. Prior to 1900, it was reported that internal relations at *Nanvarnarrlagmiut* became so strained that some families moved to *Qinaq* along the lower Kuskokwim River above Tuntutuliak. *Nanvarnarrlagmiut* had already had an influx of people from *Iquuq* (Russian Mission) along the lower Yukon River. Two levels were required in the *qasgiq* at *Nanvarnarrlagmiut* to house the boys and men of the village. They constructed a second *qasgiq*, but as reported, [translated] "they still had a rift and shortly thereafter they moved." Similarly, in the early 20th century, strife among families at *Paingaq* led to relocation of some to *Qasqirayamiullret*.

The increasing size of *Nunacuaq*, which also supported two *qasgit* (pl.), prompted some families to move to *Uuyarmiut* noted earlier.

Third, villages relocated as resources, particularly fish, became depleted. Both at *Nunacuaq* and *Nanvarnarrlagmiut*, erosion and shallowness of the adjacent streams contributed to families settling at Kasigluk and Nunapitchuk, respectively, during the 1940s. In addition, access to schools at that time was another factor.

Finally, depletion of fisheries resources followed from natural changes in the habitat, but was also believed to result from improper human behavior. People from the settlement of *Arayiit*, along Baird Inlet, reportedly moved to *Akuluraacuarmiut* when fish became scarce (*kelgar*, "when things become scarce because of inappropriate behavior"). The people at *Arayiit* were said to have not killed their dogs which had eaten from fluids leaked from fresh, aboveground burials.

Seasonal Settlements

Seasonal settlements also were reported while documenting place-names. These were places to which one, but possibly several, families moved on an annual basis for spring or fall camping. Sixteen seasonal camps were noted, 14 of which were associated with early to mid 20th century subsistence activities (Table 48; Fig. 32; Appendices 8 and 9). The other two were used prior to the 20th century.

TABLE 48. EARLY AND MID 20TH CENTURY AKULMIUT SEASONAL SETTLEMENTS IDENTIFIED IN PLACE-NAMES

*Akuluraacuarmiut**
Akulurat Qulliit
*Akulurpak***
Amlluqataq
*Arayiit**
Arviaq
*Caunecuaq****
Cilugatmiut
Egmiumanerpak
Elrivik
*Isviiqnirmiut***
*Kaganalleq****
*Naavan Qulliq****
*Qasqirayarmiut***
Qass'urrluaq
*Qertuqak****
Uqvigpiit

*Village that became a seasonal settlement
**Hamlet that became a seasonal settlement
***Not a seasonal settlement in the 20th Century

It is noteworthy that among the seasonal settlements, there were places that were previously hamlets the use of which continued seasonally. These included *Akulurpak*, *Isviiqnirmiut*, and *Qasqirayarmiut*. The first two were previously associated not with the *Akulmiut*, but with the *Cuukvagtulirmiut*. Later, they became seasonal settlements of the *Akulmiut*, as members of the two societies intermarried and the *Cuukvagtulirmiut* became fewer in number. Similarly, the northern Baird Inlet villages of *Arayiit* and *Akuluraacuarmiut*, which were part of a regional group or society no longer known to the *Akulmiut*, later became seasonal settlements of

the *Akulmiut* again, after their original members and descendants dispersed among the *Akulmiut*.

Other spring and fall camps were used by *Akulmiut* families, but were not named; therefore the list in Table 48 represents a minimum number. The list of seasonal settlements does not include places where temporary camps were set up for hunting, fishing, and trapping activities of short duration (overnight to several weeks).

Other Settlements

In addition to villages and seasonal settlements of the early 20th century, there were places associated with certain *Akulmiut* families that occupied a place as a residence for several years. Sometimes, the settlement became the basis for a new village, but not necessarily. For example, families from *Paingaq* first settled at *Qaleqcuugtuli* for several years near their former home settlement of *Kuigaallermiut*. Later, they settled nearby at Nunapicuaq, as other families who had lived elsewhere began to take up residence there. *Akulurpak*, *Atalriarmiut*, and *Uuyarmiut* were other examples of places where two or more families settled temporarily, but who eventually relocated elsewhere. Some families from *Nunacuaq* and *Nanvarnarrlagmiut* spent about two years at *Akulurpak*, then returned, and finally settled at *Nunacuaq* and *Nunapicuaq*. Two families from the *Cuukvagtuliq* area lived for a few years at *Atalriarmiut*. Later, and many years after they left, this became the modern village of *Kassigluq* or Kasigluk.

The *Akulmiut* pattern of temporary occupation by one or two families, almost in a "trial" or "pilot" fashion, followed by other families, persisted in subsequent years. For example, in 1974-75, when an airstrip was constructed for the village of *Kassigluq* one mile downstream on the opposite side of the river, one family built a house and moved there. In 1983, that was the site of new Kasigluk (or "Akula Heights") complete with modern housing units, an elementary and a high school, store, and other facilities. Part of the community still resided in old Kasigluk, the site of older residences, the church, post office, and other services.

Similarly, in the 1960s, some families originally from *Nanvarnarrlagmiut* moved to the current site of *Atmaulluaq*, then upriver to a place which was named *Nunanangnerarrmiut* ("the new place" or "one who just acquired land") because of its recency. The families only spent two winters there and then returned to the site of *Atmaulluaq*. They were joined by many families who had resided at *Nanavarnarrlagmiut* and relocated to a section of *Nunapicuaq* in the 1940s and 1950s taking their church with them. When they moved again, they took the church with them.

Finally, another pattern of settlement included cases where a single family resided most of the year at a place, but seasonally returned to the home village. *Kuingararun*, *Qurrlurpak*, *Qass'urrluaq*, and *Qasqirayarmiut* were examples where families associated with *Nanvarnarrlagmiut* spent much of the year. Seasonal settlements, like primary villages, were situated near particular resources. However, they were distinguished from villages which were also the focus of

social, political, and economic integration exemplified by their having a *qasgiq*, as discussed above.

Other Uses

The remainder of the place-names recorded referred to geographical features such as lakes, sloughs, portages, landmarks, and places where legendary events occurred. Historic subsistence activities associated with the places were noted as well as use of the named place for travel or anything else (Table 49). Classification of the places shows that for the places named, 38 percent (61) were used for fishing (blackfish, whitefish, pike, or burbot); 32 percent (51) for hunting (muskrat or waterfowl); 37 percent (60) were used as travel routes, including portages; and 16 (10 percent) were noted as sites used for gathering berries, waterfowl eggs, or wood (Table 49). five other places (three percent) were used as either lookout sites or had graves, but no other use. Another six (four percent) reportedly were not used, but were places associated with legendary events and people. Twenty-nine percent (47) of the places named a village or seasonal settlement, including those of the *Akulmiut*, *Qaluyaarmiut* of the Nelson Island area, and northern Baird Inlet-Aropuk Lake people. Again, other places were used for various subsistence activities and as grave sites, but were not named. The list of place-names, therefore, included reported use of the places, but does not include all places used.

TABLE 49. MAJOR CATEGORIES OF LAND AND WATER USE OF NAMED PLACES (*N=161*)

Use	Number* (Percentage)
Fishing	61 (38%)
Hunting	51 (32%)
Villages/Seasonal Settlements	47 (29%)
Travel	60 (37%)
Gathering	16 (10%)
Other (Lookout; Grave site)	5 (3%)
None (Legendary Event)	6 (4%)

*Total does not equal 100% since a place may have had more than one use.

Native Allotments

The 1906 Alaska Native Allotment Act (34 Stat. 197) and 1956 amendment (20 Stat. 954) provided the opportunity for Alaska Natives to obtain legal title to up to 160 acres of lands they used and occupied (Case 1984:131-139). United States Department of the Interior regulations required that applicants "establish five years of 'substantially continuous use and occupancy'" of the lands applied for, and that "the use and occupancy must also be 'substantial actual

possession and use of the land, at least potentially exclusive of others, and not merely intermittent use'" (Case 1984:144). Administrative criteria for establishing use and occupancy varied in the years following, but, by 1964, the Department of the Interior concluded that "given the semi-nomadic way of Native life, it was permissible for the 160 acre entitlement of any individual to be spread among several parcels," and that typical types of land use and occupancy included fishing, berry picking, and hunting (Case 1984:144).

By reviewing land status plats on file at the U.S. Department of the Interior (1988a), Bureau of Land Management, it was found that 264 applications had been made for Native allotment parcels (40 to 160 acres in size) located between Bethel, along the Kuskokwim River, west to Baird Inlet and Aropuk Lake, by individuals with a residence address of either Atmautluak, Kasigluk, or Nunapitchuk (Table 50; Fig. 34). The majority of these (60 percent) were located in the large lakes area of the Johnson River drainage, where all historic *Akulmiut* villages and many seasonal settlements were (compare Fig. 32 and Fig. 34). The remainder had a similar distribution because the place-names extended west to Aropuk Lake, but also included summer salmon fishing camps situated along the Kuskokwim River (Figs. 34 and 14).

For Nunapitchuk residents, the earliest reported date of occupancy of an allotment site was 1902. Sites may have been used earlier, but due to the relatively recent implementation of the Allotment Act in Alaska, generally from the mid 1960s to mid 1970s,

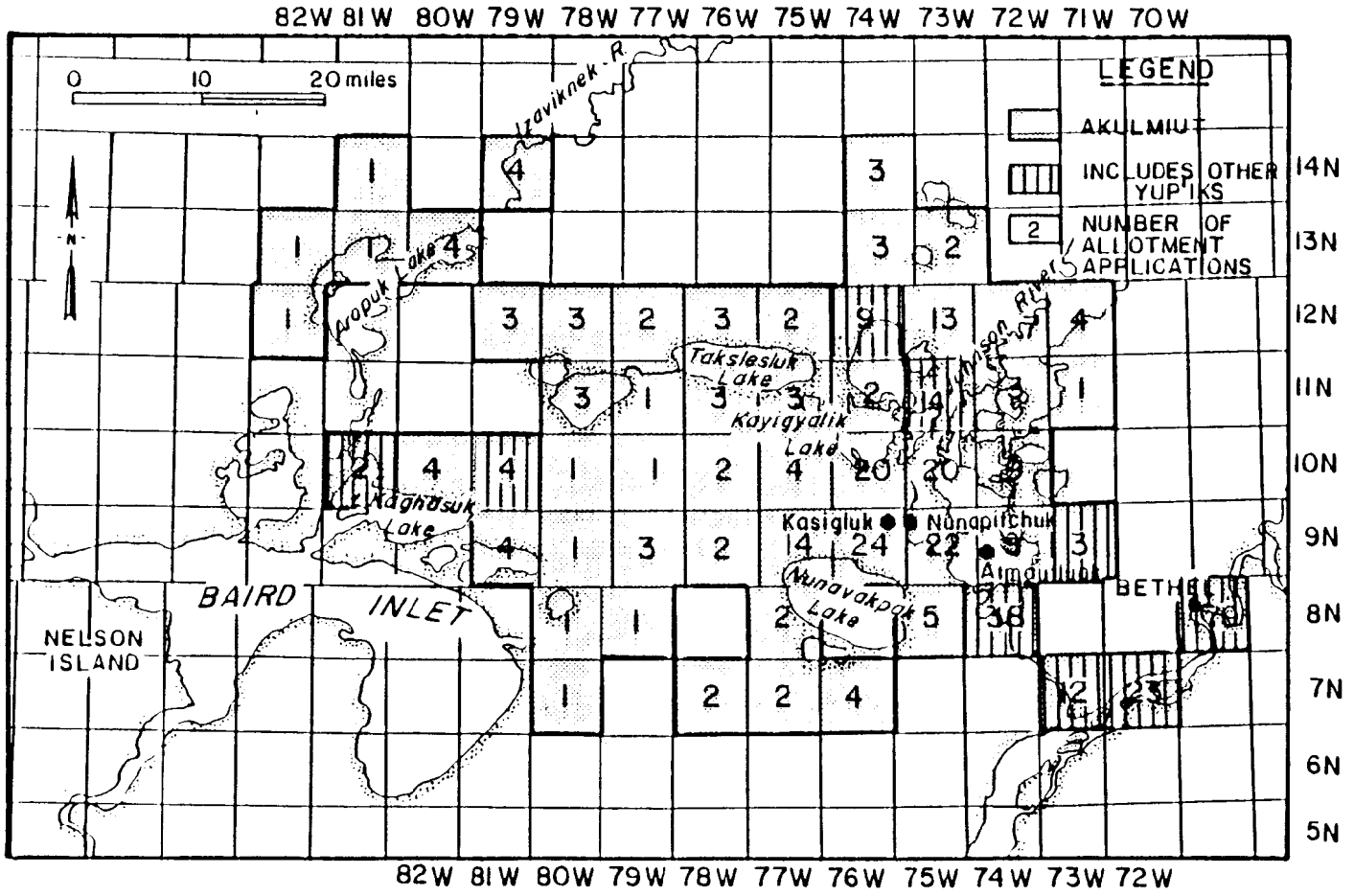


Fig. 34. Distribution of Native allotment applications in the Akulmiut area.

TABLE 50. NATIVE ALLOTMENT APPLICATIONS AND RESIDENCY OF APPLICANT FOR TOWNSHIPS IN THE AREA OF THE *AKULMIUT*

SEWARD MERIDIAN		NUMBER OF ALLOTMENTS APPLIED FOR BY RESIDENCY OF APPLICANT*			
		Nunapitchuk	Kasigluk	Atmautluak	Other
7N	72W	3	0	1	19
7N	73W	2	2	0	8
7N	76W	3	1	0	0
7N	77W	1	1	0	0
7N	78W	0	2	0	0
7N	80W	0	1	0	0
8N	71W	6	0	2	62
8N	74W	18	0	0	20
8N	75W	2	0	1	2
8N	77W	2	0	0	0
8N	79W	0	1	0	0
8N	80W	0	1	0	0
9N	72W	0	0	1	2
9N	73W	3	0	3	3
9N	74W	19	2	1	0
9N	75W	2	21	0	1
9N	76W	3	11	0	1
9N	77W	1	1	0	0
9N	78W	0	3	0	0
9N	79W	1	0	0	0
9N	80W	1	3	0	0
10N	73W	2	1	1	5
10N	74W	18	2	0	0
10N	75W	5	17	0	0
10N	76W	1	2	0	1
10N	77W	2	0	0	0
10N	78W	1	0	0	0
10N	79W	1	0	0	0
10N	80W	2	0	0	2
10N	81W	1	0	0	0
10N	82W	3	0	0	1
11N	72W	1	0	0	0
11N	73W	2	0	1	0
11N	74W	7	2	1	3
11N	75W	0	1	0	1
11N	75W	2	0	0	1
11N	77W	3	0	0	0
11N	78W	1	0	0	0
11N	80W	3	0	0	0

Continued

TABLE 50. Continued

SEWARD MERIDIAN	NUMBER OF ALLOTMENTS APPLIED FOR BY RESIDENCY OF APPLICANT*			
	Nunapitchuk	Kasigluk	Atmautluak	Other
12N 72W	2	0	0	2
12N 73W	1	0	1	5
12N 74W	12	0	1	0
12N 75W	6	1	0	2
12N 76W	2	0	0	0
12N 77W	3	0	0	0
12N 78W	2	0	0	0
12N 79W	3	0	0	0
12N 80W	3	0	0	0
12N 83W	1	0	0	0
13N 73W	1	1	0	0
13N 74W	3	0	0	0
13N 80W	2	0	0	1
13N 81W	1	0	0	0
13N 83W	1	0	0	0
14N 74W	1	2	0	0
14N 79W	0	4	0	0
14N 81W	0	0	1	0
Total	166	83	15	142

*Source: U.S. Department of the Interior 1988a

many individuals born prior to 1900 had died. Table 51 shows the declared date of first occupancy of allotments applied for by Nunapitchuk residents. As with sites used for subsistence activities noted in the place-names analysis, the allotment applications reflected the minimum number of places used for hunting, fishing, and gathering activities. Not all sites used have been applied for. The date of first occupancy was only based on the individual applicant's experience, although the site may have had an earlier history of use

TABLE 51. DATE OF FIRST OCCUPANCY OF NATIVE ALLOTMENTS APPLIED FOR BY NUNAPITCHUK RESIDENTS *(N=78)*

TIME PERIOD*	NUMBER ALLOTMENTS APPLIED FOR	CUMULATIVE NO.
1900-09	4	4
1910-19	7	11
1920-29	13	24
1930-39	6	30
1940-49	19	49
1950-59	23	72
1960-63	6	78

*Source: U.S. Department of the Interior 1988a

by another individual or family, either living or deceased. However, the distribution of the location of the sites conforms with both the place-names information (Fig. 31 and Appendices 8 and 9) and the historic record (Nelson 1882, 1899; Porter 1893; Zagoskin [1847]1967; Petroff 1884).

Native allotment applications in townships adjacent to those outlined in Figure 34 were also reviewed for residency of the applicant. They did not include applications from residents of one of the three *Akulmiut* villages. To the northeast, applicants were from Akiachak; to the southeast from Bethel and Napakiak; and to the west Nelson Island residents (or *Qaluyaarmiut*). In 10 of the 57 townships where *Akulmiut* have applied for allotments, non-*Akulmiut* residents of the communities of Bethel, Napakiak, Tununak, and Newtok have made application also (Table 50; Fig. 34). Almost all of those

applications were in townships between Bethel and the Johnson River and along the lower Johnson River.

The record of Yup'ik place-names of the *Akulmiut* and their geographic distribution showed that the area used and occupied by the *Akulmiut* extended over a 3,000-square-mile area primarily in the Johnson River drainage west to Baird Inlet and Aropuk Lake. *Akulmiut* villages and seasonal settlements accounted for about 29 percent of the recorded place-names. *Akulmiut* villages were situated in the vicinity of the large lakes which are part of the middle Johnson and Pitmitalik rivers (Fig. 32; Appendices 8 and 9). Seasonal settlements were more widely dispersed and extended throughout the area. Many other uses of places were noted and these were associated primarily with hunting, fishing, or travel. Native allotment applications also indicated historic use of the area for subsistence activities primarily during the first half of the 20th century. Many of these places continued to be used for subsistence as noted below.

CONTEMPORARY SUBSISTENCE ACTIVITIES AND LAND USE

In 1983, as in the past, the *Nunapicuarmiut* incorporated seasonal movements into their round of subsistence activities. The contemporary seasonal round included nearly all of the same fish and wildlife resources as in the past, with the exception of caribou and introduced reindeer, which were not longer present in the area. Moose are recent to the area and have been incorporated into the annual harvesting activities during the second half of the century.

Similarly, the hunting of seals which are not in the immediate area, has been added. Muskoxen are the most recent arrival (since the early 1980s) and in 1983 were not part of the seasonal round, in part due to enforcement of state regulations. However, muskoxen meat was obtained from the Nelson Island area and was part of the diet.

Muskrat, whitefish, pike, and some species of waterfowl were cited as examples of resources that had declined since the early 1960s, although it was not clear to what the declines have been attributed. Local residents stated that the increased number of beaver in the area may have affected whitefish and pike stocks, as their access to spawning and feeding areas has been blocked by beaver dams. Suitable habitat and increasing numbers of moose and muskoxen in areas adjacent to the *Akulmiut* area have been cited as factors contributing to increased numbers in the area.

Below the subsistence harvests and land use are described for a sample of Nunapitchuk households, described earlier, in terms of seasonal round and settlement pattern and geographic areas used. Maps are included which depict areas used for fishing, hunting, trapping, and gathering by *Nunapicuarmiut* in 1983. Some of these areas were used also by residents of the other two *Akulmiut* communities, Atmautluak and Kasigluk, however, their uses were not recorded in this study. The descriptions focus on the geographic areas used with regard to the distribution of fish and wildlife resources. Comparisons with historic use areas are noted. The reader is referred to Appendix 8 for clarification as to the location

of places used for subsistence and named in Yup'ik, but not shown on current U.S. Geological Survey maps.

Seasonal Round and Settlement Pattern

The *Nunapicuarmiut* harvested a variety of fish, game, and plant resources throughout the year during 1983 (Fig. 35). Timing of harvest was influenced by the seasonal availability of resources, species abundance, weather, regulations imposed by the State of Alaska and federal government, wage employment opportunities, technology available, mandatory school attendance for school age children, and personal circumstances.

In 1983, the annual round of activities indicated the *Nunapicuarmiut* harvest several species of salmon (chinook or king; chum; sockeye or red; pink; and coho or silver); several freshwater non-salmonid fish species (several species of whitefish; burbot or loche; northern pike; blackfish; and sheefish); large game (moose, black bear); sea mammals (ringed and spotted seal); small game (hare, ptarmigan, and muskrat); furbearers (beaver, mink, land otter, and red fox); migratory waterfowl (numerous species); berries (blueberries, crowberries, cranberries, salmonberries, and thimbleberries); edible wild plants and roots; and wood. Each species and its common English name, Yup'ik name, and scientific name are shown in Appendix 6. With the exception of seal and salmon, all of these resources were harvested in the Johnson River drainage and

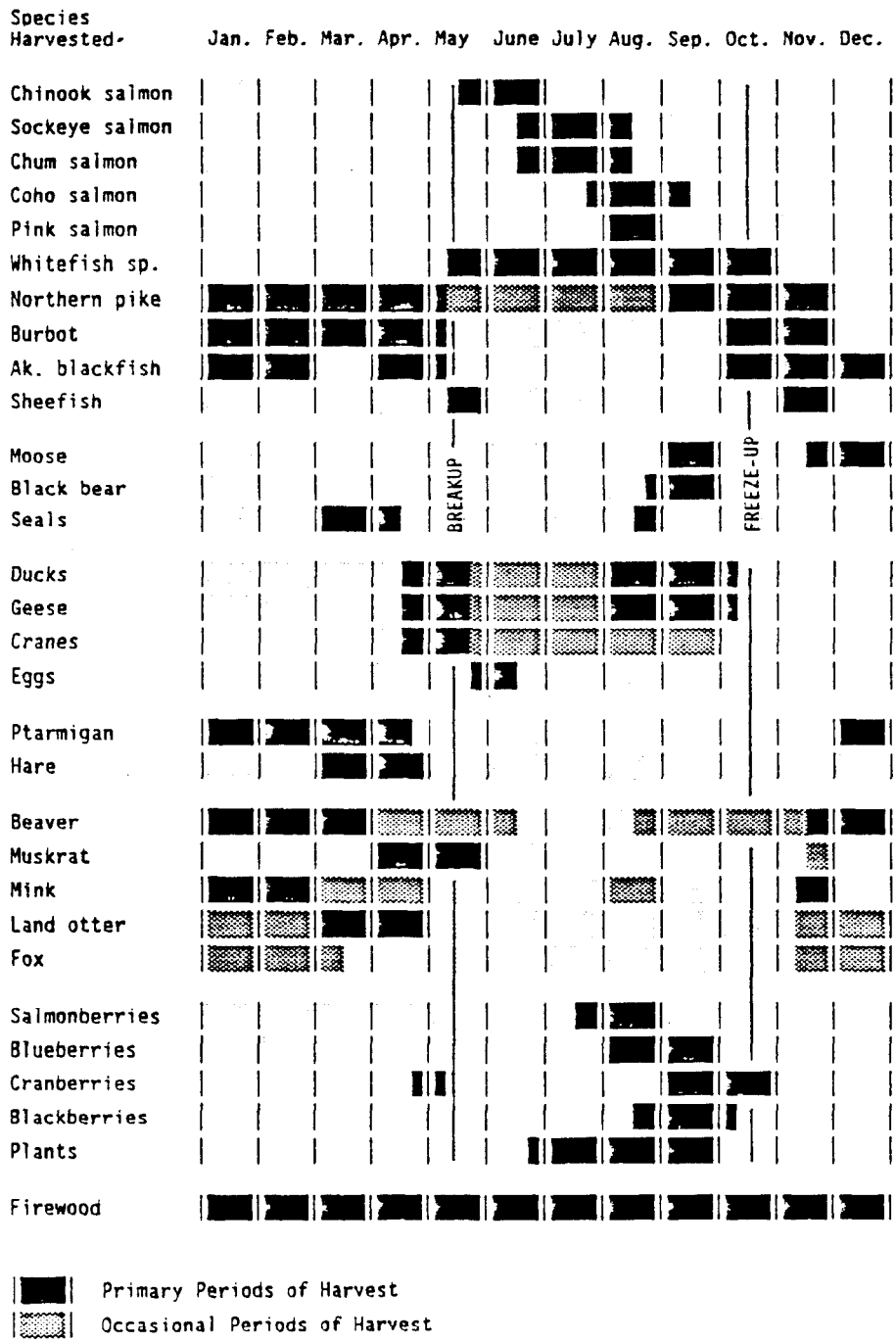


Fig. 35. Nunapitchuk seasonal round, 1983.

the area west to Aropuk Lake and Baird Inlet. Seal were taken in the east central Bering Sea and salmon in the lower Kuskokwim River.

As in the past, the seasonal round of subsistence activities, shown in Figure 35 by species and month, shows that fish and wildlife harvests fluctuated from month to month. In 1983, these periods of harvest were very similar to those described above for the earlier part of the century, with few exceptions.

Subsistence activities were based at Nunapitchuk. However, at times, temporary camps were made for overnight use and many families established seasonal salmon fishing camps along the lower Kuskokwim River. Earlier, the distribution of Native allotments was shown in Figure 34. As described earlier, these places corresponded to hunting, fishing, trapping, and gathering sites used by individuals and their families. In 1983, many of these and other sites were used as temporary camps, particularly when residents were moose hunting, waterfowl hunting, and when hunting and trapping furbearers. At some, small plywood cabins have been constructed for shelter. At others, canvas wall tents were used. Many families camped for one or several nights in tents or cabins when gathering berries, especially salmonberries. Salmon fishing camps were used for longer periods of time, throughout most of the summer, and from year to year. Usually these have included several plywood cabins and/or canvas tents for housing and cooking, as well as smokehouses, drying racks, and steambath houses. For many families, the fish camp was the summer residence. Salmon fishing camps and their use by *Nunapicuarmiut* are discussed in detail below.

Freshwater Fishing

Fish species other than salmon seasonally inhabit the lakes, streams, and sloughs of the Johnson River drainage and adjacent areas. Seven species of fish have been and continued to be harvested to varying degrees in terms of fishing effort and harvest quantities described earlier. Among them, the whitefish species and pike continued to be important fish harvested, particularly in late fall and spring, and the blackfish in early winter and early spring (Fig. 36). Historically, all primary settlements of the *Akulmiut* were situated at places suitable for intercepting the annual migration of whitefish and seasonal settlements were situated where blackfish could be trapped for consumption by humans and dogs (Fig. 32).

Whitefish, Pike, and Burbot Fishing

All fishing for whitefish and most fishing for pike took place in the Johnson River drainage. *Nunapicuarmiut* set nets in the lakes and sloughs east and north of the village, principally in tributaries of the Johnson River; in *Nanvarnarrlak* (Nunavakanukakslak Lake); and in *Nanvarnaq* and *Arviryaraq* (two lakes between *Nanvarnarrlak* and lower Kayigyalik [*Qayigyalek*] Lake) (Fig. 36), all within eight miles of the village. These areas have been used throughout the century.

Fishing areas for setting gill nets were accessed using boats during ice-free months or snowmachines at other times. During one

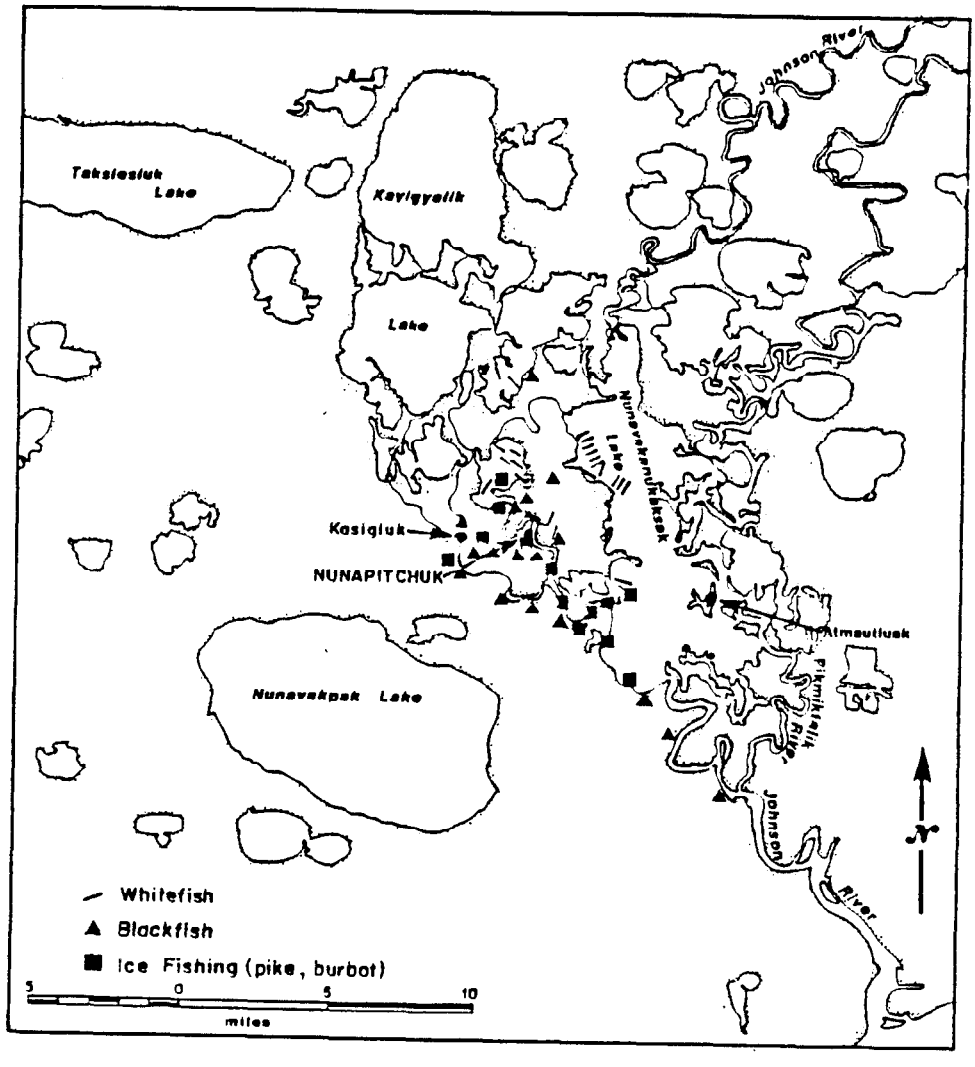


Fig. 36. Non-salmon fishing locations used by Nunapitchuk residents, 1983. (Data taken from a sample of households and direct observation.)

trip in early September 1983, 43 nets were observed in this area. Net length was as short as 20 feet and as long as 50 fathoms. Most were less than 25 fathoms in length. Mesh size reportedly ranged from 3 1/2 inches to 5 3/8 inches and mesh depth between 26 and 35 meshes, depending upon the mesh size.

A fish fence of willow was constructed in fall, as usual in October, across the Johnson River at Nunapitchuk. The use of fish fences has been occurring at least since the mid 1800s in this area, although they were used for longer periods of time during the year. During the 20th century, their locations at Nunapitchuk have varied between the upriver end of the settlement and the downriver end over a mile distant (Fig. 19). In the past, fish fences were constructed at all primary *Akulmiut* villages and were constructed at each *Akulmiut* village in 1983.

In 1983, primarily young men harvested whitefish and pike using homemade long-handled (8 to 9 feet) dip nets, 4 1/2 to 5 1/2 feet in diameter. The basket of the dip net, about 3 feet deep, was lowered through a hole in the ice to the bottom of the river and then removed. Occasionally burbot (loche) and sheefish were taken incidentally. Mostly women and children, but some men, jigged through holes in the ice for pike and burbot at one end of the fence. Occasionally, relatives from Bethel participated in this type of fishing at the fish fence.

Short nets (20 to 30 feet) were set under the ice for these fish species about the same time, but were usually removed by mid November when fish were no longer available as ice thickened and the oxygen

level of the water was considerably reduced. In winter, some families traveled to the Kuskokwim River where they jigged through the ice for burbot and pike.

In spring, during late April and early May, as the ice began to thaw and oxygen levels increased, fish moved into the drainage. Short gill nets were set again under the ice in nearby streams and sloughs. They were removed prior to breakup in mid May.

Throughout the summer, nets were set and checked daily. Some individuals fished for pike using hook and line in summer. The Pikmiktalik River east of *Nanvarnarrlak* was also used by some Nunapitchuk families for fishing in summer and fall. Occasionally families from other villages beyond the *Akulmiut* area traveled into the Johnson River drainage for mid summer salmonberry picking, and set short nets for catching freshwater fish.

Nets were also set when out hunting for moose during fall on the upper Johnson, Kvichavak, and Pikmiktalik rivers. In 1983, harvest reports for sample households showed that burbot were taken only in September, October, and November; and whitefish and pike in September and October, although variation between years was likely.

Trapping Blackfish

The small minnow-like Alaska blackfish is a bottom-dwelling fish like pike and burbot. Unlike the other fishes, blackfish are unique in their ability to utilize atmospheric oxygen and therefore are able to survive the winter in shallow oxygen-depleted lakes and streams,

such as those in the Johnson River drainage, by seeking open water areas and atmospheric oxygen. This characteristic resulted in large concentrations of blackfish at open water holes, particularly in later winter and spring. Sample households reported harvesting the largest quantities of blackfish in November and early December, January, and April. Again, some variation between years was likely.

In 1983, blackfish were taken in homemade fish traps called *taluyaq* (sing.). These traps were made from galvanized wire mesh (1/4 or 1/2-inch square) and occasionally of willow, a common form of construction until approximately 1960. The cylindrical willow *taluyaq* was about 5 feet in length and 12 inches in diameter, with a conical insert in one end about 12 inches in length, and with the throat narrowing to about 1 inch. In 1983, the metal mesh *taluyaq* was about 3 feet in length with a 10-inch opening and insert. Occasionally, mink were found in a blackfish trap as they preyed upon them.

Blackfish traps were set in sloughs and creeks from the lower Johnson River, about 10 miles below Nunapitchuk, to *Arviyaraq*, a lake 6 miles north of the village. Most traps were set south and west of the village. Men set from one to four traps. In the past, blackfish traps were placed while men were also trapping furbearers and at winter and spring camps. Seasonal settlements were also sites where blackfish traps were placed and the distribution of their use was more extensive than in 1983. Trappers who used areas northwest to Taklesluk Lake (*Taklirrlak*) and toward Aropuk Lake (*Arurpak*) in 1983 usually set a blackfish trap if they camped for several days while

trapping. These individuals were not part of the harvest study sample therefore places where they set their blackfish traps are not shown in Figure 36. Blackfish trap sites were accessed by snowmachine.

Salmon Fishing

Nunapicuarmiut salmon fishing camps were situated in 1983 along the lower Kuskokwim River between the mouth of the Johnson River and Akiachak, 47 miles upstream (Fig. 37). Most were four miles below Bethel or opposite the village of Napakiak. Salmon do not occur in the Johnson River drainage and, therefore, people traveled at least 15 miles to the Kuskokwim River to fish for salmon used for subsistence. Not all families moved seasonally to fishing camps, but instead they remained at Nunapitchuk to where they returned with the catch to process and preserve.

King salmon (*taryaqvak*) ascend the Kuskokwim generally beginning in late May and run through June into early July. Red or sockeye salmon (*sayak*) and chum salmon (*iqalluk*) begin to ascend the Kuskokwim around mid June and generally run through mid July. From early August to early September, coho or silver salmon (*qakiiyaq*) conclude the annual migration of salmon species. Subsistence salmon fishing was primarily to harvest king, chum, and red salmon, although smaller numbers of coho salmon were taken by some fishing households. Pink salmon were almost nonexistent and were an incidental catch.

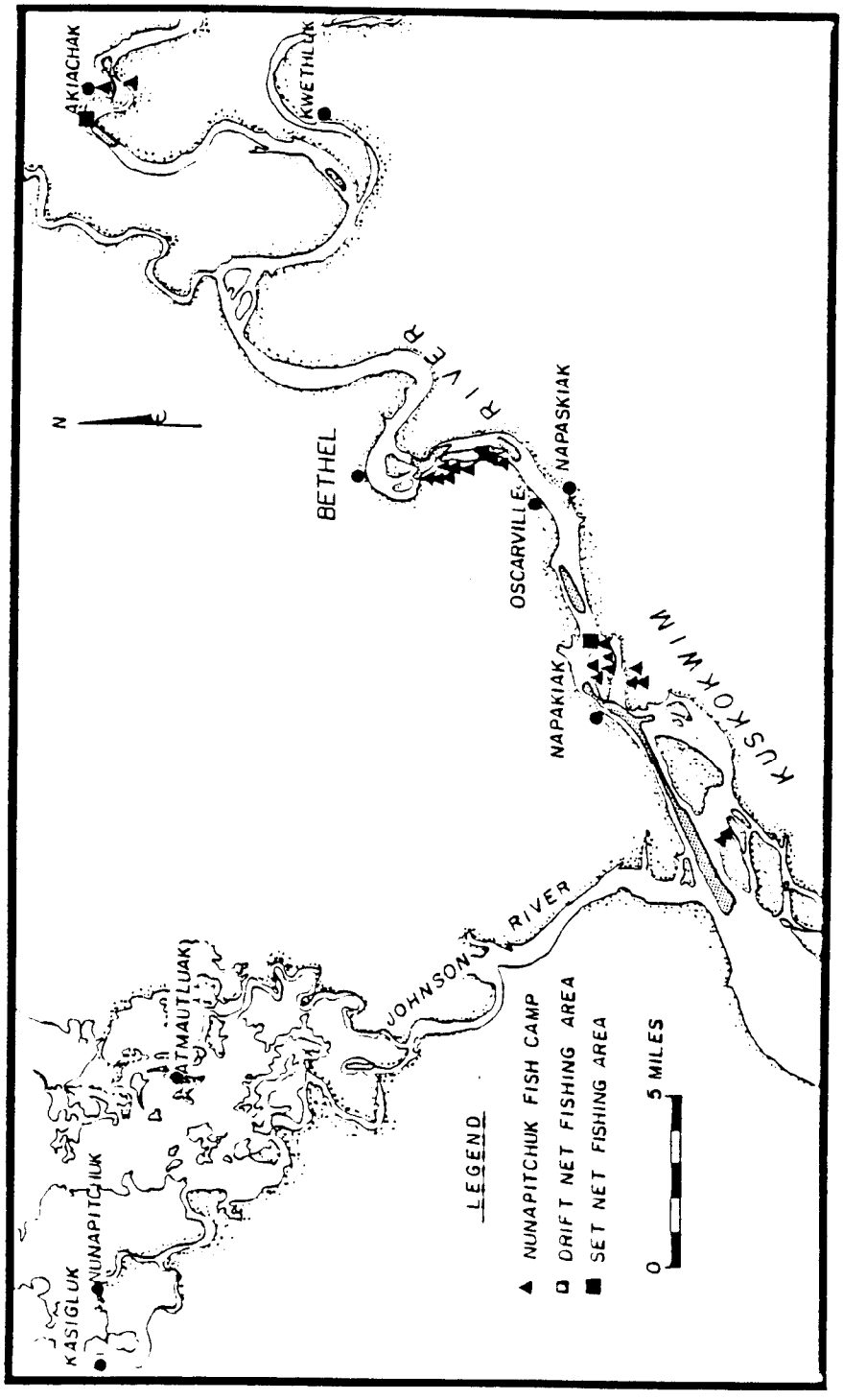


Fig. 37. Nunapitchuk fish camps and drift and set net fishing areas, 1983. (Data taken from all salmon fishing households and direct observation.)

In 1983, salmon fishing occurred primarily between Napakiak and the Johnson River where the mouth of the Kuskokwim narrows considerably and between the lower end of the island opposite Bethel and Oscarville (Fig. 37). Gill nets, extended from the bows of the boats and drifted downstream, were the predominant method for catching fish for subsistence. Gill nets were set in the very few places suitable for intercepting salmon from near the river bank. Drift gill nets were generally 50 fathoms in length with 8 1/4, 5 7/8, or 5 3/8-inch mesh and were 35 or 45 meshes deep, depending upon mesh size. Set nets were shorter, depending upon the suitability of the set net site.

Both locally handcrafted wooden boats and commercially manufactured imported aluminum boats were used for salmon fishing. Wooden boats ranged from 18 to 24 feet in length with most 24 feet long. Aluminum boats ranged from 18 to 22 feet with most 20 feet in length. Smaller aluminum fishing boats were generally at camp and used primarily for travel or checking nearby set nets, although this was the primary fishing boat for two households. Boats were equipped with outboards ranging from 15 to 115 hp, although most fishing boats had 50 or 70 hp engines.

In 1983, 24 Nunapitchuk households fished from 19 fish camps at 8 separate locations (Fig. 37). The distribution of salmon fishing camps and fishing areas in that year was nearly the same as it has been for at least 30 years with the exception of fish camps near Akiachak (Figs. 13 and 14; Table 13). The marriage of two

Nunapitchuk men to women from Akiachak accounted for the use of the women's parents camp near Akiachak.

Many Nunapitchuk fish camps were substantial in terms of structures and facilities. In 1983, these camps housed members of between 1 and 5 Nunapitchuk households, including from 2 to 14 people, all from Nunapitchuk. Related family members from other villages (Akiachak, Bethel, Napaskiak, and Kasigluk) accounted for fish camp populations as large as 30, involving as many as 9 households at a single site. Since not all household members stayed at fish camp, fish camp size increased periodically as other household members resided at the fish camp for shorter time periods (several days to a week or two).

The largest camp, involving households from several communities, had 29 structures, including residences (cabins and wall tents), smokehouses, drying racks, net hanging racks, and steambath houses. Several camps included dog yards and one camp had a small area designed for playing basketball.

Plywood frame cabins ranged in size from 10 x 12 feet to 20 x 24 feet, but many were 12 x 16 feet in dimension. Canvas wall tents also served for housing and cooking and ranged in size from 8 x 10 feet to 12 x 14 feet with most 12 x 14 feet. Smokehouses ranged in size from 8 x 10 feet to 12 x 20 feet (with two levels), but most were 12 x 16 feet. Log drying racks were 8 x 12 feet to 12 x 26 feet with most 12 x 16 feet.

Hunting

Waterfowl Hunting

The lower Yukon and Kuskokwim river deltas are a major nesting area for a variety of waterfowl and migratory birds of the North American flyways. Waterfowl hunting in 1983 was perhaps the most extensive subsistence activity in terms of area used (Fig. 38). Hunting included the harvest of numerous species of ducks, three species of goose, and one species each of swan and crane (Table 52). Local residents reported that both whitefronted and cackling Canada geese nested in the Johnson River area and were relatively prevalent, whereas brant, emperor geese, and snow geese were very few and were found primarily to the west in the Baird Inlet and Nelson Island areas. Nunapitchuk waterfowl hunting did not extend that far in 1983, although it did in the past, particularly in the Baird Inlet-Aropuk Lake area when families were at spring camp.

In most years, the shorelines of the large lakes to the north of Nunapitchuk are the primary areas for waterfowl hunting particularly in spring and summer. Those areas were accessed using snowmachines, prior to breakup, and smaller aluminum boats later. In late summer, hunters from the three *Akulmiut* communities (Atmautluak, Kasigluk, Nunapitchuk) gathered at Takslesluk Lake (*Taklirrlak*) and hunted waterfowl cooperatively. Nunavakpak Lake (*Nanvarpak*) Lake was not used in 1983, but has been the site of hunting since that time, as it sometimes was in the past. In 1983, boats were used to drive molting birds to the eastern end of the lake where they were clubbed, shot,

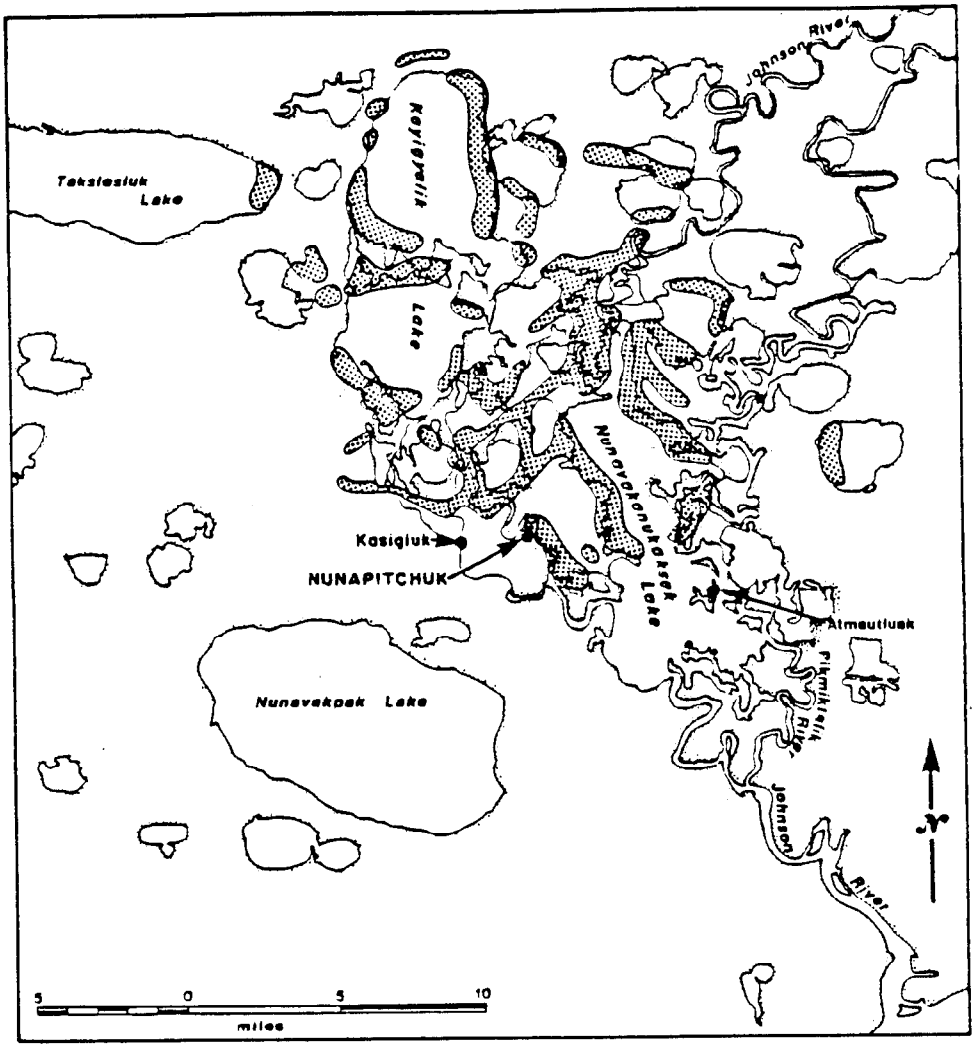


Fig. 38. Waterfowl hunting areas (shaded) used by Nunapitchuk residents, 1983. (Data taken from a sample of households.)

TABLE 52. MIGRATORY BIRD SPECIES TAKEN BY A SAMPLE OF NUNAPITCHUK HOUSEHOLDS, 1983 (*n=17*)

SPECIES	NUMBER TAKEN	
Geese		243
Cackling and lesser Canada goose	147	
white-fronted goose	74	
unspecified species	22	
Sandhill crane		31
Tundra swan		19
Ducks		1,032
American wigeon	90	
black or surf scoter	163	
common goldeneye	8	
gadwall	44	
greater scaup	77	
green-winged teal	63	
mallard	96	
northern shoveler	14	
oldsquaw	131	
pintail	107	
unspecified species	239	

or netted as they have been for decades (King 1973; Klein 1966). The catch was then sorted by species and divided by the leaders among all participating households. Waterfowl hunting also occurred in early fall along other lakes and streams, as it did in the spring.

Waterfowl harvest figures for sample households showed that of all ducks taken and specified by species during interviews (793 specified, 239 unspecified) most were scoter or oldsquaw (Table 52). Late summer waterfowl hunting, involving the driving of molting birds

at Takslesluk Lake, yielded primarily oldsquaw and greater scaup, according to hunters. This was consistent with the relative abundance of those species at the lake in 1963-65 (King 1973). At that time,it was determined that the summer harvest observed in 1962 and 1963 using the herding method showed "no indications of destructive overharvest or interference with the breeding population and perhaps this may be a good resource utilization for this area" (King 1973:109).

In the past, families collected hundreds of eggs which they boiled and stored in sealskin pokes with oil and then ate at other times of year. In 1983, sample households collected about 25 gallons.

Moose and Black Bear Hunting

Moose hunting occurred during fall and winter. Bear hunting occurred incidentally to moose hunting, although they were sometimes taken when encountered at other times. Both black and brown bear were present, but black bear were more common. Moose hunting in fall 1983 by *Nunapicuarmiut*, took hunters north and east of the village up the Pikmiktalik, Kvichavak (*Akuliqutaq*), and Johnson (*Kuicaraq*) rivers to their headwaters and adjacent lakes and tributaries (Fig. 39). The area extended as far as the Portage Lakes about 100 river miles distant, situated behind the villages of Lower and Upper Kalskag along the middle Kuskokwim River. In some years, hunters portaged from the upper Johnson to the Yukon River below Russian Mission and hunted as far upriver as Paimiut Slough below Holy Cross.

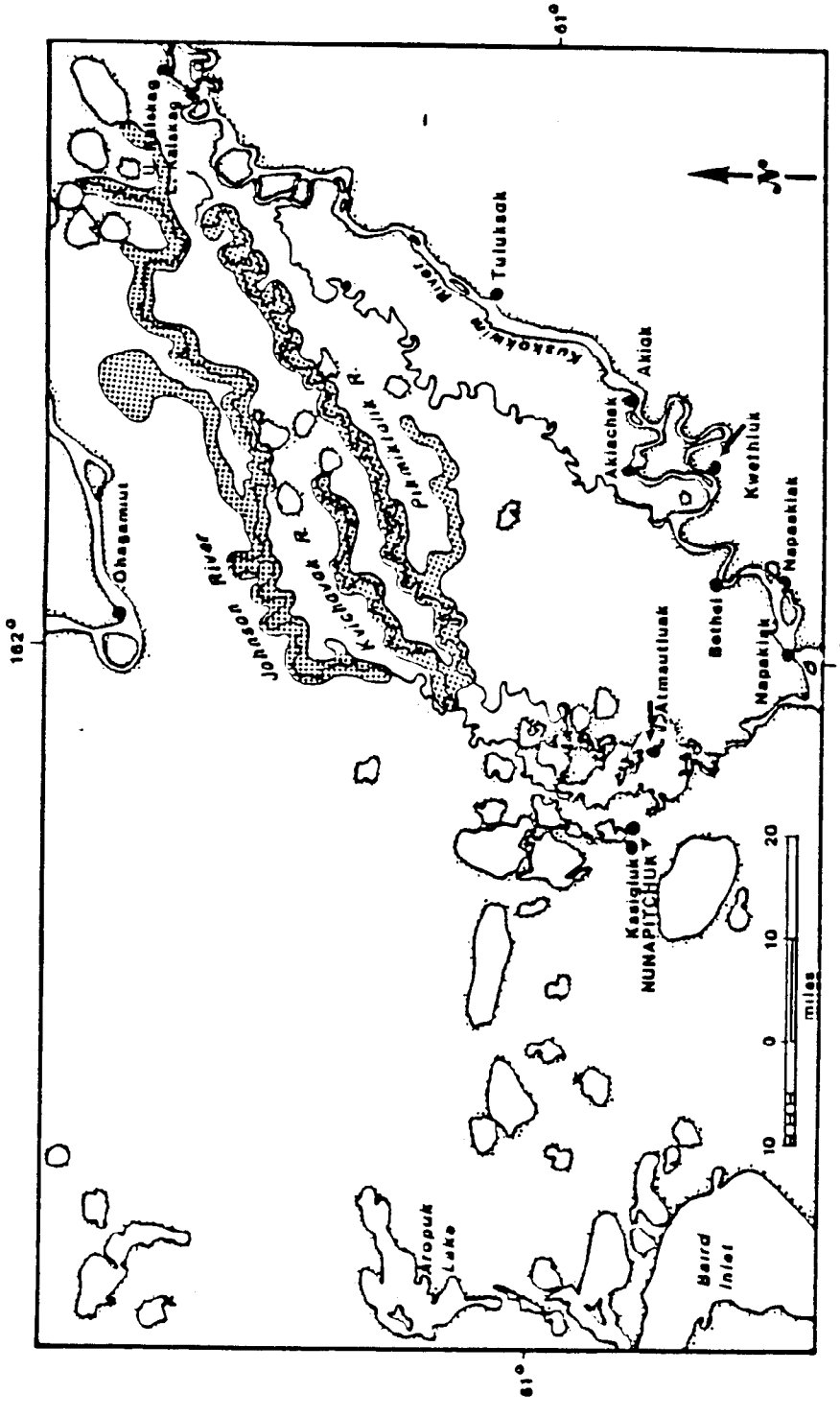


Fig. 39. Moose and bear hunting areas (shaded) used by Nunapitchuk residents, 1983. (Data taken from a sample of households.)

Some moose hunters in fall also ascended the Kuskokwim River and hunted as far upriver as Stony River, 320 miles distant. The area north of Takslesluk Lake was also a moose hunting area, but was not used by sample households in fall 1983.

Although moose occurred in the Johnson River drainage, they were not abundant. They were most prevalent along the upper portions of tributaries. Moose in numbers are a recent arrival to the area, since about the late 1950s-early 1960s, according to key respondents, although they were first seen in the area around 1941. Based on accounts of historic caribou distribution in the area and reindeer grazing areas up to the 1930s, moose in numbers appear to be mostly inhabiting areas formerly associated with caribou and reindeer from Takslesluk Lake to the upper Johnson River drainage.

Brown bear were not systematically hunted in 1983. However, they were taken when encountered as one was in 1983 along the upper Johnson River.

Hare and Ptarmigan Hunting

Ptarmigan and hare were hunted among the willow thickets in the vicinity of Nunapitchuk and Kasigluk and toward the north between Nunavakanukakslak (*Nanvarnarrlak*) and Kayigyalik lakes (Figs. 40 and 41). In 1983, both were hunted from snowmachines and most were shot rather than snared. Both ptarmigan and hare populations fluctuate markedly; as does their annual harvest. The extent of hare hunting in 1983 was considerably greater than that for ptarmigan. Hunting

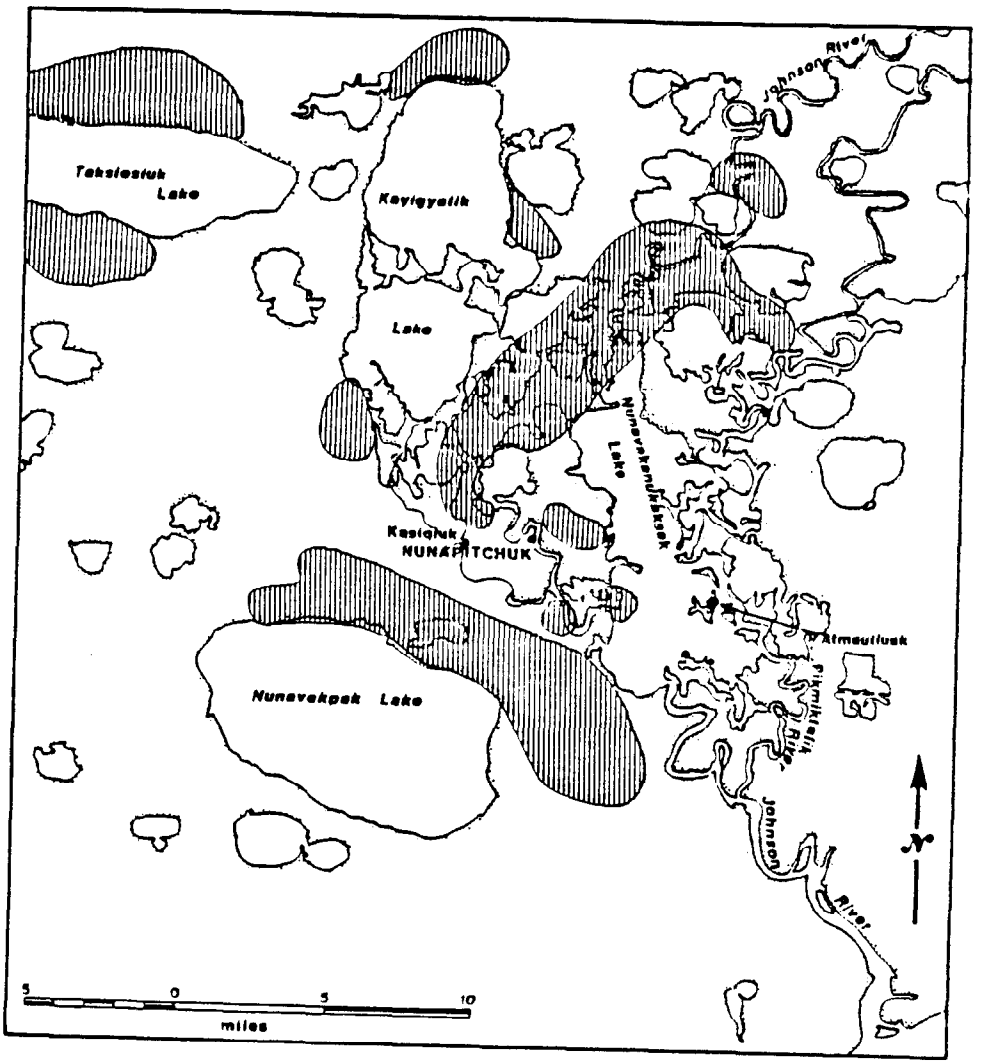


Fig. 40. Hare hunting areas (shaded) used by Nunapitchuk residents, 1983. (Data taken from a sample of households.)

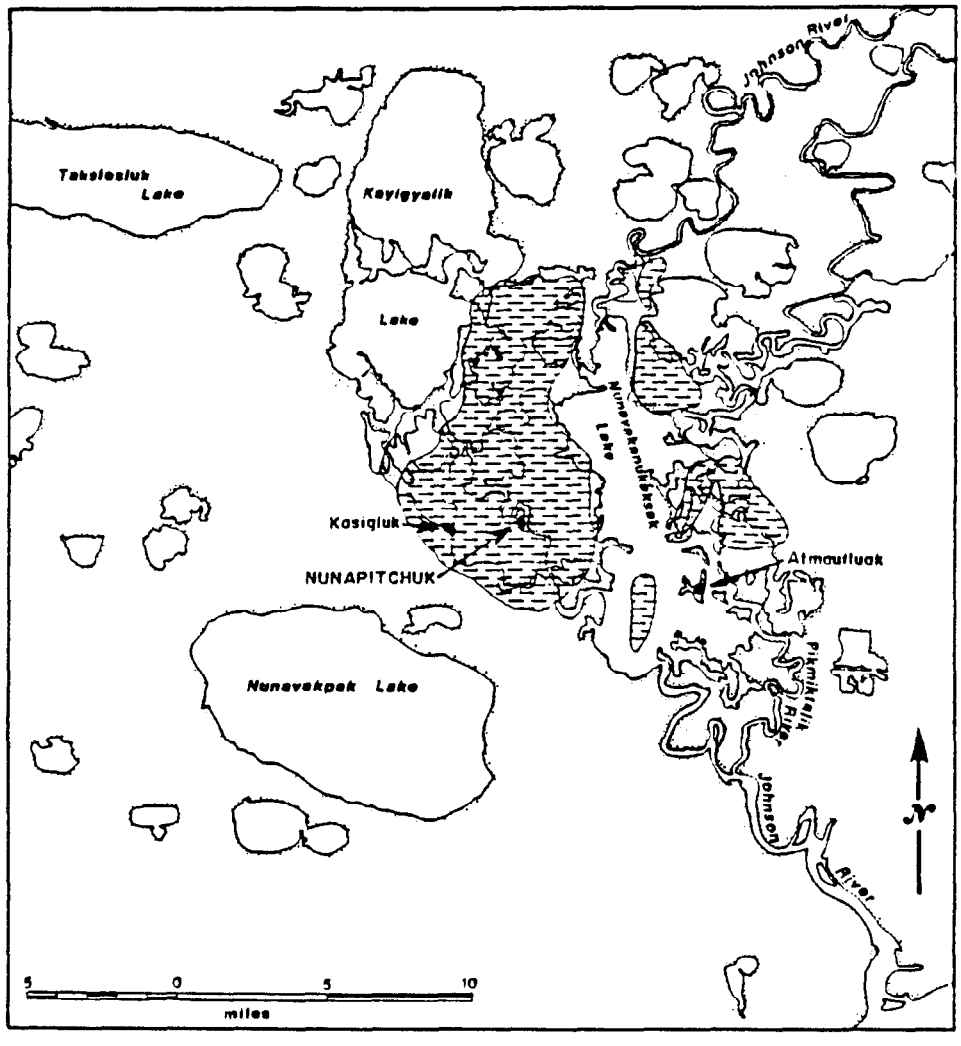


Fig. 41. Ptarmigan hunting areas (shaded) used by Nunapitchuk residents, 1983. (Data taken from a sample of households.)

extended northwest to Takslesluk Lake (*Taklirrlak*) and southwest to Nunavakpak Lake (*Nanvarpak*),and was similar to trapping areas noted below.

Marine Mammal Hunting

Nunapitchuk residents do not have immediate access to marine mammals as the community is situated within the inland tundra region rather than along or near the Bering Sea coast. In 1983, some men hunted marine mammals by traveling to coastal communities and hunted with friends or relatives in villages on Nelson Island or northern Kuskokwim Bay. Generally, men traveled by snowmachine and hunted in late winter or early spring, although some hunted in late August as noted earlier (Fig. 35). Areas hunted were not mapped, but coincided with areas used by hunters in those villages (see Alaska Department of Fish and Game 1987). In 1983, hunters took three different species of seal. Occasionally, seal ascend the lower Kuskokwim and lower Johnson rivers in late summer. They have been taken when encountered, as one was in 1982 along the lower Johnson River. In the early 1900s, belukha whale occasionally ascended the lower Kuskokwim and were taken (Oswalt 1963).

Trapping

Nunapicuarmiut trapped primarily mink and beaver in 1983, although muskrat, red fox, and land otter were taken also. Rarely,

have arctic fox been taken. Locally, these activities tended to be termed "hunting" if speakers were using English. In Yup'ik, people used the appropriate word specifying how the furbearer was caught -- *pissurluni* for hunting, *kapkianaq* ("a trap") for trapping, and *negiq* ("a snare") for snaring. The use of the English term, trapping, therefore encompassed all methods of harvest. Mink, beaver, and land otter were used as a source of food also.

Trappers operated primarily from the village, but some used a camp as a base of operations for several days at a time. Mink and beaver were taken in areas which extended as far south as the upper Kialik River, 20 to 30 miles distant; 25 miles west to Puk Palik Lake; and north 30 miles to *Carvanqeggli* drainage north of Kayigyalik Lake. A few individuals have trapped in the Aropuk Lake area in recent years, 60 miles distant (Figs. 42 and 43). The Aropuk Lake-Baird Inlet area was used regularly by *Nunapicuarmiut* during the first half of the century, as described in Chapter 4, where there were several seasonal settlements. This area has been described as having the highest density of mink in the lower Yukon and Kuskokwim rivers area (Burns 1964:28).

Beaver are a recent arrival and their distribution and abundance has been increasing considerably since about 1950. They were prevalent, however, during the mid 1800s as indicated by oral accounts and Russian fur reports described earlier.

In winter 1982-83, mink and red fox populations were lower than previous years, while land otter were stable or increasing (Dinneford 1983). Beaver were abundant, although harvests were relatively lower

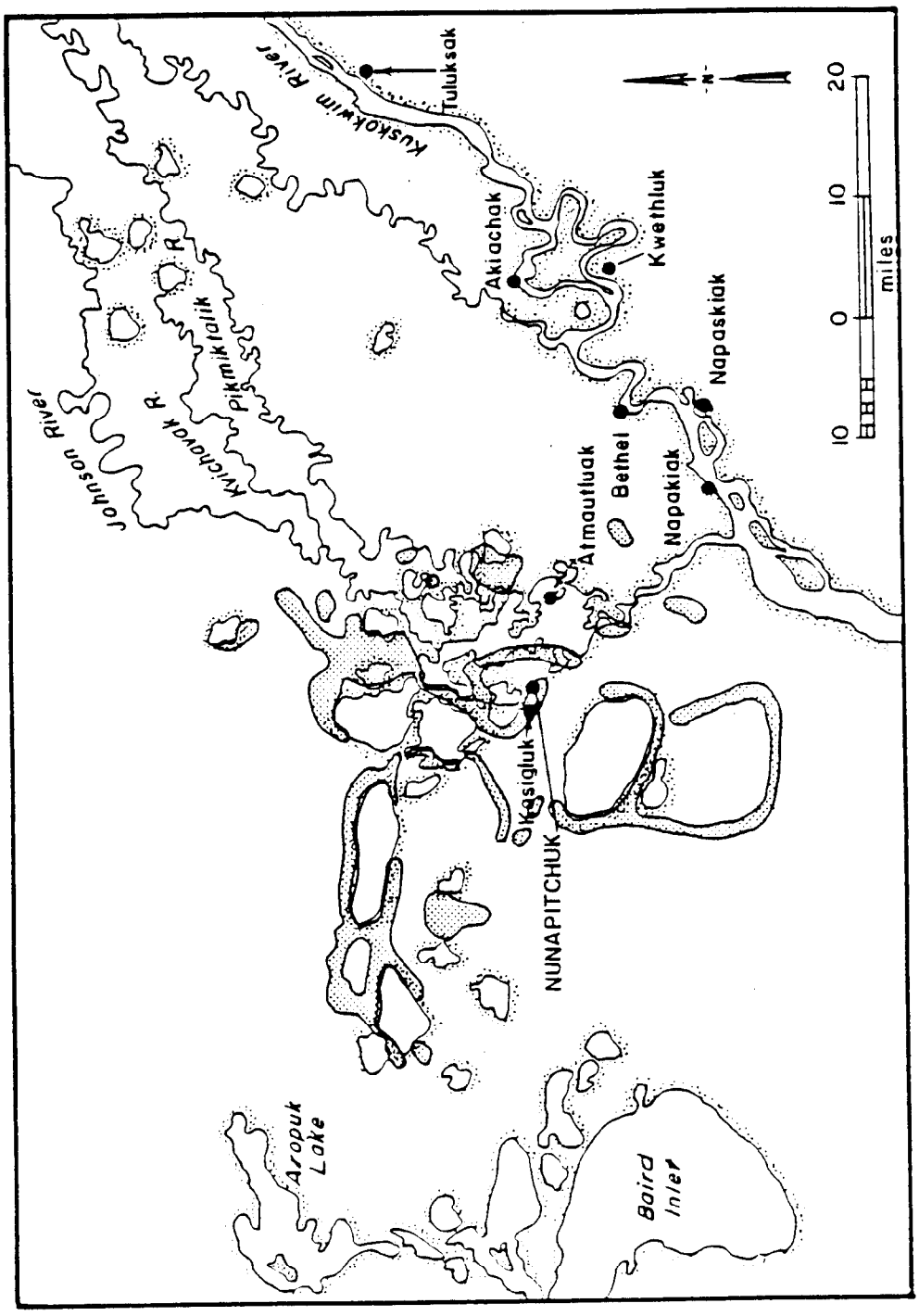


Fig. 42. Mink trapping areas (shaded) used by Nunapitchuk trappers, 1982-83. (Data taken from all mink trappers.)

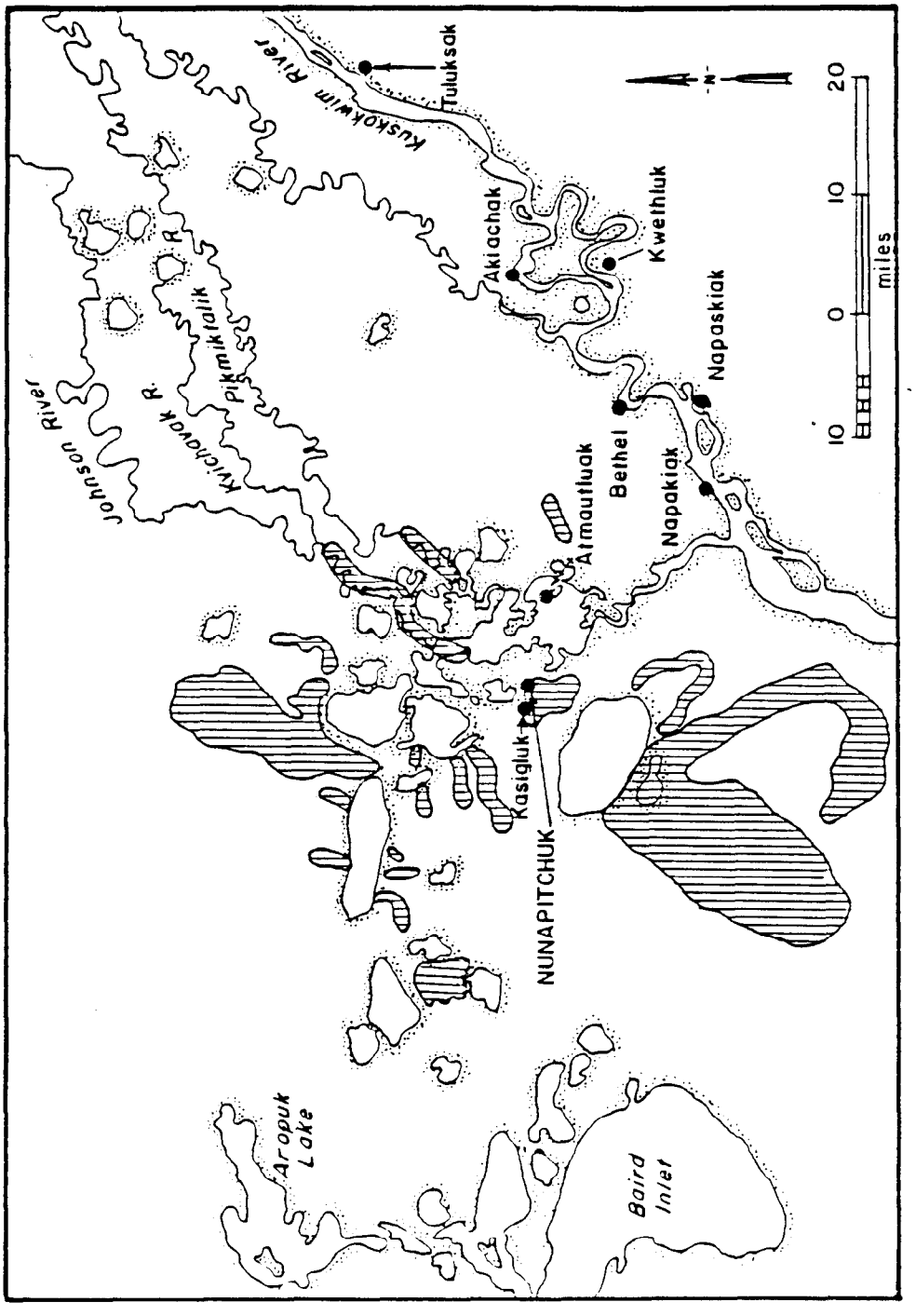


Fig. 43. Beaver trapping areas (shaded) used by Nunapitchuk trappers, 1982-83. (Data taken from all beaver trappers.)

compared with previous years. High water at freeze-up, and near record low snowfall in 1982-83, contributed to poor survival and trapping conditions in the deltas of the Yukon and Kuskokwim rivers, including the Johnson River drainage (Dinneford 1983).

Fur prices also affected the degree of trapping and, hence, the use and extent of trapping areas. In 1982-83, prices paid for mink pelts were 30 to 50 percent lower than in previous years and fur sales were about one-half of the 1981-82 season (Dinneford 1983). Similarly, lower prices paid for land otter and beaver pelts, and unfavorable conditions for trapping and snowmachine travel, limited trapping activity for those species, even though their populations were stable.

In 1982-83, mink and land otter were taken primarily in November and December, but until the end of January in other years. As previously described, they were taken incidentally in blackfish traps (*taluyaq* [sing.]) set in spring. Some mink were taken in late summer, when the guard hairs are short and the skin is soft, making them suitable for manufacture into parkas, especially for children.

Mink were harvested primarily using *taluyaq* or wire-mesh traps (1/4 or 1/2-inch square mesh or 1-inch chicken wire) constructed especially for mink trapping. They were similar in construction to blackfish traps but differed in that the conical funnel had a throat of about four inches in diameter to allow mink to easily slide into the trap. They were set in sloughs, small rivers, and along lake shores where they have the advantage of relatively quickly killing the animal by drowning and protecting them from being preyed upon by

red fox. Methods of mink trapping were described thoroughly in Burns' (1964) study of mink in this area and trapping by neighboring Kasigluk trappers.

In 1982-83 mink were taken also by some trappers using spring pan (leg-hold) traps (sizes no. 1, 1 1/2, and 2), connibear traps (sizes no. 1 1/2 or 2), snares, and .22 rifles when shot. Some trappers used several methods in a single season. One trapper noted that *taluyaq* were effective in sloughs, whereas spring traps were especially effective near dens and connibears along mink trails.

In 1982-83 beaver were taken primarily using snares set near dens but also with spring traps (sizes no. 1 or 2). Some were shot in late spring. They were trapped mostly in February and March when the fur was prime, but some were trapped in January and as late as April.

Red fox were trapped occasionally using no. 2 spring traps, but they were shot also. Trappers always traveled with a .22 caliber gun among their equipment.

In 1982-83, muskrat trapping and hunting was minimal. Although muskrat were taken in considerable numbers as recently as the early 1960s, their harvest has declined considerably. In spring 1981, however, one trapper noted that he was able to get 700 muskrat. Their numbers fluctuate and they were reportedly not as abundant as in previous decades.

Gathering

Berry Picking

Collecting berries was an important summer activity in 1983. Salmonberries are especially abundant in the Johnson River drainage, owing in part to the prevalence of the naturally formed pingos and the outstanding habitat they provide. Beginning in mid July, families traveled by boat to areas near the village, but also up to 30 river miles distant along the upper Johnson River (Fig. 44) to collect salmonberries. The area was used also by people from other communities along the lower Kuskokwim River including Bethel. In 1982, some villagers from as far upriver along the middle Kuskokwim as Chuathbaluk reported collecting salmonberries in this area (Charnley 1984). Some relatives of *Nunapicuarmiut* living in Togiak in the Bristol Bay region to the south flew to Nunapitchuk to visit and to collect and/or purchase salmonberries.

In early fall, crowberries or bearberries were collected also, as well as lowbush cranberries. Occasionally, blueberries were collected, but they are not very abundant and no sample households reported harvesting them in 1983.

Plant, Root, and Wood Gathering

In 1983, some plants and roots were gathered in early summer, but also in fall. Often, these were collected during the course of other subsistence activities. Plant and root collecting areas were

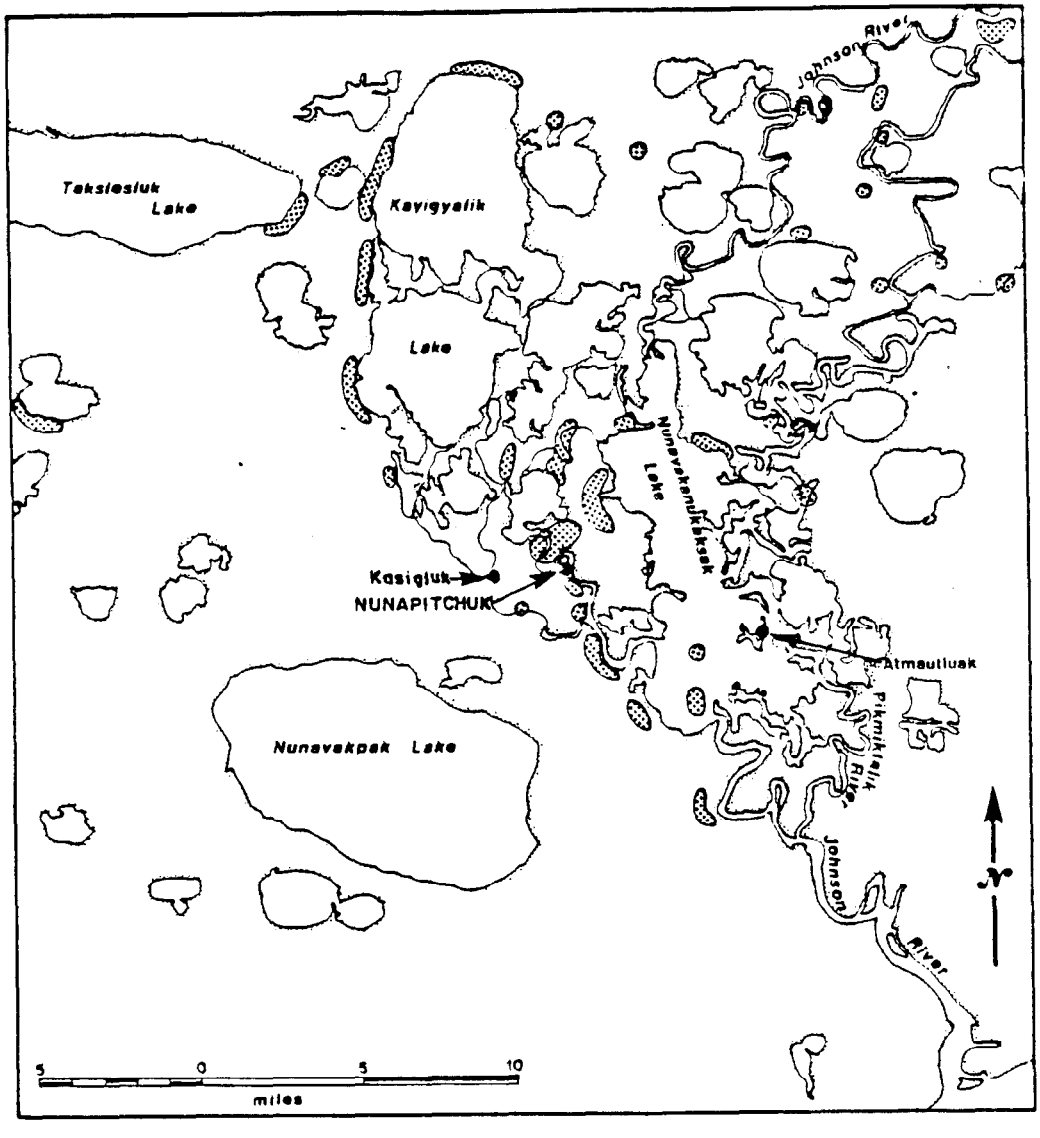


Fig. 44. Berry picking areas (shaded) used by Nunapitchuk residents, 1983. (Data taken from a sample of households.)

not mapped. However, some plants were collected as far north as the upper end of Kayigyalik Lake. Wild celery, the leaves of wild rhubarb and buttercup, and the tops of male poisonous water hemlock were gathered earliest in summer, along with roots of marshmarigold.

Labrador tea, tall cottongrass, and sourdock were collected in mid summer for eating. The reeds of cottongrass were dried and braided and later made into storage bags and mats. In addition to being eaten, sourdock were reportedly used as "landmarks" or navigational aids in marshy areas lacking other large vegetation because they were said to always grow in the same place. Labrador tea was commonly brewed with black tea for additional flavor.

Buckbean (*pingayulek* [sing.]) was said to be poisonous and seal oil was reported as an antidote, but it was collected and used for placing on muck to make a suitable surface for stepping on. The stems of water lilies (*paparnat* [pl.]) were sometimes dried and used as a rope or belt.

In fall, a certain type of grass was gathered and tied in bunches. It was used for insulation, particularly in boots and for dog bedding, but also to cover wild foods and for matting when traveling. The root of tall cottongrass and marestail were collected in fall also.

Alder, diamond-leaf willow, birch, and spruce were used as firewood for heating, often in steambath houses as most homes used fuel oil or stove oil for heating. Diamond and felt-leaf willow were used also in fall for smoking split and dried small fish, such as whitefish and pike. Much of this is wood was gathered close to the

village. Wooly willow was burned to ashes and used as an alternative for mixing with tobacco when punk (birch fungus) was not available. Driftwood used for heating was gathered at the Johnson River mouth. The trunks of driftwood trees were sought after for use as bow pieces for handcrafted wooden boats. In winter some individuals drove by truck on the river ice to Akiachak where they cut or purchased spruce wood.

CHAPTER 6. CONTINUITY AND CHANGE: INFLUENCES ON LAND USE AND SUBSISTENCE PURSUITS

Throughout the contact period, *Akulmiut* society has been subject to a variety of influences, mostly external, but also internal, that have contributed to changes in land use, including settlement pattern, and changes in the harvest of fish and wildlife resources. The following sections show how land use and subsistence activities have been influenced during approximately the past 150 years by both endogenous or indigenous customs, which have persisted throughout; and exogenous influences, such as the trade and market economy; technological changes; externally-imposed restrictions on hunting, fishing, and trapping by federal and state governments; and infrastructure and centralization of the population (Fig. 45). Together, endogenous and exogenous factors have influenced the actual subsistence activities of any one season, but also the nature and character of land use and subsistence pursuits during the historic and modern periods. It is worthwhile to examine ways in which settlement pattern and subsistence hunting, fishing, and trapping were affected by these influences as this analysis contributes to understanding the relationship between spatial distribution and territoriality and resource distribution parameters. Each set of influences is discussed below within this context. Each played a

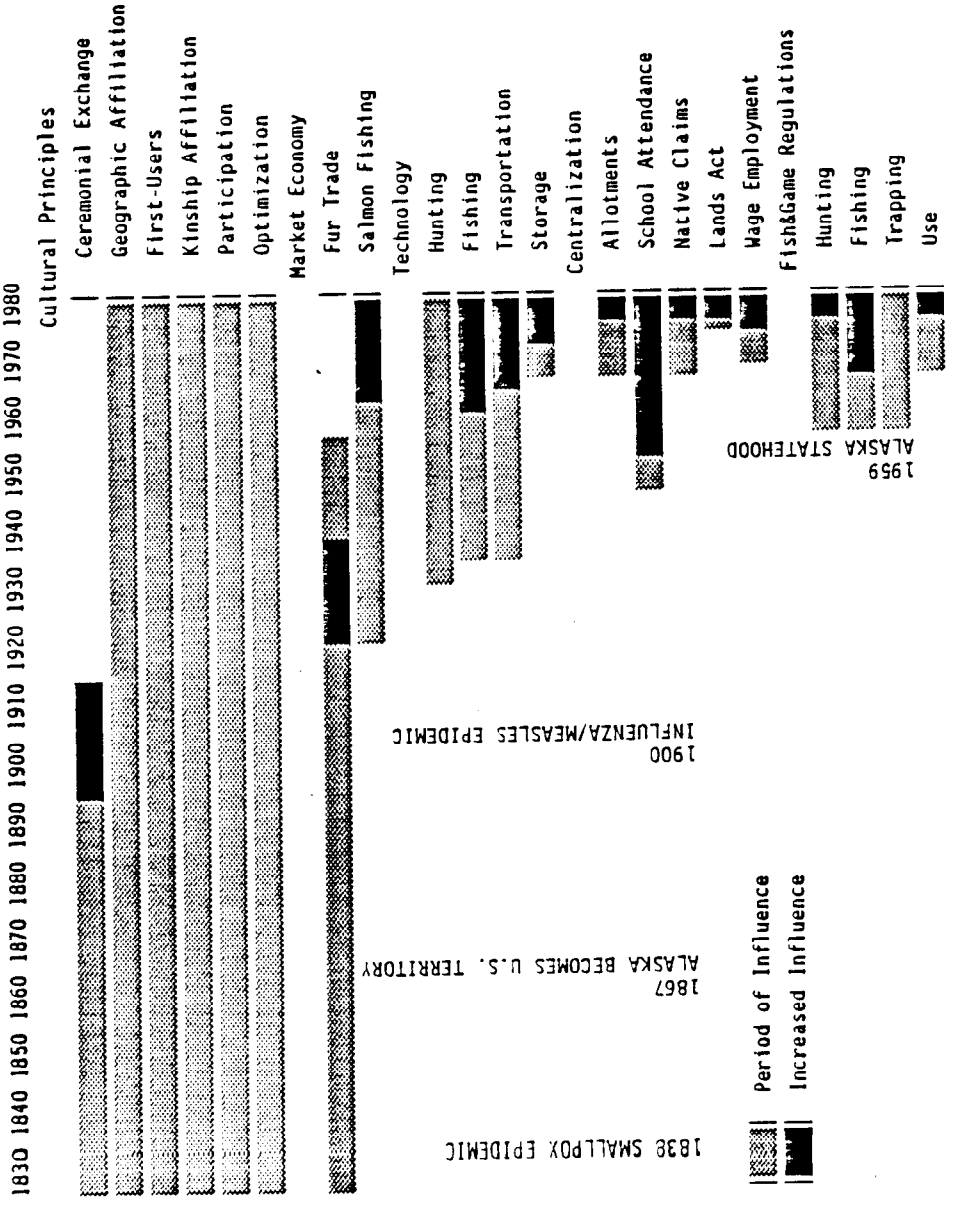


Fig. 45. Influences on Akulmiut land use and subsistence: a timeline.

role and the two set were not mutually exclusive. The presentation begins with endogenous influences on land and resource use. This serves as a backdrop against which to view persistence and change in the territorial dimensions of *Akulmiut* society during the past century and a half.

ENDOGENOUS INFLUENCES

Cultural Principles of Land Use

The harvest of fish and wildlife resources for subsistence and the settlement pattern associated with subsistence production were influenced fundamentally by endogenous cultural rules which affected individual and group activities. The cultural rules of the *Akulmiut* are discussed in terms of five cultural principles of land and water use identified for the *Kuigpagmiut*, another Yup'ik society in the neighboring area to the north (Wolfe 1981). The cultural identity of these two societies was the same, and the similarity of their subsistence production and history of contact warrant an analysis of the principles of land and resource use initially identified by Wolfe (1981). Land and resource use were influenced by cultural rules governing geographic affiliation, right of first use, kinship affiliation, optimization, and participatory use.

An individual had access to land and resources within a region where he or she could demonstrate a long-lasting or persistent social identity with a group of people who used and occupied a geographic

area (cf. also Wolfe 1981 and Shinkwin and Pete 1984 for examples of this in other Yup'ik societies). Through the principle of geographic affiliation, at birth, a person became affiliated with a place and the group of individuals residing there. The Yup'ik base *-miut* refers to "inhabitants of the settlement [or area] of." Thus, the larger grouping, *Akulmiut* referred to the people who were the inhabitants of the area "in the middle" or "inbetween."

Within the *Akulmiut* were smaller groupings of people, which were referred to by the settlement where they resided. For example, the *Akulmiut* village called *Nunapicuarmiut* referred to the inhabitants of the settlement of *Nunapicuaq* or "[place of] small real land" and the name of another *Akulmiut* village, *Nanvarnarrlagmiut*, referred to the inhabitants of the settlement of *Nanvarnarrlak*, or "one heck of a lake," in reference to the large lake that the village was situated along. At birth, a child was identified both as *Akulmiut* and also as *Nunapicuarmiut*. Furthermore, through kinship affiliation, an individual born in one place could also be associated with a group of people who resided in another area. For example, a woman born at a seasonal settlement of the *Akulmiut* and adopted to a family among the *Qaluyaarmiut* to the west, continued to be associated with her family of origin among the *Akulmiut*, while also having a geographic and kinship affiliation with the *Qaluyaarmiut*. In addition, and more specifically, she could be identified by her birthplace as well as the village where she currently resided. In this way identification with a particular set of kin also allowed a person to extend his or her affiliation to the geographic region of the kin.

The principle of geographic affiliation also enabled people to harvest resources in areas distant from the ones in which they resided. In 1983, there was one case in which a resident of the Bristol Bay region traveled to an *Akulmiut* village where she had relatives, picked salmonberries nearby, and returned with many gallons to her home village in the Bristol Bay region. In another case, an *Akulmiut* man hunted seal with a relative living in a Bering Sea coast community. The geographic affiliation of a person's kin extended the areas and resources available for use.

The same principle or mechanism operated with respect to where a person settled. People and families were associated with a smaller grouping of people, such as a village or seasonal settlement population. In 1983, virtually all permanent residents of *Nunapicuarmiut* were resident by birth right, marriage, or adoption. In one of the two exceptional cases, an older man was born and raised in another Yup'ik community and lived in another, but exercised his option of settling at Nunapitchuk because his mother was from the former *Akulmiut* settlement of *Paingaq*.

The importance of social identity by village was also demonstrated in the relocation of the people of the former village of *Nanvarnarrlagmiut* to Nunapitchuk. When they moved to Nunapitchuk, bringing their church and some of their homes, they settled in an area of the village that became known as Nunapitchuk #2. Later, most of this same group of people again moved and established their own village at Atmautluak in the late 1960s. Similarly, former residents of the Aropuk Lake village, *Cuukvagtuliq*, occupied a certain area of

Nunapitchuk. Until new housing was constructed at Nunapitchuk in the 1980s, groups of kin and their former village affiliation were represented to a large extent in the spatial arrangement of village homes.

Finally, some families were associated with certain seasonal settlements, particularly if their family repeatedly used a site or occupied the place for enduring periods of time, such as year-round in some years or repeatedly over time during a particular season. This feature was evident during work recording *Akulmiut* place-names and the associated subsistence uses of named places. Frequently, any family demonstrating continued use of a place was identified by name and referred to for more detailed information. Examples included former village settlements that were later used seasonally, such as *Naavatmiullret*, *Isviiqnirmiut*, and *Qasqirayarmiullret*. Subsequently, these became associated with certain families during the first half of this century.

An individual's Yup'ik name or names extended a person's kindred thereby creating the potential for extending their geographic affiliation. For example, a young Yup'ik man who worked on this study had a special relationship with a seven-year-old boy who had the same Yup'ik name as the young man's maternal grandfather. The young man, although born and raised in Bethel (*Mamterillermiut*) had parents from Napakiak (*Naparyarramiut*) and a maternal grandfather from an *Akulmiut* village. The grandfather's name persisted among the *Akulmiut*. Through kinship and the persistence of his grandfather's name, the young man was considered affiliated with the *Akulmiut*,

while maintaining affiliation with both the *Mamterillermiut* and *Naparyarrarmiut*.

Social identification with a group of individuals who occupied and used an area defined a person's geographic or kinship affiliation. Through a bilateral descent system, each person had a unique set of kin, and therefore, potentially had a unique set of geographic affiliations as well. These affiliations identified areas to which a person was entitled access to and use of resources. Identification as *Akulmiut* enabled access to and use of a 3,000-square-mile area, including the Johnson River drainage west to the Baird Inlet-Aropuk Lake region. Some individuals, because of kin and therefore geographic affiliation, had access to other areas further west for particular subsistence activities, such as sea mammal hunting, and further east, such as for moose hunting. Similarly, people not resident in the *Akulmiut* area, who were either former residents or who had kinship affiliations, joined *Akulmiut* for subsistence activities, such as the cooperative waterfowl hunt and whitefish harvest. Among the *Akulmiut*, residents of different villages did not tend to oppose other village residents' hunting, fishing, and gathering near their own village.

Within the area occupied and used by the *Akulmiut*, individuals or a group of people had a priority use of certain areas for resource use over others, if they were the first to use it or customarily used it -- a principle based on usufruct rights. The use of fishing sites is one example of how the principle of deference to first users operated. Sites used for setting nets and blackfish traps tended to

become associated with a certain person from year to year, provided there was continued use of the site. For example, a person from one village usually set a whitefish net at the mouth of the same small stream each spring. However, if that person did not set the net there for one of any number of reasons (prolonged illness, no means of transportation, pursuing other activities, etc.), the site would become available for use by another who became the first-user. Similarly, set net sites at or adjacent to a salmon fishing camp were associated with members of the camp, unless they chose not to use the set net site during that season.

Areas where fishing took place tended to be associated with certain villages both within the tundra lakes system and along the lower Kuskokwim River, although this may have had more to do with optimization and efficiency (described below) than customary use. In the tundra lakes system, there was considerable overlap in fishing areas from Kasigluk on the west to Nunapitchuk in the middle, to Atmautluak in the east. For example, there were areas where both Nunapitchuk and Kasigluk residents set nets and areas where both Nunapitchuk and Atmautluak residents set nets, but rarely where both Kasigluk and Atmautluak residents set nets. The overlap was, in part, due to the close proximity of the three villages and the extensive lake and slough network which provided numerous set net sites. In addition, individuals could maintain use rights to certain areas even after they relocated to another *Akulmiut* village nearby.

Areas used for subsistence salmon fishing using drift gill nets tended to be associated with the residents of nearby camps. In 1983,

six salmon fishing camps, all nearby one another, accounted for about one-third of Nunapitchuk subsistence salmon fishing households along the lower Kuskokwim River. Also, nearby were camps of Kasigluk residents (Fig. 46). The area used by those families for drift fishing was associated with the people of Nunapitchuk and the *Akulmiut*. Infrequently were others seen using the area, even though families from Bethel and Kipnuk were situated nearby and the fishing area was immediately downstream from the city of Bethel (Fig. 46). This pattern has been characteristic since at least 1963, as seen by comparing Figures 15 and 46.

Salmon fishing camps were also used and occupied according to the principle of deference to first-users or customary users. In 1983, five salmon fishing camps used by Nunapitchuk families were situated on land being used by a person or his or her immediate family members who applied for the site under the Alaska Allotment Act. Ten others were situated on the allotment of another person, generally not related to all of the current occupants, and three appeared to be on public land. Cultural rules rather than legal rights influenced the use of the camps. At several, long-term use by close family members entitled them and their spouses and offspring to use a particular camp. When some families relocated to new sites, whether vacant or not, their continued use entitled them and their family members to use the newly-established site.

Fish camp settlement was dynamic and the principles governing use persisted. Families using a camp relocated due to a variety of reasons, such as a death by drowning at the site, to be further from

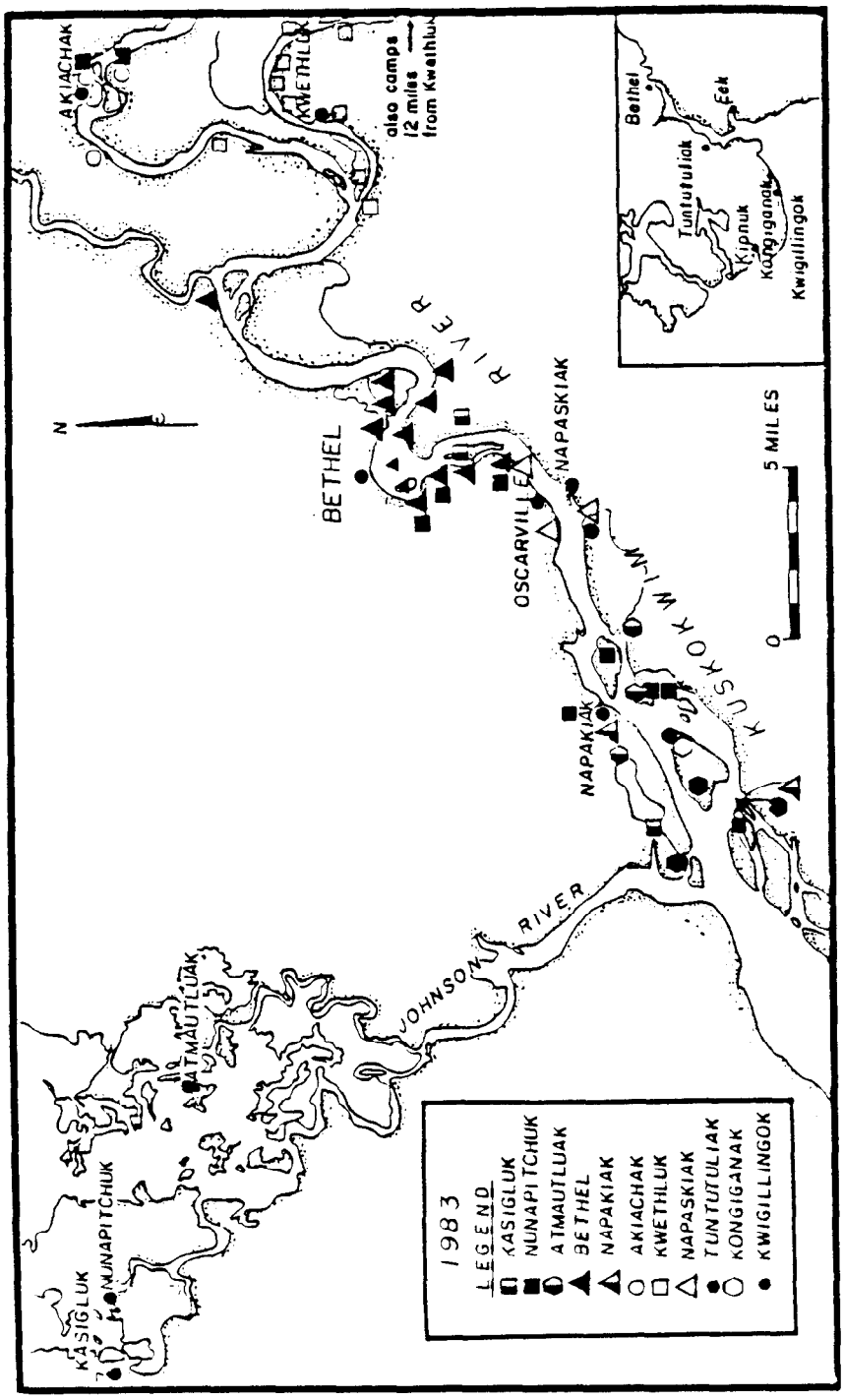


Fig. 46. Salmon fishing camps used by lower Kuskokwim River residents (by community) and situated between Akiachak and the Johnson River, 1983.

the city of Bethel, to be closer to more productive commercial fishing grounds, erosion of the river bank at the camp site, and the desire of a woman to cooperate with a sister or sister-in-law in processing fish. Continued use or first-user mechanisms initially contributed to establishing use of a fishing camp. Other families and individuals later gained access to a camp through the principle of kinship affiliation.

The principle of deference to first or customary users operated in a similar fashion for trapping areas. Trappers tended to be associated with certain areas which they customarily used. Because of this, most trappers could identify certain areas used for trapping with particular individuals. If a trapper did not continue to use an area another person could begin to use it. However, these secondary users tended to be either brothers, sons, cousins, sons-in-law or brothers-in-law. As with salmon fishing camps, customary use was the mechanism for establishing use of previously unused areas. Kinship affiliation became a means by which a person initially became familiar with the geographic area used by another person. Over time, the secondary user could become the customary user and have first-use rights.

Deference to first or customary users did not appear to apply to spring and fall waterfowl hunting or small and large game hunting areas. Hunting by individuals was intermittent during those seasons and required relatively broad coverage when hunting rather than focusing on more discrete areas.

The principle of kinship affiliation, as noted above, was a mechanism whereby use of salmon fishing camps and trapping areas, in particular, was extended to close kindred. Trappers trapped with a close relative or used an area of a close relative or in-law. Camping sites and cabins were shared as well. Later, the person who used the area initially may no longer use it. With customary use, the secondary user became associated with the use of the area. Similarly, closely-related households of an extended family often shared a fishing camp site, even if processing facilities were not shared. Kinship affiliation was the means by which people had several alternatives from which to select areas to occupy and use. These affiliations also allowed for change during a lifetime.

Each of the principles noted above suggest that land and resource use was governed on the basis of use, rather than ownership. In addition, use generally occurred not by a single individual, but by that person and his or her close kin, or at least other members of his or her society. The principles of geographic and kinship affiliation defined the society, such as *Akulmiut*, and the family, one's kindred, which established the parameters for a person's access to land and resources. By the same token, through the principle of participatory use, other individuals in the society also had access to these same lands and resources, thereby precluding individual ownership, but not precluding rightful occupants and users (cf. Wolfe 1981:242). The use and occupation of an area, site, or settlement was shared, either with qualifying members of the society, or with a more narrowly-defined set of extended family members or kindred.

The principle of optimization also regulated land and resource use among Yup'ik societies (Wolfe 1979, 1981). Fall whitefish fishing and mid summer waterfowl hunting among the *Akulmiut* were best accomplished through cooperative effort. Collectively, villagers in one settlement constructed fish fences and members of all *Akulmiut* villages joined for driving molting birds. The nature and distribution of these two resources at certain periods during the year made cooperative harvest very efficient. Other resources, such as blackfish, late summer whitefish, mink, and beaver are relatively ubiquitous in the inland tundra region. In 1983, they were harvested relatively close to the community. Subsistence activities were incorporated with other activities that were village-based, such as wage employment or mandatory school attendance for children. Salmon are relatively abundant, but do not occur near the village. Families optimized their harvest by balancing subsistence harvest needs with cash-earning opportunities and personal circumstances, such as health, available cash, operating equipment and facilities, and labor assistance. For example, in 1983, most families that fished for subsistence also fished commercially and vice versa, whether or not they commuted or operated from a fish camp. However, there were no fishermen who only fished commercially and operated from a fish camp located near the fishing grounds. Instead, they all commuted. Travel costs in terms of time, effort, and fuel were factors of consideration when optimizing resource use, but the conduct of other activities were also factors.

Uncommon resources such as moose, bear, and marine mammals were taken at relatively greater distances from the village. Thus, when there were no options in terms of harvesting location as there were for blackfish and whitefish for example. People were forced to use more distant areas.

EXOGENOUS INFLUENCES

Market and Trade Economy

Throughout the Russian period in the 1800s, Yup'ik Eskimos were involved to varying degrees in the development of Russian commercial companies operating in Alaska. The extent to which the *Akulmiut* were involved is inferred, for the most part, as described in Chapter 3. Nevertheless, general patterns reflecting their involvement provide a glimpse of the influence of market and trade on settlement patterns and subsistence pursuits.

During the Russian period, trade between the *Akulmiut* and the Russians or their agents took place beyond the homeland of the *Akulmiut*. There were no Russian trading posts within the Johnson River drainage, nor any other area used by the *Akulmiut* at that time. The Russians were closest to trading with the *Akulmiut* in their homeland when they sent agents to trade in 1861 near the mouth of the Johnson River. They were also nearby in 1853 when they traded for white fox pelts at Akiachak (Oswalt 1980:82). Prior to this and before the establishment of Russian outposts in the Kuskokwim and

lower Yukon River valleys, historic accounts noted the occasional presence of Kuskokwim Eskimos at trading stations in the Bristol Bay region to the south (see Chapter 3).

Trading trips by *Akulmiut* to Russian posts in the Bristol Bay area were probably few, if they occurred at all. It is with extreme caution the *Akulmiut* would have ventured to the Russian trading stations in that region and at Nushagak because of the alliance of the *Agaligmiut* with the Russians. The *Agaligmiut*, formerly inhabitants of the lower Kuskokwim River-Kuskokwim Bay area, figured prominently in the "war" stories of the *Akulmiut* in which their brutal and devastating deeds against the *Akulmiut* were recounted. The Yup'ik place-names which referred to incursions into *Akulmiut* territory by "the enemy" often were in reference to the *Agaligmiut*.

Akulmiut emissaries to the Russian post at Nushagak probably were limited and involved few men. Even after 1833, when the Russians established a post at Kolmakov along the middle Kuskokwim River, *Akulmiut* probably had little direct contact with them since the *Agaligmiut* helped the Russians to establish the post and expand the Russian fur trade. Over a decade later, in 1844, the trader from Kolmakov feared traveling beyond *Ur'avik* (Ogavik in many historic records), further downriver and about 60 miles from the *Akulmiut* heartland. The trader reportedly distrusted the "turbulent character" and great numbers of Natives in the region west of and downriver from *Ur'avik* (Zagoskin [1847]1967:254). Instead, a temporary post was maintained at *Ur'avik* where Natives from more distant areas could come to trade.

Even though direct contact with the Russians probably did not predate 1840, the *Akulmiut* blamed the Russians for the 1838 smallpox epidemic that affected groups of people in the region. The devastation of the epidemic, combined with continued *Akulmiut* hostility toward the *Agaligmiut*, probably contributed to their pattern of very limited contact and involvement with Russian traders, even after contact was direct.

Trade between the Kuskokwim River area Natives, including the *Akulmiut*, and lower Yukon River Natives persisted. It included exchanges of mink, muskrat, and probably beaver and dried whitefish for sea mammal oil and hides and even dried salmon (Wolfe 1979:62). Oil and hides of sea mammals were derived from people of Bering Sea coast communities west of the *Akulmiut* as well. The acquisition of surplus products for trade and the opportunities for trade such as during ceremonies were already incorporated into the seasonal round and settlement pattern of the *Akulmiut* prior to 1836.

Russian traders had little interest in the bountiful products of the tundra such as mink, whitefish, pike, and blackfish. The relationship between the Russians and *Akulmiut* had not developed well enough for either to benefit from the trade of beaver pelts. In addition, Russian posts were not well supplied and therefore offered little incentive to risk increased contact (Oswalt 1980).

After 1836, the situation changed somewhat when the Russian-American Company established an outpost at Ikogmiut along the lower Yukon River, less than 75 miles from the core area of *Akulmiut* villages. The *Agaligmiut* were not mentioned in published records

about the establishment of the post. Ikogmiut was outfitted from the north by the Russian-American Company redoubt at St. Michael rather than from the south by posts at Nushagak or Kolmakov, only 85 miles distant. Beaver, land otter, and fox pelts were desired by Russian traders and it is likely that these made their way from the *Akulmiut* region to Ikogmiut soon after the post was established. Production of a surplus for trade probably came about among the *Akulmiut* with little change in the seasonal round of the *Akulmiut*. Both beaver and land otter were already important to the *Akulmiut* as sources of food and pelts for clothing.

This initial development of market trade was soon set back within two years when the 1838 smallpox epidemic struck. Native populations throughout the region, including Native trading chiefs (*tuyuq* [sing.]) appointed by the Russians, were reduced in number. Subsequently the Ikogmiut post was attacked, apparently by the *Mamterillermiut* (near present-day Bethel), neighbors immediately east of the *Akulmiut*, in revenge for the introduction of the disease by the Russians.

Trade with the Russians advanced slowly. By 1844, the *Akulmiut* were the principal source of furs for the Native traders at Ikogmiut where there were middlemen with whom the Russians had to trade. In the 1840s, the Ikogmiut maintained a good supply of Native and indigenous products desired by the *Akulmiut*, whereas the Russian traders, to their frustration, had little to offer:

> The Ikogmyut people put up a supply of fish for their own needs and for trade on the Kuskokwim and they make

> various wood utensils, but they are occupied principally in buying up furs from the Agulmyut [*Akulmiut*] with the *laftak* [dressed hides of sea mammals] and fats which they bring for this purpose from Pashtol. Only two of them hunt beaver. The furs which are bought up by the Ikogmyut natives will only come into our hands completely when the manager of our post is given adequate means to keep a constant supply of native products on hand, quite aside from the European articles stocked, and when our temporary settlement at Ikogmyut is changed into a permanent one. (Zagoskin [1847]1967:197)

There is no evidence that the decision by the Russian-American Company to move their post after 1845 from Ikogmiut to Andreafsky further down the Yukon River enhanced their ability to obtain furs directly from the *Akulmiut*, although it did eliminate the Ikogmiut as middlemen. By 1861, however, the Kolmakov trader had been able to trade annually with the lower Kuskokwim River people at Kalskag, 50 miles closer, because he was able to provide a variety of imported and indigenous products desired by them.

As the Russian-American Company was beginning to obtain furs directly from the lower Kuskokwim River people, including the *Akulmiut*, the population of the much sought-after beaver was already on the decline and there was no market for the prolific mink of the region (Nelson 1899:278-79; Petroff 1884:60). By the end of the Russian period, the seasonal round of the *Akulmiut* and their subsistence pursuits were influenced only marginally by trade with non-Natives.

There was one important change that affected the lives of the *Akulmiut* and other Yup'ik societies that was well entrenched by the end of the Russian period. This was what one key respondent referred

to as "a new foreign policy" described earlier. Internecine warfare had ended. This change reportedly took effect prior to the Russians [translated] "being a presence here" as one elder stated. In its place people competed through ceremonial dances and gift-giving, specifically *kevgaq* as described in Chapter 5 (see also Shinkwin and Pete 1984). One respondent stated, [translated] "It is said that the *kevgaq* ceremony replaced warfare." Another man noted, [translated] "At the time of wars, the social milieu was different than in peaceful times." He added that near the end of their engaging in warfare, men used blunt arrows in their skirmishes, akin to making coup.

The end of warfare between Yup'ik societies and in its place certain intersocietal ceremonial dances and exchanges (although other types possibly occurred) probably led to at least three changes in land use and subsistence. First, the production of goods for exchange or as gifts required surplus production and the necessary time, labor, and resources for production. Second, the seasonal congregation of large numbers of people also required food surplus to that which the host group would have on hand, in order to sustain the guests during their stay. The settlement pattern may have been altered to take advantage of seasonally abundant or superabundant resources by establishing ceremonial centers at those localities. As noted in chapters 4 and 5, all primary *Akulmiut* villages have been situated where fences were constructed for intercepting large quantities of fish. These sites also each had a large *qasgiq*, the men's house which served as the ceremonial center as well. Third,

intersocietal ceremonial exchange necessitated open access to some major cross-country travel routes by certain groups of people for use at particular times. Use of resources was not necessarily granted as well. Instead, groups exchanged resources. These travel routes were also used by Native traders. Among the *Akulmiut* these routes were not used by Russian traders, although by 1861 they apparently had knowledge of the route between Ikogmiut and the *Akulmiut* villages which was used by a Russian Orthodox priest who traveled to the area at that time (Oswalt 1960:113-114).

After the purchase of Alaska by the United States and continuing until the end of World War I, influences of the trade and market economy of the region were limited in their effect on *Akulmiut* settlement and subsistence patterns. The beaver population continued to decline and, by 1900, there was a ban on beaver trapping with mink and muskrat of no value on outside markets (Osgood and Bishop 1900:32). Furbearers had been taken while families were at fall and spring camps fishing and during summer and marketable furs included only pelts in prime condition, those taken in fall and winter. However, trade in furs was probably negligible as there was little market for furs of the inland tundra during most of this period (Porter 1893:253).

The United States trading companies were successful in disrupting Native trade. Unlike the Russians, American trading companies were well-supplied and comparatively prevalent. A trading station was again established at Ikogmiut along the lower Yukon River and, in 1880, an outpost was located at Bethel, within 30 miles of

the primary *Akulmiut* villages. As noted earlier, by 1884, the Bethel post accounted for 44 percent of fur exports from the Kuskokwim River area. Even so, in 1890, the region was considered the least affected by non-Natives of any in Alaska:

> Whole villages of people can be found living here in their aboriginal state, and thousands of individuals beheld in the census enumerator the first white man they ever saw. (Porter 1893:99)

Until 1900, intergroup Native trade persisted at Bethel where Natives from the Kuskokwim River region traded natural local products, particularly oil and blubber, for furs not locally available:

> A considerable part of the fur trade in this region [Kuskokwim] is carried on by first purchasing oil and blubber of the poverty-stricken coast tribes who have no furs, and then exchanging these articles with the inhabitants of the upper river for marten, otter, fox, and bear skins. This method of trade necessitates the employment of a number of native agents, who, in their skin canoes, first scour the river, the lake shores, and inland water ways for oil in bladders, and then search the scattered settlements in the mountain recesses for skins. Trading is a congenial occupation with all these natives, and as a rule they make energetic and reliable agents....The natural products of three-fourths of this region are confined to oil, seal hides and thongs, and walrus ivory. No marketable furs are found in the lowlands, and altogether this section, though thickly populated, is one of the poorest in Alaska. (Porter 1893:253)

In 1890, the lower Kuskokwim River area was considered one of the poorest in Alaska for its lack of marketable furs, but also because freight-carrying vessels could not ascend the Kuskokwim River

leading the census enumerator to conclude "the Kuskokwim River can scarcely be considered open to commerce" (Porter 1893:101). At Warehouse, at the mouth of the Kuskokwim River where ships unloaded their cargo, lower Kuskokwim River villagers exchanged fish, geese, ducks, and waterfowl eggs for gunpowder, lead, and tobacco (Porter 1893:101).

With the establishment of the Moravian mission in 1885 at Bethel, the need developed for purchasing wildlife, particularly fish, to sustain missionaries and Native people affiliated with mission work such as orphans. The *Akulmiut* sold fish to the mission in early 1887 when the mission's supplies were exhausted (Henkelman and Vitt 1985:97). In addition, the sale of blackfish for dog food to travelers along the winter trails was common (Kilbuck n.d.:8). Also, dried whitefish were purchased from the *Akulmiut*:

> The tundra people derive much revenue from the sale of dried whitefish, people often coming from a distance to buy, even from the Yukon River. (Kilbuck n.d.:7-8)

Muskrat pelts were another product of the tundra. None of the trade involved cash. Instead, credit was extended or, in exchange, people received imported or indigenous foods or products. The following description by a Moravian missionary at Bethel shows the types of exchanges that occurred there between different groups of Native people during the period from 1890 to about 1915:

> The seal oil, kept in seal skin bags is an important article of food and for lighting purposes. To the seafaring people it is the one commercial article, from

> the sale of which to the interior people, they secure the skins necessary for their clothing. After the summer fishing is over and the fish all stored away the Onigkummuit [*Unegkumiut*, "downriver people"] load up their *angyat* [boats] with bags of seal oil, and the entire family makes their way up the river with favoring tide and mud. The upper river people are anxious to get a supply of oil for light and likely a particular festival in mind for the coming winter [and] drift down stream in their birch bark canoes, loaded with squirrel skins or muskrat skins, the former tied in packages of 45 and the latter of 33. Each package is considered enough to make a parka for an adult man while 40 and 30 respectively make a woman's parka. Besides squirrel and muskrat, deerskins [caribou] and deer leggings are the right articles of trade for oil and deer sinew for making a trade good. The two parties often meet at Bethel....As there is a trading station here the Natives bring along what furs they deem necessary to pay up their indebtedness and trade for the new bright calicos....Besides ammunition for the late summer and early fall hunt...the bags of oil of all sizes are arranged in rows on the grass....The smallest hair seal bag of oil commands a price of one pack of squirrel or muskrat....A bearded seal bag, according to size, is bought with from four to six packs, as also the stomach of a whale [belukha] filled with oil....The old women always have a lot of oil in bladders for barter for needles, sinew or whatever they can get in squirrel or muskrat. These small quantities of oil appeal to the poor people who cannot afford to pay a full pack of squirrel or muskrat for a seal bag of oil. (Kilbuck n.d. 10-11)

By 1900, the *Akulmiut* seasonal round had changed little from that at the end of the Russian period. The exchange of indigenous products was similar, although there was probably a proliferation since trading stations enabled people to obtain imported goods as well. Imported manufactured products were more prevalent, but the region remained poor according to observers such as Porter (1893). There were new opportunities for the sale of fish to non-Natives such as the Mission personnel, but these were neither substantial nor

regular. Instead, those exchanges were simply an extension of their customary exchange practices to non-Natives.

With the turn of the century, involvement in the increasing commerce of the Kuskokwim River valley by the *Akulmiut* and other Yup'ik groups of the lower Kuskokwim River area was probably most hampered by the devastation following the 1900 influenza and measles epidemic (Wolfe 1982).

About the same time, mink emerged as a marketable fur with the price paid for mink pelts increasing from $0.25 to $4.00 between 1900 and 1906 (Henkelman and Vitt 1985:190). The first trading post in the homeland of the *Akulmiut* was established in 1903 at or near *Nunacuaq*. To capitalize on the developing export market for mink, *Akulmiut* had to trap them when pelts were prime (long guard hairs, dense fur), principally from mid November to mid December. Families adjusted their seasonal activities by extending fall camping into late fall and early winter, a time which marked the onset of the ceremonial round. But the credit and goods received from trading mink was evidenced in the more bountiful and grandiose ceremonial exchanges. As stated by a Nunapitchuk elder [translated], "The stores were very supportive and extended credit to those who were to be involved in ceremonies."

By 1908, a deep water channel in the Kuskokwim River had been discovered, enabling seagoing vessels to transport freight directly upriver to Bethel where it was offloaded. Dried salmon became a commodity which was shipped further upriver to McGrath, a hub for the transport of mail by dog team to points elsewhere in the interior and

for supplying the gold mining and exploration of the Iditarod mining district (Brown 1980). The Moravian mission was granted permission, unusual if not unprecedented, from their authorities to open its own store for the purpose of trade in order to obtain indigenous products they needed such as dried fish and sealskin footgear (Henkelman and Vitt 1985:191).

Fur prices continued to increase. During this period, among the *Akulmiut*, the missionaries had been generally unsuccessful in eliminating Native ceremonies in which indigenous and imported goods were exchanged and the spirits of the wild animals were honored. With the exception of extending fall camping for mink trapping, and possibly winter camping for otter (beaver trapping was still prohibited), the *Akulmiut* continued a seasonal round and settlement pattern focused on semipermanent settlements at strategic sites for whitefish fishing and sites used seasonally for harvesting other dispersed fish and wildlife resources. The initial settling of Nunapitchuk at the end of this period was consistent with this pattern. It was situated at a key site where whitefish and pike could be harvested efficiently. Seasonal settlements were used by families when the group dispersed. Adjacent areas were used for trapping and hunting furbearers.

By the end of World War I, fur prices dramatically declined with the exception of mink which had risen to $9.00 per pelt in 1919 and continued to increase. By 1920, at least two fur traders, Oscar Samuelson and Frank Waskey, traveled through the area of the *Akulmiut* purchasing furs. Mink from this region are the largest in the state

and among the largest in the world (Burns 1964:27). Mink trapping for export was facilitated with the use of aircraft for transportation beginning in the late 1920s, as furs could be relatively quickly transported to Seattle for sale on the international market. By the mid 1930s, at least three fur traders had stores in one of the *Akulmiut* villages and others flew in with airplanes to purchase furs. Alaskan muskrat pelts, abundant in the tundra area, were considered the most luxurious of furs and were preferred by the European market until 1941 when France was invaded during the world war (Olsen in Lenz and Barker 1985:84).

An export fishing industry began along the lower Kuskokwim River in the early 1920s and was resumed after 1934, continuing for about five years. Exchanges between Native people continued. The *Akulmiut* traded dried pike and frozen whitefish with the people of the coast for walrus hides and seal oil.

Up until 1940, the influence of the market economy on *Akulmiut* settlement and subsistence activities was mostly attributable to the fur industry. The export fishing industry was intermittent and unstable, as exploration of its potential had just started. Commerce in furs, mink and muskrat, during the same period had greater stability and was flourishing. Families participated in the fur export economy by extending fall camping activities into winter for mink and beginning spring camping in late winter (March), which continued until breakup (mid May) for harvesting muskrat. Fall and spring camping were already a part of the *Akulmiut* settlement pattern

and seasonal round and therefore trapping for exporting furs was relatively nondisruptive to the overall pattern.

The ceremonial round was eliminated by 1920, thus affecting Native exchanges of both indigenous and imported products. Amassing surplus for intercommunity and intersocietal exchange significantly declined and no longer occurred in a formalized context. Instead, trapping became a family business. At the same time, the harvest of fish and other wildlife for subsistence was not bypassed; nor did it have to be, as their harvest did not conflict with the ability to harvest mink and muskrat for export. Both species had been and continued to be a source of food, and pelts not suitable for export were used in making various garments. Even in the 1940s, after schools were constructed in two of the primary *Akulmiut* villages, teachers' reports documented the seasonal decline in enrollment due to families leaving for fall and spring camping. Some left their schoolage children with relatives in the village when they went to camps.

In the 1950s and 1960s, market prices for mink and muskrat remained stable (Burns 1964; Nelson 1973), with mink bringing about $30.00 per pelt and muskrat $1.00 each. While their economic value was stable, participation in the market declined, primarily a result of centralization factors discussed below. Thus far, trapping for export had little influence on *Akulmiut* settlement and subsistence pursuits, as it had been successfully incorporated into the existing pattern. However, beginning in the 1950s trapping as a subsistence and commercial activity came under the influence of two primary

factors: centralization of the population into fewer and larger villages and compulsory school attendance. It was difficult for entire families with schoolage children to be absent for extended fall and spring camping. Also, it was very demanding for men to trap from distant camps and still maintain a family and household in the village (Burns 1964:23). The influence of these two factors affected not only trapping but other subsistence activities as discussed in the following sections.

As participation in the fur industry declined, involvement in the commercial salmon fishing industry increased. After World War II, *Akulmiut* men were hired to work in salmon canneries in the adjacent Bristol Bay region. Commercial salmon fishing along the lower Kuskokwim River gradually became a new opportunity for involvement in the market economy beginning in the late 1950s. As a summer activity, it did not conflict with requirements for schooling. Entire families seasonally relocated and, at the same time, could catch and process salmon for subsistence use and commercially sell whole and unprocessed fish. Men who left the village to work in canneries had to rely on other seasons in which to procure fish for subsistence use. Fall fishing for whitefish and pike and trapping blackfish and furbearers were still possible.

The influence of commercial salmon fishing primarily resulted in altering summer fishing patterns for subsistence. People no longer fished at fences constructed across the river in the summer for whitefish and pike, but instead either harvested salmon from camps along the lower Kuskokwim River or by setting gill nets in tundra

lakes and streams. The availability of new and improved technology, such as cotton and later nylon gill nets, enabled these patterns, both of which persisted in 1983.

Initially, commercial fishermen had to transport their catch to fish buyers and processors at Bethel, similar to the pattern of taking furs to more distant trading posts when the fur industry was developing. By the mid 1980s, when the fishing industry was more secure, fish buyers, like fur traders of the 1930s and since, purchased the raw products in the area where the resource was harvested.

Since the 1960s, cash generally has replaced credit and exchange for fish and furs. In 1983, one of the two stores in Nunapitchuk was unique in that credit was still sometimes extended in exchange for furs. Wild foods and other products continued to be exchanged among *Akulmiut* and between them and coastal people. In late winter, coastal residents arrived with sled loads of seal oil and seal which were sold or exchanged for dried and frozen whitefish and pike. Salmonberries from the tundra were sold to people from Bristol Bay communities who chartered airplanes to take them to *Akulmiut* villages where they visited with relatives and purchased berries. Five-gallon buckets of berries were sold to individuals within the community who could not pick them.

Although formalized ceremonies of distribution and exchange were eliminated by 1920, a range of ceremonial occasions persisted both within the community and between members of *Akulmiut* villages, lower Kuskokwim River, and coastal villages. Wild foods and imported goods

were distributed in a variety of ceremonial occasions, including birthday and "first kill" celebrations, and *Selavi* or Russian Orthodox Christmas. In the case of the former, typically a household fed 50 to 70 guests from the community who also received some utilitarian household item such as a cooking spoon or work gloves during the single meal. *Selavi* involved the host household feeding 200 to 300 guests during the day and distributing several items to them. Wild and imported foods were served and purchased goods were distributed. The monetary cost of preparations and purchase of food and goods sometimes extended to $8,000. In the 1980s, host households varied from year to year, with several households assuming the role of host to their fellow villagers and other guests during the six-day religious holiday. This represented the most extensive redistribution of food and goods at that time.

Technology

The *Akulmiut* were exposed to technological innovations brought by Russians and Euroamericans as trade and commerce expanded in the region. The inclusion of new technology related to subsistence pursuits to a large extent has been based on improved efficiency in time and labor in harvesting fish and wildlife, availability, and the ability to garner trade goods or cash in order to obtain it. Some subsistence pursuits have persisted using much the same technology as that of the previous century, such as driving molting birds and then capturing them using snares or by grabbing. In contrast, fishing

using nylon gill nets has eliminated the need to use perishable materials, such as willow bark which resulted in frequent repairs and replacement. At times, the use of imported manufactured technology, however, has sometimes been hampered by the remoteness of the area and the limited development of transportation networks and commerce which make the products available in the region. Finally, individuals needed the means with which to obtain new technology. Foods or goods to trade for the imported items or some means of obtaining the cash to purchase them were necessary. The previous sections described the opportunities for trade and purchase. The following sections discuss major technological changes related to hunting and trapping, fishing, transportation, and storage from the standpoint of how they may have influenced subsistence pursuits or settlement pattern of the *Akulmiut*.

The *Akulmiut* have been hunters of large game, such as caribou; marine mammals, notably seal; small game including ptarmigan, muskrat, and hare; furbearing animals such as mink, land otter, fox, and beaver; and waterfowl. By 1880, caribou were no longer present in the region, and in recent decades moose and bear have become available and hunted. Similarly, beaver declined in numbers in the mid 19th century with the trapping of them banned by 1900. They have been pursued again since about the 1970s, as their numbers have been increasing markedly since then.

During the Russian period, guns and rifles were rarely available at posts in the region and were unreliable in their operation (Oswalt 1980:111). Company policy only made guns available to "especially

reliable toyons" after 1838 (Oswalt 1980:49). However, there are records of firearms being traded by the Russians at Nushagak and gun flints offered in trade to Indians along the upper Kuskokwim (Zagoskin [1847]1967:268-270). Furthermore, as noted previously, Russian posts along the middle Kuskokwim and lower Yukon rivers were poorly stocked and the Russians generally were unsuccessful in engaging the *Akulmiut* or other Yup'ik societies of the area into the fur trade directly. Finally, the first lever-action repeating rifle, the .44 Henry, was first manufactured in 1860 by a United States company (Barnes 1976:280). Although a breakthrough in weapons development, it was not available to the area during the Russian period. Hunting patterns were probably affected in no way by this technology. The numerous accounts of inadequate food supplies at the Russian post, Kolmakovskiy, (Oswalt 1980) further attest to the inadequacy of the imported technology in an area where large game were relatively abundant.

However, the Russians introduced a new hunting method for taking beaver: entire dams and lodges were destroyed and all resident beaver harvested (Oswalt 1980:111). This practice decimated the beaver population so much that the fur trade in the lower Yukon and Kuskokwim rivers area suffered. This practice apparently led to the *Akulmiut* establishing a method by which beaver lodges were allocated among them by individuals staking them with a marker signifying that it was claimed or "owned," as reported by one Nunapitchuk elder.

By the first decade of the Euroamerican period, caribou herds were no longer present immediately north of the *Akulmiut* area, in the

mountains adjacent to the lower Yukon River, nor did they occur in the tundra area either (Porter 1893:103). One Nunapitchuk man, born in 1901, stated that there were caribou in the inland tundra area when his father was very young. At the same time, wolves were reportedly prevalent. The Yup'ik name for the Pitmiktalik River, a tributary of the Johnson River, is *Petmigtalek* referring to pits dug in the ground for trapping wolves. About 1880, Nelson (1899:122) observed these pits and described how they were made and used. A boat hook and woman's ivory hair ornament that he collected from an *Akulmiut* village at that time, depict the head and face of a wolf (Nelson 1899:58, 223). Local oral accounts attributed the decimation of the caribou to large wolf populations that preyed upon them. Overgrazed habitat commonly results in caribou herd declines as well (Alaska Department of Fish and Game 1976:53). The introduction of firearms has also been implicated in their decimation (Porter 1893:103). However, there was little evidence to support this latter notion for this region.

By the time caribou were absent, about 1880, the most advanced firearm for hunting had barely made its appearance in Alaska. The .44 Henry, although a repeating rifle, is not considered adequate for deer size animals such as caribou (Barnes 1976:280). Even in other regions of Alaska where caribou continued to be prevalent at that time, the .44 Henry was used in conjunction with traditional methods such as the combination caribou corral-fence-snare (Andrews 1977; Murie 1935). Furthermore, archaeological remains from the 1880 Yup'ik Eskimo village, Akulivikchuk, along the Nushagak River nearby

the American post, yielded few .44 Henry cartridge cases (VanStone 1970). At that time breech-loading firearms could not be sold by law to Natives in Alaska, a prohibition that continued until 1900 (Oswalt 1980:49, 50). Interestingly, the cartridge cases that were recovered at Akulivikchuk had been used to make blunt arrowheads or were drilled with holes for stringing as bead separators (VanStone 1970). Although this did not preclude their prior use in firearms, they were locally made into other items rather than being reloaded. Use of traditional weapons was evidenced in the collection of a bone arrowhead used for caribou hunting from an *Akulmiut* village by Nelson (1899:157) about 1880.

When more reliable weapons for big game hunting were available to the *Akulmiut*, large game were not. *Akulmiut* villages and seasonal settlements were situated at important fishing sites as they were in 1983. With very reliable and effective rifles, such as the .30-.06-caliber for big game hunting, it was the adoption of imported transportation technology (boats, outboards, snowmachines) that influenced the pursuit of big game for subsistence.

Marine mammals were sometimes hunted by the *Akulmiut* in spring in the lower Kuskokwim River. During the first part of the 1900s, seal typically ascended the river as far as Napaskiak (Oswalt 1963:90). About 1880, Nelson (1899:200) collected a seal spear used with a throwing stick from an *Akulmiut* village, as well as a wooden box in the form of a seal. Seal were of some importance to the *Akulmiut*. In 1983, a harpoon was sometimes carried aboard one's boat in the event a seal was encountered in the lower Johnson River as

they sometimes were. *Akulmiut* marine mammal hunting has not changed because of improved firearms. Marine mammals are not usually found in this area. Instead, hunters had to travel to coastal areas to hunt them. Changes in trade and transportation technology had enabled the *Akulmiut* to once again incorporate marine mammal hunting into their subsistence round of activities.

Small game hunting persisted for many years with the continued use of blunt arrows. Spent rifle cartridges, as noted above, were often fitted to the end of an arrow. Although .22-caliber rifles were first manufactured in 1857, it was not until the 1880s that they were improved and manufactured for widespread use as a small game, short range rifle (Barnes 1976:273-74). Even by 1931, among the *Akulmiut*, and after the 1930 manufacture of the first high velocity .22-caliber rifles (Barnes 1976:273), there were reportedly few .22 rifles in use. One man stated that he continued to use primarily a bow and arrow at that time for small game. The 16-gauge shotgun was favored for small game as well.

The .22-caliber rifle probably enhanced the efficiency with which people were able to hunt muskrat when they were prevalent and commanded relatively high prices on the market from the mid 1930s to the 1960s, as described earlier. Similarly, the less abundant hare and ptarmigan could be taken more reliably. However, because of the reduced time spent in dispersed seasonal camps, the improved efficiency for small game hunting had not influenced a change in settlement or subsistence.

Since the 1950s, it has been primarily trappers, rather than entire families, who have used seasonal settlements, other than fish camps. The trappers used .22-caliber rifles for hunting small game and also furbearers, such as mink. In fact, these small caliber rifles were very effective for taking mink, particularly during periods of unexpectedly warm weather or at open water areas -- times when other methods were less productive (Burns 1964:55). During the open water months of late spring and summer, .22-caliber rifles were also effective for taking mink and beaver. During those months the mink fur is not of marketable quality, but it was preferred for use locally in making various winter garments. Beaver occasionally were taken, as they sometimes got caught in fish nets and were used as a source of food.

In 1983, as in the past, the most effective means of mink and land otter trapping was by the use of *taluyat* (pl.) or traps made of willow, chickenwire, or metal square-mesh hardware cloth. These traps were similar to the *taluyat* used for trapping the abundant blackfish of the tundra region. The *taluyaq* (sing.) was used for mink and land otter trapping more than any other method. Sometimes steel spring traps were used, although blowing snow and freezing rain, often frequent during the trapping season, made them useless (Burns 1964:56). *Taluyat* were conducive for use given the local conditions and the behavior of mink (cf. Burns 1964). These traps did not damage the mink pelt nor its food quality, while at the same time they protected the catch from predators (Burns 1964:61). The use of *taluyat* has been improved upon by the use of chickenwire or

hardware cloth in trap construction. The modified form is lighter, more durable and flexible than traps of willow. It can be readily constructed while in camp as needed when rolls of chickenwire or hardware cloth are transported. Whereas the use of *taluyat* has been long-term, the more recent use of manufactured materials in their construction has improved the ease of transporting and deploying the traps which also last longer. Neither settlement pattern, nor the activity itself had been influenced as a result.

The use of firearms for hunting waterfowl was incorporated gradually over many years. Even in 1983, among the *Akulmiut*, the use of firearms in harvesting waterfowl had by no means replaced the primary and traditional method of driving flightless birds. By 1890, the *Akulmiut* continued to hunt spring waterfowl using three-pronged arrows rather than expending their ammunition for taking ducks, geese, and ptarmigan (Porter 1893:103). Blunt-tipped arrows were used also. Even by 1930, the use of 16-gauge shotguns was not prevalent and spears continued to be used, according to one key respondent. Firearms, as well as power-equipped boats, made the spring harvest possible again, although it did not occur from spring camps. People did not have to spend as much time in pursuit of waterfowl. Throughout and even since the mid 1950s, when the use of spring camps by families began to decline markedly, the mid summer waterfowl hunt remained an important part of the seasonal round, as it was in 1983.

In 1983, flightless or molting birds were "driven" to a confined area at one end of certain lakes where they were netted and clubbed.

This method tended to target adult male waterfowl and was not considered to result in overharvest or interference with the breeding population based on observations from 1963-65 (King 1973:109). Men in boats from all three *Akulmiut* communities cooperated in the drive. About 1880, it was reported that snares were set where flightless birds were driven (Nelson 1899:134). By 1983 the mid summer harvest using the customary method had improved in terms of ease, again because of the use of outboard motors and fish nets. It is not certain when the shift to using nets occurred, but it was likely to have been about the middle of the 20th century as manufactured fish nets became more widely used.

In 1983, the customary summer harvest of molting birds was equally as productive and important as the spring harvest in which modern weapons were used. Only one or two lakes were conducive to drives of flightless birds because of their natural shape and environmental conditions suitable for supporting large numbers of waterfowl (King 1973). Wind was another factor that affected the ability to effectively use the method on the few suitable lakes in a particular season. Hence, usually one, but sometimes two, drives were conducted on one or two lakes. The way in which the drive was conducted in 1983 was nearly identical to that observed in summer 1963 (Klein 1966).

The mainstay of the *Akulmiut* subsistence economy has been, and continued to be, fish. In the tundra region, customary fishing techniques persisted, but the use of nylon gill nets had been added. During the Russian period, there were no improvements to Yup'ik

fishing technology, either for taking salmon or other fish (Oswalt 1980:111, 113). Even after the purchase of Alaska by the United States in 1867, the turn of the century, and up until about 1940, there were few changes in fishing technology.

Short and shallow gill nets (less than 30 feet long and not more than 6 feet deep) were made either of braided willow bark, sinew, or seal hide thong (Anvil 1981:10; Kilbuck n.d.:6; Henkelman and Vitt 1985:76; Oswalt 1963; Spurr 1900:71). In the tundra, whitefish and pike were taken sometimes by set nets during open water seasons. Because these nets tended to disintegrate relatively easily, fish fences of willow brush were constructed in mid summer across certain streams and fish traps were set upriver of the fence. Some people used dip nets for taking fish near the fence. As ice began to form on the river, the traps were removed and holes were cut in the ice through which fish were taken out using large dip nets. Blackfish were taken using smaller traps made of willow and, more recently, square-mesh hardware cloth. Like mink traps described above, the galvanized square-mesh material produced a light and more durable trap which could be constructed and transported with relative ease. However, the use and construction of blackfish traps, which were primarily set under the ice from about November until January and again in late March and April, remained the same in 1983.

In the late 1800s and early 1900s, salmon fishing on the lower Kuskokwim River took place using short gill nets of braided willow bark, seal hide, or sinew and were set along the river bank or drifted from boats. Large fish traps, with 4 x 4-foot openings and

up to 30 feet in length, were also set in the river (Spurr 1900:71). Cotton twine used for nets was scarce and expensive; locally or imported cotton twine nets were rare. In the 1940s, the use of cotton twine nets became more prevalent after men went to work at canneries in the Bristol Bay region according to a key respondent. Nets were readily available there and men had the earnings with which to purchase them or the cotton twine.

Cotton nets, although an improvement, were also subject to rotting and therefore needed frequent repair or replacement. Their use in the inland tundra area permitted a more dispersed whitefish harvest in summer, when the fish fence was no longer constructed. In order for mail planes to land on the river at Nunapitchuk and for the barge to reach the village in summer to unload cargo, the summer fish fence had to be removed. The use of cotton gill nets made it possible for the summer fish harvest to persist. The use of the fish fence in fall with freeze-up continued. The same summer and fall fishing pattern continued in 1983.

Nylon twine nets came into use in the early 1960s. The use of nylon extended the use of these nets because they did not rot like cotton and their life expectancy was longer. In addition, because they did not rot, it was reported they could be set for longer periods of time in tundra lakes and streams and could be set under the ice in fall and late spring as well. This feature extended the length of time during which people could fish. Even though the overall harvest may not have increased, people had more flexibility

in scheduling fishing, an important consideration when centralization reduced the opportunity for subsistence pursuits.

Jigging for pike and burbot through the ice and spearing pike were also customary methods for taking fish. Jigging of handheld lines persisted in 1983, although spearing rarely occurred, if at all. Fish hooks used for jigging were made of imported materials rather than walrus ivory, bird bones, or other natural materials (Twitchell and Martin 1981:3) in the 1980s.

Changes in transportation technology have influenced surface, river, and air travel and consequently subsistence activities. Customarily river travel was by means of *qayaq* and the larger skin boat or *angyaq*. At least by the mid 1920s, sails were used on boats to transport families from spring camps in the tundra to the lower Kuskokwim River. By 1930, some people had adopted the use of wooden plank boats outfitted with small outboard motors, although replacement parts were rare (Hrdlicka 1944). Furs were used in trade to obtain the motors and lumber. Kayaks continued to be used for hunting and fishing in the tundra, particularly since narrow sloughs and streams could be readily navigated using them. Canvas, rather than seal skin, came into use to cover the wooden frames. Plank boats continued to be made locally, but by about 1975 they were made with plywood on a milled lumber frame. By that time, 25 and 33 hp outboard engines were commonly used to power the 16 to 18-foot boats. Small aluminum imported boats, 12 to 16 feet long, also came into use, particularly for travel in the tundra where smaller shallow-draft boats were more suitable in the shallow lakes and narrow

waterways. In the early 1980s, both handcrafted wooden and imported aluminum boats used for commercial salmon fishing were longer and wider and outfitted with larger outboards as described above. In 1983, smaller boats and outboards continued to be beneficial in the tundra waterways where they were typically used.

New forms of watercraft reduced travel time necessary for subsistence pursuits whether fishing, hunting, berry picking, or wood gathering. As families became centralized into year-round villages for much of the year, using these new forms allowed men, especially, to hunt and fish away from the village during the ice-free months of spring and fall as they had in the past. Yet, they could readily return to the family in the home village. Reduced travel time for subsistence also provided the opportunities for continuing subsistence activities while maintaining wage-earning jobs.

The use of power-equipped boats allowed subsistence pursuits to persist, even though settlement pattern had changed due to other influences. As large game such as moose and bear became available in the Johnson River drainage, boats aided men and families to travel greater distances to hunt these animals. Nearly 100 years after the disappearance of caribou from the area, large game were once again available and boats provided the Akulmiut the opportunity to include them in the annual round of subsistence activities.

During months when the waterways were frozen, travel on foot, with dogs, and by dog team were the primary means of transportation. Beginning in the mid 1960s, the use of snowmachines began to replace earlier methods. Similar to power boats, snowmachines facilitated

travel to dispersed and distant trapping camps. This allowed a man to maintain a family and household in the village at the same time as he was trapping and hunting. The difficulty in doing this without motorized transportation contributed to reduced trapping effort after 1950 in this area (Burns 1964). Motorized transport also permitted the setting and checking of blackfish traps at distant sites without family relocation to the fishing and trapping area. Since about 1980, snowmachines have permitted men to again harvest seal, although in spring, by traveling to coastal areas to join relatives or friends resident in coastal communities. Finally, snowmachines have contributed to intervillage travel, which extended the distribution of harvested fish and wildlife in ways similar to the formalized ceremonies of past years.

The use of aircraft for transporting people and freight influenced changes in non-salmon fishing patterns. Prior to 1986, landing aircraft on the river at Nunapitchuk was necessary since there was no landing field. This type of landing, combined with the need for barges transporting cargo to the village to offload at the village, contributed to the removal of the summer fish fence formerly situated in the river at the village. As with snowmachines, aircraft have increased mobility for intervillage travel and distribution of harvested fish and wildlife.

The ability to store foods for use at later times has always influenced the subsistence activities of hunting, fishing, and gathering people. The primary means of storage among the *Akulmiut* was in pits dug into the ground where the cool and frozen earth kept

foods from spoiling. Also, aboveground caches were constructed in which dried fish and meat were stored. In 1983, this continued to be the primary storage method used for processed wild food.

Additionally, unprocessed and perishable foods, such as berries, fish, waterfowl, and other wildlife or meat were stored in home freezers. This method of storage has only been available since 1970 when electricity was first generated in the community. When temperatures permitted, storage out-of-doors had continued to be used to keep unprocessed wild food frozen until later use. The use of freezers allowed food storage to extend to transitional times of the year when warm temperatures can cause food spoilage. Even with dried foods, unusually moist weather ruined a family's store. Both freezers and the electricity to operate them were very costly, as discussed above. The quantities of wild food stored in caches and out-of-doors sometimes required the use of several freezers. Therefore, families have continued to use customary storage methods. The use of pits for the storage of unprocessed foods has been replaced, in part, by freezers. However, pits have continued to be used for short periods of time to produce fermented fish and fish heads, local food delicacies.

Centralization

The process of centralization of the *Akulmiut* into year-round villages was similar to that for other Alaska Native societies during the 19th and 20th centuries. The primary influences of

centralization *Akulmiut* settlement and subsistence have come about through federal and state laws. These included statutes that made school attendance compulsory, defined Native and federal land ownership, and defined allowable uses of federal land. Secondarily, wage employment at the community level has resulted from centralization, but also further reinforced it. Each of the major laws that has influenced centralization is discussed below as well as the role played by the availability of wage employment. Hunting and fishing regulations also tended to reinforce centralization and hence, subsistence activities, but these are discussed in the subsequent section.

Federal and State Laws

The 1906 Alaska Native Allotment Act (34 Stat. 197), which provided individual Alaska Natives legal title to lands they used and occupied (Case 1984:136, 139), limited the size of the land parcels to no more than 160 acres. With an estimated population of about 200 to 300 for the *Akulmiut* at the time as many individual parcels could have been applied for as privately-owned property. However, the implementation of this act itself violated traditional principles of land and resource use. Shared and cooperative use of seasonal settlements and semipermanent villages could have been eliminated through private ownership and resulted in drastic changes to settlement and subsistence. In fact, the federal land office viewed the granting allotments as a means to "civilize" the Natives, to

eradicate the practice of shared ownership based on use. However, others viewed the act as a matter of equity to provide property rights and to protect Alaska Natives from encroaching white or non-Native settlements (Case 1984:135-36). At the time, and with few exceptions, the people of Nunapitchuk did not apply for allotments until the early 1970s (U.S. Department of the Interior 1988a).

The Alaska Native Allotment Act was amended in 1956 (20 Stat. 954), thereby allowing the selection of mineral lands and also providing for complete title by the purchaser. It was still 15 years before Nunapitchuk Natives applied for allotments. Reasons for the delay in filing applications have not been recorded, but certainly included poor communication or miscommunication about the process and possibly adherence to customary principles of land and resource use. In addition to granting title for certified allotments, the amendment required five years of substantially continuous use and occupancy. That provision, which continued to apply in 1983 tended to be incompatible with a hunting and gathering way of life which demanded changes in the use of seasonal sites for subsistence from year to year.

Simply the process of applying for land has influenced people's relationship to customary sites. Nevertheless, about 200 individuals applied for an allotment. However, applications could not be filed later than December 1971 because of provisions in the Alaska Native Claims Settlement Act (ANCSA). Once deeded to an individual, an allotment parcel could be sold subject to review by the Bureau of

Indian Affairs which also acted as the broker. Land surveys and the process of patenting the parcels has only taken place since 1983.

Since the Alaska Allotment Act only made land parcels available for individual private ownership, deeded places have become associated with individuals rather than multiple individuals or families who once shared their use. This is different from the past, when sometimes a family was associated with continued use of a particular place. Rights of use were not exclusive, but were in fact usufruct. Further, the custom of not using individual names when identifying places is evident in the virtual lack of Yup'ik place-names that make reference to an individual or are derived from a personal name (Appendices 8 and 9). With the Allotment Act, shared sites became associated with individuals.

At the time people began to apply for individual parcels, the use of these sites as family and multifamily localities, particularly for spring and fall camping, had already diminished due to other factors, particularly compulsory school attendance described below. A trend to individualized trapping camps, primarily for harvesting mink and muskrat, was already underway in the first half of the century as the market for these furs developed. Because of the more temporary use of places for berry picking, allotments probably had little influence on that activity, although individuals selected areas where they typically picked salmonberries and often utilized those places in 1983 if berries were abundant there.

Because parcels applied for could not be less than 40 acres in size, with a total allotment of not more than 160 acres, the number

of sites claimed to be used and occupied became limited to 4 per individual, even though the certified allotment could be less than 40 acres per parcel. Both restrictions had the effect of limiting the number of places for use as seasonal settlements by an individual and his or her family. Over 200 individuals applied for at least one allotment parcel within the area customarily used by the *Akulmiut*, excluding land along the lower Kuskokwim River. People could not as freely set up seasonal or temporary camps because of legal property rights afforded individuals through the allotment act.

As of 1983, the use of salmon fishing camps along the lower Kuskokwim River had not been influenced by the selection of allotments. Some camps were situated at an extended family member's allotment, while at others, a different set of families occupied an individual's allotment. In several cases, the land was not owned nor had it been applied for by any individual using the site as a camp. Only two fishing camps used by Nunapitchuk residents along the lower Kuskokwim River were occupied by the applicant or an immediate family member (U.S. Department of Interior 1988a). These camps, as noted in Chapter 5, can be substantial in terms of lodging and fish processing facilities. Often they were used by members of several households in an extended family and several households of multiple families. Customary rules governed the means by which a household or family gained use to a fishing camp site. Because of changes in river conditions at a particular camp or personal circumstances, families sometimes had to relocate, even if they were situated on their own allotment. Only since 1986, have any of the allotments been

certified, and most are still pending survey and patent. Further implications of allotment ownership on salmon fishing settlement and subsistence remain to be seen.

Compulsory school attendance was mandated first by the Alaska Territorial Legislature in 1949 requiring all children between ages 7 and 16 to attend public school (now required by Alaska Statute 14.30.010). The law made a parent or guardian responsible for insuring "that the child is not absent from attendance." Up until 1949, even though there was a school in two of the *Akulmiut* villages, parents had the option of keeping the child at home or sending him or her to school. As noted previously, school attendance as shown in late 1930s and early 1940s for *Akulmiut* schools, was greatly reduced both in early fall and spring as families departed the village for seasonally-used camps. Numerous entries by resident teachers cited reasons for individual students withdrawing from school: "needed at home," "family left village," "no home here," "left for camp," and "returned to parents" (Anaruk 1937, 1938a,b; McElroy 1939; Martin 1940). School did not open in fall until the teacher determined there were enough students enrolled, and it closed in spring after the number of students had dwindled.

After 1949, compulsory school attendance required families with schoolage children either to remain in the village and discontinue seasonal movements to hunting, fishing, and trapping areas during the school year or leave their schoolage children in the care of others. Since women generally were responsible for the care of children in *Akulmiut* society, the work of men included hunting, fishing,

trapping, and maintaining a supply of wood to heat homes. Furbearer hunting and trapping areas were often over 15 miles from the village. Without motorized vehicles, it was difficult for a man to run a trapline and still keep the household in the village supplied with wood and wild food (Burns 1964:23). Trapping effort steadily declined, not only because compulsory school attendance kept the family in the village, but also because youth were not learning trapping techniques while they attended school (Burns 1964:23).

Trapping persisted, however, and after the introduction of snowmachines, trappers could more easily operate traplines and maintain a household in the village. However, fur prices played a role in influencing trapping effort since prices paid for pelts had to offset the cost of operating equipment needed for trapping. In 1983, cash was necessary not only to purchase fuel for heating homes, but also to purchase and operate snowmachines if a man was to effectively incorporate trapping as a means of income. In addition, cash was needed to purchase traps or material for constructing them, snares, ammunition, and other equipment needed when trapping. In 1983, Nunapitchuk mink and beaver trapping areas were predominantly within 20 miles of the village.

Centralization with compulsory school attendance consolidated freshwater fishing areas closer to the village during winter and spring when they were formerly dispersed. In 1983, these fishing localities were primarily within six miles of the village. The reduced areas for fishing areas probably has been offset by changes in fishing technology, such as the use of nylon gill nets which

extended the period of time during which fish could be harvested. The fall fish fence and dip net fishing were methods used in 1983 at sites adjacent to the village, as they were in the past.

Salmon fishing along the lower Kuskokwim River developed considerably after 1959 as the commercial fishing industry developed. Commercial fishing allowed people to harvest fish for sale provided a means to get cash necessary for meeting the basic costs of living (fuel, electricity, food staples) and for purchasing equipment to be used in subsistence activities. At the same time, a family could produce relatively large quantities of wild food which could be used throughout the school year when subsistence activities were greatly restricted, in part because of compulsory school attendance.

The infrastructure associated with providing for the education required of children also made available to community residents several wage employment positions. In 1983, all of the non-professional and unskilled positions and some professional positions were held by local residents. The elementary and secondary schools accounted for nearly one-half of all wages earned in Nunapitchuk in 1983 and provided average annual incomes nearly three times greater than those of other employers (Tables 26 and 27). Full-time and part-time employment for much of the year (9 or 10 months), however, severely limited the degree to which an individual, particularly men, could participate in subsistence activities during the school year. Salmon fishing in summer, however, was not hampered by school employment.

Until recently, secondary school education was rarely available to Alaska Natives in their home community. Instead, high school students were sent to boarding schools or, later, to boarding homes hundreds of miles or more distant elsewhere in Alaska or the continental United States. Later, in the early 1970s, as a result of legal action initiated by Alaska Natives, including a young Nunapitchuk woman, high schools were constructed and, in 1983, operated in virtually all Alaskan communities.

The Alaska Native Claims Settlement Act (ANCSA, December 18, 1971, 85 Stat. 689) further influenced settlement and land use patterns. Village populations which were settled at year-round at sites (generally, where school facilities were constructed) were granted ownership as shareholders in a profit-making corporation which was granted a limited number of acres of land based on village population size. With few exceptions, the allocated amount of land had to be selected from within 12 to 18 miles of the village (Fig. 22); specifically, not further than two townships distant from the township within which the community was situated. Whereas the *Akulmiut* had occupied and used an area roughly 3,000 square miles, or about 84 townships, ANCSA entitled the 1971 *Akulmiut* population (in three villages) to about 540 square miles -- about 15 townships restricted to the lower Johnson River drainage. Only individuals born prior to the passage of ANCSA could be shareholders in the landowning corporations and, therefore, only shareholders could be involved in corporate decisions on use of the now corporately-owned lands.

The use of land outside of corporate ownership, but within the area used by the *Akulmiut* became subject to regulations by the federal government as described below. Similar to the Allotment Act, ANCSA limited land ownership by putting it into three corporate entities and restricted the areas which could be held in corporate Native ownership. Since the *Akulmiut* occupied three year-round villages at the time ANCSA was passed, each was given ownership of a discrete area of land in three corporations: Nunapitchuk, Ltd.; Kasigluk, Inc.; and Atmauthluak, Ltd. In addition, a fourth corporation, the regional Native profit-making corporation, Calista, Inc., was given subsurface title to all village lands and surface and subsurface title to other lands which they were entitled to select. Even though these lands were contiguous, each corporation had the authority to designate allowable uses and develop them as they chose. Whereas members of different communities may have the used the land jointly for a particular purpose, such as berry picking or hunting, the landowning corporations could restrict use and access to non-shareholders. The use of navigable waterways important to the *Akulmiut* for travel and fishing was governed by the state and, as such, were open to access by the public. Similarly, fishing sites could not be privately owned.

In 1983, corporate ownership of land did not appear to have influenced *Akulmiut* subsistence pursuits. Corporate lands were still used by community members without restrictions on access or use. None of the land was developed. Settlement had already been affected with the loss of opportunity for either individual or group ownership

of land customarily used and greater than about 15 miles from the village. The only exceptions included land had already been applied for and certified under the Allotment Act.

The Alaska National Interest Lands and Conservation Act (ANILCA, December 2, 1980, 94 Stat. 2371) included two provisions of central importance to the *Akulmiut* and their subsistence pursuits. First, Title VIII of ANILCA established a priority for subsistence use of fish and wildlife under certain conditions:

> ...nonwasteful subsistence uses of fish and wildlife and other renewable resources shall be the priority consumptive uses of all such resources on the public lands of Alaska when it is necessary to restrict taking in order to assure the continued viability of a fish or wildlife population or the continuation of subsistence uses of such population, the taking of such population for nonwasteful subsistence uses shall be given preference on the public lands over other consumptive uses....(ANILCA,section 802[2])

The state retained authority for regulating the harvest and managing fish and wildlife populations except where international treaties or federal statutes designated other authorities, such as for migratory waterfowl and marine mammals. Second, Title III of ANILCA established the Yukon Delta National Wildlife Refuge. All land customarily used and occupied by the *Akulmiut*, which would not be deeded to Native corporations or to individuals as allotments, was public land managed by the U.S. Fish and Wildlife Service. This was roughly one-half of the area including non-navigable waters (Figs. 22 and 31). One of the stated purposes for establishing the Yukon Delta National Wildlife Refuge was "to provide [with certain

considerations] the opportunity for continued subsistence uses by local residents." The federal government, as land owner and manager, retained authority to designate special uses such as access, recreation, and energy and minerals exploration and development, provided they were compatible with the major purposes of the refuge (U.S. Department of the Interior 1988b).

In 1983, the most potentially influential aspect of management of refuge lands on *Akulmiut* settlement and subsistence pursuits would be the management of cabin use. Draft management policy provided for the use and construction of cabins for subsistence purposes, if they were compatible with the purposes for which the refuge was established. In addition, a person was to be issued a non-transferable, renewable five-year special use permit to use or construct the cabin (U.S. Department of the Interior 1987). Cabins constructed after December 2, 1980 were the property of the federal government and could not be used for year-round residency. Thus, an individual was to have a permit to use any seasonal and temporary sites where there was a shelter or tent platform located on public land within the wildlife refuge.

The regulations limited use of cabins to the permittee's "immediate family" which was defined to include only the spouse and their children (and their spouses) and not parents, brothers, sisters, cousins, and uncles, among others. Subsistence activities usually occurred with extended family members under the draft policy would have been included within the category of "guest" when a permit was issued. Other conditions which could have applied to use of the

cabin and the issuance of a permit were described in a 14-page document (U.S. Department of the Interior 1987).

In addition, with the designation of the Yukon Delta National Wildlife Refuge, virtually all privately owned lands, as inholdings, were potentially subject to political pressures encouraging their sale or trade. Since at least 1983, some Native corporations, although not *Akulmiut*, with land within the refuge have considered trading their land for land in another refuge where oil and gas development appeared promising.

Overall, in 1983, the influence of ANILCA and the Yukon Delta National Wildlife Refuge on *Akulmiut* settlement and subsistence was in its infancy and is yet to be discerned. However, in regard to potential changes on land and resource use, the implications are profound. Since 1980, an exogenous system of land and resource use and management has been applied to areas customarily used by the *Akulmiut*. This externally imposed system, which was required by law to provide for "continued subsistence uses," has not been tested in terms of the extent to which may be compatible with customary uses and principles of land use of the indigenous population.

Wage and Self-Employment

Wage employment in *Akulmiut* villages has developed along with centralization of the population into year-round occupied villages. Infrastructure and capital projects have provided facilities to serve the population and this resulted in jobs to maintain the facilities

and services. In 1983, these related primarily to health and social services, education, and administration. At Nunapitchuk, full-time positions accounted for 31 percent of all wage employment jobs and part-time accounted for 15 percent. Thus, nearly one-half of all jobs required an employee to work at least 20 hours per week at least 9 months of the year. Full-time jobs left little time to engage in subsistence activities, particularly during months when reduced daylight and extreme cold temperatures restricted activities. In contrast part-time positions allowed more flexibility, but like full-time jobs, overnight or extended camping for subsistence activities was precluded.

In addition, the National Guard served as a means of income to the enlisted men and women. This was one of the earliest means of earning wages beginning with the Alaska Territorial Guard in the early 1940s (Oswalt 1963:76). At that time, enlistees were issued clothing and rifles which were also used personally, although their use was restricted only to military drills after the National Guard assumed authority in the late 1940s (Oswalt 1963:76). Initially, the material benefits alone were incentive for enlisting.

In 1983, enlistees, like National Guard battalions elsewhere in the country, were required to attend 48 drill and training sessions in addition to a two-week encampment. The four-hour drills often occurred three or five times per week, usually from late January through March. Participation in the National Guard had the advantage of providing some income, especially during months when subsistence activities were otherwise restricted because of weather, reduced

daylight, and limited fish and wildlife resources. Other seasonal wage employment was rarely available during that time either. The daily duration of the drills provided the opportunity for enlistees to work at a part-time job and perform other duties necessary to maintain a household and family. In addition, enlistees were eligible for retirement benefits after 20 years of service, a source of income in 1983 for several middle and older aged Nunapitchuk men.

In 1983, commercial salmon fishing and trapping were primary means of earning cash through self-employment. Commercial fishing, although not possible for all to participate in because of limited entry into the salmon fisheries, was often combined with other wage earning activities. Trapping was a means of earning cash from the sale of pelts, but also provided meat. In the 1980s, this activity was not often combined with wage employment as the two activities generally occurred during the same periods of time.

In terms of households, those with adult children in residence in 1983 were able to most effectively participate in wage employment and subsistence and commercial fishing because they were diversified. Adult children often held full or part-time jobs which provided cash, while other household members pursued subsistence activities including trapping. The average age of individuals holding full-time jobs was 33 whereas the average age of trappers was 41.5 years.

Hunting, Fishing, and Trapping Regulations

Hunting, fishing, and trapping by the *Akulmiut* and other Native people in Alaska has been regulated by the federal and territorial government throughout the century as well as by the state since 1959. By 1930, regulations governing hunting and trapping by authority of the 1908 Game Act (35 Stat. 102) and the 1925 Alaska Game Law (43 Stat. 739) and salmon fishing by the 1924 White Act (43 Stat. 464) were codified and a game warden and fisheries officer were stationed at nearby Bethel. Although the presence of fish and wildlife enforcement authorities was not continuous during the first half of the century, federal wildlife authorities have been stationed year-round at Bethel since 1963. A state fisheries manager has been stationed at Bethel since 1966, a game manager since 1978, and a subsistence researcher since 1979.

The subsistence harvest of virtually all fish, game, and furbearers was regulated in terms of methods and means of harvest, timing of harvest, location of harvest, and quantity of harvest for most species. Their use was regulated also by the state subsistence law (Ch.151 SLA 1978) and the federal law (ANILCA). The regulations were numerous and sometimes complex, differed by species, and were all written and made available only in the English language despite the fact that Yup'ik is the primary language for the *Akulmiut*. Some activities, such as hunting of game and waterfowl and trapping, required a license and others, such as fishing and marine mammal

hunting, did not. Major aspects of regulations which governed hunting, fishing, and trapping are presented below.

The Alaska State subsistence law (Ch. 151 1978 and amended in 1986) established subsistence use as a priority use of Alaska's fish and game resources whenever it is necessary to restrict their take to assure maintenance of fish stocks and game populations on a sustained yield basis. Subsistence hunting and fishing remained subject to restrictions on time, area, methods and methods, and bag limit. In 1986, amendments to the state subsistence law further restricted areas that an individual could use for subsistence hunting and fishing based on the individual's place of residence. The amendments, consistent with federal law, stipulated that subsistence uses were only those uses of fish and wildlife by rural residents for whom the uses were "customary and traditional." The residents of the *Akulmiut* villages were determined to reside in a rural area, but their use of each fish stock or game population was not necessarily customary and traditional. For example, their use of salmon stocks in the Kuskokwim River was determined customary and traditional and therefore considered a subsistence use, but their use of muskoxen in the region was determined to not be customary and traditional.

State regulations referred to below are found in Alaska game or hunting regulations, trapping regulations, and subsistence and commercial fishing regulations from 1960-88 (Alaska Board of Fisheries 1960-88; Alaska Board of Game 1960-88).

Large and small game hunting has been regulated by the State of Alaska since 1959, following statehood status being granted to the

Territory of Alaska. Prior to that time, few regulations, if any, affected the hunting of large and small game by the *Akulmiut*. The area used for hunting primarily occurs within Game Management Unit 18.

Large game, such as moose and bear, rarely occurred in the area and there was little concern for the management of small game species such as ptarmigan and hare. Waterfowl hunting, although regulated, had not been enforced except in recent years, with the exception of swan harvests. Since 1960, each of the available large and small game species have been regulated in terms of the time during which they may be harvested, the methods and means of harvest, and the number that may be taken. Each of these regulations influence the way subsistence hunters hunt, because they affect scheduling, areas that can be used, and how a person can hunt.

Purchase of a hunting license was required each year for persons older than 16 and less than 60 years of age, with few exceptions. A license cost 25 cents if the individual signed a statement declaring their annual gross household income or income received through a welfare program was less than $5,600. Otherwise, it cost $10 in 1983. Licenses were issued by vendors, but not all communities had an issuing agent, some people had to travel to a community where there was an agent or had to apply for a license by mail. A "harvest ticket" for taking moose was also required, and free-of-charge but, like the license, had to be carried on the person while hunting. A "harvest report" had to be submitted to the state within 15 days after an animal was taken or after the close of the season. A $25

harvest ticket was required for hunting brown bear. When the sex of a large game animal taken was restricted to one sex, the external sex organs had to remain attached until the meat of the animal was prepared for storage. Bear skins and skulls had to be "sealed" (that is, registered) within 30 days by an authorized state representative.

The hunting of large and small game was restricted in terms of the time when they could be taken. Prior to 1982, bull moose could be taken in the Johnson River drainage area from September through December. After 1982, the hunting season was reduced to the month of September. Since then, another 11 days in December have been added. Even though moose were available at other times and have been hunted, legal hunting was restricted to about six weeks per year, since the state manages wildlife with the objective of maintaining healthy game populations on a sustained yield basis. There were no indications during this study that moose were taken outside of the legal seasons.

Brown bear hunting was restricted less by available hunting opportunity, but more by the restriction to taking only one bear every four regulatory years. There was no closed season on black bear. The only other large game species available was muskoxen, which, since the early 1980s, have migrated into the area from the west. In 1983, the taking of muskoxen was restricted by area. They were not allowed to be taken except on Nelson Island west of Baird Inlet. The state Board of Game concluded in 1984 that there was not a harvestable surplus of muskoxen on the mainland of Game Management Unit 18, and, therefore, no hunting season was provided for. In 1985

there were reports to local wildlife authorities that muskoxen had been hunted illegally in the area, but no charges were filed.

The taking of large game was restricted in terms of the caliber of rifles that could be used and other methods of take were prohibited. Animals could not be taken with traps or snares or by driving them nor while they were swimming. They could not be taken from a motorized vehicle or boat while it was still in motion.

Small game hunting was much less restrictive than for large game. Hunting hare was not restricted in terms of time or number that may be taken, although ptarmigan hunting was. Generally, hunting of these species occurred during customary times of harvest (Fig. 35).

Waterfowl hunting was subject to state and federal regulations and international treaty (Act of July 3, 1918, 40 Stat. 755). In addition to the required hunting license, a federal migratory bird hunting stamp had to be purchased at the post office and signed by and carried with the hunter. Since 1985, the state of Alaska also has required the purchase of a waterfowl conservation stamp unless an individual qualified for a 25-cent hunting license. Certain species of migratory birds which have been customarily hunted such as swan, could not be taken. The take of other species was limited in the number that may be taken per day. The most restrictive aspect of waterfowl hunting were regulations which prohibited the taking of waterfowl prior to September 1. This eliminated the primary times of customary waterfowl hunting by the *Akulmiut* in spring and mid summer as described earlier. Harvest information for 1983 indicated that

few of the federal or state waterfowl hunting regulations were observed although customary patterns of harvest persisted. Since 1983, *Akulmiut* villages have participated in adhering to the cooperative waterfowl conservation plan of the U.S. Fish and Wildlife Service to aid in protecting the populations of certain waterfowl species through bans on hunting.

Marine mammal hunting was regulated by the federal government (Act of October 21, 86 Stat. 1027). In 1983, there were no restrictions for hunting except that only Alaska Natives could hunt marine mammals. Licenses and harvest reports were not required and methods and means and quantity taken were not limited. As for all fish and game species, wanton waste was prohibited.

Trapping furbearers was subject to similar restrictions as those for hunting game. A trapping license was required. Time, quantity, and methods and means restrictions applied. For some species, such as beaver and land otter, the pelt had to be "sealed" or registered with a fur dealer or authorized state employee within a specified period of time after the close of the season. Not all *Akulmiut* communities had a resident fur dealer. Methods of taking were restricted to certain sizes of steel traps and times during which a firearm could be used depending upon the species, among other restrictions. The use of fish traps for taking land otter and mink has been allowed since 1961. Season dates for taking furbearers tended to coincide with times when pelts are prime and to prohibit taking animals when they had young. The season was often closed during periods when people customarily took furbearing animals for

manufacturing garments locally or for subsistence. Trapping furbearers for the sale of pelts coincided with state regulations. Beaver were limited in the number that could be taken, but land otter, mink, and muskrat were not. The taking of furbearers for home use, subsistence, or commercial purposes was not distinguished in regulations.

Furbearers were the initial category of wildlife species subjected to enforcement of regulation by officials among the *Akulmiut* and their neighbors. As early as 1918, unprime mink pelts consigned to four Bethel traders were seized by customs officials in Seattle (Bower 1919:70). In 1926, a game warden was stationed at Bethel and remained until 1931, when he was relocated to McGrath along the upper Kuskokwim River. However, during that five-year period, the warden operated a "vigorous enforcement program," seizing contraband fur (Alaska Game Commission 1928:9) In 1927, 100 "lower Kuskokwim" Natives petitioned the Alaska Game Commission to extend fox, mink, and otter trapping seasons into March and requested that they be allowed to use shotguns instead of rifles for taking muskrat (Alaska Game Commission 1927:48-50). In 1930, residents of four *Akulmiut* villages and the Aropuk Lake village of *Cuukvagtuliq* stated their concern about a possible prohibition on mink trapping north of the Kuskokwim River and the effect it would have on their livelihood (Alaska Game Commission 1930:80). Mink, as noted earlier, were an important food source to the *Akulmiut* in addition to being important for trade and in making winter garments. Even as late as 1955,

Nunapitchuk residents feared seizure of furs and reportedly hid their furs when a game warden made a trip to the village.

Subsistence fishing, like hunting and trapping, was regulated in terms of time and type of gear, but was unrestricted in terms of licensing and reporting requirements. In 1983, no permits for subsistence fishing were required. Subsistence salmon fishing occurred in Kuskokwim Fisheries Management District 1. In 1983, allowable subsistence fishing time was regulated to about four days per week. It was closed during commercial salmon fishing periods and also for specified times before and after the commercial fishing periods. Salmon fishing gear was limited to the use of gill nets with restrictions on mesh size, net length and depth, and size and number of web filaments. Unattended gear had to be marked to identify the fishers. There were also restrictions on how and where gill nets could be set. The use of traps for subsistence salmon fishing was illegal. The number of salmon caught for subsistence was not required to be reported. However, some fishing households were issued a catch calendar and encouraged to record their catch on it and return it to the state.

The most influential aspect of salmon fishing regulations on *Akulmiut* settlement and subsistence were the temporal restrictions. These restrictions reduced the flexibility for scheduling subsistence fishing and processing with other activities and available personnel or labor. The vagaries of salmon run timing, run strength, and reduced number of fish after commercial fishing periods made subsistence fishing time restrictions a major factor in the ability

to harvest and process adequate quantities of salmon during the run. In general, subsistence salmon fishing regulations were observed as were customary principles of resource use described earlier. State officials were engaged in comparatively active enforcement of the salmon fishery, principally directed at managing the commercial fishery.

In 1983, the other species of fish harvested by the *Akulmiut* were not subject to state imposed temporal restrictions. Gear restrictions applied and primarily affected the taking of whitefish and pike, especially the singlemost important and long-standing method of using fish fences to block streams. The use of dip nets was legal, but their size was restricted. As with salmon gill nets, all unattended fishing gear (all types) were to be identified with the operator's name and address. This rarely occurred. It is not clear whether state regulation allowed for the small willow or wire mesh traps customarily used for taking blackfish, as the use of fish traps and other similar stationary gear except fyke nets were illegal. The definition of fyke net may have included the *taluyaq* or blackfish trap (Ganguine 1982). Using a hook and line and jigging for fish through ice was legal, but it was illegal when this technique was used during open water seasons, a method sometimes used for catching pike in summer in the Johnson River drainage.

In addition to state and federal regulations governing the harvest of fish and wildlife for subsistence, the use of fish and game caught was also restricted. Customary trade, barter, and sharing was allowed, but within certain parameters that restricted

subsistence uses "for personal or family consumption," and limited exchanges of fish and wildlife or their parts for cash (AS 16.05.940; Alaska Administrative Code 5 AAC 99.010, 5 AAC 01.010, ANILCA Title VIII). Regulations on the use of marine mammals and endangered species allowed for the sale of edible portions of the species, but restricted their sale "in native villages and towns in Alaska or for native consumption" (Marine Mammal Protection Act 1972; Endangered Species Act 1973). These regulations were not enforced in 1983.

Overall, influences on *Akulmiut* land use and subsistence have been gradual and intermittent until the last three decades (Fig. 45). Until some stability in the market economy developed in hand with changes in or locally desirable imported manufactured technology, there was little modification of subsistence pursuits. Beginning in the 1950s and intensifying in the 1970s, centralization factors assumed a larger role in influencing settlement and subsistence patterns. Throughout, endogenous cultural principles have guided *Akulmiut* land and resource use.

CHAPTER 7. SUMMARY AND CONCLUSIONS: TERRITORY AND THE *AKULMIUT*

Within the context of Alaskan Eskimo societies, the *Akulmiut* were unique in terms of the configuration of fish and wildlife resources they utilized and which formed the basis of their subsistence economy. They used and occupied areas of the inland tundra region between the mouths of the Kuskokwim and Yukon rivers where non-salmon fisheries were central to their economy. This area was starkly different from those often associated with Alaskan Eskimo populations. Their resource base was unlike coastal areas where marine mammals were prevalent and different from the hilly and mountainous areas of the arctic tundra where migratory caribou were in large numbers. Within their homeland there were no summer runs of salmon, so abundant in the major tributaries along which neighboring groups were situated.

This study has focused on the territorial dimensions of the *Akulmiut* by examining the relationship of resource utilization and spatial organization and resource distribution. It has been guided by an ecological theory that postulates a correlation between the predictability and abundance of critical food resources and the patterns of resource utilization and spatial organization. Using data for the *Akulmiut*, this study addressed the question of whether the *Akulmiut* had a territorial system of land and resource use.

Further, it has presented data on endogenous and exogenous influences that should be considered in understanding changing patterns of territorial organization during historic and modern times.

This chapter summarizes the findings of this study in terms of spatial organization, wild resource utilization, and resource distribution. However, it begins with a summary of the endogenous and exogenous factors that have influenced land and resource use among the *Akulmiut* over time. Following the summary, the conclusions are presented. The data are analyzed in the context of the economic defendability model of spatial organization. It is argued that the *Akulmiut* were territorial and maintained exclusive use of resources by means of several mechanisms which have persisted throughout their contact history. Further, this analysis demonstrates the contribution recent theory can make in explaining the diversity of Alaskan Eskimo socioterritorial organization.

INFLUENCES ON LAND AND RESOURCE USE THROUGH TIME

Two considerations were important in determining the wild resource utilization of the *Akulmiut* since contact with Euroamericans -- endogenous cultural principles of land and resource use and exogenous influences of non-native society. Both have played a role in shaping *Akulmiut* resource use and spatial organization since the mid 19th century as described in Chapter 6. It is argued here that the endogenous principles have endured. In contrast, exogenous influences have fluctuated and been less persistent over time. The

most influential aspects of Euroamerican contact on land and resource use (including spatial organization) have been factors associated with centralization of the population into year-round villages. The influence of new patterns of land ownership and their effect is only beginning. How these influences have affected *Akulmiut* land and resource use are described below in an historical context.

With the onset of the fur trade beginning during the Russian period, the *Akulmiut* had a limited opportunity to trade natural products to obtain imported items. Dried fish and, later, beaver pelts generally were traded to Yup'ik middlemen in exchange for sea mammal skins and oil and some imported manufactured goods. However, in the Yukon and Kuskokwim river deltas, the beaver population was declining by the middle of the 1800s and there was no market for the prolific mink. Furthermore, disease ravaged the Native population and hostility increased toward the Russians who were poorly supplied in trade items. Subsistence pursuits and settlement were little affected by unreliable trade and a faltering market during the Russian period. The primary change to *Akulmiut* and other western Alaska Yup'ik societies was the elimination of internecine warfare and the apparent proliferation of interregional, intersocietal ceremonial exchanges of food and goods. These ceremonial activities played an important role in maintaining land and resource use among the *Akulmiut*.

Limited trade persisted, and after Russian traders left, Euroamericans expanded commerce in the territory of Alaska by virtue of better-supplied posts. Again, disease decimated the Native

population in 1900, resulting in regrouping of the *Akulmiut* survivors into the larger remaining villages and newly-established villages. However, the means by which this was accomplished followed customary practices.

Changes in subsistence technology had virtually no effect up to this time (cf. also Oswalt 1980). Advances in firearms were of little importance given the lack of large game in the area. No changes in fishing technology were introduced. After 1900, however, a market for mink developed with prices paid for pelts and demand for mink and muskrat furs increasing up until World War II. Consequently, trapping intensified. The primary influence resulting from the increased commerce in furs was the ability to trade furs for imported manufactured goods ranging from clothing and utilitarian items to more exotic items such as wall mirrors and cameras (cf. Anderson and Eels 1935). In order to harvest furs while pelts were prime, families had to extend their fall and spring camping, but the carcasses of the animals, as before, were a source of food. Families dispersed as they had previously, although trapping efforts intensified.

Salmon fishing, for some families, became an alternative source of subsistence food beginning in the 1920s, as changes in transportation technology (airplanes and barges) gradually led to diminished use of the summer whitefish fence which interfered with trade and supply. Imported manufactured goods were no longer amassed for redistribution, as Native ceremonial exchanges were eliminated by 1920, in large part through the intervention of church authorities.

After World War II, the fur market gradually rebounded, however, and other factors influenced trapping effort and settlement pattern. Mandatory school attendance for children of schoolage contributed to changes in subsistence and settlement. Families settled nearly year-round at the semipermanent villages which made seasonal movements to camps difficult for those with schoolage children. Trapping effort declined and people began to incorporate commercial salmon fishing and wage employment in canneries into their annual activities during months when children did not have to be in school.

The salmon fishing industry emerged in the neighboring region of Bristol Bay and provided the first largescale means of earning cash for area residents. At the same time, outboard engines changed transportation for commercial fishing and subsistence pursuits by reducing travel time. Cash, however, was necessary to purchase, maintain, and operate the engines and other imported manufactured technology.

Beginning in the 1960s, several factors began to influence *Akulmiut* subsistence-related activities concurrently. Mandatory school attendance persisted. The salmon fishing industry began to develop along the lower Kuskokwim River. This provided an opportunity to earn cash locally while engaging in subsistence fishing in the same location at the same time. Changes in fishing and transportation technology and the use of nylon gill nets and outboard engines were important influences. Nylon nets also made it possible to fish in the tundra lakes system at times which had been marginal before (late spring and fall). The introduction of the

snowmachine after the mid-1960s renewed trapping as a viable option for earning cash, because reduced travel time enabled men to travel to trapping areas, but still operate from a village base. Both outboard engines for boats and snowmachines tended to counterbalance centralization factors such as compulsory school attendance and wage employment by enabling fish and wildlife harvests in areas away from the village and during the school year.

Cultural principles of land use persisted as was demonstrated in the establishment and use of salmon fishing camps and trapping areas as well as set net and blackfish trap sites. Village cooperation in constructing fish fences and conducting midsummer waterfowl hunts endured.

In the 1970s and 1980s, laws and regulations were made and/or enforced affecting land ownership and the harvest of fish and wildlife. These came about against the persistent backdrop of educational attendance regulations, a developing salmon fishing industry, and wage employment. In 1971, ANCSA started the process of putting limited amounts of land into Native ownership. Immediately preceding its passage there was a rush to apply for Native allotments as Natives would no longer be entitled once the claims act was passed. Other lands used by the *Akulmiut* and other Native societies were available for federal and state ownership, and, with ANILCA in 1980, about one-half of the customary lands used and occupied by the *Akulmiut* became public lands managed by the federal government as a wildlife refuge. The influence of these laws is just beginning to be realized as lands become patented in the 1980s and 1990s to

individuals and landowning corporations and the remainder becomes public land.

Even with the allocation of land to different owners, the management of fish and wildlife resources remained with the purview of the state and federal governments. After statehood was granted to Alaska in 1959, and with it the authority to manage most fish and game species, regulations governing hunting, fishing, and trapping were expanded, became more specific, and were codified. Most influential were salmon fishing regulations, which became increasingly restrictive with increased development of the commercial salmon industry in the area. Subsistence uses had priority over other uses when restrictions were necessary for sustained yield of fish and game populations. Implementation of the subsistence priority has begun to define the locations where individuals can hunt and fish for subsistence and is leading to judicial determinations of what is considered allowable uses of subsistence products. The influence of increasing and more refined regulation, like the effect of individual land ownership, is incipient and remains to be seen.

Overall, influences on *Akulmiut* land use and subsistence have been gradual and intermittent until the last three decades. Until some stability in the market economy developed in hand with changes in or locally desirable imported manufactured technology, there was little modification of subsistence pursuits. Beginning in the 1950s, and intensifying in the 1970s, centralization factors assumed a larger role in influencing settlement and subsistence patterns.

Throughout, endogenous cultural principles have guided *Akulmiut* land and resource use.

SPATIAL ORGANIZATION

The earliest references to the *Akulmiut* noted that they occupied the area between the Yukon and Kuskokwim river deltas (Zagoskin [1847]1967) during the mid-19th century. After that time, up until the beginning of the 20th century, various historic accounts documented the presence of villages, in which women and children resided in semisubterranean houses and men in the *qasgiq*. The "big lakes" of the Johnson River drainage appeared to be the loci of *Akulmiut* villages based on these records. From these villages, *Akulmiut* traveled both to trading centers along the lower Yukon River near present-day Russian Mission, to Bethel along the lower Kuskokwim River, and to the Bering Sea coast to the west, along major travel routes. These routes were identified in the historic literature, as priests, missionaries, census agents, and explorers recounted their own use of them for travel across the area between the Yukon and Kuskokwim rivers.

The spatial extent of *Akulmiut* land use and occupancy was determined also through the documentation of Yup'ik place-names. The distribution of Yup'ik place-names of the *Akulmiut* corroborate historic accounts which associated the area between the Yukon and Kuskokwim rivers with the *Akulmiut*. Place-names data more specifically indicated the area of the middle and lower Johnson River

drainage west to Baird Inlet, including the large lakes noted in the historic literature. *Akulmiut* villages both in historic and modern times have all been located within 12 miles of each other along the large lakes and associated tributaries of the Johnson River drainage. From late prehistoric through contemporary times there have been three or four primary *Akulmiut* villages. However, the number of seasonal settlements has been reduced and their length of occupancy has diminished. Village size ranged from 30 to 100 persons in 1880 when the first official census was recorded. The *Akulmiut* population was approximately between 320 to 400 during the late 19th century until 1940 based on historic records. This study postulates a larger regional population prior to 1940, since not all occupied villages were included in the censuses. In addition, the populations of secondary villages which were satellites to primary villages and seasonal settlements sometimes occupied year-round by an extended family group were not included. Furthermore, the 1838 smallpox epidemic and possibly decimation due to other introduced diseases had reduced the population prior to the first census in 1879.

Since the early 1970s, the *Akulmiut* have resided in three villages ranging in size from about 200 at Atmautluak in 1980 to about 400 at Kasigluk in 1985. These villages, like those of the past, are situated within close proximity (still within 12 miles of each other) and along tributaries immediately adjacent to the large lakes of the lower Johnson River drainage.

Information derived while documenting Yup'ik place-names of the *Akulmiut* indicated a number of seasonal settlements used by extended

family groups and situated along lakes and tributaries throughout the area between the middle and lower Johnson River drainage west to Baird Inlet and Aropuk Lake. The use of these settlements seasonally in early winter and spring was not reported in any historic or modern references. These places were readily identified as seasonal camps in that there was no *qasgiq* associated with them and there were particular types of subsistence activities associated with their use.

As described below, primary villages were and continued to be situated so as to harvest primarily whitefish and pike at certain times of the year, whereas seasonal settlements were dispersed at places where blackfish and furbearers were more readily harvested. *Akulmiut* villages were also characterized in the past, as they were in 1983, by storage and processing facilities such as caches and storage pits. Furthermore, each had at least one *qasqiq* which served multiple uses as a place of residence for men and male youth, men's workshop, community hall, in addition to being the ceremonial and spiritual center. The village *qasgiq* was where foods were also redistributed during intravillage, intervillage, and interregional ceremonies. This characteristic persisted in 1983. The *Akulmiut* village was the economic, social, and political center of *Akulmiut* life and was occupied by many families as much as eight months of the year. The site of the *Akulmiut* village carried with it a guaranteed food supply.

The distribution of the *Akulmiut* population was also evident from the records of Native allotment selections. In addition to seasonal settlements, these land parcels included camping sites

customarily used by families while trapping, collecting berries, or when salmon fishing. They indicate the dispersal of the population at particular times of the year for harvesting resources other than whitefish and pike. These seasonal settlements continue to be use, although on a more intermittent basis and for shorter periods of time during each season.

WILD RESOURCE UTILIZATION

Akulmiut wild resource utilization, like spatial organization, was characterized by aggregation during part of the year and dispersal at other times. Prior to centralization into villages occupied year-round beginning about 1950, villages were occupied primarily in winter. Beginning in late fall families were aggregated for fishing as whitefish and pike began to leave the shallow lakes and streams. These areas become increasingly oxygen-depleted as ice develops and then freezes. Some families dispersed to early winter camps for trapping mink and blackfish. People aggregated at the village beginning in late November through January or February. During that time they were engaged in various ceremonies with people from both within the village and other *Akulmiut* villages. These included interregional exchange ceremonies as well as ceremonies of a more spiritual nature.

In March, or earlier, families dispersed to less permanent settlements or temporary camps until breakup, subsisting on blackfish, muskrat, waterfowl, ptarmigan, and hare. After breakup,

families returned to the permanent village for late spring and early summer fishing or reestablished salmon fishing camps along the Kuskokwim River. In late July, families again dispersed to temporary camps for picking salmonberries, but also congregated for the cooperative taking of moulting waterfowl at certain localities.

In the 1980s, the village was occupied year-round, although there were many similarities with the earlier pattern of resource utilization. Fish and wildlife harvests were characterized by a similar pattern of congregation and dispersal for harvesting the principal food resources -- pike, whitefish, blackfish, and salmon. All fish and wildlife resources were stored at the village.

The primary *Akulmiut* villages identified for the 19th and 20th centuries were situated at places where the harvest of whitefish and pike was efficient by means of using a fish fence. They were located at or near the outlet of a major lake or complex of lakes and sloughs where fish were channeled into the relatively narrow waterways that drained the lakes. Even villages sites established on a "trial" basis, such as *Uuyarmiut* and *Atalriarmiut* during this century, were situated where fish could be harvested during their short seasonal migrations. Some villages were abandoned as a result of changes in the streams adjacent to the village which affected the harvest of whitefish in particular. Both the former village sites of *Nunacuarmiut* and *Nanvarnarrlagmiut* are examples. Also, modern villages established since 1970, such as New Kasigluk and Atmautluak, are similarly situated. In 1983 and subsequent years, fish fences

have been constructed in the river adjacent to each of the contemporary villages in late fall.

Even though *Akulmiut* villages were, as they remained in 1983, largely discrete and endogamous, they were interconnected through marriage, ceremonial activities, and some subsistence pursuits. Unity was validated and reinforced in intraregional ceremonies such as *Elriq* (feast for the dead), *Kevgiq* (trading festival), and *Itruka'ar* or *Kelek* (inviting-in feast), but also in the personal naming system and the use of place-names. In the 1980s, *Akulmiut* villages continued to be regarded within the region as a unit, commonly referred to as "the tundra villages." They were represented as a group on the boards of various Native organizations, such Calista, the regional profit corporation; the Association of Village Council Presidents (AVCP), the regional non-profit corporation; and Nunam Kitlutsisti, the regional environmental and resource advocacy organization.

Within the area used and occupied by the *Akulmiut*, people and families were entitled to use any area for subsistence pursuits, as they did in 1983. Customary principles of resource use were respected, however, and use of areas within the *Akulmiut* was guided by deference to first users, geographic affiliation, kinship affiliation, participation, and optimization. Most of these principles are summarized in the following comment of an elder Nunapitchuk man

> [translated] Each village has its own area, like for blackfish. It's kind of true for certain resources

> around their village but that may change from year to year, like for muskrat. If you get a place nearby where there's pups then several villages may go and use it. And not just your village would go there. For blackfish it would depend like if your parents are from somewhere else and you don't know this area then you'd go to your parent's place until you learn this area.

In addition, men and boys from each *Akulmiut* village worked as a group to drive flightless birds in midsummer on the two lakes in the area where this harvest method is especially productive.

During months when pike and whitefish are unavailable in the tundra, blackfish can be fairly readily harvested. They are abundant and ubiquitous in the area of the *Akulmiut*. They also occur in areas that are productive for mink and muskrat hunting and trapping. They are somewhat less predictable in exact location than whitefish, because they occur in areas of open water in winter and early spring, though these may change somewhat over time. Areas noted for harvesting blackfish occurred throughout the area based on information collected while recording Yup'ik place-names. At least 25 percent of all named places were noted specifically as sites used for trapping blackfish. In addition, blackfish were trapped near village sites and are the only freshwater fish available in winter. In fact, they were the major winter food source. Because of the ability to use atmospheric oxygen, blackfish can remain alive for days in buckets of water and do not need to be processed for storage. Because they are relatively ubiquitous, they could be secured for either human or dog food throughout the area while traveling from place to place (Kilbuck n.d.; Anderson and Eels 1935).

During summer some *Akulmiut* families relocated to salmon fishing camps along the lower Kuskokwim River, from just below Bethel to the mouth of the Johnson River. Even though this area falls outside of the area of the *Akulmiut*, there are specific localities where salmon fishing camps of *Akulmiut* extended families were situated. Based on information recorded for Nunapitchuk, some of these localities have been used since the mid 1920s, many since the early 1950s, and almost all since the early 1970s. Customary principles of kinship affiliation and geographic affiliation enabled *Akulmiut* families to seasonally settle and fish along the lower Kuskokwim River.

WILD RESOURCE DISTRIBUTION

Key resources of the *Akulmiut* can be classified in terms of two resource distribution parameters: density or abundance and predictability of location and time. There have been no population estimates for any of the species (pike, salmon, blackfish, whitefish) that comprised the key food resources of the *Akulmiut*. The distribution of salmon has been comparatively well documented compared to the other species for which there have not been any distribution studies in this area. The critical food resources of the *Akulmiut* were identified using harvest data from a sample of households in Nunapitchuk for 1983 (Tables 51 and 52; Figs. 41-43) and calculating the edible pounds per capita for each resource. In addition, ethnohistoric information recorded during field work indicated the principal food resources.

By species, northern pike constituted the largest percentage (22.04 percent) of total edible pounds harvested per capita; followed by king salmon (17.44 percent), chum salmon (12.63 percent), blackfish (11.99 percent), and whitefish (*Coregonus* sp.) (9.86 percent). Oral accounts indicated that pike, whitefish, and blackfish have been consistently available and harvested. Since about the late 1970s, local residents have reported reduced numbers of whitefish and pike. Pike, blackfish, and the whitefish species were considered to be the principal food resources throughout the century.

Salmon, on the other hand, began to be incorporated by some families into the resource harvesting cycle beginning in the 1920s. Initially, chum and sockeye salmon were the primary species harvested. However, even in 1983 and in subsequent years, not all *Akulmiut* families or households included salmon fishing (for any species) in their seasonal round of subsistence activities. It is suggested here that salmon fishing was included after centralization with the construction of schools and educational attendance requirements during the schoolyear. Salmon fishing in summer provided a means to produce food for subsistence which could be stored for use throughout the year as families were unable to disperse to fall and spring hunting and fishing areas. In addition, the development of the commercial fishery provided an opportunity for obtaining manufactured items in trade and later for earning cash. Virtually all subsistence salmon fishing households that occupied

fish camps along the lower Kuskokwim in 1983 also fished for salmon for commercial sale.

Other species that were harvested in larger quantities historically than in 1983 were mink and muskrat. However, even with the higher levels of mink harvested in the 1950s and in earlier years (Burns 1964) (estimated at four times the current level), the contribution of mink would have remained relatively small (less than five percent). Other food resources such as beaver and moose were rarely present in the area, prior to the 1950s. Waterfowl harvests were three times greater in Nunapitchuk during a mid 1960s study (Klein 1966) than they were in 1983. Even so, waterfowl accounted for less than 10 percent of the total pounds harvested. In this analysis, using the criteria discussed above, the principal food resources of the *Akulmiut* were and continued to be blackfish, whitefish, pike. More recently salmon have been included.

Key resources of the *Akulmiut* can be classified in terms of resource density or abundance and predictability of location and time. Several whitefish species ascend into the Johnson River drainage beginning in late April as river ice begins to thaw along river and lake beds and shorelines. With breakup of river and lake ice in mid to late May, they disperse throughout the drainage. This is characteristic of whitefish (*Coregonus* sp.) species elsewhere in Alaska (Scott and Crossman 1973; Morrow 1980). During the late spring migration upriver they are clustered, particularly as they are relatively confined to deeper waters, such as the Johnson and Pikmiktalik rivers, which begin to thaw earliest. After break-up in

mid to late May and in early June whitefish are abundant when they migrate upstream in concentration. This occurrence is predictable in time and location. They cannot disperse into the numerous lakes and streams until they have thawed, somewhat later than the deeper river waters. Thereafter, and through September, they are no longer concentrated, but dispersed throughout the drainage. After spawning in September and October (Scott and Crossman 1973; Morrow 1980), they again concentrate and move out of lakes and streams into deeper waters of the Kuskokwim River. The lower Johnson and Pikmiktalik rivers drain the vast lakes system of the area. The concentration of whitefish immediately downstream from the largest lakes complex make them predictable in location and the narrow window of time of about two weeks makes their migration predictable as well.

Similar to whitefish, pike migrate into the Johnson River drainage in late spring as river and lake ice melts, and disperse throughout the area to spawn during early summer (Scott and Crossman 1973). In late fall they again migrate from the area to deeper waters where they overwinter, generally in the Kuskokwim River. There are some areas in the lower portions of the Johnson River where there are deep water holes. During winter pike can be taken through the ice at these locations and also along the Kuskokwim River near the mouth of the Johnson River where similar concentrations occur. With the exception of summer, northern pike are relatively dense during predictable times of the year in relatively predictable locations.

Because of their ability to utilize atmospheric oxygen, Alaska blackfish are unique. They can inhabit oxygen-depleted waters typical of the shallow frozen lakes and streams of areas such as the Johnson River drainage. As a result, they can survive in most tundra mosses and in areas kept open in winter by underwater springs. Like whitefish and pike, blackfish are dispersed during summer. Although there have not been biological studies of their winter habitat (Scott and Crossman 1973), it is believed that in winter they concentrate in open water areas to obtain atmospheric oxygen or by concentrating in large masses they weaken the ice to the point of opening it (Armstrong 1982). Throughout the drainage, blackfish are relatively ubiquitous but are concentrated at open water areas. These locations are somewhat dispersed and can fluctuate from year to year. Compared to whitefish and pike, blackfish are a somewhat less dense and less predictable key resource.

King, chum, and sockeye salmon migrate seasonally up the Kuskokwim River to their spawning grounds beginning as early as late May for king salmon and continuing through July for chum and sockeye salmon. More than any other species, salmon are relatively abundant for a comparatively long period of time. King salmon have been caught from just a few days following breakup to about one week later and have been first caught during a three-week period from May 16 to June 6 (Alaska Department of Fish and Game 1983). Chum and sockeye salmon usually begin to run as early as mid June. Although the timing and location of salmon are predictable, the fact that their occurrence in concentration is not confined to such a narrow window

as whitefish and pike and spans two months makes their predictability in time and location less critical parameters. In addition, the relatively large magnitude of the salmon run indicated by contemporary commercial and subsistence harvests (over 464,000 king, chum, and sockeye combined taken in the lower Kuskokwim River in 1983) leads to the conclusion that in this area, salmon are a superabundant resource. As noted below, superabundant resources are not maintained for exclusive use.

CONCLUSIONS: TERRITORIALITY AMONG THE *AKULMIUT*

As described earlier, territoriality refers to the exclusive use of resources or occupation of an area by means of overt defense or some form of communication or advertisement (Dyson-Hudson and Smith 1978:22; Wilson 1975:256). Defense can be overt along a boundary or "more subtle, with individuals maintaining exclusive areas by mutual avoidance of each other's keep-out signals (Davies and Houston 1984:189). In both cases, time and energy are expended to maintain the territory. It makes little difference whether territories are maintained by physical combat or by being occupied "through individuals avoiding each other by the use of simple movement rules" (Davies and Houston 1984:149).

This study argues that the *Akulmiut* employed several mechanisms for maintaining exclusive use of an area or resources. These included examples of overt defense as well as forms of communication or advertisement that contributed to maintaining exclusive use. In

addition, customary principles of land and resource use operated for maintaining exclusive use.

This section concludes that territoriality among the *Akulmiut* can be accounted for by the theory that this type of spatial organization will occur where critical food resources are dense and predictable. Furthermore, the model which suggests this correlation has considerable utility for analyzing and explaining the apparent diversity in Alaskan Eskimo spatial organization and resource utilization.

Examples of overt defense by *Akulmiut* were evident in "war stories" and certain place-names that referred to encounters with "the enemy," certain non-*Akulmiut* groups. Information on offense and defense techniques was not elicited, however. It is reasonable to assume that techniques used by other Yup'ik societies in the region were applied. Defense techniques included the construction of secret tunnels connecting houses and the *qasgiq*, secret hideaways for children; skylight coverings made of slats to prevent the penetration of arrows, and shields made of wooden slats (Lantis 1946:168). Archaeological work in the area of the *Akulmiut* could easily contribute to our knowledge of defense by the *Akulmiut*. *Akulmiut* tales of war with the *Agaligmiut* noted the use of [translated] "long, interconnected ingenious entry-ways."

Offensive techniques were also related in several oral accounts. One described a man who changed into different clothes so as to look like many individuals giving the appearance of more people than there were in fact. Another described the type of clothing that men wore

during times of war. The clothing was specially-tailored to be nonconstricting. Among the *Nunivagmiut* to the west, warriors "stripped to the waist or their parka would be cut off for freer action" (Lantis 1946:168).

Some place-names and "war stories" associated with certain places indicated where enemy intrusions have occurred in the area of the *Akulmiut*. Each place noted was located along the lower Johnson River (*An'arciiq*), downstream of *Akulmiut* villages (*Uamun, Nacessvik, Paallalleq, Akcuar*), with one exception. One devastating raid wiped out the village of *Nanvarpagmiullret*, the most remote of *Akulmiut* primary villages. The "enemy" either referred to the *Qissunarmiut* ("those who inhabit the *Qissunaq*" [Kashunuk River]) or the *Agaligmiut* of the Kuskokwim Bay coast area. By 1830, the *Agaligmiut* had left their homeland and became employed by the Russians first at Fort Alexsandrovskiy (Nushagak) and later at Fort Kolmakovskiy. The name of one other place located along eastern Baird Inlet (*Curugyagaq*) is derived from the term for "encounter," but no associated account could be recalled.

In addition, *Akulmiut* and non-*Akulmiut* could be readily identified by certain forms of communication. Two material examples which symbolized this were clothing design (see also Shinkwin and Pete 1984) and the design of the kayak bow. Respondents stated that there were differences in parka design between *Akulmiut*, the coast (*Caninermiut*), lower Kuskokwim and lower Yukon river areas, and respondents could identify villages that shared a design. The *Akulmiut* woman's fur parka typically featured a design along the

bodice or *culuksugun* or *qemirlugun* (the *Akulmiut* term) which represented the tail of a blackfish. Occasionally the blackfish tail design in the early part of this century was seen on women's parkas of the Nelson Island people and lower Kuskokwim but were never seen, as one elder woman reported, for example, on parkas of Hooper Bay or Chevak women (*Naparyaarmiut* or *Qissunarmiut*). Another *Akulmiut* design, less commonly used, was the "bow and arrow" design. The parkas of lower Kuskokwim women were also distinguished by the use of the "pretend drums" (*cauyaryuak*) design across the bust or the *qaliq* part of the parka. In 1983, elder men and women remarked on the difficulty of identifying where people were from "because the parkas are all mixed up."

Men's parkas were distinguished as well by the pattern but did not have the decoration detail of the women's parkas. The style of *Akulmiut* men's parkas was distinguished by the absence of a hood with the use of fur caps with ear flaps instead (Nelson 1899:32, 37-38). Also, *Akulmiut* men were distinguished by their wearing a labret in the lower lip and a general style of boot (Nelson 1899:41, 46). During the early 1820s, Khromchenko (VanStone 1973:52-53,60) reported that different Yup'ik groups such as the *Agaligmiut*, *Kusquqvagmiut*, and *Nunivagmiut* could be distinguished by the types of fur used in making their clothing.

Two different stories relating to the time of wars, featured an *Akulmiut* man who was able to identify the intrusion of the enemy by the style of kayak bow. Also, the census agent for the lower

Kuskokwim River area for the 11th United States census (1890) remarked

> [T]he distance at which these dogs [in villages] can distinguish the canoes of strangers from those of friends is astonishing; they never make mistakes. (Porter 1893:102)

Interregional or intersocietal transgressions and insurgencies ended by the time the Russians were present in the region about 1820. The Russians gave refuge to the *Agaligmiut* who were feared by groups in the lower Kuskokwim River and Kuskokwim Bay areas. They utilized their expertise in language and local geography to advance Russian-American commerce. Even after the end of intersocietal warfare, interregional travel was undertaken cautiously. Explorers accounts for the 1800s characteristically noted where Native guides refused to embark further with a non-Native expedition (Wrangell [1839] 1980; Jacobsen [1884]1977; Oswalt 1980; Zagoskin [1847]1967). Even the Russians at Fort Alexsandrovskiy (Nushagak) reportedly had to hold hostages such as family members in order to keep Native workers from deserting.

The Russian-American Company implemented a system of "trading chiefs" or *toyon* (*tuyuq* [Yup'ik, sing.]) to facilitate trade with Yup'ik groups as they had done elsewhere in Alaska (Oswalt 1980:11). These individuals were village leaders who were designated by the trading company and were officially recognized. They were responsible for enhancing the fur trade at the village level by encouraging commercial trapping, but also "for promoting an

intervillage harmony that would improve the trading atmosphere (Oswalt 1980:11).

Settling intervillage feuds had been an objective as early as 1830 with Vasilev's explorations in the Kuskokwim River area (Oswalt 1980:10). By designating a village representative as a trading chief it appears that the Russian-American Company sought in that system of representatives a mechanism whereby designated Natives could "freely" (fearlessly) travel into other regions for the purpose of trading with the Russians. Presumably, certain village leaders already had this capability for the purpose of interregional trade between Native groups (Oswalt 1980:10-11; Shinkwin 1984:342-44). Even near the end of the Russian period in Alaska, Russian-American Company traders themselves had not succeeded in venturing into all Native-occupied areas to trade. As late as 1860, Fort Kolmakovskiy traders apparently feared traveling west of present-day Akiachak where they had to encourage Yup'ik from further west to come and trade at an outpost. Also, in the 1860s, the Russian priest Illarion traveled to an *Akulmiut* village at their request only to find found them hostile toward the Russians. The inclusion of the *Agaligmiut* at Fort Kolmakovskiy even many years after the end of interregional warfare does not appear to have been advantageous to Russian trading operations. In fact, it may have contributed to the Russians inability to establish friendly relations among the *Akulmiut* who had a history of conflict with the *Agaligmiut*.

After intersocietal warfare ended it was suggested in this study, as elsewhere (Shinkwin and Pete 1984:106), that the *kevgiq*

(Messenger Feast; Trading Festival) ceremony developed to engage villagers from a different regional group in ceremonial trading and exchange of goods, although it also occurred among villages within the group. Possibly, a form of *kevgiq* took place previously, probably within the group, but took on additional and sociopolitical dimensions during the 19th century. It was, however, the only ceremony involving villages from outside of the regional group and even then only certain villages were customarily involved in the exchange.

From the analytical perspective of territoriality or maintenance of exclusive use, these ceremonies are viewed as a mechanism for communicating the composition of the social group and the areas they used and occupied. The type of exchange that characterized *kevgiq* informed each group of the associated people, places, and products. Travel to and from the host village required knowledge of major travel routes and place-names that guided access into foreign areas as discussed below. Communication between guests and hosts required knowledge of personal names and kinship. Through communication, guests and hosts learned how to identify groups of people and their relationships simply by having knowledge of personal names which tended to be group specific (Shinkwin and Pete 1984; Beaver 1982).

Ceremonies also required vast stores of food to be provided by the host community. Aside from sustenance, this was a display of the local subsistence products including the primary ones, such as whitefish, pike, and blackfish, among the *Akulmiut*, as well as supplemental products such as waterfowl and salmonberries. Items not

indigenous to the area which had to be obtained through trade, such as sea mammal skins and oil, were also evident and these advertised the extent of *Akulmiut* resource use. Much as intraregional ceremonies were important for information exchange, so too, were interregional ceremonies. Interregional ceremonies, although seemingly lavish, were relatively efficient means of maintaining exclusive use by advertisement. By having a large group of people from different societies come together at a central place for several days, the activities of each were monitored through direct communication. In this fashion a relatively large area could be maintained exclusively without the high costs of time and energy associated with actual defense of a perimeter. This display also served to maintain areas of relatively lower productivity which in some years may necessarily become important (such as waterfowl, mink, muskrat)

Within *Akulmiut* society, there were ceremonies that occurred annually between *Akulmiut* villages -- *Itruka'ar* or *Kelek* and *Kevgiq*. Both ceremonies involved the redistribution of food and goods, and also reflected spiritual dimensions related to the propagation and propitiation of fish and wildlife (see also Morrow 1984). In addition, they brought together the larger group. Communication and information exchange were important aspects for monitoring land and resource use within the area. Knowledge of local conditions affecting travel and resource harvesting was critical for subsistence production. Sharing and exchanging were the principal aspects of the ceremonies and included not only food and material goods, but also

information. Ceremonies among members of a single village included *Nakaciuryaraq*, *Qaariitaaq*, and *Ingulaq*. These had similar characteristics to those of intervillage ceremonies, but these operated at the village level of land and resource use and for information exchange.

Since territorial behavior did not preclude the use of resources by others for specific purposes or their use at certain times of the year, the circumstances under which non-*Akulmiut* had access to the area or resources were examined. It was noted on several occasions, however, that [translated] "at the time of wars, the social milieu was different than during times of peace [and since then]." In addition to the example provided earlier describing how men's clothing was different and made so they could "move fast," it was said that [translated] "you wouldn't travel so far away that you wouldn't have some kinship....for anybody who you don't know what their name is and [but] you know [of] their namesake, you are more persistent about finding out how they are related." Even in the 1980s, Yup'ik travelers to a village which they had not visited previously, spent considerable effort determining whether they have a relative there. If they did not initiate the line of questioning, someone in the host village inevitably did. Even for non-Yup'ik visitors, it was customary that they met with a group of community officials in addition to elder men who reviewed the purpose for their being in the community. Also, for non-Yup'ik visitors, there was often an attempt to seek connections to Yup'ik acquaintances. Unannounced visitors were approached and their presence was relayed

by means of citizen band radio or telephone to key individuals in the village. In the past, prior to 1930, the *qasgiq* fulfilled this monitoring function.

Limiting knowledge of a geographic area to others was another means by which exclusive use to an area and its resources could be maintained. In the absence of maps, Yup'ik place-names served to facilitate travel and resource use among the group (Appendices 8 and 9; see also Burch 1981 and Pete 1984). The uninformed were disadvantaged. Within the area of the *Akulmiut*, the immense complex of lakes, sloughs, and other waterways is a challenge for the uninitiated traveler. There were, however, primary travel routes that were fairly readily negotiated with as little knowledge as a series of key place names referring to the few landmarks (hills, ridges) that occur in this otherwise vastly flat region. These crossregional travel routes were open to access by certain non-*Akulmiut* (see Figs. 47-55; Appendices 8 and 9).

During open water, the lower Johnson River was the primary means of entry into the tundra region from the south. This route provided access to the *Akulmiut* villages along either the Johnson River or large lakes draining into it, or the Pikmiktalik River. The Pikmiktalik River reportedly was used, in addition to the *Akulmiut*, by people from Akiachak (*Akiacuarmiut*) who ascended it and the upper Johnson River (*Kuicaraq*) in fall as they went to fall camps for hunting mink. In the 1980s, people from Akiachak typically joined their *Akulmiut* relatives for hunting moose in fall on the upper Johnson and Pikmiktalik rivers. In spring the area was used for

hunting muskrats by *Akulmiut* and *Akiacuarmiut* and occasionally others. Its use was explained in this way:

> [translated] Nobody asked but you know they used it. Not [generally] Napakiak, but some may have used it....like in spring if people heard about the abundance of muskrats, you'd expect to see people from other places such as Napakiak or Ohagmiut [near Russian Mission]. They would go if they know also convening on the area without asking. About this time of year [October] if [fish] were plentiful then like Napakiak people would come. You tell your relatives.

The upper Johnson River (*Kuicaraq*, "the way to go to 'the' river") was a route used both in open water and when frozen to reach the lower Yukon River near Russian Mission. To the west, Baird Inlet and the Bering Sea coast beyond were accessed by means of a series of portages and water routes along an east-west route which was still used in the 1980s during open water. The route extended from the large lake, Nunavakanukakslak Lake (*Nanvarnarrlak*), through *Pulayaraat* to *Arviyaraq* ("the way to go across") to upper and lower Kayigyalik Lake (*Qayigyalek*). From two points, portages and streams provided access into Takslesluk Lake (*Taklirrlak*) which provided access directly to the west. This was accomplished by means of streams and lakes such as Puk Palik Lake (*Paq'pal'aaq*) thence southwest to Baird Inlet (*Nanvaruk*) or northwest into Aropuk Lake (*Arurpak*). As one elder respondent (born 1901) noted

> [translated] ...(when he was little) people used this trail to bring things for trade (to and from the coast). It was used by *Akulmiut* or *Cenarmiut* and whoever needs to when traveling this way or through here [*Qaluyaarmiut*, *Kusquqvagmiut* also mentioned]. All these trails were open to anybody. Nobody gets a second look when you use a

> travel route. [He] heard of another route further north that *Akiacuarmiut* used to get to the coast.

This route through Puk Palik Lake and Takslesluk Lake was used by the census agent when recording for the 11th U.S. census (1890) while traveling from the Bering Sea coast to Bethel (Porter 1893). The route to the north was used also in the 1860s by Father Illarion when traveling to and from Russian Mission to an *Akulmiut* village. Later, it was used in the early 20th century by mail carriers using dog teams returning from the lower Yukon to Bethel through the tundra area. Other than travel routes and mink and muskrat hunting areas along the Johnson and Pikmiktalik rivers and Kayigyalik Lake, it was stated that the area was commonly used by Kusquqvagmiut for picking the abundant salmonberries as it was in the 1980s.

Customary principles of resource use applied to the use of areas by *Akulmiut*. Families and groups of related families were associated with the use of some areas during some or many years. Other families joined at villages that had been abandoned earlier in this century and based themselves there for several years before relocating to another village permanently. *Akulurpak* and *Isviiqnirmiut* are examples. Nevertheless, the effective means of harvest in winter was by dispersal. Even so, the large resource base of winter could be defended with little energy expended by means of communication much like signposts. Families distributed throughout the area signaled land use, but also monitored it for signs of intrusion. Mobility was not so great that families had to move frequently, rather they remained at fall and spring camping sites which were easily

identified through common knowledge of place-names. In this fashion spring and fall camps were essentially outposts which served to protect the relatively large resource base. They also encompassed the area important for harvesting the major winter food resource, blackfish.

As data for the early 1960s and 1983 also revealed, salmon fishing camps have also been established along the lower Kuskokwim by residents of other *Akulmiut* villages in addition to the lower Kuskokwim River communities from Kipnuk to Akiachak (Figs. 15 and 46). Several customary principles of resource use applied to the use and occupation of *Akulmiut* salmon fishing camps. The principles of geographic affiliation and kinship affiliation enabled newly-established households to secure a base from which to fish for salmon. Even legal ownership of some of these sites had not supplanted customary principles, as some salmon fishing sites were not even occupied or used by the legal owner.

In conclusion, the key to *Akulmiut* spatial organization and territory was similar to the "elastic disk" property described as characteristic of some territories (Wilson 1975:270) The population was compressed at some times and dispersed at others. The territory had a core area of intensive usage (in the vicinity of the primary villages) with an outer cortex that was less frequently used and visited. The *Akulmiut* delineated boundaries by several means. Critical food resources were maintained for exclusive use by members of the group. Use of more remote and less productive areas was monitored through dispersion. Use of superabundant resources, such

as salmon, was not exclusive. Certain access routes provided for intergroup travel at particular times of the year and for particular groups of people. Exclusive use provided protection in terms of a guaranteed food supply, but conversely kept group members from being offenders in terms of using areas maintained for use by neighboring groups. Further, ceremonies, clothing and kayak styles, and personal and place-names identified the group and the area of its land and resource use.

Akulmiut Territoriality and the Economic Defendability Model

As described in Chapter 1, the economic defendability model of human territoriality (Dyson-Hudson and Smith 1978) accounts for diversity in hunter-gatherer spatial organization by using two parameters of key resource distribution -- 1) abundance and density and 2) predictability in time and location. Territorial behavior is expected when critical resources are distributed so that exclusive use and defense produces a net benefit in resource capture or harvest (Dyson-Hudson and Smith 1978:36). In a territorial system exclusive use is maintained by overt defense or some form of communication or advertisement (Dyson-Hudson and Smith 1978; Wilson 1975). The benefit of a territorial system outweighs the costs (in time and energy) of maintaining exclusive use.

One hypothesis suggested by the model predicts that where key food resources are dense and predictable, human resource utilization will be by means of a territorial system. In the case of the

Akulmiut, it was found that the key resource species of whitefish (*Coregonus* sp.) and northern pike (*Esox lucius*) exhibited resource distribution parameters characterized as predictable in time and location and were abundant or dense. Spatial organization showed that all primary villages and storage and processing facilities were situated where these resources could be readily intercepted during their annual migrations. Further, the center of social, political, ceremonial, and religious life occurred at these sites where the multipurpose *qasgiq* was constructed also.

Alaska blackfish (*Dallia pectoralis*) was another critical resource of the *Akulmiut*. They are less predictable in time and location than whitefish and pike, but cannot be considered an unpredictable resource. This resource occurred in relative abundance during several months of the winter with their locations generally predictable from year to year, although specific distribution fluctuates. Their distribution is ubiquitous, but dispersed, within the area used by the *Akulmiut*. They occurred throughout the area with specific areas noted for their relative abundance. They were the major winter food resource.

Between groups or societies, the *Akulmiut* exhibited a territorial system of land use and occupancy as predicted by the model when critical resources were dense and predictable. Costs associated with maintaining exclusive use were less than benefits gained by doing so. The occupation of Akulmiut villages for eight months of the year condensed the population at a few key harvesting and storage localities which could be easily defended. Dispersion of

the population at other times ensured the maintenance of a broader area for use in harvesting another key resource, blackfish. This dispersal simultaneously encompassed areas used for harvesting a variety of supplemental resources that constituted much of the balance of food produced for subsistence.

Dispersion was an efficient means of signaling areas used by the group, but also served to monitor incursions throughout the territory. Knowledge of major travel routes provided neighboring groups access into and across the area. Thus, intergroup "traffic" could be monitored as it was channeled through a few primary "thoroughfares." Members of particular societies were entitled to use the routes for crossregional and interregional travel, whereas others did not. Travel routes, however, did not open the area for use as a commons. For resources which were especially abundant, such as salmon, only members of specific neighboring societies were entitled to harvest resources without being considered to be intruders.

The *Akulmiut* distinguished themselves and their land and resource use through several mechanisms. The annual cycle of ceremonial activities brought people together from within the group and between groups. Information exchange indicated uses, resource abundance and distribution, and served for monitoring the activities of others. Naming conventions for personal and place-names demarcated the *Akulmiut* and the area they occupied. Clothing and kayak styles further distinguished the Akulmiut from their neighbors.

Another resource used by the *Akulmiut* during the 20th century was salmon. Its exceptional abundance throughout most of the summer in this area qualified it as a "superabundant" resource. When there is a "temporary glut," the economic defendability model predicts that a territorial system will not develop because the benefits of exclusive use do not outweigh the costs of defense. Data on *Akulmiut* salmon fishing patterns showed that several societies engaged in salmon fishing along the lower Kuskokwim River between Bethel and the Johnson River mouth. Since at least 1963, members of communities representing at least three different societies (Figs. 6, 16, 46) have shared use of the area for salmon fishing. A territorial system would be expected to occur if there was a change in one of the resource distribution parameters, such as abundance of salmon.

Overall, the economic defendability model holds considerable value as an heuristic tool for answering questions relating human spatial organization to resource distribution. First, it serves to focus attention on the analysis of key variables which help to explain diversity in hunter-gatherer spatial organization. In particular, the model provides a means by which to further examine the socioterritorial organization of Alaskan Eskimo groups. Second, it provides a means for systematically analyzing territorial dimensions of these societies in a comparative context. Its utility in this context is demonstrated below by showing how the model could be used to explain the seeming diversity in territorial organization of Alaskan Eskimo societies described in the Chapter 1. Following

this is are conclusions related to problems in the application of the model in this study.

Studies of north Alaskan Eskimo indicated that some societies such as the Point Hope Eskimo (*Tikerarmiut*) had definable and defended territories (Burch 1981). Although evidence was not presented to help explain the occurrence of a territorial system, mechanisms for defending and advertising an area of exclusive use were described, such as knowledge of place-names, dispersion to fringe or "less productive" areas at certain times, and designated travel routes open for members of some groups for traveling across "boundaries" to participate in intersocietal trade fairs.

The economic defendability model could be used to analyze resource distribution parameters of key food resources and to demonstrate whether the benefits of a territorial system for the Point Hope Eskimo outweighed the costs of defense. However, several questions must be answered first. Which marine mammal species utilized were key resources for the *Tikerarmiut*? Were these predictable in time and location and dense? Was the primary settlement of the *Tikerarmiut* situated so as to maintain exclusive use of critical resources with low costs (in time and energy) of defense? The limited information available (Burch 1981) showed that, as with the *Akulmiut*, the primary *Tikerarmiut* village was the site for a guaranteed food supply (of some marine mammal species), but also where food was stored. Predictable and dense resources and stored food supplies likely generated a territorial system. Although the *Tikerarmiut* were settled much of the year at a large village

site, they dispersed in summer to areas used by different families for fishing, netting belukha whale, and/or caribou hunting. Determining whether any of these constituted a critical resource for the *Tikerarmiut* would help to explain maintenance of an area for exclusive use of an area well beyond the village as Burch (1981) argued. Further, the seeming puzzle noted by Burch (1981) of *Tikerarmiut* defense of areas of "low productivity," appears to be accounted for by the economic defendability model. Possibly, as for the *Akulmiut*, one of the critical resources was dispersed, but abundant. The costs of defense over a large area may have in fact been lowered by dispersing small family groups throughout the area.

The Nunamiut Eskimo who occupied much of the area between the arctic coast and the Brooks Range exhibited a different pattern of spatial organization and resource use. The economic defendability model again could provide further insight into the territorial dimensions of Nunamiut land and resource use. Ethnographic studies by Spencer (1959) and Gubser (1965) described individually named groupings that occupied and utilized resources in different drainages. Caribou were a critical food resource and the group came together to drive caribou during their biannual migrations. A temporary ceremonial and communal structure was built where the group coalesced. At other times of the year families could and did join other groups from among the larger Nunamiut grouping, and dispersed. In the case of the groups that constituted the Nunamiut, their organization may have been territorial for the purpose of the caribou harvest, whereas the larger Nunamiut grouping may have been the

territorial unit with respect to neighboring societies such as the *Tikerarmiut* and the Kobuk River Eskimo. Structured trade relations, again as with the *Akulmiut* and *Tikerarmiut*, were with particular rather than with all neighboring groups, and travel routes permitted uninhibited travel. Application of the economic defendability model could explicate the seeming differences in socioterritorial organization among coastal and inland north Alaskan Eskimo societies.

The socioterritorial organization of the Bering Strait Eskimo (Ray 1967) is another example in which our understanding of the relationship between resource distribution and utilization could be enhanced by application of the economic defendability model in analysis. Among the Kauwerak, an Inupiaq society, Ray (1967) alluded to caribou and fish (species not identified) as being critical resources of the Kauwerak. Even though the analysis did not use these variables to conclude that Kauwerak were territorial, the data indicated that areas were defended. Also, several mechanisms operated for monitoring incursions into the area and for protecting Kauwerak themselves from offending neighboring groups (Ray 1967). As with the *Akulmiut*, the *qasgiq* organization was central for operationalizing these mechanisms. The sociopolitical aspects of *qasgiq* life provided for monitoring land and resource use by Kauwerak and their neighbors, and for enforcing appropriate conduct in land and resource use, such as requesting permission for hunting or fishing in the area of an allied society. Place-names, knowledge of the names of older persons in the society, and unique boat styles all contributed to distinguishing the Kauwerak from their neighbors, as

among the *Akulmiut*. Ray (1967) also described "alliance sanctuaries," areas which were a commons used for harvesting seals and fish. The occurrence of these sanctuaries may be readily explained by the economic defendability model by determining whether or not the resources harvested were critical resources and what characterized the resource distribution parameters (predictability and abundance) for those resources. Similar analyses of other land and resource use of other Alaskan Eskimo societies could lead to broad generalizations of territorial behavior among Alaskan Eskimo societies.

Several problems emerged, however, in the application of the model in this study. First, there were no precise measures for identifying critical or key food resources. This study identified key resources by the relative contribution of a particular species to the total subsistence output and, to a limited degree, using emic perspectives of importance. Use of the former criterion was necessarily limited in that data for a single 12-month period were used and were derived from a sample of households. Key respondent interviews, however, confirmed the primacy of the species identified by the subsistence output calculations. As with most studies longitudinal data are necessary for refining any model.

A second problem was the lack of precision in the model because of the lack of criteria for resource distribution parameters. Determining relative predictability and abundance of a resource is a difficult task. Species-specific criteria probably are not useful if only because a complex of variables must be examined to make a

determination. Unique characteristics of geography often contribute to the abundance of a specific resource at a particular location or in an area regardless of general behavioral characteristics. For example, although certain whitefish species may be seasonally "abundant" due to biological characteristics of the species, they may be especially abundant in time and location owing to geographical features which tend to concentrate the resource further. Therefore, the same species may be considered abundant in an area used by one society, but scarce in a neighboring area. Parameters for determining resource distribution need to be better defined.

The theoretical model used to guide this analysis has considerable value for addressing the relationship between resource distribution and spatial organization and resource use among Alaskan Eskimos. It provides a means to systematically analyze territorial dimensions of these societies in a comparative context and to explain the seeming diversity in socioterritorial organization. That is, according to this ecological model, each Eskimo society that has a defended territory will be located where a critical food resource is dense and predictable, and can be harvested efficiently. Examining whether this is true for other Eskimo groups, like the *Akulmiut*, would be the next step for testing the validity of this theory. The promise of this type of analysis in explaining Alaskan Eskimo territorial behavior points to the contribution that data on Alaskan Native societies can make to the general theory of human territoriality.

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APPENDIX 1. SUBSISTENCE SALMON FISHING AND PROCESSING WORK GROUPS AND FACILITIES -- FISH CAMPS, SUMMER 1983

Date: Name:

Observer:

FISH CAMP HISTORY

When did you begin using this place for your camp?

How did you decide on this place?

Who used this place before you?

What other places have you used for your fish camp (since you were married)?

Who else was at the camp?

When were you there?

Why did you stop using these places?

Other notes:

When did you come to fish camp this summer?

How long will you be here?

How often do you go to Nunapitchuk? Bethel?

What families or people are working together to catch, cut, and dry salmon?

Name	Individual's Job or Activities	Works with Whom

Others Present:

Make a Kinship diagram to show how these people are related (on separate sheet)

SALMON HARVESTING AND PROCESSING

Where do you (or person who gets the salmon) drift for kings for subsistence?

How much king salmon did you process for subsistence?

How did you process it?
Process (strips, salt heads, jar) Amount (all, most, half, none)

Where will you store it in Nunapitchuk?

Red Salmon

Where do you (or person who gets the red salmon) drift for red salmon for subsistence?

How much red salmon did you process for subsistence?

How did you process it?
Process (strips, salt heads, jar) Amount (all, most, half,none)

Where will you store it in Nunapitchuk?

Chum Salmon

Where do you (or person who gets the chum salmon) drift for chum salmon for subsistence?

How much chum salmon did you process for subsistence?

How did you process it?
Process (strips, salt heads, jar) Amount (all, most, half, none)

Where will you store it in Nunapitchuk?

FACILITIES AT CAMP

How many racks and smokehouses are at the camp? What size are they? Who do they belong to?

How many dwellings are at the camp? What size are they? Who do they belong to?

What other facilities are at camp (steam bathhouse, cache)?

What size boat do you use? (wooden or aluminum)

What size outboard?

Who do they belong to?

Do you use your own nets?

Where do you store salmon (cache, freezer)?

APPENDIX 2. SUBSISTENCE SALMON FISHING AND PROCESSING WORK GROUPS AND FACILITIES -- NUNAPITCHUK, SUMMER 1983

Date: Name:

Observer:

HISTORY

When did you begin salmon here in the village?

How did you decide to process salmon in the village?

Have you ever gone to fish camp to get salmon and process it?

Where was it?

Who else was at the camp?

When were you there?

Are there other camps which you have used?

When was that? Who else was there?

THIS SUMMER

When did you begin processing salmon this summer?

What people are working together to catch, cut, and dry salmon?

NAME	JOB	WORKS WITH WHOM? (any relation?)
(who gets the salmon?) (is it the same for kings and chums)?		
(who cuts the fish)? (is it the same for kings and chums)?		

FACILITIES IN THE VILLAGE

Do you use your own smokehouse? (size)

Do you use your own rack? (size)

What size boat and outboard do you (or person who gets the salmon) use for subsistence salmon fishing?

Are they the same one you use for commercial fishing?

SALMON HARVESTING AND PROCESSING

Where do you (or person who gets the salmon) drift for kings for subsistence?

How much king salmon did you process for subsistence?

How did you process it?
Process (strips, salt heads, jar) Amount (all, most, half, none)
(describe how cut)

Where will you store it in Nunapitchuk?

RED SALMON

Where do you (or person who gets the red salmon) drift for red salmon for subsistence?

How much red salmon did you process for subsistence?

How did you process it?
Process (strips, salt heads, jar) Amount (all, most, half, none)

Where will you store it in Nunapitchuk?

Chum Salmon

Where do you (or person who gets the chum salmon) drift for chum salmon for subsistence?

How much red salmon did you process for subsistence?

How did you process it?
Process (strips, salt heads, jar) Amount (all, most, half, none)
(describe how cut)

Where will you store it in Nunapitchuk?

APPENDIX 3. NUNAPITCHUK MINK TRAPPING SURVEY, JULY-AUGUST 1983

Interviewer:
Person Interviewed:
Date:

NATURAL HISTORY INFORMATION

1. What habitat type is this animal found in at different times of the year?

   Fall:

   Winter:

   Spring:

   Summer:

2. What kind of behavior does this animal have at different times of the year? What does it eat? Where does it live? Is it on the move or does it stay within a small home range? Is it found in groups or is it solitary? How does it respond to different weather, snow, and ice conditions? When does it mate and have its young? Is it active during the day or at night?

   Fall:

   Winter:

   Spring:

   Summer:

3. What kind of habits and behavior does this animal have that are useful to know about in order to trap them successfully?

4. In what months are the furs on this animal the most prime?

5. What characteristics of the fur make it a high quality and valuable pelt?

6. In what areas of the tundra is this species most abundant? Why?

7. Why are these good areas for mink?

8. Have you noticed any changes in the amount of mink in the tundra areas during the past 10 years? What do you think caused this change?

TRAPPING METHODS AND HARVEST

1. In what months did you trap for mink? Which is the best month? Why?

2. What do you use to trap mink? How many traps did you set last year?

3. Where are the traps usually set? (in lakes, sloughs, etc.)

4. If mink is alive, how do you kill it?

5. What problems are sometimes encountered when trapping mink?

6. How many mink did you trap last year?

7. How often did you check your traps?

8. Did you trap from the village or do you have a camp that you trap from?

9. Locate your camp and where you set your traps on the map.

10. Do you usually trap mink in this area? When did you begin to trap mink in this area?

    How did you decide on this area?

    Was anyone else using the area before you?

11. Does anyone else use this area to trap mink? Does anyone trap with you?

12. What other areas have you used to trap mink?

13. Why did you stop using them?

14. Was anyone else trapping mink in those areas at the time? Who? In what years?

15. Did you sell all the mink you trapped to a furbuyer? If you kept any, what did you do with them? (give to someone, use for_____?)

16. What do you think of the fish and game regulations for trapping mink? (Nov. 10-Jan 31; no limit)

17. What other animals do you trap? Do you hunt muskrat or fox?

APPENDIX 4. NUNAPITCHUK BEAVER TRAPPING SURVEY, JULY-AUGUST 1983

Interviewer:
Person Interviewed:
Date:

NATURAL HISTORY INFORMATION

1. What habitat type is beaver found in at different times of the year?

   Fall:

   Winter:

   Spring:

   Summer:

2. What kind of behavior does this animal have at different times of the year? What does it eat, where does it live, is it on the move or does it stay within a small range, is it found in groups or is it solitary, how does it respond to different weather, snow, and ice conditions? When does it mate and have its young? Is it active during the day or at night?

   Fall:

   Winter:

   Spring:

   Summer:

3. What kinds of habits and behavior does this animal have that are useful to know about in order to trap it successfully?

4. In what months are the furs on this animal the most prime?

5. What characteristics of the fur make it a high quality and valuable pelt?

6. In what areas are beaver most abundant? (show on map) Why?

7. Have you noticed any changes in the number of beaver? What kind of change was it and when did it occur? Is this usual?

8. Have there been any problems with beaver disrupting fish (whitefish, blackfish, lush) streams? Where are these places? (show on map) When did this problem begin? What kind of problem has this made?

TRAPPING METHODS AND HARVEST

1. In what months did you trap beaver? Which is the best month? Why?

2. What do you use to trap beaver? (traps, deadfalls, snares, bait, rifles)

3. How many traps/sets did you set last year?

4. Where are the traps usually set? (in lakes, sloughs, creeks, anywhere else)

5. What problems are sometimes encountered when trapping beaver?

6. If beaver is alive, how do you kill it?

7. How many did you trap last year?

8. How often did you check your traps?

9. Did you trap from the village or do you have camp that you trap from? (Locate your camp and where you set your traps on the map).

10. Do you usually trap beaver in this area? When did you begin to trap beaver in this area?

    How did you decide on this area?

    Was anyone else using this area before you?

11. Does anyone else use this area to trap beaver? Does anyone trap with you? (who?)

12. What other areas have you used to trap beaver?

    When did you stop using them?

    Was anyone else trapping beaver in those areas at the time? Who?

    In what years?

13. Did you sell all the beaver you trapped to a furbuyer?

    If you kept any, what did you do with them? (give to someone, use for_____?

    What did you do with the carcass?

14. What do you think of the fish and game regulations for trapping beaver? (January 1-June 10; 40 beaver limit).

15. What other animals do you trap? Do you hunt muskrat or fox?

APPENDIX 5. NUNAPITCHUK WILD RESOURCE USE, 1983

1. Did you go _____hunting/_____collecting this year?

   If not, when was the last time you went?

2. Draw a line around the area you went (hunting/collecting).
   Where did you go?
   Where did you get _____? (kill site, net site, collecting site, search area)

3. Are there other people who use this area for _____?

4. Where are they from?

5. Did you make a camp?

   Yup'ik name for campsite?_____

6. Is this where you usuallly camp?

   If not, where else have you camped? When? Why?

   When did you first use this area? Why?

   What do you have at the camp? (tent frame, cache)

7. Who did you go with?
   What did the other people do?

   Is this who you usually go with?

8. How did you get there? (who's boat, snogo)

9. When did you go?

   How long did you stay out for?

   Hunting/Gathering techniques?

   Gear-(shotguns, rifles, blinds, calls, lookouts, nets)

10. How much did you get?

11. Did you give any _____ to other people? Who?

12. Did you use any for *nerevkarin*?

13. Did you hunt/gather other wildlife while getting_____?
    (wood, plants, berries, beaver)

14. How much did you harvest of each of the following

Whitefish	Beaver	Salmonberries
Pike	Moose	Cranberries
Blackfish	Waterfowl	Blackberries
Sheefish	Eggs	Blueberries
Muskrat	Ptarmigan	Greens
Hare	Seal	Grass

15. How much fuel did you use for heating wood?

16. How many dogs do you have?

APPENDIX 6. FISH AND WILDLIFE RESOURCES HARVESTED BY NUNAPITCHUK RESIDENTS, 1983

COMMON ENGLISH NAME	YUP'IK NAME*	SCIENTIFIC NAME
FISH	*neqet* (pl.)	
chinook salmon	*taryaqvak*	*Oncorhynchus tshawytscha*
chum salmon	*iqalluk*	*Oncorhynchus keta*
sockeye salmon	*sayak*	*Oncorhynchus nerka*
pink salmon	*amaqaayak*	*Oncorhynchus gorbuscha*
coho salmon	*qakiiyaq*	*Oncorhynchus kisutch*
broad whitefish	*akakiik*	*Coregonus nasus*
humpback whitefish	*cingikeggliq*	*Coregonus pidschian*
least cisco	*neqyaalleraq*	*Coregonus sardinella*
northern pike	*luqruuyak*	*Esox lucius*
Alaska blackfish	*can'giiq*	*Dallia pectoralis*
burbot	*manignaq*	*Lota lota*
sheefish	*ciiq*	*Stenodus leucichthys*
SEALS	*taqukat* (pl.)	
ringed seal	*nayiq*	*Phoca hispida*
spotted seal	*issuriq*	*Phoca largha*
bearded seal	*maklak*	*Erignathus barbatus*
GAME ANIMALS	*pitarkat* (pl.)	
black bear	*tan'gerliq*	*Ursus americanus*
moose	*tuntuvak*	*Alces alces*
FURBEARERS	*melqulget* (pl.)	
beaver	*paluqtaq*	*Castor canadensis*
land otter	*cuignilnguq*	*Lutra canadensis*
muskrat	*kanaqlak*	*Ondatra zibethicus*
mink	*imarmiutaq*	*Mustela vison*
red fox*	*kaviaq*	*Vulpes fulva*

*Singular, unless noted otherwise
**Species harvested but not eaten

continued

COMMON ENGLISH NAME	YUP'IK NAME*	SCIENTIFIC NAME
SMALL GAME		
snowshoe hare	*maqaruaq*	*Lepus americanus*
tundra hare	*qayuqegglig*	*Lepus othus*
WATERFOWL AND BIRDS	*yaqulget* (pl.)	
ducks	*tengmiaraat* (pl.)	
geese	*lagit* (pl.)	
eggs	*peksuut* (pl.)	
American wigeon	*qaqliq*	*Anas americana*
arctic loon**	*tunutellek*	*Gavia arctica*
black scoter	*kukumyar(aq)*	*Melanitta nigra*
brant	*neqlernaq*	*Branta bernicla*
cackling Canada goose	*tutangayak*	*Branta canadensis*
canvasback		*Aythya valisineria*
common goldeneye	*anarnissakaq*	*Bucephala clangula*
emperor goose	*nacaullek*	*Philacte canagica*
gadwall	*essurpalek*	*Anas strepera*
greater scaup	*kep'alek*	*Aythya marila*
green-winged teal	*tengesqaar*	*Anas querquedula*
mallard	*eretaarpak*	*Anas platyrhynchos*
northern phalarope**	*imaqcaar*	*Phalaropus lobatus*
northern shoveler	*curcurpak*	*Anas clypeata*
oldsquaw	*allgiar(aq)*	*Clangula hyemalis*
pintail	*uqsuqaq*	*Anas acuta*
red-necked grebe**	*qalekcuuk*	*Podiceps grisegena*
red-throated loon**	*qaqataq*	*Gavia stellata*
sandhill crane	*qucillgaq*	*Grus canadensis*
snow goose	*kanguq*	*Chen caerulescens*
surf scoter	*akacakayak*	*Melanitta perspicillata*
tundra swan	*qerratalria, qugyuk*	*Cygnus columbianus*
white-fronted goose	*neqleq*	*Anser albifrons*
willow ptarmigan	*qangqiiq*	*Lagopus lagopus*
yellow-billed loon**	*tuullek*	*Gavia adamsii*

*Singular, unless noted otherwise
**Species harvested but not eaten

continued

COMMON ENGLISH NAME	YUP'IK NAME*	SCIENTIFIC NAME
BERRIES	*atsat* (pl.)	
blackberry, crowberry	*tan'gerpak*	*Empetrum nigrum*
blueberry	*curaq*	*Vaccinium uliginosum*
lowbush cranberry	*kavirliq*	*Vaccinium vitis*
salmonberry, cloudberry	*atsalugpiaq*	*Rubus chamaemorus*
thimbleberry	*puyuraaq*	*Rubus parviflorus*
PLANTS	*naucetaat* (pl.)	
buckbean**	*pingayulek*	*Menyanthes trifoliata*
kinnikinnik	*kavlak*	*Arctostaphylos alpina*
Labrador tea	*ayuq*	*Ledum palustre*
nettle	*qatlinaq*	*Urtica lyalli*
pallas buttercup	*kapuukar*(aq)	*Ranunculus pallasii*
poison water hemlock	*anguturluq*	*Cicuta mackenziana*
pondweed**	*nayaruaq*	*Potamogeton perfoliatus*
sourdock, wild spinach	*qaugciq* *nakaaq*	*Rumex arcticus* (male--top part)
water lily*	*paparnaq*	*Nuphar polysepalum*
wild celery	*ikiituk*	*Angelica lucida*
wild rhubarb	*angukaq*	*Polygonum alaskanum*
ROOTS (edible)	*qetget* (pl.)	
tall cottongrass	*iitaq*	*Eriophorum angustifolium*
root of	*anlleq*	
marestail	*tayaruq*	*Hippuris vulgaris*
root of	*qetek*	
poison water hemlock root	*uquutvaguaq*	*Cicuta mackenziana*
marshmarigold	*allngiguaq*	*Caltha palustris*
root of	*agiinik*	

*Singular, unless noted otherwise
**Species harvested but not eaten

continued

COMMON ENGLISH NAME	YUP'IK NAME*	SCIENTIFIC NAME
TREES AND SHRUBS**	*uqviit, cuyaqsuut* (pl.)	
spruce	*kevraartuq*	*Picea mariana/glauca*
root of	*kevraacinraq*	
birch	*elnguq*	*Betula* sp.
bark of	*imegyuk*	
fungus	*kumakaq, arakaq*	*Poria obliqua*
alder	*cuukvaguaq*	*Alnus* sp.
cottonwood	*qugniilnguq*	*Populus balsamifera*
willow	*nauciq, enrilnguaq*	*Salix* sp.
felt-leaf	*uqvigpak*	*Salix alaxensis*
wooly	*angvallurliq*	*Salix lanata richardsonii*
diamond-leaf	*cuyaqsuk*	*Salix planifolia pulchra*
littletree	*enrilnguaq*	*Salix arbusculoides*
WOOD**	*muriit* (pl.)	
firewood	*muragaq*	
driftwood	*tep'aq*	

*Singular, unless noted otherwise
**Species harvested but not eaten

APPENDIX 7. ESTIMATED DRESSED WEIGHTS OF FISH AND WILDLIFE HARVESTED BY NUNAPITCHUK RESIDENTS

FISH OR WILDLIFE RESOURCE	ESTIMATED DRESSED WEIGHT (in pounds)	SOURCE
Fish		
King salmon	15.00	weighed
Sockeye salmon	5.00	weighed
Chum salmon	5.00	weighed
Coho salmon	6.00	weighed
Whitefish sp.	3.00	Baxter 1975
Northern pike	3.00	Pete 1988
Burbot	4.50	Baxter 1975
Blackfish	9.30 per gal.	weighed
Sheefish	7.50	Baxter 1975
Land Mammals		
Moose	700.00	Andrews 1988, Yupikta Bista 1974
Black bear	125.00	Johnson 1984
Hare	4.20	Ernest 1978
Beaver	28.00	Shepherd 1984
Muskrat	.70	Andrews 1988
Mink	2.50	Burns 1964
Land otter	10.50	Solf 1978
Marine Mammals		
Seal sp.	115.00	Burns, Frost, and Lowry 1985
Birds		
Ducks	1.50	weighed
Geese	4.50	Pete 1988, Cameron and Jones 1983
Cranes	9.0	Pete 1988
Swans	10.6	Johnsgard 1975
Ptarmigan	.75	weighed
Berries		
Salmonberries	7.0 per gal.	weighed
Cranberries	4.0 per gal.	weighed
Blackberries	4.0 per gal.	weighed

APPENDIX 8.
YUP'IK PLACE-NAMES IN THE *AKULMIUT* AREA
(BY NUMBER) (FIGS. 47-55)

FIGURE 48

Map Number	Central Yup'ik and translation	English Name or Description
1	*Anumalleq* that which was going out	lower mouth of slough between Napakiak and Johnson River
2	*Akcuar* ??	upper mouth of slough between Napakiak and Johnson River
3	*Kangirrlak* big old corner	slough between lower Johnson River (west bank) and Kuskokwim River
4	*Aassaqvik* place to keep secrets	slough on west bank Johnson River 2 mi. above *Kangirrlak*
5	*Penguq* hill	Kongeruk River
6	*Igvaryaraq* to come into view	first sharp bend going up the Johnson River

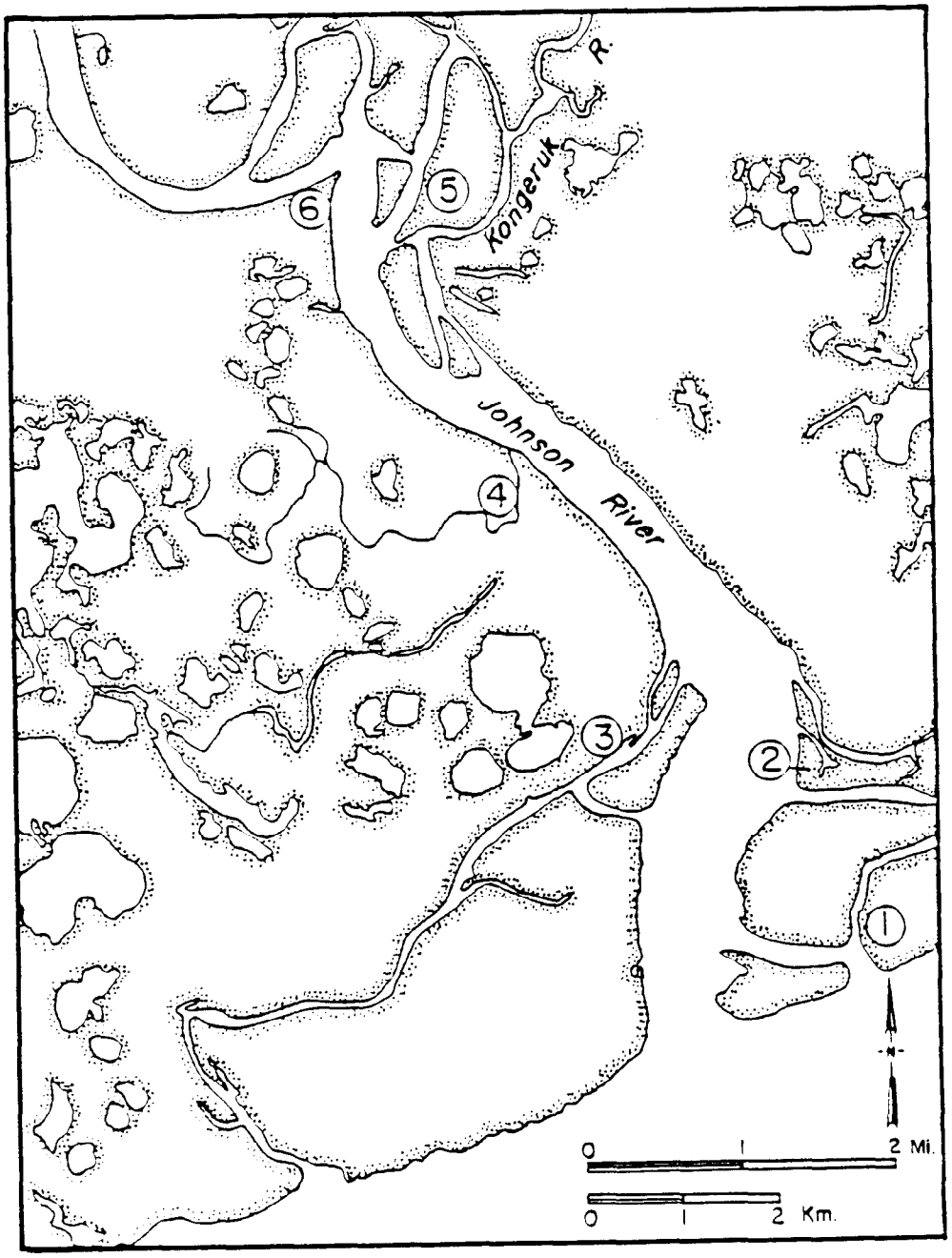


Fig. 48. Location of places with Yup'ik names, numbers 1-6.

FIGURE 49

Map Number	Central Yup'ik and translation	English Name or Description
7	*Petmigtalek* place with many pit traps	Pikmiktalik River
8	*Kakeggluk* snotty	slough between Pikmiktalik River and Kongeruk River
9	*Atmaulluaq* [has to do with backpack]	Atmautluak
10	*Paingaq* being the mouth of a river	village between Pikmiktalik River and Nunavakanukakslak Lake
11	*Eglrucetalek* way to be traveling (with canoes)	route from *Paingaq* to *Capukar*
12	*Qamuryaraq* place to pull	slough network to get from *Paingaq* to *Capukar*
13	*Capukar* covering or blocking the view	low hills 1/2 to 3 mi. east of *Paingaq*
14	*Nunangnerarrmiut* inhabitants of the settlement of *Nunang-neraq* (the new place)	interim village site (to Atmautluak) on Pikmiktalik River one bend below *Qecugiyugmiut*
15	*Pakigtaak* prying up two things	banks of Johnson River, 3/4 mi. above Pitmiktalik River

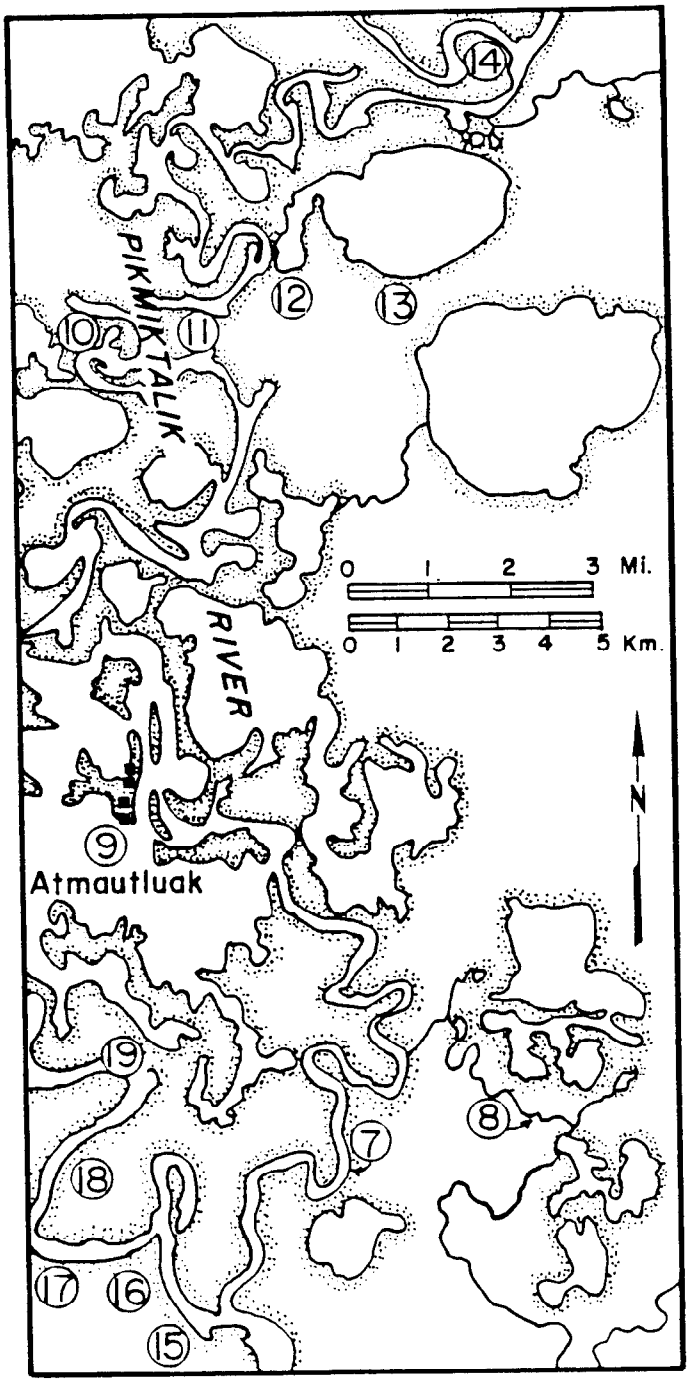


Fig. 49. Location of places with Yup'ik names, numbers 7-19.

FIGURE 49 continued

Map Number	Central Yup'ik and translation	English Name or Description
16	*Igvaryaracuar* the little place to come into view	second sharp bend going up the Johnson River, 2 mi. above the mouth of Pikmiktalik River
17	*Urraat* white or gray clay bluffs	bluffs on outside bend of the Johnson River; second bend above mouth of Pikmiktalik River
18	*An'arciiq* place to suddenly go out	part of Johnson River from its mouth to forks below Nunapitchuk
19	*Quuqaq* narrow part	part of Johnson River, 2 mi. below *Nanvarnisnguaq*

FIGURE 50

Map Number	Central Yup'ik and translation	English Name or Description
20	*Nanvarnisnguaq* thinking you are at Nanvarnaq	part of Johnson River, 1 1/2 mi. below *Narvarnaq*
21	*Kangiracuaq* little corner	part of Johnson River, 3/4 mi. below *Narvarnaq*
22	*Nacessvik* high place to look from	place on southwest end of *Nanvarnaq*
23	*Nanvarnaq* big lake	part of Johnson River, 5 mi. southeast of Nunapitchuk
24	*Paallalleq* one who fell forward	place at center of western bank of *Nanvarnaq*
25	*Uamun* a waste of time	part of Johnson River, at head of *Nanvarnaq*
26	*Qavirngalria* one that is turned/ slanted to one side	where Johnson River enters *Nanvarnaq*
27	*Taluyilleq* one who set a fishtrap	lake on east side of Johnson River forks
28	*Kassigarneq* place where two streams meet	forks of the Johnson River
29	*Uuyarmiullret/Uuyarmiut* former inhabitants of the settlement of *Uuyaq* (??)	village on north side of Johnson River forks

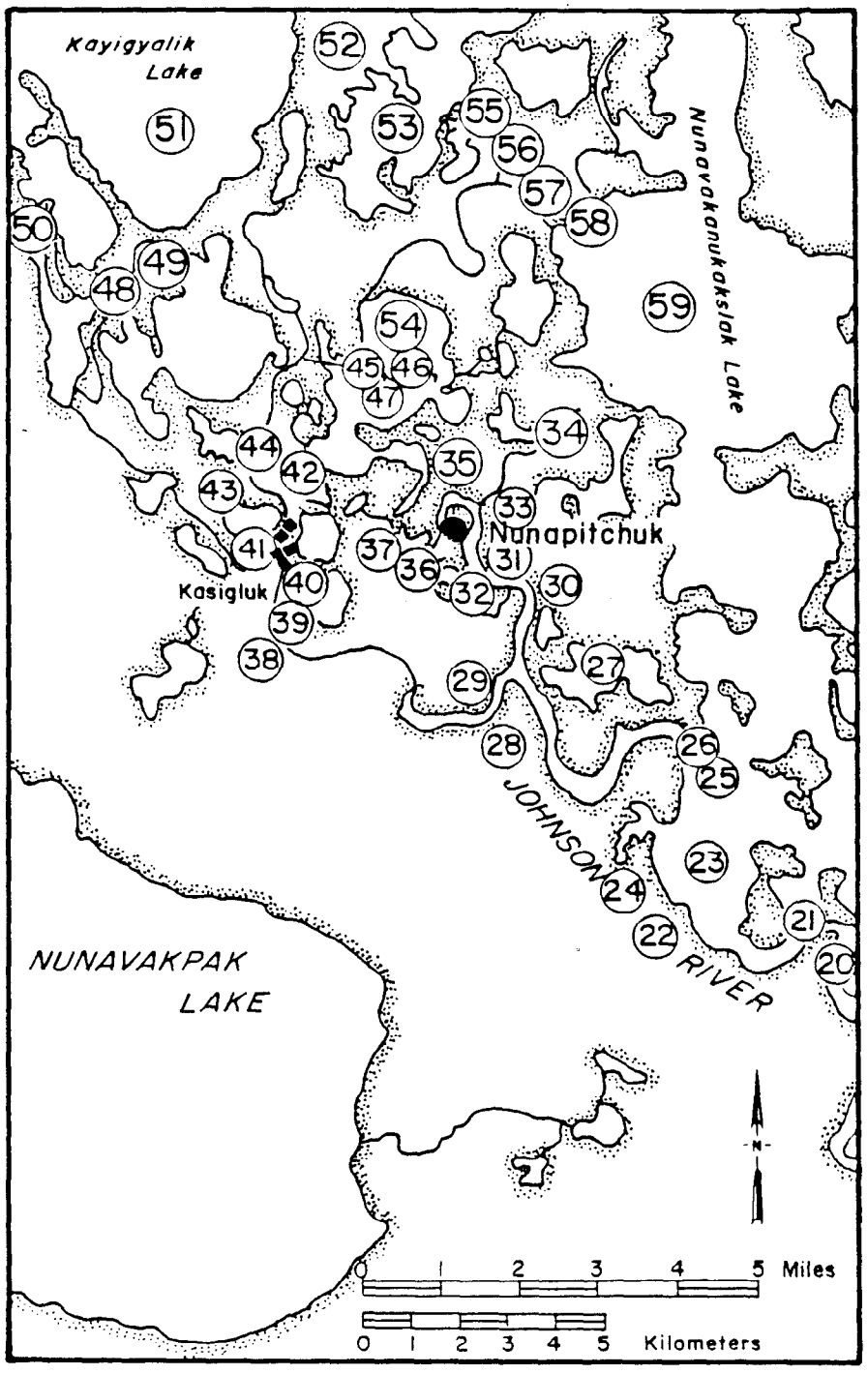


Fig. 50. Location of places with Yup'ik names, numbers 20-59.

FIGURE 50 continued

Map Number	Central Yup'ik and translation	English Name or Description
30	*Kuigaallermiut* former inhabitants of the settlement of *Kuigaaq* (little piece of river)	village on east side of Johnson River, 1 1/2 mi. south of Nunapitchuk
31	*Qaleqcuugtuli* place with alot of grebes	slough east of Johnson River, opposite *Carvanerpak*
32	*Carvanerpak* strong river current	slough 1 mi. south of Nunapitchuk
33	*Nunapicuaq* small real land	Nunapitchuk
34	*Qurrlurpak* waterfall	slough and settlement between Johnson River and Nunavakan-ukakslak Lake
35	*Akmalilleq* one who made the opposite side	slough from north opposite Nunapitchuk
36	*Piqertualleq* one who chopped; one that was chopped	slough on west just above Nunapitchuk
37	*Kuiliuraq* slough that was made	slough to Kasigluk on west above *Piqertualleq*
38	*Urracuaraat* little white or gray clay bluffs	new Kasigluk

FIGURE 50 continued

Map Number	Central Yup'ik and translation	English Name or Description
39	*Kaganalleq* one that used to be *Kaganaq* [name of a man]	house and grave site opposite new Kasigluk
40	*Kassigluq* where two streams/rivers joined	present site of old and new Kasigluk
41	*Atalriarmiut* inhabitants of the settlement of *Atalria* (one [the land] depends upon)	village at mouth of *Uilutuli*; opposite old Kasigluk
42	*Aparuirun* when grandpa was taken away	slough between old Kasigluk and *Nanvarnaq*
43	*Qurrluq* flowing water (liquid)	slough flowing into *Uilutuli*
44	*Uilutuli* one with clams	part of Johnson River between *Nanvarnaq* and old Kasigluk
45	*Pupiit* sores	slough between *Uilutuli* and lake behind *Nunacuaq*
46	*Pupigmiullret Atliiq* (the lower one of) former inhabitants of the settlement of *Pupik*	village at mouth of *Pupiit*

FIGURE 50 continued

Map Number	Central Yup'ik and translation	English Name or Description
47	*Pupigmiullret Qulliiq* (the upper one of) former inhabitants of the settlement of *Pupik*	village across lake from *Nunacuaq* at head of *Pupiit*
48	*Qemit Aciat* under the ridge	short slough 1/2 mi. west of *Nunacuaq*
49	*Nunacuaq*; *Nunacuarmiut* little land; inhabitants of the settlement of *Nunacuaq*	village along slough 1 1/2 mi. south of (lower) Kayigyalik Lake
49	*Akuluraarmiut* inhabitants of the settlement of *Akuluraq* (the area inbetween)	alternate name for *Nunacuarmiut*
50	*Egmiqalleq* a place where something went through	slough west of *Nunacuaq* near mouth of *Nanvarpiim Kuiga*
51	*Qayigyalek Atliiq* the lower ??	(lower) Kayigyalik Lake
52	*Culuutmurneq* the area where the trail/river traveler turns to face	slough between lower *Arviryaraq* lower Kayigyalik Lake
53	*Arviryaraq* the way to go across	two lakes between *Nanvarnarrlak* and Kayigyalik Lake and the river connecting it to *Kuicaraq*

FIGURE 50 continued

Map Number	Central Yup'ik and translation	English Name or Description
54	*Nanvarnaq* big lake	part of the Johnson (*Kuicaraq*) River like a lake 3 mi. above Nunapitchuk
55	*Aglumaqaq* ?sudden desire for something	slough between *Kuingun* and *Arviryaraq*
56	*Pulayararaat* where you go through a thicket	part of *Aglumaqaq*
57	*Kuingun* acquired river (or slough)	slough entering Nunavakanukakslak Lake at *Nanvarnarrlagmiut*
58	*Nanvarnarrlagmiut* inhabitants of the settlement of *Nanvarnarrlak*	village on western shore of Nunavakanukakslak Lake
59	*Nanvarnarrlak* major lake; one heck of a lake	Nunavakanukakslak Lake

FIGURE 51

Map Number	Central Yup'ik and translation	English Name or Description
60	*Nangcarturvik* place to tow	part of lower Kayigyalik Lake at southwest end north of *Uayaran*
61	*Cilungnirrlak* ??	stream flowing from west into lower Kayigyalik Lake
62	*Nanvarpiim Kuiga* the river of *Nanvakpak* (big lake)	stream flowing from north into northwest corner of Nunavakpak Lake
63	*Nanvarpagmiullret* former inhabitants of the settlement of *Nanvarpak* (big lake)	village at northwest end of Nunavakpak Lake
64	*Nanvarpak* a big lake	Nunavakpak Lake

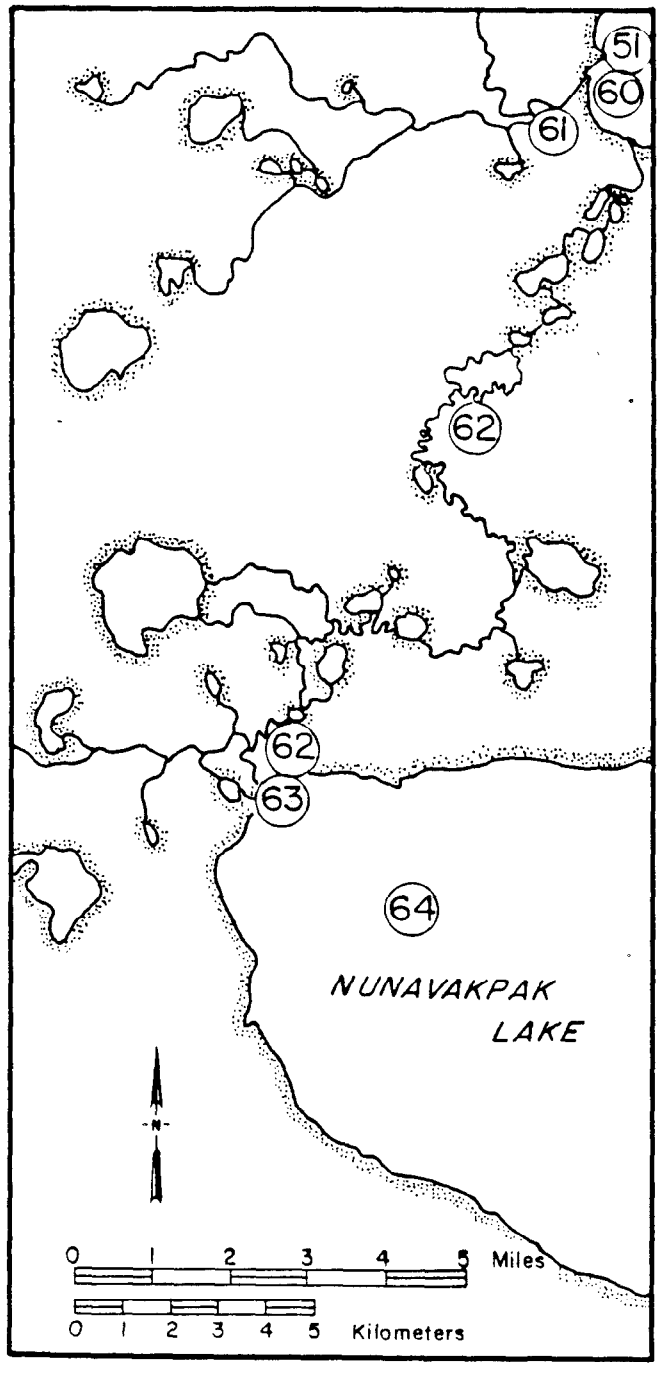


Fig. 51. Location of places with Yup'ik names, numbers 60-64.

FIGURE 52

Map Number	Central Yup'ik and translation	English Name or Description
65	*Qecugiyugmiut* inhabitants of the settlement of *Qecugiyuq* (place to pull out with roots intact)	village on first bend of Pikmiktalik River below *Cilungniq*
66	*Cilungniq* [has to do with a sparrow]	slough flowing from east into Pikmiktalik River below *Qasqirayarmiullret*
67	*Qasqirayarmiullret* former inhabitants of *Qasqirayak*	village on Pikmiktalik River at mouth of *Qasqirayak*
68	*Qasqirayak* [name of a man]	slough between *Qasqirayam Qagatii* and Pikmiktalik River
69	*Qasqirayam Qagatii* lake flowing into *Qasqirayak*	lake between Pikmiktalik and and Johnson rivers north of *Sevtam Qagatii*
70	*Sevtam Qagatii* lake flowing into the man-made slough	lake northeast of Nunavakanukakslak Lake
71	*'Sevtarmiut* inhabitants of the settlement of *'Sevtaq* (cut through place)	village along Johnson River on north side 2 mi. west of *Sevtam Qagatii*
72	*Qemirrarmiullret* inhabitants of the settlement of *Qemirraq* (the little hill)	village on bend of Johnson River 3 mi. west of *Qasqirayam Qagatii*

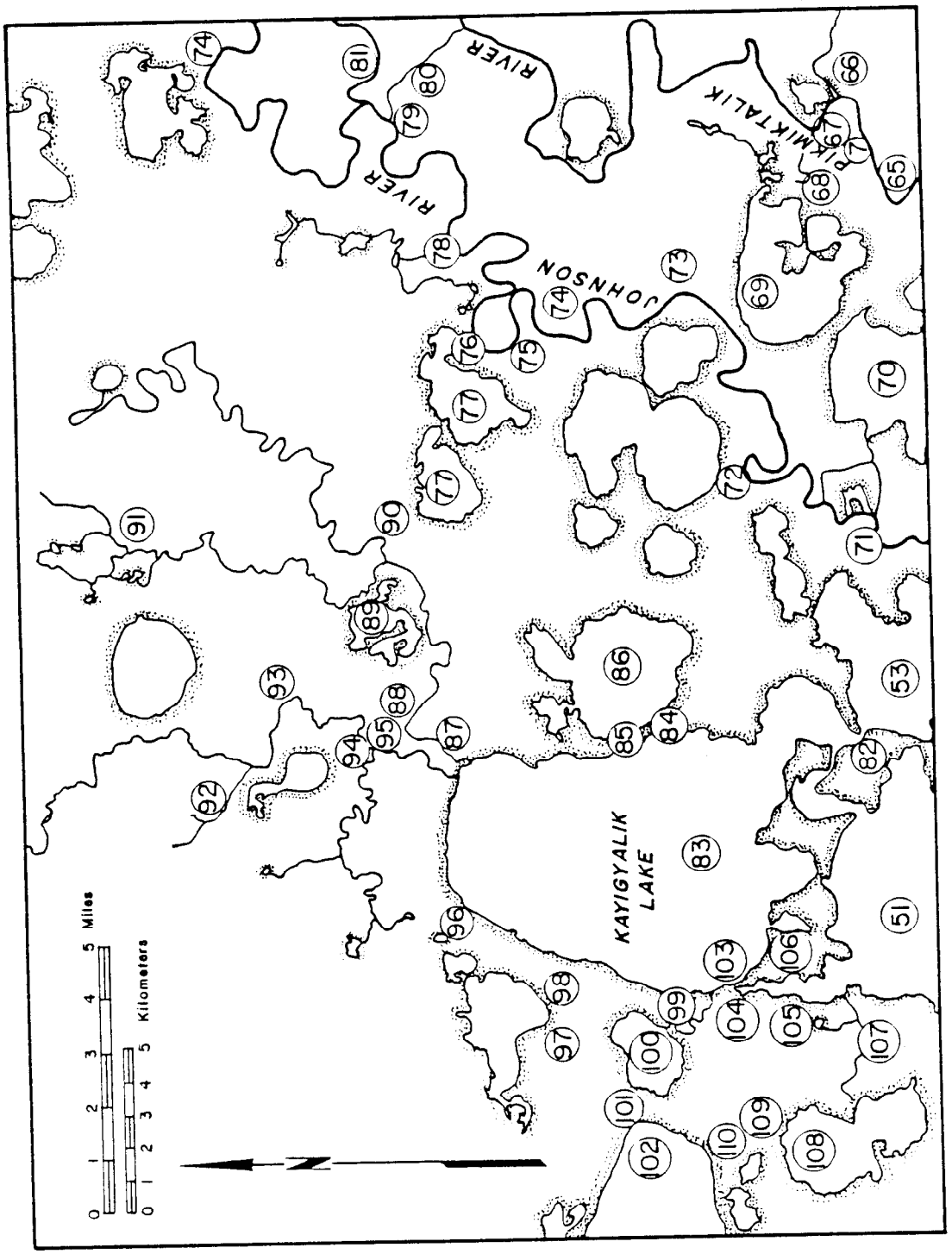


Fig. 52. Location of places with Yup'ik names, numbers 65-110.

FIGURE 52 continued

Map Number	Central Yup'ik and translation	English Name or Description
73	*Nanurqalriim Pengua* hill of *Nanurqaralria* [name of a man]	hill east of Johnson River above *Qasqirayam Qagatii*
74	*Kuicaraq* the way to go to the river	Johnson River upriver from Nunapitchuk
75	*Caunecuaq* little thing facing you	slough between Kalasik Lake and Johnson River
76	*Tevyaraq* place to portage	portage between *Caunecuaq* and *Upagyarak*
77	*Upagyarak* places to move to	two lakes between *Kuigniilnguq* and Kalasik Lake
78	*Elrivik* place to *elriq* (feast for the dead)	mouth of slough along Johnson River between Kalasik Lake and *Arviryarum Painga*
79	*Arviryaram Painga* the mouth of *Arviryaraq*	mouth of *Arviryaraq* on the Johnson River
80	*Arviryaraq* way to go across	slough between Johnson and Pikmiktalik rivers
81	*Akuliqutaq* one inbetween	Kvichavak River

FIGURE 52 continued

Map Number	Central Yup'ik and translation	English Name or Description
82	*Iquarek* the two ends	two hills on the banks of upper *Arviryaraq*
83	*Qayigyalek Qulliiq* the upper ??	(upper) Kayigyalik Lake
84	*Pengucualler* lil' ol' hill	hill south of *Kuingararun*
85	*Kuingararun* barely acquired river	slough between eastern upper Kayigyalik Lake and *Qagaksualler*
86	*Qagaksualler* little lake from which river flows	lake east of upper Kayigyalik Lake
87	*Aciirun* the part of a river that runs under a bluff or cut bank	slough flowing from northeast into upper Kayigyalik Lake
88	*Paparnartuli* that with many *paparnaq* (water lilies)	place in river 2 1/2 mi. from mouth of *Aciirun*
89	*Tengmiartuli* one with many geese	lake north of *Aciirun* 3 mi. from mouth
90	*Pissurvik* place to hunt	place between western *Upagyarak* and *Aciirun*

FIGURE 52 continued

Map Number	Central Yup'ik and translation	English Name or Description
91	*Amlluqataq* making a big step across (or over)	place on upper *Aciirun* 4 mi. north of *Pissurvik*
92	*Avayaq* branch	western branch or fork of *Carvanqeggli*
93	*Carvanqeggli* one that has a strong current	stream flowing from north into *Kuigniilnguq*
94	*Uqvigpiit* big willows	junction of *Kuigniilnguq* and *Carvanqeggli*
95	*Kuigniilnguq* one not suitable to be a river/slough	river flowing from north into upper Kayigyalik Lake
96	*Tulukarnartulik* one where there are always alot of ravens	two hills at northwest end of upper Kayigyalik Lake
97	*Naavatmiullret* former inhabitants of of the settlement of *Naavan*	village at head of *Naavan Qulliq*
98	*Naavan Qulliq* the upper *Naavan*	slough 1 1/2 miles north of *Qagaksualler*
99	*Naavan* [name of a man who lived at this place]	slough between western upper Kayigyalik Lake and *Qagaksualler*

FIGURE 52 continued

Map Number	Central Yup'ik and translation	English Name or Description
100	*Qagaksualler* little lake from which a river flows	lake between upper Kayigyalik Lake and Takslesluk Lake
101	*Tevyaraq* place to portage	portage between *Qagaksualler* and Takslesluk Lake
102	*Taklirrlak* that which became long without observation	Takslesluk Lake
103	*Uayaran* [name of a giant man]	place between *Naavan* and *Qertuqak*
104	Qertuqak two high places	hills on west between lower and upper Kayigyalik Lake
105	*Qunguyagaak* two little graves (of the *ircenrraq* [legendary little people])	hills at northwest end of lower Kayigyalik Lake
106	*Akunleq* the middle	place between lower and upper Kayigyalik Lake
107	*Carvanqeggli* one that has a strong current	slough of *Carvanqegglim Qagatii*
108	*Carvanqegglim Qagatii* lake of (flowing into) *Carvanqeggli*	lake between lower Kaygayalik Lake and Takslesluk Lake

FIGURE 52 continued

Map Number	Central Yup'ik and translation	English Name or Description
109	*Tevcarpak* big portage	portage between *Carvanqegglim Qagatii* and Takslesluk Lake
110	*Qengaquq* sudden nose	hill at southeast end of Takslesluk Lake

FIGURE 53

Map Number	Central Yup'ik and translation	English Name or Description
111	*Qass'urrluaq* old dried out lake	stream flowing from north into eastern end of Takslesluk Lake
112	*Ilutuliar* the deep one	stream flowing from north into eastern Takslesluk Lake
113	*Egmiumanerpak* going on (traveling) for a long time	river flowing from north into central Takslesluk Lake
114	*Mayurculleq* one who hunted/fished for blackfish fry	slough of lower *Egmiumanerpak*
115	*Paingilnguq* with no river mouth	stream flowing from north into western end of Takslesluk Lake
116	*'Lekcaartuli* one that keeps burning	slough flowing from south into southwest Takslesluk Lake
117	*Kemegkarculleq* one who went to get meat	slough west of *'Lekcaartuli* flowing into Takslesluk Lake
118	*Igyaraq* throat	mouth of *Akulurat Qulliit* at western shore of Takslesluk Lake
119	*Akulurat Qulliit* above the middle ones	slough between Takslesluk Lake and Puk Palik Lake

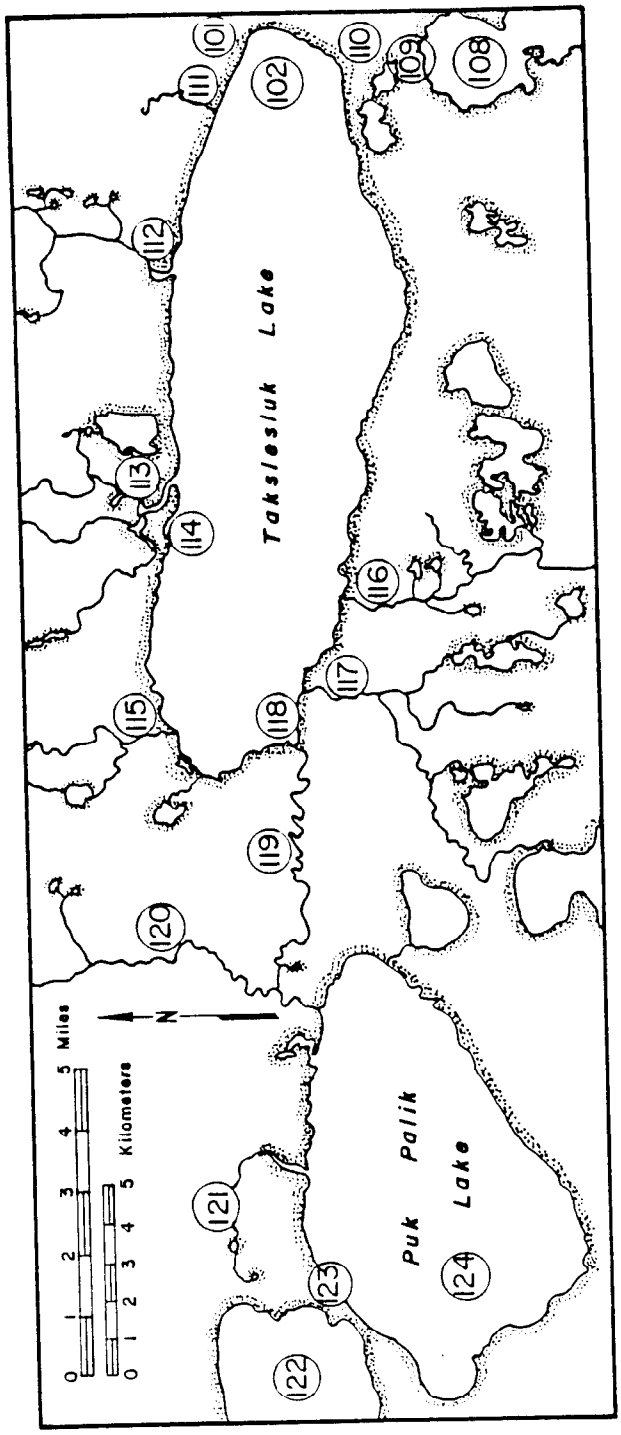


Fig. 53. Location of places with Yup'ik names, numbers 111-124.

FIGURE 53 continued

Map Number	Central Yup'ik and translation	English Name or Description
120	*Ingernam Kuiga* river of *Ingernaq* (shelf or bed)	stream flowing from north into *Akulurat Qulliit*
121	*Tuullegtulim Kuiga* river of *Tuullegtuliq* (one with many loons)	stream flowing between Puk Palik Lake and *Tuullegtuliq*
122	*Tuullegtuli* one with many loons	lake northwest of Puk Palik Lake
123	*Tevyaraq* place to portage	portage between Puk Palik Lake and *Tuullegtuli*
124	*Paq'pal'aaq* ??	Puk Palik Lake

FIGURE 54

Map Number	Central Yup'ik and translation	English Name or Description
125	*Cilertulek* ??	lake 7 mi. north of Kaghasuk Lake
126	*Akulurat* area inbetween	stream between Kaghasuk Lake and Puk Palik Lake
127	*Qagassak* ?old lake	Kaghasuk Lake
128	*Akuluraacuarmiut* inhabitants of the settlement of *Akuluracuaq* (small one inbetween)	village on slough between Baird Inlet and Kaghasuk Lake
129	*Arayiit* [has to do with ashes]	village and slough on northcentral Baird Inlet
130	*Qagalluk* bad lake	Kagaluk Lake
131	*Curugyagaq* [has to do with an encounter]	slough on eastern point of Baird Inlet
132	*Niissaat* ??	hills on peninsula of southern Baird Inlet
133	*Arveruaq* imitation whale	hill/ridge above Kinaruk River opposite Chakchak Creek
134	*Qanrangaq* ??	Kinaruk River

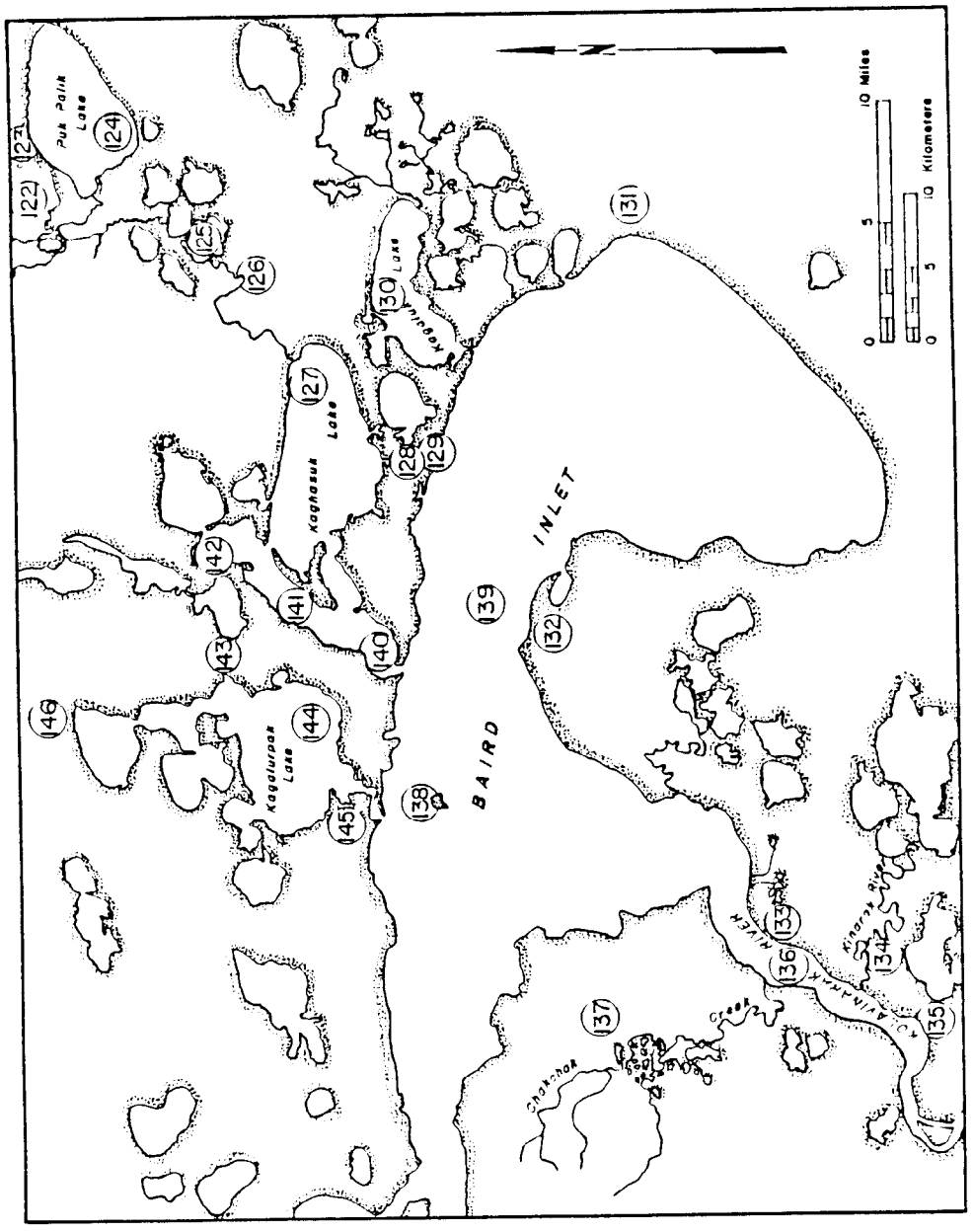


Fig. 54. Location of places with Yup'ik names, numbers 125-146.

FIGURE 54 continued

Map Number	Central Yup'ik and translation	English Name or Description
135	*Qinaruuq* ??	river flowing out of Kinaruk Lake
136	*Kalvinraaq* ??	Kolavinarak River
137	*Cakcaaq* ??	village on Nelson Island northwest of Nyctea Hills
138	*Qaterpiim Qikertaa* island of the big white (something)	island in northcentral Baird Inlet
139	*Nanvaruk* big lake	Baird Inlet
140	*Kuimliruaq* casually flowing	slough between Baird Inlet and southwest Kaghasuk Lake
141	*Igcenaq* cliff/bank (of a river)	area between Kaghasuk Lake and *Cilugatmiut*
142	*Cilugatmiut* inhabitants of the settlement of *Cilugan* (??)	village northwest of Kaghasuk Lake
143	*Qayikvayapak* big wheat grass	slough from lake between *Cilugamiut* and Kagalurpak Lake

FIGURE 54 continued

Map Number	Central Yup'ik and translation	English Name or Description
144	*Qukartutleq* [has to do with waist/ center of something]	Kagalurpak Lake
145	*Sev'elleq* one that got cut through by water	between Kagalurpak Lake and Baird Inlet
146	*Arviaq* [has to do with going across]	place and slough at extreme northern end of Kagalurpak Lake

FIGURE 55

Map Number	Central Yup'ik and translation	English Name or Description
147	*Quuyacuar* little (something)	place along outlet of Aropuk Lake
148	*Anguarpagyaraq* place requiring alot of rowing	line of lakes and sloughs between *Tuullegtuli* and *Quuyacuaq*
149	*Tevyaraq* place to portage	portage between *Tuullegtuli* and lakes to the west
150	*Arurpak* big (something)	Aropuk Lake
151	*Palat* ??	island in Aropuk Lake
152	*Sura* blueberry	place across lake from *Cuukvagtuliq*
153	*Cuukvagtuliq* place with lots of pike	village north of Aropuk Lake
154	*Ungalaqliq* in a southerly direction	place/slough 2 mi. from mouth of Izaviknek River
155	*Isviiqnirmiut* people of *Isviiqniq*	village 9 mi. from mouth of Izaviknek River
156	*Isviiqniq* ??	Izaviknek River

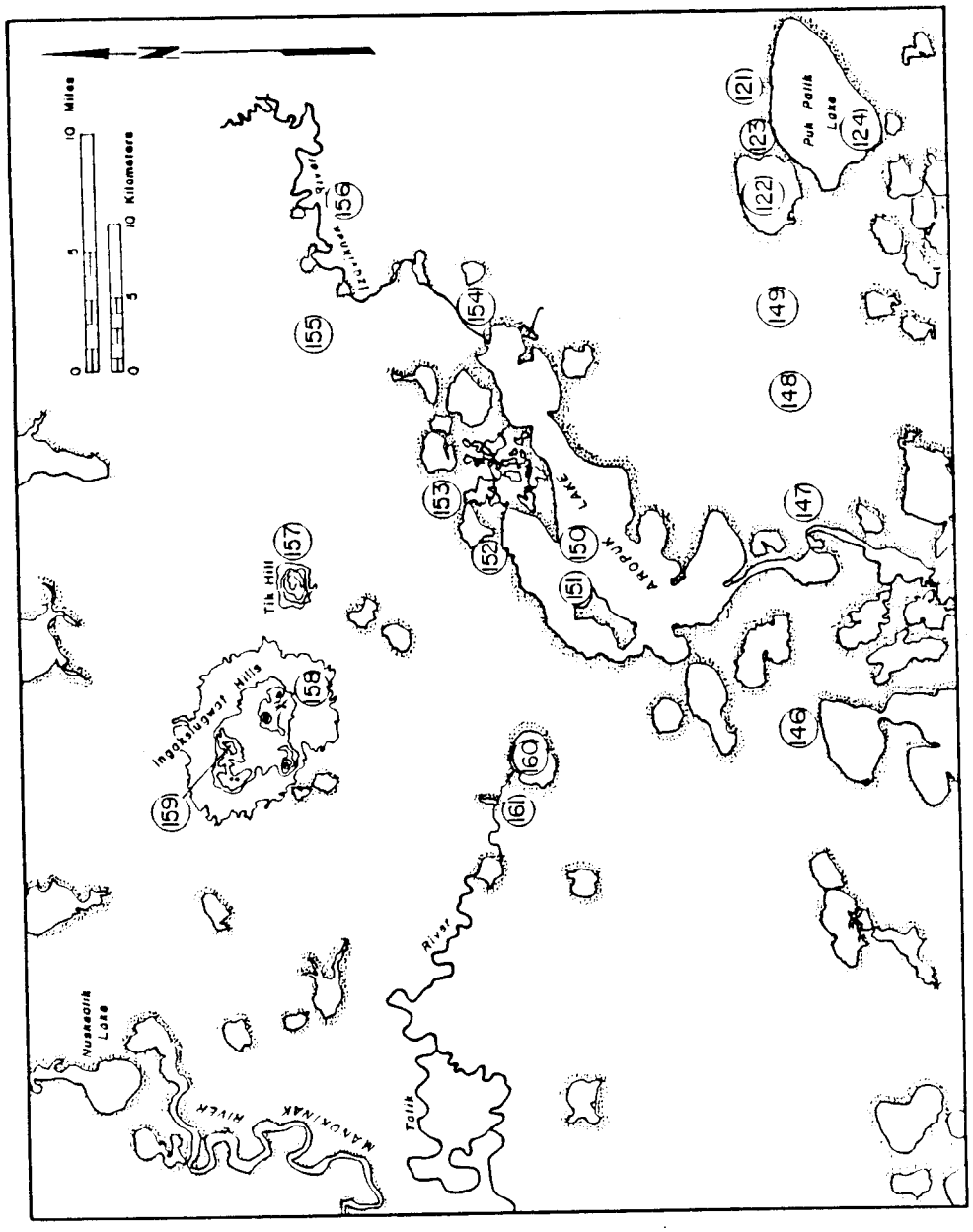


Fig. 55. Location of places with Yup'ik names, numbers 147-161.

FIGURE 55 continued

Map Number	Central Yup'ik and translation	English Name or Description
157	*Ingerrlugat*; *Ingrirrlugaq* big old mountain	Tik Hill
158	*Pupsulgek* two things with pinchers	Ingakslugwat Hills (elevation 620')
159	*Qerrirli* has alot of (?red rock)	Ingakslugwat Hills (elevation 500')
160	*Nanvarnak* big lake	lake between Talik River and Aropuk Lake
161	*Akulurpak* big middle	village on slough flowing into west side of *Nanvarnak*
161	*Tan'gerpagmiut* inhabitants of the settlement of *Tan'gerpak* (crowberry)	alternate name for *Akulurpak*

APPENDIX 9.
YUP'IK PLACE-NAMES IN THE *AKULMIUT* AREA
(ALPHABETICAL)

Central Yup'ik and translation	Map Number	English Name or Description
Aassaqvik place to keep secrets	4	slough on west bank Johnson River 2 mi. above *Kangirrlak*
Aciirun the part of a river that runs under a bluff or cut bank	87	slough flowing from northeast into upper Kayigyalik Lake
Aglumaqaq ?sudden desire for something	56	slough between *Kuingun* and *Arviryaraq*
Akcuar ??	2	upper mouth of slough between Napakiak and Johnson River
Akmalilleq one who made the opposite side	35	slough from north opposite Nunapitchuk
Akuliqutaq one inbetween	81	Kvichavak River
Akuluraacuarmiut inhabitants of the settlement of *Akuluracuaq* (small one inbetween)	128	village on slough between Baird Inlet and Kaghasuk Lake
Akulurat area inbetween	126	stream between Kaghasuk Lake and Puk Palik Lake

Central Yup'ik and translation	Map Number	English Name or Description
Akulurat Qulliit above the middle ones	119	slough between Takslesluk Lake and Puk Palik Lake
Akulurpak big middle	161	village on slough flowing into west side of *Nanvarnak*
Akunleq the middle	106	place between lower and upper Kayigyalik Lake
Amlluqataq making a big step across (or over)	91	place on upper *Aciirun* 4 mi. north of *Pissurvik*
An'arciiq place to suddenly go out	18	part of Johnson River from its mouth to forks below Nunapitchuk
Anguarpagyaraq place requiring alot of rowing	148	line of lakes and sloughs between *Tuullegtuli* and *Quuyacuaq*
Anumalleq that which was going out	1	lower mouth of slough between Napakiak and Johnson River
Aparuirun when grandpa was taken away	42	slough between old Kasigluk and *Nanvarnaq*
Arayiit [has to do with ashes]	129	village and slough on northcentral Baird Inlet
Arurpak big (something)	150	Aropuk Lake

Central Yup'ik and translation	Map Number	English Name or Description
Arveruaq imitation whale	133	hill/ridge above Kinaruk River opposite Chakchak Creek
Arviaq [has to do with going across]	146	place and slough at extreme northern end of Kagalurpak Lake
Arviryaram Painga the mouth of *Arviryaraq*	79	mouth of *Arviryaraq* on the Johnson River
Arviryaraq the way to go across	53	two lakes between *Nanvarnarrlak* and Kayigyalik Lake and the river connecting it to *Kuicaraq*
Arviryaraq way to go across	80	slough between Johnson and Pikmiktalik rivers
Atalriarmiut inhabitants of the settlement of *Atalria* (one [the land] depends upon)	41	village at mouth of *Uilutuli*; opposite old Kasigluk
Atmaulluaq [has to do with backpack]	9	Atmautluak
Avayaq branch	92	western branch or fork of *Carvanqeggli*
Cakcaaq ??	137	village on Nelson Island northwest of Nyctea Hills

Central Yup'ik and translation	Map Number	English Name or Description
Capukar covering or blocking the view	13	low hills 1/2 to 3 mi. east of *Paingaq*
Carvanerpak strong river current	32	slough 1 mi. south of Nunapitchuk
Carvanqeggli one that has a strong current	93	stream flowing from north into *Kuigniilnguq*
Carvanqeggli one that has a strong current	107	slough of *Carvanqegglim Qagatii*
Carvanqegglim Qagatii lake of (flowing into) *Carvanqeggli*	108	lake between lower Kaygayalik Lake and Takslesluk Lake
Caunecuaq little thing facing you	75	slough between Kalasik Lake and Johnson River
Cilertulek ??	125	lake 7 mi. north of Kaghasuk Lake
Cilugatmiut inhabitants of the settlement of *Cilugan* (??)	142	village northwest of Kaghasuk Lake
Cilungniq [has to do with a sparrow]	66	slough flowing from east into Pikmiktalik River below *Qasqirayarmiullret*

Central Yup'ik and translation	Map Number	English Name or Description
Cilungnirrlak ??	61	stream flowing from west into lower Kayigyalik Lake
Culuutmurneq the area where the trail/river traveler turns to face	52	slough between lower *Arviryaraq* lower Kayigyalik Lake
Curugyagaq [has to do with an encounter]	131	slough on eastern point of Baird Inlet
Cuukvagtuliq place with lots of pike	153	village north of Aropuk Lake
Eglrucetalek way to be traveling (with canoes)	11	route from *Paingaq* to *Capukar*
Egmiqalleq a place where something went through	50	slough west of *Nunacuaq* near mouth of *Nanvarpiim Kuiga*
Egmiumanerpak going on (traveling) for a long time	113	river flowing from north into central Takslesluk Lake
Elrivik place to *elriq* (feast for the dead)	78	mouth of slough along Johnson River between Kalasik Lake and *Arviryarum Painga*
Igcenaq cliff/bank (of a river)	141	area between Kaghasuk Lake and *Cilugatmiut*

Central Yup'ik and translation	Map Number	English Name or Description
Igvaryaracuar the little place to come into view	16	second sharp bend going up the Johnson River, 2 mi. above the mouth of Pikmiktalik River
Igvaryaraq to come into view	6	first sharp bend going up the Johnson River
Igyaraq throat	118	mouth of *Akulurat Qulliit* at western shore of Takslesluk Lake
Ilutuliar the deep one	112	stream flowing from north into eastern Takslesluk Lake
Ingernam Kuiga river of *Ingernaq* (shelf or bed)	120	stream flowing from north into *Akulurat Qulliit*
Ingerrlugat; *Ingrirrlugaq* big old mountain	157	Tik Hill
Iquarek the two ends	82	two hills on the banks of upper *Arviryaraq*
Isviiqniq ??	156	Izaviknek River
Isviiqnirmiut people of *Isviiqniq*	155	village 9 mi. from mouth of Izaviknek River
Kaganalleq one that used to be *Kaganaq* [name of a man]	39	house and grave site opposite new Kasigluk

Central Yup'ik and translation	Map Number	English Name or Description
Kakeggluk snotty	8	slough between Pikmiktalik River and Kongeruk River
Kalvinraaq ??	136	Kolavinarak River
Kangiracuaq little corner	21	part of Johnson River, 3/4 mi. below *Narvarnaq*
Kangirrlak big old corner	3	slough between lower Johnson River (west bank) and Kuskokwim River
Kassigarneq place where two streams meet	28	forks of the Johnson River
Kassigluq where two streams/rivers joined	40	present site of old and new Kasigluk
Kemegkarculleq one who went to get meat	117	slough west of *'Lekcaartuli* flowing into Takslesluk Lake
Kuicaraq the way to go to the river	74	Johnson River upriver from Nunapitchuk
Kuigaallermiut former inhabitants of the settlement of *Kuigaaq* (little piece of river)	30	village on east side of Johnson River, 1 1/2 mi. south of Nunapitchuk

Central Yup'ik and translation	Map Number	English Name or Description
Kuigniilnguq one not suitable to be a river/slough	95	river flowing from north into upper Kayigyalik Lake
Kuiliuraq slough that was made	37	slough to Kasigluk on west above *Piqertualleq*
Kuimliruaq casually flowing	140	slough between Baird Inlet and southwest Kaghasuk Lake
Kuingararun barely acquired river *Qagaksualler*	85	slough between eastern upper Kayigyalik Lake and
Kuingun acquired river (or slough)	57	slough entering Nunavakan-ukakslak Lake at *Nanvarnarr-lagmiut*
'Lekcaartuli one that keeps burning	116	slough flowing from south into southwest Takslesluk Lake
Mayurculleq one who hunted/fished for blackfish fry	114	slough of lower *Egmiumanerpak*
Naavan [name of a man who lived *Qagaksualler* at this place]	99	slough between western upper Kayigyalik Lake and
Naavan Qulliq the upper *Naavan*	98	slough 1 1/2 miles north of *Qagaksualler*

Central Yup'ik and translation	Map Number	English Name or Description
Naavatmiullret former inhabitants of of the settlement of *Naavan*	97	village at head of *Naavan Qulliq*
Nacessvik high place to look from	22	place on southwest end of *Nanvarnaq*
Nangcarturvik place to tow	60	part of lower Kayigyalik Lake at southwest end north of *Uayaran*
Nanurqalriim Pengua hill of *Nanurqaralria* [name of a man]	73	hill east of Johnson River above *Qasqirayam Qagatii*
Nanvarnak big lake	160	lake between Talik River and Aropuk Lake
Nanvarnaq big lake	23	part of Johnson River, 5 mi. southeast of Nunapitchuk
Nanvarnaq big lake	54	part of the Johnson (*Kuicaraq*) River like a lake 3 mi. above Nunapitchuk
Nanvarnarrlagmiut inhabitants of the settlement of *Nanvarnarrlak*	58	village on western shore of Nunavakanukakslak Lake
Nanvarnarrlak major lake; one heck of a lake	59	Nunavakanukakslak Lake

Central Yup'ik and translation	Map Number	English Name or Description
Nanvarnisnguaq thinking you are at *Nanvarnaq*	20	part of Johnson River, 1 1/2 mi. below *Narvarnaq*
Nanvarpagmiullret former inhabitants of the settlement of *Nanvarpak* (big lake)	63	village at northwest end of Nunavakpak Lake
Nanvarpak a big lake	64	Nunavakpak Lake
Nanvarpiim Kuiga the river of *Nanvakpak* (big lake)	62	stream flowing from north into northwest corner of Nunavakpak Lake
Nanvaruk big lake	139	Baird Inlet
Niissaat ??	132	hills on peninsula of southern Baird Inlet
Nunacuaq; *Nunacuarmiut* little land; inhabitants of the settlement of *Nunacuaq*	49	village along slough 1 1/2 mi. south of (lower) Kayigyalik Lake
Akuluraarmiut inhabitants of the settlement of *Akuluraq* (the area inbetween)	49	alternate name for *Nunacuarmiut*
Nunangnerarrmiut inhabitants of the settlement of *Nunangeraq* (the new place)	14	interim village site (to (Atmautluak) on Pikmiktalik River one bend below *Qecugiyugmiut*

Central Yup'ik and translation	Map Number	English Name or Description
Nunapicuaq small real land	33	Nunapitchuk
Paallalleq one who fell forward	24	place at center of western bank of *Nanvarnaq*
Paingaq being the mouth of a river	10	village between Pikmiktalik River and Nunavakanukakslak Lake
Paingilnguq with no river mouth	115	stream flowing from north into western end of Takslesluk Lake
Pakigtaak prying up two things	15	banks of Johnson River, 3/4 mi. above Pitmiktalik River
Palat ??	151	island in Aropuk Lake
Paparnartuli that with many *paparnaq* (water lilies)	88	place in river 2 1/2 mi. from mouth of *Aciirun*
Paq'pal'aaq ??	124	Puk Palik Lake
Pengucualler lil' ol' hill	84	hill south of *Kuingararun*
Penguq hill	5	Kongeruk River

Central Yup'ik and translation	Map Number	English Name or Description
Petmigtalek place with many pit traps	7	Pikmiktalik River
Piqertualleq one who chopped; one that was chopped	36	slough on west just above Nunapitchuk
Pissurvik place to hunt	90	place between western *Upagyarak* and *Aciirun*
Pulayararaat where you go through a thicket	55	part of *Aglumaqaq*
Pupigmiullret Atliiq (the lower one of) former inhabitants of the settlement of *Pupik*	46	village at mouth of *Pupiit*
Pupigmiullret Qulliiq (the upper one of) former inhabitants of the settlement of *Pupik*	47	village across lake from *Nunacuaq* at head of *Pupiit*
Pupiit sores	45	slough between *Uilutuli* and lake behind *Nunacuaq*
Pupsulgek two things with pinchers	158	Ingakslugwat Hills (elevation 620')
Qagaksualler little lake from which river flows	86	lake east of upper Kayigyalik Lake

Central Yup'ik and translation	Map Number	English Name or Description
Qagaksualler little lake from which a river flows	100	lake between upper Kayigyalik Lake and Takslesluk Lake
Qagalluk bad lake	130	Kagaluk Lake
Qagassak ?old lake	127	Kaghasuk Lake
Qaleqcuugtuli place with alot of grebes	31	slough east of Johnson River, opposite *Carvanerpak*
Qamuryaraq place to pull	12	slough network to get from *Paingaq* to *Capukar*
Qanrangaq ??	134	Kinaruk River
Qasqirayak [name of a man]	68	slough between *Qasqirayam Qagatii* and Pikmiktalik River
Qasqirayam Qagatii lake flowing into *Qasqirayak*	69	lake between Pikmiktalik and and Johnson rivers north of *Sevtam Qagatii*
Qasqirayarmiullret former inhabitants of *Qasqirayak*	67	village on Pikmiktalik River at mouth of *Qasqirayak*
Qass'urrluaq old dried out lake	111	stream flowing from north into eastern end of Takslesluk Lake

Central Yup'ik and translation	Map Number	English Name or Description
Qaterpiim Qikertaa island of the big white (something)	138	island in northcentral Baird Inlet
Qavirngalria one that is turned/ slanted to one side	26	where Johnson River enters *Nanvarnaq*
Qayigyalek Atliiq the lower ??	51	(lower) Kayigyalik Lake
Qayigyalek Qulliiq the upper ??	83	(upper) Kayigyalik Lake
Qayikvayapak big wheat grass	143	slough from lake between *Cilugamiut* and Kagalurpak Lake
Qecugiyugmiut inhabitants of the settlement of *Qecugiyuq* (place to pull out with roots intact)	65	village on first bend of Pikmiktalik River below *Cilungniq*
Qemirrarmiullret inhabitants of the settlement of *Qemirraq* (the little hill)	72	village on bend of Johnson River 3 mi. west of *Qasqirayam Qagatii*
Qemit Aciat under the ridge	48	short slough 1/2 mi. west of *Nunacuaq*
Qengaquq sudden nose	110	hill at southeast end of Takslesluk Lake

Central Yup'ik and translation	Map Number	English Name or Description
Qerrirli has alot of (?red rock)	159	Ingakslugwat Hills (elevation 500')
Qertuqak two high places	104	hills on west between lower and upper Kayigyalik Lake
Qinaruuq ??	135	river flowing out of Kinaruk Lake
Qukartutleq [has to do with waist/ center of something]	144	Kagalurpak Lake
Qunguyagaak two little graves (of the *ircenrraq* [legendary little people])	105	hills at northwest end of lower Kayigyalik Lake
Qurrluq flowing water (liquid)	43	slough flowing into *Uilutuli*
Qurrlurpak waterfall	34	slough and settlement between Johnson River and Nunavakan-ukakslak Lake
Quuqaq narrow part	19	part of Johnson River, 2 mi. below *Nanvarnisnguaq*
Quuyacuar little (something)	147	place along outlet of Aropuk Lake

Central Yup'ik and translation	Map Number	English Name or Description
Sev'elleq one that got cut through by water	145	between Kagalurpak Lake and Baird Inlet
Sevtam Qagatii lake flowing into the man-made slough	70	lake northeast of Nunavakanukakslak Lake
'Sevtarmiut inhabitants of the settlement of *'Sevtaq* (cut through place)	71	village along Johnson River on north side 2 mi. west of *Sevtam Qagatii*
Sura blueberry	152	place across lake from *Cuukvagtuliq*
Taklirrlak that which became long without observation	102	Takslesluk Lake
Taluyilleq one who set a fishtrap	27	lake on east side of Johnson River forks
Tan'gerpagmiut inhabitants of the settlement of *Tan'gerpak* (crowberry)	161	alternate name for *Akulurpak*
Tengmiartuli one with many geese	89	lake north of *Aciirun* 3 mi. from mouth
Tevcarpak big portage	109	portage between *Carvanqegglim Qagatii* and Takslesluk Lake

Central Yup'ik and translation	Map Number	English Name or Description
Tevyaraq place to portage	76	portage between *Caunecuaq* and *Upagyarak*
Tevyaraq place to portage	101	portage between *Qagaksualler* and Takslesluk Lake
Tevyaraq place to portage	123	portage between Puk Palik Lake and *Tuullegtuli*
Tevyaraq place to portage	149	portage between *Tuullegtuli* and lakes to the west
Tulukarnartulik one where there are always alot of ravens	96	two hills at northwest end of upper Kayigyalik Lake
Tuullegtuli one with many loons	122	lake northwest of Puk Palik Lake
Tuullegtulim Kuiga river of *Tuullegtuliq* (one with many loons)	121	stream flowing between Puk Palik Lake and *Tuullegtuliq*
Uamun a waste of time	25	part of Johnson River, at head of *Nanvarnaq*
Uayaran [name of a giant man]	103	place between *Naavan* and *Qertuqak*
Uilutuli one with clams	44	part of Johnson River between *Nanvarnaq* and old Kasigluk
Ungalaqliq in a southerly direction	154	place/slough 2 mi. from mouth of Izaviknek River

Central Yup'ik and translation	Map Number	English Name or Description
Upagyarak places to move to	77	two lakes between *Kuigniilnguq* and Kalasik Lake
Uqvigpiit big willows	94	junction of *Kuigniilnguq* and *Carvanqeggli*
Urraat white or gray clay bluffs	17	bluffs on outside bend of the Johnson River; second bend above mouth of Pikmiktalik River
Urracuaraat little white or gray clay bluffs	38	new Kasigluk
Uuyarmiullret/Uuyarmiut former inhabitants of the settlement of *Uuyaq* (??)	29	village on north side of Johnson River forks