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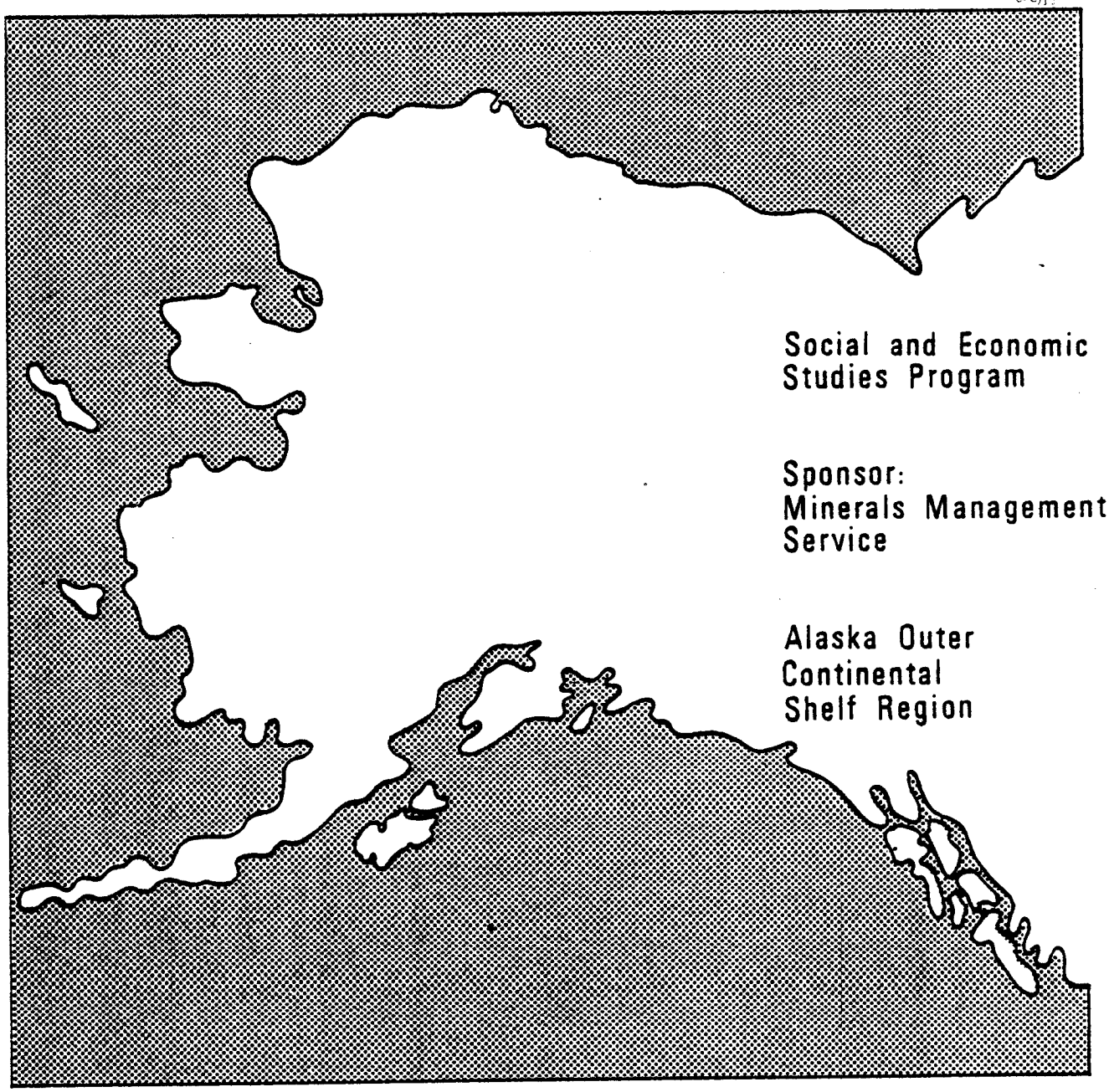

Social and Economic Studies Program

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Minerals Management Service

Alaska Outer Continental Shelf Region

Effects of Renewable Resource Harvest Disruptions on Socioeconomic and Sociocultural Systems: Norton Sound

TECHNICAL REPORT NUMBER 90

EFFECTS OF RENEWABLE RESOURCE HARVEST DISRUPTIONS on SOCIOECONOMIC AND SOCIOCULTURAL SYSTEMS IMPACT ANALYSIS UNALAKLEET, NORTON SOUND

By
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PART I
by
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and
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Virgil Katchatag

Field Research Assistance by:
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Virgil Katchatag
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PART II
by
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PART III
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ABSTRACT

The following report comprises four parts. The first part analyzes, albeit briefly, the history of Unalakleet, contemporary Unalakleet culture, the Unalakleet environment and the ways in which it is used by natives, the political economy of dependency that overlays the local subsistence economy, the relation between subsistence and the commercial fishery (and the naturally occurring, renewable resources on which both are based), the local and regional social structures (formal and informal), and the wide networks of kinship and friendship which link Unalakleet villagers to persons and families in distant locales.

The second part is a brief summary of the field investigations provided in full in Part I.

The third part explicates the methodology employed to collect and analyze village level and family level data on which the first and fourth parts of the report are based. It also specifies the restrictions and constraints placed on the investigation by the funding agency as well as by Unalakleet villagers, constraints which influenced the field investigation as well as the impacts analysis. Assumptions about the political, social, and economic context in which Unalakleet villagers are enmeshed, and the likelihood of changes in this context are delineated. The foregoing serve (1) to set the parameters in which the methodology and hypotheses for the fourth part of the study are advanced, and (2) to identify the cultural (including social structural) and economic features of Unalakleet that will be influenced should disruptions to harvests of naturally occurring, renewable resources occur.

The fourth part, conventionally an "impacts analysis", defines and rationalizes harvest disruptions of increasing severity--low, medium, and high--and offers concluding hypotheses about the probable consequences of disruptions at each level.

ACKNOWLEDGEMENTS

First and foremost we wish to extend our thanks, and our gratitude, to the native residents of Unalakleet for allowing us to conduct an ethnographic investigation of the manner in which they use their environment, the ways in which they are organized to do so, and the meanings which they attribute to it. We learned how Unalakleet villagers regard their homeland and how they maintain relations at home and with relatives and friends located elsewhere, in part because of the ways in which these many persons have become interdependent on naturally occurring resources and on the shared meanings of the importance which they attribute to these resources.

The research had a bumpy beginning, to put it mildly. The study and the researchers were rejected by village leaders and villager consensus at city council and Indian Reorganization Act council meetings before we set foot on the Unalakleet spit. And only upon intensive and very informed examination conducted by village leaders were we allowed--apprehensively--into town. Our gratitude is especially deep to the village leaders for changing their opinions about the importance of the research and the independence of the researchers and explaining the change of their positions to their fellow villagers. These acts, alone, provide a clear example of the trust relationship between elected officials and the native electorate (leaders are stewards as it were), the cooperation between the city form of government and the Indian Reorganization Act form of government, and the careful planning that is the hallmark of the village and its stewards.

So many people assisted with information, and simple, basic kindnesses to us research interlopers that we cannot list all persons who helped. Perhaps they would not care to be singled out. Nevertheless, elected officials and employees of the local political institutions, religious and school leaders, employees of the native corporation and the Alaska Commercial Company, and sundry residents were of continuing help. So were officials of the regional non-profit corporation (Kawerak) and employees of several state and federal agencies, but particularly the Alaska Department of Fish and Game.

We thank all who helped, and who endured.

Joseph G. Jorgensen
Jean A. Maxwell

January, 1984

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PART I

ETHNOGRAPHIC BASELINE
VILLAGE OF UNALAKLEET, NORTON SOUND

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CHAPTER ONE

INTRODUCTION

In October, 1981, the Alaska Outer Continental Shelf Region held a public hearing in the village of Unalakleet to gain public comments on the draft final environmental impact report that the office had prepared in anticipation of oil lease sale #57 for western Norton Sound. Village leaders and residents planned for a twelve hour, or perhaps longer, public discussion of the report. They expected a long session because they had so many questions that they wanted aired. They wanted to know how industry or the government would control oil spills during gale winds when visibility is zero for weeks, or when oil is locked in ice and pushed by high winds and currents. They wanted to know what, in the event of an oil spill that settled on the kelp beds, would happen to the commercial herring fishery and to the seals which the villagers hunt for subsistence and which follow the herring into their spawning grounds near shore. They wanted to know what would happen to the kelp on which herring spawn, and which, as kelp-roe, is collected for subsistence and also sold commercially. They wanted to know what would happen to the clams, mussells, and crabs which both sea ducks and villagers eat, if they had to be extracted through, or if they were covered by, oil. They wanted to know the consequences to the villagers if herring, seals, and birds were oil-tainted. They were particularly nettled because the report did not include bearded seals (oogruk) as resident to eastern Norton Sound, whereas bearded seals are the preferred seal hunted by Unalakleet residents. They wanted to know what would happen to the Unalakleet River if oil developments occurred nearby. Would, for instance, the salmon fishery be destroyed? What would happen to housing and housing prices? How would residents cope with inflation? And so on.[1]

Much to the dismay of the villagers, the public hearing neither produced discussions or answers, according to village leaders. Villagers had expected to challenge the report and get answers to the larger issues that they felt threatened their subsistence economy and their way of life. The OCS representatives listened to testimony, but did not respond. According to villagers in attendance at the hearing, the representatives conveyed the impression that they were bored, and flew out of the village after two hours of testimony.

Soon thereafter village leaders were notified about OCS's intention to conduct an analysis of the importance of naturally occurring, renewable resources to Unalakleet society and culture and the consequences to both if there were disruptions to the harvests of those resources.

The broad question that is posed to the researchers of this project is, "Are naturally occurring, renewable resources important to the villagers in Unalakleet?" The short answer is, so much so that when initially proposed to the village by letter from the OCS Region in late November, 1981, and by letter from Joseph Jorgensen, the principal investigator on the project, in late December, 1981, this study was disapproved by the village. A brief history of the disapproval and reconsideration are crucial to the study that we conducted, the first part of which we report here.

The people of Unalakleet were angered and embittered by the public hearing, and in the recent past they claim to have seen several researchers move in and out of Unalakleet, conducting studies in haste. According to several knowledgeable hunters and fishers, the researchers sought help, reported only what they had been told by village residents--bringing nothing new to the research or the analysis, hence not teaching the villagers anything new--and, in instances such as the environmental impact statement for sale #57, issuing research reports about their region that contain inaccurate information. Several village leaders clearly expressed the view to the authors of this study that reports contracted by state and federal agencies have not met their expectations. Some reports had the potential to harm Unalakleet residents, and many of those residents believe that certain game quotas and seasons established by the Alaska Department of Fish and Game have specifically underestimated prior use rates in Unalakleet, as well as current needs.

So a very puzzling contradiction obtains. Unalakleet residents have been studied, particularly in regards to their uses of their traditional territory, yet other than a few tallies in annual reports about commercial fisheries issued by the Alaska Department of Fish and Game, a couple of reports, including the environmental impact statement prepared for sale #57, issued by the Alaska OCS Region, a report issued by the Kawerak regional corporation about Bering Sea subsistence, and a resource report issued by the Habitat Division of Alaska Department of Fish and Game, it is difficult to locate any studies of the Unalakleet community.[2] In all of these reports Unalakleet data and analyses of Unalakleet

social, political, and economic life are either sparse or non-existent. When tallied and reported, Unalakleet data represent only a tiny part of the whole. So they have been studied, but there is no significant literature about Unalakleet. The connection between studies and regulations imposed by state and federal governments, as well as threats to resources and community integrity by large-scale oil developments, have been made by the residents of Unalakleet.

It is not surprising that the people of Unalakleet told us that they are tired of being studied, and that they challenge the presumption that their needs can be defined by, and the satisfaction of those needs can be regulated by, outsiders. It is not surprising, either, that village leaders and other residents thought that the sole purpose of the study that we proposed to conduct was to help the Alaska OCS Region to obtain information that would allow oil leases to be sold in Norton Sound.

But let us backtrack a bit. The preparation for this study began like others, we imagine. The Alaska OCS Region assumed that the environmental impact statement, mandated by the National Environmental Policy Act and the environmental regulatory process to which the research in this study would contribute, would be conducted regardless of the wishes of the villagers in the villages that eventually would be studied. The OCS Region defined the scope of the research, requested and reviewed proposals, and awarded the contract in October, 1981 to the John Muir Institute without soliciting village participation.

The John Muir Institute research team proposed that funds be allocated so that several weeks prior to the initiation of research the village could be visited, the research could be discussed, and village approval and cooperation could be sought. Funds were not made available for that activity. On the other hand, the director of the Alaska OCS Region informed the village of the study by letters sent in late November, shortly after the public hearing on lease sale #57.

Unfortunately, only one of the three main decision-making bodies, the village corporation, received a letter. The region's profit corporation, Bering Straits Native Corporation, and non-profit corporation, Kawerak, also received letters. The village corporation and Kawerak replied, suggesting that local natives should be employed on the project if the study was to be acceptable to the village. The village corporation office received no further correspondence from the OCS Region on whether action was taken on its suggestions.

Two months before the project was to begin and soon after it was clear that funds were not available to make a trip to the village prior to undertaking research, Joseph Jorgensen wrote to leaders of the three major decision-making institutions in the village, as well as to the directors of the regional profit and non-profit corporations, and explained the project. He asked them for their comments and for permission to conduct the study, promising cooperation, informed consent, and confidentiality. The director of the village corporation, herself a local native, replied. So Jorgensen called her and asked if she would post a notice for a native assistant to work with the field investigator, Jean Maxwell, and if she would also help us locate a place for the field investigator to reside. She said that she would do so, and she did. One native person expressed serious interest in aiding the study. A non-native person reserved a house owned by the Covenant School for Ms. Maxwell.

The study was to commence February 1, 1982. The City Council and the IRA (Indian Reorganization Act) governments did not swing into action until about a fortnight prior to the start-up date. At two meetings, each attended by over a hundred people, the leaders of the governing bodies called for rejection of the study; and their requests were sustained unanimously.

The IRA President relayed these decisions by letter dated January 29, 1982 to the funding agency and to the John Muir Institute. The mails were slow and notice was not received by the John Muir Institute until Jean Maxwell arrived in the village and was informed by the mayor, the city treasurer, and the president of the IRA of the villagers' decisions. Maxwell immediately informed Jorgensen, who then spoke by phone to each of the village leaders, explaining how he bid on, was awarded, and would direct the study. He disclaimed any connection to oil companies or any connection to the Alaska OCS Region claiming only that he and the John Muir Institute insisted on conducting research independent of government or corporation direction.

Jorgensen arranged to travel to Unalakleet two weeks later to discuss the research and the feasibility of conducting it. Jorgensen and Maxwell met with village leaders, and those leaders read past research conducted by Jorgensen and Maxwell. The leaders agreed to reconsider their decision. Maxwell repaired to Nome and stayed there during the month of March while the village leaders thought about the issue. Jorgensen met with the village leaders in Unalakleet a second time during March. At the second meeting the John Muir Institute research team

was invited in with the promise of assistance in conducting the research, and on April 1 Jean Maxwell took up residence in Unalakleet and resumed the research.

The actions of the villagers are particularly poignant. First, they insisted that research would not be conducted without their informed consent and their participation. Second, and equally important, the villagers spoke directly to the significance which they attach to subsistence resources. Acute concern was voiced about the study because of the presumed connection among the John Muir Institute, the Alaska OCS Region and the transnational oil corporations, and deep concern was voiced about the study because its subject--subsistence resources and their uses--is so much a part of villagers' lives and has been from time immemorial. Their experience with resource studies has shown them that these studies are inaccurate and misrepresentative to some degree, and never convey a recognizable picture of the place of subsistence activities in village life. The village leaders clearly did not want to contribute to a study whose errors of omission and commission could contribute to government decisions on offshore gas and oil development that would adversely affect their own and their childrens' lives.

The study was reconsidered and approved in large part because villagers want subsistence activities and their community portrayed accurately. The villagers gave the go-ahead to the study under conditions suggested by Jorgensen and the village leaders which were designed to enhance the likelihood that an empirically warranted ethnographic account of subsistence activities and the roles of naturally occurring resources within Unalakleet, and the significant symbols, or shared meanings of the Unalakleet community in regards to those resources and activities would be presented. The principal investigator, the mayor, and the IRA president agreed that IRA and city leaders would consult the study and review the reports before they were made final. It is noteworthy to point out that the mayor and the IRA president are natives and accomplished hunters and fishers. A time extension through September (rather than July) was suggested. OCS granted an extension only through August because of deficient funds. Jorgensen had made provision to hire native research assistants before the research began, but he convinced the OCS Region to increase the funds available for native assistants by 50%. Although the extension was granted only through August, Maxwell remained in Unalakleet through January, 1983.

Consulting the study meant giving advisory support. Village leaders, of course, maintain the overview and network of working relations required to get the study moving and helping it through tough spots. Leaders could not, nor did

they try to, command participation, or determine the course and outcome of the study. They counselled the researchers and acted as able facilitators in face-to-face contacts and by phone, and they promised to review and critique the draft reports. They accepted the responsibility of correcting errors and misstatements and rectifying omissions.

Local people working as researchers provided a vital link into the community. Teamed with the field investigator, they provided a link between villager and anthropological perspectives. Whereas the native research assistants knew how to approach persons and families and how to ask questions in a way that made sense to local people, they also provided perspective on how to understand the answers that they elicited. The anthropologists brought the research questions, comparative perspectives about the relations among parts of culture, knowledge of the significance of space, place, and labor in the lives of Native Americans whose resources were expropriated and whose societies have been dominated since reservation subjugation, and knowledge about the contexts and forms of reservation Indian responses to energy development schemes in the past fifteen years.

Originally set up to run from February through July, the study would have ended two months before salmon subsistence fishing finished, a month before commercial fishing finished, and a month before the hunting of moose began. Thus, some main subsistence activities would not have been observed in toto and we would have had to gain information about those activities partly through recall and partly through observation. We were fortunate to have been in the village in February (Maxwell and Jorgensen) and March (Jorgensen) when we could observe and ask questions about ice fishing for tom cod (saffron cod), grayling, arctic char, and dolly varden, hunting for rabbits (arctic and snowshoe hares), hunting for caribou, and early hunting for seals.

The research commenced in earnest the first of April when Maxwell returned to Unalakleet. A person from the village was hired as research associate to the field investigator, and other local researchers were hired for special purposes as required. The native research associate, Vernita Katchatag Zyllis, an Eskimo, spent her early years in Unalakleet and Anchorage before enrolling at Mt. Edgecomb school in southeastern Alaska. She lived in the East and Midwest for several years, returning to Anchorage and finally to Unalakleet in 1981. Ms. Zyllis was employed in Unalakleet's police department and was active in both state and regional organizations when she joined our project.

Jean Maxwell, the field investigator, was reared and spent many of her adult years in the West. Ms. Maxwell has conducted extensive research on the consequences of energy developments to western Indian societies, living and working on the Colville Reservation (Washington), Northern Cheyenne Reservation (Montana), Crow Reservation (Montana), and Southern Ute Reservation (Colorado). Ms. Maxwell held teaching positions at Duke University and California State University, Fullerton. She is a Ph.D. Candidate at the University of Michigan. She had not lived or worked in Alaska before.

Joseph Jorgensen, the principal investigator, was reared in the West, earned a Ph.D. degree in anthropology and linguistics at Indiana University, and has held teaching positions at Antioch College, the University of Oregon, the University of Michigan, and the University of California. He was employed by the Northern Ute Tribe (Utah) for two years, and has conducted research and lived among Northern Utes (Utah), Ute Mountain Utes and Southern Utes (Colorado), Fort Hall Shoshones (Idaho), Wind River Shoshones (Wyoming), Crow (Montana), Southern Paiutes (Utah), Soboba (California), Navajos (Utah, Arizona, New Mexico), and rural white farmers and ranchers in Utah and Montana. Jorgensen visited the village on three occasions to conduct interviews and observe village life in relation to subsistence and commercial activities. Jorgensen had participated in two Eskimo research projects before taking on the harvest disruption study, of which this study is one part.

Jorgensen prepared a research plan to be followed in the conduct of the inquiry, calling for collection of information that would account for every species extracted and used by villagers, the amounts of those species taken annually, the strategies used to procure them, and the strategies employed when natural disruptions to harvests occurred. He sought to collect all of the information that would allow him to prepare an empirically warranted account of Unalakleet life in relation to subsistence resources, an account that would satisfy the strong objections that villagers had to previous studies. The research sought to evaluate the relations among subsistence resources, their uses, and the economic, social, political, and religious lives of individuals, families, and the community. We sought to learn the values, attitudes, and opinions held by villagers about their subsistence resources, their space and place, their labor, and their society because we wished to know what might happen to Unalakleet society and culture if harvests of resources in their village space were disrupted.

The research team directed their attention to those avenues into village life that remained open during the early months of the study. As events prompted villagers to speak their minds, the team was able to record the issues raised at public meetings and the thinking and sentiments expressed there and elsewhere in conversations. The research team was able to enter another dimension of village life by attending community events, such as the school graduation ceremonies, Memorial Day observances, and a potluck for visiting dignitaries. Yet another perspective took shape as the heads and staffs of village organizations and institutions were interviewed on the histories, organizations, and functions, and the presents and futures of these bodies. But a long time was still to pass before individuals and families opened their private lives and offered their deeper thoughts and feelings to the research team.

Villagers who were asked for suggestions on how to proceed with this portion of the work agreed on their advice. They said: "give it time." This advice was in accord with what the research team had already experienced: that villagers carefully protect the privacy of their personal and family lives. Village life is carried on at such close quarters, often with heavy demands on people's emotional energies and their physical and material resources, that individuals and families create and maintain, as they can, a private space for performing daily activities and for grappling with unusual and trying circumstances as they arise. The researchers were counseled that once they and their work were better known, then invitations to visit or take part in family activities would be extended to them by the families themselves. We were told that had we entered the village a mere ten years earlier, we immediately would have been invited into homes, treated cordially, and provided information and friendship. But trust and openness could no longer be extended freely.

Subsistence activities are strongly family and friendship-centered. They are times of busy preparation and labor cooperation that require participants who share a common goal, who work well together, and who can rely on each other's skills and judgments. Subsistence activities are also times of pure enjoyment, eagerly anticipated by families and close friends as occasions to be together and have fun. But since many are considered family or friendship doings, others enter only when invited.

Information, both qualitative and quantitative in nature, was to be gathered through a multiple methodology comprising traditional anthropological observations

in which field investigator and principal investigator observed and participated in village activities and in which informal, open-ended discussions with knowledgeable villagers were held. The native assistant, of course, was to be active in the activities that, as observers, the anthropologists sought to understand, even participate in, if possible.

Information also was to be gathered through protocol interviews, that is, discussions focused on specific topics, and conducted with members of various networks in the village. For instance, Jorgensen prepared sets of topics to be discussed with members of a family-household about family-household organization, their extraction, preparation, consumption, and sharing of resources, their attitudes about the environment, the naturally-occurring resources within it, and so forth. Upon completion of the protocol observations, a member of the household was to provide the name of another household within the village with whom the initial household interacted in some fashion. In this way networks of family-households, friends, political associates, people who engage in extra-curricular organizations associated with religious organizations, and the like, could be studied. Different protocols were prepared for different kinds of information--some to apprise us about village institutions, some about households, some about the village's market economy.

A third methodology was to post species inventories in 20 percent of the village households and have those families tally their daily catches and bags for a two month period. A fourth methodology was to collect and analyze all available archival data (health, mortality, crime, welfare, business, etc.), all published and unpublished wildlife, fish, and other biological reports, and all known historical, ethnohistorical, and ethnographic materials that pertain to the village of Unalakleet.

The information would be used to write an ethnography that explicated the relations among the harvest of renewable resources and village society and culture: an empirically warranted portrait of village life. The ethnography which follows is important because it is the basis for the report that evaluates the consequences which proposed development of off-shore oil and gas would have for subsistence resources and village life.

The specific methods for sampling and data collection were modified as conditions and contexts required. But the goals of the inquiry remained unchanged. The basic methodology, which was composed of traditional anthropological observations, stemming from participation, as such is possible for anthropologists,

open-ended conversations, and focused discussions conducted with institutional leaders and employees, proved to be consonant with local expectations and agreeable to local tastes, while generating a full empirical account of basic topics that are important to Unalakleet life as it relates to naturally occurring, renewable resources.

THE SAMPLE AND THE FIELD OBSERVATIONS

During the first months of work, whenever the research team approached persons for a family interview, most declined to take part in the study. Some people expressed dismay and aversion to studies generally. Some expressed caution and wariness and questioned whether this study might not provide information to the oil companies and government agencies that could be used against the village. One man summed up the concern by saying: "we are very protective of our village, our resources, and our way of life; you'll find out that we won't stand for anything that will do us harm." So the concerns that were instrumental in rejecting the study were still concerns, regardless of the decision to go ahead with the research because of its importance to the village's future.

Several times the research team found themselves trying to dispel the notion that they were associated with the oil companies or with the Alaska Division of Fish and Game. Both groups were in and out of the village around the time the study was beginning, either staging public relations meetings (representatives of the major oil companies) or preparing for their own annual summer research projects (Fish and Game). A hearing on State lease sale #38 for oil and gas development of coastal zone waters (the sale was subsequently cancelled), was also held in the village during the same period. Concern and some confusion were both natural reactions to the new faces as villagers attempted to sort out who the outside people were, what their work was, and whose interests they represented. Villagers expressed weariness at the growing number of outsiders who come to the village. The Bering Straits School District had recently decided to move its headquarters from Nome to Unalakleet. The District built a new building and its employees required housing and services. The immediate effect was to inflate housing costs, strain the local infrastructure, and cause residents to worry about new claimants to locally-occurring resources. The sense of being overwhelmed by

an outside presence contributed to some villagers not wanting to be part of anything issuing from, or belonging to, the outside, including the study.

The activities of the late spring season consumed the attention and energies of the village. Every chance they got, people went out looking for oogruk or the birds that were soon to fly in. People were busy first with preparations, then with going to spring camp for bird hunting, and seal hunting (hunters double, even triple, their activities whenever feasible), collecting eggs and greens, and setting the first subsistence salmon nets. At the same time, people were directing much attention and energy to preparations for the start of commercial fishing. So the first hint of spring put people in motion to hunt, fish, and gather the resources that would be available for a very brief period.

We had the impression that villagers, busy with their own lives, watched to ascertain the researchers' patience. They watched for the team's openness to observe because Eskimos seldom criticize and generally teach subsistence skills by precept. Of course they also paid attention to whether or not the researchers listened and understood what people were saying and doing, but especially what they were doing, in their subsistence pursuits and village lives.

By mid-June, reservations about the study had diminished enough so that whenever the research team stopped to talk with people in a familiar and comfortable setting--while they were hanging or repairing nets, cutting fish, unloading a salmon catch, fixing a boat motor, doing business in the stores or post office--they freely offered their thoughts and feelings on a variety of topics. Some provided interviews to Jorgensen, and others offered direct information when asked directly. People were particularly expansive when visited at their camps; they told stories and elaborated on subsistence activities going on at camp and other happenings. Near the end of the summer, villagers began seeking the researchers out to tell them something they had on their mind and felt needed saying. Similarly, the researchers began receiving invitations to family gatherings where the people present would at some point turn the conversation to subsistence topics and other issues they wanted the researchers to know something particular about. Because, however, the field investigator and the native research assistants proceeded with considerable caution, formal household protocols were not collected. The researchers considered it out of the character that they had established to, three months later, switch to more formal, comparative questioning following protocol topics.

At the suggestion of village leaders and Jorgensen, record forms for obtaining figures on subsistence activity and use of resources were distributed to thirty households. But the field investigator and her assistant were apprehensive about collecting the forms, preferring to visit fishing and hunting camps to collect information from observations and open-ended discussions. Twelve record forms were collected and another thirteen were elicited through interviews. Some villagers considered counting a violation of customary practice and belief, something at odds with the proper attitude and behavior that one brings to subsistence undertakings. Others did not, and freely offered information about their catches, collections, and bags. Some considered figure taking to be a way that regulatory or other government agencies are able to assert their control over village life, and demurred when asked. Other people simply felt they were too busy to do a conscientious job of record keeping, so they declined to do so.

Because of the difficulty experienced in February of 1982 in getting the project going, the field investigator settled on a "right time" approach to discussions with villagers. There never was a "right time" or opportunity for some villagers to take part in the study. The research team did not visit their homes or camps or encounter them in one of the informal village settings good for conversations; they were not among those who participated at the public gatherings, events, or meetings the research team attended; they were not among the staff of village organizations that the research team interviewed or contacted on other matters. Yet, those people with whom the research team was able to talk during the course of the study form a cross-section of the village. Mostly native, but taking in some non-natives, they included long-time, continuous residents, periodic residents, and new and seasonal residents; they included people who had rarely been outside the village and ones who had visited and lived in other villages, towns, and cities of Alaska and the lower 48; some had grown up in Unalakleet and some had not; some had ended their schooling in the elementary grades, others had gone on to and through high school, or into and through college or vocational school; they were from different families and friendship networks; they lived in different sizes and types of households; they ranged in age from child to elder; they worked at steady year-around jobs, or at temporary or seasonal jobs, employed by others or self-employed, in all the job sectors represented in the village; they held political, social, and religious positions of

leadership, or were active in these spheres, or were involved little or not at all; they sat on local, regional, and state boards; they took part to a varying degree in community activities and events. All those villagers whom the study reached were involved in subsistence pursuits, but differed in the manner and extent of that involvement, in their knowledge of subsistence resources, and in their level of subsistence skills. But we should point out that only a few very elderly or infirm natives do not engage in subsistence pursuits; yet their relatives and friends participate on their behalf.

Inasmuch as one goal of anthropological observation is to participate so as to learn by precept, the team participated in subsistence-related activities whenever the occasion arose. It was learned that at Unalakleet there is little teaching about subsistence without purpose, and purpose is firmly linked to developing the skills to care and provide for one's family and others. In local enculturation there is a pace and order to this learning, but adults, especially anthropologists with little more than six months field time, must learn at a more rapid pace. If precept and experience is the only teacher, knowledge of the subsistence resources, how to obtain them, process and prepare them, grows slowly. Training and instruction go hand-in-hand with the learning gained through experience, as one joins family and others more knowledgeable than oneself in subsistence undertakings. Fortunately, again, we could supplement observations with questions.

Even into late middle-age, most villagers think of themselves as young in understanding about animals and the ways and possibilities presented by subsistence living. Considering themselves still learners, they linked doing and knowing as "understanding." Some expressed amusement, as well they should, that researchers would think that they had gained any real degree of understanding in just six months of work, so the principal investigator was careful to point out that we were not studying so as to become proficient hunters. A number of people expressed concern at the study's short duration. It would, of course, take one full year to see the entire subsistence round and to take part in some small way in all or most of the subsistence activities engaged in by villagers. (100 mile trips, one way, on snowmobiles to hunt caribou posed a real challenge, but one not taken.) Perhaps ten years would be required for researchers to understand seasonal and

annual variations that can occur in the availability of subsistence resources. Villagers said that to go beneath the surface of the community and to understand and appreciate subsistence living fully a person would have to be part of village life for 10, maybe 20, years. One man said the only outsider he ever knew to have really understood the people of the village was the artist Mayokok, who lived in Unalakleet for over a decade.

The principal investigator pointed out that Eskimo adaptations to the arctic occurred over five millenia. We hoped to get a modern account through knowing, even if we could not, ourselves, make the adaptation and "do it."

The dilemma that faced the research team was how to take part. The native researcher's family, relatives, and friends solved the problem by including the researchers as they went about their subsistence activities. During the summer subsistence season, the researchers joined these families in kelping, salmon fishing, berry picking, moose hunting, and even bear watching. They also camped for part of the summer with the families from Unalakleet who establish a temporary community up the coast from the village while they commercially fish. The research team gained additional information about the place of commercial fishing in the life of the village by interviewing people associated in various capacities with the Norton Sound Fishermen's Coop (NSFC) and its fish processing plant, and by working a shift at the NSFC's plant, which was managed by an outside firm during 1982. Lengthy discussions were also engaged in with local managers and employees of the two corporations that competed to purchase, process, and sell fish caught by local commercial fishermen during the 1982 season. One used NSFC facilities and was managed by non-natives, and one used makeshift facilities and was managed by local natives. Hence those operations and their roles in village life were studied.

By participating in spring, summer, and fall subsistence activities, the research team learned about the subsistence resources, concepts of ownership of resource sites, the places where resources are extracted, the techniques used to obtain resources, the strategies employed when harvests fluctuate, the methods of preparing foods for storage and consumption. The team learned how information on resource availability is exchanged; how labor and equipment are pooled in subsistence undertakings; what effort is expended, and what financial outlay is required to locate, bring in, and process the resources. The team learned how the foods are given and shared within households, and between families in the village, and with relatives

and friends elsewhere. They learned what feelings villagers hold toward the subsistence resources and toward the land and sea from which their native foods come. They learned what subsistence living means to the well-being of individual villagers and their families and the community as a whole. In short, they learned by precept and open discussion about all of those topics outlined in the research charge, that is, the scope of work.

Part I of the following report does not adequately portray Unalakleet as the villagers know life there to be. Such a task must be left to students with deeper knowledge and more graceful prose. Hopefully it will provide analysis that will teach villagers something that they did not know, but that they will understand upon reading it. From the start, even though villagers were slow to provide information, they asked that all aspects of their life be shown: the ordinary and the out-of-the-ordinary; the old ways and the new and changing ways; those aspects that people feel good about and are proud to have told, and those that are seldom exposed because of the pain and distress they bring. From the start, villagers asked that their voices be heard through the study, telling how they feel about their present way of life and telling their hopes and fears for the future of the village.

It was necessary to collect historical, ethnographic, and resource-use data not only to provide an analysis of contemporary Unalakleet society, but also to provide a baseline from which social and cultural consequences from disruptions to harvests of naturally occurring species could be hypothesized. Part III of this study explicates the methodology employed to research the ethnography that follows, as well as the assumptions that were made about the methods as well as the data that were collected. That section also provides a rationale and a methodology for the concluding hypotheses in the effects analysis that is presented in Part IV. Unalakleet natives are especially sensitive to the projections in Part IV because of the crucial nature of naturally occurring resources to their lives and culture. Sufficient comparative, diachronic data are not available to conduct an empirically adequate "impacts" analysis on Unalakleet alone. Such an analysis would require two restudies. But sufficient synchronic data have been marshalled to assist the preparation of an empirically warranted environmental impact report if that report compares several Norton Sound villages analyzed during a comparable time period.

If the people of the village, after reading this report, can say, "yes, that is us, all right; that is our village; that is the way we use our resources," then their hopes for the study will be realized and the quest for an empirically accurate ethnography and effects analysis will be served.

Notes, Chapter One

1. See the public testimony, written and oral, offered by Unalakleet residents on the Draft Environmental Impact Statement proposed for OCS Proposed Oil and Gas Lease sale No. 57 (Norton Sound), October 1981, Unalakleet, Alaska.

2. See Ellana (1980), Hemming et al. (1978), Schwarz, Lean and Bird (1981), Schwarz, Lean, Whitmore, and Smith (1982), and Sherrod (1982).

CHAPTER TWO
A BRIEF HISTORICAL PERSPECTIVE

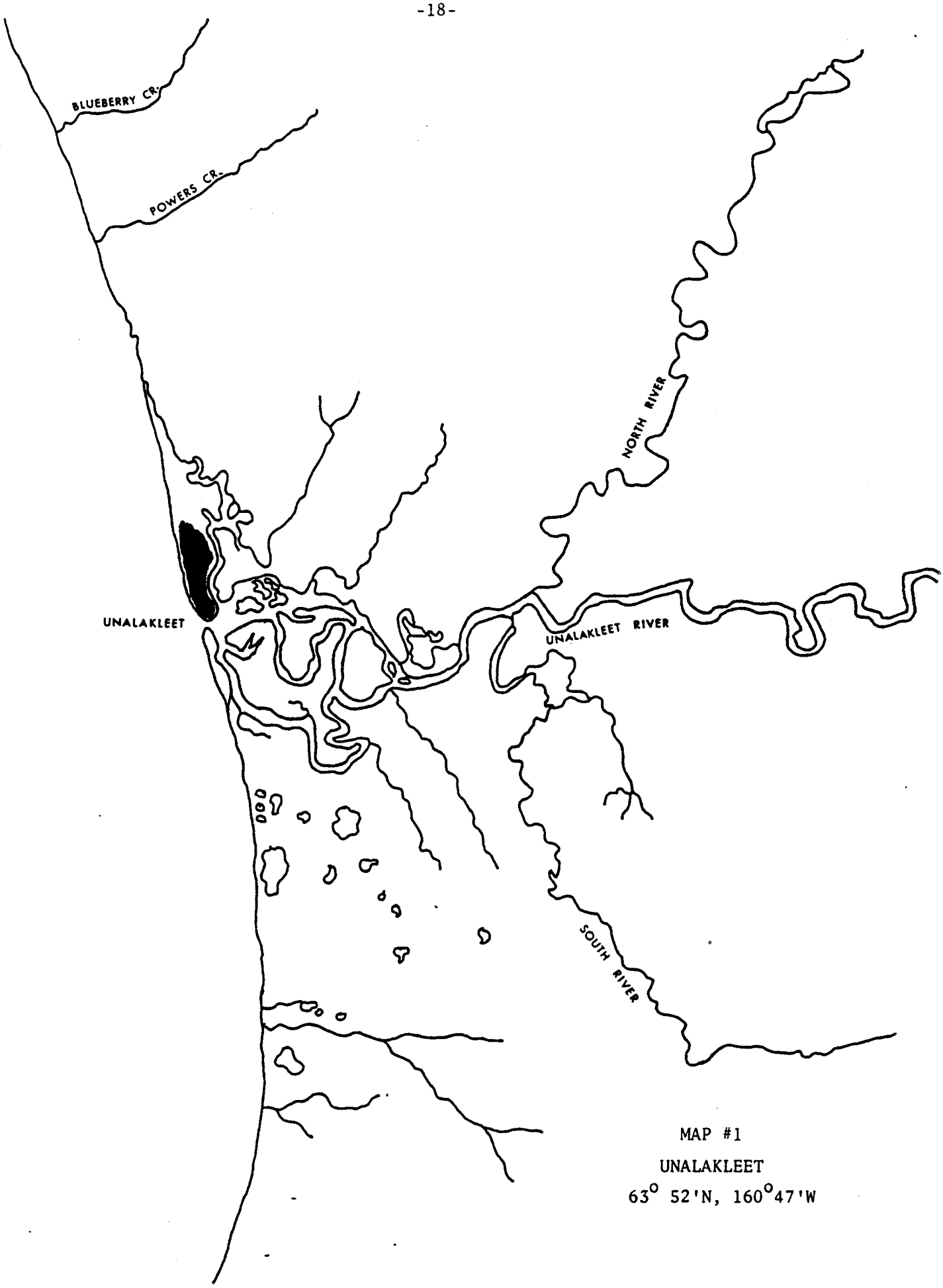
THE SETTING

Unalakleet, situated on a spit at the mouth of the river of the same name, is backed by the Nulato Hills and fronted by Norton Sound, the easternmost waters of the Bering Sea. The village is located at 63°52'N, 160°47'W, on the western edge of the Alaska-Hawaii Time Zone. It is about 400 miles northwest of Anchorage, and 150 miles southeast of Nome.

The Unalakleet River rises in the Kaltag Mountains about 50 miles northeast of the village. Many tributaries feed the Unalakleet, some rising in the Andreafsky range to the south, and others rising in the Debauch Mountains to the north. The Unalakleet system is separated from the Yukon River by the former, and the Shaktoolik River by the latter. The hills and mountains dissected by the Unalakleet system are wooded, predominantly by alpine spruce, whereas willow and birch shrub, sedges, and forbs are important constituents in the wet tundra, and bilberry, cloudberry and birch are important constituents in the moist higher tundra.

The Unalakleet River system teems with spawning salmon during the summer months, and hosts sea-run char and grayling that enter the river to spawn and stay for eight or nine months to feast on salmon eggs and salmon grilse (fry). Brown bears, too, feast on salmon. They wade into the river and fish for salmon--either migrating or spent. Brown bears also pilfer salmon from the villagers' drying racks and from their set nets (bears strip nets of their fish by standing near the shore and cleaning the nets as they haul them in--paw over paw). These bears are joined by the black bears and the villagers in harvesting the vast quantities of berries and the more limited quantities of roots that mature each year.

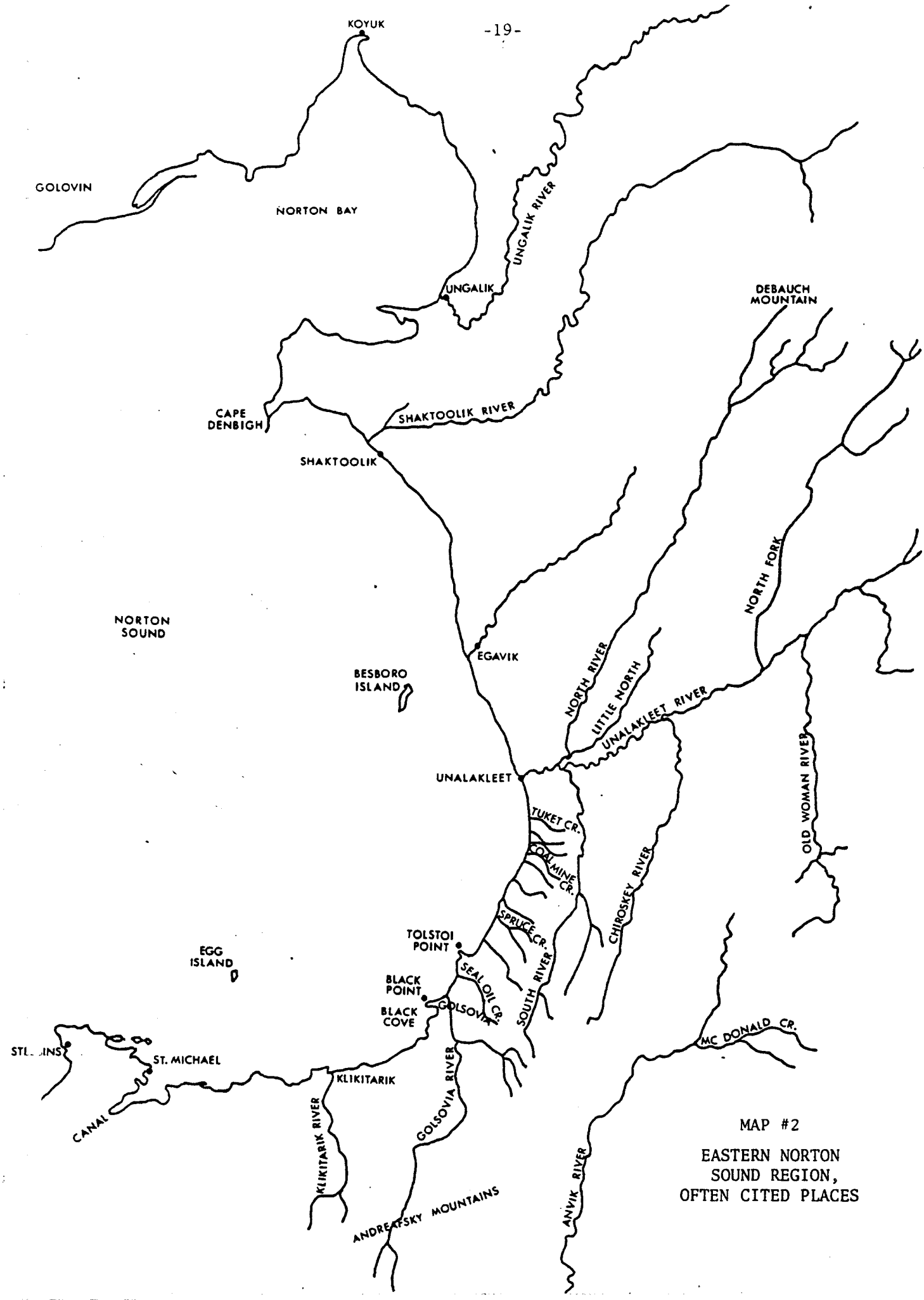
The tundra to the north and to the south support the caribou herd which, although diminished from its considerable size of over a century ago is, as is the nature of this species, increasing again in numbers. The willows and sedges along the river system are inhabited by moose, while snowshoe hares and willow ptarmigan inhabit the moist willow tundra nearby, and arctic hares and spruce grouse claim the higher reaches and the wooded zones.



MAP #1

UNALAKLEET

63° 52'N, 160°47'W



MAP #2

EASTERN NORTON SOUND REGION, OFTEN CITED PLACES

Norton Sound supports several species of invertebrates and fish, in tidal marshes, that are feasted upon by migratory and nesting shorebirds, seabirds, and waterfowl. There is kelp in which fish hide and eat and spawn. Many species of sea mammals feast upon invertebrates and fish of the area. These resources, from the herring roe-on-kelp to the beluga whale and the whistling swan, are harvested by Unalakleet villagers, and have been for more than twenty centuries.

This is not the place to launch into a full-scale analysis of the Unalakleet environment and the manner in which Eskimos currently interact with it. Scientific species designations will be provided below, as will extraction and use information. Up to this point it has been our intention to provide, in as brief a fashion as possible, a thumbnail account of the multiple resources available to Unalakleet villagers, and of the complex region in which they reside. Except for salmon, berries, birds, and eggs, the Unalakleet environment of 1982 does not yield an absolute surfeit of any natural resource, but there is such a multiplicity of resources available at different times throughout the year that it is appropriate to call the place "bountiful." It is also exquisitely beautiful in all seasons.

A GLIMPSE AT PREHISTORY

The researchers suppose that if this were the nineteenth century and we were Germans of the romantic verstehen tradition, the explanation we would offer as to why Unalakleet was inhabited by the Ungalaqlingmiut is so obvious as to be unchallengeable: it was bountiful and beautiful, so once the earliest Ungalaqlingmiut arrived, they applied their technologies, i.e., their tools and the techniques of their employ, to this rich and varied environment and they stayed.

The archeological record of the arctic, ice bound so much of the year and boggy and mosquito infested for much of the remainder, is not so robust as that of the southwestern United States, where few environmental factors inhibit research. But research conducted during brief summer sessions over the past thirty years is beginning to fill in the picture for Unalakleet, Norton Sound, and regions north and south. The picture, however, is still seen through a very dark glass, and it does not look as if the first persons to arrive at or about what is now Unalakleet set their roots and stayed. According to Dumond (1978), who

summarizes his own exceptional research in Alaska as well as that of scholars who worked in the Norton Sound area up to about 1976, points out that the earliest known habitation in the Norton Sound region occurred at about 2000 BC. Cape Denbigh on Norton Bay, a well-known archeological site, yielded a plethora of small tools that came to be known as the Denbigh Flint complex, a manifestation of the much more widely distributed Arctic Small Tool Tradition that appears to have persisted during the final stages of a relatively warm period (Hypsithermal).

Although most of the evidence for this tradition in the Norton Sound area derives from what were probably temporary camps at coastal locations, some semi-subterranean houses have been excavated along river courses in areas north and south of the Unalakleet system.

According to Dumond (1978: 64), during the Small Tool Tradition it is likely that subsistence was balanced between hunting and fishing, with special emphasis on caribou and salmon. And although some toggle-head harpoons for hunting sea mammals are known in eastern sites of the Arctic Small Tool Tradition, there is no solid evidence that seal hunting through winter ice was practiced, that dogs or dog traction were employed, or that boats were used. Sealing through ice is the prime feature of later adaptations to the Arctic coast.

The Norton Sound picture is clouded by a break in occupation from about 1500 BC to about 1000 BC with the advent of the Norton Tradition. Dumond (1976: 65) suggests that the break "hint(s) that the major subsistence base of the people disappeared rather suddenly." Average temperatures lowered, caribou migrations may have been drastically restricted, and adaptations to coastal resources may have been strengthened. In any event, the Norton Tradition in Norton Sound comprised square, semi-subterranean houses similar to those in the Small Tool Tradition, but also pottery that was fiber tempered and stamped with either checked or linear markings, oil lamps, projectile points larger than those of the microblade tradition, adze blades, and other features that distinguish Norton from the Small Tool Tradition. Lutz (1973) excavated many house pits from a site near Unalakleet, including what must have been a karigi, a large structure used for ceremonies as well as for a men's house.

The Norton Tradition is recognized as "Eskimo Proper." It must have emphasized use of the sea, particularly the hunting of sea mammals, a renewed emphasis on the extraction of salmon from the spawning rivers, and caribou from the tundra nearby (Dumond 1978). Indeed, the distribution of the tradition is along

the Alaskan coast from the Alaskan Peninsula to Point Barrow, but according to Dumond (1978: 71), the "steady evolution of the specifically Norton form of the Norton Tradition is confined to the south." Norton was, it appears, the bailiwick of the Yupik who, along with Western Aleut, Eastern Aleut and Inupik speakers constitute the four language groups of the Eskimo-Aleut language family.

Norton Sound has been occupied continuously for the past 3000 years, and it may well be the case that sites will soon be discovered to fill in the void between 1500 and 1000 BC. It is evident, however, following Giddings' (1960) discovery of a continuous sequence of late prehistoric sites near Cape Denbigh (1200 AD to the early contact period), and Lutz' (1973) discoveries at Unalakleet (dating to 100 BC) that Eskimos, who were adapted to the coast but who also harvested the resources of the rivers, tundra, and forests, were ensconced in the region for at least three millenia conducting subsistence pursuits for the same resources, if not in the same fashion, as today.

FROM EARLIEST CONTACTS THROUGH ANCSA AND THE EXPROPRIATION THROUGH LAW

The earliest protracted contacts by Europeans with Eskimos of the Unalakleet area occurred with the construction by Russians of Fort St. Michael (Mikhailovski Redoubt) in 1833 (see Ray's edition of Edmonds 1966). Fort St. Michael was located east of the Yukon River mouth, a scant 52 miles southwest of Unalakleet. The coastal strip between the two villages, but especially between Unalakleet and St. Michael Island (a mere 48 miles away) provides nesting areas and fly-ways for tens of thousands of waterfowl, seabirds, and shorebirds, beluga migration routes, salmon migration routes, and oogruk areas used by villagers from both communities for centuries. Furthermore, the St. Michael Island area is the principal area used by residents from both villages for the collection of herring roe-on-kelp.

The Russian-American Company provided the structure and impetus for European-Eskimo trade relations, and in all likelihood Unalakleet villagers were drawn into those relations soon after 1833, if not before, at still more distant posts. Henry B. Michael (1967) has translated and edited the travels of L. Zagoskin and Zagoskin's biographer, M. Chernekov. Zagoskin traveled in the Yukon, Kuskokwim, and Unalakleet regions from 1842 through 1844, issuing a description of his observations as a scientific report. Zagoskin was not the first Russian to

write about his journeys through the Unalakleet region, however. Apparently his countryman, Malakhov, traveled from St. Michael to Unalakleet, followed the Unalakleet to its origin, and crossed over to the Yukon drainage (Koyukuk) in 1838 and again in 1840 (Correll 1973: 44). Malakhov or some other agent of the Russian-American Company established a hut for trade and hired a native to operate it.

On August 3, 1842, Zagoskin arrived at Tolstoi Point from St. Michael--currently a favorite oogruk hunting area for Unalakleet residents. He met a native there who preceded Zagoskin into Unalakleet (a 3½ hour walk for Zagoskin). Zagoskin arrived in Unalakleet nine years after Fort St. Michael had been established, and either two or four years after the small trading hut had been established in Unalakleet. The exact date at which the hut was established is not so important as is the connection between the events of 1836, when an epidemic cut a swath through what had been the large village of Unalakleet, and the first contacts with Europeans in the Norton Sound region, probably in or about 1833. Whatever the date may have been, in 1836 the village of Unalakleet had been reduced to 13 inhabitants from perhaps nine times that number.

When Zagoskin arrived (see Michael 1967, pp. 95-102 for his account), the village was located on the gravel spit on the north side of the river's mouth. But he could look directly across the mouth and see the remnants of the village on the south-side spit that had been abandoned six years earlier when the epidemic had raged. Hearth depressions and the depressions excavated for karigis were visible to him.

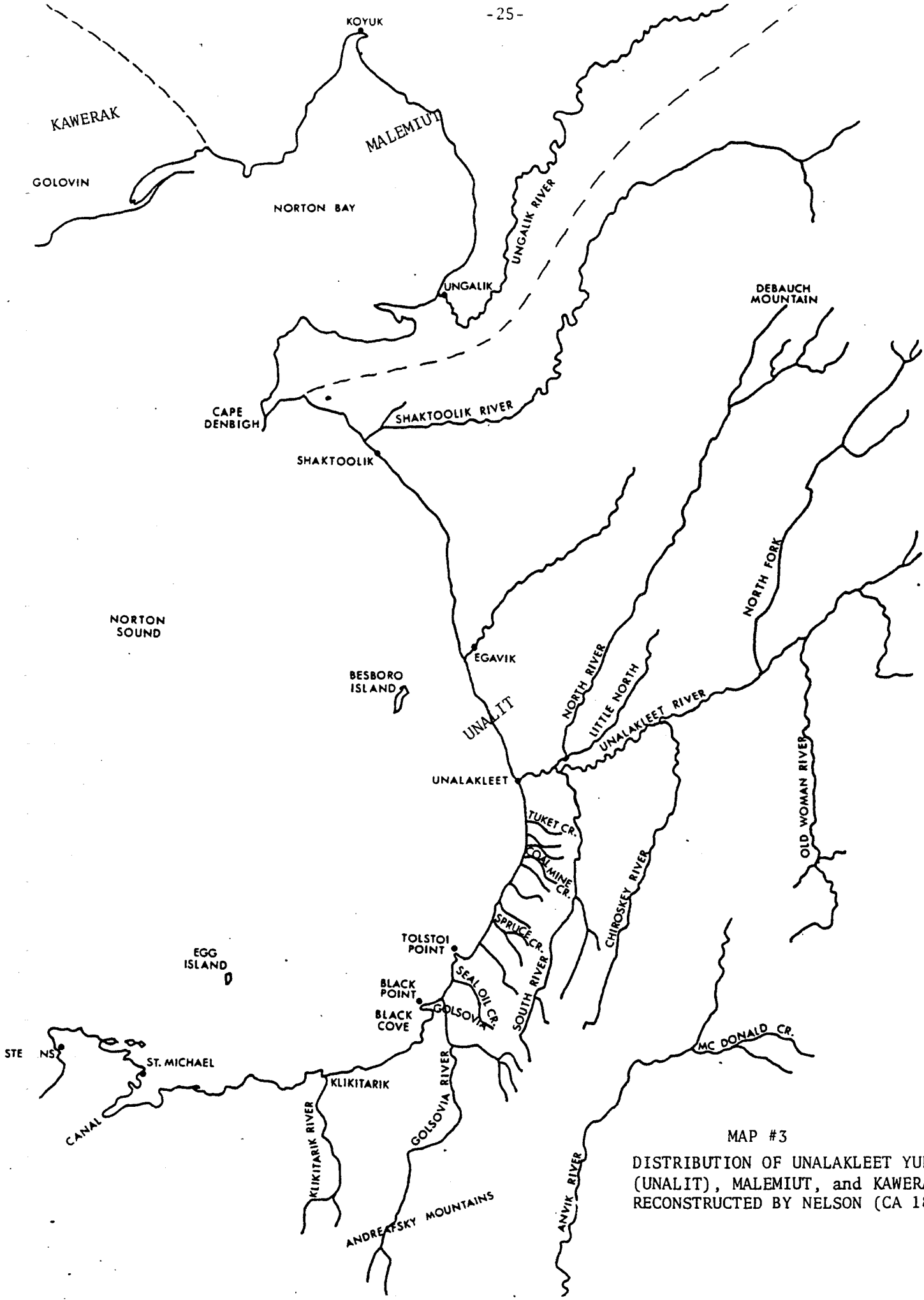
The setting and resources of Unalakleet in 1842 seem to be very similar to the setting and resources of 1982. Zagoskin commented that the soil was sandy and held potential for cultivation; that fresh water, fish, standing timber, and driftwood were plentiful; and that Unalakleet would make a good staging area for commerce, certainly preferable to the mouth of the Yukon.

The tiny Unalakleet population of 1842 had no Malemiut Inupiat within its numbers. Malemiuts from the Norton Bay region and northward were recognized to be adept trappers, so Zagoskin sent word either to or through the village of Shaktoolik 33 miles to the north that he wished to trade with Malemiut trappers.

During his several trips to Unalakleet and elsewhere in the region, Zagoskin identified the trade routes and actual travel made by Eskimo traders from the northern Bering Straits to the villages along the lower Yukon, and from the mainland across to the Chukchis in Siberia. Moreover, his trips up the Unalakleet River and into the Yukon drainage identified the roles played by Athapaskans in interior to coastal trade routes, and the role of kinship in most trade relations. Unalakleet villagers traded oil to the interior for caribou skins, and Malemiuts journeyed to Unalakleet to exchange peltries for caribou skins. Caribou skins, of course, were extremely desired for winter garments.

Little more than two decades after Zagoskin had recognized Unalakleet's excellent locale as a Russian-American Company trading post, Western Union Telegraph designated Unalakleet to be its headquarters for one section of its projected transoceanic line (Whymper 1869; Dall 1870). The line was not built through Alaska, but the Western Union team made its way to Unalakleet in 1866. The trading hut was in operation and the village had grown dramatically in the preceding 25 years. The village, according to Whymper (1869:167), was inhabited by Malemiuts and Kaveaks (Kaweraks), whereas Dall (1870:24) of the same party also identifies Unaleet inhabitants. Members of each group spoke a different dialect, although they intermingled within the village. In 1866 the Malemiuts, in general, resided from St. Michael Island to Golovin, whereas the Kaweraks, in general, resided north and west of Golovin. According to Dall (1870) the Unalakleets (Unaleet) were the only permanent inhabitants of Unalakleet. Presumably he meant original inhabitants. Some Russian-Eskimo admixture had occurred, semi-subterranean houses and karigis had been built, intervillage and Eskimo-Indian trading proceeded apace, and a trade network connected Athapaskans of the Yukon, who extracted fox, beaver, and marten pelts, to the people at Unalakleet, thence to the Chukchis of Siberia, and finally to American and Russian traders.

Correll (1972: 55-58) infers that the pre-1836 Unalakleet residents were Yupik speakers. Most died during the epidemic of 1836, so with the establishment of the trading hut in Unalakleet by the Russian-American Company, Malemiut and Kawerak Eskimos, each speaking an Inupik dialect, began moving into Unalakleet, but the original Unalaqlingmiut, or inhabitants of Unalakleet, which were Yupik speakers, had their closest affinities with Yupik speaking Eskimos of the Yukon Delta.



MAP #3

DISTRIBUTION OF UNALAKLEET YUPIK (UNALIT), MALEMIUT, and KAWERAK AS RECONSTRUCTED BY NELSON (CA 1836)

The United States purchased Alaska from Russia in 1867, but the first important and extensive report on the people of Norton Sound was not published until 1899, nearly 20 years after Edward W. Nelson (1899) had completed a four year ethnographic research expedition there for the Bureau of American Ethnology.

In 1877 Nelson, much as Dall had observed a decade earlier, determined that prior to the movement of Russians into the area, the Yupik speaking "Unalit," or Unalaqlingmiut, were the original inhabitants of the region from slightly north of Shaktoolik to Pastolik, whereas the Malemiut occupied the region northwestward from the head of Norton Bay (Nelson 1899: 24). He located the Kawerak from Golovin westward on the north shore of the Sound and the Seaward Peninsula. Nelson further reported that between the 1830s and 1880 Malemiut had moved southward into the depleted villages along the Norton Coast, but that the disappearance of caribou from the coast, in turn, caused a great reduction of Malemiut settlements by 1880 (see also Skoog 1968, and Burch 1975 for interpretations of the decline of resources during the period). Nelson reported that the villages of Shaktoolik and Unalakleet in 1880 were either principally Malemiut, or Malemiut and Unalakleet (Inupik and Yupik).

As for language distinctions, Nelson (1899: 25) reports that the Unalit of Unalakleet spoke a dialect very different from either Malemiut or Kawerak, but very similar to the dialects spoken south along the Norton Sound coast, around the Yukon Delta, and further south.

Nelson's ethnography of the several Eskimo groups around Bering Strait is a massive tome (518 pages, 7 3/4" x 11") focusing principally on the techniques and tools employed by Eskimos to cull their livelihoods, provide shelter, transport themselves and their belongings, and the like. As such, the "arctic genius" of the Eskimos is laid bare, from the ingenious ways in which ptarmigan were snared during the winter (much as a fish weir with traps, brush fences were erected with openings placed every several feet in which a snare was placed; when the ptarmigan tried to pass through the opening it triggered the snare), to the efficient floating nets anchored beneath the winter ice in which seals were netted and suffocated as they swam at night. The highly efficient and imaginative Eskimo tool kit--replete with a plethora of traps, snares, nets, and weirs (fences or obstructions)--made it clear that the life of the coastal Eskimo could be, and indeed was, surprisingly sedentary. That is not to say that Eskimos did not travel. They made

long journeys by dog sled in pursuit of caribou, fur-bearing animals, and trade; and they also made journeys to participate in ceremonial affairs at adjacent as well as more distant villages.

The resources harvested by Norton Sound Eskimos in the late nineteenth century were, for the most part, similar to the resources harvested by their forebears during the prior three millenia, and to those harvested by the contemporary residents of Unalakleet. Tomcod (saffron cod), rainbow smelt and sculpin were jigged through the sea ice; and dolly varden, Arctic char ("trouts" to the natives), pond smelt and grayling were jigged through the river ice. Of interest is Nelson's (1899: 180) rendition of a grayling hook in use at Unalakleet in 1878: the hook was set in an ellipse of ivory, and the ivory had been stained with green spirals. It looked much like a popular modern spinning lure (green daredevil) in use in the Arctic and elsewhere around the world. Many types of sinkers and anchors for lines and nets were used, as were a bevy of fishtraps (for blackfish, whitefish and other fish varieties).

Shellfish were collected along the shore of Norton Sound near and southwest of Unalakleet, especially during the fall when high gales from the north and the resulting low tides exposed mussels and clams, and made it possible to find other shellfish and fish, including sculpins, beneath the rocks. Gill nets were set in the Sound to ensnare salmon during their spawning migrations to Norton Sound rivers, while seines were pulled along the beaches of the coast as well as the river to harvest salmon. Seines of smaller mesh were also pulled along the Sound's shore to harvest herring during their spring spawning runs. And herring roe-on-kelp was harvested, dried, then boiled during the winter when brought out of storage.

Detachable barbed-points (toggles) were attached to seal, walrus, and whale spears. Leisters (three-pronged spears) of various sizes were used to hunt birds and fish. Skin-covered kayaks and umiaks were used to pursue quarry and transport goods. And dog traction was used to pull sleds. Inasmuch as each family possessed a dog team of eight to twelve dogs (including a few pups), the demands for a constant supply of meat for the family as well as for the dogs was a permanent feature of Eskimo life. Some families got by with as few as eight dogs, it appears, by making greater use of small sleds that would be pulled by a lone hunter as he sought caribou in the frozen tundra hills, or as he pulled his kayak across the ice to find open water so as to hunt seals during the winter (see Nelson 1899: 205-211).

Nelson noted that the houses in Unalakleet and elsewhere between St. Michael and Norton Bay were more mixed in variety than the regions north and south--lending credence to the observations of Zagoskin, Dall, Whymper, and others, that Yupik speakers were joined by Inupik speakers (Malemiut, predominantly) in those villages. Yet Nelson (1899: 252) said that the houses in Unalakleet were generally of the Unalit (Yupik) style he observed farther to the southwest. Karigis (kashims) were constructed in all Norton Sound villages. Nelson mentions them as being important, but apparently to him they were so commonplace as to be treated in general, rather than by specific villages. Lutz (1973) has excavated prehistoric karigis at Unalakleet, whereas the unexcavated proto-historic karigis on the south side of the river mouth are still visible from the air.

During the period spent by Nelson in the Norton Sound-Bering Strait area, Ivan Petroff (1884) conducted a census for the United States government. He counted 100 persons in Unalakleet, a number far larger than the survivors of the epidemic of 1836, but perhaps smaller than the number of people who had inhabited the village in the interim. The village population waned with the consequences of the epidemic and the availability of caribou. Yet the population of 100 in 1880 represented a large village by 1880 standards.

Several accounts mention small villages located up the Unalakleet. Villages such as Iktigalik were confirmed by residents in Unalakleet in 1982. Moreover, several residents of Unalakleet reported that they were reared in such villages where they resided year around, venturing to the village at the river's mouth to trade, or to attend ceremonials and feasts. Such trips with several young children were not engaged in lightly, because the return during summer months required polling and pulling from the bank heavily laden umiaks against the current for 15 to 20 miles. All of the former residents of upriver locales maintained their summer camps in areas close to their original habitation sites (brothers located along bluffs at adjacent portions of the river, or across the river from one another). Invariably these people told the researchers that they were Malemiut. Inasmuch as most of these people were in their 70s when contacted by the researchers, placing their births and residences in the region soon after the turn of the century, it is likely that people we interviewed were the progeny (children and

grandchildren) of the Malemiut's encountered by Allen (1887) on his journey down the Unalakleet in 1885. Small settlements, in fact, occurred in many places in the late nineteenth and early twentieth century, including Golsovia to the southwest and Egavik to the north. But over the course of the past 50 years, but especially since the conclusion of World War II, many residents of the small villages began establishing their year around residences in Unalakleet, while often retaining camps at their erstwhile homes.

Correll (1974: 66-74) has pieced together the highlights of the influential role played in Unalakleet by the Rev. Axel Karlsen who, as a proselytizer and organizer for the Swedish Evangelical Mission Church of America, established missions in at least fifteen villages from the Yukon River mouth to an area east of Nome. Karlsen arrived in Unalakleet in 1887, when he began preaching. And he used Unalakleet as his base of operations until he died and was buried there in 1910.

Karlsen is credited with stifling and eventually eradicating traditional gatherings, especially plays and feasts, and for discrediting and hence eradicating shamans. He was instrumental in opening a school (later to become Covenant School) in 1899 (using forceful techniques, such as soap in the mouth, to curtail the use of their native languages by students), a ministry to service the sick and the aged, and a home for children. Karlsen also encouraged the residents of Unalakleet to develop gardens for potatoes, onions, and a wide variety of cool season, green vegetables.

Close on the heels of Karlsen, whose impact on the village of Unalakleet is institutionalized in church, school, gardens, and the loss of all traces of native dancing, singing, and services of shamans, was the Presbyterian Rev. Sheldon Jackson, who also served as the General Agent for Education in Alaska. By 1894 Jackson had secured private and Congressional funding to purchase reindeer (tamed Rangifer tarandus) from Siberia and ship them to Alaska (Stern et al. 1980). Jackson established a herd in Unalakleet in 1894, and the first superintendent of the reindeer station (at Eaton Station ten miles above the mouth of the Unalakleet River) was the Reverend Axel Karlsen. The reindeer herd was in the private ownership of Karlsen's church, with parts of the herd belonging to the 150 Lapp reindeer herders who were brought from Norway to maintain the herd and to teach local natives to become pastoralists (see Stern et al. 1980: 26-36; Correll 1974: 70-72). In 1902 as many reindeer were owned by missions and other non-Eskimos in Alaska as were owned by Eskimos (Stern et al. 1980: 28).

Reindeer herding seems to have suffered a setback at Unalakleet about the time of the Nome Gold Rush on the Seward Peninsula (circa 1899-1900). Reindeer were used and sold for traction and for meat during the gold rush; while both pneumonia and measles epidemics roared through the region. Native populations dwindled, as did the reindeer herds. A herd was established in Shaktoolik in 1907, and a second herd was re-established in Unalakleet in 1911. Inasmuch as some Unalakleet natives as well as Covenant missionaries had flocked to Nome to seek their fortunes during the gold rush, it is likely that the demise of the initial herd can be traced to this event (see Correll 1974; 72; and Stern et al. 1980: 29-34 for evidence on which this preceding surmise is based). The herd that was re-established in 1911 was herded by Lapps. Around 1940 the reindeer were sold by Lapps to the federal government (the original purchasers of the herds), and the reindeer were redistributed to local Eskimos. A few Lapps stayed in Unalakleet to help, but the herd was gone by 1966. The Shaktoolik herd remains.

The village of Unalakleet from 1838 to the turn of the century and perhaps for a few decades into the twentieth century comprised speakers of two dialects of Inupik (Malemiut and Kawerak) and one dialect of Yupik (Unalit, Unaleet, or Unaaliq), according to Correll (1974: 84-86). Correll (1974: 106-110) argues that for at least one century the three dialects formed separate demes (unilocal, bilateral descent groups)within the village, each with its own karigi. But the ever-present trade contacts, ceremonial participation, and intermarriages began to break down the distinctions among the dialect groups. On the other hand, place names throughout the region were uniformly Yupik, according to Correll, emboldening him to claim that the Unalit Yupik place names were recognized by Inupik immigrants, who also recognized the precedents set by the early Yupik inhabitants of the area. Such may have been the case, but Correll's generalization could not be confirmed during the 1982 field session, although the question was pursued several times.

Correll further explains that as Kawerak-Malemiut intermarriages increased, the two Inupik demes began to share a single karigi for all Inupik speakers, whereas the Unalit speakers maintained their own karigi. Moreover, place names and site ownership, after one or two generations of use, came to be defended by the demes that possessed them.

If deme ownership of strategic resource sites and places was recognized in the early decades of the twentieth century, such could not be confirmed in 1982, but that is not to repudiate the generalization. Many forces, not the least of which were federal laws, have influenced and changed Eskimo property rights in the past 40 years. In 1939 the village of Unalakleet sought to become a reservation under

provisions of the Indian Reorganization Act (Wheeler-Howard Act) when that Act was extended to Alaska natives in 1938 (52 Stat. 393). Unalakleet was one of six villages or islands in Alaska that organized under the Act between 1941 and 1946, being granted a tiny 870 acre reservation for their effort. The reservation provided 870 acres in trust to the village, not to separate demes and not to individual allottees.

In 1939 the natives of Unalakleet ratified a constitution under the provisions of the Indian Reorganization Act, so that in 1939 the village of Unalakleet elected a village government to regulate its internal affairs and became organized to conduct municipal and public activities, and economic enterprises as well. The reservation was not established until two years later in 1941. The IRA government, with some important modifications following passage of ANCSA (Alaska Native Claims Settlement Act) in 1971, has remained intact and in operation since 1939. By organizing under the IRA the villagers gained access to programs created by Congress and administered by the Bureau of Indian Affairs that had not been available to them previously, and these programs, too, exercised considerable influence on village life between 1939 and 1971. We will return to these issues.

During World War II a U.S. Army base was established on a hill about 3.5 miles directly north of town. And although the base was dismantled following the War, in the mid-1950s a U.S. Air Force radar station was erected on the adjacent hill to the east, and a road connecting the base to a runway in Unalakleet, and to a radar transmission station 15 miles up the Unalakleet River (crossing the North River) was built. The air base, claiming 8,000 acres near Unalakleet and above and adjacent to the River, remained in operation for two decades until it was decommissioned in a rather haphazard fashion about 1974 (leaving transmission towers whose cones were filled with PCB, noxious and volatile chemicals in drums, batteries exposed on ledges, drums of oil and gasoline, and the like). In the mid-1940s, and from the mid-1950s until about 1974, then, contacts between villagers and military personnel were relatively constant, even though the army and air bases were self-sustaining through their transportation and communication lines to Fairbanks, Anchorage, and to the 48 states. The military base came to control the North River, de facto and de jure, during the period.

Although the military bases were self-sustaining, Unalakleet residents recalled that during the occupancies at the bases that military personnel hunted and fished in areas formerly used exclusively by natives, and that during the 1950s

and 1960s in particular, they found it more difficult than previously to extract the resources that they required for subsistence. Indeed, it was recalled that the North River area was filled with military personnel and boats during the fishing season, and by hunters during fall and spring. According to native informants, they requested the officers at the air base to prohibit military personnel from hunting and fishing in the area, and they complied.

It is conceivable that the pressures on local hunting areas were not caused by military personnel alone. After World War II residents from small villages near Unalakleet began to relocate in Unalakleet, while Unalakleet began to grow through natural increase as well. Between 1880 when Petroff tallied the first census of Unalakleet, and 1910, when the second village census was taken, Unalakleet grew from 100 to 247 (or 147% over the preceding 30 years). That increase must have been due in large part to in-migration. But between 1910 and 1930 the population increased by only 14 people to 271. The world-wide flu epidemic during that period killed many natives, while driving some from the hinterlands to seek refuge in Unalakleet. There is little doubt but that large villages in which natives are dependent on naturally occurring resources can maintain themselves, let alone increase in size, only if abundances of those resources are available on a regular, predictable basis.

In the period prior to World War II Unalakleet villagers were almost entirely dependent on naturally occurring resources. Furthermore, dog traction was the dominant source of transportation on land, and paddles and human energy on water. Dogs had to be fed regularly, so their needs, too, constrained village size.

During and after World War II trucks were brought in to Unalakleet by the military, and subsequently over the following 25 years outboard motors for boats, snowmobiles, ATCs (all terrain cycles), and even trucks and cars were acquired by residents and by institutions, such as church and school, within Unalakleet. Rifles, guns, and the appropriate ammunition became the dominant means of securing quarry, as weirs, traps, and snares became much restricted in use. Traps became restricted primarily to the acquisition of fur-bearing animals. Dog ownership and use decreased, and jobs and programs made available through the village IRA government and through the Covenant Church increased the cash flow in (and out of) the local economy.

By 1950 the village population had increased to 469 from 261 two decades earlier. So a second great spurt in village population, far out-stripping an annual natural increase rate of 2.5 over 20 years, most probably occurred soon after World

War II, and is attributable to in-migration from the smaller hamlets nearby, but especially Golsovia, Egavik, Klikitarik, and upriver locales. (No reliable figures are available for 1940).

In the following ten years the population grew about 100 people to 574 (1960), only to plunge to 434 in the following decade (1970). The much slower growth rate between 1950 and 1960 from the previous decades, and the plunge between 1960 and 1970 can be attributed in largest part to federal policies and programs. Unalakleet residents were drafted and volunteered for military service during the Korean and Vietnam wars; and the Relocation Program (and the Employment Assistance Program that replaced it) of the 1950s and 1960s, administered by the Bureau of Indian Affairs and made available to Unalakleet villagers through the local IRA, provided transportation for villagers to Anchorage, Seattle, and other cities, and on-the-job training when they arrived. The Employment Assistance Program focused on the relocation of entire families, not individual trainees. The programs, which, in 1952, were extended to all Native Americans enrolled on reservations, were designed so as to permanently relocate natives in urban areas where they could sever their ties with their reservation communities and be integrated into the economies of cities (see Jorgensen 1978: 22-27). Unalakleet children were encouraged to leave the village for school, and many did, attending the BIA's Mount Edgecomb school in Sitka (southeastern Alaska), and on to college at Haskell Institute (Lawrence, Kansas), or the University of Alaska, often with BIA assistance or entitlements through legislation in the Johnson Administration's War on Poverty.

Alaska achieved statehood during this same period (1959), and the ADF&G (Alaska Department of Fish and Game) assumed control of fishing and hunting throughout the state. By 1960 the commercial fisheries division of the ADF&G had determined that a profitable commercial fishery could be established in Norton Sound, beginning first in the Unalakleet and Shaktoolik areas. That department established regulations for the commercial fishery and began encouraging natives to take part in it. By 1961 some Unalakleet residents became engaged in commercial fishing. Along with commercial trapping, which had a head start over commercial fishing of at least 150 years among natives in the Unalakleet area, the village had established its second commerical, market-dependent venture. It is crucial that both of these economic ventures, trapping and fishing, were solely dependent on the harvests of naturally occurring, renewable resources--some of the same resources on which their subsistence depended.

If Unalakleet families and individuals were pulled or pushed from Unalakleet in the late 1950s and 1960s for military service, education, or employment through government programs, so were they drawn back to Unalakleet by the monumental force of ANCSA, work made available along the trans-Alaskan oil pipeline that followed ANCSA, the desire to use Unalakleet as home and a base of operations, and the desire to re-engage in a subsistence lifestyle that now held the promise of some employment. But fully twenty-one years before ratification of ANCSA, and eight years before the awarding of statehood to Alaska, Frank Degnan, a native resident of Unalakleet, was elected to the Territorial House of Representatives. When statehood was conferred in 1959, Degnan was elected to the Alaska House of Representatives. He represented Unalakleet very well, using his influence to bring state and federal programs to Unalakleet during his tenure in territorial and state government.

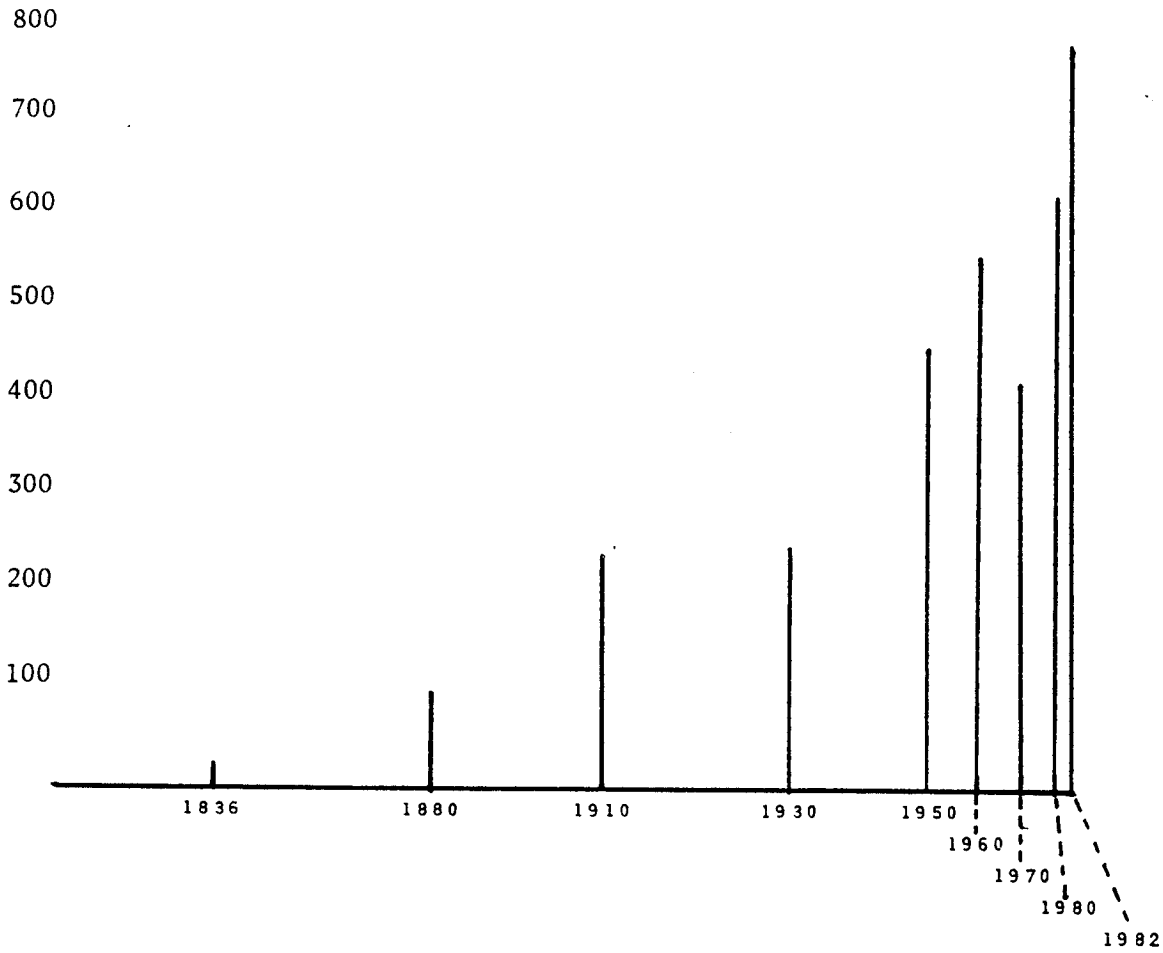
By 1971, when ANCSA was passed, Unalakleet already was electrified, although most homes, then and now, were heated by oil and wood-burning stoves. In 1972 the PHS (Public Health Service) built a water system throughout Unalakleet, and also constructed a sewer system served by a sewage lagoon for liquid waste disposal and a series of pumps to move the sewage to the lagoon. Most houses have been electrified and hooked up to the sewer system for over a decade. HUD housing projects were brought to the village by the IRA in the 1960s, and the Alaska State Housing Authority and the Bering Straits Regional Housing Authority constructed about 90 houses between 1972 and 1981.

These several factors, houses, sewers, electricity, and schools, coalesced to make life somewhat simpler and more convenient for residents of Unalakleet, emboldened children to stay in the village beyond their public school years, and encouraged former residents to return.

In 1970, just prior to the passage of ANCSA, the village census tallied 434 residents, but a decade later that population had increased to 632, and a scant two years later, in 1982, a census taken by the City of Unalakleet put the total at 790. The increase of 82 percent in 12 years is not phenomenal in Unalakleet history, as the following bar chart shows. Indeed, the size of Unalakleet has waxed and waned with the availability of resources and with harsh epidemics.

FIGURE 1

UNALAKLEET POPULATION, CIRCA 150 YEARS (1836-1982),
UNEQUAL INTERVALS, SEMI-LOGARITHMIC BASE



What is unique, however, is the total size of the present population. As long as Eskimos have inhabited Unalakleet they have depended for their sustenance principally on the land and sea mammals, birds, eggs, fish, shellfish, and plants of the region, i.e., the naturally occurring resources. Deprivations were experienced from the movement of the caribou herd from the coast in the 1870s, and people migrated out. And pressures were felt from military personnel uses of natural resources during the 1960s, and villagers responded to those pressures by stopping military personnel from hunting and fishing locally. And although the uses of dog traction dropped considerably in the 1960s and early 1970s with the advent of snowmachines into the area, dog team ownership rose rapidly in the late 1970s, largely because of the 1049 mile Iditerod race which passes through the village, and continues, requiring absolutely greater harvests of natural resources than ever in the past. So population

size, alone, is influencing how villagers regard the amount of local resources and the uses to which they are put. And as oil prices increase, or as local income decreases, the uses of dogs may increase, putting greater pressures on local harvests.

During the period from statehood until the passage of ANCSA, precisely the time when village residents were being lured from the village with the prospects of jobs and crumbs of wealth to the cities of the United States, some residents entered Unalakleet's fledgling commercial fishing operation stimulated by ADF&G encouragement and assistance in 1961. During the first thirteen years of the operation, a villager could engage in commercial fishing if he had access to a skiff (usually 16'-18'), an outboard motor (35 to 50 hp), and a couple of 50-fathom nets (about an 8" mesh for kings and 4" or 5" mesh for the smaller salmon species).

Commercial fishing, although requiring a modest cash outlay for boats, motors, nets, fuel, rain gear, buoys and other equipment, between 1961 and 1974 brought a fairly steady source of income into village families. During that period Unalakleet fishermen averaged about 58,000 salmon caught (aggregate) per year with an unadjusted average annual cash value of about $35,800 (figures are adapted from Schwarz, Lean, and Bird 1981: 46, 50; and Schwarz, Lean, Whitmore, and Smith 1982: Table 1, Commercial Salmon Catches, Norton Sound District).

In 1973, however, the Alaska Legislature created the Alaska Commercial Fisheries Entry Commission (AS 16.43) and empowered that commission to regulate entry into the commercial fisheries of the state, establish priorities, establish the maximum number of permits per area of the state, establish qualification for the issuance of entry permits, provide for the transfer and reissuance of entry permits, and other important powers. The Commission awarded permits to Unalakleet fishermen on the basis of the number of points that they had accumulated as commercial fishermen during the preceding twelve years, and several other criteria, including hardship and need. As a consequence, many villagers who had been away at school, or in the military, or on various BIA employment programs and who had returned only of the establishment of the Alaska Commercial Fisheries Entry Commission, had not accumulated sufficient points to be awarded a permit, free. The only avenue available for them to enter the commercial fish business was to purchase a permit from a permit holder (the 1982 value of an entry permit for the Unalakleet fishery being $10,000 to $12,000), or to begin attaining points by helping an established permit holder.

During the years immediately after the establishment of the Commission, the maximum number of permits for the Unalakleet salmon fishery was set at about 294, although only 196 have been issued by the Commission. Norton Sound

Eskimos hold about ninety of the current total. Unalakleet Eskimos hold fifty of those permits. Another 50 residents serve as helpers (often working to accumulate points to earn a permit). And still another seventeen Unalakleet natives hold permits in more distant waters. During the four years after salmon fishing was restricted to entry permit holders, many of whom purchased their permits from the State, the annual average catch (aggregate) jumped to about 81,500 salmon at an average value of $124,800 (unadjusted, annual aggregate measure). Native fishermen are earning less than one third of the annual totals. Given the price of an entry permit, and the costs of motors, boats, nets, rain gear, fuel, and the like, few natives were able to establish themselves as commercial fishermen after 1973.

In 1971, with the passage of ANCSA, a formidable framework of new native organizations was established. The IRA government, which had been functioning since 1939 and which held title to the Unalakleet reservation since 1971, continued. But it continued in an altered form. The 870 acre reservation was revoked, as was the Native Allotment Act of 1906 that allowed native individuals to claim 160 acres, to be held in trust by the Secretary of the Interior, so long as the ground did not include mineral deposits. Some Unalakleet residents claimed 160-acre allotments prior to passage of ANCSA. After 1971 Unalakleet residents could not claim allotments, but they were entitled to conveyance of land for their homesites, and subsistence campsites.

ANCSA extinguished aboriginal hunting, fishing, and land rights; provided for the reorganization of the Unalakleet government and its corporate structure; provided new recognition of sovereignty and authority (self-government) to the village; provided new sources of unearned income; provided for village-level institutions that seek state and federal funds; provided regional institutions--profit (Bering Straits) and non-profit (Kawerak) corporations--and formal relations with them; and provided for title to land.

The IRA government since 1971 has been the non-profit arm of the Unalakleet village structure and the major organization through which federal programs made available to Native Americans have been channelled and administered. The IRA government has a five-member council that deals with Kawerak, Inc., the regional non-profit corporation, sponsoring boat building classes, fisheries management classes, elders conferences, and the like. It also administers many federal programs that play very crucial roles in village affairs, including health care, employment assistance, college assistance, social services, tribal operations, and thoughtful, philosophical and practical counsel. Several federal acts, but particularly the

Indian Self-Determination Act of 1975, the Indian Financing Act of 1974, the Indian Health Care Improvement Act of 1976, and the Indian Child Welfare Act of 1978 not only provide the IRA government with greater measures of sovereign immunity than it possessed prior to the passage of ANCSA, but also provide the enabling legislation wherein the resources to provide health care and other public services can be obtained.

The City of Unalakleet, on the other hand, embraces natives and non-natives within Unalakleet, and was incorporated in 1974, three years after passage of ANCSA. City governments were not mandated by ANCSA. The City government comprises a seven-member city council from which a mayor and a vice mayor are elected. The City government provides Unalakleet with state revenue sharing funds and access to block grants for municipal purposes. It levies taxes, provides police protection, provides fire fighting equipment, maintains the roads, and so forth.

The third key institution is the Unalakleet Village Corporation, mandated by ANCSA and established in 1973. It is run by a Board of Directors. The eight-member board elects its chairman. The UNC (Unalakleet Village Corporation) is the profit-making arm of the village. It began with 829 original shareholders, each with 100 shares of stock. As its portion of the Alaska land settlement, UNC has received 100,000 acres through the conveyance process established by ANCSA and is to receive another 61,280 acres. In turn, UNC must convey some of this acreage to shareholders. UNC acquires funds to conduct business, and is authorized to do so as a corporation, through the $952 million settlement award provided to Alaska natives for the extinguishment to all claims to land title in Alaska. UNC opened a grocery and dry goods store in competition with the Alaska Commercial Company operation in Unalakleet, and the two began competing in snowmobile, outboard motor, and ATC repairs. It also has entered into construction in town.

In 1973 the Norton Sound Fisherman's Co-op was founded by several local fishermen who gained the impetus to do so in the creation of UNC, which had some money to loan for commercial ventures, as well as through the establishment of the state's Commercial Fisheries Entries Commission, which began to regulate an important aspect of the fishery, namely, the number of fishermen who could compete in it.

In the subsequent chapters we will have occasion to talk at greater length about commercial fishing, the major institutions of the village, and the consequences of recent, rapid growth for Unalakleet. The changes of the past decade have been large and obvious in Unalakleet, but the subsistence economy persists.

Extremely obvious, however, are new technologies that have changed the village (4-wheel drive vehicles driving through tunnels of snow heading one or two city blocks to the grocery store, for instance). Yet the new technologies are preeminently convenient overlays to traditional society, rather than the harbingers of an imminent transformation of Unalakleet society away from a subsistence base. As one village leader told the principal investigator: "We take whatever technology works, and shape it to our own purposes and uses...Apparently that bothers people who want us to remain pristine, or to admit our contradictions of wanting technology and controlling and preserving the natural resources for our own use...Why not? We've always accepted and reshaped technology that works for our own purposes." This practical, instrumental, and clear statement addresses the question of contradiction in subsistence and technology as well as it can be addressed.

CHAPTER THREE

INTRODUCTION TO SUBSISTENCE

The manner in which naturally occurring, renewable resources are harvested and put to use in contemporary Unalakleet, the social and economic organizations by which these ends are accomplished, and the cultural symbols and values that are attached to subsistence activities and natural resources, are the major focuses of this volume. As such, many subsistence topics receive extended treatment, and extended treatment on subsistence topics, particularly when assessing resources, species by species, and season by season, can have the unintended effect of providing a picture of each tree in considerable detail while losing the panoramic view of the forest and the relations among the living things within it. We seek to avert the problems caused by too much depth of focus in the following chapter, but the chapter on species-specific availability is necessarily rather arid.

The village of Unalakleet is located on a spit at the mouth of the Unalakleet River. The river valley is wide and cut by dozens of meandering channels. Hills rise to the south and north, eventually climbing into mountains as a person progresses upriver toward the head waters. The taller hills and mountains are forested, but the lower hills and valleys are tundra. The annual precipitation is about 20 inches whereas the mean annual temperature is about 27^{o} F. This is a rather mild climate for so northerly a location, although mild is a very relative term as used here inasmuch as the comparisions are to be made with continental tundra regions in the interior and the north.

The Unalakleet River begins freezing (icing over) in October, and sometimes break-up does not occur until early June (as was the case in 1982). Moreover, even though break-up of Norton Sound ice formations can occur as early as late April, break-up on the Yukon characteristically occurs in mid-May. The break-up of the Yukon discharges enormous quantities of ice into southern Norton Sound, often negatively influencing greens collecting, bird hunting, herring roe collecting, and fishing engaged in by Unalakleet villagers, but positively influencing oogruk hunting by creating "oogruk ice," i.e., flows on which oogruk can be located by hunters.

Willow and birch shrub covers much of the area, with willows growing rather dense and from 5 to 15 feet tall. The willows and birch shrub provide browse for

moose. Hummocks between the willows support tall grasses and arctic heath plants. Constituents include Betula glandulosa siberica (birch), Salix pulchra (willow), and Carex cryptocarpa (sedges, a favorite of moose). A layer of lichen rests beneath these dominant plants. The shrub vegetation gives way to Picea glauca (white spruce) at the higher elevations in the hills and mountains.

Snails, slugs, and centipedes; many flowering plants, including Heracleum maximum (masterwort), Iris, Epilobium spicatum (willow-herb), Aconitum, and Delphinium; legumes including Campanula (bellflower) and Pedicularis (wood-betony); and berries, especially Rubus chamaemorus (cloud-berry or salmon-berry), Vaccinium uliginosum (bilberry or blueberry), and Vaccinium vitis-idaea (low bush and mountain cranberry) are abundant. Caribou (Rangifer tarandus) are the major influent herbivore, whereas wolves (Canis lupus) and brown bears (Ursus h. kidderi) are the major carnivore and omnivore influents.

The shore and bluff regions of Norton Sound, the waters, ice and islands of eastern Norton Sound, and the Unalakleet and Egavik river systems, are the other major aspects of the environment that are lived in and used by Unalakleet villagers. The river systems host all five species of Pacific salmon, including king or chinook (Oncorhyncrus tshawytscha), silver or coho (O. kisutch), chum or dog (O. keta), pink or humpback (O. gorbuscha), and sockeye or red (O. nerka). Pink spawning runs are especially strong, whereas sockeye runs are very limited. Sockeye salmon require lakes in which to spawn, and only one body of water in the Unalakleet system appears to be adequate for that purpose. The river also hosts two anadramous char (locally known as trouts), Arctic (Salvelinus alpinus) and Dolly Varden (Salvelinus malma), that feast on salmon eggs and fry. Burbot (Lota lota), also known as ling cod, and whitefish (Coregonus) occur in the Unalakleet river also.

Kelp in the Sound provides food, protection, or spawning grounds for several species of saltwater fish, including herring (Clupea harengus), smelt (Osmerus mordax), and saffron cod (locally referred to as tom-cod) (Eleginus gracilis). The Sound's floor supports several species of invertebrates, including king crabs (Chinoecetes opilio), tanner crabs (Paralithodes platypus), clams (Macoma calcerea), shrimp and mussels (several species of each). These marine invertebrates are principal food sources for several sea mammals and birds that inhabit the waters of eastern Norton Sound for part of the year, or that stay year around and haul out on Besboro Island and on the ice throughout the region. The sea mammals that harvest fish and shellfish in the area include spotted seals (Phoca vitulina), ringed seals

(Phoca hispida), bearded seals (locally called oogruk) (Erignathus barbatus), beluga whales (Delphinapterus leucas), and, in ever increasing numbers, walrus (Obodenus rosmarus). Sea ducks, such as the eiders (Somateria spp.); bay ducks, such as the scaup (Aytra spp.), and even surface ducks, such as mallards (Anas sp.), dive for shellfish (mollusks principally) and fish in Norton Sound. Swans (Olor) dive for vegetation.

The river systems and the tidal flats of eastern Norton Sound provide spring and fall fly-ways for many species of waterfowl and shorebirds, and also provide nesting areas for a wide variety of birds, too numerous to mention here.

The ecology of the eastern Norton Sound region provides several integrated food chains that link animals of the land to animals of the sea, and animals of the sea to plants of the sea, animals of the land to plants of the land, and so on. The place of Unalakleet villagers within these chains will occupy our attention throughout the remainder of this study. In particular we call attention to the nature of the subsistence economy, the nascent market economy that is developing around and dependent on naturally occurring resources, and the opinions natives have of, as well as the significant symbols that they attach to, their space and place.

So as to be able to convey the importance of the subsistence economy, differentiating it from the market economy, it is important to make clear our assumptions about what a subsistence economy is. In so doing, we intend to pave the way for discussions about the interplay between subsistence and the market economy, and to distinguish public sector economics from private sector economics within the market. All three concepts--subsistence, private sector market, and public sector market, are crucial to distinguish and to understand in relation to modern Unalakleet.

THE SUBSISTENCE ECONOMY: A DEFINITION

The term, economics, will be used throughout this study as a generic term which refers to patterns of exchange, whether in the form of cash transactions or barter. Subsistence economics, on the other hand, refers to a mode of production that is more limited, but that is also broader than exchange patterns. The contradiction is resolved only upon recognizing that subsistence economy embraces a mode of production comprising the organization of ownership of naturally occurring resource areas, the organization of labor to extract, process, and store naturally

occurring and renewable resources, the organization of distribution required to share, gift, or reciprocate those resources, and the patterns of consumption of those resources. By and large, natural resources occur and persist without human planning, control or manipulation, although various environmental manipulation techniques have been used by natives the world over to alter selected aspects of their environments (through burning, conservation techniques, broadcast sowing, water impoundments and the like) to enhance their subsistence harvests. In another sense, human activities can interrupt the growth, recurrence, or even existence of these natural resources, but in the absence of man and his activities, these resources will exist even if other natural events limit their growth or distribution periodically.

Subsistence modes of production, literally extraction, can be distinguished from other economic forms by several factors in addition to their direct and intimate links to naturally occurring resources. First, there is no well-developed market system. Middlemen (entrepreneurs or capitalists who buy cheap and sell dear) are not inserted between the producer and the consumer. There is no speculation on the value of a commodity, a commodity being something that is bought and sold in the market place. Speculation is purchasing something for a purpose other than its normal use and for resale. Nor are there permanent locations or structures set aside for the exclusive purpose of the exchange of goods.

Second, while there are exchanges of natural resources among and between community residents, the exchange of processes or unprocessed resources for services or for cash is relatively rare, and not a subject for higgle-haggle.

Third, in a subsistence economy labor is a part of life, rather than a commodity to be bought and sold in the marketplace. Persons contribute their skills and their labor to extract, prepare, and store food and by-products, and they do so as an obligation of life.

Fourth, neither the resources that are extracted, nor the labor that is required to extract and process them, are converted to capital. Hence, capital accumulation does not occur so that savings of renewable resources for future sales is not a primary motivator for human activity. On the other hand, resources are preserved and stored to sustain human life, and in some unusual instances, say if a family is in need of seal oil to see it through until a hunter can bag a seal, a family with sufficient oil for its own need might sell oil to the needy family for a nominal, set fee recognized throughout the community. Abiological forces

(wind, water, ice, temperature, etc.) and biological processes render long-term storage (periods beyond one or two years) difficult, while the technological requirements for overcoming these forces and processes are very expensive or unavailable. So resources are stored and subsequently distributed to maintain life, but not stored for future sale and the conversion to capital.

A fifth distinguishing mark is to be found in the distribution pattern utilized in subsistence economies. Distribution of resources in a subsistence economy is, for the most part, based upon family, extended kin, friendship, and village networks. Goods, except at community festivals when they might be pooled, are not distributed to people outside established personal networks.

The absence of specialization within a subsistence economy is a sixth distinguishing characteristic. Worker's productive activities are not limited to a single product or even species. Subsistence requires several skills and end-products in contrast to the skills required of a used car salesman, an assemblyline worker, or a physician in a market system. This is not to say that some men do not weave better nets, or that some are not more proficient geese callers or oogruk hunters than others. But it is to say that most, if not all, men develop proficiency in the majority of subsistence skills engaged in by men. Such specialization as occurs, does so along sex and age group lines.

A seventh and final factor, one closely related to the previous six, is the criterion that production activities are directly linked to procuring food and maintaining shelter for the persistence of life itself. In a sense, then, this final factor elicits an image of an individualistic economic structure, whereas in fact extractors give as well as receive, and interdependency among networks of families within and among communities is crucial to the social fabric in which the subsistence economy is embedded.

None of these seven factors in itself distinguishes subsistence from other economic modes of production, but taken together they provide criteria adequate for the task.

THE MARKET ECONOMY OVERLAY, PUBLIC AND PRIVATE

A long history of federal and, more recently, state relations and controls has drawn native villages ever deeper into public sector dependencies as their traditional lands and resources have been expropriated. But Unalakleet natives have also become influenced by, and participants in, private sectors of the market economy through trapping, commercial fishing, and the sale of by-products from subsistence activities. The interplay among cash derived from public and private sector economic activities, technology for subsistence and commercial activities, and the persistence of the subsistence economy will be explicated in several following chapters, with special attention given to the interplay in Chapter Eight, "The Fit Between Market and Subsistence Economies."

THE RESOURCE CYCLE, PLANNING FOR EXTRACTION, AND A GUIDE TO THE RESOURCES OF EASTERN NORTON SOUND

In the following three chapters we seek to explain the cycle of naturally occurring, renewable species extracted by Unalakleet residents; the organization for extraction of those resources, including strategies and planning; and a catalogue of the availability, use, and technology for acquisition of naturally occurring resources. The chapters are separated, and the catalogue follows the narrative chapters so as to provide empirical support and details where detail would otherwise detract from the narrative and the generalizations that we seek to convey.

The cycle of naturally occurring species will provide an overview of the annual subsistence round, including an assessment of species availability by number of different species by seasons. It will also provide information on species not previously harvested but currently harvested, and areas only recently used for resource extraction.

The chapter on the organization for extraction will explicate the strategies and planning that go into extraction throughout the annual cycle. Care will be taken to make clear how Unalakleet residents plan to harvest and preserve multiple species by season (spring-summer), distinguish staples from secondary or tertiary food supplies, fall back on less preferred items if the preferred species have been disrupted for some reason(s), plan to extract some species for immediate consumption, and so forth. Discussion of amounts of species extracted by families, techniques and technology of extraction and storage, and planning for extraction so as to allow for sharing with kinspeople, friends, and the elderly--intra-and-inter-village--will be introduced.

The final chapter of this section will provide assessments of the dominant and secondary species harvested and put to use by Unalakleet natives. The species are grouped into sea mammals, land mammals, fish, birds, and plants, and assessed for availability, habits and characteristics, extraction, techniques and uses.

CHAPTER FOUR

THE CYCLE OF SUBSISTENCE RESOURCES

INTRODUCTION TO CULTURE AND NATURE IN UNALAKLEET

No one season or month begins the subsistence year. The native foods extracted and enjoyed by people of Unalakleet become ready at different times of the year, but there is no time when at least some native food important to the local diet is not available. Native foods are sought throughout the year whenever people have the need or taste for them and the means, and weather and travel conditions to go for them.

The subsistence resources on which people rely are numerous, and several are abundant during the season or seasons in which they occur. Most of these resources are available and harvested within a 60-mile radius of town: along the length of the Unalakleet River Valley and its tributary river valleys, north and south along the coast, and out into Norton Sound.

People look to the land and rivers, the sea, and the skies for their subsistence needs. The resources they harvest for food come from all three. The land and sea provide certain resources year around and others seasonally; the skies provide seasonally. In the midst of an environment yielding numerous and sometimes abundant resources, people nevertheless must work hard at harvesting these foods, and they must acquire and constantly draw on a considerable store of knowledge about the resources and other natural conditions to be able to meet their subsistence needs each year.

People keep a mental calendar of food resource availability. They know when each resource will usually come available, for how long it will be available, and the proper time in its cycle that it can and should be harvested. In their mental calendar, people know the order and pace with which resources follow each other, as well as the combination of resources that are available at any given time.

People fine-tune their mental calendar each year, figuring for that year as precisely as they can in days or weeks the arrival of the foods, their duration and time of best harvesting, and the speed at which they will follow each other. People draw on their own knowledge of the cycle and habits of the animals and plants, of the influence of weather and ice conditions on the availability of these resources, and of the signs they observe in nature which tell them more exactly what the year's calendar will be.

Just as they keep a mental calendar, people also keep a mental map of the area, and locations within that area, where each resource is usually located. To fine-tune their mental map each year, people again draw on their own store of knowledge about animal and plant habits, about the influencing conditions, and about the signs they read in nature to figure out more exactly the location of food resources that particular year. In refining both their calendar and map, everyone incorporates the huge quantity of information on resource availability that people exchange with each other.

People's store of knowledge about food resources necessarily includes much more besides a mental calendar and map of resource availability. To be able to satisfy their year's subsistence needs, people must be skilled at obtaining the food resources, preparing them for consumption, and preserving them for later use. They possess the know-how, based on their elders' teachings and their own experience, of land and sea hunting, fishing, and resource collecting. Once the resources have been located and extracted, people employ their knowledge of preservation and storage techniques to put away food for both their own and others' needs.

Subsistence needs are never simply individual, except in a short-term or immediate sense. On a yearly basis, people never use their store of knowledge to obtain food resources only for themselves. The planning and taking of foods, and the preparation and preservation of these foods, are done with the needs of whole families in mind, and beyond that, the many occasions and reasons for giving to the elders and to relatives, friends, and neighbors. The giving of food and the eating of food in the company of others have inestimable importance to life in Unalakleet, as important for social reasons of kinship and friendship and personal reasons of pleasure and sense of self-worth, as for the economic reasons of subsistence need.

One aspect of subsistence is routine and practical and rooted in teachings, experience, and daily reality. Subsisting involves learning and practicing a store of knowledge about the animals and plants; techniques for getting these resources under changeable weather, water, and ice conditions; techniques for preparing, preserving and storing these resources. It involves the help people give to one another in the work of pursuing, extracting, and processing the foods. It involves giving food to others who need or will enjoy eating what they receive. It involves each of the trips taken from town or camp to go after whatever foods are in season. It involves butchering the game, cleaning and cutting the fish, picking leaves and

other debris from the berries. It involves repairing and maintaining boats, motors, nets, and snow machines. It involves locating, cutting, transporting and chopping wood. It involves cooking for and feeding the dogs. It comprises a host of preparations and activities involving native foods and other sustaining resources.

A second aspect of subsistence gives meaning to daily practicality and routine. Subsisting also includes the responsibilities that people fulfill in providing for their families and caring for the older people and for other relatives, friends, and neighbors. It includes the pleasure which people derive from subsistence pursuits and from being out in the country. It includes the respect and reverence that people hold toward the land and the animals. It includes the understanding people have of the deeper connections between themselves as a people, the land and sea, and the resources. They know that these connections not only sustain their bodies, but also their cultural and personal essences, giving them identity and meaning in their lives as individuals and as a people. It is to these resources, and their relations to them, that villagers in Unalakleet assign significant meanings, the symbols of the reality that is Unalakleet.

The following chapters will take up the actual workings of, and meanings attached to, a subsistence way of life as that life is practiced and protected by the people of Unalakleet. This chapter sketches the natural scene by outlining the annual cycle of subsistence resources. It describes, by season, the when and where of resource availability and other features of the cycle of subsistence resources.

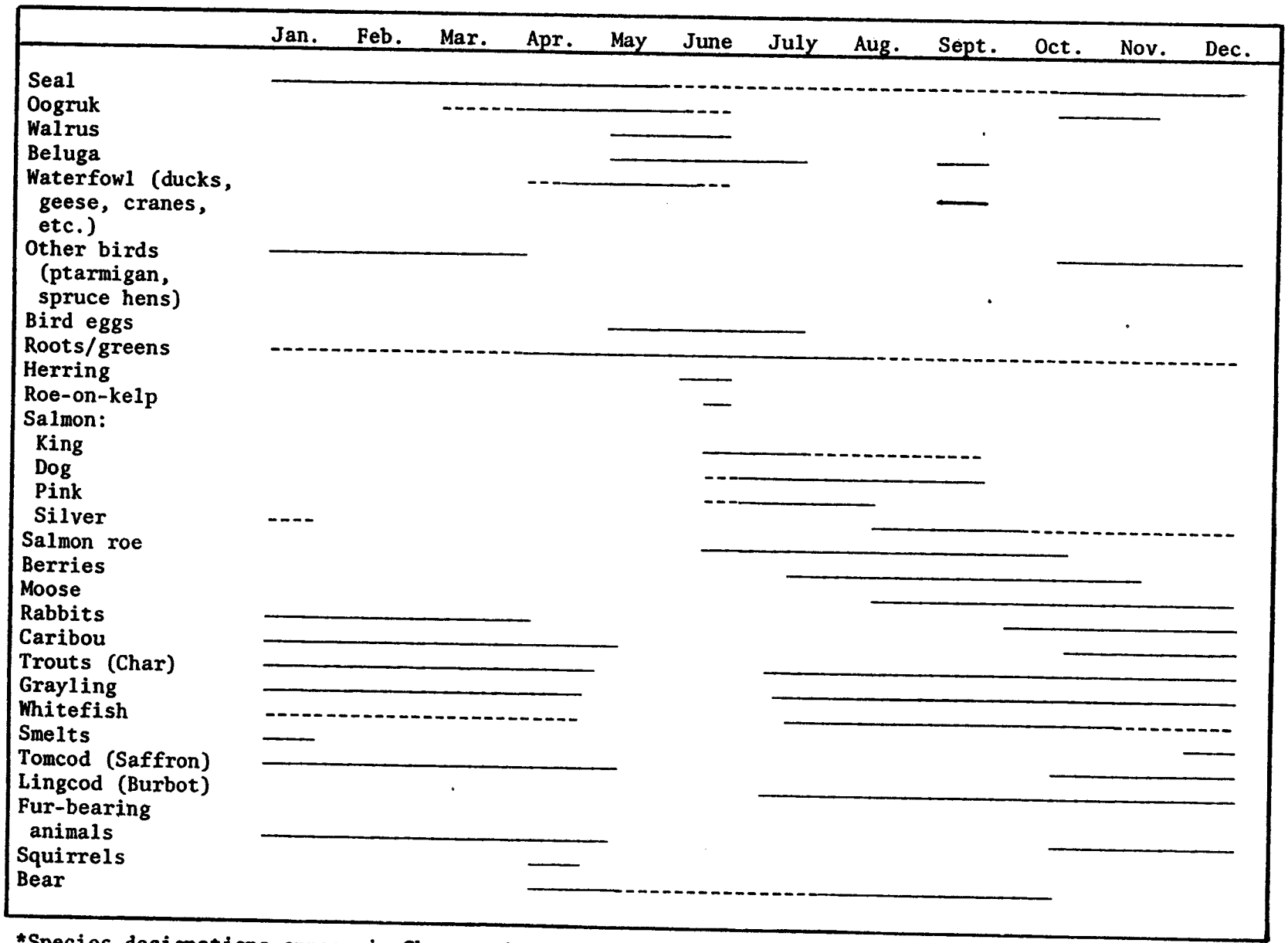
Figure 2 provides a graphic representation of species availability throughout the annual cycle. Common names for species are used in this figure. Taxonomic nomenclature for each species appears in Chapter 6. Reference to this figure may be helpful, particularly when reading the text for the Spring Season during which as many as five kinds of resources--embracing perhaps 50 species of plants, sea mammals, birds, birds eggs, fish, marine invertebrates, roe, and marine plants--are available at the same time.

WINTER SEASON

What better time in the Arctic cycle is there with which to begin than winter? Winter commences with freeze-up of the rivers and creeks and formation of off-shore ice. Freeze-up usually takes place in late October and early November. In winter, people can find foods as near by as outside their doorsteps, as when

FIGURE 2

HARVEST CALENDAR OF SUBSISTENCE RESOURCES*



*Species designations appear in Chapter 6.

Solid lines indicate the period when the resources are principally harvested; dotted lines indicate the period when the resources can be, and are sometimes, harvested.

they walk to the river mouth and slough to ice fish for tom cod and smelts. In winter also, people travel about as far as they ever go for resources, snow-machining 120 miles or more to hunt caribou or set trap lines. Many of the winter foods can be taken in quantity, being available either in large numbers (tom cods, smelts, trouts, and rabbits) or in large size (caribou and moose).

Once snow and river ice conditions allow long-distance travel by snow machine, groups of men plan hunting trips for caribou. They head northward to the high country miles inland from Shaktoolik or Koyuk, country inland from Golsovia, where they meet the herds on their migration routes. Hunters generally try to take the number of caribou they need in the first months of winter, although groups of men go out anytime during the season, even as late as the final weeks before spring breakup.

Moose are found along the frozen river courses and creek drainages during winter. Families that did not shoot a moose in the fall often will plan a winter hunting trip for one, usually along South River. Moose are easier to get in the winter than fall time, being both more concentrated and more visible, but they are still more difficult to bag than caribou. No matter the reason for being out in the country in the winter, whether checking traplines or pursuing other game, hunters are always on the look-out for moose and will even return to town for the proper rifle if they do not have it with them when a moose is sighted.

Men set trap lines for fur-bearing animals (lynx, wolf, wolverine, foxes, beaver, marten, mink, and muskrat) as soon as the trapping season opens in winter, although squirrels are not trapped until the end of winter when they emerge from hibernation. Men trap over a large territory: in the hills around town, along the Unalakleet and tributary river valleys, north and south along the coast and coastal valleys from Egavik to Golsovia, and in the Shaktovlik and Unqalik areas to the north and the McDonald and Anvik areas to the south. While checking traplines, men are always on the look-out for fur-bearers that can be bagged with a rifle. They are always on the alert, as well, for large and small game animals (moose, rabbits, ptarmigan and spruce grouse).

Winter is the time for taking rabbits (hares), another land animal important as a food resource for the village. Rabbits are wide-spread, in the willows and forests along the rivers and creeks and the willow-birch cover on the tundra and hills. Hunters take rabbits anywhere they come across them, but they particularly seek them in the hills around town, along the main river and its tributaries (North and South Rivers), and in the hills and creek valleys down the coast to

Golsovia. Rabbits (and their predators) have a seven-year cycle of abundance, of which hunters keep track. In the one or two years at the peak of the cycle, rabbits can be taken easily and near to town. At these times, hunters can take many rabbits in one trip out, working alone, with a companion, or as part of a group of men in a rabbit drive. In the off-years of the cycle hunters settle for whatever number of rabbits they can get. Rabbits are taken all winter.

Two inland birds, ptarmigan and spruce chicken, are another winter food source. Ptarmigan inhabit the willow-birch brush on the tundra plateaus, near the hills south of town. Hunters prefer ptarmigan over spruce grouse for their taste and for the added challenge they present, ptarmigan being less plentiful. Since ptarmigan occupy some of the same habitat as rabbits, the two animals are often hunted together, or at least bagged on the same trip.

Spruce grouse occupy a less restricted habitat than ptarmigan, those areas forested in spruce, and are particularly hunted in the hills north of town or around a family's upriver campsite. Rabbits are also found in the same habitat and are often hunted together with spruce grouse or taken on the same trip. Spruce chickens and ptarmigan are taken all winter.

Just as they look to the land, people also look to the river to supply food throughout the winter months. As soon as the ice is sufficiently thick to support humans walking about and engaging in all manner of activities on it--such as driving snow machines over it, hauling loads, and drilling holes--men, women, and children venture to the river mouth and the slough behind town to jigg for tom cod, and during the coldest months to jig for smelts while they are running (December and January). Ice fishing for tom cod goes on all winter. Tom cod are available in large numbers, as are smelts when they are running strong.

Upriver ice fishing is also engaged in throughout the winter. Families drive their snow machines to favorite fishing places on the river to jig for trouts (Arctic Char and Dolly Varden). In the early winter months, they also hook an occasional silver salmon, or more rarely a burbot or whitefish. On especially good fishing days, people will bring home large sacks of trout, but on bad days they may only get enough for a meal or two. As the winter progresses it is necessary to travel farther for good fishing upriver.

In the winter, the sea provides hair seals to those hunters who go on or along the shore ice out from town on days when wind conditions are right. Seals are shot at breathing holes, leads in the ice, and at the ice edge. During the first month of winter, when the herds are migrating south through Norton Sound, oogruk (bearded seal) are sometimes taken at the edge of the ice.

Crabs are also available during winter and are taken through the ice north of town with traps or by jigging.

Food resources for family meals or to feed dogs are available throughout winter. Some kind of game or fish can be taken just about anytime, barring poor weather, shore ice, or travel conditions. Spring is always eagerly looked forward to as it nears, however, partly because it offers changes in diet, new kinds of fresh foods that are much enjoyed, and a chance to resupply the family's store of these foods.

SPRING SEASON

People look forward to spring with much anticipation and delight. Spring comes with the break-up of river and shore ice. Break-up coincides with warming and lengthening days. These conditions, in turn, coincide with the reemergence of new and varied resources that flood into the area in the spring of each year.

The pace of spring subsistence activities is much faster than winter because of special characteristics of the resources. Spring foods come in quickly; and they follow each other closely, overlap, or in some years are almost all available at the same time. Some of the spring resources are only available for a very short time: certain of the birds pass through in a day or two (Black Brant Geese), or a week (Snow Geese); certain of the plants (musuu root, fireweed shoots, roe-on-kelp) are at the stage when they are best taken for eating only for a few days or a week. Over all, spring foods are available for barely two months (mid-to late April through early to mid-June). An already short spring may be further shortened or delayed by a late break-up, by the local ice conditions and by the behavior of the Yukon River break-up ice.

Ice conditions and water temperatures affect the time of arrival of spring birds, fish and sea mammals, whether they come within hunting range, and their numbers. Herring, on which king salmon and spotted seals feed, will be slow in coming toward shore if water temperatures remain below a critical level. If lakes or the Sound are not open, some birds will fly by. Beluga whales will swim past Norton Bay if the ice pack has not broken up.

Ice conditions make the difference whether oogruk (bearded seal) can be hunted with much success. Oogruk feed at the ice edge and haul out where the size and sturdiness of the ice can accommodate their size and weight. When large pieces of old ice are within safe boating distance from town, and when boats can be maneuvered through the ice chunks, conditions are favorable. Yukon break-up ice, which the currents bring some years within hunting distance of Unalakleet, provides such favorable conditions. Sometimes ice conditions are so poor (winds blow local shore ice to sea and no break-up ice of the right kind remains in the area) that only a day or two of oogruk hunting the whole season results in any kills before the oogruk have migrated through. (Poor ice conditions can similarly damage winter as well as spring hunting for seals.)

Spring is such a short season, with resources as important and well-liked as those of any other season, that people watch, plan carefully, and work hard to make the most of what they can during this time. For weeks before break-up, people talk about the birds flying in, the coming of geese, ducks, cranes, and swans. Before the birds have arrived, men complete boat repairs and families make preparations to leave for spring camp. As word comes from Yukon delta villages, and then from St. Michael and Stebbins, on the approach of the migration to Norton Sound, people make short trips out from town to the flats to look for the first birds. Geese, except brants, fly in first, closely followed by ducks, cranes, and swans, then brants. The marshes and lakes in the flats surrounding town, and along the course of the river for 35-40 miles, are the resting areas for the northward migrating birds, and eventual nesting places for some.

Most people first hunt the flats close to town, making day trips out or overnight camp. They have about two weeks before nesting begins to take what birds they can, and only a few days for brants and a week for snow geese before these birds fly on to nesting areas farther north. The flats are soon hunted out, and families set up camp five to twenty miles down the coast or go to their upriver camps to continue bird hunting. Eider, scoter, and old squaw ducks, and several sea birds can only be hunted either down the south coast or to the north near Shaktoolik or further toward Golovia.

From spring camp along the south coast, or on trips out from town, people hunt for oogruk and spotted seals throughout the season. Spotted seals return to Norton Sound in the spring from wintering areas in the Pribilofs and stay in the Sound through fall. Oogruk migrate through the eastern Sound by sometime in June, returning in their late fall-early winter migration, but in fewer numbers than in the spring. Hunters try to bag enough oogruk and spotted seals in the spring to resupply for the year their family's store of seal oil. Spring is a good time for hunting these animals; they are available and hunting conditions can be better than in winter or summer. Fall is the other good time for taking spotted seal, but not oogruk.

Spotted seal can usually be found and taken in the waters off, or to the south or north of, Unalakleet. When ice conditions are unfavorable for oogruk, however, Unalakleet hunters will travel as far north as Norton Bay or southward closer to St. Michael and the Yukon break-up ice to find these seals, so important are they to families' supply of resources (seal oil, meat, hides).

While out sealing, winding up bird hunting, or later kelping, both north and south of town, people check the coast and islands for sea bird eggs. They look for the eggs of sea gulls, terns, eider ducks, puffins, and later in the season (or early summer) murres. At home, people check the flats around town and upriver for the eggs of loons, geese, ducks, swans and cranes, and a wide variety of shore birds. Generally people do not go specifically for eggs (except sometimes murre eggs) but use the occasion when out for another resource to look for them, or they make trips out of town to try for a combination of spring foods--greens, herring, roe-on-kelp, sea mammals, and/or crabs. People also look for eggs around their river camp when they go in the spring to inspect and prepare their campsite for the coming summer (set up the tent or refurbish the cabin, repair damage, begin additions).

Greens of several kinds are another food taken in the spring. Like the other major food resources, greens are collected both to eat fresh and to preserve and store for later use. People either go specifically to collect greens, or look for them when out for other resources. People repair to nearby areas for greens, for example along North River Road; and they travel farther, to particular creeks, hills, or marshes where they know the greens to be. People search for greens when at their river camp or their spring camp along the coast, and they check particular places along the way to and from camp.

Sura, the leaves of the dominant tundra willow (Salix pulchra), are picked from river and creek banks early in the season while the leaves are still young and tender. Masuu, a root, is dug early from the rocky tundra before the fibers turn woody. The young shoots of fireweed are gathered from river banks and other moist areas. Some marsh plants, aluegaqs (sourdock) and kavuuti, are also taken early to mid-way through the season. Tukaiyuks (wild celery) are picked along river and creek banks throughout spring.

Crabs are sought by jigging or by traps when collecting roe-on-kelp, or when collecting greens in coastal regions whose waters are known to be rich in marine invertebrates. About mid-spring, if not earlier, beluga (white) whales and walrus are watched for as the herds migrate through Norton Sound. Beluga whales can be netted in the waters off the coast north and south from Unalakleet, but boats of men also go to Norton Bay to hunt for these animals, whose muktuk is so prized and enjoyed. People report that beluga are not seen much anymore near Unalakleet and that they no longer enter the river and slough as they once did before increased activity and noise at the mouth and delta has kept them away.

Many hunters commented on the marked increase in the numbers of walrus in Norton Sound, some hunters having sighted herds as large as 300 to 400 animals in 1982. Walrus have always been hunted far from shore in their ice haul-out areas, where a kill must be butchered since the animal is too large and sinks too easily to be brought back in its entirety. When out for walrus or beluga, hunters will take oogruk or other, smaller seals if they are sighted. Hunters who have gone out for oogruk, the large bearded seal, but who could use a walrus will try taking one if sighted where conditions are good for its recovery; they may also try for a beluga if one is seen. Hunters travel as far north along the coast (to Shaktoolik or Norton Bay), south along the coast (to Tolstoi Point, Golsovia or beyond) or out into Norton Bay (80 miles or more) as they safely can, given wind and travel conditions, and their degree of preparation, in the search of seals, oogruk, walrus, and beluga whales.

Herring run in the late spring, when the water has warmed sufficiently for these fish to begin coming in toward shore for spawning. Families, or hunters out for other game set a subsistence net near to shore, usually in deep water, and usually in one emptying of the net take what is needed for drying and storing. Nets can be placed almost anywhere along the coast, north or south of town, where

herring run. Roe is taken from the female fish, and preserved for later eating by salting. When the shore water has warmed to the right temperature, herring spawn on the abundant kelp that grows along the rocky shoreline out of St. Michael and in St. Michael Bay, and the rocks between Cape Denbigh and Point Dexter. Families take their boat to one area or the other to collect roe-on-kelp for subsistence. They gather the kelp at low tide, wading among the rocks and using their hands or rakes to pull the kelp, laden with herring roe, from the rocks. People use the occasion of their kelping trip south or north along the coast to check for greens, eggs, or crabs at places where they know these resources to be, or to discover new places for gathering them. People also combine a trip for sea mammal hunting with subsistence herring fishing and kelping.

Spring is a time for camping. People greet spring with delight not only for the new and varied fresh foods this season brings, but also for the joy of boat travel and setting up camp along the coast or upriver. Coastal camps can always be made temporarily, during overnight travel and hunting trips. But families also set up for part or the length of the season so they can hunt birds and sea mammals, gather greens and eggs, and fish for herring and collect roe-on-kelp from their camp. With camping goes the joy of being out in the country, camp meals, and visits with people who stop by as they are travelling, walks along the shore beachcombing, appreciation of beautiful sunrises and sunsets, weather changes over the water.

Spring passes into summer as the weather warms, sometime during June, around the time the king salmon run begins. People leave spring with memories of good meals of duck soup and roast goose, muktuk and boiled herring roe, fresh sea bird egg omelets, half-dried and roasted herring eaten with fresh greens, and with these and the other food resources of spring preserved and stored for later use. People enter summer looking forward to the succession of salmon runs and berries that will come in from June through August.

SUMMER SEASON

Summer subsistence activities are carried out at a more measured pace than in spring, but no less intensely. The summer season lasts nearly a month longer than spring, and the days are longer, providing more outside work hours. The food resources that become available in summer are more spaced in their arrival and have a longer duration than the spring foods. Summer resources are not only available

in quantity but also harvested in quantity to preserve and store for winter use. The work of summer subsistence activities is intermixed with commercial salmon fishing, just as late spring subsistence activities are meshed with commercial fishing for herring.

An overlapping succession of salmon runs occur during summer. The kings (chinook) appear first, then pinks (humpback, or humpies), then dogs (chum), and in the late summer and fall, silver (coho) salmon. The king run is both the shortest and smallest run. The pink run is overwhelmingly the largest of all salmon runs in the Unalakleet and tributary rivers. The strength of the king run varies over a several-year period. The strength of the dog salmon run varies within a single season.

Families begin their subsistence fishing for salmon by setting king nets just inside the Unalakleet River, from the mouth to a couple miles upriver and in the slough south of town, as soon as kings start running. People like to take kings at the point where their oil content is right for smoking, not too much oil, as would be the case for king taken out in the ocean, or not too little oil, as would be the case for farther upriver. People go out to empty and clean their king nets daily. Once a family has taken the number of kings it needs for smoking and freezing, as well as eating fresh, the family pulls its king net so other people can fish that place in the river mouth or slough.

By the time the king run tapers off, usually by the fourth of July, people have all pulled their king nets and put in pink and dog salmon nets. People set these nets either the same place they had their king net or by their river camp. If the net is set at camp, people may cut and dry some of the fish there, rather than bringing them to town for processing. When they are out on the river to check nets, people enjoy fishing for salmon or any other fish they can get with rod and reel. They have favorite holes along the river where fish lie. They like to fish at those places, either stopping to throw in a line or drift fishing. People collect both pink and dog salmon throughout July. Dogs often run into September.

Another way of catching pinks and dog salmon is by seining in the slough or at a place on the river above a good-sized sandbar. People know the best places on the river for seining, and have their own favorite spots among these. A group of people, relatives and friends, get together to seine. They work together to stretch a net out from the river bank into the river and move it down, by boat and walking, to the sandbar, where the fish are entrapped. In one or two seines, they usually catch a large quantity of fish, and often other kinds incidental to pinks and dog salmon.

Summer is when people again begin catching trouts (Dolly Varden and Arctic Char), grayling, whitefish, and burbot, either as incidental fish when seining for salmon or by rod and reel. People fish the river whenever they have the chance, when out checking nets, at camps, berry picking, hunting (later in the summer for moose), on an outing (family picnic supper along the river, for example). People can bring quite a number of salmon and other fish home from one day's fishing with rod and reel, enough to dry and add to the family's stored food, to give to an older person for a meal of fresh fish, or to freeze for later sending to family members or friends who live in the cities. Often, some of the fish caught are also prepared for eating on the spot.

If grayling or trout, the roe, liver, stomach (cleaned of its contents), and intestinal fat are consumed and enjoyed raw while the fish is being readied for cooking. For roasting the fish, men cut stout lengths of willow, carve one end to a spear point, insert the point into the body of the fish, and place the fish holder upright by the camp fire to roast the fish. The fish can be served on a bed of willow leaves. For making ooruk, a freshly caught fish such as male humpback salmon, or trouts, are selected for cutting into sections (which are in turn slit) and boiled in a pot over the camp fire or on a camp stove. When traveling the river, people carry with them in their boats the necessary utensils for cooking and eating, as well as the seal oil that must accompany ooruk, condiments (salt and pepper), and if a meal stop has been planned, such other ingredients of an ooruk meal as greens, potatoes, and onions. Freshly picked berries may be included in the meal, if found around the picnic site or at an earlier stop along the river.

People look primarily to the river and land for subsistence foods during summer. The rivers yield fish, which people take to eat fresh and to store in quantity. The flats and hillsides along the river courses yield berries. People have their known and favorite berry picking places along the Unalakleet River, and its tributaries. People pick berries over the whole area surrounding town, including the tundra flats and bluffs along the lower river, channels and sloughs, North River Road, even the land near and around the airport. People pick berries along the coast and coastal valleys when they are traveling or camping, or checking their commercial salmon nets. Sometimes women or whole families are invited by their relatives and friends in Shaktoolik, Koyuk, or St. Michael to visit and pick berries. The people who have given the invitation acquaint them with the territory and take them to locations laden with berries, which they are then free to use during future visits.

The berries that mature in summer, and which are picked both for eating fresh and for storing in quantity, are: salmonberries (cloudberries), blackberries, and blueberries (bilberries). Salmonberries are the first to ripen (in July) and are available throughout the summer and even into fall. Blackberries and blueberries ripen in August and can also be picked in fall. Cranberries begin to ripen in late summer and early fall. Some years, depending on wind, moisture and other weather conditions, the crop of salmonberries or blueberries can be less abundant than usual. In 1982, blueberries were hard to find throughout the area (except Nome). Usually, however, families are able to put away the amount of berries they need by spending more time, making more trips, or going farther for picking. Currants are also taken for preserving. Other berries, found only rarely, such as wild strawberries and raspberries, are picked and eaten with delight when they are discovered.

The land also yields early summer greens. People pick wild rhubarb from rocky hillsides; and from the beach they collect atchaaqluk (beach greens), some of which they store for later uses, including the making of Eskimo ice cream.

The sea, in summer, yields spotted and hair seals. Spotted seals, in particular, become a nuisance to commercial fishermen in the later summer when they take silver salmon from their nets. Fishermen will shoot at the seals, to scare them away, but also may try to take them if they are in need of seal oil or know some other family who could use the seal.

Summer gradually changes to fall. The change in season is not accompanied by a marked difference in available subsistence resources, rather a focusing of effort to obtain and store certain resources that are important to a family's winter food supply.

FALL SEASON

People look forward to fall, as they did to spring, for the time they will spend at camp. In September and October, families go to their upriver camp to fish for silver salmon, hunt moose, and pick cranberries; they also fish for trouts, grayling and whitefish there, hunt birds (cranes, ducks, geese; spruce grouse and ptarmigan), pick Labrador tea and berries other than cranberries that are still available from the tundra. Most of these subsistence activities can also be carried out by taking day trips out from town, but people prefer to spend some time

at camp. It is efficient to combine these subsistence activities in one place at or near the location of the resources. Beyond this, people look forward to the pure enjoyment of being at camp and harvesting needed resources during a season when conditions are good, when weather is cool and dry and free from mosquitos, and when being out in the country can be experienced a last time before the relative confinement of winter sets in.

People set nets for silvers, river seine for them, and take them by rod and reel. The silver run is dependable and constant; however, some years are such banner years for silvers that families preserve more of these fish (by dry weight) than pinks. Silvers are considered by many to be the premier fish for their taste. They are smoked, dried, frozen, and parts are brined. Collected as they are, late in their spawning cycles, they are relatively low in fat. Moreover, the cool and dry fall weather allows a softness to be retained in the dried and smoked fish that usually cannot be achieved in other seasons and with fish whose body fat is in greater proportion to its total weight.

Moose hunting is begun in late August, when the season opens, and continued through fall, and winter if necessary. Most families try to bag at least one moose for their year's food supply. If successful, they will give part of their catch to older people, families without hunters, relatives who live away in the city, and others who they know can use or will enjoy eating the meat. Several men with dog teems seek more than one moose annually for dog food. Moose are hunted throughout the Unalakleet and tribary river systems, and sometimes in neighboring water courses (e.g. Eqaire or more distant areas). Moose are elusive animals, challenging to take in the fall when natural camouflage is still abundant, and hunters make careful preparations and try a variety of approaches to bag this animal. When they travel the river during the fall, people usually are prepared to fell a moose should they sight one by chance.

People go bird hunting upriver during the fall where cranes gather for their migration and where geese and ducks are also available. Some people try their luck in the flats around town during this time. But more travel to the Shaktoolik or St. Michael areas where fall bird hunting is usually successful. Those who travel up or down the coast to areas of good bird hunting also watch for seals or oogruk and may use the occasion to pick cranberries as well.

People seine the river in the later fall for trouts (Dolly Varden and Char) to put these fish up in quantity for their family use. The trouts will later be eaten frozen, with seal oil, as quak, but must first go through a series of freeze-thaw periods in the cache for the taste to be right. Fall seining for trouts and other incidental fish (grayling, whitefish, burbot) is also carried out to obtain dog food. A portion of the incidental catch is also set aside for family use: whitefish especially for fish agootuk; and burbot especially for their livers, a delicacy. When burbot start to move, late in the fall before the river freezes, people go out to those places on the river where they know these fish can be found and try for them with rod and reel.

Bears, especially black bear, are sometimes hunted in the fall for their meat, when it is good tasting after a summer and fall diet of berries and the fat is thick before hibernation. Black bear may also be taken in the summer for their meat but not brown bear which feed on dead fish and walrus during that season. Local natives feel that spent salmon and putrified walrus do not yield good flavor in the flesh of bears that eat them. Bears are hunted for their hides especially in the spring when the fur is at its best. People will kill bears any time they threaten human life or become too much of a nuisance at camp (raiding fish racks and nets, breaking into cabints).

Seals and clams are the fall resources taken from the sea. Men will try for seals in the fall, as in the summer, if they are sighted and can be recovered. The fall storms wash mussels, clams, and other invertebrates and fish (collectively "beach throw"), onto the beaches, where they are collected; and the fall low tides expose extensive mud flats out from town, where some people go to dig clams. Fall is also the time people go to the beaches to collect logs for winter firewood.

By the time of freeze-up and the start of winter, caches, storage sheds, smoke houses, and freezers brim full with the foods families have worked diligently to obtain and preserve. Families begin winter with dozens of boxes of dried salmon, strings of dried herring, mason jars of seal oil, barrels of salmon berries, sacks of trout, jars of sura, tukaiyreks and fireweed in seal oil, buckets of salted herring, roe-on-kelp, bags of black meat (dried oogruk and seal meat); freezers with moose meat, birds, muktuk, gouk, berries, salmon steaks, packages of smoked salmon strips; and much more.

Families also begin winter with memories of all the good times spent in taking these resources; the camps, the travelling, the visiting; the sunrise seen while watching a salmon net set for the first kings; the first ooruk made from pink salmon; an eagle watched in silent reverence upriver; and much more. There are stories to tell and retell during the winter about incidents with bears, about hunting trips, about people who were visited and places that were seen.

And turning forward to the start of winter, people anticipate hunting caribou, icefishing for tomcods, smelts, and trouts, and much more in the endless arctic cycle. Except for a few technological changes in hunting and transportation equipment and a near dependency on petroleum products to make their transportation equipment work, the modern residents of Unalakleet are much the same as the forebears observed by Edward Nelson one century ago.

CHAPTER FIVE

EXTRACTION OF SUBSISTENCE RESOURCES

INTRODUCTION

Each family pools its collective wisdom, gained from teachings and through experience, about resource availability and the techniques for extracting these resources. Applying their combined store of wisdom gained from practical applications in a myriad of situations, the family members work together, and with relatives and friends, to harvest the subsistence resources they need for their own food supply and for giving to others. Experience, planning, and effort are crucial to their subsistence endeavors.

Planning

Each family knows about how much food it must put away to take it comfortably through the year, and from one season of the year to the next. The heads of a family (husband and wife) grow with age in the ability to estimate their needs. Being more inexperienced, young families may either put away too much of certain foods and wind up giving away more than they expected so that the extra does not spoil, or else they put away too little and wind up being helped with additional food by their parents or other relatives. Older heads of families (men and women in their 40s, 50s and 60s) can judge closely what their storehouses and freezers must hold. They know how much must be on hand to feed their own family. They also know their stored supply of food must be large enough to draw from to feed guests and visitors and to give to the people who they look after or hear of needing food (the elderly, their children with young families, other relatives and neighbors), those who they customarily think of (relatives and friends both in-town and living elsewhere), and those with whom they reciprocate (people in other villages who receive fish, say, and reciprocate with caribou or mukruk. The foodstore must also allow for a certain (usually small) amount of spoilage.

People rarely calculate exact amounts of food they need to put away. Rather, they know generally how much of a food item they would like to have for various uses, and they know when they are critically short on staple foods or on the other foods which are stored in lesser quantity than staples but which are important for the taste,nutritional content, and variety they supply in rounding out the food supply. A precise calculation of the amounts of specific foods to be put away cannot be made in advance because there is no certainty that these foods will be obtained in the desired quantity.

One or more of several factors intervene between the anticipation at the beginning of a season of what can be harvested and the foods and their quantities which are actually harvested. Natural factors vary the abundance and location of resources from year-to-year. Natural factors also affect the success with which the harvesting and preservation activities can be carried out. The availability of time and cash, and how these are allocated in subsistence pursuits, can change over a season by necessity or preference.

IMPEDIMENTS TO RESOURCE EXTRACTION AND THE RESPONSES MADE TO THEM

The possible impediments to resource extraction fall into two categories: 1) uncontrollable or unexpected, and 2) predictable or preventable. Many of these affect everyone, as when ice or weather conditions alter the availability of particular resources or hinder travel. Other impediments strike individual persons or families, as when equipment is lost or rendered unusable by major breakdown.

Uncontrollable or Unexpected Hindrances to Extraction

Weather and ice conditions account for many of the obstacles people face in extracting subsistence resources. They reduce resource availability below their normal levels, distribution, and seasonal span; they restrict access to resources (interfere with travel, or prevent travel altogether); and they cause spoilage of foods already harvested. Other, more infrequent disruptions to resource harvesting can be caused by major mechanical problems on a hunting or fishing trip (breakdown of snowmachine or outboard motor parts, such as a crankshaft for which no spare is carried, or could be carried). Or, more rarely yet, the total loss of equipment (a snowmachine plunging through the ice or a quick thaw causing the abandonment of a snowmachine, for example). And sometimes, no matter how careful the advance preparations and how much effort is expended in the actual trip, a "slump" or "string of bad luck," as Eskimos might put it, plagues the endeavor. These are fortuities against which no one can adequately guard, not even Eskimos who, themselves, are beneficiaries of thousands of years of experience and preceptors to show the way.

The response to these various uncontrollable or unexpected obstacles is itself varied and inventive. Men are extremely skilled at improvising equipment repairs with whatever is at hand; local recognition of this adeptness is captured by the saying "Eskimos never get stuck." Hunters in a party keep track of each

other's whereabouts, or are ready to lend a hand to someone they come across who is in need of assistance (gas, spare parts, or a ride). The impediment to travel caused by ice, snow and weather conditions (river overflow on the ice, poor snow cover, stormy seas) may simply mean that a trip must be postponed, or that travelers must put in at a safe location and wait for moderation of the conditions.

When weather conditions have altered the availability of one or more resources, or caused spoilage of foods already taken, the response is to try to make up for the shortage. Families take more trips out or may take longer trips and combine their harvest of resources as much as possible. They may also make up the shortage by turning to other resources whose availability has not been affected.

Predictable or Preventable Hindrances

These include the predations of bears in the fall on people's fish racks and nets at camp. To prevent or reduce loss of harvests (either total or partial) by bears, people rarely leave a fish camp unattended unless absolutely necessary, and they keep dogs, powerful flashlights, and guns and rifles at camp and handy at all times to frighten bears away or kill them outright. If damage to property is sustained, people do the necessary makeshift repairs on nets and fish racks, and continue harvesting. During the warm season, that is, during the period of each year when Eskimos and bears compete for the same resources and, from the Eskimo view, encounter one another all too frequently, Eskimos regularly tell stories about the behavior of bears, especially their depredations. These stories may be 50 years old, but vividly remembered and recounted.

Another predictable and preventable impediment is caused by general mechanical problems on snowmachines and outboard motors. Both the necessary spare parts (e.g., belts, spark plugs, a cord which can function as a starter rope, and propellers), and the necessary tools for repair are always carried along as standard operating procedure no matter how short a trip may be or during which season the trip is taken. People keep a mental record, as well, of parts that have been replaced and their approximate lifespan. Mechanical failure is also minimized by careful pre-trip preventive maintenance and by storing vehicles and equipment in good repair and in protected places.

A Major Gap in the Family Food Supply: The Consequences and Response

Fish and large game (both land and sea mammals) are critical to a family's food supply. The taking of fish in large quantity is predictably assured, and

although the success of its preservation is more variable, a family can look forward to obtaining a supply sufficient to their needs. The large game animals are a different story, as the following detailed illustration will tell.

Consequences from Not Bagging a Moose

Because of all the noise and activity on the river in the fall, moose tend to stay away from the river's edge and move among the tall willows, birch, and ridges. A family may have to make as many as five trips far up the Unalakleet River to bag a moose, and even then the family may not succeed. But on the other hand, on occasion a person travelling up or down the river on another purpose, such as taking supplies to fall fish camp, or taking fish to the village, may chance upon a moose swimming across the river, pull his rifle, and shoot it in the head as it climbs onto the bank. The meeting was lucky; the Eskimo was ready. But when a moose is not obtained, while not catastrophic, an added strain is placed on the family for the remainder of the year. That added strain is met in a variety of ways. They must work harder to land sea mammals in the fall and early winter, burning more fuel and consuming supplies and ammunition to do so. To get through the coming winter, they must now try to put away as much as three times their normal fall supply of dried salmon and frozen trout, requiring more trips up the river.

The moose that was not seen, or that got away affects the family in other ways. After the river and slough freeze over, the fishing time and harvests of tomcod, smelt and fresh trout are mutually increased, although except for the fresh trout, the cost of extraction is mainly the gas and supplies to get to the fishing areas and the additional time spent in very cold places burning many calories.

The family's take of winter small game animals, namely rabbits, spruce grouse and ptarmingan is also affected. Generally, throughout the winter, these are hunted every other week for a change in the diet, and are almost a special dinner. So, without large game as staples, especially moose and oogruk, a family's hunter must make more trips throughout the winter for what would normally be almost a delicacy. Also affected would be a family's store credit balance over the winter. In order to obtain the minimal protein that they desire in their diets, a family may have to purchase reindeer and other meats from the local stores, even if they do not want to do so--preferring native foods--or fear that they cannot afford it because it will reduce the amount of cash and credit available to mount subsequent subsistence activities. The following summer and fall their normal resource

extraction time would also be affected by having to work or to spend more time engaged in commercial fishing to pay off the previous winter's credit balance so as to retain a favorable credit rating.

Finally, a family's failure to bag a moose or two, or to compound the problem by failing to bag sufficient numbers of caribou or sea mammals in the fall and early winter affects families other than the unsuccessful one. This is because all families who have had successful fall and/or early winter hunting ventures, are aware of those who have not had success in either or both seasons. Those who bagged large land mammals will reciprocate with those who landed several sea mammals if each was short on the resources bagged by the other.

Consequences from Bagging Moose, Caribou, and Several Sea Mammals

The families who were successful in land and sea mammals pursuits will give what they can afford to relatives and friends who failed in some of their hunting endeavors. They may also share or reciprocate food with relatives, affines, or friends in other villages who may live in closer proximity to a particular resource, such as caribou or walruses, which they wish to reciprocate so as to broaden their diets, or who experience failure in the pursuit of some resource, and wish to add to their diets. A most important characteristic of the Unalakleet environment is its bountiful and varied resources. There is no sole dependence on whales, or caribou, or walrus, or salmon, but when one or more are difficult to locate or to extract, the Unalakleet resident shifts to another. But the failure to bag big land mammals, or big sea mammals is felt in Unalakleet. It is felt more severely in communities that are more dependent on one or two species. So Unalakleet residents often share, gift, and reciprocate.

Indeed, successful families one year are big givers, but they may be big receivers the next. Whenever there are abundances, however, the family will send "care" packages (the native term) to their relatives and friends who live in urban areas. The packages are sent by air, or the food is provided on visits, either by urban residents to the village, or vice versa. As the natives put it, this sometimes results in "surprise return gifts" from the urbanites. They are usually in the form of foodstuffs generally not available in the local stores, such as crab, shrimp, cheeses, sausages, and fresh produce. The gifts may also be composed of fresh cuts of meat, a diversion to the diet that is cheaper by 50 percent in Anchorage, say, than in Unalakleet.

Successful hunters are always aware of the elderly, and will present them with gifts of foods they may not have access to because of age or the infirmities of age. They keep in mind elderly who are their relatives and those who are not as well. They provide both with gifts of food, and they even do so to elders they know in other villages.

HUNTING, GATHERING, AND FISHING TRIPS: MOVING FOR THE HARVESTS

The harvesting of resources for the family food supply requires many trips up the river, into the woods, over the tundra and onto the ocean over a year's period. These trips vary in purpose: taking one or several specific resources is usually the object, but trips also must be made to assess the readiness of resources for harvesting or to put subsistence equipment in place (e.g., set salmon nets, set traps and snares, prepare camp). When in quest of any natural resource, villagers are aware of, and look for, other resources that can be harvested besides those that are sought as the main purpose of the trip.

The length of trips (in time and distance) and hence the extent of preparations and the investment made in them (fuel, ammunition, food, etc.) are principally determined by the main purpose of the trip. Trips can be as short as one to three hours, as when summer subsistence nets set close to town are checked and cleaned daily. Many trips to harvest foods take a full day, many also take two or three days (a weekend), while harvesting the larger game animals, such as caribou, moose, or oogruk, can take from one to two or three weeks. Any given trip may be shortened or extended by unforeseen circumstances: breakdown of a boat motor or snowmachine, poor travel and weather conditions, bad luck; or on the other hand, especially favorable food harvest conditions, or pure good luck (e.g., chance meeting a moose crossing the river).

The number of trips made to harvest resources during a season, and throughout the entire year, is always considerable. In certain instances a single trip can completely satisfy a family's needs for a particular food resource. A family's store of caribou, but rarely moose, can be supplied in one extended trip. The trouts for a family's winter supply of quak can be taken in one successful late fall seining up river. With good weather, a family can put up at fall camp most or all of the silver salmon it needs. A couple of weekend ventures for herring, roe-on-kelp and certain greens can supply these resources in the desired quantity.

The usual case is that several trips are made for a particular food resource or combination of resources. Much of the salmon is taken by set nets, which require initial installation and daily checking. Birds are hunted both in the spring and fall and at different locations during these seasons (the flats, down the coast, and/or more distant places). Hunting for land mammals (moose, bear, and beaver) and sea mammals (oogruk, seals, walrus and whales) is not always successful the first time out; and even if so, family needs may require additional trips to obtain a sufficient quantity (several seals for oil and meat, for example).

Weather, including temperature, fog, wind, rain, snow, and sleet, ice, and travel conditions can multiply or reduce the number and the length of trips. An extended rainy spell at the wrong time in summer or fall can spoil an entire batch (sometimes hundreds) of fish hung for drying, or an extended warm spell in late fall can spoil an entire supply of trout put away for quak, either event necessitating additional trips for collecting more trout (char) or for harvesting other foods to take the place of what was lost. A bad year for oogruk, because of poor ice conditions, will send hunters out more often on reconnaissance or on longer trips (traveling farther and staying out for a more extended period). Time limitations are another factor which affect the number and length of trips made to harvest resources. A person's job can shift most subsistence activity to weekends and the after-work hours of long daylight from late spring to early fall. Being engaged in commercial fishing may mean that a person must carry out subsistence pursuits during the off periods.

Among the trips taken are those for scouting out the availability of resources and their readiness for harvesting. While people know the seasons when particular resources become available, they are more acutely tuned to when the resources become prime (i.e. amount of fat, condition of the hides, ripeness, etc.) or when the conditions for harvesting them are right. Seals, for example, approach their prime in the fall and sustain it through the winter. When they are taken in the fall for their hide, meat, and blubber, the thickness of the layer of fat, according to villagers, gives an indication of the type of winter to come (i.e., a thicker layer than usual indicating a long, cold winter; yet it may also indicate an abundance of herring, smelt, and marine invertebrates). Waterfowl are in their prime in the fall before migration, but they are also rested, well fed, eager to respond to the migratory imprinting, and less apt to respond to a hunter's call. As a result, more birds are taken in the spring at the end of the northward migration and before mating when they will respond to calling.

Considerable advance preparation goes into the several day or longer camp trips, made to harvest resources. All the necessary equipment for extracting the resources must be readied, the vehicles put in top condition, and the multitude of camp items gathered and packed. Even the day-long trips are given close attention, because the success or failure of the endeavor, as well as the safety of the members of the party, can rest on the preparations. The serious attention given to the preparations and the effort of carrying them out are always accompanied by a general air of excitement for the trip and an enthusiasm and optimism about the hunting or fishing to come.

Preparations for Resource Extraction Trips

All resource extraction trips require intangible and physical aspects of preparation. These preparations take varying amounts of time and consideration depending on the purpose and the length (time and distance) of the trip.

One-Day Trips

Most one-day (round trip) outings are spur-of-the-moment decisions, or they are routine activities, and in general require only an hour or two of preparation time prior to departure. When the members of the party are from two or more families, rather than a single family, as is often the case, intangible preparations would be a quick discussion agreement of site selection, agreement on responsibility for mode of transportation and for fuel, and agreement on individual and shared food responsibilities, i.e., who brings what.

The physical preparations consist of taking enough food from the family supply for a picnic meal or snack, and coffee or tea, making a quick shopping trip to the local store for additional items,and gathering personal cooking/eating utensils, depending on the agreement. Someone must secure fuel for the appropriate mode of transportation. The equipment must be assembled that is needed for the harvest (e.g., firearms, fishing tackle, net or seine, etc.). Sufficient and appropriate clothing must be donned, and accessories must be collected. Finally, the boat, snowmachine, dog sled, ATC, or day pack must be loaded.

Short-Term Trips and Extended Trips

Preparations for both short-term (2-3 days and nights) and extended (one or more weeks) trips are basically the same. The very nature of these trips, being longer and more involved than all-day trips, requires detailed and careful planning. Everything from creature comforts (e.g., shelter (usually tents), sleeping bags,

camp stoves, lanterns,toiletries, etc.) to safety precautions (all necessary spare parts and tools) must be attended to.

Speculation on a prospective hunting trip may begin as much as a month beforehand. The initial inspections of the appropriate modes of transportation take place 3-5 days in advance. Members of the hunting party begin more detailed discussions of plans about two to three days before the trip and continue right up to the moments before departure. The members of the party get together (if from two or more families) and discuss site selection of the harvest area and preparedness in the event of mechanical breakdown. They discuss the distribution of shared expenses (e.g., motor and implement fuels, store-bought food staples, spare parts, etc.) and the breakdown of shared equipment (e.g., modes of transportation, tents, camp stoves, lanterns, cooking utensils, etc.). Just prior to departure there is a final discussion in which each person's list of items is rechecked (e.g., has the member packed his seal oil, condiments, sleeping bags, flashlights, extra clothing, ammunition, etc.). Table 1 itemizes expenses associated with resource harvesting trips. The expenses are broken out for three different lengths of trips. The rounded totals for the camp trips would be shared among the participating members. If one member did not have the cash to cover his share of the expenses, he could give in-kind contributions, such as supplying the boat motor or a seine.

Individual physical preparations begin about three days in advance with inspection and preventive maintenance on the snow machine or outboard motor. Also firearms (rifles generally) are sighted in, then cleaned and oiled; and skinning and butchering knives are sharpened. Tents, sleeping bags, and reindeer or other mattresses are aired out, and restored handily for loading in boat or sled. Extra clothes, blankets, toiletries, extra ammo, flashlights, etc., are packed away in duffel bags or similar containers. Also, camp stoves, lanterns (if so assigned) are tested and readied for loading. Finally, personal foods and/or assigned store-bought staples are packed in coolers, knapsacks or boxes, usually the day or night before departure.

One common aid to physical preparation is the way most families store their basic and essential harvesting equipment in a general area of their equipment storage shed. This is for instances when a last minute invitation is received or for when various unexpected conditions arise which call for immediate preparedness.

TABLE 1

FAMILY EXPENSES ASSOCIATED WITH TRIPS AND EQUIPMENT FOR EXTRACTION OF RESOURCES, UNALAKLEET, 1982

Item[a]	Type of Trip: Round Trip (1 day)	Short Term (2-4 days)	Extended Term (1-2 weeks)
Motor fuel	$ 12-35	$ 40-50	$ 80-120
Spare motor parts	20 max.	20 max.	45-50[b]
Ammunition	10-12	15-50	40-80
Food stuffs	5-15	25-35	60-120
Stove and lantern fuel	min.	6-10	24 max.
Miscellaneous[c]	0-10	15 max.	25-35
Rounded Total:	$ 45-80[d]	$ 120-180	$ 275-430

Item	Equipment: Price Range	Life Expectancy in Years	Annual Cost Per Life Expectancy
Skiff 16'-18'	$ 3,200 - 3,400	10	$ 320 - 340
Sealing Boat 18'-20'	2,000 - 3,000	20	100 - 150
Outboard motor 35-50 hp	2,600 - 3,200	6	433 - 533
Snow machine	3,200 - 4,500	5	640 - 900
Sleds	500 - 1,000	15	33 - 66
Nets	2,000 - 2,800	20	100 - 140
Buoys and Incidentals	200	10	20
Reload Equipment	150	20	7.50
Rifles and Guns (6)	1,800	25	72
Rod, Reel, Tackle (5)	500	5	100
Freezers (2)	1,500	15	100
Caches and Smoking/ Drying Racks	1,500	15	100
Maintenance			
Sealing Boats			20
Snow machines/outboards			150
Range Total (Rounded)			$ 2,200-2,700
Midpoint (Rounded)			$ 2,450

*See footnotes on next page.

Footnotes for Table 1

[a]The expenses, where appropriate, are figured for two to four people. On camp trips, when the members are drawn from two to several families, the fuel, spare parts, and food expenses are shared.

[b]The range will be pulled up to more than $100 if a spare STT propeller is included for trips upriver in the fall. (A stainless steel propeller for a 35 hp outboard costs $150). Furthermore, spare parts are not used on every trip, even though they are taken on every trip. Annual estimates, therefore, are required. See the text. We discount 50 percent for spare motor parts over a year.

[c]Includes extra flashlight batteries, lantern mantles, film.

[d]Expenses for one-day trips are generally lower in the winter than in the spring-summer.

Types of Trips Taken for Food Resources

Each trip made for harvesting subsistence resources is tailored to the purpose of the undertaking and to the usual practices of the family members or partners included in the trip. The particular areas that are fished, the places where stops are made for picnics, and the sites where camps are set up, for example, are selected according to customary family practices as well as atuned to the availability of resources. When the village is considered as a whole, the combined usage which all its people make of the land, sea, and subsistence resources spans an immense territory and all seasons. Table 2 lists the different kinds of trips that can be taken by a family or a network of family and friends for particular resources during their season of occurrence. The number in parenthesis beside each entry in the table indicates the number of times that a family may need to make the trip during a season to harvest the particular resource(s) in question. The table represents a five year period. No one family would make all the trips listed, and in the number indicated, during any one year, as we have explained in the preceding text, but in general, the fewer the resource of any one kind, the greater the number of trips to procure that resource (moose, say) and to procure supplementary resources (char, hares, tomcod, e.g.). But all the resources are used, and to harvest them requires that each family make many trips of the different kinds listed. Just how many are made in each year varies according to the impeding or facilitating conditions discussed previously and on the following pages.

The Economics of Extraction

The economics of extraction can be understood only if we recognize that subsistence based on the extraction of naturally-occurring resources is the first priority of every household. Planning for subsistence is as commonplace as pulling on pac boots and ski bibs in the winter. Unalakleet residents do not weigh investments in outboard motors, shotgun shells, fishing nets, food caches, and home freezers against the advantages of purchases at the native store, or purchases of television sets. The former come first, the latter are budgeted for over longer periods.

Some member of every native household in Unalakleet is engaged in some subsistence harvesting activity two days of every week. On average some member of every household is engaged in some subsistence harvesting activity four days of every week. The discrepancy between the two is simple. Younger families where one partner in the couple has full time employment may hunt, fish, and collect

TABLE 2

POSSIBLE EXTRACTION TRIPS, DEPENDING ON RESOURCE AVAILABILITY, UNDERTAKEN ANNUALLY BY FAMILY OR FAMILY MEMBER(S) EITHER SINGLY OR IN ASSOCIATION WITH KINSPEOPLE, FRIENDS, OR BOTH UNALAKLEET, 1977 - 1982

Resources and Season
(Number of Trips in Parentheses)
(s=several and n=numerous)

Type of Trip	Spring	Summer	Fall	Winter
Round trip (1 day)	sea mammals(s) whale(net)(s) birds(s)[a] rabbits(hares)/ ptarmigan(n) rabbits/spruce hen(grouse)(n) greens(1-2) roots(1) trapping(n) wood(n)	king salmon(n) greens(1-2) berries(4-5) wood(n) pink and dog salmon(n)	berries(4-5) clams(1-2) seals(2-3) rabbits/ spruce grouse(s) burbot(3-5) trout(1-2) wood(n)	sea mammals(s) trouting(n) tomcod(n) crabs(2-3) rabbits/spruce hen(n) rabbits/ ptarmigan(n) trapping(n) wood(n)
Short camp trip (2-4 days)	sea mammals(2) whale(1-2) birds(2) sea birds/eggs/ greens(1-2) herring/kelp(1) trapping(n) campsite inspection/birds(1)	Pink and dog salmon (2-3) berries(2-3)	moose/bear (2-3) beaver(1-2) berries(2-3) breakcamp/ birds(1)	moose (2-3) sea mammals(1-2) trapping(n)
Extended camp trip (1-2 weeks)	caribou(1) whale(1) birds(1) brants(1)[b] sea mammals(1) trapping(2) birds(1)		moose(1) moose/bear/ beaver/fish silver salmon/ berries(1) birds(cranes)(1)	caribou(1) trapping(2-3)

[a]Whenever the word "birds" appears, unless otherwise modified, it refers to all the various species of migratory waterfowl.

[b]Brant (black) geese are so desired that people will make a special grip to Golovin Bay to acquire them, if necessary.

during evening, weekends, and vacations only, whereas larger households, whether or not there is a gainfully employed member, have one or two persons who engage in subsistence activities half again more often than younger families, and often share their harvests with younger families, women-headed households, and the elderly. Some households--about 20--have members who hunt or fish almost every day of the year. They are big providers of native foods.

To hunt and fish, given the modern costs of technology and fuel, cash must be contributed by persons in a household, or in a network of kinspeople who share from bag, quarry, collection, or catch. And the many kinds of trips listed in Table B can be understood as made possible by two factors, pooling or sharing of cash, and multiple extraction purposes on a single trip.

Even though of Unalakleet's 355 native adults under 65 only 104 are employed full time, about 115 fish commercially in Unalakleet or elsewhere (some of these being either employed full time, or a few, about 25, being self-employed or trappers), and the rest either subsist on transfer payments or catch-as-catch-can employment, cash is allocated to subsistence at a very high rate. The average household, exclusive of boat, snow machine, firearms, and net purchases, mounts or helps to mount at least 100 day trips, twelve short trips, and seven extended trips annually. Using values near the midpoints of the trip range values in Table 1 (one day = $60, short term = $150, extended term = $350), and discounting 50 percent for the use of spare motor parts, households, on average, invest about $8,800 annually into subsistence trips, exclusive of major equipment* When we tally equipment costs for subsistence, prorated for the life of the equipment in question, the annual expenditures increase to $11,250 (rounded, see Table 1). Native Unalakleet residents sink at least thirty percent of all income into subsistence.

Round-trip (1 day)

Much can be accomplished in one-day extraction trips. They represent the majority taken throughout the year. All resources, except caribou, can be harvested on a one-day trip or succession of such trips. It would be a fortuity, however, to bag a moose, black bear, whale, or oogruk while on a day's trip for some other resource; and it would also be rare to take one of these animals on the first day of a more lengthy hunting trip.

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*See CHAPTER EIGHT, VILLAGE ECONOMICS, on the costs of boats and motors and their relations to commercial and subsistence tasks.

Many of these trips are the daily checking and cleaning of subsistence fish nets in the summer, and can include checking traps set closer to town in the winter. In the spring after breakup, whale nets are checked daily. Generally a one-day trip is made to harvest a specific resource, but people are constantly looking for and prepared to take other food resources that may be in season and/or in the area. Examples of these possible incidental harvests include: aiyu(tea), spruce grouse (hens or chickens in native vernacular)/ptarmigan, and occasionally owls, when rabbit hunting; seal, while checking a whale net.

One-day trips in the winter can help fill the gap in a family's food supply when the family has not been successful in taking the large land and/or sea mammals. Rarely in conjunction with this major gap in the food supply, a family's credit line at the local stores may approach its ceiling earlier than anticipated. In either of these instances, the number of one-day trips for the fish and small game animals available in the winter increases in proportion to the family's needs. It should always be remembered, however, that families in need will be looked after by their relatives and friends who have sufficient food to give some away. Whether sufficient or not, kinspeople and friends share.

Short Camp Trips (2-4 days)

Short term camp trips (2-4 days, often over a weekend), are made with the intention of harvesting one or two primary resources, but the likelihood of taking additional secondary resources increases in proportion to the length of the trip. In the spring, after breakup, often the first trip upriver is to inspect the family's campsite and put it in order for the coming seasons. On this trip, the men will hunt birds, both migratory (geese and ducks) and year-round (ptarmigan and spruce grouse), and also beaver. The women may also do some hunting, and if the trip is extended may look for eggs and greens as well. In the late fall, families going upriver to break camp may seine for their winter supply of trout quak, hunt birds, pick cranberries, and fish a final time for silvers. On this trip, they are on the lookout for moose, perhaps a second one if they previously have been successful. Beaver are also available and approaching their prime at this time. On this trip, families have specific needs in mind (gaps in their food supply to fill). Yet they will not hesitate to take resources they may already have enough of in order to help fill the gaps in other families' harvests.

Another example of the many possible short term trips in spring camp for bir hunting. Whether a family is able to undertake a short term, or more extended, trip for birds depends on time limitations. Some family

members, because of work or school, can only seek resources on a daily, evening, or weekend basis, whereas other members of those same families can engage in extended trips, Bird hunting camp sites close to town are taken on a first-come, first-serve basis and serve as a base camp for both day-to-day and longer hunting trips. From the sites farther down the coast, other resources available include seal and sea birds. From these many spring base camps, brants are eagerly sought during the one to two days they pass through on their way to nesting grounds farther north. These examples of multi-resource harvesting are but a few of the many variations throughout the year.

Extended Camp Trips (1-2 weeks)

Caribou, and usually moose, are obtained by making extended trips. Many families also make a one to two week trip upriver during the peak fall runs of silver salmon to put up quantities of this fish for the winter. Trapping, by its very nature, includes some extended periods in the timberland. Men, often bachelors, will spend the better part of six months in the river valleys and tundra, trapping, hunting, and returning for brief visits with their quarry. The other entries on Table 2 are included to show that when conditions have prevented the harvesting of resources during the shorter trips, a longer trip may be undertaken because it offers a good chance of filling those gaps in the food supply.

THE YEAR'S FOOD SUPPLY (FRESH AND STORED)

If they all could be amassed in one place at one time, the results of a family's yearly subsistence efforts might surprise even the family itself. Storehouses and freezers brim with food at the beginning of winter. People can look at this store both with a grateful sense of preparedness for the months to come and with anticipation at tasting summer foods in the depth of winter. Yet this winter's supply of preserved food is only a part of all the subsistence foods taken and consumed throughout the year.

Families typically eat three to four meals a day, one or two of which may be meal-sized snacks; a varying number of smaller snacks are eaten in addition to these meals. Of all the meals eaten during a week by far the majority feature subsistence foods as the main dish. Breakfasts, when taken, are the only meal in which store-bought foods (coffee, eggs, cereal, meat) might predominate, but even at these meals subsistence foods can figure prominently, as when caribou or moose steaks are fried up for breakfast or left-overs from the previous night's supper are eaten. Breakfast often features homemade items (home-baked bread; sourdough pancakes) and includes jams, jellies and syrups made from berries gathered in late summer and fall.

Lunch (or brunch) and supper, as well as meal-sized snacks in the afternoon or the evening, most often are prepared with native foods. The main course is fish, moose, caribou, seal, muktuk and roe-on-kelp, birds, or rabbits. Each of these can be prepared in a variety of ways, and is served with seal oil, indispensable to most native meals, and greens or vegetables from the family gardens. The meal is completed sometime later with tea, bread, and fruit (often berries) or as a special treat, saloonak or agootuk. Dried fish and strips of salmon are handy and much enjoyed snacks, also common provisions on hunting trips and for travel upriver to check nets or pick berries. Of the twenty-two meals other than breakfast taken during a week, typically at least eighteen are made up of native subsistence foods. The other four have store-bought foods as their main dish (chicken, pork chops or ribs, spaghetti, or beef stew are good examples). For most families, meals of store-bought foods chiefly provide variety bought at considerable expense. The native foods, out of desire and not just necessity, provide the overwhelming majority of nutritional and caloric needs of families.

Close to a third of native meals are made from fresh subsistence foods; the proportion of fresh to preserved foods increases in the late spring and remains fairly high during the summer and fall, although fresh foods are also obtained during the winter. These fresh foods, whether eaten at home, in town or at camp, cannot be overlooked in any estimate of the amount of subsistence resources which a family harvests and uses over a year's period. Such an estimate must also include the foods, again both fresh and preserved, that are given to the older people and to other relatives, friends and neighbors. Finally, an estimate of this kind must include the quantity of foods gathered to feed a family's dogs, these harvests generally being carried out simultaneously with obtaining the foods the family will consume. Table 3 presents an estimate of the amount of native subsistence foods which a "typical" Unalakleet family harvests for its own consumption, for giving away to others, and for feeding its dogs. Some families, depending on their size and taste preferences, as well as their success in the hunt, and other conditions particular to them, will take more or less of each type of food than other families. The table is constructed from the point of view of a village-wide norm, and assumes that the natural conditions affecting resource availability during the year are favorable for hunting, fishing, and gathering these foods. When seal hunting, for example, hunters will bag as many seals as they can (but not more than they can use); however, the conditions may not be

favorable to bagging many, or even any at all. Table C presents the quantities of each food resource that a family will harvest in a good year, i.e., during a year when most naturally-occurring resources are available in some quantity. Otherwise, if one particular food is less available, the harvest of other food resources will be increased to fill the gaps in the family's food supply (as discussed elsewhere in this chapter).

TABLE 3

TYPICAL ANNUAL FOOD HARVEST, BY FAMILIES,
ASSUMING ADEQUATE AVAILABILITY OF MOST RESOURCES
UNALAKLEET, 1977-1982

Resources	Amount Taken[a] (for immediate consumption and for storage)
Spring[b]	
Oogruk	1-2
Other Seals	6-8
Walrus	1 (or parts received as gifts)
Beluga Whale	Muktuk (pieces received as member of hunting party, as a gift, or in exchange for other resources)
Waterfowl (excl. seabirds)	40-50
Seabirds	6-8
Eggs	Variable (60-100 eggs)
Greens	Variable (a few lbs. or gals. per green)
Herring	1 tub (250-300 fish)
Herring Roe-on-Kelp	3 buckets
(for caribou, rabbits, and crabs, see winter figures)	
Summer[c]	
King salmon	50-75 (30-40 smoked, 12-15 eaten fresh, 10 frozen, 6-10 brined)
Pink salmon	800-1600 (725-1500 dried; 60-80 eaten fresh; 10-12 oksolik)
Dog Salmon	150-200 (120-170 dried; 15-20 eaten fresh; 10-12 half-dried; a few oksolik)
Salmon eggs	30-40 lbs. (frozen and dried)
Greens	Variable (a few lbs. or gals. per green)
Trout (char) grayling, whitefish[d]	Variable (eaten fresh)
(for silver salmon and berries, see fall figures)	

Table continued....

TABLE 3
(continued)

Resources	Amount Taken[a] (for immediate consumption and for storage)
Fall[e]	
Silver salmon	250-300 (190-225 dried; 15-20 smoked; 20-25 eaten fresh; 10-15 brined; 6-8 frozen; 10-12 half dried, a few oksolik)
Trout (char) grayling and whitefish(incidental catch)	600-1000 lbs. (6-10 gunny sacks)
Burbot (ling cod)	12-15
Moose	1-2
Berries	
Salmonberries (Cloud-berry)	60-90 lbs.(2-3 30lb. barrels)
Blueberries (bilberry)	15-90 lbs.(1-3 30lb. barrels)
Blackberries	15-20 lbs.
Cranberries	20-25 lbs.
Currents	Various (several quarts)
Birds (waterfowl, seabirds)	30-40
Seals	8-10
Marine Invertebrates (all types)	2-3 buckets
(for rabbits (hares), spruce hen (spruce grouse), and ptarmigan, see winter figures)	
Garden harvest	
Potatoes	250-300 lbs.
Carrots	25-30 lbs.
Turnips	30-35 lbs.
Various other vegetables	10 lbs.
Winter	
Seals	2-5
Caribou[f]	6-8
Rabbits[f] (hares)	40-60 (family consumption)
Spruce hen (spruce grouse)	20-30
Ptarmigan	12-15
Trout (char & grayling)[f]	400-500 lbs. (4-5 gunny sacks)
Tomcod[f]	4-10 gunny sacks (family consumption)
Smelt	150-200
Crabs	Various
(for moose, see fall figures)	

[a]Unless otherwise specified, the figures indicate numbers of animals (e.g., 6 seals, 200 dog salmon). The size of the buckets typically used for transport and storage is 5 gallons.

[b]No estimate is attempted for beaver and squirrels.

[c]No estimate is attempted for black bear.

[d]Throughout the summer and fall, these fish are taken by spinning rod and reel and out-of-net catches and cleanings to be eaten fresh at home or out in the country. No estimate of these takes is attempted.

[e]No estimate is attempted for bear and beaver.

[f]Much higher numbers (an additional 500 hares,15 gunny sacks of tomcod, one or two moose and several seals) apply for families with dogs to feed. Dog owners also avail themselves of the fish heads, tails, and entrails available at the processing plant during the summer, lugging 5 gallon buckets full of these fish parts to their dogs.

TECHNIQUES OF EXTRACTION

Fish

Set Nets

All of the fish taken for food, except tomcods and smelts, can be captured with set nets, either as the target or as an incidental catch. People do all or a great portion of their subsistence fishing for salmon (all species) and herring with set nets. Some nets are set for trout, but the majority are harvested by seining in the fall during the spawning run, or jigging during the winter.

Subsistence gill nets are generally 50 to 100 feet long and 6 to 8 feet deep. The size of mesh varies for the size of fish, ranging from 2" for trout and herring to 6" for king salmon. The entire bottom length of the net is attached to a weight (lead filled) line and the top length is attached to floats, spaced several meshes apart. Families inspect and repair their nets before they begin fishing for the season. If the weight line and floaters need replacing on one or more of their nets, families will either do this job (called "hanging a net") themselves or take their net(s) to someone in town skilled at net hanging and pay for the work. Two men are especially skillful at this task. Families will generally do their own mending of holes and tears in the mesh.

Nets are set from river or slough banks by tying one end to a heavy object, generally a stump or large piece of driftwood, stretching the other end of the net out into the water and then fixing that end in place with an anchor, allowing some give in the net's tension. The water end is marked with a blue buoy. Near the mouth of the main river and in the wider parts of the slough, both ends of the net can be anchored (and marked by buoys) in the water. People set their river bank nets where they know fish to travel, rest, or in the case of trout (char), feed. Generally those places are at the mouth of a tributary, creek, and in a place where the current cuts close to a deep bank but is not too swift.

No matter where its net is set, near the river mouth, in the slough, or close to its upriver camp, a family needs to check the net at least once daily. A daily check is important so that fresh fish are taken for eating and preserving and so that debris is not allowed to collect and either snare or rip the net.

The family member or members who go out to check the net, empty it of whatever fish have been captured, an often lengthy task of disentangling both fish and debris from the mesh. After emptying and cleaning, they may adjust the tension and the position of the net, or entirely reposition the net in a better location. During prolonged rainy periods, nets are pulled to prevent damage from river debris and because the fish caught cannot be properly dried.

During most net cleaning trips, the people who team up for the task take spinning rods and reels along and spin cast for fish to add to the larder, but for the pleasure of fighting big fish as well. If alone, a person out to check the family net will make a few casts before and after emptying and cleaning the net. If two people go together, one usually spends the time fishing while the other works the net. Then both will fish for awhile, sometimes several hours, before the net is emptied and cleaned a second time.

Most often people who set and check subsistence nets together are either members of the same family (e.g., brothers, mother and son), or close relatives (e.g., first cousins), or friends (especially boyhood friends that continue through life). In both setting and checking, there is work to be shared. One person will pull the net and dump it off the opposite side while the other extracts the fish. If a tangle occurs, one untangles the net while the other keeps the boat in the right direction, popping the accelerator at the right time to pull the net straight. This time, whether short or for several hours, is demonstrably pleasurable, filled with laughter and comments about what is seen, what is caught, and so forth.

Most families, sometime during the late summer or early fall, spend a few weeks (at least one, but often three) at their fish camps preparing salmon (usually silvers). During the peak of the chum salmon and start of the silver salmon run, a family repairs to camp, harvesting and preparing fish for storage. At camp, the net is checked three or four times daily and each period's catch is cleaned and hung as it is brought in. In between checking the net and eating meals, the family members fish with spinning rods and reels. The fish--salmon, grayling, whitefish, or trout--caught by this method will be preserved, but some will be eaten for a fresh meal of roasted, boiled or fried fish. Grayling, for certain, will be cooked fresh and the roe eaten fresh on the spot. The intestines, too, will be stripped and eaten as the fish is cleaned.

Two to three times during the stay, someone, sometimes the entire family, will make a trip to town for supplies. More often than not, however, at least one person stays behind to protect the hanging fish from bears, which at this time of the year are switching their diet from berries, roots, and small mammals, to spawning salmon. Bears are drawn to the river in great numbers. As many as four might be spotted at the same bend in the river. The hanging fish become a ticket to an easy meal. But it is often a very selective meal. If king, silver, dog, and pink salmon are hung, only the kings and silvers will be eaten, and then in that order.

Since bears are generally nocturnal in the fall, three essentials at a fishing camp are a dog (sometimes two or more to frighten the bears and provide time for the hunter to get a good sight picture), and a rifle to protect the camp (shooting the bears) if necessary. The people there must be protected, but the vital fish harvest seems more important as the real attraction to the bear's depredations.

Seining

People subsistence seine to catch a large quantity of spawning fish in a single trip. Harvests can be enormous, as the following example attests. About ten years ago a man and his family trapped about 1,000 silver salmon on one seining sweep using their motor boat, a net on each side of the boat, and persons walking on the river's edge holding the outer ends of the nets. The nets were held as firmly as possible as the man drove the boat out into the river, then reversed and headed back to shore. He claims to have lost as many as he retrieved, and it took four people two and one half days, steady, to clean and prepare the fish (enough for 200 meals of dried salmon for a family of five assuming, as Unalakleet natives do, one dried salmon per person per meal).

Seining provides not only a large quantity of fresh salmon or trout for cutting and drying, but various kinds of incidental fish. People seine primarily for pink and silver salmon, and for trout (char). Depending on when and where the seining is done, king and chum salmon, grayling, white fish, and ling cod are usually retrieved in the nets.

The subsistence gill nets used for set net fishing are also used for seining. Some families also have seine nets (heavy twine and small mesh), which they employ mainly for trout. The techniques of seining require that a group of people (minimum of three, more usually five or six), work together to handle the net and empty it, to transport the catch to town or to camp, and to clean, cut, and--primarily the salmon--hang the fish. Generally people from one or two related families, such as sisters, their spouses and children, or brothers and their

families, seine together, pooling labor and equipment (net and boats) and dividing the catch between them. Less frequently, people from more than two families seine together since the catch will be divided among more participants, resulting in smaller portions unless the seine is worked several times or the catch is especially good.

A day spent seining yields catches of several hundred to several thousand fish, split between the families involved. It is an efficient way to obtain a large portion of a particular fish, such as trout or silver salmon, for a family's needs for storage and subsequent use throughout the winter, including food for its dogs. It is a means of making up for fish lost earlier in the year to spoilage or fish not taken because rain has prevented proper drying of previous catches from set nets.

People seine during a stretch of good weather so that the quantity of fish taken will have the chance to dry, or in the case of trout, to age properly and not be lost. (People consider it wasteful in resources and in labor to lose either small or large amounts of fish to spoilage, even though the spoiled fish can be fed to dogs.) Families coalesce during the summer to seine for pink salmon, in the fall for silver salmon, and in the late fall for trout. Seining for trout in particular must be gauged correctly. The trip is made a few days before freeze-up begins on the river and at the time the trout start to move to spawn. Throughout the summer the trout have taken positions throughout the system, but especially in the salmon spawning areas of clear gravels upriver. The temperatures at this time generally range from above freezing during the day to below freezing at night. These weather conditions are ideal for the proper aging of the trout which are stored in an outdoor shed. In Unalakleet the trout is "aged" in this drying-freezing fashion to gain the preferred taste and texture. Fish prepared in this fashion are eaten frozen as quak, with seal oil.

On occasion, even with the best forecasting of weather conditions, an entire catch of trout (several hundred pounds of fish) will be spoiled by an unexpected and extended warm spell. Although an extended warm spell will spoil the harvest, it usually provides conditions in which the family can seine again because the thin sheet of ice on the river melts for a short time. If the river ice does not melt during the warm spell, as sometimes happens, a family's winter supply of trout quak is sought by jigging through the ice upriver, usually yielding fewer fish. Yet lone fishermen or a man and wife often catch 50 to 100 trout (char) in

a day's jigging, with 100 to 150 considered a very good day. But those fish cannot be prepared into the preferred taste and texture for quak because the winter conditions are not conducive for proper aging. The winter supply of quak would then be constituted more of tomcod, trapped from the slough near town. Tomcod, unlike trout, does not require aging to make good tasting quak.

Summer and early fall seining of pink and silver salmon, respectively, is generally carried out by one family, by two closely related families (e.g., mother and father with married offspring, mother and father with brother or sister of either, etc.) or two families whose heads grew up together as best friends. The families generally bring their own boats, of which either and sometimes both are used in the seining process. Again, both families may have their own net, and both may be used, but generally one seine or net is sufficient.

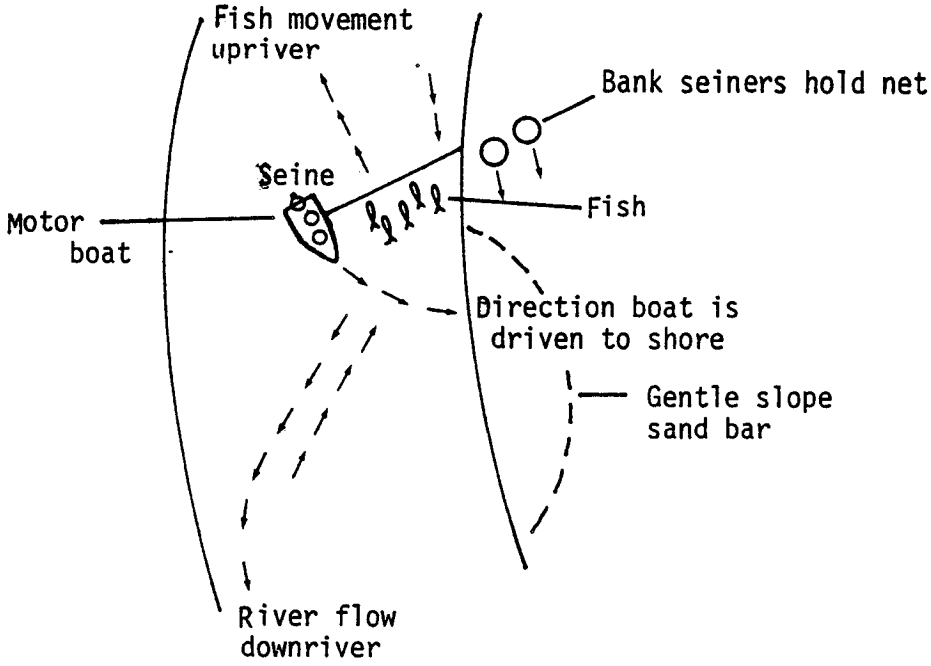
Appropriate seining sites are known to natives, much as strategic set net sites are known to them. But the river channels change from year to year--sometimes following storms or prolonged high water. So new and more strategic sites are always sought because they are important in determining how successful the seining will be, and how much seining must be done in order to catch a significant amount of salmon for all involved. The part of the river selected is usually narrow, with a long sandbar on one side and a deep cut bank on the other. This site is narrow enough to prevent the fish from going around the seine, but not so narrow that it restricts the boat's maneuverability. The deep-cut side provides the channel where the fish travel and the long sandbar is where the seine with the fish is hauled out. (See Figure 3 - Single and Double Seine)

After they have chosen a suitable location, the family(s) in the seining part will more often than not bring out their spinning rods and reels and spend time fishing to test for the amount of fish in the area they have chosen and also to catch fish for a meal. Usually with more than one family, the time spent before seining is enjoyed as a picnic outing. The elders sit and talk while the children swim (in the summer months of July and early August) and the adolescents fish. The fish caught (salmon, grayling or trout) are usually cooked on sticks over an open fire, served with seal oil on beds of green willow leaves, and followed by tea for the grownups and canned juice or soda pop for the youngsters. The relaxed picnic atmosphere is preserved for awhile longer as the adults linger over their tea and trade stories and anecdotes from past outings. After the eating utensils are cleaned and packed and the trash is either burned or buried, leaving a clean

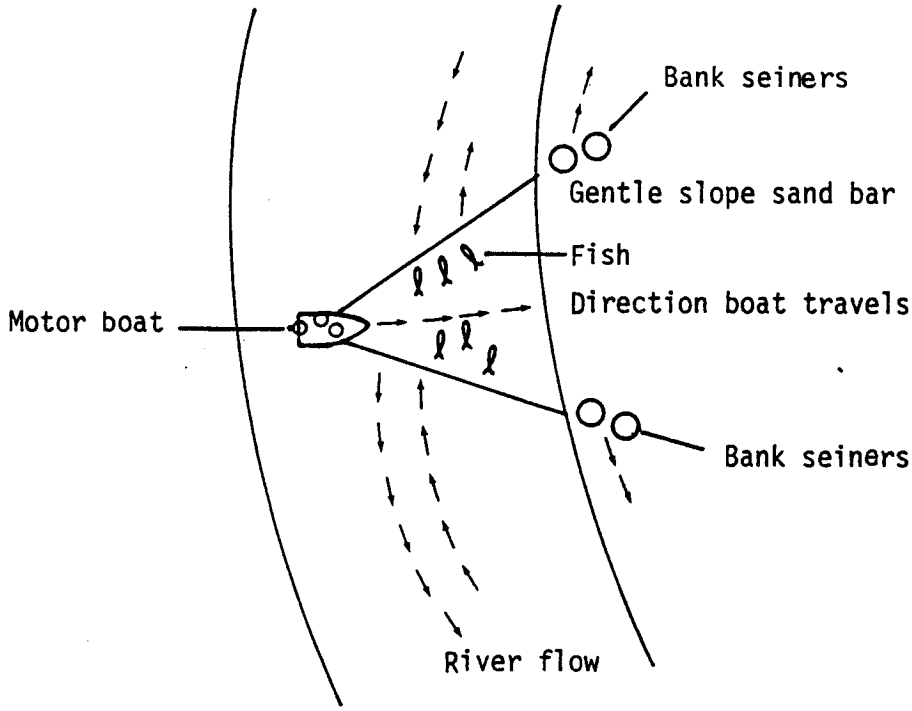
FIGURE 3

SUBSISTENCE SEINE TECHNIQUES

Single Beach -
River Seine Technique



Double Beach -
River Seine Technique



site, the picnic atmosphere is then replaced by a more serious set of activities as tasks are assigned to different members of the party. In a seining group, there is a task for everyone (from grownups to children as young as three to four years old) and everyone does their best at their task.

First, rocks of a good size are gathered by children, and a grownup or two, and put into the boat. While this is being done, the net(s) is piled on the upriver end of the sandbar, in such a way that it will not tangle when it is drawn out by the boat. One group of people have the task of holding onto the lead line of the shore end of the net, the other end being tied to the boat and pulled out into the river. Once the net is stretched out fully into the river, the people on shore begin the seining operation by walking down stream with their end of the net as the motorman also eases the boat downstream. At this point, everyone is as quiet as possible, including the motorman who has the motor at its lowest possible speed without stalling it. About halfway down the length of the sandbar, the motorman starts to ease the boat toward shore. Now the people on shore and in the boat start throwing their rocks, gathered earlier, at the downriver side of the net until the boat is beached and has closed off that avenue of escape to the fish. Once the boat is beached and the arc closed, great care is exercised to keep the leadline on the bottom of the river to prevent fish from escaping under the net while it and the catch are being hauled onto the sandbar. A second seining technique uses two nets. The people holding the end of the upriver net walk upriver and the people holding the downriver net walk down river while the motorman drives from the outside edge of the channel directly to the sandbar. A second person in the boat might beat the water behind the nets with an oar to keep the fish in the nets.

Once the net has been brought fully onto the sandbar, everyone begins clubbing the fish caught. The women now begin preparations for cleaning the fish. First they don their aprons and scarves, then sharpen their ulus (women's crescent shaped knives). They prepare their cutting tables by covering them with gunny sacks to keep the fish from sliding around when they are being cut. As fast as the women cut the fish, the children wash them in the river and put them into containers for transport to town or else hang them on the racks set up for drying at camp. Each family that seined returns to town with a portion of fish (salmon and other species) that will add to its food store. If two families were involved in the seining, shares of the catch are usually equal. But if there is a disparity in the number of family members, the family with the fewer mouths to feed will defer to the larger family at a rate of about 3:4 or 3:5 fish. This ratio is a "silent" (informal) agreement that is understood before the families leave town.

Spinning Rod and Reel

The dazzlingly popular fishing innovation of the 1950s, spinning tackle, has captured the fancy of Unalakleet fisherpersons--males and females. As soon as the rivers clear of ice, spinning rods and reels become the first implements of the ice-free seasons for extracting fish. The rod and reel is used for most of the species of fish available in the Unalakleet area river systems. Although nets and seines are the principal means by which people obtain fish for their food supply, the rod and reel is the most pleasurable way of fishing and is brought along on all trips made on the river from spring through fall.

When a person is upriver for whatever purpose--to check nets, on a hunting trip, at camp, to pick berries, or just on a pleasure outing--the rod and reel is the Unalakleet native's answer to the fast food stands of the urban settings, only it is much more fun than standing in line at a fast food counter, and the food obtained is tastier from a native's perspective and much more nutritious from the nutritionist's count of vitamins, minerals, and proteins per ounce. On occasion, while rod and reeling, the fisherman may be aware that the fish he or she has just caught (trout, grayling, or salmon) could be one for the sport fisherman's wall, say, a fourteen pound Dolly Varden or five pound grayling, yet it is quickly cleaned and gutted and put on a stick over the fire to be enjoyed by all fishers working the same stretch of the slough or river together.

In addition to the fun and challenge of spin fishing, a surprising amount of fish (to a "lower 48" fisherman) are caught in this manner to put up to dry. During the pink salmon run three people can land 75 fish in a short time. From a boat, while a second person cleaned a subsistence net, Jorgensen has seen 35 fish caught by one person on spinning gear.

Whether in town or up at camp, adults spend much of their free time "pleasure fishing" and end up cleaning and hanging or freezing their catch for the family foodstore. Kids also go to the slough to fish, or fish on family trips upriver and bring back their catch for the family meal and for the family freezer or fish rack. Some of these children may be visiting grandparents or other relatives from the city. They experience the pride and pleasure of contributing not only to those with whom they are staying, but also to their own family's food supply as they send or take fish home on their return. In this manner, for people of all ages, subsistence "chore time" is also leisure time.

Jigging (Hooking)

As soon as the ice over the slough and river is safe enough to walk and travel on, the jigging stick becomes the main implement for extracting fish. Every family has several jigging sticks. These are flattened pieces of hardwood, about an arm's length, which are notched at the ends and wound with nylon monofilament or Dacron fishing line. Another, slightly longer stick, is used as an accompaniment to retrieve the line and club the fish.

Two types of barbless, treble-hooked spinning lures are used for ice fishing, one for smelts and another for trout and tomcod. The type of lure used for trout and tomcod comprise ¼ to ½ oz. Pixie, Mepps, or Daredevil (brand names) spinning lures (larger versions are used for salmon during the summer). These lures, or spoons, are usually silver with a red or orange center (the Pixie or Mepps variety), or else striped with red and white (the Daredevil variety). The barbs on the treble hooks are snipped or filed off to facilitate removal of fish.

The smelt lure, on the other hand, is always a solid silvery spoon. It too is a barbless treble hook. When jigged, these lures resemble the tomcod fry upon which smelts feed. Also, on occasion a piece of tomcod is put on the hook as bait. For trout, when these fish will not strike,salmon eggs (which have been in the freezer since summer and thawed for this purpose) are used as bait and attached to the hook on the spinning lure.

Jigging consists of working the stick with short, quick upward movements that attract the fish. The process of jigging, or hooking as it is also called, requires patience and a skill that grows with experience. A person must learn how to find the depth at which smelt are running, which can vary over a day of fishing. Tomcod and smelt, both pelagic, are available in schools only with incoming tides, and a person experienced at jigging knows that a good time for a break, to eat, or warm up, or to knock another hole in the ice (with parka off so as not to overheat and consequently chill--even to the point of icing up a bit), is where the line swings seaward, indicating an outgoing tide, or when the fish are not hitting the lure.

People of all ages jig for fish. Boys and girls learn at home and school how to make the jigging sticks. Starting from age four or five, children learn how to use the sticks to fish for tomcod and smelt close to town, where their parents or older friends fish, and where they can fish through a previously open hole. When they are older, and able to withstand the cold snowmachine ride, they look forward to accompanying their families upriver to jig for winter trout.

People travel upriver to fish throughout the winter. The story told is that the upriver potential for winter trout fishing was discovered only ten or twleve years ago when a wife and husband decided to try their luck, jigging through the ice miles farther up than fishing was usually done. This must have been known to some local families who lived upriver prior to the great influenza epidemic of 1917, but it is treated as a recent discovery. Nevertheless, snowmachines were not available and dog team trips were not necessary for perhaps forty years so that the trout fishing potential upriver was rediscovered as the fishers quickly filled several sacks at the place they chose. Word of their success spread quickly; upriver trout fishing became another mainstay of people's winter subsistence activities.

Earlier in the winter, trout are extracted anywhere from four to seven miles up the river (the "lower holes"). They range in this area from freeze-up to mid- and late-January. After this, people travel upriver ten to twelve miles or farther to catch trout (from one pound to fifteen pounds). There are two different areas along the river, both about two to three miles in length, where large fish are usually caught. These areas are known feeding stations where large char can feast on fry, roe, and nymphs that swim or tumble by. Likewise, there are two different trails to these areas, both being routed in a more or less straight line to conserve gas.

In winter trout fishing, as opposed to fall trout seining, there is no sharing of expenses although several couples (husbands and wives in their 30s and 40s) may drive up and fish together, sharing the catch. More often it is a family or even an individual affair (e.g., husband and wife and perhaps older children; boyfriend and girlfriend; cousins; male friends). Often 150 fish or even more are caught; sometimes very few fish are taken. While two families may go up the river together, it is with two separate snowmachines and sleds, and traveling together is mainly a safety precaution in the event of a breakdown.

The initial holes in the ice (in the lower and the upper fishing areas) are the hardest to make. On the first trip of the season each family or individual makes his own hole(s). Once these initial holes are made, they are taken on a first-come, first-serve basis. The ice is at least three feet thick, and a fisherman might chip two, even three, in a session if the fishing is not productive. The ice covering the holes is relatively easy to chip through after a hole has been cut because only a one or two day interval passes between usage. "Second-hand"

holes up the river are much easier to chip through than second-hand holes at the river's mouth because the temperature up river is 5^{o} - 10^{o} warmer in the winter than in town. In the spring, on some days farther up the river, it can be as much as 20^{o} - 25^{o} warmer than in town with less wind chill.

On a typical day there are more holes than fishermen to fish them. The successful fishermen are easy to spot, not only by their piles of trout but also because the other fishermen are usually moving from hole to hole trying to improve their position. (This phenomenon is also true of fishing for tomcod and smelt at the river's mouth.) Luck, rather than knowledge of the probable whereabouts of fish, seems to be more a factor upriver where less experience has been accumulated than near the river's mouth. Upriver a fishless person can be using a fishing hole only a few feet away and using the same lure as someone who is pulling up trout right and left. One, apparently, has his hole near the feeding stations of large fish gobbling up smaller ones (as nymphs, etc.). The other person is near, but not near enough. Although baiting the hook usually improves success, when this and changing holes and lure depths fail, all a person can do is be patient and wait for his neighbor to go, hoping the "luck" of the hole remains. Throughout all this, although there is a general concentration on their lines, fishermen of neighboring holes carry on converstions, swapping stories, gossip, and news. On occasion, a man will generously offer an exchange of fishing holes to his neighbor who is having less success than himself.

Since trout fishing is usually an all day affair, a thermos of hot coffee, a package of smoked salmon strips, and bread are taken along and eaten by the fisherman or the family, or the couples, etc. Extra coffee and a pot are also taken to brew more coffee over an open fire, which fellow fishermen are invited to join in on.

While people arrive at different times in the morning, at the end of the day the fishermen who have not already returned will leave at about the same time, since it is easier to keep track of each other by the lights of their snowmachines. Towards spring when the days are longer, this is also true because of the places where the trail crosses the river there may be pockets of air in the ice, rotten ice, or overflows that make travel dangerous. Once safely in town, the people who did not have to hole-hop all day (i.e., who were successful), usually drop off a part of their catch at the homes of elderly relatives or friends who, because of age or infirmity, are no longer able to fish for themselves. Then, it is time to

mark the end of a good and successful time in the country with a meal--fresh trout prepared fried, roasted or boiled, often eaten in the company of friends or relatives who are invited over because they could not make it upriver that day.

Basket Traps

Basket traps for tomcod are constructed out of chicken wire in an elongated shape (5' to 7' long and 2½ to 3' in diameter). First a sufficient amount of chicken wire is cut and laid out. Then it is rolled into cylindrical shape and wired together at the seam. Then enough wire to cover an end is cut and wired to one end, thus completing the trap. Fifteen to twenty feet of a stout line or rope are secured to the trap in such a manner that when the rope is pulled to haul the trap from the water the open end will always come up first. Now the trap is ready to be used.

Down at the slough, when the ice is about four to five inches thick, a hole just a little bigger than the trap itself is chopped through the ice, and the trap is lowered to the river bottom. Tomcod trap fishing takes place when the ice is four to five inches thick for a particular reason. When the ice is this thick, it is easier to see the schools of tomcod, and the ice around the hole is strong enough to support the weight of the several thousand tomcod that will be taken.

After the trap has been positioned in the hole, the fishermen then walk 50 to 100 feet away from the open end of the trap. With any heavy object they bang on the ice and walk back toward the trap. This banging serves to drive the tomcod in the general direction of the trap opening. Once back at the trap, one man pulls on the line which brings the trap into an upright position. Then the trap and its catch are ready to be hauled out onto the ice. This is done several times until the fishermen involved are satisfied with their catch.

If the fishermen are from two different families, the catch is split evenly. At any rate, the fish are put into gunny sacks and hauled home. The majority of the catch is usually for dog food, while a gunny sack or two are set aside for family consumption as quak.

Basket traps can also be used for winter trout fishing, but only a few people employ this means for catching upriver fish. The baskets are made of wooden framing, 8' long and 4' deep, covered with chicken wire, except for one end. The open end is fitted with a funnel of wire leading into the interior of the basket, which lets fish in but keeps them from swimming out.

One or two baskets are set in a narrow part of the channel that has a firm bottom for them to rest on. Before the baskets are put down, a trench is cut in the ice so an obstacle stretching across the river, from bank to sandbar, can be constructed. This obstacle is made of spruce poles, set upright and close together. Piles of willow bundles are placed around the poles to help keep them anchored. And toward the center of the channel, where the baskets will be fitted, a section of fencing is put in place and the baskets are tied to it. Before the baskets are put down and anchored to the fencing, a test hole is made in the ice to determine the current. Large holes are then cut, and the baskets are lowered into the water, so they rest on the bottom and their openings face at the best angle in the current to capture fish. These holes are maintained so the baskets can be hoisted and emptied every day or so.

Other Techniques

Snagging

Occasionally, when the silver run is heavy and at a favorable location, fish will be taken by snagging. A strong pole is made, to which heavy twine is attached, and to that a large, barbless hook. The fish are snagged on the hook, then pulled in and swung onto the river bank in a smooth motion that keeps them from freeing themselves.

Dip Nets

Dip nets are used to retrieve large fish, such as king salmon, caught on spinning tackle. Some people also have tried using dip nets to take fish directly. One family, for example, successfully used a dip net, to which fish eggs were applied, to catch whitefish. The whitefish had been attracted to the area where the family was cutting fish by the guts and other cleanings thrown into the water.

Land Mammals

Moose

A general body of techniques are used to procure moose, but most fall into the genre called "stalking". That is, one or a small party of hunters stalk the quarry through a combination of stealth, knowledge of the animals' habits, and the use of rifles and ammunition. The idea is to see the animal without being seen (or heard, or smelled). Stalking then differs from organized drives, as are used to secure rabbits (hares) and caribou, and from the use of traps, snares, pitfalls, and deadfalls. The ooze in the bogs and the permafrost makes pitfalls of little value, whereas the terrain frequented by moose (sedge and shrub areas of the river plains and tundra) makes deadfalls impractical, even though logs and rocks for the construction of deadfalls are available in the Nulato Hills. The first technique is not considered to be stalking by natives, so it is separated from the other stalking techniques. Stalking requires the intention to stalk--to hunt prey. Luck is luck, and natives recognize it as such.

Happenstance (Luck from a Native's Perspective)

From time to time a hunter or family headed upriver or downriver by boat on some unrelated task will happen upon a moose swimming across the river. If it happens when the family is headed upriver, regardless of the purpose of the trip, the windfall opportunity takes the "challenge" of the hunt away. The moose is bagged, nevertheless. If a moose is encountered while a family is headed downriver from some completed task, they will bag the animal and be pleased with the lucky meeting, while not worrying much about the failure to be challenged in the quest. But if an unsuccessful hunter is headed downriver from an unsuccessful moose hunt, and comes upon a swimming or wading moose, he would consider it a "blessing".

Waiting

Often one or more hunters wait at a place along the river where, given patience, a moose is likely to appear. Sites are selected within a good shooting range of the following: major game trails, a large clearing with a lake, pond or lagoon located within it, or adjacent to it, or across the river from a sizeable clearing adjacent to the river. Sedges are usually available around the edges of the water and the clearing.

Drifting

Drifting requires at least two hunters, and often three will hunt together. After a base camp has been established, hunters will motor up the river a few miles from camp, then drift back down; or they will drift from camp a like distance, then motor back to it. Usually the two drifts, one above and one below camp, are done at opposite times of the day, late afternoon being the time to go upriver, then eating a meal near a spot where a moose may appear, and then drifting down. Drifting down from camp usually commences in the early morning with a stop several miles down river to eat, again near a likely spot for a moose to appear.

Drifting is complicated because the river's channel dictates where the stronger currents are, and also where it is too shallow to move the boat without scraping the bottom. Successful drifting requires a good stern man equipped with an oar for steering, and a good bow man equipped with a pole for avoiding snags. Without these skills and simple tools, the hunters do not achieve a silent drifting technique, and are likely to be heard by, hence to frighten away, moose.

Many bears and, sometimes, beavers are encountered during drifts. It is usually up to the recognized leader of the hunting party (father, older brother, most accomplished and experienced hunter, etc.) whether those game are taken or not. If a black bear is seen it is usually killed and the meat taken (if it is the early fall). If the bear's flesh does not taste "fishy" to the natives, they keep it. On the other hand, if the taste quality is considered bad, only the skin is kept.

Beavers are taken if they appear during the late morning or early afternoon periods of drifts. At those times moose are usually resting. Any other time, a moose in the area would hear the shot and move well out of range and sight.

Calling

In the fall, bull moose are rutting and become very territorial animals. At this time they are also scraping their antlers against tree trunks to rid them of their velvet. During and after scraping these bulls also bellow and snort. These scraping and bellowing noises are distinctive and very resonant, and can be imitated with some success.

Antlers (or a shoulder blade) from a previous hunt, are banged and scraped on a tree trunk imitating fairly closely the same sounds made by the rutting bulls. While some men can use their voices to imitate the bellows and snorts of moose, an ingenious homemade call is used. They are made from an empty three-pound coffee can, a length of stranded-rope (smaller strands woven into one rope) and a pocket

knife. A hole is made in the center of the bottom of the can. This hole must be made so that it is just large enough for the rope to pass through it. Both ends of the rope are then knotted, so as to facilitate pulling on the rope and to prevent the rope going all the way through. When this rope is pulled through the can at a moderate speed, the uneven texture of the rope grating on the rim of the hole in the bottom produces the snorting sound,with the can amplifying and resonating it. Since these calls are not effective immediately, unless a bull is "just down the block", the hunter waits, while occasionally using the antler call.

Caribou

Caribou,too, are hunted by the stalking technique on some occasions, but particularly during the Fall hunts that originate from the camps located up the Unalakleet River. When the ground is not frozen or there is not sufficient snow to travel by snowmachine, positioning near a herd and waiting is the desired technique. During winter hunts, as well, some hunters wait for caribou frightened by hunting activities from a drive conducted on snowmachines or frightened by a wolf pack at their heels, to run several miles, then to circle back to the vicinity from which they started.

Snowmachine Drives

Several hunters, organized by one or two knowledgeable men, will pack their snowmachines and sleds (which they pull) with fuel, food, tools, rifles (usually .226 calibre on up, but often in the .235-.243 range) and ammunition for winter hunts 75 to 120 miles northward, or 50 to 75 miles southward from the village. Larger herds occur to the north. Because a sled can pull about four butchered caribou (600 lbs.) for 120 miles and still have necessary space for fuel, a sled can pull more caribou shorter distances because less space is required for fuel. Trips less than 75 miles are preferred, and caribou drives over short distances are preferred to longer drives, even though natives prefer caribou with a considerable amount of lactic acid build-up from drives (caribou can jump up to 20' through the snow, outdistancing wolves and keeping abreast of fast snowmachines.

The technique is as with any drive, to form a pincer movement with several snowmachines, usually using a natural rise in the landscape such as bluffs or mesas, to restrict and guide the animals during the drive. The hunters shoot for the necks or the heads, following the practice of sighting the quarry with the naked eye. Scopes, they aver, are apt to help you hit the animal in the side or the rear, destroying much of the meat.

Bear

The upper hills and valleys where bears forage in the summer are inland one to more than five miles from the main river and its major tributaries (North, South, Chirosky and North Fork Rivers). Natives prefer to hunt black bears rather than brown bears, and to do so during the summer rather than during the fall (ADF&G rules specify a season beginning August 20th).

In bear hunting (usually black bear), locating one is by far the easiest task, but seeing one doesn't guarantee bagging it. Hunters choose a site with a good vantage point. This is an area from which they can "glass"(use binoculars) the most acreage with the least amount of movement. While bears are noted more for their keen sense of small than their eyesight, natives claim that there is a bird that is usually in and around the black bear habitat that acts as a kind of sentry. One chirp and the bear is off and running, almost always away from the hunter.

Once a bear is sighted, the general direction of the wind is noted. If there is a wind, the binoculars are used to scan the plants and shrubbery around the bear to insure that the wind matches the same general direction as at the glassing area, and also to locate the sentry bird, if he's present.

Then a possible shooting vantage point is selected (this is subject to change upon arrival) and a general route to it is plotted and gone over carefully with the binoculars for maximum cover enroute, with an eye out for any possible obstacles (e.g., bogs, willow draws with streams, areas where an unseen bear may be foraging, etc.).

Once at an advantageous shooting point, the success of the hunt is dependent upon a person's shooting skill.*

Beaver

Beaver are taken for subsistence use in two basic ways in the fall. First they may be taken on a moose hunt when using the drifting technique. The more common procedure is to locate a beaver lodge and simply beach the boat and wait at a good vantage point. Beavers are very industrious in the fall not only collecting and storing food, but also in making improvements on their lodge. So, if the noise of the motor has frightened them into their lodges, in 5-10 minutes they will be back out again.

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*Rifles are always sighted in prior to leaving town, either at the dump or on the beach at a safe distance from town.

Beavers are not immediately shot. It must be first determined how many beavers occupy a particular lodge. As many as five will occupy a lodge over one winter. If there are only two they are left alone, but if a family hasn't eaten beaver for a long period, one of the two may be taken. The rationale for the action is that the one that remains will find another mate, or that another pair will inhabit the empty lodge.

Rabbits (Hares)

Rabbits are hunted from late fall through the winter and into spring. They are hunted both for home consumption and for dog food.

A hunting party going out to get enough rabbits for one meal can consist of one to four hunters. Rabbits are usually found in stands of willows that line small streams. These streams are actually small seepages that run from near the top of a hill to its base, forming small valleys. The stands of willows extend along both sides of the stream to about ten yards.

A pedestrian drive (sweep) starts near the top of the thicket and works closer to its base. For a sweep, four people are ideal, though three can work it. Snowmachines are parked and men move on foot. Two of the people are the "wings", that is, they walk along the outsides of the willows. One person is a "chaser" and walks through the middle and one is the "anchor", stationed beforehand at the base of the stand. When everyone is in place at the top, the drive starts down. The three (wings and chaser) starting at the same time, making noise, any rabbits seen at a close enough range being taken on the way down. These rabbits are stopped by whistling (a "pursed lips" whistle thought to resemble the whistle of a hawk's or owl's wings), and then shot when stopped.

Rabbits are taken in large quantities for either sharing within the community or for dog food. The rabbits taken for sharing are taken in the late fall and throughout the winter. Large numbers for dog food are usually taken in the spring, although they can also be taken in the winter if an unforeseen situation arises (e.g., loss of a large quantity of trout seined for dog food, an unusually weak run of pink or chum salmon, etc.).

The fall and winter hunts are conducted in generally the same manner as the four man party, except that snowmobiles are employed, and the hunters number from six to eight. During drives in which snowmachines are used, rabbits jump in front of the machine and are shot at the predetermined place. One hundred fifty or more might be killed.

In the spring, rabbits are mating and are found in large numbers. The females are usually surrounded by a number of males who are rutting. Once a female is identified, then the males are picked off without the other rabbits scattering as they are all in an excited state.

During this rutting season when the rabbits are in large groups, they may also be taken in a different manner if nature and weather coincide. That is, if an extended number of sunny days occurs at this time, the rabbits can go snow-blind. In this case they are all sitting on their haunches and rubbing their eyes with their forepaws. At this time, they are vulnerable to both man and predators as well.

Sea Mammals

Set Nets

Belugas are sought with set nets located in the Sound about 1½ to 4 miles from shore and about 7 miles or more, north or south, of the village. Nets are hung locally, usually constructed from #9 twine, the mesh being a diamond shape with 9" on each side, thus stretching to 18". A few commercial floats are used at the top of the net, whereas gunny sacks full of sand are used as anchors. The nets are usually about 100' in length and 25 meshes deep (37½' deep when stretched). The net moves so as to ensnare the beluga on contact. As an unintended consequence of commercial fishing, seals (frequently) and whales (less frequently) become ensnared in commercial nets.

Hunting

Beluga hunts are conducted during the ice-free period in large, aluminum or wooden skiffs powered by outboard motors. Two local men normally organize the hunts in which several men participate. Beluga pods are sighted, the quarry are shot with rifles, .243 caliber and larger, and the animals are gaffed. The whales are secured to boats; floats are attached, and the animals are hauled to shore for butchering.

Seals are hunted during the winter (ice hunting), during the spring (break-up ice used by seals as rookeries and resting places) and in the fall (ice free). They are also hunted around the commercial salmon nets when seals are more a hindrance than an opportunity for seal oil.

Ice hunting techniques are of two kinds. In one a single hunter, perhaps partner, stalk along the edge of the shore ice in a white outfit so as not to

be seen. The seals are shot with .226 caliber rifles or larger when they haul out on the ice (coming out through leads in the ice that are used for breathing holes).

The second technique is to place a seal boat on a sled and pull it by snow-machine over the ice to the large open lead; normally two hunters, brothers or friends, hunt together. They launch the boat and work the perimeter of the shore ice in search of seals. Upon shooting the smaller seals, the quarry are pulled into the boat. Larger seals (250 lbs. and up) are towed to the ice for butchering.

Spring hunting depends on the distribution of the ice break-up. Teams comprising at least two boats, often three, and composed of two to three men each, will launch their boats from Unalakleet and travel westward up to 80 miles amid the floating ice looking for oogruk and smaller seals. The hunters seek to shoot the animals in the heads or necks to stop them quickly and completely. Fast, flat trajectory rifles (.226 swift, 227, 235 caliber) are used for the kill. Animals that have hauled out on the moving ice are preferred, but animals in the water, too, will be shot, gaffed, attached with lines and floats, and retrieved. Often two or three boats of men will join to land and butcher the oogruk.

Some hunters have the ability to call oogruk with a sound similar to a child's wail. An animal observed close to floating ice might be called so as to get their attention, but seals have sensitive hearing and are easily frightened out of range.

Fall hunting takes place close to the village, usually at the river mouth, as well as at all other creeks along the near coast. During the fall, seals pursue tomcod as they move back and forth between the salt water and the tidal zones of the rivers and streams. Two men pursue the seals in small aluminum skiffs.

Walrus are hunted like the oogruk, except that greater caution is exercised in shooting, gaffing, and retrieving the animal because of their pugnacity.

Birds

By the time the migratory waterfowl have arrived in the Spring, the camps along the coast and up the river have been in place for up to a week. The camps along the coast will more likely have been up as much as 2-3 weeks earlier for spring seal, rabbit and ptarmigan hunting.

Generally, the smaller waterfowl (ducks) arrive first, around late April-early May. By the third week of May bird hunting of all species is in full swing.

Ducks are hunted with shotguns, not with traps or nets, and mainly from blinds erected near lakes where they stop to feed. While commercial decoys are

sometimes used, "decoys" can be made from ducks caught. These ducks are simply placed in the shallow waters near a lake's edge, and their heads are propped up with sticks of appropriate length.

Geese and cranes fly in large flocks and are called or decoyed in a number of ways. Cranes are called chiefly by voice. Their call is very distinctive and, while the sound to imitate them is originated in the throat, the likeness comes from a trilling of either the tongue or the lips. Geese are also called and decoyed in a variety of ways. Most men (and some women) use their voices to call geese, though there are a number of different types of commercial calls. Also in the last couple of years, a very effective homemade goose call has been used with a lot of success.

Homemade goose calls are fashioned from hollow discharged shotgun shells. Many times downed geese are also used as decoys in the same manner that downed ducks are used. Very simple decoys for white geese are also made or improvised on the spot if there is any kind of a wind on any particular hunting day. To make these all that is needed is a length of twine and some white cloth. First, the twine is strung out about a foot or so off the ground. Then to this are tied sections of the white cloth. The wind catches these and flaps them about. If there is no twine handy, a hunter simply crouches down with shotgun handy, and calls at the white geese while waving the cloth.

White geese, it is noted, pass through the Unalakleet area on their way to their nesting habitats. When they reach the Unalakleet area, they may rest and feed on the flats for a day or two but generally they just pass through in several different flocks for about a one week period. They must be shot as they fly over. Brants also move through the area quickly, all flocks bunched together and passing over in two days at the most.

At spring camp (and for women who stay in the village), while the men are out hunting, women pluck and clean the birds as they are brought in. During the plucking the down of geese and cranes is kept for later use, mostly in pillows, but also in homemade articles of clothing.

When the birds are cleaned for freezing, the insides are taken out and cleaned (gizzards are halved then cleaned and washed) and the heart, liver and gizzard are reinserted into the chest cavity.

Sea birds, such as old squaw, scoter, and eider ducks, are generally taken on coastal trips to harvest other resources (eggs, kelp, greens, etc.), or when a family is embarked on a trip to visit relatives at the nearest village either up or down the coast, Shaktoolik and St. Michael respectively.

Natives feel that sea ducks are sensitive to noise and human presences so they inhabit chiefly the uninhabited areas between coastal villages. St. Michael is an exception because the area around it consists of several islands, and also a number of coves and inlets with a rocky shoreline. The land above the coast is low and flat without the tussocks of tundra and is ideal for nesting.

These birds can be taken either from a boat or the shore with a shotgun. The scoters can also be taken near lakes that are close to the coast.

While eider ducks are a prized bird, they are taken very sparingly by Unalakleet natives and then only males are taken. This is because a number of years ago they were a common sight around the area. Natives associate their decimation and relocation to more distant places with the advent of outboard motors. Now the eider ducks seem to be making a gradual return to the Unalakleet area and the residents are loathe to discourage or deplete them by excessive hunting.

Plucking and cleaning preparatory to freezing is done in the same manner as with geese and cranes.

Both spruce grouse and ptarmigan are mainly bagged with .22s during rabbit hunts. Rabbits can also be taken by shotgun when natives are hunting for either bird. The main purpose of a hunt is whatever the hunter intends to bag. Over the winter, the majority of small game hunts will be for rabbits.

When hunting for spruce grouse, the hunter picks a sizeable stand of spruce and walks through it. If it is an unusually still day, he may be still and listen. If there are a good number of spruce grouse in the trees, they will be heard clucking. This walk is generally at a leisurely pace, but the hunter is looking up in the branches of the trees trying to spot a bird. They are not only well camouflaged but they are also very quiet once an unnatural sound is heard. The hunter is often startled by one flying rapidly away from very close. When this occurs he will note the general direction the bird flies as they generally fly only one to two hundred yards away. Where there is one in a tree there will usually be at least three or four more in that general area, so he again starts stalking, though more slowly. When one is sighted, a hunter can get off as many as five shots (if needed) with a .22 rifle, as these birds fly short distances and then perch. After getting enough for one meal (5 birds) the hunter, if it is not dark, may hunt either rabbits or ptarmigan beyond the spruce groves.

TECHNIQUES OF FOOD PRESERVATION AND STORAGE

Drying

Full Dried

Most of the different types of fish, sea and land mammals procured for subsistence can be preserved by drying. Large quantities of salmon are put up by this means. Herring, some tomcod, and occasionally other fish are dried. Seal and whale meat is dried, and called "black meat." Usually portions of moose and caribou are dried. Roe-on-kelp can also be preserved by drying. The proportion of each type of food resource which is dried in any given year for a family's food supply is partly a matter of family taste and preference. The proportion is also affected by the weather conditions that year (favorable, or not, for drying).

The exact details of preparation for drying (e.g., the cutting of fish) and the drying technique vary somewhat, each family having its own taste preferences and customary methods. The details also vary according to the particular type of fish. A description of the general technique follows.

Salmon are prepared by first splitting them down the belly and removing their guts and dorsal vein. Eggs are saved for separate drying or freezing. Their backbone is then removed by a cut that leaves the two filleted sides of the fish attached to the tail, which in turn allows for hanging on the poles of the fish racks. (The head may be removed, and hung to dry separately, or else left attached to one side of the fish). Fish are cut and hung for drying the same day they are taken from the net; or if brought home or to camp late, they are processed as soon as possible the next morning.

Silvers and chums are the larger of the salmon which are dried without smoking; kings are too large, too thick, and far too fat to be full-dried successfully. These larger salmon are filleted so that the thickness of the flesh cut from their bones is just right for proper drying since if cut too thick, the salmon may spoil in the drying process. Once the backbone is removed, the flesh is then scored across its width, the cuts being made at intervals from the head to about two inches below the tail. These cuts are made oblique to the skin but do not pierce the skin. The procedure of cross-cutting exposes additional flesh surface to facilitate drying and also to facilitate eating of the dried fish. Pinks, the smaller of the salmon cut for full-drying, are filleted along the bones. Generally their flesh does not require scoring for proper drying; but a few large males may need it, and some families prefer to make the cross-cuts for later eating.

After being rinsed in water, the cut salmon are hung on racks to air dry, first with their skin out, and after a day or so when the skin has sufficiently dried, they are turned inside-out to finish the drying of the flesh. The fish are watched so they do not sunbake while drying, and are either removed to covered racks at a point which will prevent that, or the racks themselves are covered. The fish are watched so they are not left exposed too long in the rain, and are protected by covering as much as possible. The fish are also watched so that flies do not lay eggs on them, pepper being sprinkled to keep them off, and the eggs that are laid scraped off.

The backbones of chum and silver salmon, because they retain sufficient flesh on them, are tied on the racks with string and dried for human consumption or for dog food. The backbones of pinks are discarded when the fish are cut and cleaned upriver but in town they are usually saved for dog food. Sometimes a special type of cut is made on the large pink males which separates their backbone with some flesh from the two sides, but which leaves all three still attached to the tail for hanging, drying, and eventual eating.

Another special cut made on female salmon keeps the eggs inside the belly of the fish. The sides are cut in one section from the backbone and the fish hung to dry. In this type of cut, it is imperative that the belly is not penetrated, and that the eggs age without contact with the air. The fermented eggs, called oksolik, are removed from the fish when eaten in the winter.

Dried pink and chum salmon are packed in boxes or loose bags and stored in the sheds, caches, and smokehouses for the winter. Silvers are stored strung - 50 to a bundle.

Herring are gutted, and the roe saved for separate preservation by brining and freezing. The belly cut is then continued on one side of the backbone up to, but not through, the skin of the back, a cut which lays the fish open to facilitate drying. The cut fish are placed on a flat screen surface to air-dry out-of-doors, being turned as necessary. Herring are then strung through the mouth, in bunches of 25, and hung in sheds (sometimes being kept outside a little longer to finish drying before being stored).

Tomcod are prepared for winter drying by removing the guts, except for the eggs, and then are strung through the gills and mouth opening and hung in bunches out-of-doors.

Trout are dried in the same manner as pink salmon, though not in large quantity, since most are put up frozen.

Cutting fish is as much an art as a skill. Women develop their cutting ability over the years from adolescence to older age. They become skilled at the use of the ulu, the women's knife, learning to cut very swiftly and yet, not to sacrifice perfection for speed. They go beyond simple utilitarian cutting to prepare fish, whose cut form has a beauty of appearance. The finished fish, as they hang on the racks and later dried when they rest on the table for a meal, please the eye as well as the palate.

Drying fish is also a skill. Women possess a store of know-how about the proper stages in the drying when fish should be turned, spaced, or moved to higher positions on the racks. They know the critical point when the fish have dried sufficiently that they can be removed from the racks and placed in storage.

Fish must be protected from rain, sun, and flies, and women know the procedures for this. They exercise continued vigilance that the fish will not mold or spoil. Moisture will produce mold, which can be brushed off. The great danger of extended rain is that the fish will not dry and spoil. Sometimes an entire seine catch or several cleanings of the net spoil because weather conditions are such that the fish will not dry no matter what preventive efforts are taken. When this happens, the fish are processed for use as dog food.

There is continued vigilance that fish hung in direct sunlight do not sunbake. Sunbaking renders fish hazardous for human consumption since if eaten with fresh fruit, and Unalakleet residents cherish fresh fruit whenver it is available, it will produce a botulism-like condition. Drying fish are also examined for any eggs laid by flies, and these eggs are brushed off to prevent larvae from hatching into the flesh of the fish.

Roe-on-kelp is air dried by laying out on a flat surface covered from the sun. Roe-on-kelp is most often preserved by brining, however.

Oogruk and seals are first skinned. Later the skins are stretched and nailed to a board or to a shed or cache wall on the side having the best exposure to the sun. The blubber is separated from the meat for rendering into oil. Wide, and thin long strips of meat are removed from the carcass and lightly salted, then hung on racks high above the ground away from loose dogs. Once dried, the black meat (local name) is stored in a freezer or a cache. Walrus meat is similarly cut and preserved by drying. It is also hung in sheds or caches near the places where dog teams are staked.

For caribou, drying is facilitated by the fact that these animals are harvested during the colder months of the year. The carcass is butchered at the site of the kill, into quarters, rib sections, and other pieces. The meat to be dried will usually be taken from the hind quarters although front quarters also have a sufficient quantity of meat for this purpose. Since the return trip is a long one, the meat has frozen by the time home is reached, and being frozen makes it easy to slice. These thinly cut slices range from the strips typical of beef jerky to full steak-sized pieces. These cuts are thawed, salted and/or peppered to taste, then hung on temporary racks erected on outdoor sheds or on top of the house. Once fully dried, they are wrapped and stored in a freezer or inside a storage shed.

Moose meat taken in the winter is dried in the same manner as caribou. Meat taken on fall hunting trips must be cut unfrozen, which makes the process more laborious. Otherwise, the strips are salted and/or peppered to taste and hung to cool-air dry on temporary outdoor racks. (Caribou taken in the spring are similarly cool-air dried.)

All the types of fish and meat that are dried are dipped in seal oil when eaten.

Half-Drying

Partly dried chum and silver salmon are taken from the racks and preserved for later eating by being wrapped and put into the freezer. Half-dried chum and pink salmon can be preserved in seal oil. The fish must be selected at the proper stage in drying, when the inner flesh is still moist but after the surfaces (flesh and skin) have hardened. Tomcod can also be preserved half-dried. Frozen half-dried fish are cooked by boiling or roasting. Both animaq (half-dried, boiled) and patekseq (half-dried, roasted) are eaten with seal oil. Half-dried fish packed in seal oil are eaten as they are.

Oogruk, when half-dried, can be preserved in barrels in seal oil.

Smoking

A large portion of the king salmon caught for subsistence, and a smaller part of the silver catch, are preserved by smoking. The fish are gutted and cut, as for drying, and then salted (the amount of salt varies according to family tastes). They are hung and allowed to begin the drying process, then removed and cut into strips. The strips are left bound by portions of the tail, or else tied two together, and hung over poles in the smoke house. Half-green alder wood, gathered

from the beach, is used to smoke the fish. When fired, this wood produces mostly smoke, yet retains a spark to keep burning. The intention is to smoke the strips and not further dry or cook them with heat. There is much skill involved in maintaining the fire and positioning the strips the right distance from the fire so proper smoking occurs. Too much fire will cook the fish, and too much smoke will make the fish bitter. During the stages of smoking, the strips are gradually repositioned farther from the fire and room made for new ones. After the right amount of smoking, the strips are moved outside to continue their drying on the fish rack. Strips are cut into smaller lengths for packaging and then stored in the freezer. Sometimes, rather than being cut into strips, fish are smoked whole, in their cut form, which is Yukon-style.

Freezing

Some of the king and silver salmon catch is preserved by freezing. The fish are put in the freezer whole (after being gutted, cleaned, and sometimes ice glazed) or else they are cut into steaks or larger sections and put into the freezer wrapped in meal-sized portions or water packed. Ling cod and whitefish for agootuk are stored by freezing.

The butchered parts of caribou and moose are wrapped and put into freezers. Birds are wrapped and put into the freezer after being plucked and their intestines removed (gizzards, hearts, and livers are saved and frozen along with the carcass).

The muktuk of beluga whale is prepared for freezing by paring off some of the fat so that the skin and remaining blubber measure about 1½" - 2" thick. The muktuk is cut into rectangular lengths and wrapped for the freezer. The gouk of walrus is similarly frozen.

Tomcod and smelt, as well as the trout (char) caught ice fishing, are stored (whole and intact) in the caches and sheds; they remain frozen in these store houses throughout the subzero winter months. Trout caught in the late fall for winter quak are stored in gunny sacks in the sheds and allowed to age in the alternating freeze-thaw of the transition period between fall and winter; they remain naturally frozen through the subzero winter months.

Berries of all varieties are packed in plastic bags and containers and placed in freezers. Large amounts of salmonberries, sometimes mixed with bilberries (blueberries) and/or blackberries, are put into wooden barrels and stored in the sheds. Greens are either frozen in plastic bags and containers or else packed in glass jars, which are then filled with seal oil and stored in the sheds.

The choicer pieces of oogruk that are not dried or eaten immediately, such as ribs, haunches (roasts), livers, and kidneys, are preserved by freezing.

Fish roe, saved for bait, are first put into the freezer and then later, when winter subzero temperatures have set in, are removed and put in the shed to make room in the freezer for other foods.

Herring roe, and roe-on-kelp are bagged and stored in the freezer.

Brining/Salting/Pickling

A common method of preserving herring roe-on-kelp is by alternating layers of kelp and salt (preferably rock salt) in a plastic bucket, and letting these set with a weight on top until some compaction has occurred. More layers are added until the bucket is filled. The covered bucket is stored in the shed. This method yields roe-on-kelp that has a fresher texture when eaten than kelp preserved by drying, although drying preserves this food longer. Herring (fish) are sometimes pickled.

The bellies and heads of king salmon and silver salmon are similarly preserved by alternating layers of the fish parts with salt in a bucket. Thick boneless cuts of king salmon are brined separately to make saloonak, a delicacy eaten at special times, served to visitors, for example, with tea for an afternoon snack, or after a family meal in the evening.

Seal Oil

Seal oil is used as a medium of preservation for half-dried salmon, oogruk, and greens (sura, tukaiyukes, and fireweed are preserved separately in oil or mixed together).

Seal oil is rendered blubber of oogruk, spotted seal, hair seal, or beluga whale. The blubber is separated from the meat and cut into long strips, which are scored at intervals and then put into a glass jar. The oil forms naturally from the blubber as it sets in the jar, although on occasion the blubber is warmed to speed the process. Sometimes a covered hole is made in the floor of the storage shed where the jars of rendering blubber and finished seal oil are kept. A family always has one jar of seal oil in their house freezer for ready use with meals. Each family has its own preference for which type of seal oil (oogruk, spotted seal, hair seal, or beluga) it likes best for taste, and other characteristics.

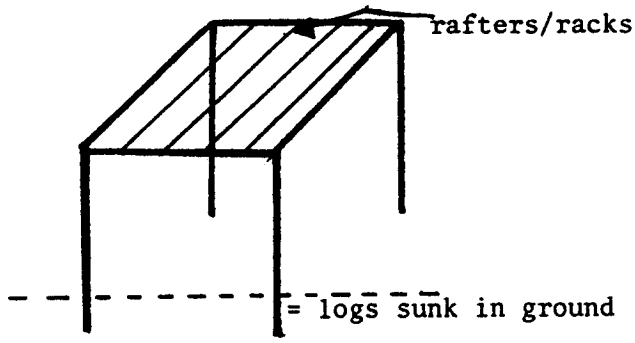
Canning

Some families can salmon. Most canning involves berries, these being put up as syrups, jams, and jellies.

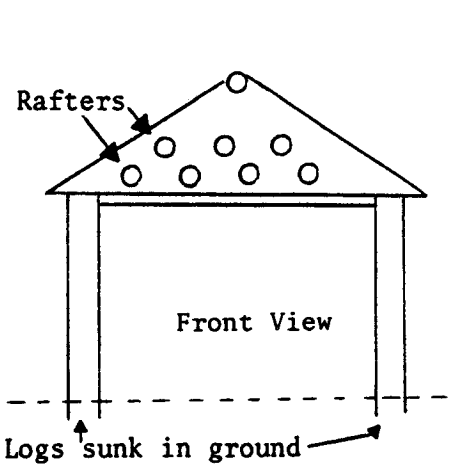
Structures for Storage

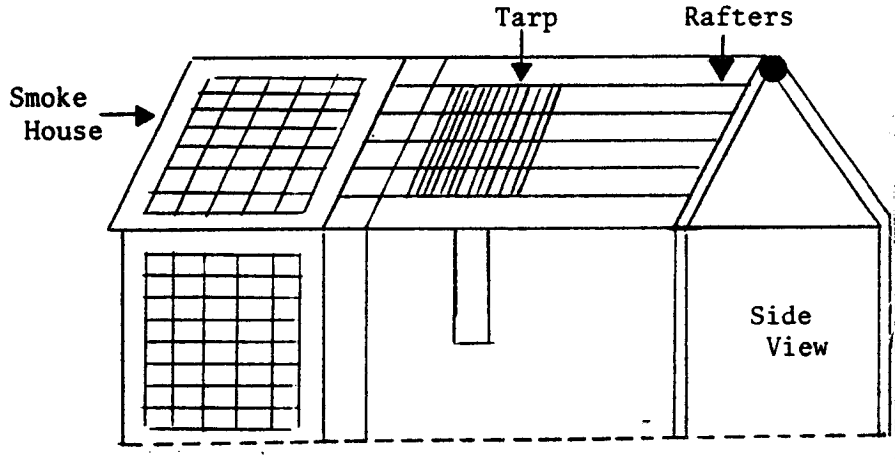
There are several kinds of drying racks, smoke houses, and caches in Unalakleet, as well as a few ice cellars (no longer in use). Families also own large chest type electric freezers that, usually situated in ante-chambers, draw electricity during the summer months, but that are unplugged during winter months. Some drying racks are simple structures of four verticle logs placed in a rectangle with four horizontal logs placed on top and connecting them at the four corners. Smaller poles, cut from saplings, are placed from end to end on the base structure and meat is hung from those poles, or rafters.

FIGURE 4
STRUCTURES FOR DRYING AND SMOKING



The preferred drying rack is gabled and provides protection from the rain. One section of the gabled superstructure is covered either by canvas or boards, and the other part is open for better air movement and more complete drying. During prolonged rains, family members move the drying meat from the open section to the covered section.





Attached to the drying racks, or in a separate structure nearby, is a smokehouse used for king salmon, seals, beluga, moose, and other dense and fat meats. During protracted rains the meat that is air-drying can be moved into the smokehouse and cold-smoked, or treated to very moderate smoking to help the drying and so as not to lose the meat. But if during a long, rainy period the smoke house is full of king salmon strips and the drying racks are filled with pink salmon, the pinks may have to be given to the dog owners in the village.

Building a Drying Rack or Cache

Following time-honored traditions and resourcefulness, and because costs for materials and transportation are extremely high, Unalakleet natives build drying racks, caches, and smoke houses out of driftwood, discarded packing boxes, and remnants of dismantled buildings. Men walk the beach around the spit seeking logs washed up by river and tidal action for rafters and corner posts. Only old, water impregnated logs are sought. Logs from 25' to 30' are sought for the main beam, the longer ones when a smoke house is to be attached to the drying rack. In that fashion a single beam can serve both.

Cross beams are then sought of the same length. These, too, are 25' to 30' logs, although often smaller in diameter than the main beam, that have been deposited on the spit. The cross beams are laid on top of four heavy logs about 5' long that have been set upright, and connect the four logs at their tops. A log is placed at the front and rear of the structure on top of the cross beams to support the main beam above it, and logs are then run from the main beam to the corner posts to form the gable, or the double-pitched structure. Next many layers of long rafters (the same length as the main beam), usually spruce saplings that have been picked up along the beach, are positioned length-wise from front to back in the structure, and from about 4½' above the ground (to keep the meat from the ground and from the dogs) up to the roof, which may be 20' above the ground. The roof is covered with a tarp, perhaps two tarps for a long structure (from $80 to $200 each). (Tarps are not only expensive, but the strong east winds often blow them into the Sound during winter storms).

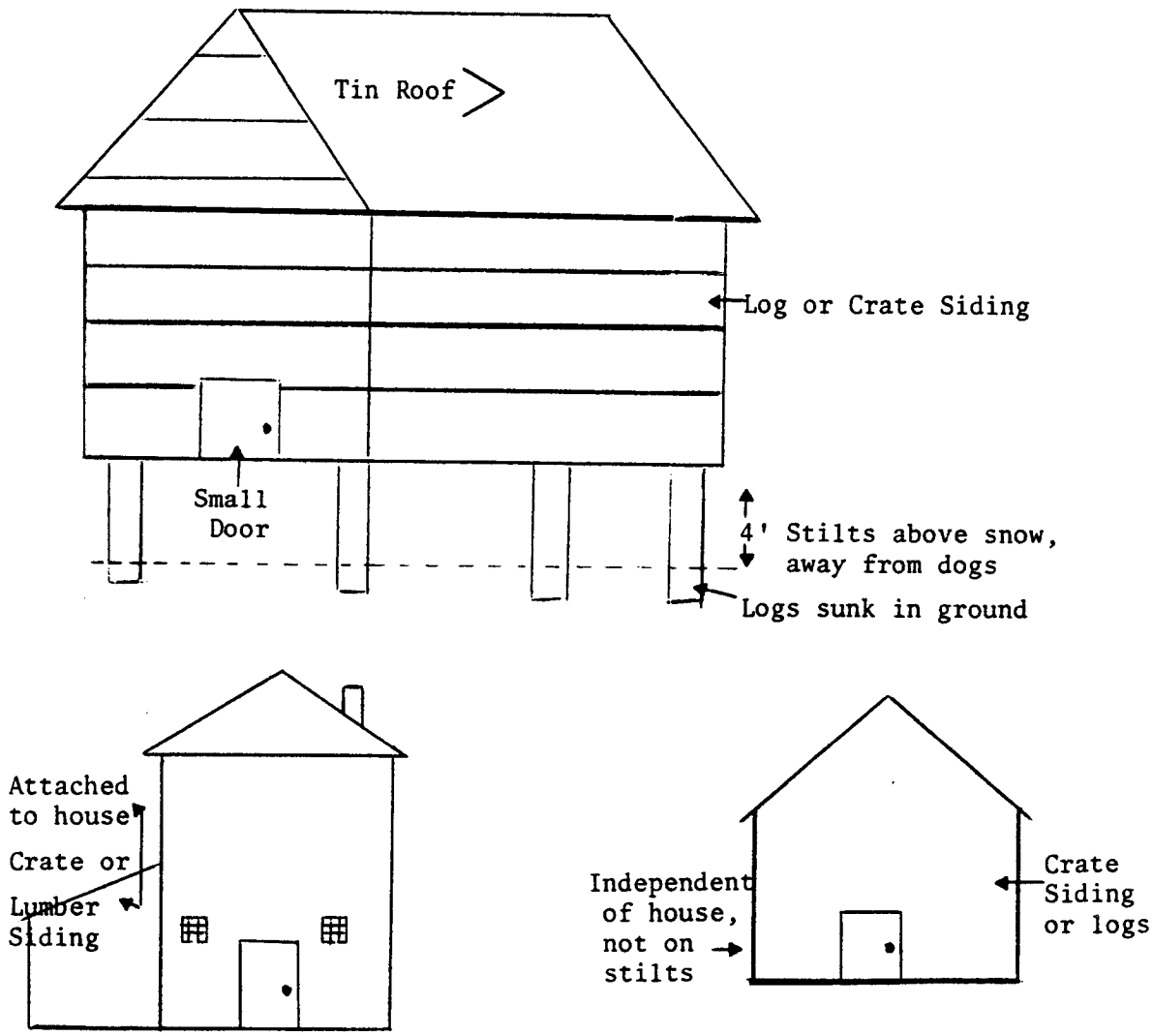
Because of shortages of materials and high costs for materials and transport, virtually all the smoke houses and drying racks in the village have been put together with driftwood and discarded parts and pieces. The logs are usually notched and carefully placed. Because of the nature of the materials, all drying racks look very old, regardless of their ages, but the wide majority are sturdy and very well built.

Scraps are kept for future use, or for burning. Resourcefulness and imagination in the use of scraps is impressive to the interested observer. For instance, crates in which items are shipped to Unalakleet are often composed of five-ply (or more) wood. The crates are dismantled (it would cost more to return them to the sender than the boxes are worth) and used to construct smokehouses, storehouses (caches, which are built much like a gabled drying rack, except that the walls are enclosed by logs or crating materials) and sheds. Smaller crates are used as dog houses. Outboard motors and snow machines are often covered by structures made from scraps, and drying racks are often roofed with sides from crates.

When the old BIA school was dismantled a few years ago, families retrieved the tongue-and-groove ceiling, cut and fitted it to make excellent store houses and smokehouses.

FIGURE 5

TYPES OF CACHES



CHAPTER SIX

NATURALLY OCCURRING RESOURCES HARVESTED AND PUT TO USE

INTRODUCTION

The preceding three chapters have provided generalizations about the subsistence economy that have sought to account for the relations among resources and the manner in which planning for their extraction, as well as their extraction, takes place in modern Unalakleet. A considerable amount of detail was foregone so as to provide comprehension of the whole. In the following pages we provide a catalogue embracing the availability, characteristics and habits, extraction times, techniques of extraction, and uses to which they are put, of the many resources extracted by Unalakleet natives.

Species are organized and discussed in the following categories: sea mammals, land mammals, birds, birds' eggs, fish, marine invertebrates, greens (land plants and kelp), berries, and other resources (driftwood, minerals, and the like). Distribution maps are provided for all species, either individually or by groups with similar distributions.

SEA MAMMALS

Spotted Seal, Phoca Vitulina ssp.

Availability:

In the waters off Unalakleet, and north and south along the coast, from spring through fall. Seals are generally abundant, relative to other marine mammals, and an expectation prevails that if a hunter makes a careful effort to bring a seal in, one is likely to be obtained. During the last 5 years, however, seals of all kinds have been harder to bag because of unfavorable shore ice conditions (shore ice has not held or extended westward into the Sound as usual because of strong east winds which dislodge the ice and blow it into the Sound).

Habits and Characteristics:

3½ - 4 feet in length (average), 120 lbs (average), about 56 lbs dressed. Usually the hunter will come on single, solitary seals in the water, at their breathing holes or leads, or on the ice next to holes and leads. Generally, however, when one seal is sighted, there will be others in the area; seals travel in herds, as well as singly

and in small numbers. Seals have exceptionally sensitive hearing. They are quick to their holes when the least disturbed. Spotted seals are hard to bag also because they can swim long underwater (making it difficult to judge where and when they will surface).

Spotted seals haul out at Besboro Island and travel north and south along the coast to feed.

Extraction:

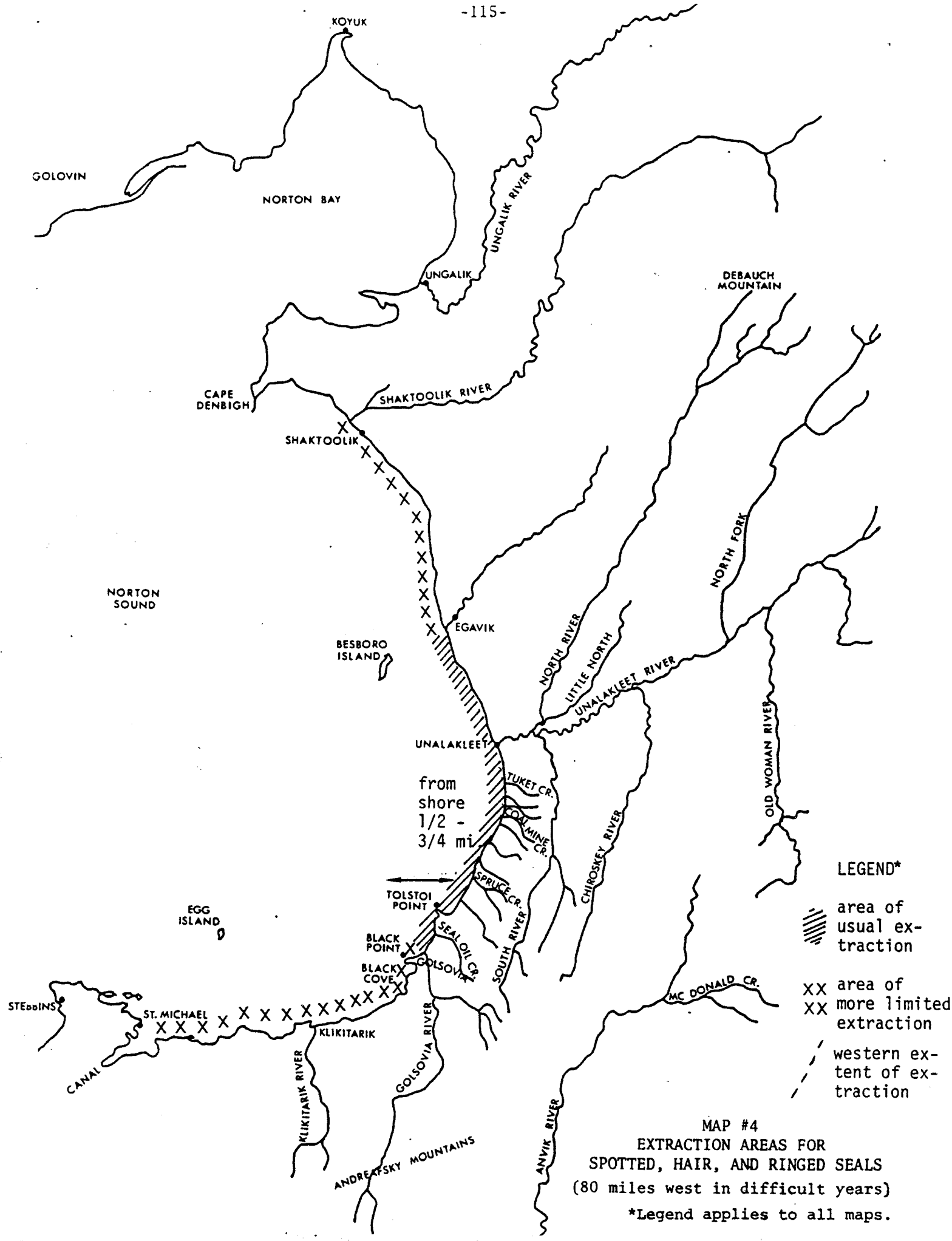
Spotted seals are hunted primarily in the spring (April-May) and fall (Sept.-Nov.). Spotted seals can be taken in the summer near commercial salmon nets, or the mouths of rivers where they feed on fish. They are generally hunted from boats, the ice, or less frequently from the shore, under conditions that permit recovery. Seals are taken, when possible, in the waters surrounding Unalakleet (within about 2 miles from shore and 5 miles up and down the coast from town). In the winter, spring and fall, the shore ice off Blueberry Point provides a good hunting area, as does the shore ice south of town. If a seal with pups is sighted, that seal will not be taken unless the hunter has considerable need for a seal and there is little likelihood of coming on another seal on that trip.

Hunting trips are made specifically for seals, but if other animals and foods (birds, eggs, greens) are sighted along the way, these will also be taken. Seals are taken when they are sighted during a hunting trip for another animal, such as oogruk or birds.

In late spring, seal skins are of inferior quality, with bald spots or areas of thin fur; this is the one time of year that seal skins may be discarded when the animal is butchered.

Techniques:

Any rifle can be used (.22, .243, or larger caliber), but not a shotgun, for hunting seals. One person may hunt alone, or hunting partners may go together, either in the same boat or in separate boats, sometimes hunting together, sometimes splitting up. Sealing boats are pulled over the ice by snow machines, or if ice conditions are poor, by hand-drawn sled, to reach the water in winter. Hunting is also done on foot on the ice or along the shore. Generally seal hunting trips are one-day undertakings from town, although boats are taken out from spring and fall camps to look for seals, or a seal may be killed on the way to or from camp. Lines with heavy hooks are used to snag seals from the water, once they have been shot from a boat, the ice or shore.



MAP #4
EXTRACTION AREAS FOR
SPOTTED, HAIR, AND RINGED SEALS
(80 miles west in difficult years)

*Legend applies to all maps.

Hair Seal, Phoca vitulina ssp.

Availability:

Year around in the waters of Norton Sound near Unalakleet, as well as north and south of Unalakleet.

Extraction:

Hair seals are hunted primarily from fall (September) through spring (May). Like spotted seals, hair seals are also sometimes taken during the summer.

Habits and Characteristics:

On the average, slightly bigger than spotted seals (65 lbs dressed weight). Locals consider hair seals easier to obtain than spotted seals; they are available year around, and stay under water for shorter periods.

Ringed Seal, Phoca hispida

Availability and Extraction:

Ringed seals are reported as seldom available and, as a consequence, are taken only infrequently.

Information was not gathered on whether ringed seals were more prevalent, and brought in more often, five or more years ago, before poor shore ice conditions set in and diminished the take of seals and oogruk.

Uses: Spotted, Hair, and Ringed Seals

1) Seal oil

Blubber is rendered to seal oil, an absolute necessity to the preparation and eating of other native foods. A meal of native foods is not complete without seal oil. Dried fish, oogruk, moose, and caribou are eaten dipped in seal oil. Frozen fish, oogruk, moose, and caribou are eaten dipped in seal oil. Seal oil is poured over a bowl of boiled fish (ooruk); boiled meats (moose, caribou, reindeer); and boiled herring roe, or roe-on-kelp. Half-dried (and then roasted or boiled) fish are eaten with seal oil. Greens are packed and served in seal oil. Eskimo ice-cream (agootuk) is prepared with seal oil as one of the ingredients. Blubber or rancid seal oil is also fed to dogs to maintain them in a healthy condition.

2) Meat and internal organs

Used fresh, frozen and dried for family meals. Used fresh or dried as dog food (now the primary use of meat of the small seals).

3) Skins

Skins tanned for making mukluks, gloves and mits (for hunting, ice fishing, dog teaming, and snow machining), purses and bags, slippers and baby boots. Skins are scraped of hair for seal oil pokes. Raw seal skin used for lashings; bleached skins are used for decoration.

Note: As the keeping of dogs is on the rise, the quest for seals, along with other foods given to dogs, is also on the increase.

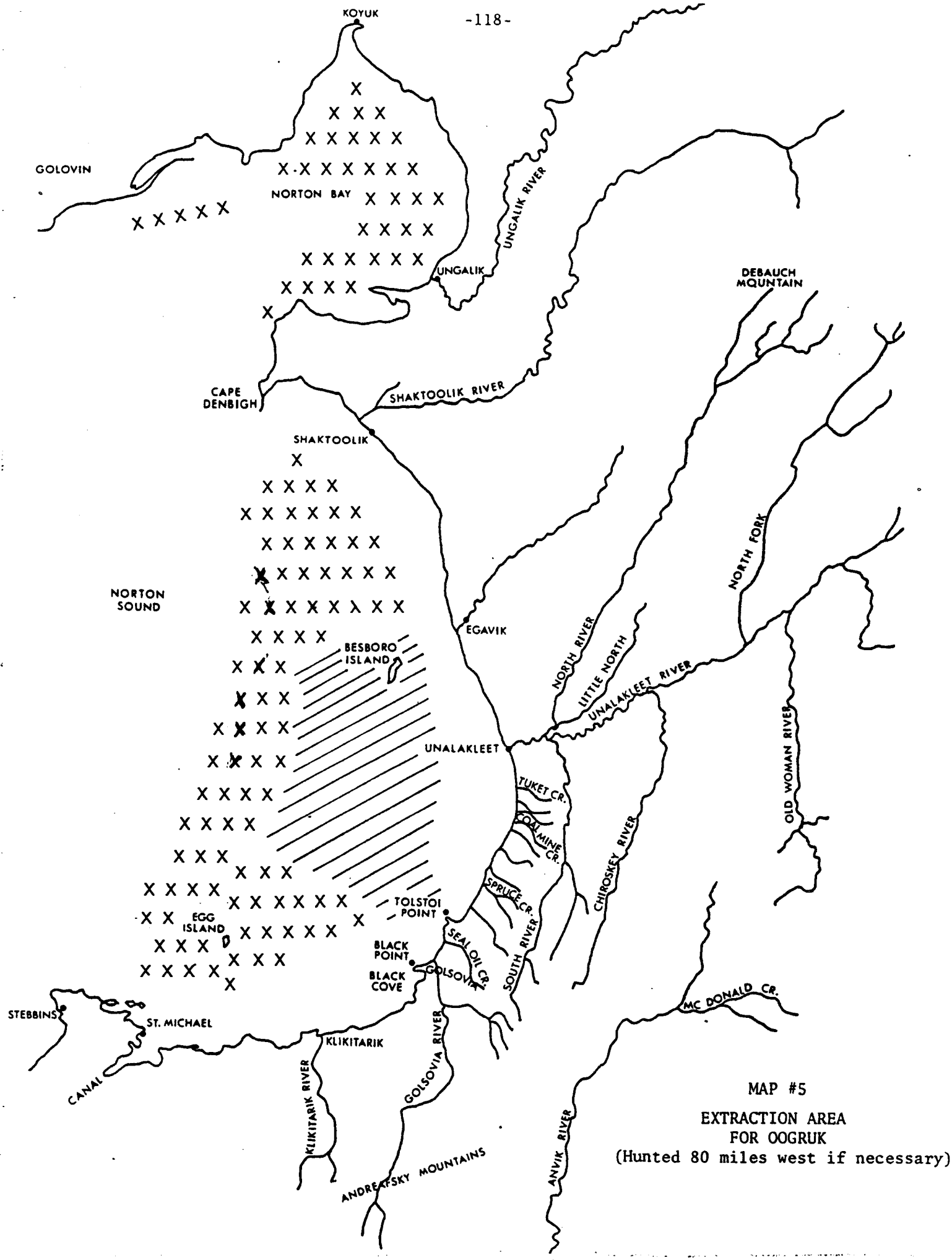
Bearded Seal (Oogruk), Erignathus barbatus

Availability:

In the Sound waters off Unalakleet, north and south along the coast, and farther westward into the Sound. Oogruk are present at the ice edge and in break-up ice where they feed on fish and haul out on the ice. They migrate northward past Unalakleet during the late winter and spring and southward during the fall and early winter. Oogruk are considered to be present in larger numbers in spring than fall. The availability of oogruk is less than other seals in numbers of animals, except for ribbon seals, as well as in length of season and ice conditions.

During the last five years, for several reasons the ice conditions have been poor for hunting oogruk. One, the ice edge has been too far out in the Sound for safe hunting, the ice having been blown from shore by strong east winds. Two, the break-up ice closer to shore has been of a kind (small pieces, rubbery, choked passageways) that makes boat travel and navigation difficult and the presence, sighting and taking of oogruk unlikely. Three, the nature of the ice has also prevented or made difficult the butchering of a kill at the sight.

The availability of oogruk and the conditions for successful hunting of these animals, depends on the ice pack: the position of the



MAP #5

EXTRACTION AREA
FOR OOGRUK
(Hunted 80 miles west if necessary)

ice edge, the presence of large, solid pieces of break-up ice, and the ease of travel around and through the ice. The break-up of the Yukon usually provides proper ice for oogruk hunting. Weather is an additional critical variable.

Habits and Characteristics:

8 feet in length (average), 150-200 lbs. dressed weight (average). Oogruk rest on floating ice, strong enough to support their body weight, and feed on herring and tomcod along the ice edge. They are found singly, or less frequently together in small numbers, although where one oogruk is sighted, there are likely to be others in the area. Oogruk, like other seals, have exceptionally sensitive hearing, and also the ability to dive quickly when disturbed.

Extraction:

Oogruk are hunted in the spring (March-May); some hunters also go out in the fall (October-November). The spring, 1982, hunting conditions for oogruk were improved somewhat over the very poor conditions of recent years. The past few years have clearly shown that a combination of bad weather and ice pack conditions can narrow to two or three days the time during a season when oogruk can be successfully and safely hunted. Such severely limited hunting occurred during 1979, 1980, 1981.

During break-up, oogruk can be taken in the ice just out from the beach or the river mouth, but more usually they are taken at the ice edge west, north, and south from town. The poor conditions of the last few years made longer hunting trips necessary, some hunters from Unalakleet going as far as Norton Bay, where the ice conditions were favorable for obtaining an oogruk. Hunting trips up to three days are made specifically for oogruk, and include preparations for the taking of a large animal. Many families set up spring camps on the coast, five to fifteen miles southwest of town, for combination hunting of oogruk and birds.

Techniques:

Oogruk are hunted from a boat, shot with a rifle (.243, .279, .30-.30), and kept afloat with a harpoon attached to floats. Hunters team up in a single boat, or sometimes two or more boats of hunters travel together. Oogruk hunters shoot for the nose, claiming that the

animals lungs will stay inflated if hit in the nose (but not the brain).

Uses: Oogruk

1) Seal oil

Oogruk is the seal oil preferred by many families (for its taste and purity). Oogruk meat, half-dried, is stored in its own oil. Some blubber, rather than rendered into oil, may be fried and enjoyed as a delicacy.

2) Meat, internal organs, stomach contents

Oogruk meat (called black meat in dried form) is relished for meals. The internal organs are also relished and consumed, either at the site of the kill (the liver), or later. The stomach is examined for whatever shellfish it contains (clams, oysters, shrimps) and these are consumed as delicacies.

3) Skin

The thick hide is used for the soles of mukluks (boots).

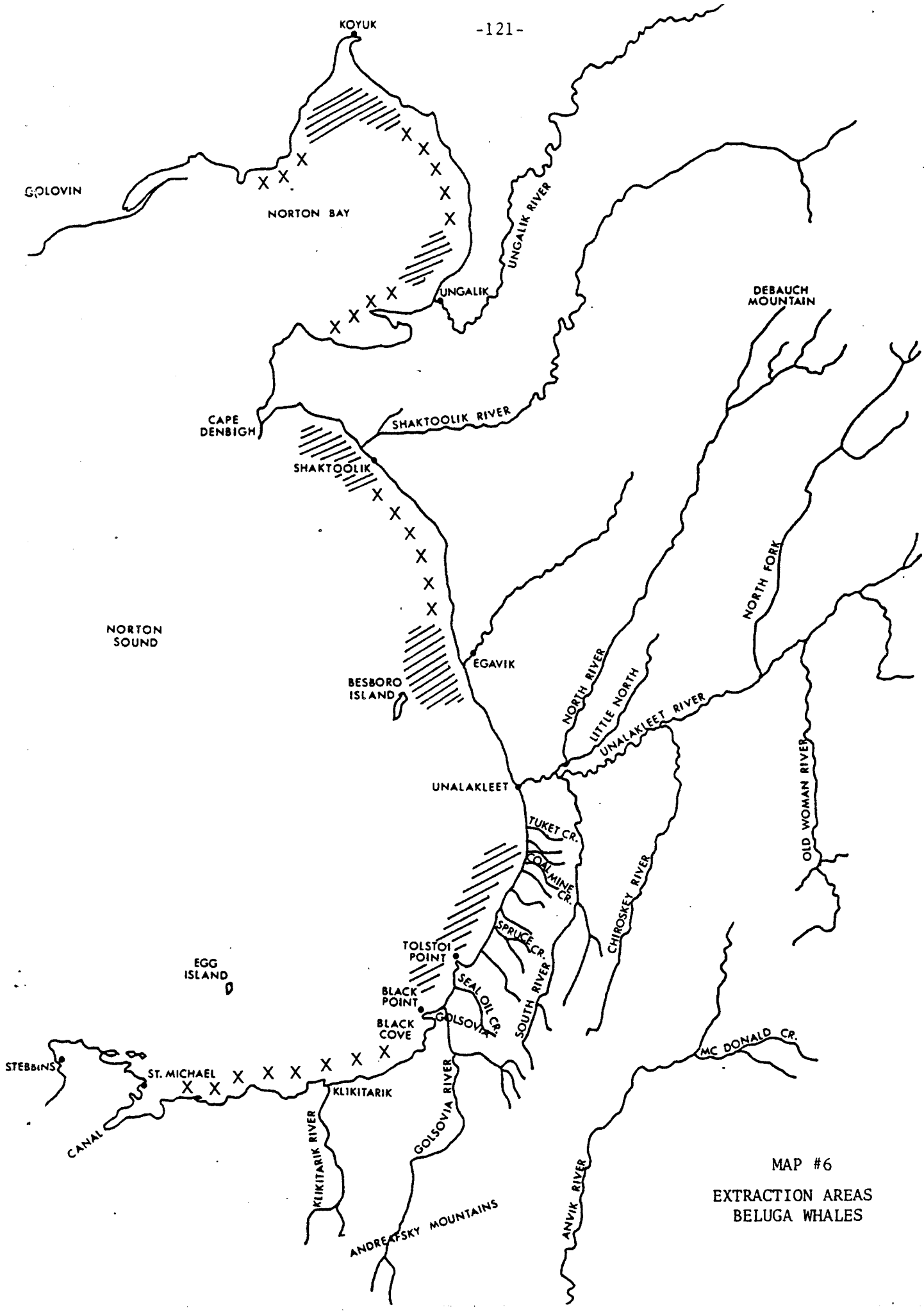
Oogruk is considered one of the premier animals. Oogruk are highly desired for the taste of their oil and meat, the delicacies they yield, and dishes prepared from them. Oogruk, being larger and more difficult to obtain than other seals, are also valued for the greater challenge they present to the hunter and the greater quantity of oil and meat they provide. Oogruk are considered in a category apart from other seals.

White Whale (Beluga Whale), Delphinapterus leucas

Availability:

In waters off the coast from St. Michael to Norton Bay, herds of beluga migrate northward to Norton Bay for calving in the late spring and early summer and southward in the fall.

Availability is affected by ice pack conditions. If Norton Bay is ice-locked, beluga will migrate by. Noise and activity of people will drive beluga away, or scatter herds, causing the whales to seek areas having less disturbance. People report that beluga are seen less often near Unalakleet than 2 decades ago, and attribute the change to noise and activity pollution since the advent of outboard motors, commercial fishing, ATCs, and the fish processing plant near the river's mouth.



MAP #6

EXTRACTION AREAS
BELUGA WHALES

Habits and Characteristics:

Yearlings average 6 - 8 feet and older whales will reach 18 - 20 feet in length. Weight range 2 - 12 tons. Dressed weight of average beluga hunted, 900 lbs. Beluga travel in herds. Hunters report beluga to be highly sensitive to the presence of people and noise. Beluga enter rivers in herds, but have not been sited in the Unalakleet River for several years.

Extraction:

Beluga are hunted during the spring (May-June) and fall (September) migrations. They are sought from St. Michael to Norton Bay, though most hunters from Unalakleet go to Norton Bay (Koyuk, Ungalik areas). Hunters have not had success close to Unalakleet in the last several years. Hunting has been good at St. Michael, Shaktoolik, and Norton Bay.

Like oogruk and seal harvests, beluga harvests have been down the last 5 years, all attributable in part to weather and ice conditions.

Techniques:

Beluga are taken with nets, or from boats by shooting and harpooning. The twine nets are specially made for beluga: they have 18" mesh, are about 25 meshes deep (30 feet) and average 100 feet in length. Nets are set off shore, anywhere from 50 yards to 2 miles out, wherever a deep water throughway for migrating whales is judged to be. When set out of Unalakleet, the nets are put at least 7 miles north or south from the village. Fewer floaters and sinkers are used than on fish nets. The anchors (these can be gunny sacks filled with beach sand) are made heavy enough to hold the nets but light enough to drag and entangle the whale. A buoy marks the net.

Beluga hunted from boats are taken with small caliber rifles (.270 or .308) and kept up with floats attached to toggle-head harpoons. Good places to hunt for beluga with rifles are those shallow areas near river mouths where the whales feed on fish (herring, tomcod). The shallows provide a good setting for chasing and recovering the large animals.

Beluga in open deep water will be easily frightened by hunters and work together to confuse and elude their pursuers (large whales on the perimeter of the herd will direct the younger ones).

A boat or several boats of hunters go together and prepare specifically for hunting beluga. Men try to go with someone recognized as a good beluga hunter, a man who knows the habits of these whales, who insists that all those on the hunt respect his directions, and who has been successful in previous hunts.

Uses:

1) Skin and blubber, the muktuk of a whale

Muktuk is a prized food. However and whenever it is served, it is much relished. It is given to guests as a greeting and a special treat. For a family meal it provides a delightful change of pace in diet and a way of creating a special occasion for family members to enjoy together.

2) Meat and internal organs

Meat and internal organs are used for dog food.

Baleen Whale, unidentified (perhaps Pacific Right Whale, Subalaena sieboldii)

In late June of 1982, a 30' whale, probably a Pacific right, but perhaps a minke, entangled in a commercial fish net off the coast a few miles north of Unalakleet. The owners of the net discovered the whale while it was still in usable condition. They chose a man in Unalakleet to receive the whale, only asking him to remove the whale from their net.

Word passed quickly about the whale and the muktuk it would provide. Young men drove their boats to the site and helped untangle the whale, fasten ropes to it, and bring it to shore. By the time the whale was towed to shore, a large crowd had gathered on the beach. People had come to see the whale being cut up, to help when they could, and then to take home a piece of muktuk. The crowd remained large throughout the afternoon while the whale was being butchered. Some came to look on for a short time and take home muktuk, but many stayed to take part in and enjoy the holiday atmosphere that prevailed. Children played and older folks visited. Everyone on the beach was having a good time.

Those who knew how to cut up a whale gathered around the animal and worked for several hours at removing the muktuk. People from the crowd helped pull the ropes when it was necessary to haul the whale farther onto the shore. The large whale yielded a huge pile of muktuk. As they were cut, the pieces of muktuk were laid in one place on the beach, and the man who had been given the whale was the one to oversee the distribution of the muktuk. He gave everyone who had come for muktuk a piece, sometimes several. He gave the older people and those with bigger families larger portions. He gave a lady who was visiting relatives in Unalakleet a large piece so she would have plenty of muktuk to take to her family and friends when she returned to the city. He gave good-sized pieces to all those who worked to cut up the whale, and to their families. He gave muktuk to the summer volunteers and teachers from Covenant High School who had come to see the whale and watch what was going on. He also kept muktuk and the baleen for himself, his mother, and others of his family, and to have some to give away later as people asked for muktuk. He kept the meat and internal organs for food for his dogs.

Those in Unalakleet who heard about the whale but who couldn't get to the beach themselves sent someone from their family for a piece of muktuk. Those who brought back muktuk shared with relatives and friends who hadn't gotten any, but who they knew would want some for a meal.

People talked about the whale for a long time afterward.

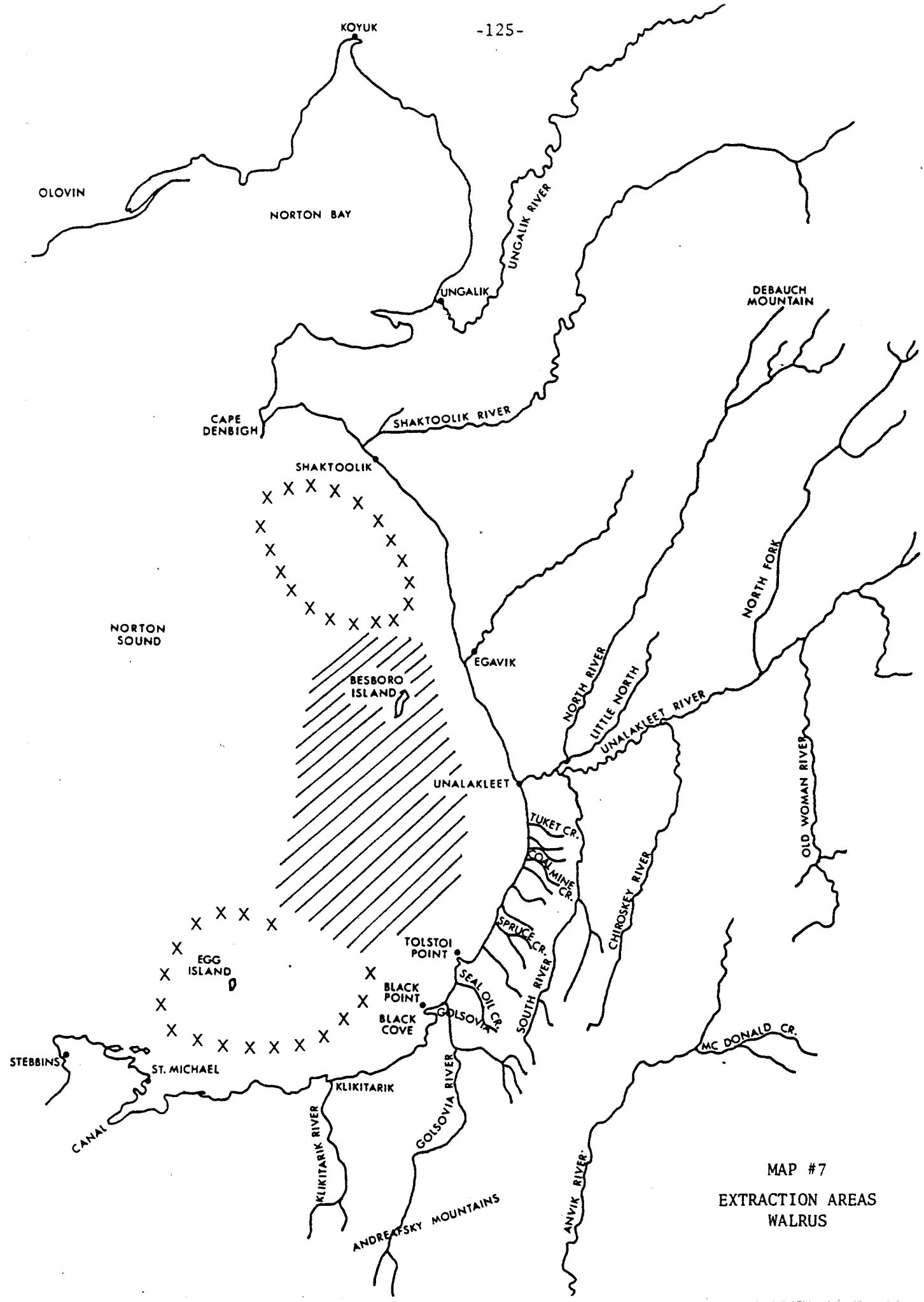
Walrus, Odobenus rosmarus

Availability:

Walrus come into the Unalakleet area near the head of Norton Sound during spring. Unalakleet people observed that in the past five years the numbers of walrus have been increasing within the eastern Norton Sound area in which they travel and hunt. They also observed that 1982 was an exceptional year for walrus, these animals being more numerous than seen before.

Habits and Characteristics:

Walrus average 12 feet in length and to 3000 lbs. in weight. The average dressed weight of walruses taken locally is about 700 lbs. Unalakleet hunters have seen herds of 300 to 400 animals swimming



MAP #7

EXTRACTION AREAS
WALRUS

together. Walrus feed on bottom invertebrates, especially shrimp, crabs, mussels and clams; when they are old, they feed on hair seals. Walrus haul out on the ice and at Besboro Island. Some hunters expressed concern that walrus, especially as they are growing in number, will chase away oogruk and make this desired animal harder to bag. Other hunters said walrus and oogruk can co-exist, so the knowledge of their compatibility is not firmly established among local hunters.

Extraction:

Walrus are taken during the spring and early summer (April-June), when they are migrating through the area. Walrus are shot in the Sound from as far south as Egg Island to as far north as Cape Denbigh, although the area nearer to Unalakleet is the most intensely hunted.

Fewer men from Unalakleet are experienced at hunting walrus, in contrast to the many who are experienced and skilled at seal hunting. People say that more men may try hunting walrus as the number of the animals increases and as interest in ivory carving grows.

Techniques:

Walrus are taken with rifles (.270 and up) and must be shot through the head, rather than the chest since according to local hunters the inflated lungs act as natural floats which keep the animal from sinking until it is hauled onto the ice for butchering. (As noted earlier, seals are shot in the nose if possible, for the same reason.)

Hunters will not try for walrus unless they are in a sufficiently large boat (18' or longer) to bring back the meat and they judge they are sufficiently prepared for hunting such a large and dangerous animal. Men hunt together for safety and to help in dragging the carcass onto the ice for butchering.

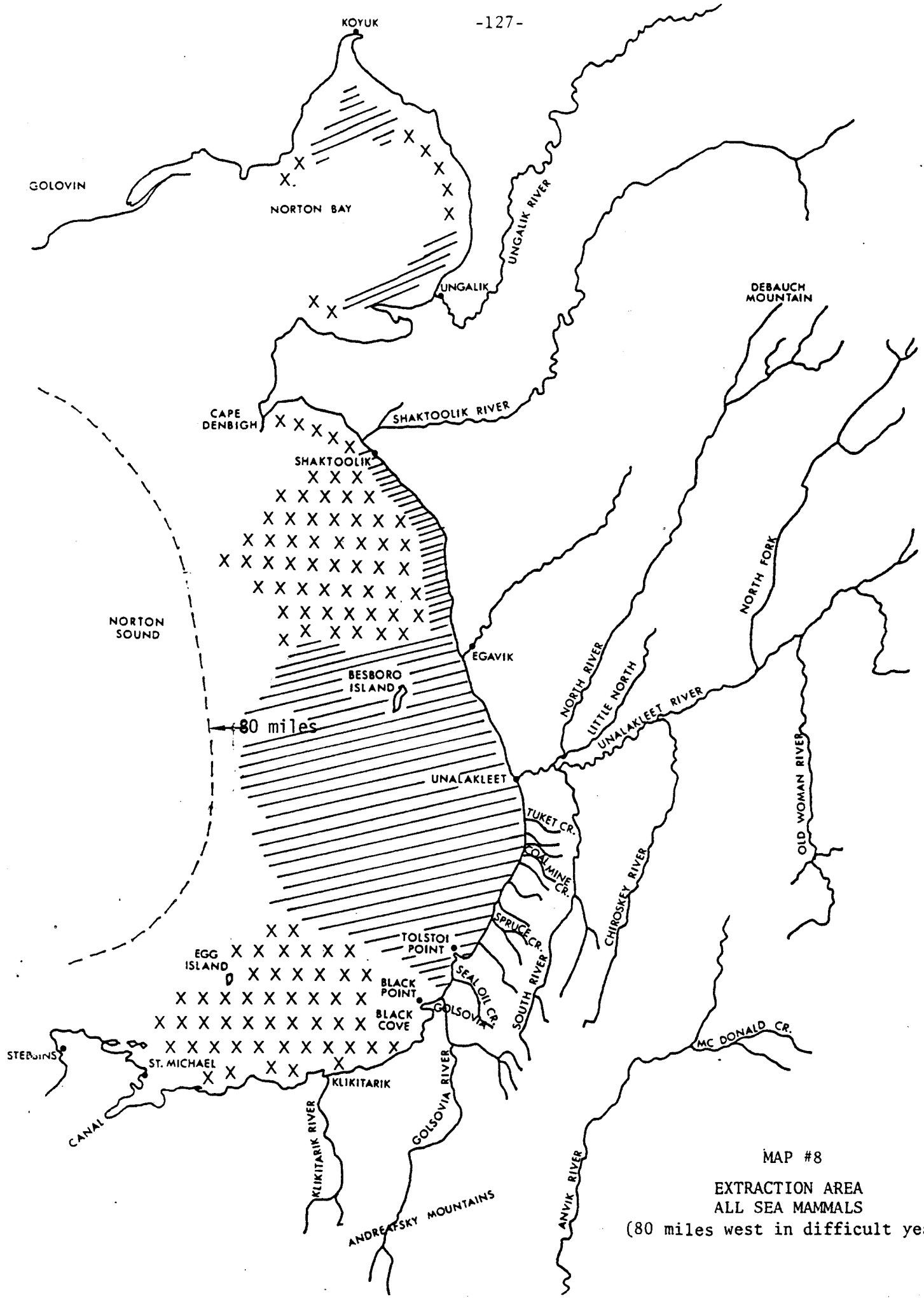
Uses:

1) All the following are eaten:

Skin and blubber, meat (used also for dog food), flippers, internal organs (e.g., liver; guts used also for dog food), stomach contents (crustaceans).

2) Other uses:

Tusks are the major source of ivory for carving and other art work. Tusks are also used for digging implements, such as root diggers.



MAP #8

EXTRACTION AREA
ALL SEA MAMMALS
(80 miles west in difficult years)

Other Marine Mammals sighted in the vicinity of Unalakleet and the area and hunted by Unalakleet people:

Bowhead Whales, Balaena mysticetus (around Besboro Island and Egavik).
Pacific Right Whales (around St. Michael).
Northern Sea Lions, Eumetopias jubata (around Unalakleet River mouth).
Ribbon Seals, Phoca fasciata (incidental to hair seals).

LAND MAMMALS

Caribou, Rangifer tarandus Stonei

Availability:

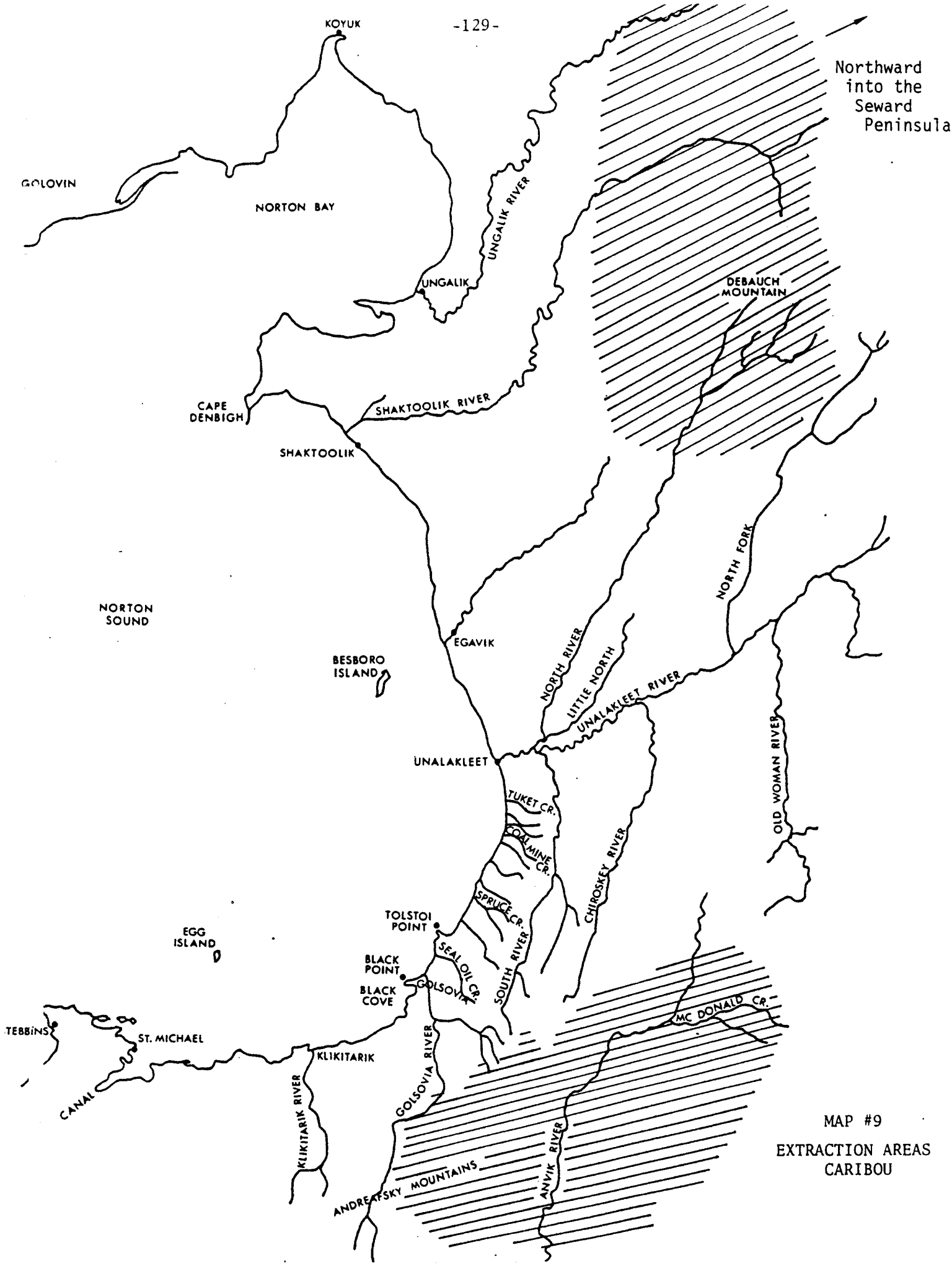
From early fall through winter and spring, as the caribou migrate through the high country tundra regions far back from the coast.

Habits and Characteristics:

Caribou are herd animals, a herd numbering from 10 to thousands of animals in the fall, and from 6 to fifty animals in the winter and spring as they break up, seeking lichens and browse. Caribou feed on lichens, principally, but also other tundra plants, and range through the high country ridges and valleys where lichens, moss, and browse are abundant. Caribou attain weights up to 600 lbs., but animals in the 300-400 lb. range are more often bagged, yielding 250-300 lbs. dressed weight.

Extraction:

Men make hunting trips for caribou from September through May, although many try to put in a supply of caribou as early as possible. Caribou are hunted up the Golsovia and Shaktoolik rivers, and north beyond Koyuk on the Seward Peninsula. Men routinely travel 75-100 miles from Unalakleet to locate the caribou herds. The areas they frequent are common hunting grounds for people of all villages in Norton Sound (Elim, Shaktoolik, Golovin, Loyuk, e.g.). Some men, on occasion, travel northwest as far as Buckland and Kotzebue if they are invited by a relative or friend to hunt there and are guided through the territory. Generally hunters avoid taking does with calves.



MAP #9

EXTRACTION AREAS
CARIBOU

Techniques:

Travel is done by snow machines or dog teams. Camp is made during the several-day to week-long trips. Several hunters travel and camp together. The greater the distance the greater the amount of fuel required and the less meat can be returned to the village.

Caribou are taken with fast, small-calibre rifles (.226, .243 on up), often as several men on separate snow machines drive them forward. Caribou are said to have the habit of circling after a drive, some hunters stay at the point where the drive began and bag the animals as they return several hours later.

Uses:

1) Meat

All meat is taken for consumption and eaten fresh; or stored for later use by freezing or drying.

2) Organs

Organs are also taken for consumption.

3) Fat

Used as an ingredient in agootuk, Eskimo ice cream.

4) Hides

Used for sled or camping mattresses. Leggings used for making mukluks.

5) Dog food

The only time meat or hides are discarded is when they are diseased or infected with warbles.

Reindeer, Rangifer tarandus

The closest tame (quasi-domesticated) reindeer herd is at Shaktoolik. A herd is currently being started at St. Michael-Stebbins from seed animals from Shaktoolik. People from Unalakleet buy reindeer meat from the manager of the Shaktoolik herd, also from Nome, Golovin, and Shishmaref. They also obtain leggings, used in making mukluks, from the same sources. Recent discussions at Unalakleet have revived the idea of either forming a town herd or establishing a cooperative among individual herd owners.

Moose (Alaska-Yukon), Alces alces gigas

Availability:

Year around in the river and creek valleys, flats and hillsides. Some hunters report that moose have become harder to find, either scarcer or driven farther up river and into the hills by the number of hunters out for them in the fall.

Habits and Characteristics:

Moose feed on willows, birch, sedges and forbes along the water courses. They are solitary animals. Moose have acute hearing which alerts them to hunters before they are even seen. Once seen, moose will lead hunters on what often becomes a wild goose chase over timbered land.

Moose grow to a height of 8' at the shoulders and 10½' in length. Weights often exceed 1400 lbs. with the average dressed weight between 700-900 lbs.

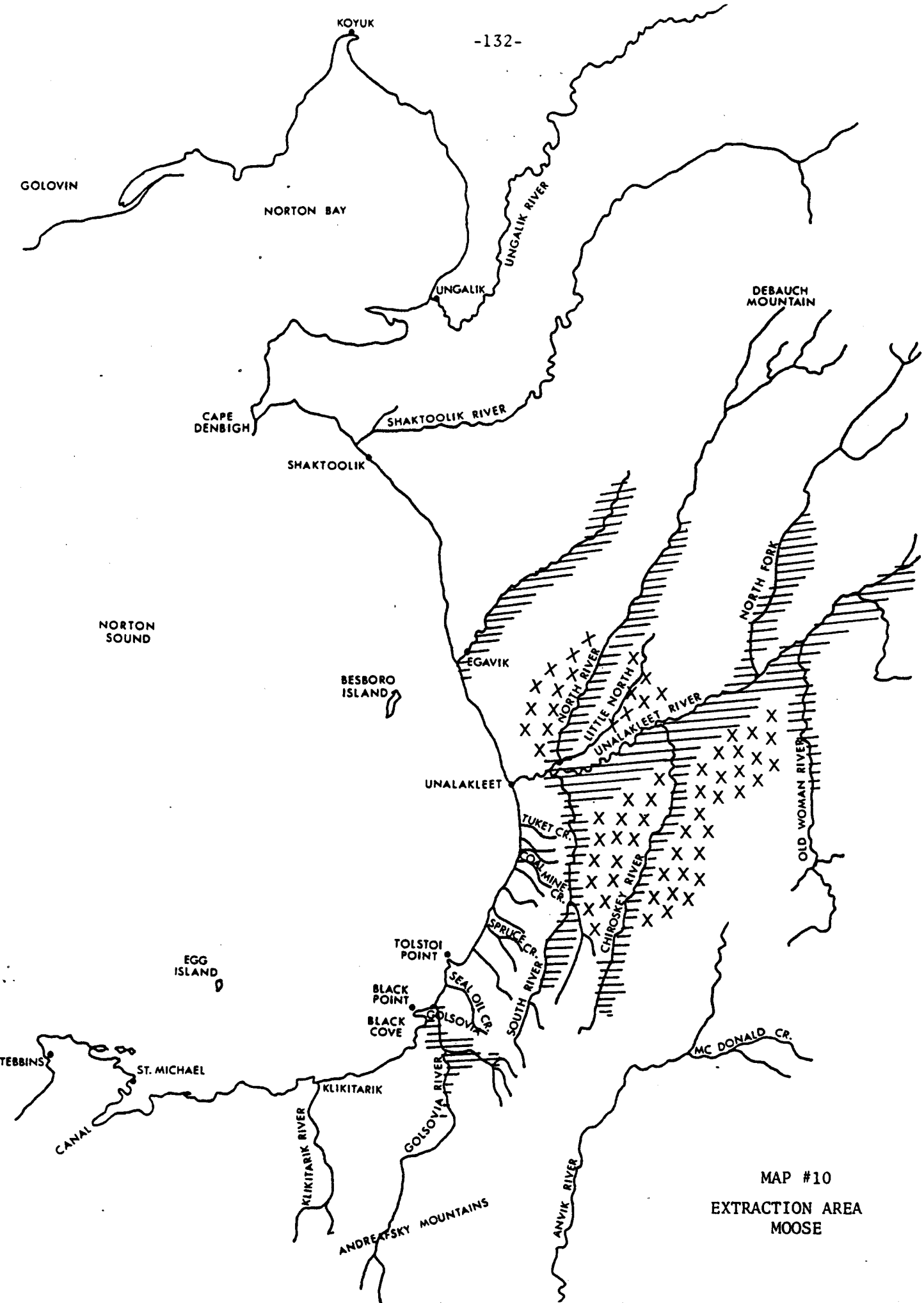
Extraction:

Moose are primarily taken from fall (August, when the hunting season opens, through December or January). Men hunt the Unalakleet, North, South, Chiroskey, Old Woman, and Egavik drainage systems for moose. Drainages to the south along the coast at least to Golsovia are also scoured in the search for moose. Occasionally a Unalakleet hunter will be invited by a relative or friend to hunt in a new, more distant, and unfamiliar territory, such as the Nome area. Hunters generally will not take females with calves.

Techniques:

Stalking is a principal technique as men, usually two or more friends or relatives, join to assist one another on hunting trips up river. In the fall, they take boats and look for moose in the willows and ridges along the river banks; in the winter they travel by snow machine. The trips usually last from a few days to a week or more.

In the fall, moose hunting trips may be conducted from fish camp when families are netting silvers and chars. When camping or when going up river in the fall to extract and store fish and berries, people always are alert and prepared in the event a moose is seen.



MAP #10

EXTRACTION AREA
MOOSE

Moose are bagged with a rifle of .243 caliber, or larger, although Unalakleet hunters might use even smaller, flat, fast-shooting calibers, such as .226 swift. When hunting moose with boats, men employ a drifting technique. For example, they drive the boat up river miles past where they are camped and then shut off the motor, allowing the boat to drift slowly and quietly down river. As they drift, they watch for moose standing on the river banks or crossing the river and listen for the sounds of other animals and forest noises that indicate a moose is farther down river or in the timber. Occasionally they land to check a marshy or flat area that moose are known to frequent. Winter hunting must be done in sheltered river beds or forested areas where moose can locate sedges, saplings, or bark and branches--either exposed or exposable--through pawing.

Uses:

1) Meat and internal organs

All meat is taken for consumption, eaten fresh or stored for later use by freezing and drying. Organs are taken for consumption. Both are also used for dog food.

2) Antlers

Moose horn is used for ulu handles, scraper handles (for working hides), and jewelry.

3) Shoulder blades

Shoulder blades are used to make moose calls.

Brown Bear (including grizzly), Ursus horribilis kidderi tundrensis; Ursus h. alascensis

Availability:

Year around, throughout the area (winter hibernation). Villagers observed that brown bears are on the increase, their numbers being considerably greater than a decade ago.

Habits and Characteristics:

These are the major influents in the area, influencing (not dominating) the distribution of anadromous fish, other mammals, and man. Brown bears feed on fish, big and small game, and carrion scavenged from the beaches and rivers in the summer. During fall, their diet is

heavily berries. They raid fish racks and nets for salmon at people's fall camps along the river, and break into cabins at the camps. Bears travel singly or in twos or threes (a female and cubs to the yearling stage). Weights often exceed 750 lbs., averaging about 500 lbs. These humpbacked bears are often 8' in length.

Extraction:

Brown bears are hunted in the late fall for hides and meat. Villagers say the taste of bear meat is improved by a fall diet heavy in berries rather than scavenged food, and in the early spring when they first come from hibernation for hides. A bear is also killed when it becomes too much of a nuisance to a camp (stealing fish, breaking into the cabin), or in self-defense when it is encountered and charges.

Bears are for the most part hunted incidentally, often for protection, when they are encountered on trips for other purposes.

Techniques:

Bears are frequently hunted with high-powered, yet small-caliber rifles (.226 swift, .243). Summer evenings, or at dawn's light when the bears appear in the rivers or along the coast, are good times for hunting. At those times they appear to eat spent or spawning salmon, or to feast on beach throw. Hunters go with a partner.

Uses:

1) Meat

Meat (including the head) is consumed or used for dog food.

2) Hides

Taken for throw blankets and mats.

3) Claws

Used for jewelry (necklaces, earrings).

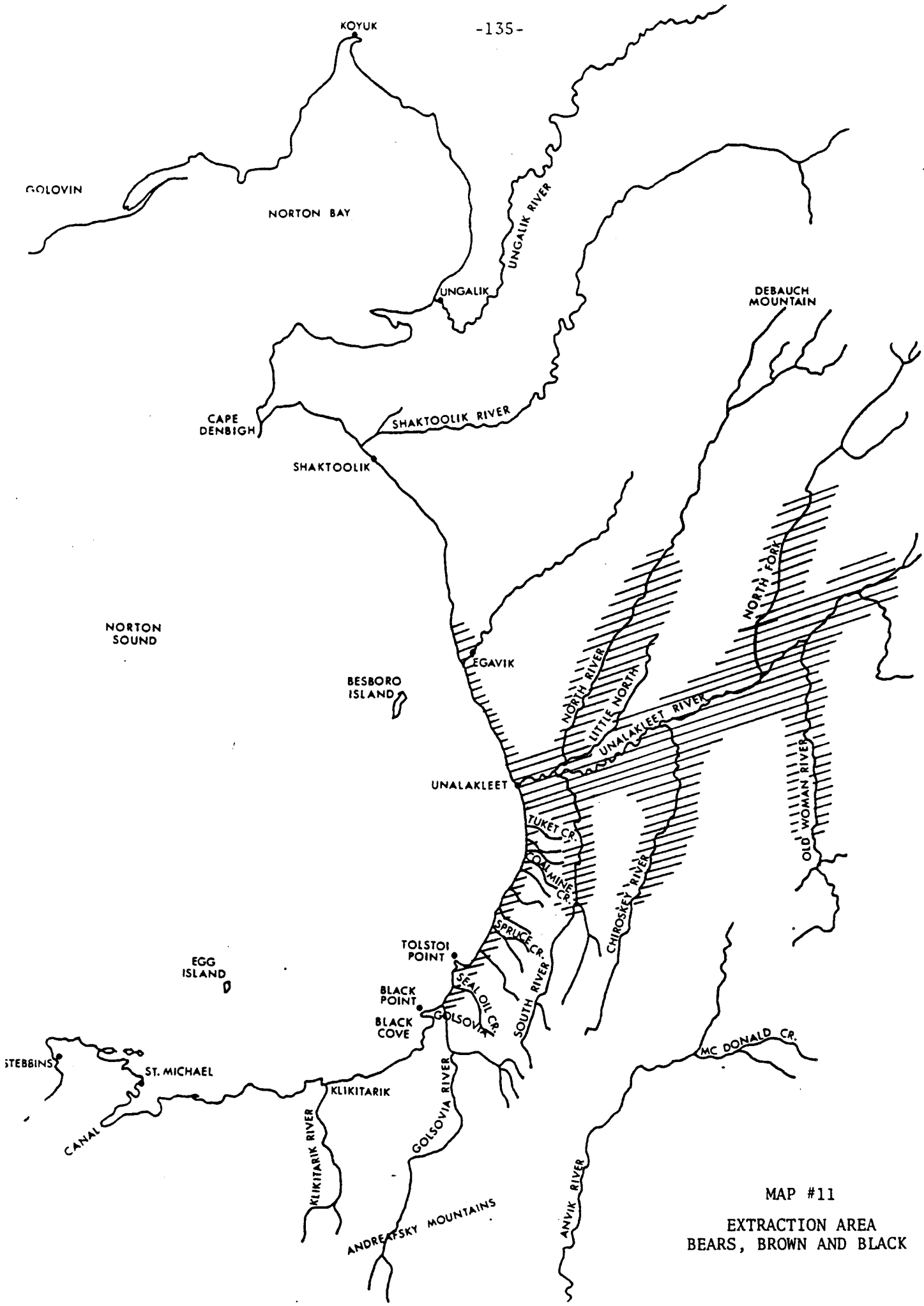
Black Bear, Ursus americanus

Availability:

Year around, throughout the area (winter in hibernation).

Habits and Characteristics:

Black bears feed on fresh fish, berries, carrion, small game. Like brown bears, they have home territories, often marked by claw marks



MAP #11

EXTRACTION AREA
BEARS, BROWN AND BLACK

on trees. These quarrelsome animals are regarded as dangerous. Black bears grow to 350 lbs. and 6' in length.

Extraction:

Black bears are hunted from spring through fall. Their hides are especially good in the spring when they first come from hibernation. According to villagers, their meat, like that of brown bears, is especially good in the fall, after a diet largely of berries. Bears are for the most part hunted incidentally, when they are encountered on trips for other purposes, or when they are considered dangerous and threatening.

Techniques:

Bears are hunted with small caliber, high-powered rifles (.226, .243, .270 on up), that shoot fast and flat.

Uses:

1) Meat and internal organs

Meat, including the head, and internal organs, including the kidneys (a delicacy), heart, liver and sometimes lungs, are consumed. Meat and internal organs are used for dog food.

2) Fat

Fat is used like butter.

3) Hides

Used for throw blankets and mats.

4) Claws

Used for jewelry (necklaces, earrings).

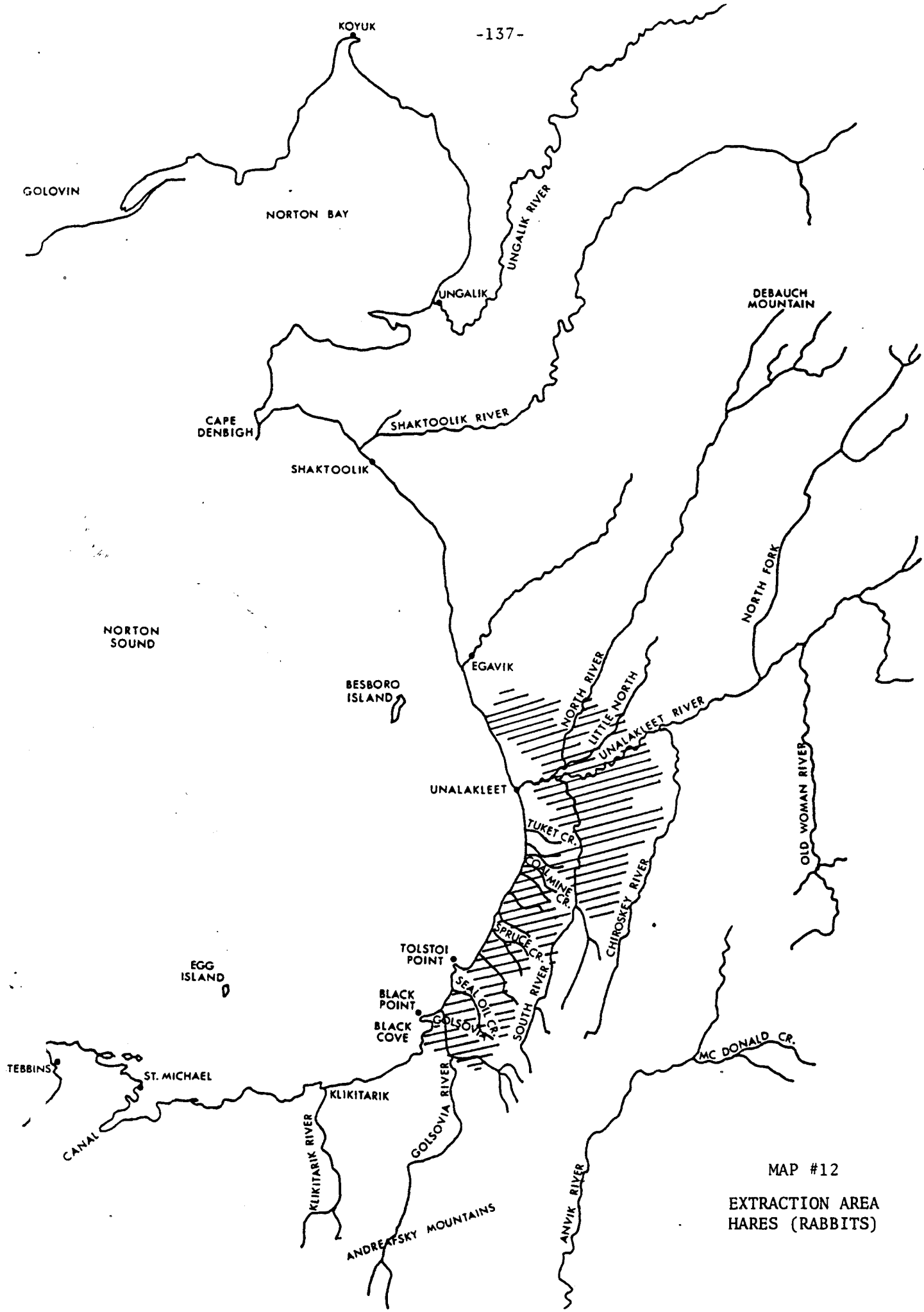
Hares (Rabbits)

Alaskan Hare (Snowshoe Rabbit), Lepus othus othus, and Arctic Hare, Lepus arcticus

Availability:

Snowshoe rabbits (Alaskan hares) follow a several (6 or 7) year cycle of abundance, of which one or two years are marked by extremely high numbers of rabbits, then three slack years when they are low in numbers, then three years of increasing numbers until another peak year is experienced. The 1981-82 year was such a peak year.

Snowshoe rabbits are found throughout the area where willows grow, along all creeks and rivers and in the hills; this area is also generally forested.



MAP #12

EXTRACTION AREA
HARES (RABBITS)

Snowshoe rabbits are much more plentiful than Arctic hares, which are found in small number, yet which are also much larger animals than Lepus othus.

Habits and Characteristics:

Both hares occur in large groups and have two litters per year, of up to 8 young per litter. Snowshoes average two pounds in weight. They occupy the same willow habitat as ptarmigan. The meat of both species of hares changes in taste during spring rutting, and at that time they are hunted only for dog food.

Arctic hares are often 15 lbs., lean animals averaging 12 lbs. Both species are white in the winter months. Arctic hares are unique in that they are not known to touch their fore feet to the ground when running.

Extraction:

Snowshoes are hunted from fall through winter and spring (October or November through March or April). Men hunt hares along water courses and in hills from as far south of Unalakleet as the hills and valleys 25 miles distant to as far north as the valleys north of Blueberry Point. Within the Unalakleet River drainage, hares are often hunted in the north and south foothills, along the main river channel, and along the North River Road.

Techniques:

Hares are taken with .22 rifles and, from time to time, 20 gauge shotguns. Hunters reach hare areas by snow machine, dog team, or on foot (for those areas close to town when hares are in abundance). Hunters go out alone, with one or two partners, or in groups as large as 10 or 15 men.

A group of hunters usually practices a drive technique. The group travels by snow machines to a particular creek and beginning at one end, works together to flush the animals into the open and drive them along the creek. The animals can be seen by the marks they make in the snow as they run. This method bags a large number, although in good years of the snowshoe, a single hunter can also bring in a large number. Conservation techniques are practiced so that only some of the animals herded in each drive are killed.

Uses:

1) Meat and internal organs

Meat and internal organs (heart and liver) are for human consumption or dog food.

2) Skins

Used as boot liners, and for childrens' parkas, hats, and booties.

Beaver, Castor canadensis belugae

Availability:

Year around in the river drainages of the area.

Habits and Characteristics:

Quality of the furs vary with the season, as does the taste of the meat. Beavers build lodges with entrances below the level of the river ice in which several families reside. These thick and long-furred animals reach weights of 60 lbs. and 3½' in length (including tails).

Extraction:

Beaver are primarily taken from fall through spring (October-May). Hunters search out the location of beaver dams along the Unalakleet and North Rivers, particularly; also the Egavik River, but trap lines are established on all river drainages north and south of the Unalakleet drainage.

Techniques:

Trap lines are set with ice-up in the fall, then checked regularly and when on hunting expeditions. Commerical traps are used. If the occasion arises, beavers might be shot with a .22 caliber rifle. Trap lines are checked by snow machine transport.

Uses:

1) Meat, fat and internal organs

Meat, fat and internal organs (kidneys and heart) are consumed by humans or are used for dog food.

2) Skins

Skins are used for trapper hats, the borders of parkas, boots (mukluks), and baby booties, or are sold for cash to fur buyers.

3) Tails

Tail is consumed as a delicacy.

Ground Squirrel, Spermophilus undulatus ablusus

Availability:

Year around, in high hills habitat throughout the area (winter in hibernation.)

Habits and Characteristics:

The fur and meat of ground squirrels are best during the first two weeks the squirrels are out of hibernation. Afterwards, during mating, the fur is ruined and the meat becomes stronger tasting. Arctic squirrels live in colonies, a female bearing as many as seven offsprings. They are herbivorous.

Extraction:

Squirrels are taken for their meat and furs as soon as possible after they come out of hibernation (about a two-week period) during spring (April-May). Afterwards squirrels are taken for dog food.

Techniques:

Squirrels are taken by trapping (small commercial traps so as to cause minimal damage to fur) or by shooting (.22 caliber). Squirrels are bagged during the time of year when travel is still by snow machine or dog sled.

Uses:

1) Meat

Meat is consumed or used for dog food.

2) Skins

Skins are used for parka linings and for the outer shell of womens' fancy, or dress, parka. Skins are occasionally sold.

Porcupine, Erethizon dorsatum myops

Availability:

Found in a habitat of low hills forested with pines.

Habits and Characteristics:

Usually nocturnal, these animals eat bark and young shoots in the forested region. They grow to nearly 3' in length, with tails, and up to 30 lbs. Solitary animals, except during the rutting season.

Extraction:

Bagged incidentally, when encountered on a trip for other purposes.

Techniques:

Shot with a rifle (.22 caliber). Clubbed when not up a tree.

Uses:

1) Meat

Meat is consumed or used for dog food.

2) Quills

Quills are used for jewelry (earrings, necklaces).

Fur-bearing Animals

The following animals are taken principally for their pelts:

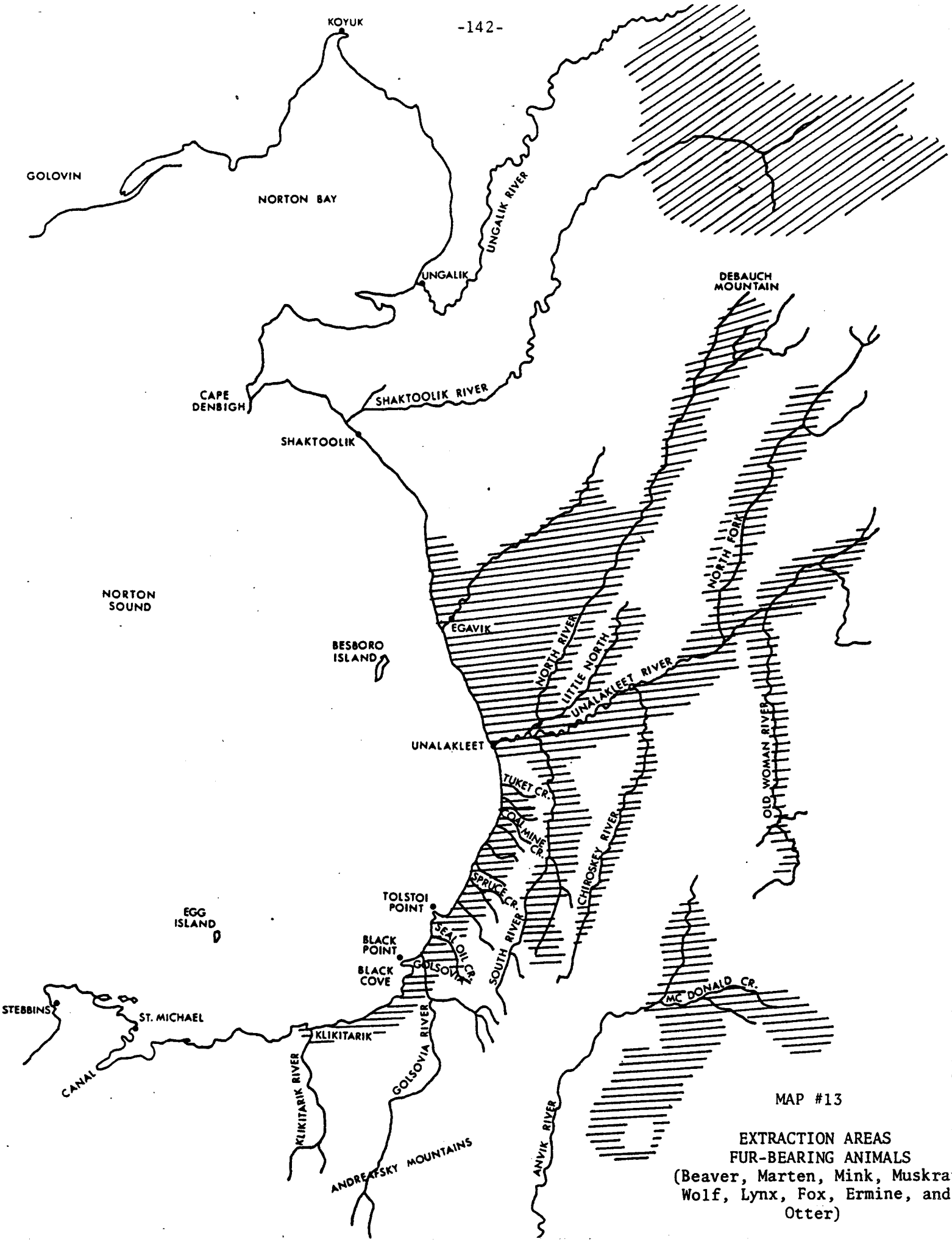
Red Fox, Vulpes fulva alascensis
Cross Fox, Native identification (intergrade or red-fox variant)
Arctic Fox, Alopex lagopus innuitus
Ermine, Mustala erminea arctica
Mink, Mustela vison ingens
Marten, Martes americana actuosa
River Otter, Lutra canadensis yukonensis
Muskrat, Ondatra zibethicus spatulatus
Lynx, Lynx canadensis
Wolf, Canis lupus pambasileus
Wolverine, Gulo luscus katschemakensis
(See also Beaver, Squirrels.)

Availability:

These animals are present all year in the area. They occupy a variety of habitats: high country, high hills, and tundra (white fox, wolf, wolverine); hills and valleys, timbered and/or vicinity of rivers and creeks (red and cross fox, marten, river otter, lynx, wolf, wolverine); river and creek banks, lakes and ponds (mink, muskrat); coastlines (red and cross fox). The numbers of some of these animals (foxes and lynx) vary in cycle with hares, a principal food.

Habits and Characteristics:

Most of these fur animals are solitary, although wolves reside in packs. Wolverines are considered to be very smart animals and difficult to trap. The arctic fox, which is white during most of the year, is especially prized during its summer blue phase.



MAP #13

EXTRACTION AREAS
FUR-BEARING ANIMALS
(Beaver, Marten, Mink, Muskrat, Wolf, Lynx, Fox, Ermine, and Otter)

Extraction:

These fur animals are taken from October or November through March or April (Beaver into May).

The entire Unalakleet River Valley (from mouth to headwaters) and its tributaries (North River, particularly) are trapped. All the country five or ten miles out of town to over 100 miles inland is trapped. To the north, the coastline and creek valleys, Egavik River valley, and even the area around Shaktoolik is worked. To the south, the coastline and creek valleys as far as the Yukon drainage side of the Andreafski range are worked. The high country is worked throughout the entire winter. Fur-bearing animals are also taken when seen on subsistence hunting trips (e.g. when wolves are sighted around caribou herds).

Techniques:

These animals are primarily trapped. Men lay a line of traps, and periodically take trips by snow machine lasting from one day to several days to check their trap lines. Laying and checking trap lines is ordinarily an individual undertaking. A few men spend the entire winter trapping, entering town only to reprovision the foods they cannot get from the land while at camp. When hunting, and if a fur-bearing animal is sighted, a man will bag it with a rifle, usually a .22 caliber.

Uses:

1) Furs

Commercial sale of furs. Furs are sold to local buyers (AC Co. Store, UNC Store; private individuals for their own subsistence use; fur buyers from Shaktoolik).

2) Subsistence use of furs

Parka ruffs (wolf, wolverine, fox); parka linings (lynx, muskrat; see also squirrel); mittens (wolf); hats (fox, lynx, marten, otter; see also Beaver); borders of footwear and parkas (fox, otter, wolverine; see also Beaver).

3) Meat

Meat is often used as dog food and trap bait.

BIRDS

Ducks

Eider (common), Somateria mollisima

Eider (spectacled), Lampronetta fischeri

Eider (steller's), Polysticta stelleri

Scoter (common) (Whistler), Oidemia nigra

Old Squaw (Whistler), Clangula hyemalis

Pintail (Sprig), Anas acuta

Mallard, Anas platyrhynchos

Shoveler (Spoonbill), Spatula clypeata

Widgeon (American) (Bluebill), Mareca americana

Common Golden Eye, Bucephala clangula

Green-Winged Teal (Pocket), Aras carolinensis

Greater Scaup, Aytha marila

Availability:

The sea ducks in eastern Norton Sound, i.e., eider, scoters and old squaw ducks, are strictly coastal and island birds, they are not found on the river flats or upriver. Eider ducks are making a comeback in numbers, having been abundant years ago, then experiencing a marked decline that is just now reversing. People connect the decline with the introduction of boat motors and associated noise pollution.

The surface feeding mallards, pintails, shovelers, widgeons, and teal ducks inhabit the flats, marshes, rivers, and lakes near Unalakleet, St. Michael, and Shaktoolik. These ducks are found in much greater numbers in the area around St. Michael and Shaktoolik than Unalakleet.

All species of ducks are in the Unalakleet area from May through late September or early October.

Habits and Characteristics:

Ducks begin nesting about 1½ to 2 weeks after their spring migration into the area. During the summer, they raise their young. They begin flying again towards fall, about a month before they migrate south.

Ducks fly in flocks of 10 to 30 birds. The coastal ducks average the largest in weight (eider ducks, old squaw and scoters ca. 6-8 lbs.). Among the other ducks pintails, mallards, shovelers and widgeons average 2½ -3 lbs., and teal are the smallest, averaging about 1 lb.

Extraction:

Hunters generally take only the eider duck male, going for the duck and its eggs about the same time. This is to preserve the females so eider ducks can continue to make a comeback in numbers.

All other ducks are hunted for a 1½ to 2 week period in the spring, from their arrival until egg-laying begins. Ducks are not hunted from nesting through the summer while the young are being raised. After they begin flying in the fall, ducks are again hunted until they migrate (about a 2 to 3 week period). Ducks are hunted throughout their area of availability. Widgeons are a highly preferred duck because they are good tasting and, being fast flying, they are a challenge to hunt.

Techniques:

Ducks are hunted with shotguns, usually 12, 16 or 20 gauge. People watch carefully for signs of the arrival of ducks, geese, cranes and other birds in the spring. The time for hunting is short, and the concentration of birds is not great in the area surrounding Unalakleet. For a very few days, lots of people hunt on the flats immediately south of town, but the number of hunters quickly diminishes the availability of birds. The most serious and successful hunters are at the right place at the right time. They set up an early camp along the coast or are the first to arrive at their upriver camps, to catch the birds as they enter, and they spend much or all of the 1½-2 week hunting period at camp.

People can travel quickly to the flats for hunting, but boat travel is required to set up camp down the coast or upriver to catch the flocks as they fly over. The area along the flats, south to Big Lake, is camped on a first come, first serve basis. South of Big Lake to Klikitarik, families set up spring camp at the same place each year. Each family has its own special camp place, known to and respected by everyone else. Families make spring camp to hunt birds and eggs, seals, oogruk, walrus and whales, and greens. These same camp places can be used in the fall for gathering berries. Each family has its own special and established camp place upriver, which may be used for bird hunting in the spring and fall.

Uses:

1) Meat and internal organs

Ducks are taken for their meat and internal organs (i.e. heart, lungs, liver and gizzard).

2) Down

The down of eider ducks is used for pillow stuffing.

3) Tails

The tail section of pintail ducks can be saved intact, dried, then fanned out, and used as wall decorations.

Geese

Canada Goose (Black Goose), Branta nigricans

Emperor Goose, Philacte caragica

White-Fronted Goose (Yellow-footed Goose), Anser albifrons

Snow Goose (White Goose), Chen hyperborea

Black Brant, Branta nigricans

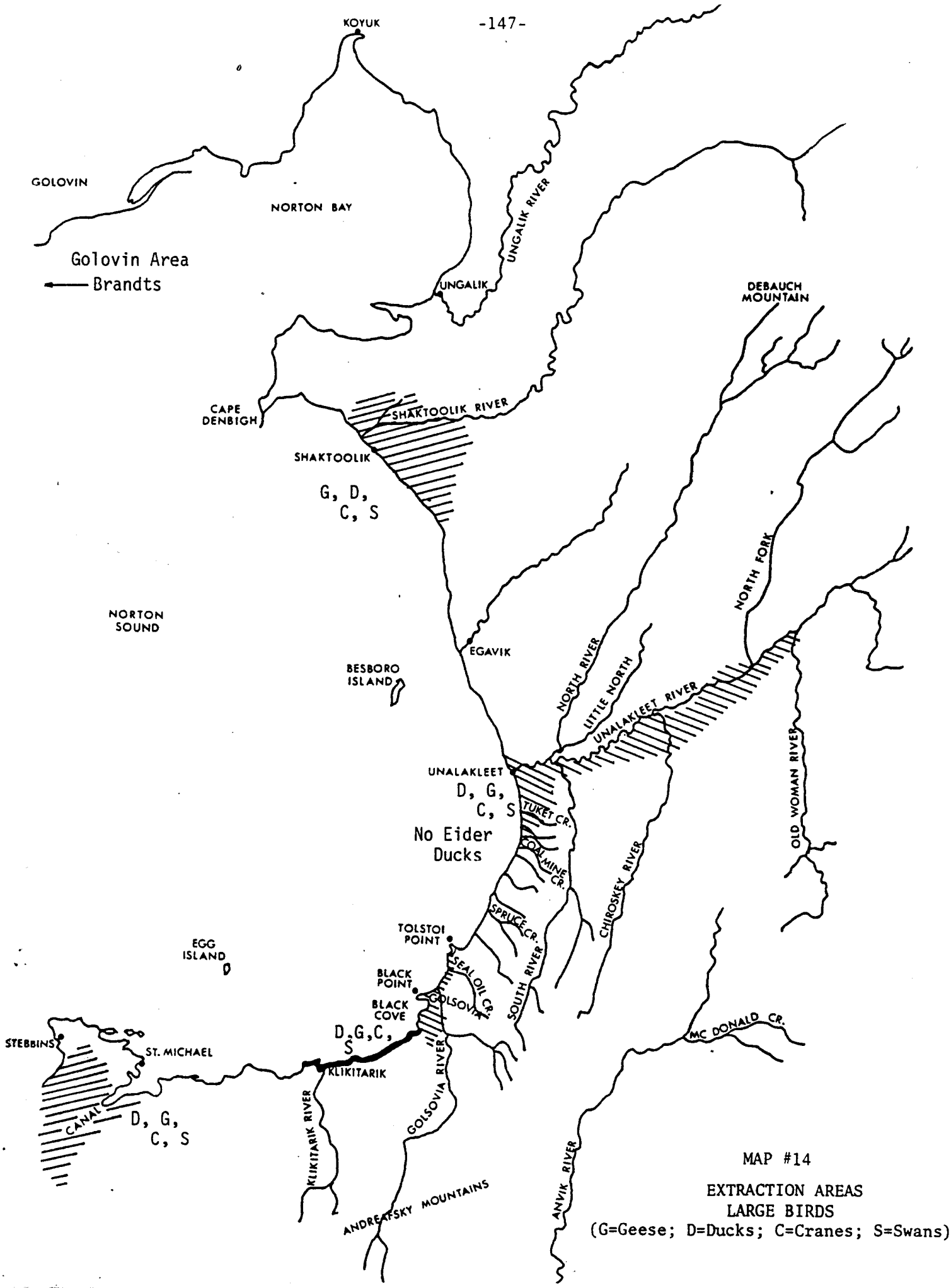
Availability:

Geese are found in the area from May through late September or early October. Some fly in and through the Unalakleet area, black brants passing through quickly, but the others remaining for a longer time in the flats, marshes, along rivers and by lakes, and some eventually nesting upriver. A much greater number of geese, including other varieties (such as the emperor goose), fly in and nest at St. Michael and Shaktoolik than at Unalakleet.

In the spring, brants are available for the shortest time, only one or two days, as they pass through, and snow geese pass through in a week or less. But the Canada and white-fronted geese are around longer, for about two weeks on the flats and upriver before they begin nesting. In the fall, geese begin flying and are available for about two and a half to three weeks before migration.

Habits and Characteristics:

Those geese that remain in the area, begin nesting upriver, and to a lesser extent in the flats, about two weeks after having first arrived. Geese fly in flocks of two to 30 birds. The Canada, snow, and white-fronted geese average about 8-10 lbs. Brants and emperors are somewhat smaller, averaging 5-7 lbs.



MAP #14

EXTRACTION AREAS
LARGE BIRDS
(G=Geese; D=Ducks; C=Cranes; S=Swans)

Extraction:

Hunters generally do not hunt geese after they begin nesting or through the summer while they are raising their young. Geese are hunted for the period (one day to two weeks) in the spring, that they are available before nesting or flying on; and for the period (about 3 weeks) again in the fall as they head southward or after they begin flying before migration.

Hunters may go to brant nesting areas at Golovin if they miss these birds the short time they are available around Unalakleet. Hunters may also decide to go to Shaktoolik or St. Michael, where the numbers of geese, cranes, and ducks are greater. People go hunting alone, with partners, or in families. The actual hunting is done individually, but the travel and camping is most often with relatives and friends.

Techniques:

The same gauge shotgun (12, 16 or 20) is used, as for ducks. People are skilled at calling down geese by voice or at making their own goose calls from spent shotgun shells. Decoys are sometimes used. (For additional information, see Ducks.)

Uses:

1) Meat and internal organs

Meat and internal organs are consumed.

2) Down

Goose down is used to stuff pillows, quilts or other articles.

3) Wings

Wings are used as brooms around camps.

Sandhill Cranes, Grus canadensis

Availability:

Cranes, like geese and ducks, arrive in the spring and are present in the area until their fall migration. Cranes nest in the Shaktoolik flats in large numbers. They also gather in the upper reaches of the Unalakleet River just before they head south in the fall.

Habits and Characteristics:

Cranes average 10 lbs., dressed weight. They fly in flocks of three birds to 30. In the fall, cranes gather in the thousands in the flats far up the Unalakleet River.

Extraction:

Hunters generally will not bag cranes once nesting begins and during the summer while the young are being raised. In the spring, hunters have about a two-week period to hunt cranes in the flats and upriver from Unalakleet. In the fall, hunters travel to Shaktoolik flats or far up the Unalakleet River to locate cranes.

Techniques:

The preferred gun for taking cranes is a 16 gauge, although hunters will also use a 12 gauge or even larger shotgun (10 gauge). Some hunters are skilled in calling cranes.

Uses:

1) Meat and internal organs

Meat and internal organs are consumed.

2) Down

Crane down is used for stuffing pillows or other articles.

Whistling Swan, Olor columbianus

Availability:

Swans arrive in the spring, somewhat later than the first geese and ducks. They are found around lakes in the flats near Unalakleet and upriver throughout the marshes at the edges of the birch shrub.

Habits and Characteristics:

Swans average 15-20 lbs. dressed weight. They are always found in pairs, mating for life, but as many as 8-10 birds may fly together.

Extraction:

Swans are not hunted during and after nesting.

Techniques:

Swans are taken with 12 or 10 gauge shotguns. Some hunters are skilled at calling swans.

Uses:

1) Meat and internal organs

Meat and internal organs are consumed.

2) Skins

Some people make seats from the feathered skins of swans.

Ptarmigan (Willow), Lagopus lagopus, Ptarmigan (Rock), Lagopus mutus

Availability:

Ptarmigan inhabit the area year around rather than seasonally. Rock Ptarmigan inhabit the low hills east and southwest of the village, whereas willow ptarmigan inhabit the willow-bush shrub tundra near the river and along and near the flats south of the village.

Habits and Characteristics:

Ptarmigan weigh about 1 lb. dressed. They flock from 3-5 up to 15-20 birds. Their food is willow.

Extraction:

Ptarmigan are hunted from October through March in the tundra flats, foothills and stream valleys just north and south of town and to about fifteen miles upriver; ptarmigan can also be hunted on tundra flats farther upriver.

Techniques:

Ptarmigan are taken with .22 rifles or small gauge (20) shotguns. Hunters pursue ptarmigan on foot, with snow machines or dog teams. Hunters stalk alone or with partners. Often a combination of hares and ptarmigan are sought, but hunters bag whichever is available.

Uses

1) Meat and internal organs

Meat and internal organs are consumed.

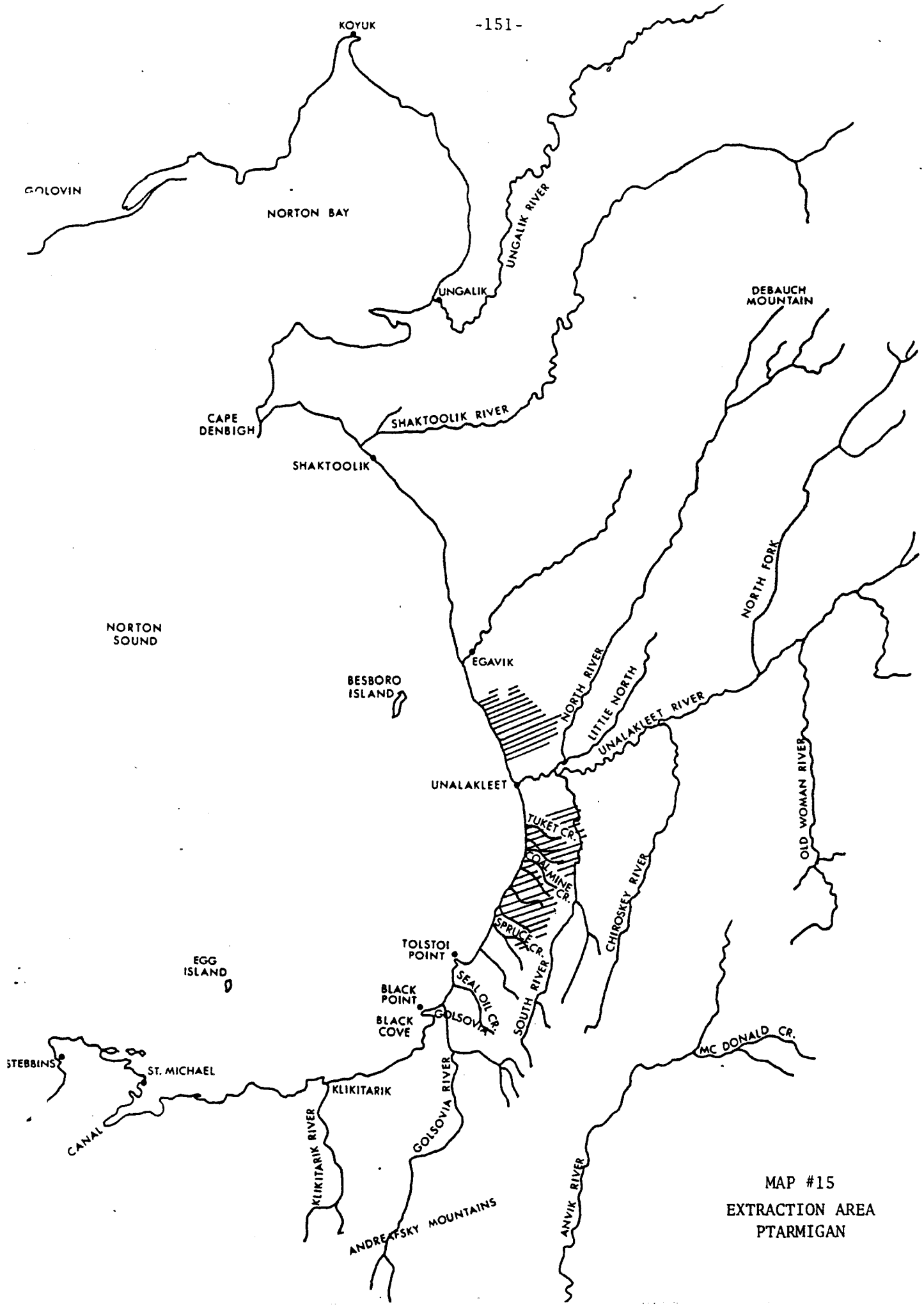
2) Tails

The tail sections can be saved intact, dried, then fanned out and used as wall decorations.

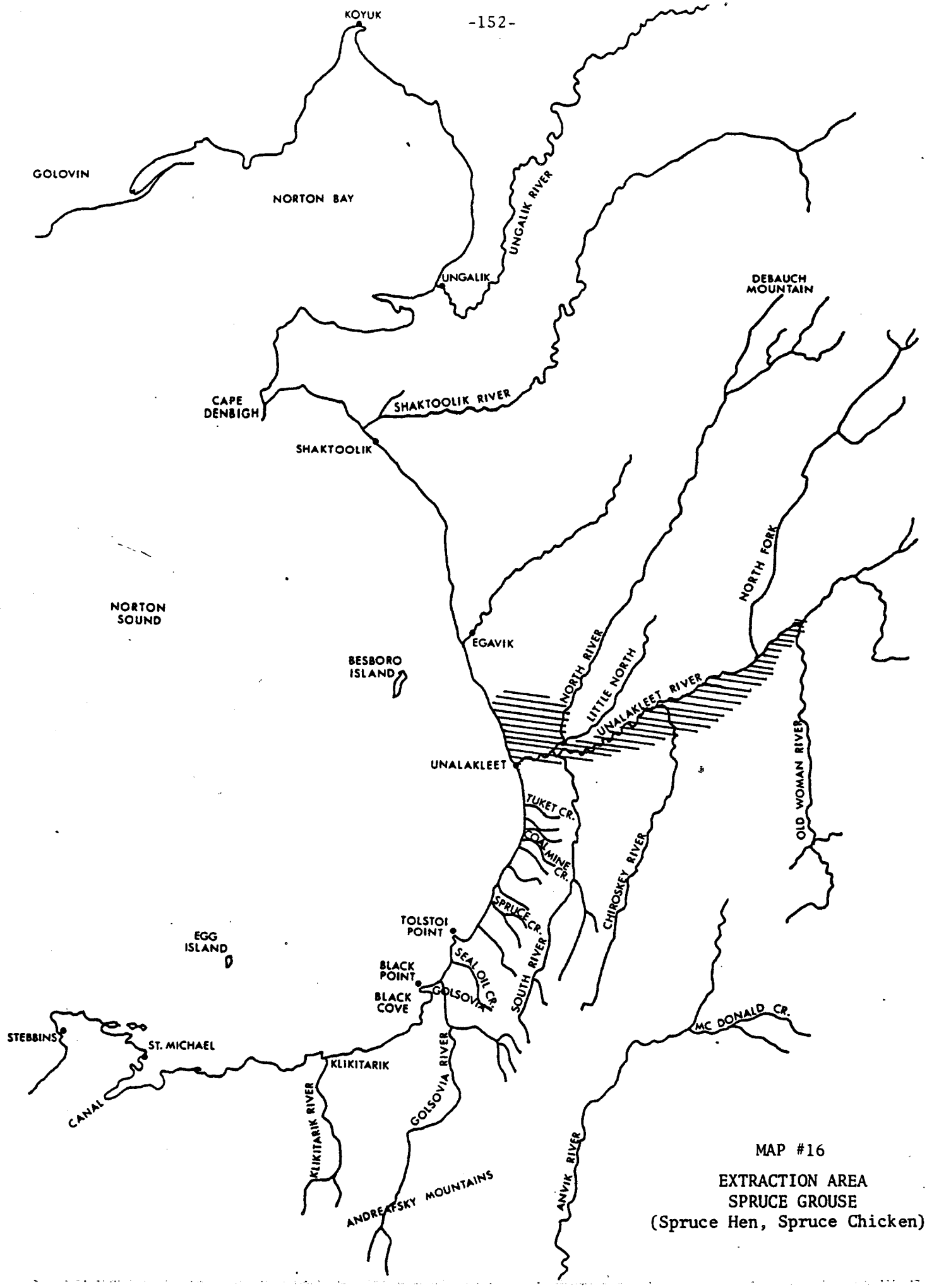
Spruce Grouse (Spruce Chicken or Spruce Hen), Canachites canadensis

Availability:

Among birds, spruce grouse are another year around, rather than seasonal, inhabitant of the area. They live in spruce forests (on the hills north and east of town and lining the Unalakleet River).



MAP #15
EXTRACTION AREA
PTARMIGAN



MAP #16

EXTRACTION AREA
SPRUCE GROUSE
(Spruce Hen, Spruce Chicken)

Habits and Characteristics:

Spruce grouse weigh about one lb. dressed. They are found singly or in small groups (2-5) birds. The grouse is generally silent, so must be sighted for initial contact.

Extraction:

Spruce grouse are taken in the fall and winter. Hunters sometimes go out specifically for these birds, or watch for them while they are rabbit hunting, or when cutting and gathering wood. People also look for these birds when walking in the spruce forests behind their river camps.

Techniques:

Spruce grouse are taken with .22 rifles or small gauge (20) shotguns. The weapon used is often determined by whether the hunter's main intention was to hunt hares or grouse, rifle for the former, gun for the latter.

Uses:

1) Meat and internal organs

Meat and internal organs are consumed.

2) Tails

The tail sections can be saved and used in the same manner as ptarmigan.

Snowy Owl, Nyctea scandiaca

Availability:

Among birds, snowy owls are another year around inhabitant of the area.

Habits and Characteristics:

Snowy owls weigh about 4 lbs. dressed. They are territorial, nesting in spruce trees. These owls feed on rodents and hares, so hunters seek them in the terrain inhabited by hares and ptarmigan.

Extraction:

People will bag snowy owls when they happen on them during winter rabbit and ptarmigan hunting trips.

Techniques:

Hunters use either .22 rifles or 20 gauge shotguns depending on what quarry they intend to bag at the outset of the trip.

Uses:

1) Meat and internal organs

The meat and internal organs are consumed.

Other birds inhabiting the Unalakleet Valley and surrounding area:

Bald Eagle, Haliacetus leucocephalus

Golden Eagle, Aquila chrysaetos

Snow Bunting, Plectrophenax nivales

Osprey, Pandion haliaetus

Gyrfalcon, Falco rusticolus

Peregrine Falcon, Falco peregrinus

Pigeon Hawk, Falco columbarius

These birds are not hunted, nor are their eggs gathered. They are, however, part of people's experience of their land and country. They are known and their presence enjoyed.

EGGS

Birds Eggs:

Gull, Glaucus, Larus hyperboreus

Gull, Mew, Larus canus

Arctic Terns, Sterna paradisaca

Horned Puffin, Fratercula corniculata

Murres, Uria aalge

Swans, Olor spp.

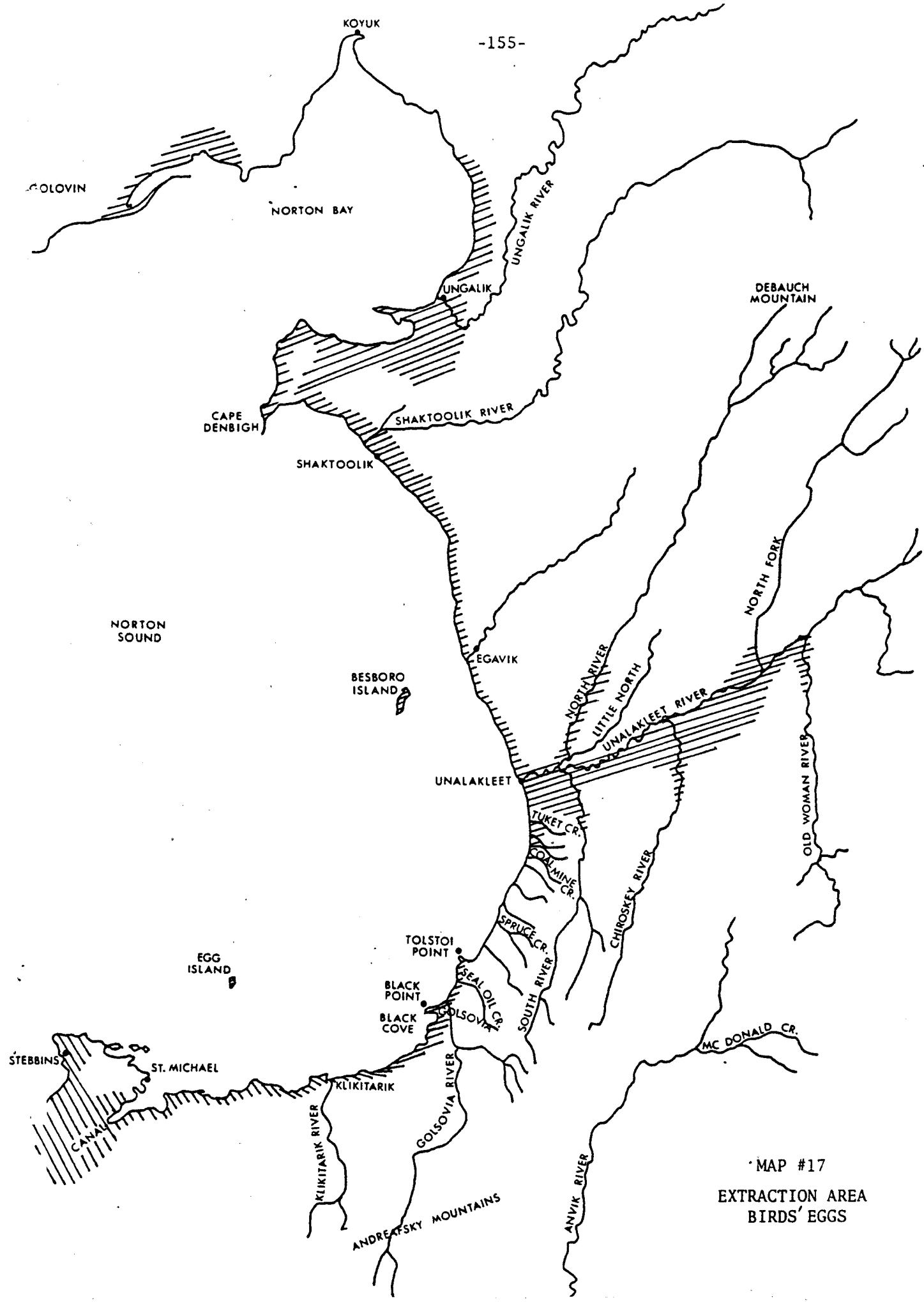
Ducks, Oidemia spp., Clangula spp., Spatula spp., Somateria spp., Anas spp., Polysticta spp.

Geese, Branta spp., Anser spp.

Crane, Sandhill, Grus canadensis

Loons, Gavia spp.

Shorebirds (Snipes, Sandpiper, Galwits, Dowitchers, Whimbrel), Numenius spp., Tringa spp., Actitis spp., Limmodromus spp., Erolia spp., Capella spp.



MAP #17

EXTRACTION AREA
BIRDS' EGGS

Availability:

Cliff bird nestings occur along the coast and coastal islands (Twin Islands, Eider Duck Island, Egg Island, island off Wood Point), south of Unalakleet from Tolstoi Point to St. Michael, and along the coast northward from Blueberry Point to Shaktoolik and Cape Dexter, including Besboro Island. Flats and river bird nestings occur throughout the flats and marshes that extend southward from the mouth and banks of the Unalakleet River to the spring camp and foothill areas northward to Powers Creek, and eastward to South River and Portage. Egg laying areas also are found around lakes and flats upriver on the Unalakleet and other river systems. Extensive nesting areas are located in the flats behind Shaktoolik and along the canal and lakes and streams out of St. Michael, and Golovin. Birds nest after their migration into the area, and when conditions are right (winter is past).

Habits and Characteristics:

Cliff nesting and island laying birds include: sea gulls, puffin, some terns, eider ducks, and murres. Flats-nesting birds include geese, brants, ducks, swans, cranes, sea gulls, loons, some terns, many shorebirds. Birds which nest upriver around lakes and on flats of the river include geese, ducks, swans, cranes, loons and sea gulls. Tundra nesting birds include shorebirds and ducks.

Extraction:

Once birds start laying eggs, the hunting of birds mostly stops and egg collecting begins. Eggs are gathered in late May, and sometimes early June, depending on how long winter lasts, throughout the area of availability.

People gather eggs on the flats immediately south of town; up the Unalakleet River on flats and by lakes; along the coast and coastal islands southward to St. Michael and northward to Shaktoolik; and along the canal and lakes near St. Michael, and the flats near Shaktoolik, Ungalik, and Golovin.

People seek the eggs of sea gulls, terns, puffins, murres, eider ducks, and other ducks. They will harvest, if they come across them, the eggs of geese, loons, cranes, and shorebirds.

Techniques:

Eggs are usually gathered when people and families are at spring camp along the coast or upriver, or when traveling to or from camp. People know the locations of nests and nesting areas around their camps, in areas hunted for other spring foods, and along the routes to and from these places. The spring camps are made for combined hunting (birds and sea mammals), egg collecting, gathering greens, and kelping. Some people make special trips along the coast south from Tolstoi Point to collect murre eggs. Containers of any kind are used to collect eggs. Usually eggs are collected once per season from each nest encountered. The birds whose eggs have been collected are stimulated to lay a second time. For cliff-nesting birds whose eggs are difficult to reach from the ground, a person will be lowered on a rope, along with a container attached to a separate rope, to gather the eggs.

Uses:

1) Eggs

Birds' eggs are eaten fresh, either at camp or at home; they are not stored.

2) Shells

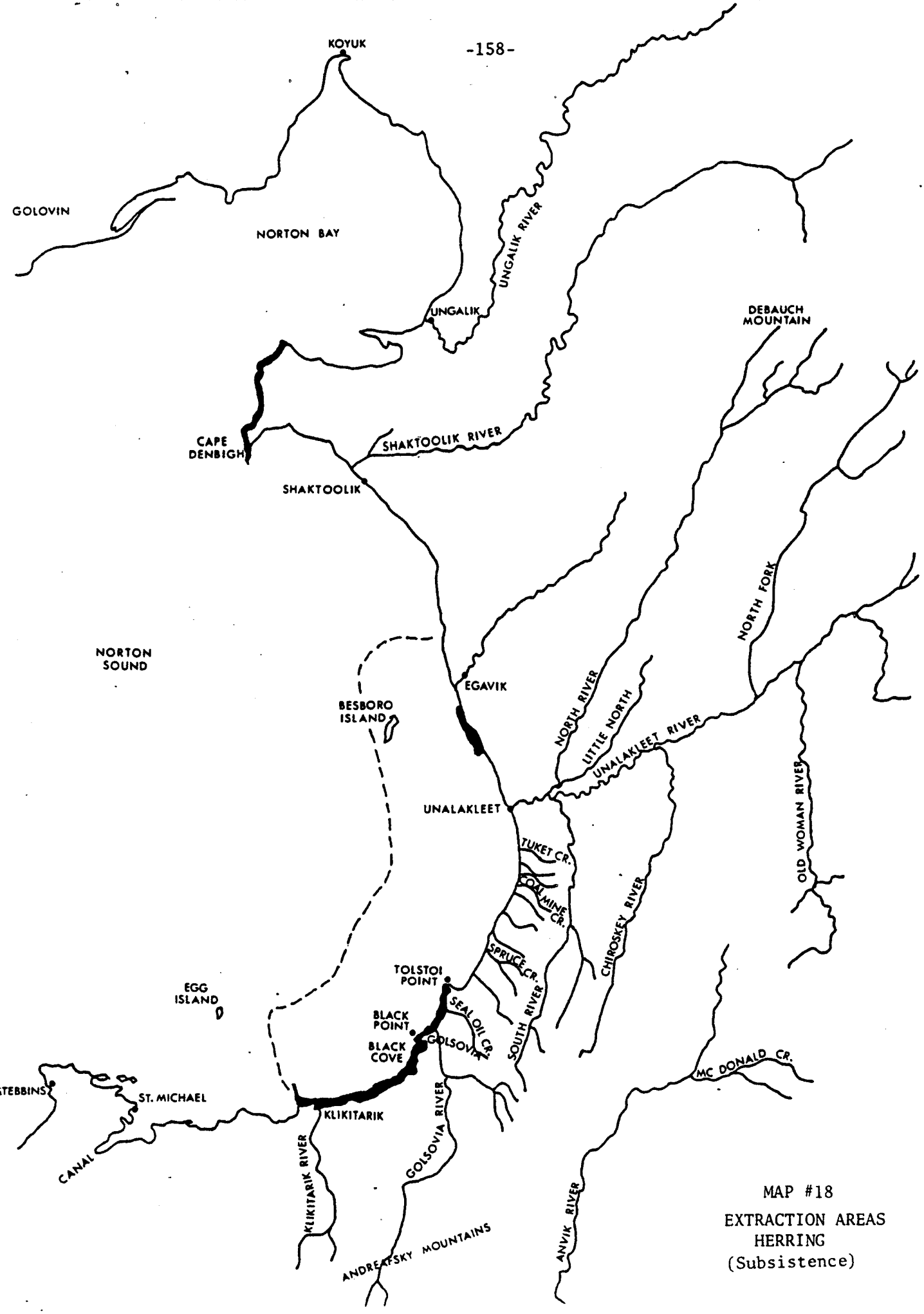
The shells of sea gull and duck eggs are saved and strung to hang as wall decorations.

FISH (Saltwater)

Herring, Clupea harengus pallasi

Availability:

Herring generally arrive in the offshore waters of Norton Sound in the last two weeks of May, although these fish can come as late as the first weeks of June. Herring pass through the area during as brief a period as two weeks but more usually in three or four weeks. The time of arrival of herring, whether early or late, depends on the break-up of the offshore ice which the fish follow so as to spawn in the kelp near shore. In 1981 it is estimated that 4,000 m.t. (metric tons) of herring spawned in Unalakleet waters and although turbidity



MAP #18

EXTRACTION AREAS
HERRING
(Subsistence)

made counts unreliable in 1982, it is estimated that about 4,000 m.t. were available that year (Schwarz, Lean, Whitmore, Smith 1982:3).

Habits and Characteristics:

Herring are sensitive to water temperature and come in close to shore (for spawning) only when the water has warmed sufficiently. Herring are pelagic (schooling fish); when they spawn, they are available in great quantity.

Extraction:

People extract herring both north and south of town all along the coast to beyond Egavik in the north and Tolstoi in the south. People subsistence fish in the same area that they fish commercially. A family often extracts enough in one trip for its annual subsistence use.

Techniques:

Subsistence herring are taken with a "trout" (char/grayling) net or with a short length of commerical herring net (both nets have less than 2" mesh). The nets are usually set in fairly deep (8-25') rocky areas close to shore where the herring feed. A net is watched after it is set, since it fills quickly and the herring should be taken fresh. Subsistence herring fishing is carried out at the same time as eggs and greens collecting and sea mammal hunting in the late spring.

Uses:

1) Herring

Herring average about 650 calories per edible portion of the fish. They are eaten half-dried (and roasted) or fully dried, with seal oil and greens. Herring are preserved by drying and strung on strings. Sometimes a portion is pickled or brined and stored in buckets.

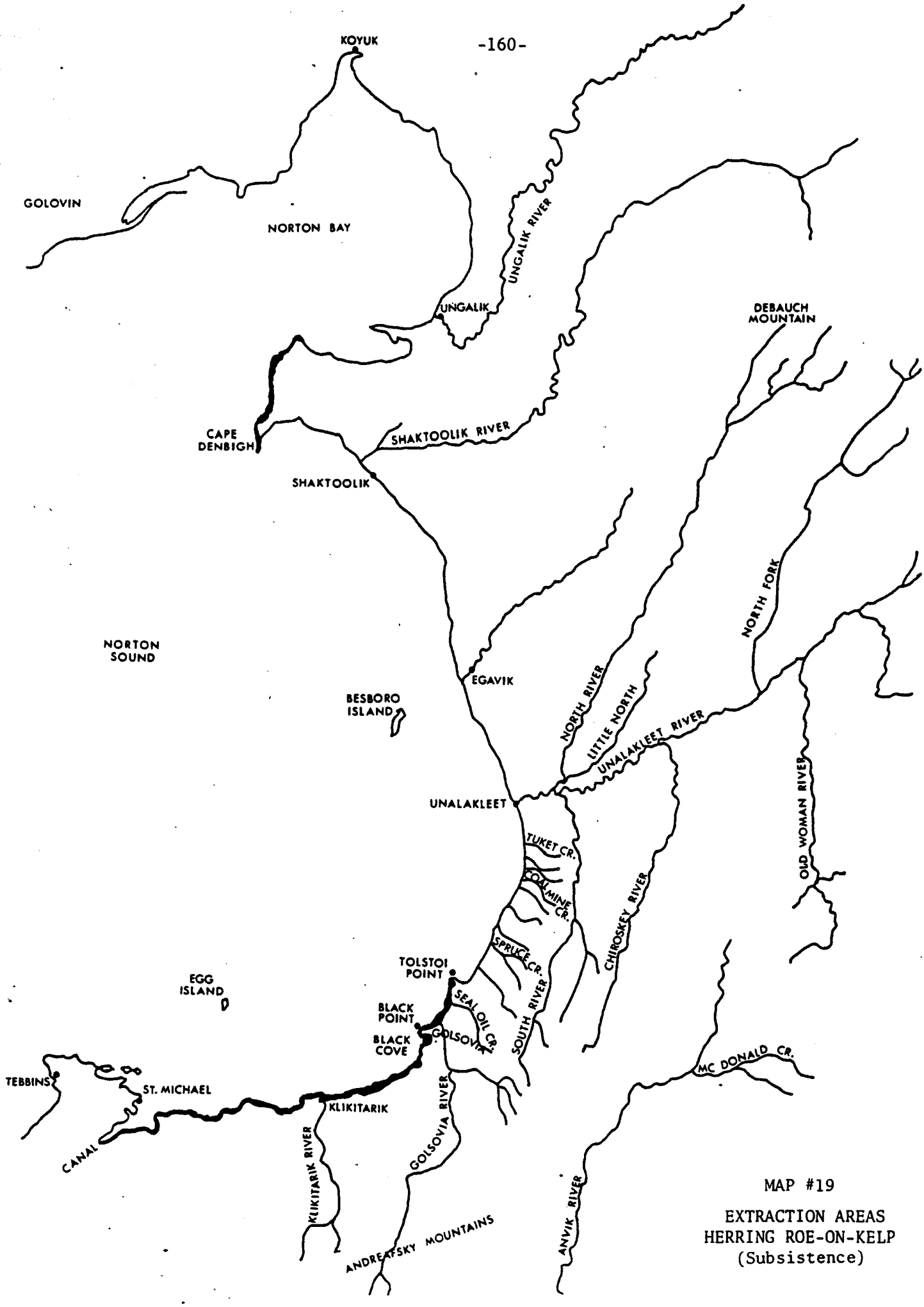
2) Roe

Roe is taken from the fish as it is cut for drying and eaten lightly boiled. Roe is preserved in salted brine, or is frozen in brine.

Herring Roe-on-Kelp, Clupea harengus pallasi; Fucus spp.

Availability:

Herring spawn in the late spring, (late May to mid-June). The time of arrival of herring and their spawning depends on breakup of the



MAP #19

EXTRACTION AREAS
HERRING ROE-ON-KELP
(Subsistence)

Yukon River ice and the clearing of ice from Norton Bay. Herring roe-on-kelp is found from Tolstoi Point all along the rocky coast to and past St. Michael (includes St. Michael Bay). Roe-on-kelp is also found near Norton Bay, from Cape Dembigh to Point Dexter. It is thought that herring spawn near Blueberry Creek north of the village. Whereas roe-on kelp was not recovered from that area in 1982, herring roe was deposited on king salmon nets set in that vicinity (see Schwarz, Lean, Whitmore, Smith 1982:6-7).

Habits and Characteristics:

Herring are highly sensitive to water temperature and spawn only when the coastal waters are sufficiently warm. The thickness of the roe (layers on the kelp) varies with location and from year to year. Subtidal spawn may occur on red algae (Rhodomala larix); it also occurs on eel grass and rock substrate. Saffron cod and many varieties of birds eat the spawn.

Extraction:

People begin collecting kelp as soon as herring spawn. They pick kelp during or after fishing for herring. People usually can gather the roe-on-kelp they need for subsistence in one trip from home or camp, or while they are commercial "kelping." Travelling up or down the coast seeking kelp, people will also look for eggs and greens.

Techniques:

Villagers generally wait for low tide to expose kelp beds in the rocky areas. They wade among the rocks and collect the kelp with their hands, filling plastic buckets, plastic sacks, or other suitable containers. For deep water areas, kelp can be collected using a rake.

Uses:

1) Roe-on-kelp

Roe-on-kelp, which is a good source of vitamins, including a modest source of Vitamin C, can be eaten fresh, either raw or lightly boiled and dipped in seal oil. Most of the kelp gathered is stored for later use by packing in salt, freezing, or drying.

Tomcod (Saffron cod), Eleginus gracilis

Availability:

Tomcod are available at the river mouth and in the slough east of the village during the winter months (from late October through April), for as long as it is safe to walk on the river ice.

Habits and Characteristics:

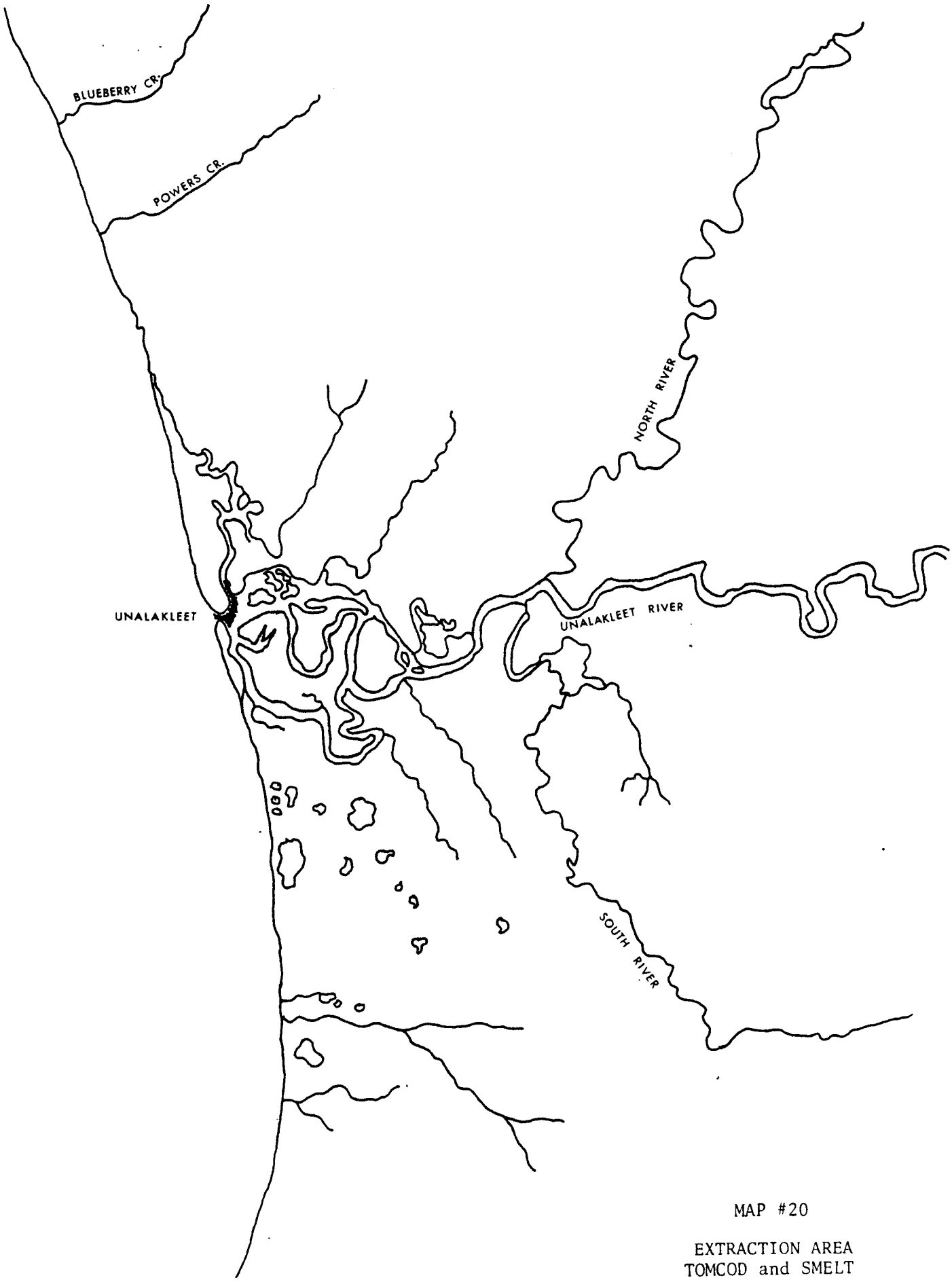
Tomcod average 8" in length. A range of sizes and weights, from small fish of a few ounces up to large tomcod of a pound or so can be caught. They yield about 300 calories per edible pound. The females are bigger on the average than males. Tomcod are pelagic, swimming in schools that vary in size and depth. They feed heavily on herring roe following the spawning.

Extraction:

Villagers begin fishing for tomcod in late October as soon as the slough and rivermouth freezes solid enough to walk on. They continue to fish throughout the winter, until April when the ice is near break-up.

Techniques:

People chop holes in the ice with a dohke (a long handled, metal bladed ice chipper) or similar instrument. The holes vary in depth from less than a foot to three or four feet or more, depending on the month of winter and how cold the winter has been. People fish for tomcod with a wooden jigging stick, fishline, one or more treble, barbless hooks (a second or third as trailers to the first), and a lure with red coloration (the same ½ oz. hooks used for salmon and char are also used for tomcod). A separate stick is used to retrieve the line and club the fish, which quickly freeze on the ice. People test with their line for the depth at which the main numbers and usually largest sized of the tomcod are swimming. The length of the line is adjusted to the depth, and readjusted as needed during the time of fishing. People also catch tomcod in quantity for dog food with large wire basket traps lowered through the ice.



MAP #20

EXTRACTION AREA
TOMCOD and SMELT

Uses:

1) Flesh and internal organs

Tomcod are eaten fresh (boiled or fried) with seal oil, or preserved by freezing or drying. They are taken in large quantity for eating frozen, as quak, with seal oil. They are eaten half-dried (and boiled) or fully dried, with seal oil. The livers are also eaten. Tomcod are extracted in large quantity for dog food. Portions are used as bait for smelt fishing.

2) Roe

Tomcod roe is eaten and enjoyed.

Smelt (Pond Smelt), Hypomesus olidus, and Rainbow Smelt, Osmerus mordax

Availability:

Smelt run into the mouth of the Unalakleet River during the coldest months of winter. Sometimes the runs start as soon as mid-to-late November, but usually they begin in December and last through January or into early February. Availability generally lasts for a month, although on a daily basis the quantity varies. The greatest numbers of smelt are caught on the coldest days.

Habits and Characteristics:

Smelt range on the average 6" to 8" in length, although smelt to 12" are caught on occasion. They have extremely high oil content, so they are high in calories and especially desired during the winter months when they appear. Pelagic fish, they co-occur with tomcod which they eat, running with them and the tide as they pursue their quarry. The depth at which smelt swim varies from close to the ice to deep below it. Smelt are more difficult to catch than tomcod, striking the hook more quickly while being more adept at escaping. Generally fishing is better in the early morning hours.

Extraction:

People fish for smelt from the ice at the mouth of the river. The entire period of the run is fished except during stormy weather or strong winds. At daybreak people begin arriving at the river mouth to test the strength of the day's run so as to be sure not to miss the peak(s) of the run. A few people fish the entire day; most stay for at least a few hours no matter when they arrive.

Techniques:

People chop holes in the ice with a dohke (a long handled, metal-bladed ice chipper) or other comparable instrument. By December and January, the ice is thick and holes must be cut three or four feet deep. The hole is kept open by skimming away ice as it forms with a long handled, slotted ladle, or other similar instrument. The fishing equipment consists of a wooden jigging stick with fish line, and a small single or more usually a treble barbless hook with a silver lure. A separate stick is used to bring the line in and club the fish. Portions of tomcod are used for bait to lure smelt, the preferred fish of the two. People first test with their line for the depth at which the main body of the school is swimming. Once the right depth is located they can usually continue hooking at that position for some time, but changing levels when necessary.

Uses:

1) Flesh

Smelt are taken for family meals. They are usually eaten the day they are caught; extra are frozen. Smelt are used as trap bait, on occasion.

FISH (Freshwater)

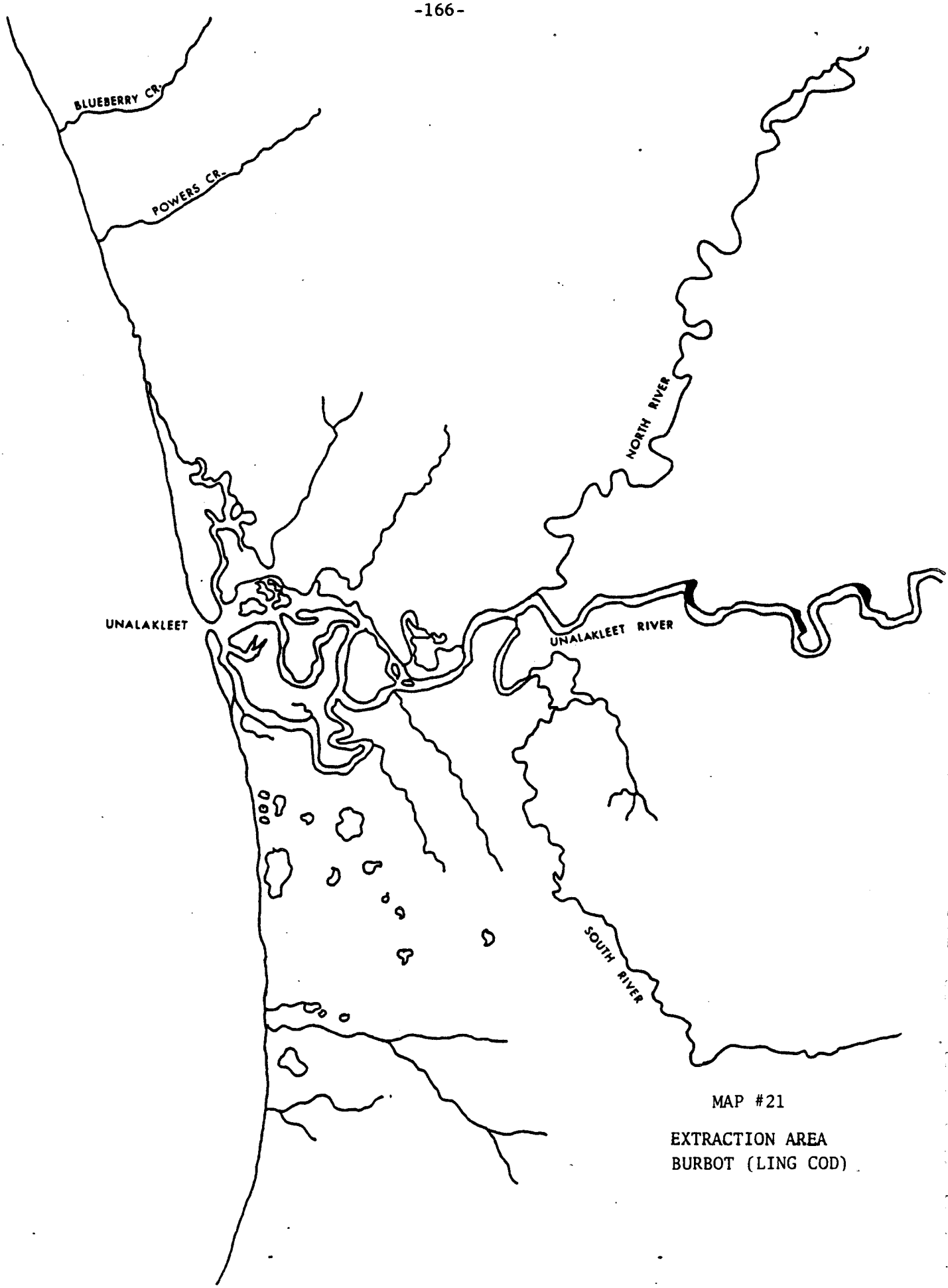
American Burbot (Lush Fish, Ling Cod), Lota lota

Availability:

Burbot, usually referred to as ling cod, are the freshwater American Burbot of the cod family (Gadidae). Burbot are present all year as bottom fish in deep water areas of the Unalakleet River. Although they appear in moderately large numbers, they are spread out through the system. Very few fish so large as these can occupy the same feeding station.

Habits and Characteristics:

Burbot average 15-18 lbs. in weight, but are known to attain much greater weights. These fish occupy deep holes in the river where they feed on whitefish, grayling, char, salmon grilse, and freshwater invertebrates. They are voracious eaters. When they begin moving in



MAP #21

EXTRACTION AREA
BURBOT (LING COD)

the fall, ling cod are found in slow moving current. They have large livers that are very rich in vitamins (Branion 1930:200).

Extraction:

People fish for burbot, or take them incidentally when seeking other fish, from July through December. They are most often taken in the late fall before the river freezes solid when char, whitefish and grayling are eating salmon roe, and ling cod are eating char, whitefish and grayling. People fish for burbot in deep water areas of the river within 10 miles of town. When fishing specifically for burbot, people usually keep the larger fish, those running 25" to 32" in length.

Techniques:

In the summer and early fall, burbot are caught incidentally when seining for pinks or other fish. In the late fall, before freeze-up, people fish for them with a rod, using a barbed hook the same as for salmon. Light-fleshed fish (char or whitefish) are used as bait. In the winter, they can be caught during ice fishing, with wooden jigging stick, line, and hook.

Uses:

1) Flesh and internal organs

Burbot are taken for their large liver, a much enjoyed delicacy that is very rich in vitamins, and their flesh. A native delicacy is made from the boiled liver which is whipped into a paste and to which blackberries and seal oil are added. Sometimes the flesh is used for dog food.

2) Roe

Burbot roe is eaten.

Sea-run (for periods up to three months);

Whitefish, Prosopium spp., including Sheefish, Stenodus leucichtyhs

Availability:

Whitefish are present in the Unalakleet River and its drainage rivers year around. Whitefish are also found in other river systems in Norton Sound. They are fall spawners, so appear in greatest abundance and with the greatest amount of fat during the fall. Sheefish occur rarely in the area, but some are taken most years.

Habits and Characteristics:

Whitefish range from 12" to 22" in length and from 1 to 3½ lbs. in weight. They are very high in calories, averaging about 650 per edible pound. The few sheefish taken recently in the Unalakleet area have averaged 3½' to 4' in length and about 10 lbs. in weight. Whitefish feed on salmon eggs, fry and minnows of many species, nymphs, and flying insects. Their small mouths make it difficult for them to bite a lure.

Extraction:

People catch whitefish mostly in the summer and fall (July-October), although they sometimes catch them in the winter (November-March). They take whitefish in the sloughs around town and along the length of the main river, to and past the farthest camp. They also take them up the North and Chiroskey rivers. People also catch whitefish when camped at Egavik. Like the chars and grayling, whitefish feast on salmon eggs, smelt, and fry.

The sheefish, which are usually caught in brackish water, in 1982 were taken in a State of Alaska Fish and Game test net on the Unalakleet River and in a commercial silver net along the coast near Egavik (neither in brackish waters).

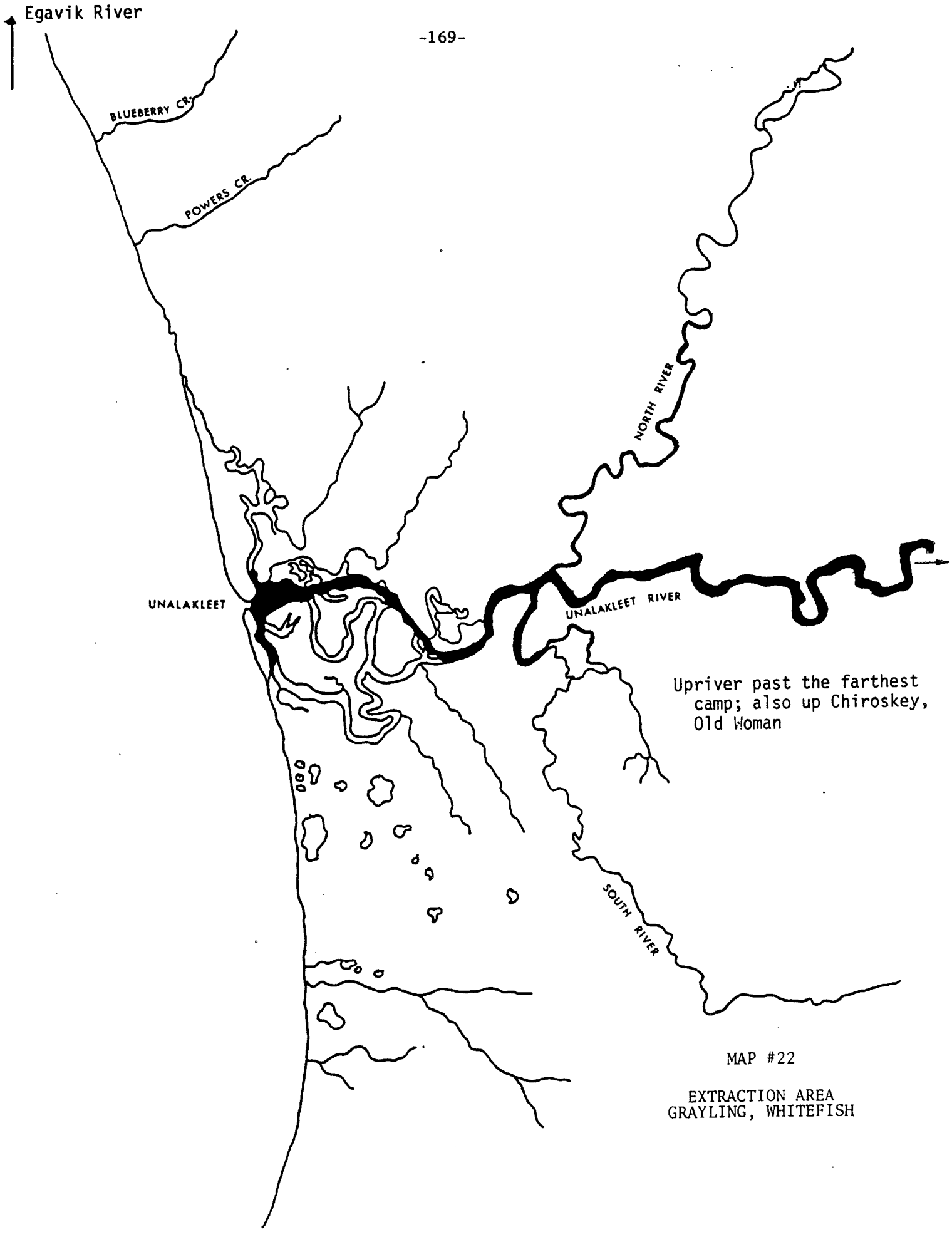
Techniques:

During the summer and fall, whitefish are taken with a rod or net. When fishing with a rod, people use a medium "J" hook and salmon eggs for bait; the hook is allowed to rest on the river bottom. Whitefish are also taken incidentally when river seining for pink salmon in the summer or for char in the fall. Another method reported for taking whitefish is by dip net with fish eggs as bait. In the winter, although rarely, whitefish will be taken during ice fishing, with a jigging stick.

Uses:

1) Flesh

Whitefish are eaten raw or prepared by boiling, baking or freezing (quak), or they are frozen and used later to make fish agootuk. Whitefish is used as bait for ling cod and for dog food.



Upriver past the farthest camp; also up Chiroskey, Old Woman

MAP #22

EXTRACTION AREA
GRAYLING, WHITEFISH

Arctic Grayling, Thymallus arcticus

Availability:

Grayling are present year around in the Unalakleet River and its drainage rivers, as well as other river systems along the coast.

Habits and Characteristics:

Grayling range from 10"-21" in length and .5 to 2½ lbs. in weight. The larger fish are usually located upriver. Grayling are spring spawners, being at their fattest in May-June. Grayling will strike a lure inasmuch as they are carnivorous and seek fry, minnows, and all manner of freshwater invertebrates in all stages of development including worms, pupae, nymphs, and flying insects, including the ubiquitous mosquitos.

Extraction:

People take grayling from July through April (summer, fall and winter). They catch grayling throughout the length of the Unalakleet River, from the mouth beyond the farthest camps; also throughout the drainage rivers (North, South, Chiroskey, Old Woman). They rarely catch grayling in the sloughs around town, unlike whitefish. When camped at Egavik, people also catch grayling.

Techniques:

Grayling are taken by rod and reel (summer and fall), with a spinning lure and sizes 8-12 treble hooks (3/8 to 1/2 oz.) like those used for "trouts" (char) and smaller (pink) salmon. In the winter, graylings are taken while jigging through the ice with spinning lures. Grayling are caught incidentally when seining for trout (char) in the fall.

Uses:

1) Flesh and internal organs

Grayling are eaten raw or prepared by boiling (ooruk), baking or freezing (quak). The liver, stomach and fat around the internal organs can be eaten raw, right after the fish is caught and cleaned. Grayling are taken for meals at home, at camp, or at a picnic or rest stop along the river. They are especially preferred cooked fresh from the water. They are sometimes used as trap bait.

2) Roe

Grayling roe is eaten raw.

"Trouts" (Char): Dolly Varden, Salvelinus malma, and Arctic Char, Salvelinus alpinus

Availability:

"Trouts" (both species of char) are present year around in the Unalakleet River, its drainage rivers, and other river systems in the area.

Habits and Characteristics:

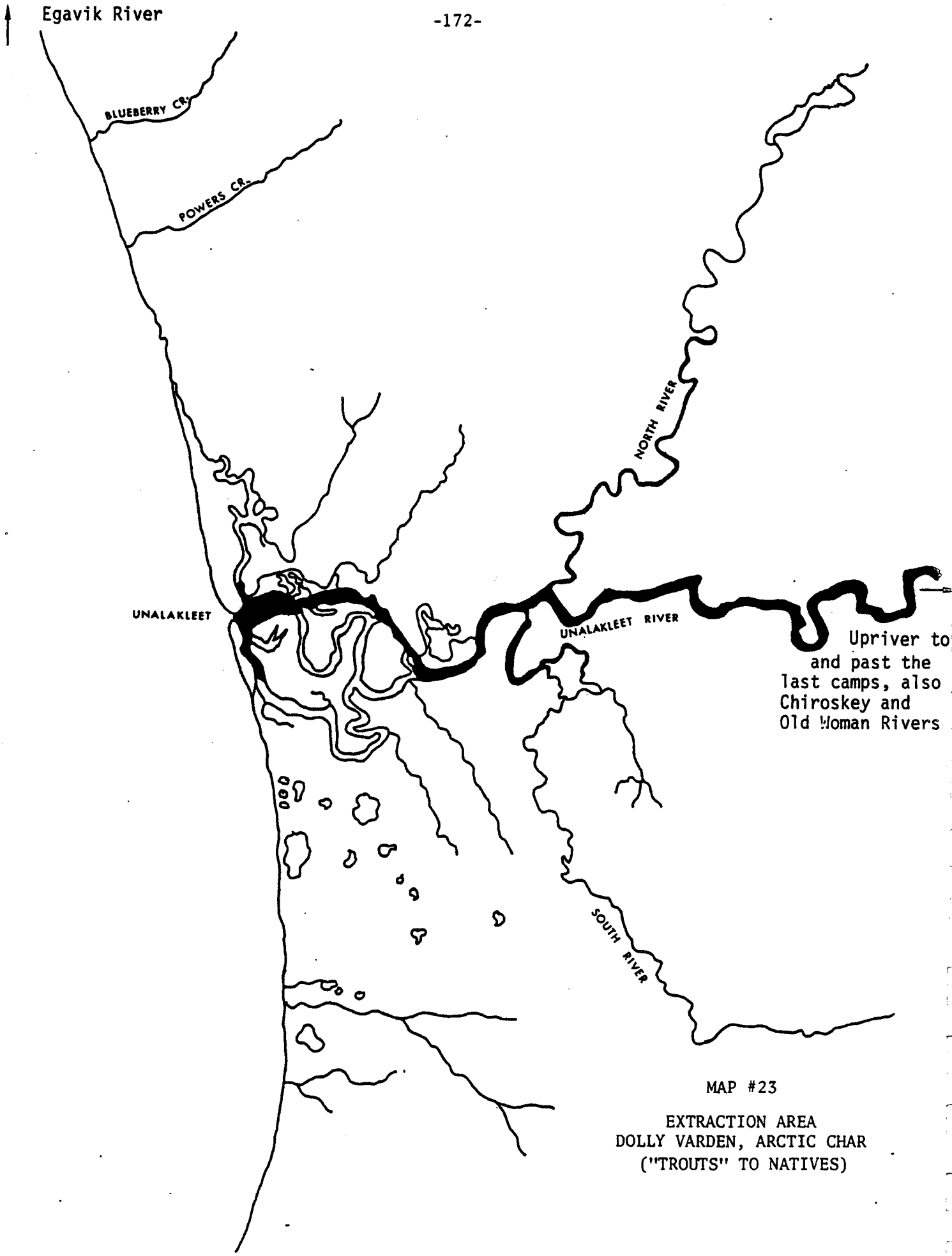
Dolly varden (dollies) and Arctic char (char) occupy similar and adjacent feeding stations (lies) along the river, and being anadramous, go to and return from the Sound in spring and summer at similar times each year. There is little difference between the two. They are fall spawners and are in best condition after feeding on salmon eggs and fry for two or three months. Young dollies and char take lies down river and average 12"-14" in length and perhaps 1 to 1½ lbs. Small fish stay away from larger of the species who feast upon them. Farther upriver the bigger fish occupy fishing stations, averaging 14"-20" in length and weighing from 4-12 lbs. (some trout are very large). These large fish are fat and yield on average 800 calories an edible pound, so they are highly nutritious. Like grayling, trouts strike at lures, and like grayling, these large fish eat millions of salmon eggs, fry, sculpin, minnows, and nymphs each year, and smaller amounts of small but mature grayling, whitefish and char.

Extraction:

Trouts are taken most of the year, but with more emphasis in the fall spawning period (September and October) and winter (November to April). People fish for trouts throughout the Unalakleet River System, along the main river from the sloughs around town to and past the farthest camps; and up the North, South, Chiroskey and Old Woman rivers. When camped along other rivers in the area, such as the Egavik, people also catch trouts.

Techniques:

Trouts are taken by river edge seining with a net during the spawning period, by rod and reel, and with jigging stick and line. People seine for trouts with a small mesh (large strand) net in the



MAP #23

EXTRACTION AREA
DOLLY VARDEN, ARCTIC CHAR
("TROUTS" TO NATIVES)

fall (September and October). Several people form a team, select a location where the river narrows, usually above a good sized sand bar, and lay out the net on the start of a suitable sand bar. Then one or two people hold one end of the net while people in a boat pull the other end of the net out into the river. The net, loosely stretched between shore and the river, is worked down river. People holding the end on the river's edge walk along the shore, and people with the other end in the boat drive the net in a large arc toward the sand bar. Once at the sand bar, the net is closed enough to trap the trouts (and other fish taken incidentally, such as whitefish, grayling, and ling cod). Trouts are also taken incidentally in subsistence and commercial nets set for salmon during the summer and fall (July-September). People fish for trouts with rod and reel, using a red or orange-colored spinning lure (about a size 3/5 ox. treble hook).

Throughout the winter months, people travel upriver by snow machine or dog team to ice fish for trouts. Holes are chopped in the ice with a dohke (long handled, metal-bladed ice chipper) or other similar instrument. The trouts are caught by jigging with a wooden stick, line, and the same lure and hook as used with a rod and reel.

Salmon eggs may be used for bait (rod and reel, or jigging). Some people use traps to catch trouts in the winter. The traps are large, rectangular in shape, enclosed with chicken wire. A trap is placed beneath the ice in a narrow part of the channel, and the space between it and the banks is filled with wooden fencing and willow bundles (weir with trap).

Uses:

1) Flesh

Trouts are eaten, prepared by boiling (uruk), frying, baking, freezing (quak) or drying. They are taken for meals at home, at camp, or at a picnic or rest stop along the river. They are used for dog food, bait for ling cod, and trap bait.

FISH (Anadromous)

King (Chinook) Salmon, Oncorhynchus tshawytscha

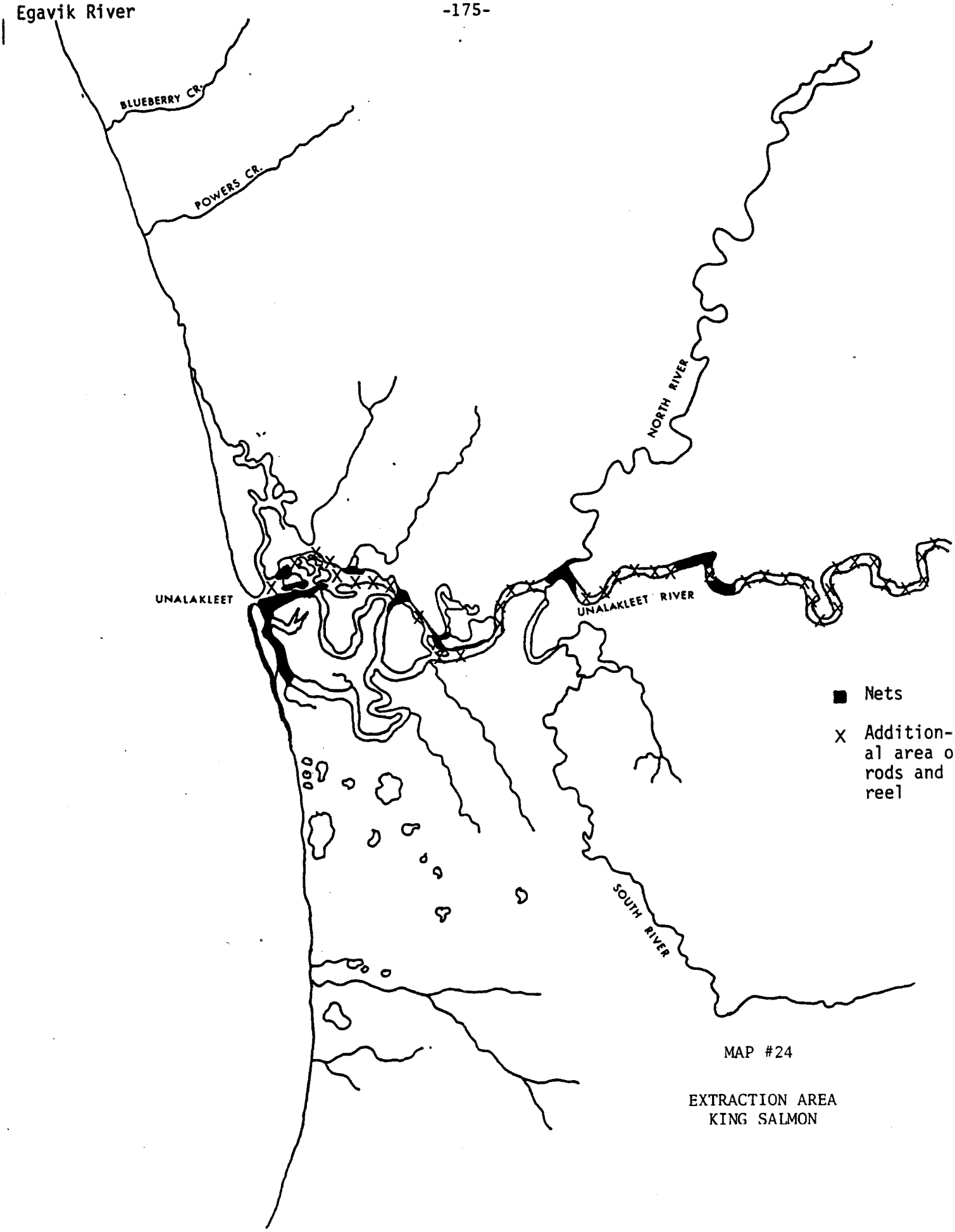
Availability:

Kings are the first salmon to arrive in the summer. They come just after herring, usually the beginning of June although their arrival can be delayed by two weeks or so because of late break-up of shore and river ice. The king spawning run lasts for about a month. Villagers felt that the 1982 king run was poor because they were unable to harvest the number or size of kings they needed for subsistence. A sonar counting station operated by the ADF&G in 1982 tallied 7500 kings a couple of miles upriver (above the commercial as well as most subsistence nets) (Schwarz, Lean, Whitmore, Smith 1982). Inasmuch as about 6100 kings have been netted commercially, on average, during the preceding four years, and less than 3800 were netted in 1982, it is likely that there were many fewer kings available in 1982 than between 1978 and 1981. The Unalakleet kings may have a five year (rather than four year) cycle. For example five years earlier (1977) only 2700 kings were taken commercially. The 1982 population may be the progeny of the 1977 spawns.

Habits and Characteristics:

Kings are anadromous, as are other Pacific salmon. They hatch and grow to grilse size in the Unalakleet, then go to sea in either a four or five year cycle. They feed on herring and follow the herring run. Kings grow to very large sizes, ranging in weight from 15 to 60 lbs. and in length to 5'. A record 120 lb. king was caught in a commercial net a few years back. Salmon, all species, are very high in calories, vitamins, and minerals, yielding about 1000 calories per edible pound. Jack salmon, or precocious males, follow spawners to the river after about two years in the ocean. They are about 5 to 10 lbs. and 2' in length. Kings spawn in the clear river gravels of the Unalakleet system.

Egavik River



MAP #24

EXTRACTION AREA
KING SALMON

Extraction:

People set subsistence gill nets as soon as kings arrive. They first set along the coast just south of town, but primarily right inside the river mouth and the slough back of South Point. They soon set nets upriver within about 5 miles of town, but not much farther because kings become blacker as they approach the spawning event and swim upriver. People set nets in the same places or general areas each year. For kings, the areas where villagers place their nets are on a first-come, first-served basis, except near family camps. The area around camps is recognized as the fishing station used by particular families. In the general use areas (the coast and from the river mouth to the first camps, and between them), as people remove their nets, having gotten what they need, other people will then come in to set their nets, and so on. People make room for others as they finish. If a person claims a fishing area, he leaves a buoy nearby to notify others, even if no net is set. Families that stay during parts of the year at Egavik, set nets along the coast and upriver there.

People fish by net, and by spinning rod and reel for kings to about seven miles from the river mouth throughout the period of their run, or until villagers have taken what they need. Subsistence fishing for kings takes place from the very beginning to the end of the run. Dog (chum) and pink (humpback) salmon are also caught incidentally in nets set for kings.

Techniques:

Subsistence nets used to take kings are either king nets (5"-6" mesh) or chum nets (3"-4" mesh). These nets usually measure up to 300' (50 fathoms in length), and are 6'-8' deep. They are usually tied at one end to the river bank (or shore) and at the other end anchored out into the river (or Sound); or else near the river mouth they are anchored at both ends in the water. People generally check and clean their nets at least once a day. If people are not having much luck getting salmon in one place, they will move their nets to another place.

The same kinds of heavy fiberglass spinning rods and spinning reels, capable of handling a couple of hundred yards of 20 lb. test line, are used for all salmon. Sometimes larger "daredevil," "mepps," spinning lures--orange or red preferred--sizes 1 or 2 oz.,are used for kings,whereas smaller "pixie" lures (3/5 oz.) are used for other salmon.

Uses:

1) Flesh and internal organs

Kings are enjoyed fresh, prepared by baking, roasting, frying, or barbequing. Most of the catch is preserved, either by filleting and cutting the fillets into strips which are first smoked and then frozen, or by freezing sections or steaks. Less often kings are prepared by air drying. Some of the heads are kept (frozen) for soups, stews, or to bake; and some are brined. Stomachs are sometimes eaten fresh (boiled); stomachs and entrails are fed to dogs or used as fertilizer for the gardens.

2) Backbones and tails

Backbones and tails are half-dried for eating, or fed to the dogs.

3) Roe

Roe is frozen for trout bait, dried for trap bait, or dried for dog food.

Every part of the salmon is used. What is not eaten is given to the dogs or used as garden fertilizer.

Pink (Humpback, Humpies) Salmon, Oncorhynchus gorbuscha

Availability:

Pink salmon generally begin their spawning runs about a week or two after the king run has started. The pink run lasts through July. The Unalakleet pink run is very strong, producing much larger numbers than king, chum and silver. In 1982, 5.7 million pinks were counted at the ADF&G sonar station on the Unalakleet River. The numbers were so large as to make the tallying of other species difficult.

Habits and Characteristics:

Unalakleet River pinks are a small strain. Genetics, not nutrition, determine their sizes. Male (buck) pinks average about 18" in length, and 2 lbs. in weight. The females (hens) are smaller, averaging about 15" and 1 lb. in weight. Unlike kings, pinks have a two-year cycle, so in addition to genetics, they are not at sea for a sufficiently long time to grow to large sizes. Pinks in more southerly drainages average five pounds, so the Unalakleet strain is small.

Extraction:

People begin setting nets for fishing for pinks after they have taken the number of king and dog (chum) salmon they need or after the king run has subsided. Pinks are taken for subsistence throughout the length of the Unalakleet River (from the mouth and sloughs around town, to the farthest camps), and in the North, South, Chiroskey, and Egavik rivers.

By early in July, the king nets have been pulled and pink and chum nets set. These set nets are generally placed at or near a family's camp. The slough south of town is seined for pinks, as are other areas upriver (Eaton Station and similarly favorable places on the river with narrow channel above a good sized sandbar). Pinks will be taken early as incidental catch in king and chum nets. Pink nets are usually checked, cleaned and emptied daily. Pinks are also taken throughout their run with rod and reel, when people are out checking their nets or traveling the rivers. Kings and chum are kept, of course, when taken incidentally in pink set nets or when seining for pinks.

Techniques:

Subsistence nets used for pinks have a smaller mesh (3") than king, chum and silver nets. These nets, like the others, are usually 300' in length and 6' to 8' deep. The nets are set from the river bank. The same nets are also used for seining (see "Trouts," for a description of seining). Pinks are taken with spinning rod, reel, and medium sized orange or red colored daredevil, pixie or mepps lures. People sometimes clean and cut the fish emptied from their nets right on the river at camp or where seined. Sometimes they dry pinks at camp. Most often, they bring them back to town to cut and dry.

Uses:

1) Flesh

Eaten fresh, specially selected males are prepared and much enjoyed as ooruk (plain-boiled), and eaten with seal oil and boiled potatoes. Sometimes boiled greens, and raw onions, carrots or turnips are added. Also prepared fresh by baking, roasting, or frying. Pinks are most often preserved in quantity for later eating by drying. Sometimes they are preserved and stored by half-drying and packing in seal oil. Pinks are dried in quantity for dog food.

2) Roe

Roe are often left in the fish to make oksolik, a delicacy.

3) Internal organs

The entrails and slime from cleaning the fish are used to fertilize gardens or are given to dogs.

Dog (Chum) Salmon, Oncorhynchus Keta

Availability:

The dog salmon run starts a week or two weeks after the pinks are already running. Occasionally some chums come in earlier. Dog salmon run from mid-to-late June until early or mid-September. The strength of the run fluctuates during the season. Dog salmon run primarily in the Unalakleet River but also in the drainage rivers (North, South, Chiroskey) and in the Egavik River. In 1982, 195,000 dog salmon were counted at the ADF&G sonar station on the Unalakleet River.

Habits and Characteristics:

Dog salmon range from 8-15 lbs. in weight (up to 30 lbs.), and 2½ to 3' in length, and yield about 1000 calories per edible pound. They have a four or five year cycle from egg to spawn. These silver-sided salmon have handsome streaking, faintly multicolored, brightly so as they approach spawn, from their backs down their sides.

Extraction:

People fish for "dogs" in their areas of availability with set net, by seining, and with spinning rod and reel. People net fish at the mouth of the river and in the slough south of town (same area king nets are set), by their camps, and in good seining areas along the river. They fish for dogs with rod and reel throughout the length of the river and in its drainage rivers, when they are out checking and cleaning nets, at camp, traveling the river, or hunting. Dog salmon are also caught incidentally in nets set for kings, pinks, and silvers.

Techniques:

Chum nets (3"-4" mesh) are either set from the river bank or used for seining. Kings or pinks caught incidentally are also kept. People use a medium sized orange or redish colored spinning lure (3/5 oz.) for dog salmon.

Uses:

1) Flesh

Eaten fresh, prepared by baking, roasting, frying, chum are also enjoyed plain boiled (uruk), and preserved for later use by drying. Less often they are preserved by half-drying, then packed in seal oil, and frozen for later baking (patekseq) or boiling (animaq). Whatever parts of chum salmon are not eaten (heads, backbones, guts) are given to the dogs.

2) Eggs

Eggs of dog slamon (oksolik) are eaten after they have been allowed to ferment in the belly of the dried salmon.

3) Roe

Roe is frozen for fish bait or dried for trap bait. Roe is also fed to dogs.

4) Internal organs

Entrails and slime are thrown on garden soil as fertilizer.

Silver (Coho) Salmon, Oncorhynchus kisutch

Availability:

Silver salmon begin their spawning in early to middle August, about three weeks (or more) after the start of the dog salmon run. Silvers continue running strong through September. Some silvers

remain in the river as late as January. Silvers spawn in the Unalakleet River and its drainage rivers (North, South, Chiroskey, Old Woman) and in the Egavik River. Sixty-five thousand, one hundred silvers were counted at the ADF&G sonar station in 1982.

Habits and Characteristics:

Silvers average 6-12 lbs. in weight and 30"-34" in length. They have black spots on silvery bodies. Their roe to spawn cycle is either three or four years.

Extraction:

Silvers are taken throughout their area of availability. Most people like to go to camp in the fall to catch silvers and dry the fish there, to pick berries and to hunt. They dry more rapidly the closer they are to spawn condition inasmuch as they have burned much of their body fat while eschewing food and seeking their spawning areas. Villagers set nets by their camps or seine in good palces along the river close to camp. They use spinning rod and reel at camp, and while boating on the river or hunting along the river for moose. In the winter, people catch an occasional silver while ice fishing upriver. Silvers are taken incidentally in chum nets and vice versa.

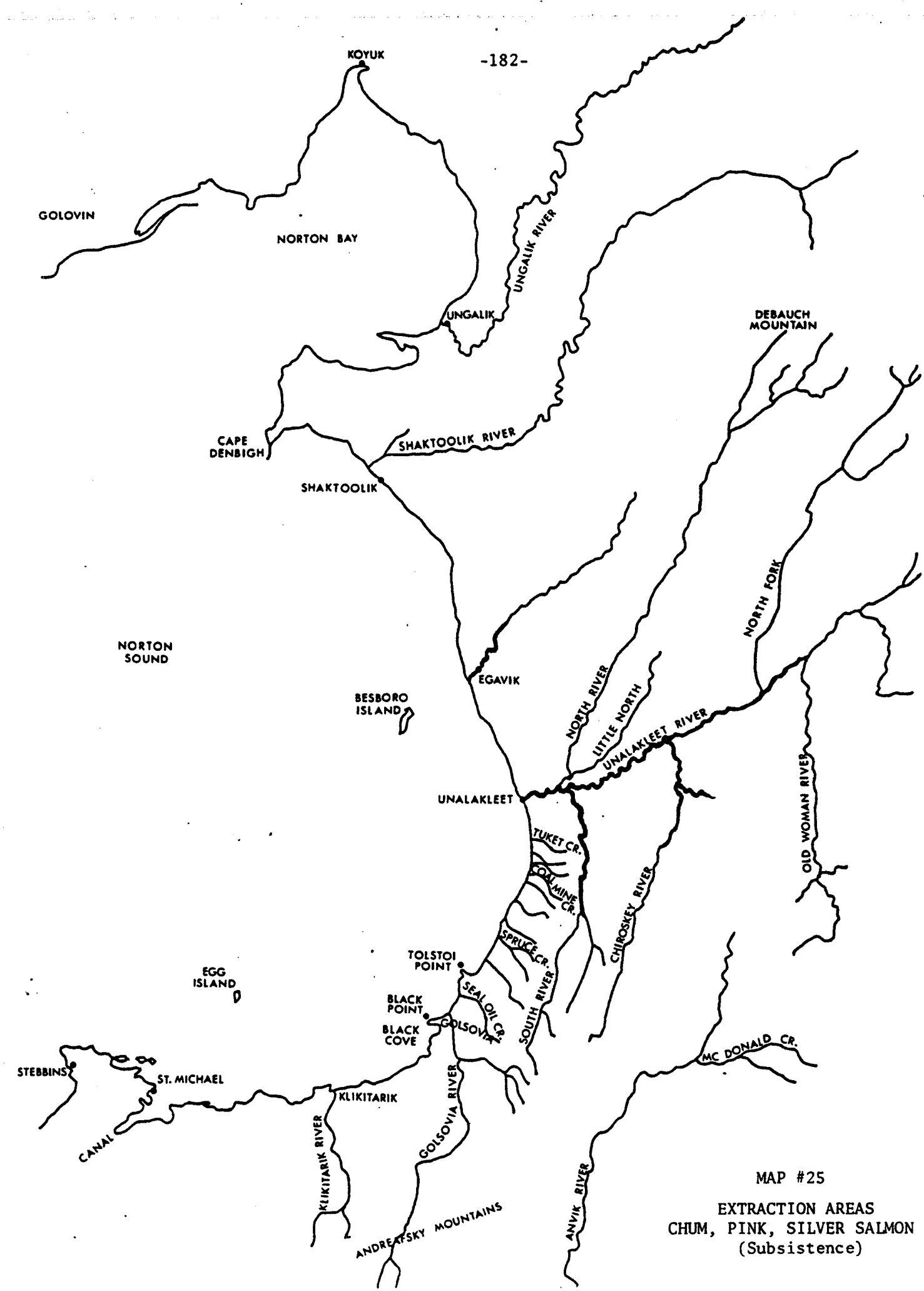
Techniques:

Silver nets are usually the same used for chum (3"-4" mesh) although some villagers make larger silver nets. The nets are set from the river bank or are used for seining. When fishing with rod and reel, an orange to reddish colored medium sized lure is used, as for dog and pink salmon. When ice fishing, people catch silvers with jigging stick, line, and the same type lures as used in summer.

Uses:

1) Flesh

Silver salmon are eaten raw, prepared plain boiled (ooruk), baked or roasted, or fried. Silvers are preserved by smoking in strips and by drying; they are also frozen (as steaks in larger pieces, or whole). They are sometimes half-dried and then frozen for later roasting or boiling. Silvers caught in the late fall or winter are sometimes put



MAP #25

EXTRACTION AREAS
CHUM, PINK, SILVER SALMON
(Subsistence)

away frozen in the storage sheds and later eaten frozen (quak) with seal oil. Soft underbellies and heads of the silver females are grined. Those parts of the silver not eaten (head, backbone and guts) are fed to the dogs.

2) Eggs

Eggs are frozen to use as bait for fishing, or dried for trap bait.

3) Roe

Roe is fed to the dogs.

Red (Sockeye) Salmon, Oncorhynchus nerka

Availability:

In the first weeks of August, a small spawning run of red salmon enters the Unalakleet River. None were reported by the ADF&G at their counting station.

Habits and Characteristics:

These salmon enter the river annually, but thus far in small quantities. They spawn in one, perhaps more, small lakes along the river. Male reds are 5 to 12 lbs. and up to 34", the females are smaller. Their cycle varies by population, variously reported at four to seven years (some are said to spend up to three years in the spawning lake). The Unalakleet strain is not well understood.

Extraction:

Red salmon are only rarely caught as they move upriver. Some are taken at the point they leave the main river for the creeks that lead to the lakes where they spawn. These fish may be following other spawning populations, such as silver.

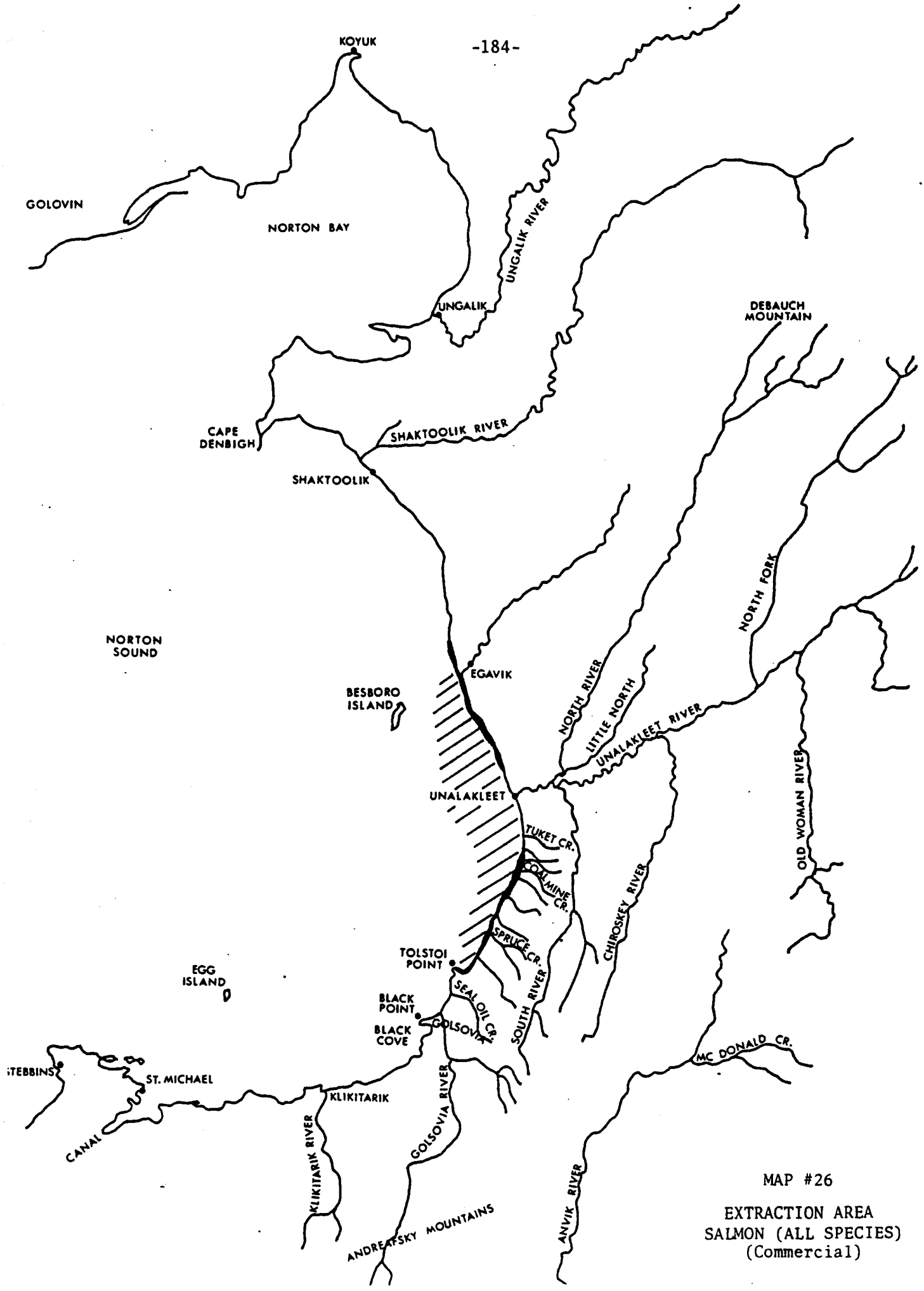
Techniques:

Red salmon are taken by rod and reel or with a net. Often they are caught incidentally to silver salmon.

Uses:

1) Flesh

Red salmon are eaten raw, and are preserved for later consumption by drying or freezing.



MAP #26

EXTRACTION AREA
SALMON (ALL SPECIES)
(Commercial)

Salmon Eggs (Roe), Oncorhynchus spp.

Salmon eggs are taken from the female when the fish is cleaned. The quantities of eggs in king, chum, and silver salmon are saved for several uses: king, silver and chum eggs, those red-orange in color, are used as bait for trout fishing. They are also preserved by freezing; dried eggs are used for dog food. Dried eggs from chum, silver and king are used as trap bait in the winter. The roe of pink and other salmon can be left intact inside the body when the fish is cut for drying to produce Oksolik (fermented eggs) which are considered a food delicacy. Each family prepares some salmon eggs in this fashion.

FISH (Other)

Rockfish, unidentified, perhaps sculpin.

An ocean fish, found in clear water, rockfish is taken south along the coast when people are out hunting for sea mammals, eggs and greens. The skin of rockfish is used as part of the decoration of fancy women's parkas.

Blackfish, Dallia pectoralis

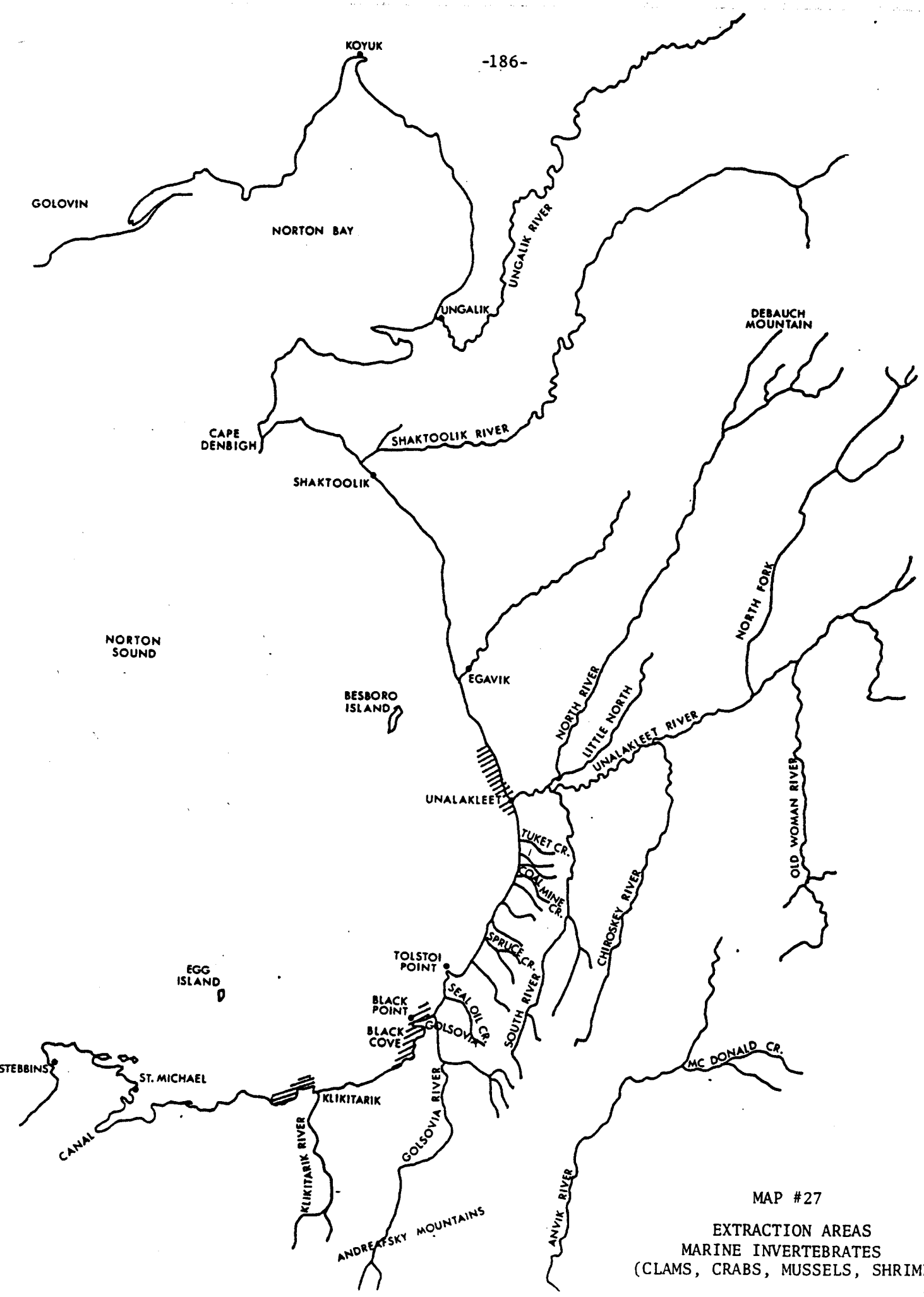
Blackfish formerly were taken in fish basket traps upriver past Chiroskey and in the lakes in the slough. Only a few people take blackfish now.

MARINE INVERTEBRATES

King Crab, Chinoecetes opilio
Tanner Crab, Paralithodes platypus
Clams, Macoma spp.
Mussels, Family Mytilidae (species not identified)
Shrimps, more than one species, not identified

Availability:

Clams and mussels are washed up on the beaches in the fall. Clams are also present in shallow tidal areas of Norton Sound north and south of the river mouth at Unalakleet to the south and near Golsovia, Black Point, and Klikitarik.



MAP #27

EXTRACTION AREAS
MARINE INVERTEBRATES
(CLAMS, CRABS, MUSSELS, SHRIMPS)

Crabs are present in the deep rocky water off Blueberry Point north of Unalakleet and south along the coast past Tolstoi to Black Cove and near Klikitarik.

Shrimps, mussels and clams are also found in the stomachs of oogruk, walrus, and beluga.

Extraction:

Clams and mussels are gathered in the fall (August and September), after they have been washed onto the beaches by storms, or clams are dug from the extensive shallow areas that are exposed off the beach when the tides are very low. Clams are also taken from oogruk and walrus stomachs during the spring.

Crabs are taken from below the ice off Blueberry Point during the winter (November and December especially, but also later in the winter). Crabs are also taken in the spring (May) from rocky areas south down the coast.

Shrimp and other invertebrates are taken from oogruk and walrus stomachs during the spring hunts.

Techniques:

Crabs are mostly taken in the winter with pots, baited with fish (e.g. trout). Some people jig with baited line. Some people also take crabs in the spring by using bamboo sticks to dislodge them from rocks.

Uses:

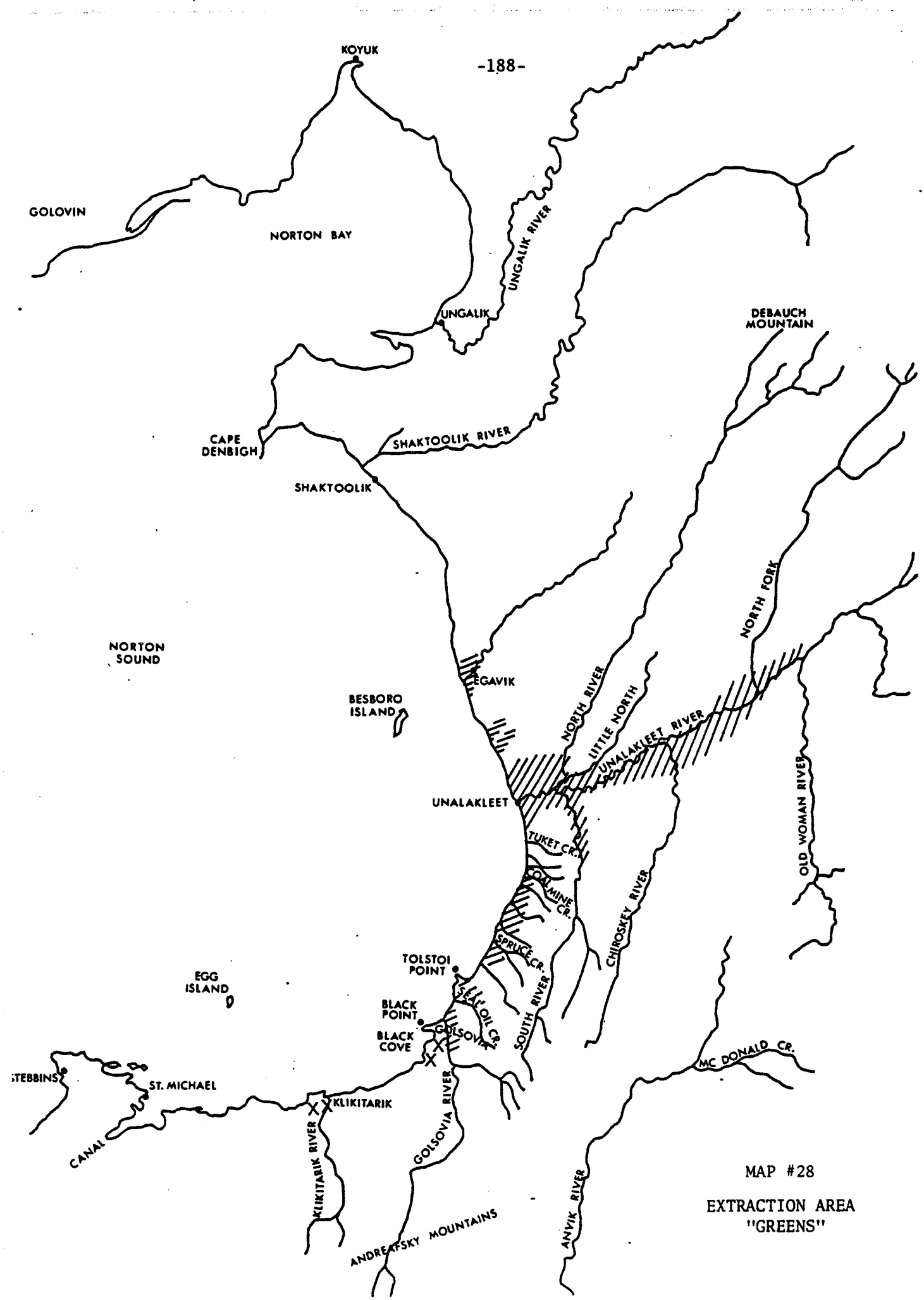
All marine invertebrates are taken for their meat.

GREENS

All land plants are collectively referred to as "greens." Common names, where known, precede native names. Several species were not identified.

Willow leaves (Sura), Salix pulchra

Eskimo potato (Masu), Hedysarium alpinum



MAP #28

EXTRACTION AREA
"GREENS"

Wild Celery (Tukaiyuks), Ligusticum hultenii
Sour Dock (Aluejaqs), Rumex articus trauta
Tundra (Laborador) Tea, Ledum palustre
Fireweed, Epilobium angustifoluim
Wild Rhubarb (Kusimaq), Polygonum alaskanum
Atchaaqluk (Beach greens), including Honckenya peploides
Kavuuti (Marsh greens), unidentified
Wild Onions, Allium spp.
Wild potatoe, Claytonia tuberosa
Bracken Fern, (Fiddle heads), Pteridium aquilinum
Stinkweed, unidentified
Ikiutuk (round top greens), unidentified

Marine Plants:
Kelp (see also roe-on-kelp), Fucus spp.

Availability:

Greens are, for the most part, available in the spring and early summer. A few are at the harvest table during part of their cycle later in the summer or fall. The greens grow in a variety of habitats: along or near rivers and creeks (sura, tukaiyuks, fireweed; sometimes wild rhubarb) on hillsides (Labrador tea, wild rhubarb) along the beach (atchaaqluk), in from the coast (round top greens), on the tundra (Labrador tea, masu), marshy places on the tundra (kavuuti, aluejaqs), and wide distribution in town (stinkweed).

Habits and Characteristics:

All these plants are gathered at a particular point in their cycle, often at the stage of early growth (young leaves, shoots, before the plant flowers). Because most of the plants are picked at a particular point in their growth cycle and this stage can pass in a few days or a week or two, people watch carefully the plants' maturation, how fast or slowly it is taking place, to catch it at the right time and not lose out. A high vitamin and mineral content is characteristic of these plants.

Extraction:

Sura, the leaves of a particular kind of brush willow, Salix pulchra, is taken in the spring (May or early June) when the leaves are young. Sura is gathered along the creeks on the coast or upriver.

Masu, a root, is dug in the early spring (May) when the ground first thaws. The root can quickly turn woody, and so must be watched and taken at just the right time. Masu is dug on the tundra.

Tukaiyuks, wild celery, is taken in the spring (May to early June) before the plant flowers. The plant is found in the same creek and river bank habitat as sura, but matures a little later than sura. The leaves and stems are gathered.

Fireweed is also picked in the spring (May or early June). The very young shoots are sought, and these are found in the same creek and river bank habitat as sura and tukaiyuks.

Wild rhubarb is gathered in the early summer (June) from hillsides while the stems of the plant are still young and tender, before they turn woody.

Tundra tea, the stems and leaves of the plant, can be gathered year around from spring through fall, and in the winter, and is widely available. Some people have their own preference for the location (hillsides, at the foot of hills, or on the tundra at particular places along the coast, upriver, or out of town) to gather the best tasting tea.

Beach greens are gathered in the early summer (June) while the plants are still young and before they flower.

Stinkweed is generally gathered in the fall, after the plant has naturally dried. The plant is also sometimes taken when it is green in the summer.

Techniques:

People generally obtain greens while they are at spring camp on the coast or upriver, when they are out bird or egg hunting, kelping, herring fishing, or picnicing. Some plants can be gathered in or close to town, and people will walk or drive cars or trucks, or ATCs on a special outing to pick greens.

Uses:

These greens accompany and help make complete native meals of fish, oogruk, seal, moose and caribou. Sura, tukaiyuks, and fireweed are stored in seal oil (either individually or combined) to be eaten with native foods such as dried fish and black meat. Rhubarb is made into dessert. Tundra tea is brewed for after dinner, after eating native food.

Stinkweed is used medicinally, either in tea form or as a poultice, for bad colds, arthritis, wounds, and other ailments. Greens, in general, are preferred to commercially grown vegetables available in local stores, but those too are quickly purchased after arrival at the stores.

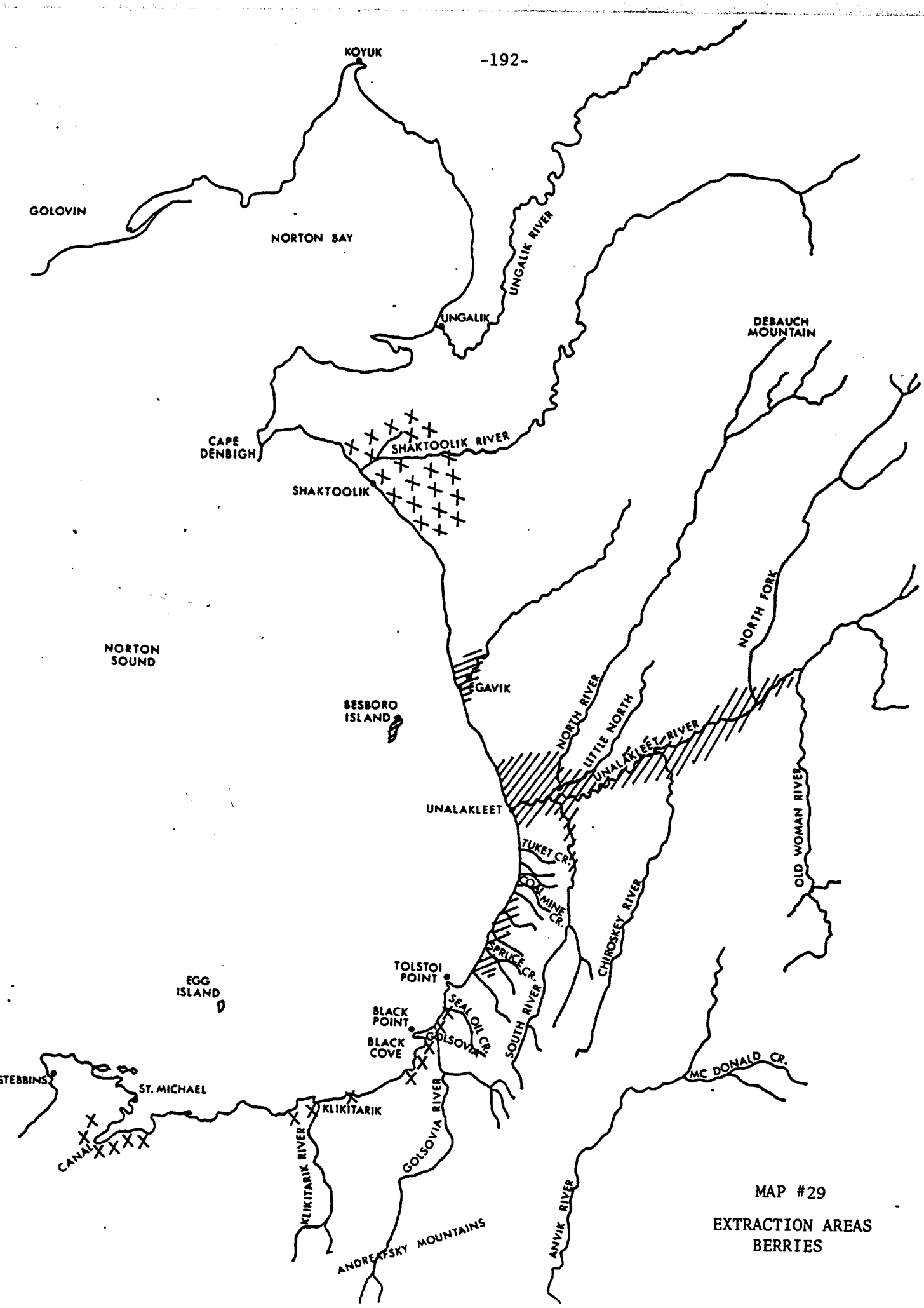
BERRIES, FRUITS

Cloudberries (Salmonberries, or Akpik), Rubus Chamaemorus
Crowberries (Blackberries), Empetrum nigrum
Bilberries (Blueberries), Vaccinium ubiginosum
Cranberries (lowbush), Vaccinium vitis idaea
Alpine Bearberry, Acrostaphylas alpina
Currants (red and black), Ribes spp.
Wild Strawberries, Fragaria chiloensis
Raspberries, Rubus idaeus
Beu-wa-haks, Rubus, species unidentified
Rose hips, Rose acicularis

Availability:

Berries ripen beginning in mid-summer (late July). Salmonberries ripen first, then crowberries, and bilberries, and then cranberries. Cranberries, currants, beu-wa-haks (raspberry-like fruit) and rose hips begin ripening in the fall (August). Berries are available into October.

Salmonberries, crowberries and cranberries are found together, all over the tundra. Bilberries are found on the tundra flats, but more on the hillsides. Currants grow in the woods. Raspberries and beu-wa-haks grow along river banks. Salmonberries, crowberries,



MAP #29

EXTRACTION AREAS
BERRIES

bilberries and cranberries are most abundant. Salmonberries vary in abundance from year to year, depending on the summer weather. Bilberries, a major component of tundra hummocks, are more dependable than salmon berries, and crowberries and cranberries are even more dependable than bilberries.

Habits and Characteristics:

People know the terrain and vegetation where a particular kind of berry thrives and is found at its best (largest, sweetest, juiciest). Salmonberries, bilberries, and cranberries have stages in their ripening, from tart and firm to sweet, soft and juicy, and they are picked for some specific uses, as well as general eating, at these different stages.

The berries are high in Vitamin C and nutrients.

Extraction:

Families have their own favorite picking areas for each type of berry. In general, berries are picked all over the tundra, including the flats and the hillsides north of town. They pick the river banks and along the hillsides and flats from Portage all the way upriver to the farthest camps and along South and North rivers, the hills and flats of the Egavik River Valley, Besboro Island, and the coast south of town to Tolstoi Point. When they put in at Golsovia or Klikitarik, or elsewhere along the south coast, people will pick berries. There are berry areas also near the Unalakleet airport. Some people are invited by friends or relatives to pick in the St. Michael, Shaktoolik, or Koyuk areas.

Techniques:

People make trips from town and to their river and coastal camps to pick berries. They go by boat, truck, three-wheeler, or foot. Wooden berry buckets, coffee cans, plastic buckets, and almost any kind of container can be used for berry picking. Usually leaves, stems, hulls and other debris are cleaned from the containers as the berries are gathered. While berry picking, people are alert for bears.

Uses:

From those picked, some berries are always eaten fresh, on the spot and as part of meals. Salmonberries, bilberries, crowberries and cranberries are put away in quantity, either in barrels in the storehouses or in freezers. Salmonberries, bilberries and crowberries may be stored mixed together. These berries are generally served after a native meal. They can also be part of a special snack of tea, crackers and fruit served to guests and visitors.

Salmonberries, blackberries, or these mixed together, are used as one ingredient of agootuk, Eskimo ice cream.

Cranberries (picked 1/2 to 3/4 ripe) are made into jams and jellies, as are curr nts, salmonberries and bilberries. Cranberries are also cooked into sauces; bilberries can be prepared this way too.

Bilberries are made into pies. Wild strawberries, raspberries and beu-wa-haks are eaten when they are picked.

OTHER RESOURCES

Driftwood

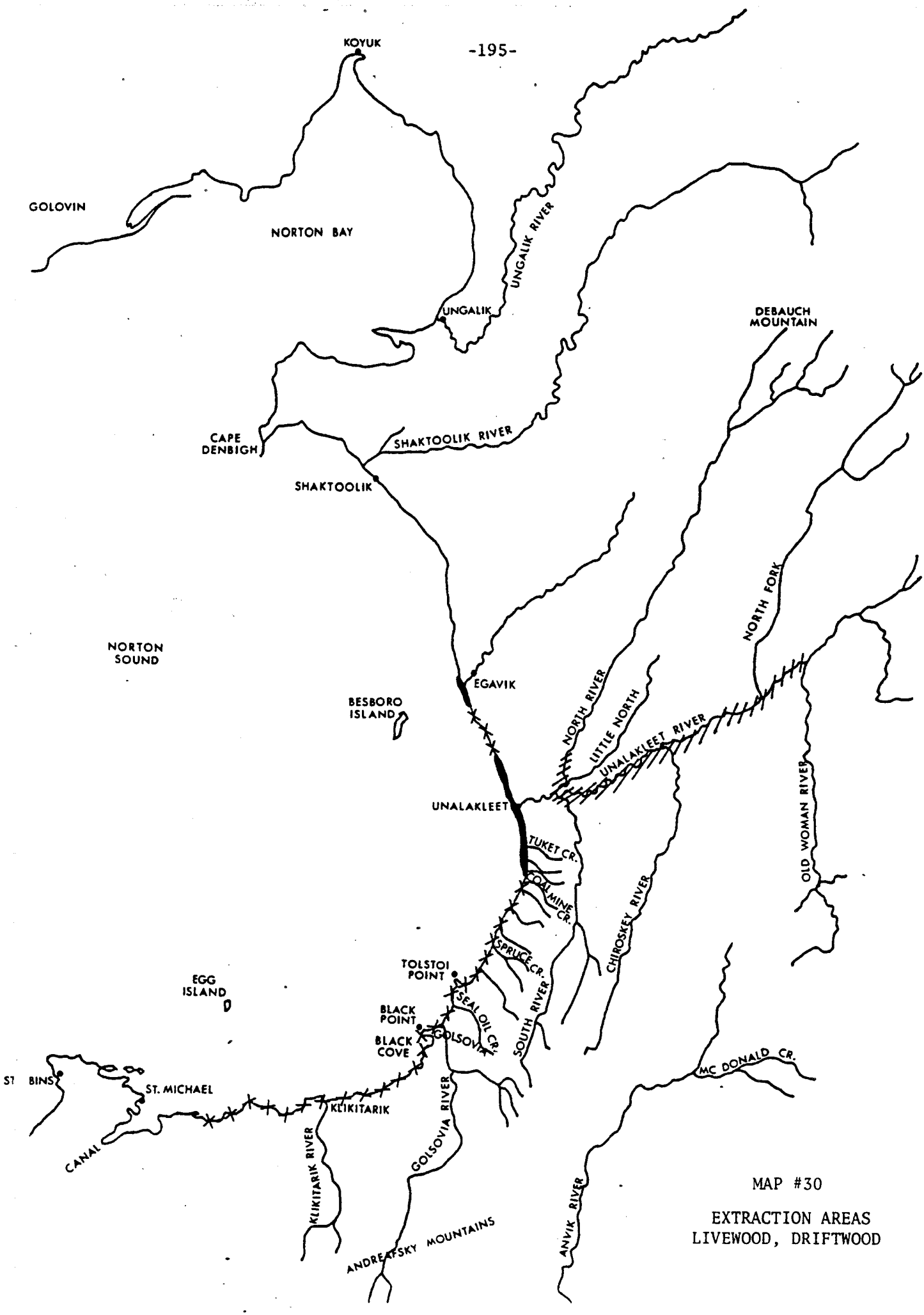
Driftwood is gathered along the beach from town, northward to the hills and southward along the flats. Beach driftwood is used for fuel: home heating and cooking, campfires for hunting and picnics, fires for smoking fish, and fires for cooking dogfood. Beach driftwood is also used for constructing fish racks, duck blinds, camp wind breaks, tent frames, boat poles.

Driftwood or fallen wood is gathered while upriver, for camp fires and tent posts.

Livewood

Wood (spruce and birch) is cut to build cabins on the river, and caches and fish racks at camp upriver. Willows are cut to make sticks for roasting fish, and beds of leaves are used for serving the fish on. Alder (fresh and dry) is used to smoke fish upriver at camp.

Spruce boughs are used to start campfires and smoke mosquitoes away. Alder bark is used for dying, for example skins and basket grass. Spruce wood is used for handles to root diggers and skin scrappers. Birch bark, willow splints, and spruce roots are used to make baskets. Diamond willow wood is used to make lamps.



MAP #30

EXTRACTION AREAS
LIVEWOOD, DRIFTWOOD

Grasses

Strawlike grasses are gathered in and around town and at camp upriver for basket weaving and for making insoles for boots and shoes. Grasses are also used for starting fires.

Minerals

Red Ocre

This rock is found in quantity only in the Moses Point/Elim area. The rock is pulverized and mixed with water to form a paint that is applied to the wood of berry buckets, root digger handles, hide scrapper handles. The paint becomes permanent once applied and adds not only color but a protective coating.

Fossil Mastodon Ivory

People find fossil mastodon ivory in bank cuts or washed out from the soil along the rivers or coasts. The ivory is used for carving.

CHAPTER SEVEN
THE SOCIAL ORGANIZATION FOR SUBSISTENCE

INTRODUCTION

The social organization of Unalakleet encompasses family, closely related households, wider networks of kinspeople, and networks of friends. These various kinds of organizations are not only interrelated through various overlapping memberships, but they are also embedded in, and interdependent with the organizations of extraction, distribution, and consumption of naturally occurring, renewable resources.

Families are the basis of Unalakleet social organization, and the bonds among family members, in metaphorical terms, are tight and secure. Even to the most casual observer, the central role of families--extended, perhaps, through several households--are obvious. Protracted observations by the field research team over a year allowed us to recognize the many strong bonds within families, including connections to members who have established separate households. Members of one or of several closely related family households come swiftly to each other's aid in sickness or trouble; bear hardships together; consider many of their most memorable and happy times to be those they have spent together; assist one another in child rearing; provide comfort and solace in times of grief; and pool knowledge, skills labor, resources, and even cash.

Intense feelings and devotion characterize the interaction between and across generations, and between lineal and collateral relatives. Grandparent-grandchildren ties are firm, indulgent, and loving. Parent-child relations are as loving preceptor to proud student, but not solely structured in a student-teacher fashion. Friendship, kinship, and love pervades the relation. Nieces and nephews gain succor and friendship, even life-long hunting, fishing, and food preparation partnerships, from uncles and aunts, whereas siblings and bilateral first cousins of the same sex and same age-set form life-long friendship-kinship-partnership bonds that pervade most of the public, subsistence, and recreational activities in which villagers engage, and also in private and confidential activities and discussions.

Intense feelings coupled with very close ties can also exist between more distant kinspeople of the same sex and age sets who have been reared in Unalakleet. The constant contacts in so intimate a place, a place in which cooperation in the sharing of knowledge and activities is so crucial to the maintenance of life itself,

generates close ties with more distant kinspeople. Those ties emerge when children accompany parents on visits, at spring, summer, and fall hunting camps, when several families join to share meals and tell stories, when children attend school, and so forth. The same closeness generated from shared activities and common experiences, but particularly from sustained activities, binds friends, generally women with other women and men with other men. These special attachments, too, are born and nourished in camping trips, rabbit hunts, school experiences, 4th of July celebrations, fishing ventures, New Year's celebrations, basketball trips, and the like, and they can span a lifetime.

In family life, as in village life as a whole, subsistence pursuits assume central importance. Men hunt, fish, repair equipment, create shelters and build storage facilities; and women fish, gather, collect materials for fuel and construction, and prepare and store the products of extraction. These activities, the organization of extraction by sex and age within the family, are undertaken and completed not by rote, but by planning which considers every member of the family, and others who may be partially dependent on the family. There is consideration, too, for those who are not partially dependent on the family, but who need or would appreciate portions of food or assistance from time to time. Extraction of resources is sometimes carried out alone, but even for hunting, fishing, and gathering tasks that can be conducted by one person, such activities are more often conducted in concert with family members, other kinspeople, and friends. In part, these activities allow for speedier, more efficient, and more secure ventures but they also generate pleasure and emphasize interdependence.

When harvested resources are eaten, the basic acts of consumption, Unalakleet villagers seek the company of others--family, hunting partners, visitors, friends--usually lingering after the meal's completion to exchange stories or talk over plans for an upcoming trip to camp. There is little evidence of perfunctory meals "sandwiched" between work, the latter measured as "labor time". The pace of Unalakleet life stops for meals. Consumption is enjoyed.

KINSHIP RELATIONS

The Role of Kinship in the Life Cycle

Since 1971 and the enactment of ANCSA, which had the effect of creating village and regional corporations, families once located in distant places have returned and replanted their roots in Unalakleet.* Returning families joined

*The stimuli to return to Unalakleet are discussed in Chapter 2, pp 34-39.

kinspeople and other friends who never left. Since 1971, children, young adults, and adults in Unalakleet have experienced life cycles similar to those Ungalaqlingmiut, who preceded them in the village over the past century. Children in Unalakleet are born into a wide network of bilateral kinspeople established and maintained by parents, older siblings, and more distant collateral relatives.

From their earliest experiences children can turn for affection, protection, comfort, instruction, and sustenance not only to their parents and older siblings, but also to uncles, aunts, and grandparents. Often husband and wife were reared in Unalakleet, but in some instances (described below) one spouse moved to Unalakleet from a different village. In cases of village exogamy, children have fewer contacts with families of the in-marrying spouse, but an effort is made to keep the connections as strong as possible. Children may spend summers with grandparents, or uncles and aunts, in their mother's home village; holiday visits are memorable, as well. Sometimes a family will live for a period (one to several years) in the mother's home or village, and children have memories of the time spent there.

As they grow older, children develop their own special friendships with certain kinspeople (first cousins traced through either parent, a favorite uncle or a favorite older person, for example) and with non-kin (school mates, in particular). As young adults they assume increasing responsibilities within their families and within the village (more and more they help the older people, for example, and become involved in village affairs). Their circle of kinspeople is enlarged and new responsibilities assumed when they marry. After marriage, their focus begins to center on their own growing families and those of their brothers and sisters and on the needs of their aging parents and relatives. When they, too, have become elders they receive the love of their children and grandchildren and the respect of the community; their wellbeing is the concern of not only their near kin but neighbors and young adults who bring them portions of their subsistence harvests, give them rides, cut wood for them, and clean house for them.

Marriage and Residence

Unalakleet natives do not approve of marriages between bilateral first cousins (the children of either father's siblings or mother's siblings). Marriages between first cousins have occurred on rare occasions, but they are discouraged before they are consummated and frowned upon thereafter.

Unalakleet is sufficiently large to accommodate a considerable amount of village endogamy (marriage of partners from within the village). There are 154 couples

in the village, in 119 of which either one or both spouses were born and reared in Unalakleet. Of those 119 couples, 66 are marriages between village residents (endogamous), and 53 are marriages between people reared in Unalakleet and spouses from other villages or cities (exogamy). Thus, Unalakleet is an agamous village--a majority of persons (56%) marry spouses within the village, but many persons (44%) marry someone from outside the village.

We have no reliable data on out-marriages where the former Unalakleet resident moves to another village or city, but the results of our informal tally of outmigration is that in recent memory women (88) move out much more often then men (33). Women practically always move to cities, such as Anchorage, rather than to other villages (72 to cities, 16 to villages). Men, too, most often move to cities, but at a rate of 2:1, not 4.5:1 as is the case for women.

As Table 4 demonstrates, most natives born and reared in Unalakleet marry someone from within the village, and when a spouse is from another village or city, that spouse is most often a woman (the ratio is 3:2 in-marrying women to in-marrying men).

TABLE 4
NATIVE COUPLES' POST-NUPTIAL RESIDENCE
BY SEX
UNALAKLEET, 1982

Male Pre-nuptial Residence	Female Pre-nuptial Residence	
	Unalakleet	Not Unalakleet
Unalakleet	66	32
Not Unalakleet	21	0
	Total: 119	

The village, then, fits the patrilocal-virilocal model in which most couples reside in the village of the husband or the husband's male kinsmen. Given a subsistence lifestyle in which men hunt, fish, and rely upon one another for help and support in a vast terrain that, itself, requires knowledge and experience to comprehend, patrilocality-virilocality is a simple decision. When men move <u>from</u> Unalakleet, it is usually after they have secured full time jobs and have given up, at least temporarily, much of the subsistence life style. They become dependent

on "care packages" of native foods from home, or they engage in subsistence activities during vacations. If they live in Bethel or Kotzebue, as some do, they engage in more limited subsistence activities in those large villages.

Turning our attention to intervillage marriages while controlling for race and residence in Unalakleet, we see even more clearly the relation between sex and place: native men marry natives and bring them to Unalakleet, whereas native women either marry non-natives and bring them to Unalakleet, or they marry natives from villages located closely nearby (see Table 5).

TABLE 5

COUPLES RESIDING IN UNALAKLEET IN WHICH ONE SPOUSE HAS MOVED INTO THE VILLAGE, CONTROLLED FOR NON-NATIVES

Unalakleet Natives	In-Marrying Spouses	
	Native	Non-Native
Male	24	8
Female	9	12
	Total: 53	

Of all intervillage marriages among Unalakleet natives, local men marry native women at a ratio of 3:1, whereas local native women marry native men at a ratio of 3:4. Although native women resident in Unalakleet more often marry whites than natives, in eight of the nine marriages between Unalakleet native women and non-Unalakleet native men, the men are from Norton Sound villages. Four of the men are from either Shaktoolik or St. Michael, villages where residents have shared some extraction areas with Unalakleet residents for several generations. These in-marrying men bring considerable knowledge of the terrain with them and move easily into the subsistence region, only part of which is new to them.

The non-natives (12) who have married native Unalakleet women, in all but one instance, have been drawn to Unalakleet because employment was available and are either full time employed or self-employed and on the peripheries of a subsistence lifestyle.

Native men who marry native women from villages other than Unalakleet and bring them to reside in Unalakleet, frequently have met their spouses either at

Covenant School, which enrolls natives from around the state, or at Mt. Edgecombe School in Sitka, where they did likewise. Unalakleet women who married fellow students, or air force personnel once stationed in Unalakleet, do not reside in Unalakleet. The male bonds and the subsistence lifestyle seem greatly to influence post-nuptial residence in Unalakleet.

In this regard it is important to note that of the 35 couples in Unalakleet where neither spouse was born or reared in Unalakleet, four are native, all four are from adjacent villages in Norton Sound, and all four are closely related to a woman who married a Unalakleet native man and took up residence in Unalakleet. The connection through an established family made the relocation possible. The way in which the relocation came about is instructive. The woman who married the Unalakleet native had two married and two unmarried siblings in her natal village. This woman was soon followed to Unalakleet by her mother and her mother's unmarried son and daughter. The woman's two married brothers remained in their natal village. The unmarried siblings, i.e., her mother's son and daughter, were reared in Unalakleet and eventually married spouses from Shaktoolik (whose residents share part of a subsistence region with Unalakleet). Moreover, the woman's two married siblings (brothers) also eventually relocated with their spouses from a nearby village to Unalakleet, networking through the family ties established earlier by the initial migrants. Such ties are necessary to gain acceptance, hunting partners, and familiarity with the terrain.

Thirty-one white couples (eleven conjugal pairs and twenty families) reside in Unalakleet. They represent 20 percent of all couples (but only 15 percent of all households in the village). These 31 couples occupy 53 full time jobs in the village. Unmarried children in two of the twenty families also are employed full time. If the future is like the past, all will leave Unalakleet when their employment ceases, when they are transferred, or when they retire.

Families, Kindreds and Deme

No one in Unalakleet would limit the use of the word "family" only to a small circle of kinspersons living in town. Family, of course, encompasses a person's most immediate relatives (father, mother, brothers, sisters, sons, daughters, grandparents, and grandchildren), but it also embraces near kinspeople with whom a person invariably has a very close relationship (aunts, uncles, first cousins, nephews, neices, and great-grandparents). Family often refers to great-uncles and-

aunts (these may be considered like grandparents), grand-nieces and-nephews (these may be considered like grandchildren), second cousins, and other more distant collateral kinspersons through both the mother's and father's sides. Descent is reckoned bilaterally, and villagers rely upon descent reckoning to classify their kinsmen and the nature of their relations to them, but family also can include people in adoptive or step-relationships.

Many of a person's family (in both the near and more distant senses) live in Unalakleet; but at least some, and sometimes many, also live elsewhere. Most everyone in Unalakleet has family living in other villages of Norton Sound or elsewhere in village Alaska (particularly the Yukon-Kuskokwim area), in Anchorage, and other cities in Alaska and the Lower 48. There is considerable contact among family members, even though several may be separated by considerable geographical distance. Periodic visits, summer season or school-year residence, and exchanges of letters, phone calls, subsistence foods, and other gifts all serve to maintain the strength of the ties.

Family circles extend over geographical space to include kinspeople living even in distant places and over genealogical space to include kinspeople of sometimes distant relationship.

Families, in this sense, are composed of bilateral kinspeople located in Unalakleet, as well as in more distant places, and their loose structures, which encompass all living relatives and memories of deceased ones appear to be something akin to large, nuclear family-centered kindreds, yet those in which affines as well as kinsmen are recognized as members.

Because bilateral descent, in conjunction with marriages, convert relations that are affinal (in-laws) in one generation to kinship (blood) in the next, a child's family kindred includes relatives (mother's kinspeople) who are his father's affines, and relatives (father's kinspeople) who are his mother's affines. So family flexibility, rather than rigidity of the ordering principles of membership, is the rule. Indeed, when a person marries, his affines become family to his children, as does his personal family of orientation.

Affines, that is, brothers-in-law, sisters-in-law, and parents-in-law, and sons-in-law/daughters-in-law, develop and maintain strong bonds through joint activities, whether they reside in the same or in different villages. If they reside in the same village, on occasions some male affines hunt or fish together; some female affines prepare meals together; affines attend community celebrations

together, often establish spring camps close to one another, and maintain close relations with the children of their sisters or brothers (their nieces and nephews). It is the kinship bond of uncle and aunt to niece and nephew that makes more secure the bonds between siblings-in-law, and the kinship bond between grandparent and grandchild that makes more secure the bonds between parent-in-law and son-in-law/daughter-in-law.

If affines reside in different communities, bonds are maintained through visits, the sharing of foods, particularly those that are abundant in one place but scarce in the other, and resource extraction excursions, again often for resources locally abundant in one place, but scarce in the other (such as kelp-on-roe, caribou, or berries).

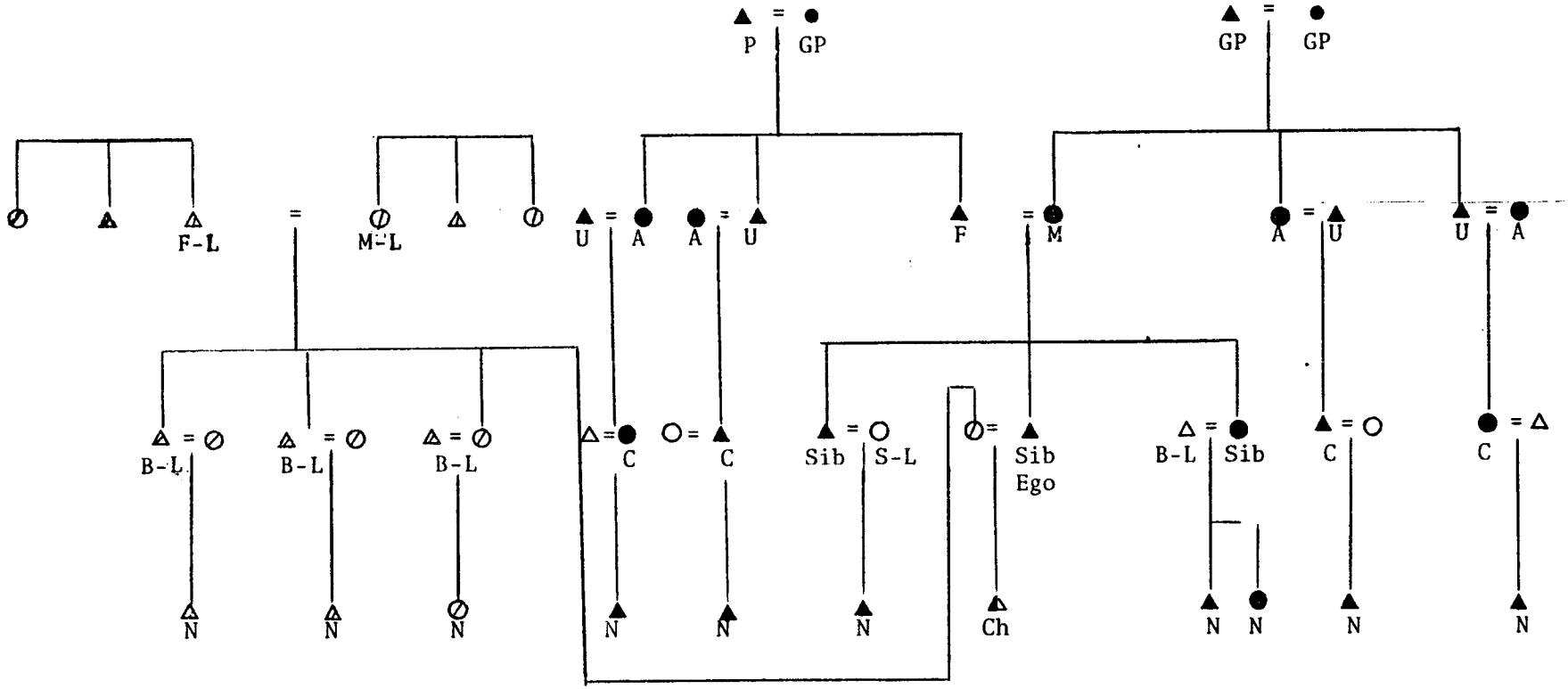
Figure 6 is an idealized, schematic representation of siblings' family kindred of orientation (the one into which brothers and sisters are born and reared), and a male's (ego's) family kindred of procreation, a kindred that is added to his personal kindred of orientation. A woman's ego, of course, adds her husband's family kindred to her new kindred of procreation.

These organizations are flexible, allowing for adoptions, and movements of persons from one household to another within the kindreds as exigencies and interests dictate. The members are quick to specify the nature of their kinship relations to other members if asked, or to volunteer such information ("he's my cousin, my mother's sister's boy") if a family member's name is mentioned, or if a hunting trip is recounted, or if a person reflects on a basketball game. That is to say, family members are proud of their relatedness, share many experiences, and want the uninformed person who mentioned the name, no matter what the context, to know how they are related. This is not mere descent reckoning; kinship relations in Unalakleet entail a vast array of joint activities, and descent reckoning is in large part a memory of those activities. Relatives are proud to be relatives.

Family kindreds, then, are somewhat unbounded because kindreds of orientation overlap with kindreds of procreation. At marriage the spouses have more kinspeople, more obligations, and more persons to turn to for assistance than before. The side on which most emphasis is placed, husband's or wife's, is determined in largest part by residence. That is, the kindred located in the village in which the couple resides will provide the most daily connections of all kinds; if the marriage is endogamous, both husband's and wife's kindreds are emphasized, but the male hunting-fishing activities will usually swing the weight to the husband's kindred of orientation. Children, however, receive succor, support, attention from both sides and serve to increase the activities shared between them.

FIGURE 6

SCHEMATIC REPRESENTATION
SIBLINGS' FAMILY KINDRED OF ORIENTATION
MALE EGO'S FAMILY KINDRED OF PROCREATION



Legend:

○=Female, △=Male, = marriage
GP=Grandparent; A=Aunt; U=Uncle; Sib=Sibling; C=Cousin; Ch=Child; N=Nephew-niece, F=Father; M=Mother
M-L=Mother-in-law; F-L=Father-in-law; B-L=Brother-in-law; S-L=Sister-in-Law

▲ Solid Figures = siblings' family kindred of orientation. Sibling ego's child is procreation to ego, but orientation to ego's siblings
○ Clear Figures = sibling ego's affinal relatives in family kindred of orientation
⊘ Diagonal Figures = sibling ego's family kindred of procreation.

Family kindreds can, and usually do, occupy several houses, thus comprise several households. An elderly person may have a house and choose to live alone; a young nuclear family may have a separate residence, and a third family, comprising mother, father, unmarried children, a divorced son or daughter, and a couple of grandchildren, may occupy a third house. Yet the three households may well be the core of a family, i.e., the set of people who most frequently interact in hunting and fishing activities, food preparation, baby sitting, meals, and the like. But residence flexibility is such that some people come and go from one house to another (married couples, students, divorced men or women, may co-reside with their parents or grandparents, or with an uncle and aunt, then move on to another house, or return to school). Nevertheless, the kinship, nurturance, support, subsistence organization (extraction, distribution, consumption) bonds remain. A family, then, is not a house or a household. It is an unbounded organization of bilateral kinspersons that expands at marriage. Each child sees his or her family as an ever widening circle of relations.

Functions of the Family

Each circle of family in the wider sense has its own history, traditions about its place of origin and its ancestors, and stories about memorable events. Each family has land that its members have customarily used as campsites for many generations for harvesting native foods. Each family has names that reflect its continuity. Families of today continue the history bequeathed to them. They retell the stories and traditions and pass on their store of knowledge to younger members. Every year they set up camp on the land recognized as theirs, either through allotment or through traditional practice, or subsistence use. When their children are born, they bestow Eskimo names in remembrance of past members of the family; sometimes the English names (first and/or middle) given to a baby also recall the memory of family members who have died.

Within an immediate family, the smallest circle of kinspeople, each member holds responsibilities toward the others. Parents want the best for their children and work hard to provide for them. Parents put food on the table largely by subsistence harvesting of the native resources. Many obtain at least a portion, and sometimes most, of the cash needed to house, clothe, and otherwise provide (e.g., meet school-related expenses) for their children by commercially harvesting

the native resources (fishing and trapping). Part of the instruction given to children, and knowledge handed down, is the techniques of harvesting and processing native foods. When out in the country, upriver, or on the ocean, and involved in subsistence pursuits together, parents feel they are giving their sons and daughters the same memorable childhood experiences that they fondly look back on.

Sons and daughters, as they grow older, take on increasing responsibilities within the family. As they become more adept at hunting, setting and checking nets, cutting fish, piloting a boat on the river or ocean, and other aspects of subsistence, they take on more of the work and contribute more to the family's food supply. Their contribution increases in other areas of daily family life, too--taking care of younger sisters and brothers, cleaning the house and yard, making repairs, feeding the dogs, taking part-time or seasonal jobs. They care about their parents' approval and feel real distress if they let them down in some way.

Brothers and sisters look after one another when they are children, giving protection and comfort. When older, they continue to watch after each other's welfare and will personally sacrifice to help in a pinch. They provide each other with native foods and meals; but especially when one is having a hard time and without a hunter, or unable to go into the country, they make it a point to bring food.

Brothers and sisters are among each other's best friends. Brothers pal around together when young; when older, they hunt together, and they talk over troubles and plans. Sisters are the same; they pick berries and cut fish together; they care for each other's children; they talk over their hopes and cares, and in other ways give each other emotional comfort and support. When brothers and sisters have families of their own, these families join in activities together. They visit and have meals together; they harvest subsistence foods together; they give each other, and their younger siblings, a place to stay. Together they sometimes join their parents to harvest foods and they go to their parents' house to help with repairs and construction. When they have grown older and become grandparents, people are looked after by their children, grandchildren, nieces and nephews, grand-nieces and-nephews, and others in the village. Even with advancing age, however, most of the older people maintain considerable physical activity and continue to give from their end. They hunt and trap, fish, and pick berries and greens. They give part of what they harvest, and part also of the food others have

brought them, to their children and grandchildren, as well as to friends of their own age. When they are older, people help give their adult children and grandchildren a start in life and help ease difficulties they are experiencing. Their houses are always open; they have their adult children and grandchildren stay with them; they take their young grandchildren to raise, and they give financial help when they can manage.

Collateral kinspersons are very frequently as close as lineal kinspersons. Indeed, a special enduring closeness almost always develops between first cousins and often between second cousins. This same degree of closeness links uncles and aunts with their nephews and nieces. These kin come to each other's aid and generally look after one another. They hunt, seine, and cut fish together; they explore and travel the country together. The older teach the younger about subsistence techniques and a host of other subjects. If they are fairly close in age, these relatives are close friends who spend a lot of time in each other's company, who joke, who share good times and troubles, who know they can count on one another, who give each other gifts and in a multitude of ways express their friendship. (These close and enduring bonds, where cousins are concerned, are usually between men on the one hand and females on the other.)

The Deme-Like Organization of Unalakleet

Kinspersons, no matter how distant, feel a measure of responsibility to each other. In fact, the common, local observation is that practically everyone in the village is related in some way, by blood, by marriage, or both. Such an organization, an agamous bilateral, localized descent group is called a deme, and Unalakleet more or less fits such a description. Its core members surely comprise a deme. The fact that only four native couples are from villages other than Unalakleet is strong evidence for a deme-like organization.

This recognition of kinship, combined with a sense of belonging through the generations, is one of the unifying forces among people in the village. This translates into people putting differences aside and joining together in common action when circumstances require. This also translates into a general concern for one another and an immediate willingness to help when circumstances, either small (such as running out of gas on the river or being on foot and needing to get

to the other end of the village) or large (such as death, an accident, or a fire), render someone or a whole family in need of assistance.

Households

If the village is considered from the perspective of households (i.e., those people who live together under a single roof and who form a unit of consumption), the residential composition is of several types, most of which are kin-based. Yet 25 percent of non-natives reside as single persons, or several single persons sharing a house or apartment. Table 6 classifies all village households, native and non-native, into nine types (and "unknown") and lists them by their frequency. It is crucial to point out that native households, for the most part, are not independent, but that several coalesce to form families--basic units of extraction, distribution, and consumption. Such is not the case for non-native households.

TABLE 6

HOUSEHOLD COMPOSITION, NATIVE AND NON-NATIVE
UNALAKLEET, 1982

Household Type[a]	No.	Native	Percent	Non-native	Percent	Percent Difference Nat/Non-Nat.
Nuclear	97	77	(47)	20	(42)	+5
Single Person	31	24	(15)	7	(15)	0
Single Persons Living Together	5	0	(0)	5	(10)	-10
Conjugal Pair	21	10	(6)	11	(23)	-17
Composite[b]	12	12	(7)	0	(0)	+7
Single Parent (Denuded Nuclear)	13	13	(8)	0	(0)	+8
Extended	13	12	(7)	1	(2)	+5
Grandparent	7	7	(4)	0	(0)	+4
Joint	7	7	(4)	0	(0)	+4
Unknown	6	2	(1)	4	(8)	
Totals:	212	164		48		

[a]Households were classified as follows: Nuclear = husband, wife, and offspring; Conjugal pair = husband and wife; Composite = mixed kin and non-kin; Single Parent (or Denuded Nuclear) = mother or father and offspring; Extended = husband and/or wife and married offspring (son or daughter with spouse and/or offspring); may include unmarried offspring; Grandparent = grandfather and/or grandmother and grandchildren; Joint = siblings; may include their spouses and/or offspring.

[b]Also includes the CHS girls' and boys' dorms and the BSSD work-study dorm, which are tallied in the native household column.

Paying attention to native households first, by far the most common type is the nuclear household. Nearly one out of every two households is composed of parents and children. These households range in age from young families with husband and wife in their 20s and having two or three small children,to older families with husband and wife in their 60s and having adult, but unmarried, sons and daughters living at home. Some of these families include grandchildren, nieces or nephews who are being raised by their relatives or who stay with them so they can attend school in Unalakleet rather than in the cities where their parents live. Many of these nuclear households change in composition during the summer months when sons and daughters, grandchildren, brothers, sisters, aunts, uncles, and cousins come from the cities where they work or go to school to stay for awhile in Unalakleet, which many consider their true home, cities being way stations and domiciles.

After nuclear households, the next most frequent type (at 15%) is single person households. The large number of such households (14) are bachelor men of various ages. Men are less apt to migrate from Unalakleet than women, and if they stay in Unalakleet, they always maintain close ties to their families for whom they hunt and fish, and from whom they receive support, meals, cash, and help in kind to defray expenses. A few are widowed older people, men or women, whose children have their own homes, but with whom they form extraction, distribution, and consumption units.

Conjugal pairs make up 6% of native households; some are young native couples who do not yet have children, and at the other end of the age spectrum, some are older native couples whose children have moved into their own homes. In all cases, native couples are linked to larger family units for subsistence and life itself.

Composite households, a mixed group consisting of various types of kinspersons, often lineal and collateral, perhaps also including non-kin (friends), make up 7% of native households. Native households are open, and people move in and out to share resources and gain support as is necessary for the moment.

Single parent families comprise 8% of native households; most are younger parents, but some are older parents who have lost their spouse but who have adult and minor children living with them.

Extended households, comprising 7% of the total, are composed of married offspring (some with children of their own, and some without their spouse), who live with one of the couple's parent(s). Some extended households form by

necessity, when young families cannot find or afford housing of their own. Other extended households form when a married son stays at home, or returns to live there, to take care of his parents).

In 4% of village households, grandparents have one or more of their grandchildren with them. Some have raised their grandchildren since they were young; some have their grandchildren for the school year so they can attend school in Unalakleet rather than where their parents live.

The remaining 4% are joint households, ones in which brothers reside together, sisters with their children, or a brother and sister, some with a spouse and/or children.

Households composed of native or native/non-native members span all eight types of households listed in Table 6. All but one of the non-native households fall into the nuclear, single person (alone or together), or conjugal pair types. These, of course, are the dominant types of households in advanced capitalist countries in which nuclear families are small and families, couples, and persons are mobile and relocate for jobs. Both Covenant and Degnan schools and the REAA school district office prefer to hire husband-wife teams (nuclear families, and conjugal pairs), although itinerant teachers are usually single (and form single-person households or room together in composite arrangements). The State of Alaska's non-native personnel predominantly live in conjugal pair households; other non-native personnel in the village live in conjugal pair or nuclear households.

Basic Differences Between Native and Non-Native Households

The non-native households, then, for the far largest part are composed of itinerant professionals in education and other public services. They have located in Unalakleet for their occupations and usually do so for relatively short periods of time. Educators, particularly single persons and pairs, leave during the summer months. Only one non-native household in the village, that of the Lapps, is elderly. Non-native couples, should they stay in Unalakleet to retirement age, invariably relocate. Furthermore, non-native persons and families within the village are not interdependent but fit the more typical nuclear household model, practicing Protestant ethic values.

The contrasts between native and non-native households are marked: whereas 28 percent of native households are either composite, extended, grandparent, single

parent, or joint, only one non-native household falls into any of these categories. The importance of the differences must not be overlooked. Native households change in composition as persons grow older and move in with married children, or as divorced women relocate from cities with their children and move in with a sibling, or as children whose parents are working in some distant place move in with grandparents, and so forth. These many kinds of households, similar to the nuclear, conjugal pair and single person households among natives, are connected to larger family circles in which goods, services, equipment, and labor are shared, in which support and comfort is gained, and in which even cash is pooled and shared for some purposes.

NETWORKS

A network of interacting people may be connected by any one of several different kinds of ties. They may be kinspeople (by blood or marriage), friends, coworkers, members of the same organization or group, or school mates. While this section specifically considers networks of kinspeople, other kinds of networks also exist in Unalakleet. It should be kept in mind, as well, that people who form a network of kinspersons usually will, at the same time, stand in other relationships to one another. They may work together; they probably attend the same church (Covenant Church); they likely attended the same high school (Covenant or Mt. Edgecombe); and they may belong to one or two of the same social organizations (Sewing Circle or Covenant's Young Marrieds Group, for example).

A network can be described as a constellation of interactive people who pass information, goods and services amongst themselves. The people within a kin network visit one another, work on tasks with and for each other, and give or lend items to each other. While they do not relate exclusively to others,they may spend considerable time together, repeatedly joining to accomplish certain tasks and to enjoy each other's company. They think of each other when they have something to give, and, of course, one gives to the other(s) at those times.

Kin networks generally consist of one or more core groups of closely related people: parents, children, and children's families; siblings (brothers and sisters) and their families; first cousins and their families; or a mix of these and other more distant kin.

The spread of a network usually reaches far past the boundaries of the village. It includes kinspersons who are next-door neighbors and kinspersons who live in distant villages and cities. Information and goods flow to the farthest reaches of a network; information includes family news and word on subsistence resource availability; and goods include native foods and other gifts. Joint activities (such as resource harvesting and processing) generally take place among kinspersons who are resident within the village. Depending on the season, however, visiting relatives will be available to take part and are included in the endeavors. Sometimes, kinspeople living elsewhere are invited to visit for the specific purpose of hunting birds, fishing, or picking berries. Invitations like these may serve to incorporate kin into an activity network for the first time or else strengthen pre-existing network ties.

Affinal Networks

In-law (or affinal) relationships are one of the factors which expand networks far beyond Unalakleet. As already noted, one partner of a union is frequently from another village or urban area. Table 7 lists the place of origin for the outside member of the 33 native unions in which one spouse is from another village in Alaska. In 20 other unions in which one spouse is a Unalakleet native, the outside spouse is non-native and hails from an urban area: Anchorage or another city in Alaska or the Lower 48.

All but four of all native spouses married into Unalakleet are from villages in the Norton Sound and near Yukon areas. In fact, some members of the older generation, now elders and widowed, either married from these same villages or came from them to live in Unalakleet, the home village of their spouse. Several of these villages are close enough to Unalakleet that there is considerable visiting and interchange between kin. Subsistence foods pass through the affinal networks linking the spouses.

TABLE 7

AFFINAL NETWORKS: NATIVE SPOUSES MARRIED INTO UNALAKLEET FROM OTHER VILLAGES IN ALASKA

Spouse's Home Village	Number	Area[a]
Aleutians	1	Bering Sea
Bethel	1	Y-K
Elim	3	NS
Golovin	2	NS
Koyuk	2	NS
Mountain Village	1	Y-K
Nome	3	NS
Point Lay	1	North Alaska
Savoonga	1	Bering Sea
Shaktoolik	6	NS
St. Mary's	5	Y-K
St. Michael	2	NS
Yukon-Kuskokwim (unindentified)	3	Y-K
White Mountain	1	NS
Unknown	1	
Total[b]	33	

[a]Y-K = Yukon-Kuskokwim village; NS = Norton Sound village.

[b]In twenty-one other couples, one spouse is from Unalakleet but the other is from an urban area in Alaska or the Lower 48.

Subsistence foods usually flow directly between a couple and the kinspeople of the in-marrying spouse. Women who have married into Unalakleet from the St. Mary's and Mountain Village area, for example, send their parents and families subsistence foods which are not readily available on the Yukon. These women and their Unalakleet husbands give caribou, moose, seals and seal oil, tomcods, smelts, king salmon strips and berries to the women's relatives. While they do not necessarily expect anything back in return, they receive subsistence foods that are harder to obtain or a taste-treat around Unalakleet, such as berries, pike, shellfish, blackfish, cisco, and whitefish. The flow of subsistence foods, as these

particular couples also illustrate, is on a regular but sometimes also on an emergency basis. Routinely during the year gifts of food pass between the families. But on occasion circumstances such as a poor harvest of berries in one area, or a disasterous flood, or violent winds pushing shore ice over the spit, will necessitate that subsistence foods be given to help meet particular needs.

The flow of subsistence foods between villages may pass through several affinal links in a network and even result in the formation of food-trading friendships. For example, the mother of a Unalakleet man whose wife is from a Yukon village struck up a friendship with another elderly person related to her daughter-in-law and now receives berries from her friend and sends gifts of native foods in return.

Affinal networks not only link people in Unalakleet with different villages but they link family networks within Unalakleet itself. Each spouse of a couple brings his or her own local kinship network to the union and subsequently some members of each family are joined in a common activity and exchange network. At any given time a husband and wife may draw together members of both families for a subsistence activity, seining for example, or else they may participate with one or the other set (patri-side or matri-side) of their kinspersons. Activity or task groups vary in composition at different times, but there is a core group of their kinspeople--the core of a kindred--who are involved overall. The couple gives from their harvest to both sets of parents, siblings, grandparents and other relatives in their kinship networks, and these in turn may pass some of what they receive to others in their exchange networks. Women and men who have married into the village take part in their husband's or wife's activity networks (although some have their own siblings or other kin who have also married into the village to join with in subsistence and other activities).

The flow of goods through kin networks points to the ramifying nature of these networks. A much larger number of villages are connected by interacting kinspeople than at first glance may be supposed. Focusing attention on only those exchanges between spouses and their immediate families in affinal networks, for instance, underestimates the extent to which goods, once put into a network through giving, find their way through acts of further giving to people far beyond the initial recipient.

Consider, for example, a couple in Unalakleet, the wife of whom is from St. Mary's village. A network of her own kinspeople will often distribute among

themselves what goods she sends to any one member. So, she may send by plane a box of frozen caribou and moose meat to her home village for her parents. They in turn will give some of this meat to their children living there. Perhaps one of their daughters, the original giver's sister, is visiting from another Yukon village that she has married into. She will be given some of the meat, which she will take home; and people in her husband's village will partake in a meal of moose or caribou from Unalakleet.

The same phenomenon occurs when parents in Unalakleet send "care packages" of dried fish, seal oil, and berries by jet to their married children in Anchorage. The receipt of native food is much looked forward to by Unalakleet people and all other Eskimo people living in the urban areas of Alaska and elsewhere. The children who receive their parents' gift will give away some of it, in portions or in meals to cousins or other friends and relatives who also live in the city and would delight in a taste of native food.

Kinship Networks Connecting Unalakleet with Other Villages and the Urban Areas

Affinal networks, as discussed previously, are one major interconnection. Another major connection is provided by people who have moved from Unalakleet, their home village, to other villages and cities. They leave primarily for jobs, schooling, or to be with their spouse or other relatives. Ties to their home village are rarely completely severed, however, and they remain an active part of kin networks, through which information and goods flow. They also enter subsistence and other activity networks when they return home to visit.

The flow of goods through a network to kinsmen who are living away includes subsistence foods among its most common and important items. Parents and siblings, primarily, periodically send these foods or bring them when they visit their children, brothers and sisters, and other kin living elsewhere. People in the village frequently think about and talk about those kinsmen and friends who are away and have a difficult time getting native foods. The villagers put away some of their subsistence harvest with those relatives and friends in mind. In one way or another, all the different kinds of foods (caribou, moose, seal oil, smelts, salmon, berries, etc.) make their way to Unalakleet people living away from the village so they can taste them. Once received, the food packages are shared with others,

relatives and friends, who also live away from the village and who would enjoy having a meal of native foods. When they can manage, people away from the village send gifts of food available to them in thanks for what they have received (for those living in the cities, these foods are mostly store-bought, such as turkey, beef, fresh fruit, crabs, fresh shrimp, and sometimes all the fixings for a complete dinner).

Kinspeople living away in the cities and other villages come home to Unalakleet to visit whenever they can. Some make it back several times a year, some once a year, while others not until as many as 30 years have passed. However long between return visits, when back in Unalakleet they are taken out to fish, hunt, and pick berries. Some individuals and families, in fact, return specifically for the purpose of harvesting native foods. Whatever foods they harvest for themselves they take with them, and they are given more by relatives and friends who are glad they came.

When they get back to the city or village where they live, they share the foods they have brought with other relatives and friends who were not able to make the trip to Unalakleet. They may even have been given packages of native food to carry back to designated people by their relatives and friends.

Friendship networks, discussed in the following section, are the third major interconnection between Unalakleet and other villages and the cities. Networks of all kinds expand the connectedness of Unalakleet people to thousands of other native people from Barrow to Bethel and beyond.

Friendship Networks

Friendships between people can be as strong and lasting as the bonds of kinship. The two often go together: two brothers may form an especially deep friendship and so may two sisters, two first cousins, an uncle and nephew, or an aunt and niece. Looking back, people say that these attachments formed early when they were boys or girls, and that these close friendships were strengthened during their adolescent years and sustained through their adult years.

Men usually form such close and enduring friendships with another male relative. As boys, for example, two first cousins will play together and keep one another's company around home and at school. The mold is set young, and the relationship deepens when they begin hunting together, and they share the joys and

pains of their teenage years. By the time they are young adults, these two first cousins have become hard and fast friends. They continue that friendship over their adult years, going through many adventures together, relying on each other in difficult times, and lightening dark moments with joking and laughter.

Close male friends and hunting partners, like the cousins being described, show real concern for each other and attend to each other's safety when hunting in the country and on the ocean, but also they look after each other in the village (or the city) when they are out on the town together. In later years when they have become older men, they look back and tell stories about how they got each other out of scrapes and through truly dangerous situations, perhaps even relating how one saved the other's life. They also tell humorous stories on each other about embarrassing incidents and elicit laughter from their audience. Among their listeners may be two young cousins who have begun their friendship and look forward to a close and life-long association through good and bad times like those told in stories by their elders.

Women form close friendships with female kin but much more than men will also form friendships with distant kinswomen and non-kinswomen. School is often the place and time when these friendships begin. During their elementary and high school years in the village, they make friendships with other girls that mature when they are grown women. They offer help and assistance, visit, and remember each other with gifts. They may also be confidants who give advice and comfort to each other.

The friendships which women make during their years at high school, vocational school, and college away from home often become the basis of later intervillage networks. In these school settings, women from different villages meet and establish ties that transform in later years to food-trading and visiting relationships. When they travel to each other's village for a conference or on other business they have a place to stay (although they may have kinspeople there, as well, who will also give them residence). They send their friends some of their subsistence harvest, giving foods that are scarcer in the home area of their friends and receiving foods that are scarcer in their own area. Women also establish food-trading and visiting relationships with the women they meet from other villages when attending conferences and job-related workshops and training sessions.

One example will serve to illustrate the extent to which such friendships between women, built up and maintained over a life-time, expand the intervillage networks of subsistence food giving and sharing. A late middle-aged Unalakleet woman trades at different times dry fish (pink salmon), smoked fish (King salmon), frozen tomcods, trouts (char) and berries with friends in Shismaref, Savoonga, and Gambell for black muktuk (bowhead whale), white muktuk (beluga whale), gouk, and other berries. She trades blueberries (bilberries) and groceries with friends in Shaktoolik for beluga whale. She, in turn, gives portions of the muktuk, gouk, and other foods she has received to her children and their families. The women she trades with, some of whom are located in villages to the south as well as in the northern villages cited in the illustration, are all friends from her days in school at Mt. Edgecombe and the periods she spent away from Unalakleet while her husband worked at jobs in other places.

THE KINSHIP-FRIENDSHIP ORGANIZATION OF EXTRACTION, DISTRIBUTION, AND CONSUMPTION

The harvesting of subsistence resources is more commonly carried out in the company of other people than alone. This is for reasons of safety, companionship, economy, and labor assistance. Hunters sometimes go out by themselves for rabbits, birds, or seals (winter seal hunting is always conducted with at least one partner); people will also go unaccompanied to check and empty fish nets or check their trap lines if set fairly close to town. But when trips are made over a long distance, in potentially hazardous conditions, to take large and sometimes dangerous game, or to harvest a resource in quantity (e.g., seining), the parties number at least two and sometimes more than 20 people.

Hunting Groups

Hunting groups are composed of two or three men, except when large game is hunted and then the party is usually bigger. Hunting partners are closely related men or best friends who grew up together. Brothers hunt together, as do first cousins (maternal or paternal), uncles and nephews (maternal or paternal), brothers-in-law, second or more distant cousins, or a combination of bilateral kinspeople and affines. Sometimes young men go out hunting with particular experienced or elder men from whom they want to learn hunting techniques about the animals hunted, ice and weather conditions, and other points about the hunt. Although men have

one or two other men with whom they particularly like to hunt, and with whom they go out as often as possible, the composition of hunting parties differs depending on who has the time, resources, inclination and need to hunt, as well as the game being sought.

Parties of three or four men form to go after the large sea mammals (oogruk, whale, or walrus) for protection and cooperation in the work of hunting and butchering. These parties are generally composed of two hunting partners and one or two others who are relatives or friends of the hunting partners. In the cooperative effort of a rabbit drive, one or more pairs of hunting partners join together, and with other relatives and friends. The largest parties generally form for caribou hunts, their size offering protection for the distance travelled. Several pairs of hunting partners may be involved, and accompanied by single individuals, the members of the party as usual being relatives and friends. Once the caribou herd has been located, however, the party separates for the actual hunting. Hunting birds is similar in the respect that the actual hunting is usually done alone, although a family or partners make camp together. When men go far into the country to check their winter traplines (60 or more miles out), the trapper usually has a companion (a hunting partner or other close relative or friend) along for company and safety. Trappers, of course, hunt when not tending their trap lines. Because many trappers are single adult males, they return to their families and wider networks of kinspeople and friends much more meat than they consume. They are significant over-contributors to their families' subsistence economies and to the wider networks with which those families share.

Fishing Groups

One or more related families team up for summer and fall salmon or trout seining. Participants may simply be an immediate family or may include a combination of parents, sons and daughters (and their spouses and children), grandparents, children, brothers and sisters or cousins (and their spouses and children), and friends. Setting and checking the family subsistence net is usually more strictly a family undertaking and is done by one or a few household members, although even here another relative (sibling or cousin, for example) or friend may go along.

Other Food Harvesting Groups

Similarly, the gathering of berries, greens, eggs, kelp and shellfish is often a family undertaking, either on a one-day outing or on a trip out from camp. But often, too, grandparents and kinspeople or friends, either from town or visiting from the cities or other villages, are invited along. Hunting partners who make spring camp together will also go out together to gather kelp, birds' eggs, and greens. Sisters, cousins, or women who have been friends since girlhood go berry picking together. Quite often, when there is room in the boat or truck, a food harvesting party will invite an elder along, or someone else who otherwise might not have the transportation to travel farther out from town than he or she could go on foot.

Food Processing Groups

In the Field

The people who go on a day outing (e.g., to seine) or who camp together are those who work together in processing as well as harvesting the foods. Male relatives and friends, often hunting partners, share the labor of butchering large animal kills (oogruk, walrus, whale, and sometimes caribou and moose). Occasionally someone will happen by and help with the butchering of large game and if so, is given a share of the kill. The female members of a household or camp clean, cut, dry, and smoke the fish taken from subsistence set-nets. Females outside the immediate household or camp unit (mother and adult daughters or daughters-in-law, sisters, cousins, girlhood friends) clean and cut fish after seining together.

At Home

A household unit generally takes on the processing and preserving of foods brought in by its members. The women and girls of a household pluck birds; cut and clean fish; turn and move fish on drying racks and in the smokehouse; salt fish, kelp and roe; make seal oil, cut meat for drying; wrap and bag foods (meat, fish, berries, greens) for freezing.

When they visit, close female relatives (adult daughters or daughters-in-law, siblings, cousins) or girlfriends will often help with the processing of the food harvest. Close relatives (mother and daughter or daughter-in-law, or sisters, for example) and sometimes neighbors will share the use of fish racks and space in food storage units (sheds, store houses, caches, freezers).

The men and boys of a household complete the butchering of game brought home; gather wood for smoking fish and building fish racks; construct or renovate the racks, smoke houses, and storage buildings; and maintain and repair the motorized vehicles, boats, and equipment (nets, guns, rifles, rods and reels), used in harvesting subsistence foods. Again, when close male relatives and friends visit, they will help with these undertakings.

Distribution of the Harvest

The large sea mammals (oogruk, whale, and walrus) are divided among the members of the hunting party. When they return to town, the hunters share their portion with relatives, elders, friends and neighbors. The catch taken in seining for fish or a drive for rabbits is also divided among participating members who, in turn, give some away to other individuals and families. For the other foods harvested, a person gets all of what he or she catches or gathers, even if the food is taken while the person is with others. This is true for birds, eggs, greens, shellfish (taken by rod and reel), berries, seal, caribou, and moose. The person puts the food in the household larder, and also usually gives some away.

In giving a portion of their harvest to others, people always contribute to their parents, their adult children, the elders, those persons (especially widowed women or young women with children) who have no hunters in their household, and kinspeople and friends in the cities and other villages. Other relatives and friends are given the gifts of food whenever possible. Special relationships of giving also exist: the trading or exchange partners whom people have in other villages (already discussed) and the friends and relatives with whom people payuk. In payuking, two people (both usually resident in town) give gifts to one another, visit, and look after and help each other. This relationship continues over years; it can be between good friends or relatives of the same age or it can be between two people of different ages, the younger one of whom looks after the well-being of the older.

No matter how conscientiously a family works to meet its food needs or how carefully it plans, circumstances such as illness or failure in hunting may cause it to fall considerably short of filling its needs. All of the adult natives in the village know what big game has been taken and which families may be short. In these cases, friends and relatives look after the family by bringing food, and doing so in such a manner that the family will not lose face. People observe that

giving takes place with an attitude of gentle caring and happiness and simply as a natural part of living: "it's just something that's always done."

Consumption Units

A household relies on the subsistence foods that its members harvest during the year. A household feeds not only its own members but many others, such as friends and relatives who drop in to visit, children who come to play, people from out-of-town who stay overnight, or people who come to help with building or other work. Generally anyone who stops in is offered coffee and often a snack or a full meal. Sitting down to eat almost any meal in the village usually means having a grandparent, brother or sister, extra children, cousin or some other visitor joining a household at the table. This is a commonplace happening both at home and at camp. To yokoq is a specially recognized form of sharing by consuming native food together. When household members invite visitors either to an after-supper snack of tea, berries, strips of dried meat, and crackers, or to a mid-afternoon light meal of dried fish and seal oil, carrots and onion pieces, followed by tea, crackers, and berries, this is to yokoq. It is a much enjoyed occasion in each other's company, the native foods being integral to it.

A larger unit of consumption forms when dinners accompany family and community events. Meals are prepared for holidays and celebrations, such as weddings and anniversaries, and invitations go out to the larger circle of family, kinspeople and friends. "Church ladies," (i.e., women who regularly engage in extracurricular activities at the Swedish Evangelical Church) always prepare a meal for the close relatives and friends of a person who has died, the meal to be eaten after the funeral. Community-wide potlucks are held for various occasions, usually in recognition of some event, in honor of someone from town, or in welcome for visitors. Native foods figure prominently in these meals, as the central dish (e.g., pots of caribou stew to feed 200 people), or among the many dishes brought (e.g., a pan of baked and stuffed salmon, a bowl of berries, a plate of muktuk). Villagers appreciate the foods as gifts from God for the sustenance of the native people.

CHAPTER EIGHT

VILLAGE ECONOMICS

INTRODUCTION

Prior to the nineteenth century, Unalit-speaking (Yupik) residents of what is now the village of Unalakleet were engaged in complex trade networks that connected Athapaskans in the interior to Chuckchee Eskimos in Siberia. There were many relations throughout these complex networks, of course, with major connections between Unalit speakers and Malemiut people (Inupik speakers) to the north, and Kawerak people (Inupik speakers) to the northwest. Russians began searching for furs in Siberia in the early seventeenth century, establishing trading posts there in the 1630s. About a century later they explored the Aleutian chain and then turned south along the coast in search of more furs and trade contacts. In 1797 the czarist state-owned Russian-American Company set up shop on Kodiak Island, and between 1833 and 1838, that same company had established two posts in Norton Sound, one at St. Michael, and the other, a "trading hut", at Unalakleet.

From at least 1833 through 1867, Russian soldiers and traders sought to dominate trade in Norton Sound, seeking Alaskan goods for Russian and European markets. Czarist merchants and soldiers attempted to invade existing networks of exchange with the intention of linking all together. The quest was to provide commodities to overseas buyers while providing commodities of considerably lesser value to Eskimos. The resources extracted by Eskimos and Athapaskans were natural, renewable items of traditional use--pelts and hides for clothing, drums, bedding, and the like. The merchants reaped the benefits of commodity circulation throughout Europe and the world, while delegating the risks of production to the natives (the extractor producers). Thus, the setting, baiting, checking, and clearing of trap lines during winter months, the skinning and transporting of pelts to trade partners or directly to trading posts, was done by the natives without help or credit against projected returns by the merchants. The Russian-American Company was never completely successful in interrupting all old networks and linking them up through control. A considerable amount of exchange escaped this company's efforts to exercise control, in large part because posts already established by independent Russian merchants on the Kolyma and its tributaries in Siberia offered a larger supply of trade goods and better prices.

In 1867 the United States purchased Alaska from Russia, and trade relations shifted to the ACC (Alaska Commercial Company) whose agents and traders took over the fur trading post at St. Michael and the hut at Unalakleet. The Alaska Commercial Company originally was a private firm given the sole rights to trade in the area. Subsequently, the trading post changed hands on several occasions, only to revert to the Alaska Commercial Company again in the early 1970s. At that time ACC was, and remains, a federally-subsidized firm. Federal subsidies were sought by, and granted to the Seattle-based company by Congress, because of local competition created through provisions of ANCSA that allowed for several kinds of native-owned and operated business (ANICA - Alaska Native Industrial Corporation, and village corporation stores, for examples).

Within thirty years after the purchase of Alaska, residents of Unalakleet had become involved as laborers, on a very small scale, in Rev. Karlsen's sundry small operations, including the reindeer herd. Some journeyed to Nome with erstwhile Karlsen employees during the gold rush.

Subsequent contacts with church, government and, on a more limited scale, private sector businesses, have drawn residents of Unalakleet ever more tightly into the nation's political economy. Their aboriginal lands have been expropriated for military bases, then returned in recognition that any claims they might make to still greater amounts of lands, water or other resources were extinguished. In recognition of that extinguishment of claims, the village and the region of which it is a part have received public monies to conduct their affairs. The public sector has come to play an increasingly important role in the economy of the village since 1971.

Commercial salmon fishing was conducted on a rather haphazard and unsuccessful basis in western Norton Sound in the post World War II years, but after several moribund seasons was revived in 1961 when the Alaska Department of Fish and Game stimulated it, and after fish buyers agreed to purchase and process catches in the Sound. For twenty years a single buyer, with one or two exceptions, controlled the catches at Unalakleet and eastern Norton Sound, much as a single oil distributor, Standard Oil, located at St. Michael, controlled (and continues to control), all oil distributed in the eastern Norton Sound area. Monopsonies of trade, where a single firm monopolizes all exchange in some commodity market, were common in the arctic after statehood as before. Prices for which people can sell, as well as prices that they must pay for basic commodities, are set by the monopsonist. The state and federal governments guaranteed the new order by providing support for the capitalist enterprises.

Public (state) support for enterprises has come in several fashions, but principally through the development of infrastructure (transportation systems, utilities, communication systems), services (fire and police protection, research), laws (such as those that inhibit foreign competition, or that create and protect private property and private accumulation), and state assistance and subsidies to get nascent industries moving that benefit capital without demanding excessive outlays from it.

In modern Alaska the public sector of the economy looms very large, paving the way for capitalist investment and capitalist extraction of the naturally occurring, non-renewable resources (oil, gas, minerals) and renewable resources (principally fish, shellfish, furs, and timber). Even native corporations have been established to extinguish land and water claims on the one hand, while encouraging them to participate in capital investment and accumulation on the other. The public sector economy, providing infrastructural development, services, subsidies and assistance, is also evinced in transfer payments and services provided to people who have suffered most, or who are least able to operate successfully in the private sector, or in that part of the public sector that provides earned income for employment (local, state, or federal employment, IRA employment, employment derived from state or federal block grants, contracts, and the like).

Modern village Alaska, and Unalakleet is no exception, has become dependent on public funds to maintain and expand their municipal and IRA functions, and to provide cash to families in the employ of local, state, and federal institutions, or the agencies and programs funded by those institutions. All such funds are ultimately dependent on legislation at the federal and state levels, so they can grow, shrink, or disappear depending on legislative decisions and the ideological predilections of presidents and governors.

This is not to say that there is no private sector in Unalakleet. There is one. But except for one long-term enterprise, trapping, and one more recent enterprise, commercial fishing, all others are directly dependent on public sector expenditures for their very existence, and even commercial fishing requires federal assistance in some forms if natives are to engage in it. Constant public expenditures are required to maintain a small trucking firm, a growing air service, a small inn, two grocery-dry goods-garage operations, and the rest of the village's economic superstructure. It is more than noteworthy to point out that both commercial fishing and trapping are based on the harvests of naturally occurring, renewable resources. Fish have provided a staple in Unalakleet Eskimo

diets for over two millenia, whereas fur-bearing animals have provided, until recently, the bulk of Unalakleet natives' clothing and bedding for the same period, and exchange values with Eskimo, European, and American traders for hundreds of years. So key items of subsistence are also the key items of commerce, and each is severely limited in growth potential.

Unalakleet Eskimos have been propelled into corporations and corporate ventures by virtue of their ratification of ANCSA's provisions. But in so doing they were not transformed into corporate capitalists bent on accumulating capital, saving, delaying gratification, economizing scarce resources so as to maximize their financial benefits, and withdrawing support from others as they compete in the market place, Rather, Unalakleet Eskimos, prior to and subsequent to ANCSA, possess values about the land, the air, the water, and the animals and plants on and within them, that are significant to them and different in some important ways from commodity valuations of naturally occurring renewable and non-renewable resources (commodities being anything from mineral rights to a human's productive capacity that is sold on the market place). Unalakleet Eskimos certainly sell commodities, such as pelts, fish, and their labor, but they also give and share those same items and activities; and they engage in cooperative and helpful associations and gestures in extraction and transport of those items when otherwise competitive behavior would be expected. Examples will be provided below. At this point we seek to call attention to the complex way in which the village of Unalakleet is incorporated into the nation's political economy, a political economy controlled by the capitalist mode of production.

It has been argued for at least three decades that Native Americans have been emerging from underdeveloped tribal cultures over the past several centuries, but that modern technologies and organizations ("modernization") and universalist achievement orientations would propel those societies to development. Economists have generated a large number of variations on this theme. "Dualism", "stages of economic growth", "diffusion", and, for want of a better term, "psychological inadequacy", are some of the themes that have been proposed to account for why tribal economies are underdeveloped, and how they will become developed. In general, all of the arguments contend that if infrastructure is developed, modern theories of organization put into operation, and tribal people taught universalist achievement orientations (i.e., save, delay gratification, economize scarce resources so as to maximize future benefits, compete for personal and family gain, dissociate from restrictive entangelements with wider networks of kinspeople, friends, and tribal mates), that such tribes will experience economic development.

A second body of political economic literature has critiqued such themes of economic development and found them wanting. It is not our purpose to review either of these large literatures--that which explains steps necessary for economic development in a worldwide capitalist system, or that which explains the opposite, that is, the genesis of persistence of underdevelopment and dependency in a worldwide capitalist system. We do, however, want to show how the village of Unalakleet has become drawn into the complex hierarchical system controlled by the capitalist mode of production, and how Unalakleet combines the capitalist mode with other modes. Whereas the capitalist mode of production is dominant in the United States and in Alaska, it is an articulated system that does not transform all persons and communities within its embrace into industrial producers of surplus value. Rather, for its own growth the system encompasses semi-capitalist and pre-capitalist forms of production. In the United States the public sector has provided the means and the economic transfers to integrate semi-capitalist (some sales for gain, as in trapping) and pre-capitalist (subsistence) modes within the larger political economy. Many forms of dependency result from this integration.

Capitalism is a disciplined pursuit of profit, forever renewed, but it is much more. The development economists are surely correct when they point out that technologies, the techniques of their use, labor-time, universalist orientations, need-achievement, and wealth, are pre-requisite to capitalist development. But they are surely wrong in thinking that if these factors are in place, ipso facto, tribal economies will transform into capitalist economies. Neither human propensity for profit nor greed are universal, and the residents of Unalakleet in their economic behavior provide clear evidence that they are not universal. Furthermore, the complex hierarchy that is capitalism has integrated Unalakleet while expropriating most of the natural resources within its former domain, providing the rules and regulations by which its public and private sectors will operate, and providing the funds and dole through which public sector dependencies are maintained.

Capitalism in the arctic is capital intensive rather than labor intensive, and the capital is invested into the extraction and production of non-renewable resources. Representatives of oil, gas, and mineral industries have made several public presentations in the village of Unalakleet in the past two years, informing residents not to expect jobs in those industries when those resources are "developed" below the waters of Norton Sound, but they have also been told to become familiar with people in the industries, because Unalakleet, being situated

as it is and providing the infrastructure that it has, such as air transportation, sewers, electricity, communication systems, and so forth, will see representatives of the industries on a regular basis. If economic "development" is to spin off in Unalakleet, as a "multiplier" from the extraction and transportation of raw materials by multinational corporations, the spin-off will be to the major and minor air carriers, and to either or both entrepreneurs and the village corporation as they respond to new demands for limited goods and services. Thus, there may be need for a restauranteur (or perhaps two), an inn keeper, housing starts, larger dry goods operations, and the like, as the private sector influences the village, the state and federal public sectors grow to accommodate the industry, and the village economy responds to both.

In the past year Unalakleet has experienced the growth of the public sector within its midst as the BSSD (Bering Straits School District) has relocated from Nome to Unalakleet, putting pressure on limited housing, making demands on services, and causing more than a little local consternation among village residents. The current attractiveness of Unalakleet as an administrative center is as real as it was 150 years ago, but in contrast to the conditions of the nineteenth century, Unalakleet is very large as arctic villages go (nearly 800 people), and its residents are informed about some of the threats posed to the beauty of their environment and the integrity and maintenance of their way of life from current decisions to expand Unalakleet into an administrative center and secondary staging area for industry and the public sector that serves it.

INFRASTRUCTURE AND POPULATION

Transportation

Unalakleet, for 150 years, has been recognized as well situated and attractive as a trade and administrative center. Currently it is a secondary but important intraregional and interregional transportation center with thrice weekly jet service (Wein Airlines)to and from Anchorage, and service through Ryan Air (a local, native-owned business), up to five days per week to and from Nome, Stebbins, St. Michael, Kotlik, and Shaktoolik. Ryan also flies to Gambell on St. Lawrence Island, from Nome, thereby making connections to all of the key points in the Norton Sound-Bering Straits region. The Bureau of Indian Affairs cargo ship, North Star III, delivers supplies to Unalakleet each July (off-loading on small barges in Norton Sound inasmuch as Unalakleet is not a deep water port).

Several barges from Nome (Arctic Lighterage), St. Michael (Black Navigation), and Seattle (PAL and Alaska Cargo) also service Unalakleet during summer months, delivering canned goods, fuel, boats, outboard motors, snowmachines, ATCs, and all manner of durables for the two stores, churches, schools, public and private institutions. The Sound near Unalakleet is too shallow for the large barges, so they, too, off-load in the Sound and the goods are lightered to the docks along the slough on the eastern edge of the spit on which Unalakleet is situated.

A road runs through Unalakleet and along the beach on the western edge of the spit facing the Sound. The road was improved through public funds in 1982 and allows for modest truck, automobile, snowmachine, ATC, dog sled, and bicycle traffic. It connects the fish processing plant, the ACC store, the post office, the inn, and a warehouse on the south end of the spit, to the airport on the north. The roads are kept open throughout the winter, and parts of the road, especially toward the southern end of the spit, are often cut through snow-ice drifts ten feet in height. There may be as many as 70 serviceable trucks, 4-wheel drive vehicles, and cars in the village. A road built by the U.S. Air Force in the late 1940s crosses the North River and connects the village to the decommissioned White Alice radar site about 15 miles to the east and also to the privately-owned musk ox farm east of town.

Every family in the village owns one or more wooden or aluminum skiffs, usually 16' or 18' and a 35 to 50 hp motor, for transportation to spring camp, summer camp, and fall hunting and fishing camp. The 18' boats often double for commercial fishing and kelping activities. Most also possess a somewhat larger wooden or fiberglass and wooden boat for seal hunting (18' to 22'). All households have at least one snowmachine for winter hunting and fishing, to run traplines, for local transportation, and for pleasure. ATCs are less common, but available in five or ten percent of the households. In 1982 there were 24 dog teams in the village and several families were in the process of developing teams. Whereas the impetus for the reinstituting of dog teams came from the Iditarod Trail Race that runs through Unalakleet in mid-March each year on its route from Anchorage to Nome, and dog teams are trained and raced in the village, on occasion, dogs are used on hunting, fishing, and wood collecting expeditions.

Communications

Unalakleet is serviced by General Telephone Alaska. There are about 200 phones in the local system at present, but it can expand to accommodate twice that many. Unalakleet is unusual in Norton Sound, with the exception of Nome,

in that phones are located in the majority of houses. Local repairs are made by representatives from Nome. Long distance connections are transmitted via an Alascom satellite station, not by cable.

A large satellite reception disk in Unalakleet provides television reception, and practically every home is equipped with a TV set. Radio stations in Nome provide regional news of importance, especially news about weather, ice, and fish conditions. Shortwave sets, too, are in use, especially by health institutions, and allow regular communication among Norton Sound villages as well as access to more distant radio transmission.

The Tundra Drums, a Bethel newspaper, and the Nome Nugget are regularly flown to Unalakleet and sold in the local stores, and the Unalakleet Native Corporation also flies Anchorage newspapers to the village for sale in its store on Wein's thrice weekly schedule. The Bering Straits School District publishes a biweekly Strait Talk, and the Regional Corporation publishes a monthly paper.

Housing

There are 170 single family dwellings, the vast majority of which were constructed either through BIA-HUD programs in the 1960s, or Alaska State Housing Authority and Bering Straits Regional Housing Authority in the 1970s and early 1980s. There are also a twelve unit apartment building owned by the UNC with exclusive lease arrangement to the BSSD (Bering Straits School District), and living quarters within the UNC headquarters. The City built a four-unit apartment for city employees in 1982. Housing for the resident staff at the Covenant School and dormitories for resident students are located in the church-school complex. The BSSD has also built a five-unit apartment to house some of its staff. Some duplexes have been converted from former BIA buildings.

Schools

The state, through the REAA (Rural Education Administration Area) recently completed the conversion from BIA to state schools and constructed a new elementary school and a new state high school, both named after Frank Degnan. The Covenant Church High School also serves the community, with many Covenant School students coming from other communities in Alaska and boarding at the school. The schools have warehouses, gyms, kitchens, and the Degnan state school also has a bowling alley and a swimming pool. A local Headstart program has its own building. Classes mounted by NWCC (Northwest Community College, Nome) and ABE (Adult

Basic Education) are held in the new city library. ABE (federal) funds, channeled through IRA-Kawerak, were joined with state matching funds for the building's construction.

Public Structures

Unalakleet has a post office, city offices, city library (built with state and federal funds), two health clinics, a city-owned recreation building ("Rondy" or Rendezvous Club), an IRA office (which it shares with the NSFC-Norton Sound Fish Co-op), a weather service installation, some state aviation buildings, some abandoned FAA (Federal Aviation Administration) and USAF buildings, a large new BSSD office building ($4 million), and several buildings for garages, workshops, and storehouses for the public institutions.

Private Structures

Although there are several privately owned buildings in Unalakleet, most were either built with public funds, or were built with and sustained by funds that either derived directly from public sources (grants, contracts, transfers of buildings from prior federal uses to private uses), or as in the instances of the local lodge, trucking firm, and air carriers, that are sustained by revenues derived from travelers predominantly from the public sector (state and federal employees, school boards, researchers on state and federal contracts and grants, professionals delivering services provided by state or federal contracts or grants, regional representatives or native corporations, and so forth). Buildings, often more than one, are owned by Wein Air Alaska, Ryan Air Service, Unalakleet Valley Electric Cooperative (under city charter and state-supported, in part), Alaska Commercial Company (federally subsidized), the Unalakleet Native Corporation, the Covenant and Catholic churches, two family trucking operations (two to four small trucks), a family-owned inn (lodge-restaurant), the Norton Sound Fish Cooperative (plant with blast freezer, cold storage, gutting and heading rooms, scales, and dock), and GTE telephone. A private fishing-hunting lodge (Silvertip) is located a few miles upriver.

Water, Sewer and Solid Waste, Electricity, Oil

The PHS (Public Health Service) in 1972 built a filtration system, wellhouse, pumphouse, and pipeline from Powers Creek to Unalakleet (4.5 miles). A pressure pumping system delivers chemically-treated water to homes and structures throughout the village. Waste heat is recovered, one million gallons of water can be stored, and there is a storage facility for fuel to drive the pumps.

The sewage system, also constructed in 1972, connects houses and other buildings through a pumping system to a sewage lagoon east of town. Solid wastes are dumped by local residents in a dump located on both sides of the road north of the airport.

Unalakleet was electrified in the 1960s through federal grants. UVEC (Unalakleet Valley Electric Cooperative) operates several diesel-powered generators for local users. UVEC, using state energy grants, has recently installed several windmills to provide some additional power to local users and is studying the feasibility of collecting solar energy.

Oil and wood burning stoves supply most of the heat used in homes. Residents normally purchase fuel oil from the Unalakleet Native Corporation, which, in turn, buys it from the regional monopsonist, Standard Oil, in St. Michael. The schools and some private firms purchase their own fuel from the monopsonist in trade.

Population

Between 1980, when the most recent national census was taken, and late 1982, when the village took its own census in preparation for land conveyance as well as state revenue sharing, the local population swelled from 632 to nearly 800. The principal cause of the dramatic growth was the relocation of the BSSD offices from Nome to Unalakleet. The permanent staff and their families accounts for more than 60 percent of the rapid increase.

Yet for the preceding five years the Unalakleet population had been quite stable, although the population had increased dramatically soon after 1971 and the passage of ANCSA. As has been demonstrated so many times in the past, Native Americans prefer their natal and cultural homes, and when incentives are such that persons and families can be sustained on their home reservations or in their home villages, natives will return (see Jorgensen 1978 for a review of the relevant literature, and see Robbins 1979, for a recent example of the profound effects that the Boldt Decision of 1972 re native rights to half the total fish catches in the State of Washington had on the Native Americans who returned to the Skagit River in that state to reactivate their kinship-based lifestyles while engaging in the salmon fishery).

In 1980 the resident population had been stable for five years with 84 percent of the 1975 population located in the village in 1980. According to the U.S. Census, the younger age groups were more interested in cash employment than the older age groups, and the village's unemployed equaled in number the villagers

who were discouraged and no longer seeking employment. At that time the resident work force was defined, somewhat unrealistically, as the total population between the ages of 20 and 44. People over age 44 are capable of work. In 1980, 250 native residents of Unalakleet, male and female between the ages of 15 and 65, were either underemployed, or unemployed.

The median age of the Unalakleet population was 24.3 for males and 21.6 for females in 1980 (about five years older than the median ages for 1975). Age group distribution in 1980, by percents (rounded) was: Under 5, 11%; 5-14, 20%; 15-64, 64%; 65 and over, 5%. So, the population is aging, but relatively youthful; and it is also predominantly native (88%), although whites increased from 6% to 12% of the total between 1970 and 1980, and the BSSD brought twenty non-native employees (many with families) in 1982, thereby increasing the percentage of whites in the totals. Between 1970 and 1980 births outstripped deaths more than two to one in Unalakleet and the natural increase was over one percent per year. Thus, most of Unalakleet's growth in the past twelve years is attributable to migration, because it has grown over 80 percent in the past twelve years.

EMPLOYMENT

The overwhelming majority of permanent jobs available to Unalakleet residents are in the public sector, and as pointed out above, the majority of permanent employment in the private sector in Unalakleet primarily is dependent on travel or purchases made by people on public sector payrolls, grants, contracts, and related sources of funds.

Village government, including the city, IRA, and the UNC, employs 24 persons full time (4 on contract to the IRA). The several schools, BSSD, and the Headstart program employ 83 persons full time. Various state programs employ 14 persons full time, Federal programs employ 3 persons full time. For convenience we have placed UNC in the public sector. In fact, both UNC and ACC draw some funds from the public and some from the private sectors.

The village's private sector employment, comprising the air services, inn, Alaska Commercial Co. (privately-owned, but federally-subsidized for the past eight years), and family trucking service provides about 34 full time jobs. An interesting point about the Alaska Commercial Co - it struggled throughout many villages after the enactment of ANCSA and the establishment of some village corporation stores. It was subsequently sold by its ownership, but the new owners

obtained federal subsidies so as to compete with village corporation stores, whose start-up funds came from native claims funds and federal programs.

There are about 180 full time jobs in Unalakleet. It is difficult to pinpoint the precise number because jobs that appear to be permanent come and go with contracts and grants. In any event, natives hold about 60 percent of the permanent full time jobs, and whites hold the other 40 percent. Fifty whites, representing twelve percent of the population, are considerably overrepresented in the permanent employment tally, but (with the exception of two elderly Lapps whose families once herded reindeer in the area) would not be in the village if there was no employment for them. Indeed, following past practices, all will leave when these jobs terminate or they retire. A few white households are inordinately overrepresented in full time, public sector employment. Among 31 couples or families, 55 white persons are employed full time, meaning that 30 percent of all full time employment in the village is held by these few households.

A wide variety of seasonal and part time employment (underemployment) is available primarily in the summer months. If state or federal contracts or grants are garnered by the city or the IRA, up to 30 construction jobs may open, as was the case in the summer of 1982. Some of these jobs went to local natives, others went to union members called off the bench in Fairbanks. The NSFC's fish processing plant might employ as few as 25 or as many as 35 persons in their various crews throughout the season (in a special relationship for 1982, 14 of those employees were white); and its current joint seamanship-boat building federal grant ($3.6 million) with Kawerak provides assistance to students and employs several teachers during the winter months. BLM (Bureau of Land Management) firefighting crews, depending on the size and the whereabouts of the fire, might employ as many as 20 firefighters. The National Guard has a unit in Unalakleet; although shrunk in size over the past decade, it provides a little income to its 15-20 members through attendance at meetings and encampments. And in various programs channeled through the City, the IRA, Kawerak, and state offices, agencies and departments, about 20 more people, about half youths, find part time work. Service on advisory fish and game, and coastal zone boards, memberships on school or regional corporation boards, service on commissions, and attendance at workshops provides travel and per diem expenses and, on occasion, fees for service. The musk ox farm provides employment for non-locals to collect musk ox quiviut (hair) that has been shed on plants during the spring.

Self-employment in Unalakleet is the major source of income for many native families, depending as they do on trapping during the winter months and commercial fishing during the summer months. Sixty-five local natives hold limited entry fishing permits (about fifteen for fisheries other than Norton Sound), but twice the fifty permit holders in the Sound fish commercially in Unalakleet, either as helpers to permit holders, or they fish commercially for herring or collect spawn-on-kelp (permits are not required for herring at this time). Other forms of self-employment seldom provide persons with full time work or its equivalent, but they certainly supplement subsistence and commercial pursuits, providing the cash that allows for equipment and fuel purchases, equipment repair, and basic necessities that are no longer produced by each family's labor, such as clothes, processed foods, and heating fuel or other utilities. Self-employment includes knitters (of wool and musk ox yarns), carvers (ivory, wood, antlers), sewers-seamstresses (skins and cloth fabrics), sled builders, net hangers, welders, boat builders, carpenters, electricians, mechanics (small and large motors and engines), baby sitters, beauticians, and persons expert at hunting seals and rendering oil. Except for knitters, sewers (seamstresses), and baby sitters, only two, or sometimes three, persons engage in these several forms of self-employment. (There are, for instance, two carvers, two net hangers, two sled builders, one aluminum welder-boat maker (non-native) and so on).

Table 8 lists the current full time employment available in Unalakleet. The total of 180 probably varies eight persons either way. A quick perusal will confirm that the sources of funds for most of these jobs are public, either directly or through an intermediary. The private sector, for the most part, services the public sector, providing transportation, hauling, lodging, meals, groceries, dry goods, and repairs. The UNC store and garage employs locals, and recirculates and invests some of the profits, but the banks from which it borrows, and the vendors from which it buys, are located in Anchorage, Seattle and elsewhere. The federally-subsidized ACC store hires locals, so some of the local money spent for purchases recirculates locally, but the profits are drained from the village. Ryan Air, too, invests and recirculates locally some of the dollars spent with them but their fuel, aircraft, parts, and electronic technology purchases and financing must be done outside the village and the region. Currently Ryan Air is planning the construction of a terminal and restaurant to accommodate increased intraregional and interregional travelers, many of whom are doing business with, working for, consulting, or attending meetings at the Bering Straits School District. Wien Air Alaska is not a locally-based corporation, and invests its profits elsewhere.

TABLE 8

FULL TIME EMPLOYMENT IN UNALAKLEET, 1982

Employer	Source of Funds	Number of Employees	Non-Native Employees
Public			
Village Government			
IRA	Federal	3	
City (Inc. Dept. of Public Safety)	State	16	6
UVEC	State	5	2
Unalakleet Native Corp.	Federal Legislation and private sales	22	1
Schools			
BSSD	State	33	20
Degnan	State	30	14
Covenant	Private	16	16
Headstart	Federal	4	
State			
Youth Services	State	1	
Public Assistance	State	2	
Counselor	State	1	
Energy Audit	State	1	
Magistrate (city-state)	State	1	
Department of Transportation	State	3	1
State Trooper	State	1	1
Public Health Clinic	State	2	1
Teleconference Moderator	State	1	
Coastal Zone Resource Area Director	State	1	
Regional Non-Profit (Kawerak)			
Euksavik Clinic, Norton Sound Region Health	Federal/IRA-Kawerak Contract	3	1
ABC/NWCC	Federal/IRA Kawerak Contract	1	
Subtotal:		147	63

Table cont'd. ...

TABLE 8
(continued)

FULL TIME EMPLOYMENT IN UNALAKLEET, 1982

Employer	Source of Funds	Locus of Ownership	Number of Employees	Non-Native Employees
Federal				
Post Office	Federal		3	
Private				
Wien Air Alaska	Private	Non-local	7	1
Ryan Air Service	Private	Local	13	6
Alaska Commercial Co.	Federally-subsidized Private Firm	Non-local	8	
Rendezvous(Rondy)	Private	Local(City-owned)	4	2
Musk Ox Farm	Private	Non-local	2	2
Subtotal:			37	11
Total Full Time Employment:			184	74

Private, Family-operated Businesses

The following are family-owned and family-operated firms. Most are located in the family homes. From time to time the Browns' close their lodge, or lease it to construction firms when construction is underway in the village. Part time help is hired when the Browns' cafe and lodge are open. The Ski-Doo dealership provides occasional sales and repairs. The Lestankof firm is slightly smaller than the Haugen family business. Each operates with few trucks and each operates with family members. These businesses are somewhat larger than "self-employment", another category used here, but similar to "self-employment", none of these small entrepreneurs are solely dependent on their businesses. Some fish commercially; some trap; some are employed full or part time at other jobs; all engage in subsistence pursuits. Three of these businesses are white-owned and operated.

	No. Working in Business on Some Basis	
	Native	Non-Native
Larry's Ski-Doo	3	
Lestankof's Hauling	2	
Haugen's Hauling	4	
Tweeto's Boat Building	2	2
AC-DC Construction	3	3
Bill's Video Mart	1	1
First Stop Gift Shop	2	

(end Table)

Private Sport Fishing

A private sport fishing lodge (Silvertip), a non-native owned firm based in Anchorage, operates throughout the salmon season. The lodge and its guests, about twenty per week, use Wien Air facilities for personal and freight transport. Local natives are not hired by the lodge, which is located about five miles upriver from the village. The lodge has little influence on the village's cash economy beyond discretionary purchases made in village stores by guides and occasional guests. For the most part, the lodge is self-contained. Villagers frequently encounter the sportfishers on the river, however, as guides direct their guests to holes and riffles used by natives for net placements and for spin fishing. Natives claim that the guides have learned the spots by watching local natives. These intrusions are decried at public meetings whenever development impacts are discussed.

A second sportfishing venture, created in 1982 by the Covenant Church, drew a few customers from that church's national organization as guests during 1982. The business has considerable potential for the Covenant Church because it owns most of the infrastructure necessary to accommodate 100 guests or more per week. Boat and equipment, advertising, and community goodwill costs, however, are obstacles that must be overcome. Goodwill is crucial because local natives do not want more non-natives on the river, and sportfishing enterprises have never been seriously considered in Unalakleet Native Corporation discussions.

TRANSFER PAYMENTS: THE UNEARNED SIDE OF THE PUBLIC ECONOMY

If the village of Unalakleet is dependent on public sources of money for the lion's share of its infrastraucture and its earned income, it is dependent on public sources for all of its unearned income. The most recent annual data on unearned income is for 1981. The figures show that federal and state transfer payments play a crucial role for many persons and households in the village, although our field observations have made it clear to us that no recipient of transfer payments subsists solely on those payments. All engage in various subsistence activities. Even the aged prepare and preserve foods. And all recipients, whether connected to other households through kinship networks and the nexus of sharing and cooperating that occur in this village, or whether connected through friendship networks and treated specially because of age (the elders, including the non-natives, are treated with unusual concern and kindness as simple acts of life where anything else would be unthought of and unthinkable), receive assistance,

parts of the day's harvest, or preserved and stored naturally-occurring resources, such as dried fish or seal oil. In turn, recipients of transfer payments may babysit, help process and prepare food, or provide support in words of affirmation about the kindnesses extended. They are not obligated to reciprocate, but by custom and convention, they give and they share.

Transfer payments come to Unalakleet villagers in several forms: major among them are food stamps, aid for dependent children (hereafter,AFDC), old age assistance (hereafter,OAA), and aid to the permanently disabled (hereafter,APD). But unemployment insurance is collected by some (we have no totals), energy assistance is provided to many (we have no dollar totals), and crucial services, from weatherization to counselling are delivered. The sum of four transfer payments to Unalakleet residents in 1981 was $233,000 or $347 per capita for all village residents for the year. The sum was not distributed on a per capita basis, of course, but its value was high relative to the size of the community. In the arctic, however, $347 doesn't buy very much, particularly when needs for clothing, fuel, shelter, and goods are higher than in temperate zones, and when prices are twice or more than equivalent prices (costs) in, say, Seattle or Poughkeepsie.

For example, in July, 1982, an AFDC recipient, a woman with one child, purchased jeans, a polyester shirt, children's shoes, and cigarettes at the ACC store. The total was $108. Comparable prices in Southern California would yield a total of $57. Unalakleet food prices were equally high. Some July, 1982 comparisons between Unalakleet and Newport Beach, California prices will make the point.

	Unalakleet	Newport Beach
Longhorn cheese	$ 4.50 lb.	$ 1.99-2.69 lb.
Milk	2.25 qt.	.89 qt.
Pinto beans	1.33 lb.	.59 lb.
Spaghetti	1.33 lb.	.69 lb.
Hamburger	3.75 lb.	1.99 lb.
Rice	2.35 lb. .75 (50 lb. bulk)	.75 lb.
Steak	10.50-12.50 lb.	2.99-4.50 lb.
Stew meat	5.00 lb.	2.99 lb.

The prices in Unalakleet are competitive inasmuch as the two stores compete for business, run specials, and keep close tabs on one another. It is evident that large amounts of cash income are required if the family must purchase all of its dry goods and food necessities from the local stores, while also

paying fuel and electricity bills and, in many instances, rent or mortgages (low interest and low prices through HUD, state, or regional programs). Transfer payment recipients are less able to subsist solely on cash transfers than might a couple, both of whom are employed full time. All recipients of transfer payments are linked into kinship and friendship networks through which they share their own skills while receiving assistance in many forms (food, transportation, kind solicitation, and real concern).

Table 9 summarizes the four transfer payment programs for Unalakleet in 1981. It is evident that whether using families or persons as the measure, twenty percent of the native residents of Unalakleet are receiving some form of transfer payment. The small amounts that such transfers represent certainly make a difference in a family's life, but they are not sufficient to sustain either a recipient or a family.

TABLE 9

TRANSFER PAYMENTS, FOUR SOURCES, UNALAKLEET, 1981*

Source	Av. No. Cases Per Month	Av. No. Pers. Per Case	Av. $ Case Per Year	Annual Total $ All Cases
Food Stamps	30	3.1	$ 2,633	$ 79,000
AFDC	24	3.0	5,040	121,000
OAA	12	1.0	1,545	18,550
APD	7	7.0	1,960	13,700

*All data are from the Division of Health and Social Services, Division of Public Assistance, State of Alaska. AFDC = Aid for Dependent Children; OAA = Old Age Assistance; APD = Aid to the Permanently Disabled.

As mentioned above, the transfer payments do not tally unemployment benefits nor services in kind provided to welfare recipients and other residents, including medical assistance and counselling, energy assistance, and weatherization assistance, all of which benefit welfare recipients and some other local residents.

UNALAKLEET NATIVE CORPORATION

The UNC is managed by a non-local native. Local natives have managed the corporation in the past. The current manager, hired in early 1982, oversees the operations at the store and garage, recently securing loans to enable expansion of both facilities. He advertises food and dry goods specials throughout the region serviced by Ryan Air, from the villages of Kotlik in the south to Shaktoolik in the north. He has been successful in encouraging natives from villages that do not have mainline air service from Anchorage, hence cannot buy fresh produce and some dry goods locally (such villages are dependent on summer barge deliveries), to fly to Unalakleet, on occasion, to purchase produce and other goods during winter months. When natives make such flights, of course, it is not because prices are low, but because the goods are available and usually because they have relatives and friends with whom they can visit and to whom they can bring gifts (and return with gifts). The manager suggests that bush residents are "used to paying" high air transportation fees.

Promoting specials has stimulated UNC business and caused the ACC store to compete. During the winter months the UNC store was flying in $20,000 worth of produce per month, and the ACC store might have been flying in half that amount or more. Given that there were less than 700 residents in Unalakleet at the time (prior to the relocation of BSSD) $30,000 per month in produce was more than the village's 175 families could consume or pay for. The Covenant School could buy some, but it is large enough to buy its own food in bulk and does so. Nevertheless, produce never stayed long on the shelves in February and March. So locals purchased a large amount and visitors also purchased some. Produce, like the greens and berries available in spring, summer, and fall, is cherished.

The manager sought other ways to move goods within the native store, offering discounts on outboard motors prior to the spring season and specials on repairs. When asked about loyalty to the native store, that is, whether local natives purchased at the UNC store rather than the ACC store out of loyalty to themselves, their coshareholders, and the community, he replied that price, not loyalty, motivated native buying behavior.

So the UNC retail operation in Unalakleet began competing in earnest with the ACC store in 1982, and the new manager sought to expand the business by generating sales in the various communities from Kotlik on the Yukon Delta to Shaktoolik some 30 miles to the north.

The UNC also landed a building development grant and contracted for the construction of four apartment units, which it owns and leases in addition to another eight units that it had constructed previously, and it gained the contract to build four apartments units for the city. Although these several business activities are relatively small in scope given the number of shareholders in the corporation and their long-term needs, the corporation is providing jobs in the village and recirculating income in so doing. It operated at a profit in 1982, the first such in its young history.

Although the UNC, as a consequence of ANCSA and the establishment of the BSRC (Bering Straits Regional Corporation), does not possess subsurface rights to the land granted to the UNC; it receives a part of the cash award made to the BSRC (itself in receipt of part of the $962 million award from ANCSA). BSRC holds the subsurface rights to UNC land and to the land that UNC conveys to shareholders. It is the capital provided to the UNC from ANCSA that capitalizes UNC operations and allows them to gain loans and credit.

The importance of management in gaining maximum returns on investments and keeping check on the vendors and banks with which they deal is well known in Alaska. A few years ago the BSRC was treated scandalously by an Anchorage bank in a celebrated case. The UNC, too, has had to struggle in order to get fair deals. In 1981, for example, about $2 million from their ANCSA funds was invested by UNC in an investment management firm in Anchorage. A year later that $2 million had not generated one cent in interest. At that time a $2 million dollar investment in the money market would have yielded $400,000 in one year. The money was retrieved post haste, and used as collateral to secure loans for capital developments within Unalakleet and to purchase fuel oil for the 1982-3 winter (done several months prior to the barging season).

UNC management has recently purchased office furniture and equipment, instituted modern cost accounting procedures, and pressured vendors, particularly food vendors, to provide the UNC with a two percent discount if the UNC paid its invoices within a week following delivery. Until early 1982, vendors had insisted on full payment (no discount) before delivery. It was possible to pressure food and office supply vendors because several such businesses are in competition in Anchorage.

Monopsonists, on the other hand, do not yield to pressure or suasion. For example, the UNC purchases fuel oil for villagers and for its own needs, buying about four barge loads per year (delivered during the summer) from Standard Oil in St. Michael. The Alaska bush is divided among oil monopsonists so that there is no competition. In order to secure oil for the 1982-3 season, the UNC had to pay $500,000 up front (several months prior to delivery) to Standard Oil, and Standard Oil refused to quote a price per barrel or per any other unit of measure. The UNC secured a loan, and in turn, sold the oil to villagers as they needed it throughout the long winter season. The sale price to villagers was the same as the price paid by the UNC (no profit was taken for reinvestment).

Thus, the UNC serves the public good, and that public comprises natives and non-natives. It also sells for a profit, and reinvests the profit for more local business and local jobs. Its shareholders and board of directors discuss the public good in their business deliberations, such as selling fuel oil for the price at which the UNC buys it, and those discussions, at one point, caused them to turn down, without equivocation, a business that provided great potential--a liquor store. It is illegal to sell liquor in Unalakleet, and liquor is currently flown in by persons who accumulate sufficient cash to pay for a few cases of alcohol, then keep a few bottles and sell the rest (realizing a modest return for their investment and high risk). No one, however, is an established bootlegger. The risk is distributed among many over a year, and acrimony and bitterness does not focus on any single entrepreneur.

The UNC also badgered and pressured the USAF to return to Unalakleet and properly decommission its former base and White Alice radar station. Highly dangerous chemicals, such as PCB, were known to be in the transmission cones, and other chemicals, acids, oils, and gasoline were known to be stored at the sites. In July, 1982, the USAF sent a team to remove some items, and label others. The UNC sought to protect the river, the salmon, other wildlife, and the beauty of the land that it had claimed from ANCSA's land conveyance provisions, for future generations. The Board and the IRA Council feared that the village would have to be evacuated and the resources on which Unalakleet residents have subsisted for generations would be destroyed forever if the PCB began leeching into the river.

The UNC has been a source of funds, loans as it were, to the NSFC (Norton Sound Fishermen's Cooperative) and to UNC shareholders who belong to NSFC and share its liability.

The evidence is clear and to the point. The UNC has sought to serve the interests of its shareholders, and those interests include the preservation of the Unalakleet environment, the space in which natives gain their livelihoods, are willing to defend, and to which they assign significant meanings that encompass the interests of past and future generations. The UNC has not entered commercial fishing, but has helped shareholders through the NSFC to do so.

COMMERCIAL FISHING AND THE NORTON SOUND FISHERMEN'S COOPERATIVE

Commercial fishing has been an important feature in the economies of many Unalakleet families for over twenty years. The ADF&G sought to reestablish commercial fishing in Norton Sound in 1961, and was successful in encouraging erstwhile native fishermen to renew their efforts. In 1964 the Small Business Administration financed some Anchorage businessmen to build a modest fish-processing plant (cut heads, tails and gut), but it had neither cooling room, nor freezer. Through a series of abuses the SBA foreclosed, and leased it out. Since 1973, with the establishment of the state's Commercial Fisheries Entry Commission, and the correlative creation of the NSFC, a very small operation that principally was engaged in by local native fishermen began to attract non-local fishermen capable of purchasing entry permits while being assured that the competition for the fish would be limited. Moreover, persons who could acquire sufficient capital from banks on conventional loans, or who could generate sufficient annual revenues from fish sales, qualified for loans through the state's Alaska Fisherman's Mortgage and Note Program. Native fishermen in Unalakleet have seldom qualified for either of these sources of funds. Indeed, in 1980 native fishermen belonging to NSFC averaged $5,000 income for the season. Some, of course, make much more and some less (range $2,000 - $38,000). But non-local and non-native fishermen who hold permits in the Unalakleet fishery (Subdistrict 6, Norton Sound) have qualified for loans and state programs. Because skiffs up to 32' are allowed, large, high-powered boats with large fuel tanks can stay on the water longer and make it possible for aggressive fishermen to make quick trips to clear their nets and quick trips to the tenders positioned in the Sound by the marketers, or to the slough in Unalakleet, whichever is closer (or available). It also allows some of the more competitive and less scrupulous fishermen to clean the nets that have been set by other fishermen (a complaint made by some native fishermen in the past three years).

Seventeen local native fishermen were sufficiently active in more distant and productive waters (two at Bristol Bay and fifteen at Emmonak in the Yukon Delta) to have earned limited entry permits in those areas. They continue to fish outside Unalakleet. The permits are worth three times the value of Unalakleet permits.

Fish, the single most important staple in the diets of Unalakleet natives, is also the single most important commodity with which they can penetrate the market and gain earned incomes. Since 1973 however, they have watched non-natives venture into the local fishery, and few natives can muster the ten to twelve thousand dollars required to purchase a permit from the 196 limited entry permit holders in the Norton Sound area (Nome to Unalakleet).

Although the Norton area was planned for a limit of 294 permits, that number was reduced and as of 1982 there were 196 commercial entry permits in the entire Norton area with values of ten to twelve thousand dollars a permit. Ninety natives hold such permits throughout the area, practically every one earned by accumulating points through participating in the commercial fishery in the 1960s and early 1970s. Fifty reside in Unalakleet. There are, in addition, another fifty natives in the village who fish commercially in the Norton Sound region, some as helpers to their friends or relatives who hold permits, and some as herring fishermen who are trying to save enough money to purchase a limited entry salmon permit (no entry permit is required for herring fishing, although an annual fee of $45 must be paid to the state to fish for herring).

These 100 native fishermen, half of them permit holders, belong to the Norton Sound Fishermen's Cooperative, as do 24 local non-native fishermen (school directors, teachers, and whites otherwise employed in the village). There are four other non-native fishermen who reside in Unalakleet each summer. Of the 196 permit holders, then, 114 belong to the NSFC, and about 70 of all Norton Sound permit holders normally fish at Unalakleet. Unalakleet natives hold about 70 percent of the permits used by fishermen at Unalakleet but do not necessarily earn 70 percent of the catch inasmuch as, by and large, non-natives and non-locals possess bigger and faster equipment than do natives.

The NSFC members have joint liability for previous debts (from unsuccessful marketing in 1974 and from excessive spoilage in 1978-79), and NSFC property, including a processing plant with cleaning rooms, scales, a blast freezer, and cooling rooms capable of storing one million pounds of fish. The NSFC, with a loan from the CEDC (Community Economic Development Corporation) and subsequent loans

and stock purchases from UNC and the Bering Straits Regional Corporation, purchased the plant from the Small Business Administration in 1974. The NSFC also owns trucks, hoses, pumps, storage cannisters, and other manner of equipment. The NSFC shares an office - a converted FAA house - with the IRA government. The NSFC liability, through loans from the CEDC, UNC, and the Alaska Native Foundation, is about $750,000. The UNC also owns 40% ($50,000) of the NSFC's non-voting preferred stock. Some native fishermen obtain assistance in purchasing equipment and fuel from the NSFC, but they also can gain assistance from the Alaska Native Foundation, which assisted 500 rural native fishermen throughout in 1982.

The NSFC has a very close working relationship with Kawerak, Inc., the regional non-profit corporation which owns 60% of the NSFC's non-voting preferred stock ($75,000), and with the Bering Sea Fishermen's Association. With the former they secured a $3.6 million federal grant to conduct seamanship, net hanging, boat building, boat repairing, and commercial fishing classes over two years for native residents of the Kawerak region. The classes were conducted in Unalakleet in 1982. They subsequently were transferred to Nome. The NSFC would like to add about 20 boats, 24' - 26', to the native fishing fleet in Norton Sound each year. And from the Bering Sea Fishermen's Association, they acquire information and assistance in securing marketing information about new and appropriate fishing technologies, detailed information on tax liabilities and tax preparation, a newspaper that disseminates crucial and current information about the local and national fishing industry (Bering Sea Fisherman), and instructive visits from a regional representative of the Association. NSFC leaders frequently travel to Anchorage to confer with Bering Sea Fishermen employees. The NSFC contributes a membership fee.

In this regard it is interesting that NSFC fishermen are counseled about the many specific deductions to which they are entitled as commercial fishermen when filing their federal income tax forms. Not that local fishermen need to know their expenses--they know them to a penny so that unless they plan carefully they cannot fish, or they cannot fish often, or their equipment breaks down, and so forth. But the advice they receive assists them in reducing their costs still further by providing clear direction as to which of their expenses are deductible.

Salmon Fishery Economics

The value of the salmon catch to Unalakleet fishermen has increased dramatically since 1977 when the United States extended its territorial waters limit to 200 miles from shore. That act, which greatly restrained foreign competition by denying foreign fishermen access to waters close to spawning areas, increased local fish stocks and local fish availability.

A prior state act, however, which established the Commercial Fisheries Entry Commission, has worked to deny many local native fishermen commercial access to the abundances that have been made available since 1978 (the season following the act of 1977). On the other hand, the two acts together have stimulated non-native fishermen to buy permits and equipment and enter the Unalakleet fishery. The dramatic changes in the Unalakleet fishery are summarized in Table 10. In that table the four principal salmon species are treated in aggregate (red, or sockeye salmon, are seldom caught, and whether they are tag-alongs following other species, or fish headed up the Unalakleet to spawn is not relevant at this time because there are too few to matter).

TABLE 10

COMMERCIAL SALMON HARVEST, AVERAGE NUMBERS OF FISH AND DOLLARS, UNALAKLEET, 1961-1982*
(Subdistrict 6 Totals only)

Event	Interval	Av. Total Annual Salmon Harvested	Av. Total Annual Catch Value $
ADF&G stimulates the Commercial Fishery	1961-1973	48,000	$ 35,800
State of Alaska Enactment of Commercial Fisheries Entry Commission	1974-1977	81,600	124,800
United States Enactment of 200 Mile Territorial Limit	1978-1982	208,200	370,900

*Salmon and dollars are rounded to the nearest 100. Data are adapted from Schwarz, Lean, Bird (1981), and Schwarz, Lean, Whitman, Smith (1982).

The increases in fish and dollars (averaged, but unadjusted for inflation) are not fortuities, but rather incontrovertible evidence of the relation between legislation and the growth of the fishery. Nearly five times as many salmon were caught annually and their value was over ten times greater after 1977 and the extension of the territorial water limit than before 1973 and the establishment of the entry commission. But the perhaps unintended consequences of the legislation have been to increase non-native earnings disproportionately to native earnings. Natives, principally through the NSFC, are seeking ways to enter the fishery if they do not now hold permits, while also developing the fishery to its fullest potential. It is thought by NSFC leadership and the Bering Sea Fishermen's Association, for instance, that 80 percent of the annually available spawning salmon could be harvested by the commercial fishermen each year, while still allowing sufficient salmon for all Unalakleet subsistence uses, for the modest but growing and bothersome sport fishing catch on the river, and for spawning stock.

Some idea of the fishery's potential can be estimated from the 1982 season. It must be recognized that salmon populations are highly variable by year, but we also must assume that the effects of the 200 mile limit will continue to increase spawning stocks. In any event, fishermen in the Unalakleet subdistrict harvested 252,700 salmon in 1982, but the Alaska Department of Fish and Game counted 6,011,500 salmon upriver, many beyond the main body of subsistence nets set by Unalakleet residents for kings, pinks, and chums (nets for silvers, for the most part, are set above the ADF&G's sonar counting station). If the NSFC were to approach an 80 percent catch, given the current boat size (32') and equipment restrictions (no purse seines), and given the limited permits, most in the hands of non-natives, many changes would have to be made. Locals would have to acquire permits now held by non-locals. Fishermen would have to obtain boats close to the maximum size with powerful motors. The numbers of nets that fishermen can set will have to be increased, as will the number and length of the fishing periods (both are regulated by the state). Moreover, the NSFC will have to expand its plant and dock facilities, its marketing arrangements, and its transportation arrangements.

The Kawerak-NSFC boat building and seamanship program is intended to help Bering Straits natives enter and gain success in the commercial fishing market. Capitalization is a limiting factor, but there are ways to acquire capital, and natives have demonstrated resourcefulness in acquiring it in the past couple of years. For example, the Unalakleet fish marketing area had been controlled for

most of the past two decades by a single marketing monopsonist based in Seattle but with processing and shipping operations in the Anchorage area. The monopsonist had not been especially interested in the large runs of pinks, and had paid lower prices for many years than the NSFC thought was reasonable. Between the 1981 and 1982 seasons they set out to rectify the problem.

The NSFC contacted domestic, as well as Japanese, Russian, and other foreign marketers. The foreign marketers posed various problems because state approval was required in order to allow them to enter Norton Sound waters and conduct business. Over the period of several months foreign negotiations were dropped and a deal was finally struck with a person from Minnesota. The contacts were made between members of the Covenant Church in Unalakleet who both work at the Covenant School and fish commercially, and the buyer in Minnesota, also an active member of the Swedish Evangelical Church.

The Minnesota buyer contracted to take over NSFC's processing plant and market all of NSFC's fish. So as to obtain the contract, he agreed, at his own expense, to purchase and install a blast freezer and a cold storage room capable of holding one million pounds of fish. For that capital improvement the NSFC consented to let the Minnesota buyer bring his own management and principal crew to the processing plant (14 persons, primarily college-age adults, also from the church in Minnesota). In turning the operation over to the Minnesota buyer, the NSFC could not hire as many local natives to work in the plant as the leaders desired, but they obtained important infrastructural additions that will allow them to save more fish than previously while allowing them to search for better (more profitable) markets. They would also be able to hire more local natives in the future, because NSFC made no commitment to the buyer beyond the 1982 season; that is to say, they were free to act as their own marketing agent and resume control over the processing plant after the 1982 season ended.

The former monopsonist did not want to be pushed out of the fishery, so it struck a separate deal with a local native fisherman in which it made him an agent with the power to buy fish for them. It also sent in an advisor, set up an icing machine, and provided other equipment that would make it possible to dump salmon into containers and fly them to the Anchorage area for processing. They had no dock or buildings, but set up the operation at the end of the slough with a front-end loader and makeshift equipment. The competition was unusually healthy for the local fishermen. So much so that about half of the NSFC fishermen sold to

the native buyer, and through the king, chum, and about half of the pink commercial fishing periods, the Minnesota buyer shipped about 300 percent fewer pounds of processed fish (gutted, heads and tails chopped) than the native buyer shipped in unprocessed fish. Heads and guts constitute about 24 percent of total weight, so the native buyer and his marketing partner were winning the battle to that point 2¼ to 1.

The stakes were high. The erstwhile monopsonist wanted to buy local good will and get reestablished in the Unalakleet market. It was necessary to buy back in because the Seattle-based trader had bought himself out by buying cheap in years past. Thus, the local buyer was authorized to pay $1.37/lb. for kings, $.35/lb. for chum, and $.15/lb. for pink salmon. Those prices, respectively, were $.02, $.05, and $.02 more than the Minnesota buyer was paying. The differences add up for a quarter of a million pounds of fish (with a potential for several million pounds annually). The Seattle buyer was not making a profit at those prices and at the extra weight in unprocessed, iced fish the buyer was flying from Unalakleet.

Furthermore, in its quest to regain the market the firm that had controlled the fishery for so many years also provided start-up money to many fishermen through the local native buyer, making it possible for permit holders who were short on cash to purchase a motor, a boat, some nets, or whatever else they needed to get started. They could pay back the loans with their catches.

So, for the first time in the history of the commercial fishery in Unalakleet, a little competition crept in, and for the first time in native experience, they benefitted, albeit minimally, from that competition. The fish marketing business, however, is a complex and fickle thing. Pinks are small salmon in the Unalakleet drainage, rarely attaining five pounds. The costs to ice and ship them, iced but unprocessed, to Anchorage by air soon became too much a losing proposition for the Seattle-based firm, which had not been able to move a floating processor into the Sound because it was held up in Bristol Bay to the south. The fishermen in that area were on strike, and because it is the world's major sockeye salmon fishery (a very valuable fish that occurs in great numbers), the firm kept its processor there until the strike was settled. Unable to move to Unalakleet where they could process the roe and other by-products from pinks, they refused to buy more pinks, presumably thinking that all of the Unalakleet fishermen, with no place else to sell, would inundate the Minnesota buyer with their catches and that he would neither be able to buy or process the fish.

Things didn't work out that way. The local native buyer simply reduced the price of pinks to $.05 ($.08 less than the Minnesota buyer's price and $.10 less than his own earlier price) and continued to offer $.35 for chums ($.05 more than the NSFC contracted person from Minnesota). He took a personal risk to do so. But as fortuities would have it, a strong run of chum materialized at that very time, so many that a processing plant in Nome had to be closed because it couldn't process the fish that were brought to its docks. The chums circled east and hit the Unalakleet nets the next morning. One skillful Unalakleet fisherman in a 16' Lund skiff, working all alone, brought in 1600 lbs. of chum in a single boat load, the gunwales barely above the water line. The native buyer was back in business at a profit rather than a loss.

The two buyers stayed to compete throughout the entire salmon season, and although the NSFC did not get the majority of the business, it obtained a blast freezer, the cold storage room, and an advantageous position for the coming season. It would not be paid off nor pay off its debts at so rapid a clip as it might desire, but its leadership was pleased that local fishermen had benefitted from the competition and had obtained a fair price for a change.

The views held by the NSFC leadership and the native fishermen are most interesting. They enjoyed the competition waged between the non-local buyers and they reaped the benefits, but there was no rancor, no opposing sides, and no tooth-and-claw struggle. Perhaps half of the Unalakleet native fishermen's sole sources of income are a combination of fishing and trapping (at least 14 of the 50 fishermen), or fishing alone. They had to sell where they could get the best price and obtain start-up money. If they couldn't pay their share of their liabilities to the NSFC during the summer, they could pay some of it, or there would be another year.

The effects of the competition were salutory, and the increased prices obtained by fishermen for their fish far outstripped inflation for the period between 1981 and 1982, as the following comparisons demonstrate (Table 11).

TABLE 11

COMPARISONS OF SALMON CATCHES, TOTAL VALUES, AND PRICES PER FISH
UNALAKLEET, SUBDISTRICT 6, NORTON SOUND, 1981-1982 SEASONS*

	Total Salmon Caught	Estim. Tot. Val. of Salmon	$ Value Fish	$ Value Increase 1981-82
1981	198,500	$ 341,000	$ 1.72	
1982	252,700	489,000	1.94	13%

*Species caught rounded to nearest 100; dollar values rounded to nearest 1,000. Data adapted from Schwarz, Lean, Bird (1981) and Schwarz, Lean, Whitmore, Smith (1982).

Whereas the greater number of fish taken in the Unalakleet district may be due to more abundant spawning runs than in the previous year, which is quite clearly the case for silver salmon, the runs of kings were less abundant than the previous year. Until 1982 and the establishment of the sonar counting station by the ADF&G, counts were mechanical and did not provide reliable estimates of runs. It appears that the greater number of fish taken in 1982 was prompted by the higher prices available to fishermen through competition, and start-up funds available to them as well. Native fishermen, in particular, probably stayed on the water longer and cleared their nets more often in each two day fishing session.

Costs in Commercial Fishing

The $489,000 earned by about 68 fishermen, natives and non-natives, in the Unalakleet salmon fishery in 1982 was not evenly distributed, but the average for all fishermen earnings was about $7,200 (rounded to the nearest 100). The season ran from June 17 to September 4, divided into about 25 fishing periods varying in length from 12 hours to 48 hours with rest periods in between.

Some, but not all, native fishermen work with assistants to help set and clean the nets, off-load, help maintain the equipment (hauling fuel and oil, hauling nets, retrieving nets from the net hanger, and so forth), and help provision the boat. In a normal 48 hour fishing period the team will make about seven net checks--an exhausting routine in the tiny skiffs that allows little time for rest. If there is no floating processor or tender stationed in the Sound, the trips from dock to nets can be very tiring, making it difficult for fishermen to sustain the pace through every 48 hour fishing period. It is a well known fact that fish caught increase with fishing time. Earnings increase with fishing time as well.

Minor motor breakdowns and repairs, however, can knock a fisherman out of a 48 hour period, and if that period happens to be during the king salmon season ($1.37/lb. to the fisherman) rather than during the pink season (.13/lb.) it can be costly indeed. A partner can help against losing a full period if they are able at making repairs or simply taking a big share of the load. The permit holder usually capitalizes the venture, but the helper gets a 1/3rd share of the catch. So if a fisherman with a partner earns $7,200 for the season, $2,400 is paid to the partner. If a person does not fish at all, but provides a boat, motor, and equipment (but not fuel) to another fisherman, the owner of the equipment also is paid a 1/3rd share of the gross.

It is evident that if a person's sole source of income is commercial fishing, given the high cost of commodities in Unalakleet, that person must have powerful outboard motors, a large (24' to 32') skiff, good equipment, and a partner. He must also fish often, perhaps not missing a single period during the season. But let us look at the average costs for a Unalakleet fisherman.

A Unalakleet fisherman will usually buy a boat that can double as his family's subsistence fishing boat, or, if he obtains two boats and motors over a five or six year period, a smaller boat (16') will be used by his family for subsistence fishing, whereas the newer and larger boat (18' to 24') will be used to move the family to spring camp, to collect kelp-on-roe, to make journeys to nearby villages (St. Michael or Shaktoolik), and to move to and from fall camp. So a large skiff and large motor will usually have several uses. Table 12 lists the start-up costs for a fisherman who possesses the minimal equipment required to fish commercially near Unalakleet.

TABLE 12

COMMERCIAL SALMON FISHERMAN START-UP COSTS
UNALAKLEET PRICES, 1982

Equipment	Price
18' Aluminum Skiff	$ 3,400
50 hp Outboard Motor	3,200
King Net	700
Chum Net	700
Coho Net	700
Pink Net	700
Rain Gear & Incidentals	300
SST Propeller	180
TOTAL	$ 9,880

An aluminum skiff could last as few as five or as many as thirty years (it is perhaps too early to tell); a motor about four years, with simple maintenance (perhaps only three years if it is used heavily throughout each season); nets about four years until the mesh needs to be replaced and the net rehung; rain gear about three years, and propeller replacement is highly variable. Fuel costs are considerable, but average $175 per 48 hours session if seven to eight trips are made during the session. Motors are maintained, of course, but when the crankshaft wears under heavy use, repair costs approach replacement costs, so new motors are purchased. Table 13 totals the annual costs for maintenance and fuel (assuming twenty 48-hour periods are fished) for the fisherman (assuming four year motor and net lives).

TABLE 13

COMMERCIAL SALMON FISHERMAN ANNUAL OPERATING AND MAINTENANCE COSTS, UNALAKLEET PRICES, 1982

Maintenance	Price
Minor Motor Repairs	$ 150
Incidentals	150
Propellers (variable)	75
Fuel, Twenty 48-hr. Periods @ $175	3,500
TOTAL	$ 3,875

At about the end of each four year cycle a new motor must be purchased, adding $3,200 to the fisherman's expenses (1982 price for a 50 hp outboard) and the mesh must be replaced in each net and rehung, adding another $1,000 to the fisherman's expenses (mesh per net at $200, and $50 per hanging). So after four years another $4,200 outlay is required.

It is evident that a person must fish long and often if, over four years the start-up, maintenance, and operating expenses total $25,380 or $6,345 annually, exclusive of interest payments. And it is not a lot less expensive if, after the four year start-up period, a new motor must be purchased and the nets must receive new mesh and be rehung, although the annual costs thereafter, in 1982 prices, would reduce to $4,925 exclusive of interest payments. At $4,925 annual

costs, and 1/3rd share going to a helper, the fisherman making $7,200 annually would be losing $125. At $6,345 annual costs (the first four years), he would be losing $1,645. So the fisherman's costs are high and they must fish often, or they must fish seldom, maintain less powerful motors, work without a helper, and focus on subsistence fishing. In any event, the equipment doubles for subsistence pursuits.

The Nascent Herring Fishery in Norton Sound and Its Relation to Start-Up Costs and Commercial Entry for Native Fishermen

In 1979 a commercial herring fishery was opened in Norton Sound. At present, a $45 fee is required to enter the fishery, but no permit is required. The herring season is short, occurring soon after break-up, and bad weather and poor ice conditions can seriously inhibit access to the spawning herring that enter the coastal areas. The principal spawning region in the Sound is near St. Michael Island and Stuart Island southwest of Unalakleet. Although observation conditions were poor in 1982, the ADF&G observed about 15,800 metric tons of herring in Norton Sound during early June, but the Unalakleet and St. Michael areas (both areas are fished by Unalakleet fishermen) were open for only three days and six days respectively during the June 3 to June 8 period, with three overlapping days. Nevertheless, during that period 840 metric tons of herring were harvested at Unalakleet and a total of 3,714 m.t. were harvested in eastern Norton Sound. (These figures were obtained from commercial sources and not from ADF&G. The ADF&G reported 3,567 m.t. taken in eastern Norton Sound). NSFC officials estimated that native and non-native Unalakleet fishermen, who fish all areas in the eastern Sound, harvested at least 1/3rd of the total.

The significance of the harvest of 3,625 m.t. (to select a mid-point between the figures provided to us) is the following: the herring fetched about $270/m.t. (average for 8.8% roe). The total value was about $980,000. Unalakleet fishermen may have earned $330,000 of the total. In 1981, with somewhat better ice and visibility conditions, the catch was larger and worth about $1.5 million. So in a few days of frantic work, fishermen can far exceed the total they earn for fishing throughout the entire salmon season.

Because the herring fishery in Norton Sound is only now being developed and does not require a permit, the opportunity for natives who do not hold salmon permits but wish to do so, can enter the herring fishery so as to accumulate enough capital to purchase a limited entry permit from a holder. But the costs to

capitalize a herring operation are high, and successful herring fishers have, for the most part, been whites from distant areas using the best available technology (32' welded aluminum boats with twin inboard-outboard Volvo 280 motors, twin 50-gallon fuel tanks, a winch on the bow, rollers on each gunwale, one of which serves as a large batter that knocks the fish from the net as it is drawn across the boat (upside down) by the other roller and returns the net to the water.) The best technology is in the $50,000 range. One corporation left five such boats in Unalakleet after the 1982 herring season with the intention of using them again in the 1983 season and thereafter. Such technology provides a marked advantage over a 16' or 18' skiff without rollers to hoist, turn, and return the net to the water.

By and large natives are not looking for $50,000 equipment at this time, but through the NSFC-Kawerak project are building, or having built for them, 24' to 26' aluminum boats in Unalakleet and Nome. They seek to buy 100 to 115 hp. outboard motors, three nets, raingear, and stainless steel propellers. The costs for herring fishing are much the same as those for salmon fishing, except for the boat and motor, which are much more expensive than those that are usually purchased for salmon fishing. Table 14 tallies the start-up costs for herring fishing. It must be remembered that the same equipment, except for nets, that is used in herring fishing can also be used for salmon fishing, and if the weather is good and a fisherman can fish for five 48-hour periods per year for each of several herring seasons, he can easily pay for his equipment, its maintenance, replacement motors, and a salmon permit, while earning points toward a limited entry herring permit should the Commercial Fisheries Entry Commission deem it advisable to require them in the future.

TABLE 14

EQUIPMENT COSTS TO PENETRATE THE
COMMERCIAL HERRING FISHERY, UNALAKLEET, 1982

Equipment	Cost
24' Aluminum Boat*	$ 8,000
115 hp Outboard Motor	5,000
Three Nets @ $700	2,100
SST Propeller	350
Raingear, Incidentals	300
TOTAL	$ 15,750

*Assumes that the boat is welded in Unalakleet.

The problem, of course, is obtaining financing around $15,000 to get the herring equipment. But if it can be obtained through the NSFC, UNC, or the Alaska Native Foundation, the fisherman will possess equipment that should enable him to secure a sufficient annual income to provide for most of his family's needs as well as have equipment that is not too large for trips to spring camp, that is sufficient for both commercial and subsistence harvests of herring spawn-on-kelp, and if fitted with a jet unit for lift and clearance, that will also provide transportation to and from fall camp.

Maintenance costs are higher than for smaller equipment because of the high cost of motors, and operating costs are higher because the larger motors burn more fuel and because herring fishermen stay on the water for perhaps all but six hours of a 48-hour fishing period, clearing their nets at least nine times during the 48 hours as they run from their nets to the tenders and return. (The bigger, faster 28'-32' boats with rollers and batters, of course, can make more trips and do not have to refuel in a 48-hour period).

During a season in which five 48-hour herring periods are fished, fuel costs will be about $1,000 ($200 per period), and every four years the motor must be replaced and the nets rehung with new mesh ($5,750 in 1982 dollars). About $150 per year in motor maintenance would also be required. Quite clearly, a commercial fisherman should obtain herring equipment because it can be used for roe collecting, salmon fishing, and subsistence pursuits as well. A 24' boat will serve all of those purposes--being appropriate technology for the village.

Herring fishing can be extremely profitable once start-up costs are covered. In two days of fishing in Unalakleet in the 1982 season some native fishermen made up to $6,000 each. A ten day season with a biomass of 22,000 m.t. could put many native fishermen in the black, and they know it and are planning for it. And spawn-on-kelp, too, can be very profitable. During the short commercial season one native family, using two tenders and several skiffs, collected 40 tons of roe-on-kelp (Ficus sp.) at a value of $.70 lb. ($56,000) according to the commercial buyer. Whereas this family harvested the lion's share of the total roe-on-kelp collected and sold in the region, a few natives collected as much as a ton (ca. $1,400) in the short harvesting period.

The future for commercial fishing in Unalakleet appears to be limited but encouraging to natives. If appropriate technology is maintained--relatively small skiffs and the like--and if the processing plant, docks, and air transport facilities continue to grow to handle larger numbers of fish (six or seven million

salmon and seventeen to twenty five m.t. of herring is a large availability pool on an annual basis), it is conceivable that the fishery will become the economic foundation for a continued subsistence life in the arctic. It is ironical that the naturally occurring, renewable, harvestable resources of the sea, are beginning to provide Unalakleet Eskimos their entré into world-wide markets--perhaps as producers and controllers of exchange, rather than merely high risk-taking producers.

On Competition in the Fishery

When writing up the results of a multivariate and rather complex analysis of social indicators of community well-being in eight Alaskan villages, four in the Aleutians and four in the NANA region, Jorgensen was struck by the importance of two factors, the amounts that native Alaskans invested into their subsistence pursuits, and the amount and kinds of things that they shared within and between households, among wider networks of kinspeople, and among friends. Sharing extended from one's home village to associates in distant villages. And an interesting fact that should not go unnoticed, was that the more people earned, whether in public sector jobs or as successful private fishermen, the more widely they shared. It was important to learn that whether a native person demonstrated entrepreneurial success, or was dependent on transfer payments, they shared. Struck by the widespread phenomenon, Jorgensen referred to the "cement that holds the structure of Eskimo villages together," the persistence of traditional subsistence pursuits and the organization of labor and distribution, especially sharing, as "The Tie That Binds" (Jorgensen, McCleary, McNabb 1983: 252).

Subsequently, when talking to a knowledgeable Unalakleet hunter-fisher, Jorgensen wanted to know if there was a single native person or a single native family in the village who did not participate in subsistence pursuits. The question had been asked to other residents, and all had been puzzled by the question's obtuseness. It had never occurred to anyone that some family among them would not be engaged in subsistence activities. This hunter, on the other hand, was asked if a person or a family hunts seldom, or is incapable of engaging in a variety of subsistence activities, whether subsistence products would be distributed among them. Not with exasperation, but with a desire to inform, the hunter said "Sharing is the tie that binds, the aspect of our life that is Eskimo, that makes us, that maintains us." The native's summary phrase was identical to the metaphor selected by Jorgensen for the same phenomenon in different villages.

It is the concept and activity of sharing that blunts the tooth-and-claw competition that characterizes so much of the entrepreneurial and capitalist activity. Indeed, Protestant ethic individualism, in which the person is besought to save, delay gratification, develop one's worldly talents and accumulate worldly possessions, after 85 years of evangelical activities in the village, has not fully caught on. Natives share and maintain wide-ranging ties with kinspeople and friends; and the persistence of native views of their obligations to one another in their arctic homeland makes it difficult to shun those obligations and to replace them with closer, personal ends. People who hunt caribou together, or hunt rabbits together, or share warm homes, or skills and labor to repair a damaged snow machine, do not make good competitors against one another in the commercial fishing or trapping arenas. The arctic remains a demanding and challenging place where several millenia of adaptations, highlighted by sharing and helping, have been the mode.

Some examples of competition in the Unalakleet commercial fisheries will make the point. In discussions about what technology is considered appropriate for Unalakleet herring and salmon fishing, commercial fishermen regularly reported that a fisherman needed a boat about 24', perhaps 26', and a single outboard motor in the 100 to 115 hp range. Jorgensen often commented that twin 50 hp motors, although costing more, would last longer, could be run at about one half throttle, would be much more fuel efficient, and would be much safer when on the Sound. Visions of rough seas during mid-May when, at night, fishermen are trying to find, or trying to clear their herring nets while watching for moving ice, would make for anxious moments, the kind of moments when a non-Eskimo would feel safer with two motors rather than one. Eskimo responses were instructive. Jorgensen was told by the fishermen that 100-115 hp motors were best because they provided full power when that power was needed. But more importantly, the fishermen replied that a fisherman with one motor, in the words of one man, "is never out on the water alone," meaning, of course, that another Eskimo will always help a person in distress.

There were discussions among Eskimo fishermen of thoroughly un-Eskimo behavior, such as native commercial fishermen checking their nets only to find that they had been stripped. No one for a moment thought that an Eskimo had stripped a fellow fisherman's net. Upon hearing this, the trappers among the fishermen were asked, and practically all fishermen engage in at least some trapping during

the winter months, whether their traps were ever cleaned of their quarry by another native. That, too, was unheard of, and furthermore, no trapper will exhaust a river bed or creek of all its fur bearing animals, no matter what the pelts are fetching on the market, because "no one wants to think that he has destroyed the life of a place." The environment is shared with those animals.

The native view of competition cannot be divorced from the native view of helping and sharing throughout each person's lifetime engaged in those activities. This view of competition proved absolutely perplexing to the Seattle fish buyer's non-native agent during the 1982 season in Unalakleet. The agent was working long hours, thoroughly engrossed in the competition between his firm and the Minnesota buyer's firm for each fishing period's catch. He would press on for nearly an entire 48-hour period icing fish, putting them into containers, and shipping them out to Anchorage by aircraft at a rate of three 28,000 lb. shipments during each two-day period. His firm was beating the Minnesota buyer, but could not quite knock him out, even though his own firm's salmon prices to the fishermen were higher than the world-wide market could bear.

The knock-out opportunity came during one July fishing period, presumed to be a pink salmon session, when an unexpected and very large run of dog salmon materialized. The native concept and practice of sharing and helping, of never leaving someone alone on the water, deflected the punch. Around midnight during the last day of a session, two of the Seattle firm's tenders loaded with dog and some pink salmon headed from Shaktoolik to Unalakleet. A tender belonging to the Minnesota buyer headed back at about the same time. The biggest of the three tenders was owned by the Seattle firm and piloted by a native. En route, the Seattle firm's big tender lost one engine and its little tender broke down completely. The Minnesota firm's tender, laden with 6,000 lbs. of salmon, also broke down.

Rather than hurting the competition and helping himself, the native buyer and the Seattle-based firm for which he worked and to whom most natives were selling their fish, the native piloting the big tender heard the distress call from his companion boat and slowly worked its way back to pull it in to Unalakleet. When he got to his sister ship he saw the disabled boat of the competitor. So on one engine he pulled both of the boats back to Unalakleet, thereby threatening all of the fish in all three tenders because they surely would rot before he got

them back to the village. One of the Seattle firm's boat loads was iced, the others not. Soon after the two tenders made their way to Unalakleet behind the larger tender, the slough smelled of rotting fish. All but the iced fish were rotten, so both firms suffered.

The Eskimo pilot refused to leave the other tenders on the water without help. Eskimo values, not market values, prevailed.

In another example, the Seattle firm installed an ice machine in Shaktoolik for the sole use of fishermen selling to their firm. The idea was that by providing ice, fishermen would lose fewer fish before moving them to Unalakleet, and that the Seattle firm would be able to buy all of their fish, thus denying them to the Minnesota buyer. A village official was left in charge of the ice machine. In that capacity he sold ice to all who wanted to buy--those who sold to the Minnesota man as well as those who sold to the Seattle firm. The Eskimos simply shared, while enjoying the benefits that competition brought to them.

When it was clear that at least half of the NSFC members were selling their fish to the local native who was buying for the Seattle firm, the NSFC leadership was not miffed. They felt that the competition was especially healthy, even if local fishermen were not paying back their outstanding obligations to the NSFC during the 1982 fishing season. They pointed out that in past years the fishermen had to accept the price offered by the monopsonist who controlled the local market. For many Unalakleet residents, commercial fishing is the sole source of revenue, so they sought the best price available.

In this regard, many fishermen immediately switched to the Minnesota buyer during the first 36 hours of a period when the local native could no longer afford to buy pink salmon on his own (without the backing of the Seattle firm).

The competitive side of Eskimos in Unalakleet commercial fishing may be in failing to share precise information with other fishermen on the whereabouts of especially productive net placements.

THE INTERPLAY BETWEEN THE MARKET AND THE SUBSISTENCE ECONOMIES

It is evident that Unalakleet has grown dramatically in size, not only in response to ANCSA and its provisions, but in response to other public sector institutions, jobs, and transfers as well. In the late summer of 1982 alone the village population swelled from about 630 to about 800 as the Bering Straits School District

relocated its offices from Nome to Unalakleet. The small village became larger, and the percentage of employed non-natives and non-local natives increased, causing further disparities between local natives and in-migrants in Unalakleet.

A characteristic trait of many non-native residents in the Alaska bush is that they extract naturally-occurring, renewable resources for subsistence, or for sport, or both. The population in Unalakleet, with increased motorboats plying the rivers and increased snow machines moving over the ice and snow, is causing comments of concern and consternation among local natives, much as the presence of air force personnel fishing and hunting in the area during the 1950s and 1960s bothered villagers at the time.

The naturally occurring, renewable, harvestable resources are the source of Unalakleet Eskimo existence; they subsist because they use them, know how to use them, how to regulate them, and how to rely on them. But the very most important resources on which they depend for subsistence are also the resources on which their commercial life, their entré to the market is based. Eskimo families harvest salmon, herring, and other fish in great quantities to eat and to feed to their dogs, and 65 of those families also fish commercially for salmon and herring in Norton Sound (50 families representing 100 fishermen fish in Unalakleet, another 15 at Emmonak). The sole source of income for half of those families is fishing, or a combination of fishing and trapping. And for fourteen men, each a confirmed bachelor (at least at this point in their lives), they fish commercially, trap commercially, and hunt caribou, moose, and other game to distribute to their families and networks of kinspeople in the village. These men receive some financial assistance from their families so that they can stay on their traplines during the winter, purchase traps, ammunition, clothes, food, and fuel, and resume fishing in the summer.

And for families whose members fish commercially, except for nets and buoys, the same equipment that is used for commercial fishing is also used to conduct practically all major subsistence activities in which a family engages during the spring through fall seasons, from establishing spring camp to establishing fall camp. The equipment purchased for fishing is used for subsistence as well as commercial purposes, and the equipment used for winter hunting is used for commercial (trapping) and subsistence purposes.

Among the 104 natives employed full time in the village--the vast majority in public sector jobs--all engage in subsistence activities and all plan to

conduct those activities during weekends, vacations, and after work periods. But they also contribute their cash to underwrite other members of their families in conducting subsistence tasks, from winter ice fishing, rabbit hunting, and ptarmigan hunting, to seal hunting in the spring. Everyone shares in the results of the effort, and the gainfully employed underwrite the equipment, fuel, and related expenses.

The arctic has yielded non-renewable resources for corporate extraction, and returned some of the revenues generated by those resources to the state, and the state, through various and sundry programs has returned some of those revenues to village Alaska. School districts, schools, energy programs, block grants, revenue sharing, and such like are the results. Public infrastructure has been built, and in some ways the convenience, if not the quality, of life has been enhanced. But for Unalakleet natives, the non-renewable resources beneath them are owned by the regional profit corporation, and the non-renewable resources below the floor of Norton Sound and beyond the village and regional boundaries are owned by state and federal governments. The renewable resources from which they gain their subsistence and commercial livelihoods are regulated by state and federal governments as well.

State and federal governments, and the various village institutions and governments that they support, are the preeminent sources of funds--appropriated through legislatures--on which natives must rely for most of their employment, and state government is the regulator to which they must turn to learn the rules about how and in what ways the resources on which their forefathers have subsisted for several millenia shall be extracted or not extracted.

The political power over the area's resources beyond the native-controlled region is vested in state and federal governments, while control and ownership of those resources--mineral, oil, and gas, in particular--have been transferred to multinational corporations through lease sales, or are in the process of being so transferred. At the local level, as public relations representatives of several multinational energy firms who have visited the village have been wont to explain to Unalakleet natives, few jobs from oil and gas developments in the Sound can be anticipated for local natives. On the other hand, local natives should prepare for the continued presence of corporate personnel, who will in all likelihood use Unalakleet as a secondary staging area as well as a recreational retreat. Perhaps presaging the oil industry growth, in the past year the Swedish Evangelical Church in the village has mounted a small recreational fishing operation using Covenant

School dormitories and kitchen for guests, and it is likely that boat renting operations might follow. Moreover there is persistent talk at UNC about building a hotel to service the burgeoning public sector.

The native subsistence economy and the native's space is being affected and will continue to be affected by public growth which, in large part, is a response to federal legislation, which in large part is a response to the discovery of vast quantities of oil, which in turn affected state revenues and legislation, which has caused the village to grow at a rate with public sector dependencies in the village.

Thirty percent or more of the income from the public sector to native families is plowed into subsistence activities and commercial fishing pursuits, as is amply demonstrated in Chapter Five, but especially in the section on the costs of mounting subsistence extraction trips, and in the analysis of the costs in commercial fishing technology and its uses for subsistence purposes. Unalakleet is home. Whites and corporations come and go.

CHAPTER NINE

NATIVE VALUES OF THEIR SPACE AND PLACE: LAND, WATER, AIR, LIFE, THEIR HOMELAND

INTRODUCTION

Unalakleet space is where Unalakleet natives live. The land, water, and air that constitutes Unalakleet space encompasses a range in which native residents, among other things, acquire their livelihoods, and which they are willing to defend. Places, on the other hand, are locations within the larger range in which homes, camps, even burning picnic logs and other objects created by villagers, or given definitions and meanings by them are situated. Storage caches, unoccupied karigis that once belonged to the "old people", and spots on the river or Sound where unusual and important events occurred, are places within Unalakleet native space.

As John Bennett (1979) has pointed out, the ways in which societies define their spaces and places, the ways in which they are used, the manners in which rights to them are transferred, and the ways in which sentiments are attached to them vary widely. It is not clear how many generations it has taken for the Eskimos of Unalakleet to develop cultural definitions of their space, that is, their environment. The symbols that residents attach to their environment have long, long histories, however those symbols are expressed.

The village's space is defined by places, such as the Unalakleet River, the Whale-back Mountains, Egavik River, Golsovia; by abiological phenomena, such as the characteristics of shore ice; by activities of natural competition, such as the behavior of brown bears; by memories of cultural competitions, such as a history of intermittent warfare and subsequent trading with Athapaskans; and by memories of the use of areas to which sentiments are attached such as the pleasure and anticipation of spring camp, and the delight at the speed maintained by caribou when being pursued by hunters astride snowmachines. The space includes places where ancient and recent ancestors have been buried, where an unwanted radar station reminds people of how much better the environment would be if it was removed, and where their own range ends in joint use regions with Shaktoolik residents to the north and residents of St. Michael to the southwest. To go beyond those joint

use regions, good form requires an invitation to have been extended, at some time, to Unalakleet residents from the customary users of the area.

Neither space nor place to the native inhabitants of Unalakleet are defined solely by ownership rights to corporeal and incorporeal property, as we have stated, albeit briefly, in the introductory examples. Over the long course of Inupik and Yupik residence in the Norton Sound region the space from Golovin in the North to St. Michael in the Southwest, and from the Whale-back Mountains in the East to 80 miles westward in the Sound, Eskimos in and around Unalakleet have obtained their livelihoods, entertained their kinspeople and friends, visited their affines, told stories about their territories and the marvelous things that have occurred in them, enjoyed pleasant and harrowing experiences with their families and wider networks of kinspeople and friends within that territory, made decisions that would enable future generations to live on the same land, and recognized the earth, sky, water, plants, and animals as natural as well as supernatural--making themselves available at some times but not at others. The residents of Unalakleet, most likely in the past, undoubtedly now, respect their dependency on, and relations with the phenomena of their environment--their space, its places, its things.

LEARNING HOW SIGNIFICANT MEANINGS ARE HELD, AND WHAT THEY ARE

Understanding how natives assign symbols to their space and place cannot be gained by administering questionnaires, or by following interview schedules. Texts must be collected, discussions must be overheard, comments in context and in place must be heard by the student first so as to get some idea about what is important, that is, to what have significant symbols been assigned, and second, to evaluate whether these symbols, these significant meanings, are shared rather than subjective, reactive, and particular to the person whose comments or opinions the student has heard.

In this regard, a dozen trips up the Unalakleet River to clear and untangle nets with different villagers, sometimes with entire families, will impress the student that various Unalakleet residents conduct salmon harvesting subsistence tasks in much the same way, and that they talk about the river and the life and objects in and around it in much the same way. This is true, as well, when people talk about ice fishing adventures up the Unalakleet River. The student hears their several conversations about their respect for the ice, their knowledge of the ice, and the

good times they experience in jigging for fish and watching for birds and mammals. The student hears them speak of the significance of the environment to them, as an integral part of life, indeed, indistinguishable from life itself, much as sharing is an act of life that is embedded in all subsistence activities--from planning to consumption. The significant meanings that villagers have attached to their space and place are made clear to the observer, the student, over the course of repeated contacts.

For example, Jorgensen was impressed during his first net clearing trip on a July night (beginning at about 8:00 p.m. and returning at about 5:00 a.m.--traditional work hours in the contiguous 48 states being of little concern here) how the two men he had accompanied gained pleasure from their subsistence activities. Both men called attention to eagles that flew from their perches as the boat approached them, and during the evening both men, separately, and on two occasions each, mentioned the beauty of the Unalakleet River and its riches. The joy and comfort of being there was obvious and explicit. These men knew the river's intricacies, and knew the terrain in all directions. One commented that the White Alice radar site on a hill above the river, visible from several points as a boat heads upstream or down, was the only eyesore on the landscape. There was no rhetoric, just a statement of fact about an unwelcome presence. Jorgensen joined other natives and watched them enjoy the same activities, commenting on them in similar ways, and commenting on the White Alice site as well. The river was not regarded as marketable, and, if not marketable, it was not regarded as an elite province for environmentalists either. Residents were very much concerned about the recent wild rivers designation that the federal government had bestowed upon the river's upper course because they feared that it would be clogged with kayaks and campers from cities near and far.

The meaning of the river to the residents of Unalakleet cannot be validated simply from hearing a few similar comments and observing similar behavior among different people. But such comments and observations help. Other kinds of comments made in different contexts can help to validate or invalidate impressions derived from comments made during net clearing activities. For instance, at times an interested student happens to be at the right place when information bearing on values and meanings is conveyed. Such was the case when a man, shy, inarticulate, about 30, who, according to many accounts, would never consider speaking at

a public meeting or at a public hearing, nor ever act as a spokesman for the village, sought out a competent and admired uncle to express his concerns about developments, in general, that might affect the river--from oil and gas to commercial and sport fishing, canoeing, and kayaking by outsiders. The man was emboldened to talk by a few drinks of alcohol, but he was lucid.

To this man the river meant the comfort of place and space. It provided nourishment--real and spiritual--and represented the freedom to conduct an Eskimo way of life. He recognized that the river was threatened, as were the freedoms that the river represented, and he said that he would rather take lives, or have his own life taken than to see the river overrun or destroyed.

The elder counseled the younger man that violence would not solve problems, but would only generate more problems. But the elder, too, recognized the vulnerable and powerless position of local natives, and though he did not counsel violence, he felt that force, alone, might be the only way in which the river could be kept intact as Unalakleet space.

The chance hearing of this discussion caused the research team to inquire of, or to inquire about, perhaps in a clumsy fashion, all other men in the village who fell into the 25-40 year age group, and to learn how they felt about the river. The vocal, articulate leaders were not queried, but those who are neither vocal nor leaders were. Forty men expressed or have been heard to express sentiments similar to those articulated by the concerned younger man to his wise uncle. This is not a commodity view of nature where a village and its resources are salable at the right price. It is a native view of space and place; it is a home, a place in which livelihoods are obtained, and which they are willing to defend.

The utter frustration Unalakleet residents must have felt at the public hearings run by OCS on Lease Sale 57 for Norton Sound in October 1981, and at subsequent hearings conducted by the state, and at public relations meetings conducted by representatives of oil companies in Unalakleet cannot be understood as sham, or as political positioning by people seeking to enhance their financial positions. And the statements by village leaders cannot be understood as contradictory when, after arguing eloquently against developments that may threaten their livelihoods and damage their space, and after putting those statements in the public record, then in the same statement, request training for jobs and the allocation of jobs to village residents. It is only that one step in the reasoning has been omitted.

The missing step was supplied by the elder who counseled his nephew that violence would only make the situation worse, while suspecting that nothing short of violence will stop developments from occurring. It is the sense of the inevitable that causes the articulate leaders to protect what they can. As one man who opposes large scale industrial developments said to Jorgensen, "What chance does a $2 million fishing operation* have against a $2 billion oil operation, especially when the guys who make the decisions have all the bucks--oil bucks?" He said this during a discussion of an impending state oil lease sale, since cancelled, that had so frightened Unalakleet residents that it dominated much of the public discussions that were focused on different topics, such as commercial fishing.

ON THE VALUE OF REGULATING NATURE

It took some time and several conversations to understand Unalakleet villager responses to questions about "how many?" That is, when a villager described a rabbit hunt engaged in by about a half a dozen men the previous evening, several images were prompted by the description. Although the men were riding snowmachines, they formed a gentle fan-shape that kept many animals inside the lines that they formed. The technique is at least as old as the paleolithic, and it still works well. But the differences are that snowmachines, petroleum-based fuel, and rifles are used. They can travel faster and farther to get the same amount of game that their fathers bagged over a longer period and in a slower fashion. As soon as the technique was described, the researcher asked "how many did you bag?" After a puzzled look the answer came, "At least 100; we had enough for every family (native) in the village (probably 170). Everybody received one for rabbit stew last night."

Then, without prompting, the villager pointed out that you kill only some of the rabbits that you startle into the drive. "You leave many. You sure don't take them all. You'll be back, and so will they." The lesson is straightforward, matter-of-fact. The message finally takes hold. There is conscious conservation of rabbits (hares); "you don't take them all, and you don't hunt in the same place every day." Indeed, you learn that they don't hunt rabbits on every winter day,

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*Norton Sound commercial fishing--the entire Norton Sound region exclusive of the Yukon Delta.

but vary the subsistence activities to ice fishing, ptarmigan hunting, caribou hunting and so forth. The fur bearing animals are not depleted from an area, and no one wants to be responsible for reducing populations of game beyond the point at which the normal recovery rates that are known for an area can be sustained.

So, it is learned that villagers care that animals are in the habitats in which they belong, that those animals can be harvested in the future, and that they, the hunters, played no role in severely depleting them.

Underlying this behavior is a simple meaning: nature is not abused. It is used with pleasure, and fully, but it is not abused. Moreover, there is both an explicit and implicit assumption that natives know the terrain and the animal populations on it. The persistent question, then, of how many (or how much) was usually answered, "100, but sometimes two people will get 150"; "three, but the winter lasted long and by the time we could get to the seals, the herring were running in the area." But the answer that was appropriate for the village was either "we got enough" or "we didn't get enough, so we'll have to go again, or replace that resource with another resource." Enough means enough for that family's current needs, or that family's needs for some period, as well as for some kinspeople and friends. To deplete an area of fish or game is always too much.

Regulation, then, is linked to needs, use, and the animal populations in the area in question. It is as if natives, by experience and knowledge, were undocumented ecologists. They may as well be talking about biomass, optimum population sizes, and carrying capacities of areas. They don't talk in such terms. Nevertheless, if queried about researchers or representatives of agencies who talk in such terms, and who establish the regulations that govern the resources of the Unalakleet region, resources on which natives have lived for a long time, the responses are often low-keyed, but appropriately pointed.

Natives feel that there is little fit between regulated resources and the availability of those resources, and as a consequence they follow their own knowledge, their own understanding of the land, river, skies, and sea. State regulations, except perhaps in commercial fishing, are not relevant to the Eskimo scene, nor are they restrictive. Eskimos, they aver and believe, do not abuse nature, and because they know their own space (whereas state and federal employees do not know it, and would be lost and, perhaps, helpless within it) they will treat it as it should be treated. They value their space highly.

If the discussion turns to Alaska Department of Fish and Game rules, or to federal regulations, those two bodies that came to exercise complete control over the resources on which Unalakleet Eskimos depend after ANCSA extinguished their claims to those resources, the residents seem unmoved by those institutions and their regulations. But when those regulations are referred to, it is also clear that natives feel that they do not fit the animal populations that they are intended to regulate.

If Eskimos focus their critical eyes on the regulations, they suggest that the regulations are misapplied and inappropriate in largest part because the regulators make faulty observations, mismanage their domains, and base their regulations either on faulty data, or misinterpreted data. In the very first exchange between the principal investigator and the villagers, Jorgensen was told how villagers had helped researchers in the past only to have the information that they provided misinterpreted and regulations enacted that were contrary to the nature of the animal populations in question and the natives' uses of those populations.

During 1982, villagers often referred to mismanagement and misunderstanding of the environment by state regulators in particular. For example, during the late and very short commercial herring season three fishermen, dismayed by ADF&G action to close the fishery, fished out of season. They were caught, taken to the judge, and fined. Soon after the waters were closed, the state reopened them on an emergency basis. Natives interpreted that state action as prima facie evidence that state experts did not know or understand the natural resources, whereas natives do. The reopening of the herring waters was tacit admission of the experts' fallibility.

During the winter months Unalakleet residents decried other state regulations, particularly the restrictions placed on caribou which limited hunters to five animals per year. When it was discovered in the summer of 1982 that the great northwestern caribou herd was much larger than the ADF&G had previously stated, that caribou occurred in such large numbers in the Kobuk Valley that they were pressuring the commercial reindeer herds, and when the ADF&G lifted the five caribou limit for subsistence, local opinions were confirmed: the state never should have established the limit in the first place. The natives were perplexed that either the state did not seek their advice, or they misued the information that they sought. The view, and it is firmly held, is that the natives understand natural resources and are capable of managing them.

As still further evidence of governmental mismanagement, Unalakleet residents referred to the large numbers of walrus that, following break-up in 1982, migrated all the way to Unalakleet in eastern Norton Sound eating the shellfish and seals. The numbers of walrus penetrating closer and closer to the head of the Sound have increased regularly over the past five years. The natives attribute this to the federal quotas, since lifted, that were placed on walrus harvests several years ago.

Whereas natives are bothered by state and federal regulations, these do not seem to represent strict rules that must be obeyed. When an Eskimo ventures into his hunting space, he is not observed by regulators. It is not the space of regulators, not their domain. They do not know the places, nor how to cope. Eskimos do know how to cope. They tell stories of the places that they have been, or are going. They know where to look for game, what to expect when caribou begin to run, and how to go about trying to save themselves if, alone, they fall through the river ice. They know techniques used to adjust to fortuities in the past, and they know stories about people who innovated the techniques.

So when the researcher presses on the question of regulators and their regulations, the responses usually are that "They don't follow us into the country." It is as if the regulators live in a world of paper and ink and theories and rules. As for the rules, it is doubtful that they would be observed even if the regulators followed the hunters into the hinterland. Eskimos are calm and reserved about the rules, but although bothered by them, they do not seem to pay much heed to them.

As Unalakleet residents are wont to say, they know their resources; they appreciate them and they would not damage them, because they are sustained by those resources. Furthermore, as they always point out to the interloper, there are many kinds of resources and no fear of depleting any single resource.

Regulating the Bear Hunters

Regulations about hunting are generally eschewed, but moose, caribou, and bear regulations make little sense to natives. Bear regulations, in fact, are in direct conflict with native ideas about when, where, and why bears should be hunted. ADF&G has set the bear season to open on August 20th, but Unalakleet hunters kill them as early as the middle of July. At this time, according to Unalakleet natives, the bear's meat is at its tastiest and most tender condition. ADF&G regulations would deny natives edible bear meat, in their view.

Natives seek bears when those animals are getting the bulk of their diets from berries, roots, grubs (larvae, nymphs, worms, pupae of insects), and small rodents. They feel that when the bears' diets are principally plants, the black bears, in particular, are "USDA Prime" (local witticism). Yet by August 20th, the meat of the black bear is referred to as "USDA Canning Quality", if not, "Trap Bait". Natives explain the reduction in quality as a product of the change in the bears' diets from the berries, roots, grubs and small rodents available in the summer, to a diet composed mainly of spent salmon. They believe that as the salmon loses its vitality after spawning, the spent, flacid flesh is devoured by bears because the salmon is easy prey to these none too-discriminating predators.

Natives aver that once these bears have consumed a large quantity of spent salmon, that the bears' meat acquires a "fish" taste comparable to the taste and appearance of a spent salmon. A native summed up the Eskimo rationale for breaking ADF&G regulations (taking bears out of season) in this fashion: "If one wants to taste fish, go fishing! But if one wants "USDA Prime" quality black bear meat, then go hunting before he (the black bear) goes fishing!"

ON THE VALUES OF A SUBSISTENCE LIFESTYLE

The research team members sought to learn, in as many ways as possible, how natives regard their lives as subsistence hunters, gatherers, and fishers in the late twentieth century. It was possible to collect texts on the topic from younger men, and texts from older men and women as well. Because of the importance of the values of younger men to the persistence of a subsistence life, and the values and expectations of older hunters for the persistence of the lifestyle and the meanings that they assign to it, two brief texts follow. The first is verbatim from a native man, aged 30, who has served in the U.S. military and spent time in Seattle and Anchorage, a common past among natives aged 25-40. The second is paraphrased from an open-ended discussion with a venerable local and very much active hunter, 82 years of age.

A Young Man's Views

> The subsistence life style in the Norton Sound area is just as the name implies: a reliance on the sea, the rivers and their drainage and the land, for sustenance and the pursuit of happiness. The village is steadfastly linked to its environs, including the air, sea, and the land with all its water systems. These environs play a vital role in that they are the lifeline of the village, providing its sustenance throughout the year. This lifeline linkage to their environment is not unlike the umbilical cord linking the fetus to its mother. Yet this is as far as that analogy can go in that most villagers (fetus)

never leave their environment (womb) except by death or choosing to go to a more urban setting for whatever reason (e.g., to further their education, a job transferral, perhaps with a raise (the "offer-you-can't refuse"), or just because of the hardships of the subsistence lifestyle.

A subsistence lifestyle makes certain yet reasonable demands of the people who deign to live in such a manner. These people must have a reverence for the land with its river systems, and the sea; this reverence must be coupled with a respect and knowledge of daily, seasonal and the overall annual weather and climactic conditions. These weather and climate conditions influence not only travel over land and sea for resource extraction, but also the subsequent preservation and storage of those resources.

Also important to a subsistence life style is a broad knowledge,innate and acquired, of the habits and habitats of animals of both land, air and sea, and the proper means and methods of extraction, preservation and storage..

If any of those requisites are missing, a person may as well go through school, go on to college, get his sheepskin and pursue happiness wherever that degree affords him to. If his reverence is found in a church or synagogue then so be it. If his respect is for mom and dad, the flag,and the president, then that is all fine and commendable. If his knowledge can only be gleaned from school books, newspapers, news magazines, and the like, then he may be voted the most likely to succeed. A person whose reverence, respect and knowledge were attained in this manner would have to start his education all over again, from square one, to be able to live a subsistence lifestyle in the village.

While it is apparent that the indigenous peoples of the Norton Sound area do not carry out their lifestyle in the unadulterated fashion of their ancestors, it is still consistent with time-honored standards of subsistence.

Modernization has made methods and modes of extraction easier but it (modernization) is also a wolf in sheep's clothing. True, the mechanizations and modernized hunting and fishing equipment have made traditional modes of extraction and preservation easier. Therein lies the paradox. The very same outboard motors, snowmachines, ATC's, etc., along with the rifles and shotguns that brought the people "closer" to the game faster, are the same things that through noise and increased activities, are "driving" the game farther away from larger concentrations of subsistence-oriented communities.

Therefore, living a subsistence lifestyle has become a very expensive undertaking. The extended hunting expeditions are very costly in that the outboard motors and snowmachines eat up gas at a rate of over $2 a gallon. Firearms ammunition and supplemental store-bought foods and spare parts at local stores cost an arm and a leg, with an eye thrown in as S.O.P.

> All of your (white, Anglo, non-Native) diet comes from a store. Your sports are gardening, hunting, and fishing. Most of the (native) diet comes from the country, supplemented with store-bought foods. Even if anyone in the village wanted to live off of strictly store bought goods, it's virtually impossible to do because of the high prices those goods demand.
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> Transplanted natives, who live in an urban setting, either temporarily, semi-permanently or occasionally permanently, never completely forget their roots. As they go about their daily routine, some intangible, internal clock or calendar is often subconsciously aware and in touch with the pulse of life in and around the village. This can be as subtle as a twinge or dull ache one feels when seeing the first seagull or robin in the spring, and realizes that, back home, he'd now be preparing for bird or egg hunting. It can also be as heart wrenching or depressing as hearing second or third-hand, that one's former hunting or fishing partner has passed on a week or two before. As he gets acclimated to city life, these feelings subside in much the say way sirens cease to bother or alarm him, whether he be driving a car or relaxing at home. Generally, the longer a person stays away, his visits back home are less and less frequent and farther in-between. Occasionally, an individual who left as an adolescent with some outdoor experience, will return with a family to show the children their roots. They may even stay to try and pick up where they left off, only to find out that the skills they had are rusty and that when they left, their education wasn't complete. Sometimes an individual may pass on before he feels the need to visit or relocate back home. More often than not, he will have his body returned home for internment if he or the family is financially solvent enough to do so. Indeed, most people who die away from home are returned for burial in the local cemetery, although again, economics dictate whether this is possible, even if it is preferred.

On the Young Man's Views

The young man focused on changes to the subsistence way of life wrought by technological innovations, the use of gasoline and oil, and the pushes and pulls of a market economy that pressures natives to cut their ties, to move to the city, and to leave the old life behind. The meanings of the native space and the values of the subsistence lifestyle endure, however, and beckon the urban dweller to return. But upon that return the native must pick up the pieces and reacquaint himself (and herself) with the details of a native subsistence life. It is modified techniques that are learned, techniques that work with the new technologies. Men do not go so hungry for such long periods of time as was the case during winter periods a half century earlier as men pursued caribou 100 miles by dog sled, or seals 100 miles by sled and kayak. As a consequence, some etiquette has

changed. But significant meanings attached to the environment and to the social and economic organization of life in that environment have not changed.

The older man, perhaps a representative of this "unadulterated" number referred to by the young man, has very explicit views about meanings attached to the subsistence life, and they focus on the symbolic side of hunting. To this person, hunting and culture are inseparable phenomena. The symbols, although he does not express them as such, are so crucial that if the hunter does not know them and observe them, he is not a hunter, he is merely hunting.

It is crucial to point out that every young hunter in the village (under 40 years of age) queried by Jorgensen said that they sought the advice of the older hunters, and if possible hunted oogruk, caribou, and beluga with them. They learn from the elders by precept. Eskimos do not give stern admonitions, nor do they lecture. They certainly do not criticize a person's ineptitude, and would not think of ridiculing a fellow hunter by "calling him stupid" (a comment by Eskimos in Canada as well as Unalakleet). The following interview (questions and answers) convey how an elderly hunter regards and values hunting.

An Old Man's Views

One renowned hunter with whom the research team members spoke on many occasions was born at Norton Bay in 1900. He moved to Unalakleet in his youth at a time when many other families from smaller villages in eastern Norton Sound were relocating to Unalakleet. Throughout his life he has hunted in the Sound, often westward 100 miles in search of oogruk, and north toward Norton Bay in quest of belugas. He has maintained two camps on the Unalakleet River, fishing from them during the summer months, and mounting hunting expeditions from them during the fall and winter months.

This gentleman is the village's most esteemed hunter, the first person named to the principal investigator when asking other hunters about who was the first person in the village to whom they would turn for advice about hunting land mammals or sea mammals.

In his youth this man regularly hunted beluga whales each spring by kayak, setting several harpoons attached to seal skin floats in each whale. For the past three decades he has pursued belugas in aluminum boats with crews of three other hunters who have sought to acquire skills similar to those possessed by the elder hunter.

When asked about sharing catches and whether hunting techniques for each species had changed over the years, the elderly hunter was bothered, but his concern was not immediately understandable. So, when asked all too bluntly what persons in the village hunted oogruk, he answered "No one!". But sometime later the question was rephrased to "Who in the village goes hunting oogruk?" The reply this time was "Everybody." That is, every able bodied male in town hunts oogruk, but no one, with the exception of his 70 year old hunting partner, knows how to hunt properly.

The elder hunter distinguished hunting properly from killing animals for subsistence. And he made it very clear that hunting followed rules that must be learned and employed with care. He pointed out that hunters go fast and far, but do not know the terrain. He suggested that young people can bag game in quantities that approach or match the quantities bagged by older generations, but that their dependence on snowmachines and boats provides some false security, namely: how would they cope without the benefit of snowmachines, motorboats, and rifles?

During a discussion of hunting style and techniques, including the etiquette of the hunt, i.e., the symbols that are attached to the hunt and that demark good form, the elder hunter mentioned that young hunters divided oogruk in "any old fashion" among people who participate in the hunt. Oogruk hunting, although done in conjunction with at least one other hunter, usually requires more than two people to pull the big seal onto the ice and to butcher it after getting it there. In the elder hunter's youth, he explained, "the first person to assist the hunter was given the left quarter, the second person a less preferred section..." and so on. This etiquette was not observed, and the elder used this as evidence that no one knew what he (collectively) was doing. That is, people were killing oogruk, assisting in its retrieval and butchering, and participating in sharing the quarry, but to the elder hunter, it was a series of acts based in ignorance that defiled the real meaning, the proper form of oogruk hunting.

When the elder hunter was asked whether anyone <u>knew</u> how to hunt, the answer was that one "boy" knew how. The "boy" was his hunting partner, 13 years his junior. The elder then said "Once he didn't know anything, that boy, and we went hunting oogruk. We came upon a "scamp" (a scamp is a two or three year old oogruk). If a person yells, that scamp will raise out of the water. It will do this three times if you yell three times. I yelled, and that scamp came up out of the water and looked around. I watched that boy and he didn't know what to do. I yelled

again after a little while, and that scamp came up again and looked around. I yelled a third time and that scamp rose up out of the water. I looked at that kid and he couldn't move. He said 'You must be a medicine man (shaman)'." The old man laughed and explained that the "boy" confused knowledge with spiritual power. His point was that a person had to possess knowledge to be a hunter--knowledge of the animals, the ice, the water, the winds and, of course, the etiquette, the significant symbols, that competent native hunters had attached to the hunting life.

The old man also said that a hunter must endure, alleging that young oogruk hunters do not pursue their quarry under difficult conditions. He suggested that the younger men hunted but were not hunters because to obtain oogruk you must go where they are, and where they are depends on many factors including the break-up of the Yukon, the break-up of Norton Sound, the whereabouts of the smelt, herring, tomcods, and the like. If obtaining oogruk required 100 mile journeys over treacherous waters and ice, you pursue them. He lamented that modern hunters go only during favorable conditions and do not go very far (several went 80 miles from the village in 1982). Thus, he averred, they bag fewer oogruk. The old man said something like "You would have to be willing to be cold, and hungry, and to struggle with shifting ice and wind to hunt oogruk successfully and regularly."

On the Old Man's Views

Oogruk was seized upon because of its special significance in the lives of Unalakleet natives. If any single resource is preferred it is seal oil. It is used with practically all meals, making dried meat palatable and stored greens tasty. It provides huge amounts of calories to help persons withstand the arduous winter, and it also pleases the natives' tastes. Five gallons of seal oil is considered minimum for a family of five to last from seal season to seal season. Ten gallons is preferred. A rough measure for small seals (spotted, ribbon, ringed) is one half gallon of seal oil per seal, so the village of Unalakleet requires about 1,200 to 1,500 seals per year to satisfy the desires of the entire native population.

Oogruk, however, are sufficiently large so that a single animal can provide more than half a family's annual oil requirements. So if two men invest $200 in fuel and pursue oogruk 80 miles, hunting waterfowl as they move along close to shore while watching for the moving ice which seals use as their rookeries, it is evident that the animal and its by-products are important to them. The old man's

complaint, then, was not that oogruk had lost their importance, or that men did not hunt them, or that the catch was not shared. His complaint was that none of it was done properly, according to the good form that he remembered as a child and of which he remains, in his own view and the view of the villagers, an exemplar in the present. Yet he, too, partakes of the new technology.

The enduring items are the subsistence way of life and the importance of sharing. The fear is that the new technology, if and when removed, will deny natives their time-honored, cherished way of life.

The Views of Elderly Women

Women who are elders, those now in their 70s and 80s, have lived most or all of their lives in Unalakleet; but they have travelled, and they have seen the changes that happened at home and in other villages during the last six or seven decades. They remain strong in their belief that the Eskimo way should not be forsaken. They understand that the native values and way of life impart a strength to those individuals who uphold and follow them. They understand that the values and way of life are themselves a means by which Unalakleet natives can survive with integrity and with hope for their future generations. Elderly women are clear in their desire to defend and preserve this way of life, its subsistence base and its values; and they live as examples for the young to follow and teach whatever the younger ones are willing to learn.

One afternoon in the fall of 1982, five elderly women, some with members of their families, gathered together to celebrate the birthday of two of their company who had been born just one hour apart 71 years before. Throughout their lives all five have been good friends, and the atmosphere of the birthday party mirrored that life-long friendship. Cakes, jello, and coffee were served and enjoyed, and presents (some being flowers and fine vegetables just taken from the ladies' gardens) were opened amid the telling and retelling of stories and the accompanying of laughter. After the dishes were cleared, the presents passed around for all to see, and the laughter had subsided, the talk took a serious turn.

The subject to which everyone gave attention was the state-wide vote that would be held in just a few weeks on a referendum to remove the priority status given to the harvesting of subsistence resources. One of the elderly women said that she could not conceive of having her right to fill her fish rack infringed

on or denied. Each year she fills her rack and smokehouse many times with salmon and herring, and she fills her sheds and cache with these fish, with trout and tomcod, black meat, seal oil, berries, and greens. Her freezers are likewise packed with caribou and moose, muktuk, birds and other native foods.

A good part of this harvest is given to her by relatives and friends, but she processes all of it, and some of the foods (fish, berries, and greens) she still harvests herself. Besides what she uses for her own household, she gives much of this food to her children and grandchildren, some who live, work, and go to school in cities and villages elsewhere. She gives food to her neighbors, friends, and the many visitors who stop to see her each year. This woman said she would defy any laws that keep her from taking native foods to her need, even going to jail if it should come to that. Two of the other elderly women smiled as she finished her statement, and then almost in unison said: "No, I will be the first one to go to jail in defense of my native (subsistence) way of life." The conversation soon turned to infringement on the commercial harvest and the difficulties local fisherment experienced just that summer when outside fishermen set their nets across the ends of local nets, reducing their access and take.

The conversation again turned, this time to the Eskimo way of life and how it is anchored in subsistence and in a set of values which native villagers uphold and practice daily. These values, they said, embrace a respect for the land and the resources (from the land, sea, and air) and a respect for the human person. They talked about how the resources are respected by using every consumable or manufacturable part of each animal and plant harvested (the often quoted adage is that nothing should be, or is, wasted). The resources are also respected by practicing conservation: taking only what one needs, not taking all of a resource in one area, and not taking a resource when the young are being born. The land is respected in a way that becomes a spiritual reverence for many people. To deface it (for example with litter) is unthinkable. To be out on the land is not only a joy but a communion. The individuality and potential of each human being is respected. People's mistakes are not cause to give up on them, but occasions and reasons for learning.

The needs of people are looked after; each person's and family's well being is the concern of all. When a need becomes known, food or other help is given with an etiquette and in a manner so that none of the people involved experiences embarrassment. Giving, no matter if occasioned by need or by the knowledge that

someone would simply appreciate the gift, is considered essential to a genuinely happy life. The giver delights in the joy brought by the gift, shown in the light which shines from the eyes of the receiver. The pleasure reaped from giving was much in evidence at the birthday party, just as it is in the daily lives of the people who attended.

Some days later, another elderly woman, the sister of one of the ladies at the party, echoed the sentiments expressed there. Her words were:

> (On sharing) If someone needs and is hungry, that's Eskimo law, you see it and you bring what they need. We're supposed to look after orphans and widows. If somebody got no one to hunt for them, you share, even if you're not related. We think of those who need to taste fresh meat and bring some to them or tell them to come and get, and they do!
>
> (On respect for the land) It breaks my heart when I see outside people come here and waste fish and scatter beer cans and litter all over. You can't do that in the city; why can't they keep it up when they come here, too? We're trying to keep this area, where we get our food, clean. I **love** my food, and my children's stomachs are Eskimo; I brought them up that way. Even my children who live in the city (Anchorage) ask me to send them native food. But there's no food to get on dirty land and water.
>
> (On the subsistence way of life) Everyone loves the sunshiny day, a clear sky; good people, bad people, old people, young children--we all love the sun. If they take away my native foods, they are gonna take away my sun. That's how I feel. It is gonna be dark for all of us if they hurt our foods and make our water dirty.

Views of Two Young Women

A common experience shared by young women in their 20s and 30s is having lived away from the village at different times in their lives. The circumstances which bring this about are several but federal policies to educate natives and cause them to sever their ties with the old way of life and with tribal or village mates are principal among them. Relocation programs besought families to move so as to obtain a job. Children were encouraged to attend high school, vocational school or college in distant places; some young women took jobs of their own; and others moved for a husband's schooling or job. Some women have been away a good portion of their lives, but most have lived away for at least one period; and some, particularly single parents, regularly move back and forth, between village and city. How difficult the reentry is for women partly depends on the point in

their life (and learning) at which their move occurred and how long their stay became. There is an attachment to family, the village and countryside, and the way of life that not only pulls women (and men) back home but eases the adjustment. The adjustment, nevertheless, can be painful and include plain hard work, particularly if a woman left the village too early in life to have learned the basics of resource harvesting and processing techniques, or has become used to the "comforts" of a cash-based city existence, or is in conflict about the contradictions between a personal, liberated career, and the requirements of the sexual division of labor in a subsistence life.

One woman in her early 30s and accompanied by her small child, returned home to Unalakleet after spending considerable time at schools and jobs on the outside. She could immediately tune into the same wave-length as her aunt, standing on the shore and looking out together into a flaming sunset over Norton Sound, when the older lady said "Quianna (thank you) for this beautiful clean beach and this beautiful evening vista." The young woman could relate to her aunt's feelings, just as she could relate to childhood friends of her own age as they exchanged stories and memories and discussed their opinions about the future of the village.

Her nascent Eskimo values were present, but she had to acquire much learning of subsistence techniques. Her mother and other of her elder women relatives would teach her these as she expressed her desire to learn. Learning, itself, was "on-the-job-training"; so experience at tasks expanded new knowledge while reviving old knowledge. The woman's understanding of an adult woman's obligations in conjunction with the development of skills increased as she joined her family on trips upriver and down the coast to camp, set and check fish nets, gather kelp, pick berries, and jig for trout.

Her friend and former village companion, a woman of like age but who lives in Nome, visited her during the summer. She, too, grew up in Unalakleet but has spent much of her adult life away, with her husband and children and working at jobs for which her education had prepared her. During her visit, she joined a seining party which included her friend's daughter and her friend's mother. After years away, she still remembered how to read the river channel, a depth of knowledge once acquired that had not been lost. She also remembered all aspects of the seining technique and consequently was assigned one of the more difficult tasks by the older woman of the party.

The Nome woman's joy at being upriver and working together with women friends at harvesting salmon was evident. She lingered over the coffee that followed the picnic meal and swapped stories of camps and adventures on the river during her youth and she shared her feelings of deep love for the river and country of her home village.

Later, when she was getting ready to return to Nome, the older woman in the seining party gave her a gift of several sacks of dried salmon and packages of smoked salmon strips for her participation in the seining and the hard work she had put into it. The young woman was moved by the experience and spoke of plans to come back the next summer, bringing her children with her. She wished to spend two or three weeks at camp, harvesting food resources once again at home. She said the meaning and pleasure of extracting native resources were even greater for her at home than around Nome where she usually extracts natural resources for subsistence.

Her friend remains in Unalakleet and slowly seeks to reestablish herself within a subsistence lifestyle, learning and appreciating ever more with the passing months what life in the village and the subsistence way of life will mean for her and her daughter. She has experienced mild hardships and expects more, but she also anticipates that the joys she has experienced and the obstacles she has overcome will continue to be their own rewards, as they have been for preceding generations.

Views from the Young People

In May of 1982, just before the end of the school year, the principals of the Frank A. Degnan School and Covenant High School allowed the research team to visit classes and talk with students. At both schools the students were asked about the way of life in the village and about the subsistence resources in particular. They were asked to list their favorite foods and favorite season of the year (including their favorite activities during that season(s)). A discussion followed; we first talked about the harvest disruption research project and then the discussion turned toward the cleanup of PCB and other dangerous chemicals and oils at the USAF White Alice site overlooking the Unalakleet River. Near the end of the class hour, the students were asked to write a statement expressing their thoughts and feelings about the land and food resources and the village way of life.

Most students featured subsistence resources prominantly on their list of favorite foods (younger students also included pizza, spaghetti, hamburgers, fruit or ice cream). When the different native foods were compiled, the list read like an inventory of a family's yearly food supply (see Table 15).

TABLE 15

FAVORITE SUBSISTENCE FOODS[a]
OF GRADE SCHOOL AND HIGH SCHOOL STUDENTS, UNALAKLEET, 1982

agootuk[b]	Eskimo foods	rhubarb
bear meat	fish	salmon
beluga whale	garden potatoes	salmonberries
berries	geese	seal
birds	gouk[d]	seal oil
black meat[c]	massu[e]	shellfish
blueberries	moose	smelt
caribou	muktuk[f]	sura[i]
crabs	oogruk[g]	tomcod
cranberries	ptarmigan	trouts[j]
cranes	quak[h]	walrus
dried fish	rabbits	whale
duck	reindeer	

[a]Students sometimes specified the way they like the particular food prepared (for example, as stew, soup, steaked, smoked); and when appropriate they sometimes noted that a food be eaten with seal oil.

[b]Eskimo ice cream.

[c]Dried meat of sea mammals, eaten with seal oil.

[d]The skin and blubber of walrus.

[e]A type of root.

[f]The skin and blubber of whale.

[g]Bearded seal.

[h]Frozen fish or meat, eaten with seal oil.

[i]Young leaves of a certain willow.

[j]Dolly Varden and arctic char.

The favorite season activities reflect young people's participation in family subsistence. Hunting, fishing, berry picking, camping, picnicing, and going into the country and upriver were all repeatedly mentioned and often expressed in a way that conveyed the pure delight which young people take in them. Table 16 lists these favorite season activities.

TABLE 16

FAVORITE SEASON ACTIVITIES
OF GRADE SCHOOL AND HIGH SCHOOL STUDENTS, UNALAKLEET, 1982

Spring	Fall
hunting seals, walrus, and whales	hunting moose
hunting ducks and geese	berry picking
going to spring camp	fishing
taste of fresh foods	camping upriver
	bird hunting
Summer	seal hunting
fishing	picking clams
drying fish	good weather, no mosquitos
egg hunting	
berry picking	Winter
family camping	hunting rabbits and ptarmigan
picnics	seal hunting
boating	hunting moose
going upriver	ice fishing
being in the country	snowmachine trips in the country and upriver
commercial fishing	dog team driving and racing
summer jobs	outdoor sports, ice skating and skiing
outdoor sports, swimming	
school vacation, having fun	

During discussion of the research project and the PCB cleanup at the White Alice site, students demonstrated concern for the future of their village. The life they know is based in subsistence, and they insisted that nothing be allowed to jeopardize this life. They are aware that the present and future well-being of village families depends on their ability to continue harvesting the naturally occurring food resources. They are also keenly aware that subsistence keeps body and soul together, thereby transcending simple physical maintenance (even though that in itself is crucial). Like their parents and grandparents, these young people attach special meaning to subsistence activities, to the food resources, and to the land. Among the youth, perhaps unlike the majority of the parental

generation at a comparable age who were relocated, for a while at least, in cities, there is clear recognition of the value of subsistence lives, and threats to future generations. They speak of love and tradition, as well as necessity. They want for their children what they know to be true for themselves and for the generations preceding them.

The students' own words follow.

> Right now what I really enjoy most in life is camping, hunting, and fishing. I go camping to pick berries, and make dried fish. I go hunting so I can eat something for lunch or dinner. I fish so I can eat during the winter.
>
> Male student, grade 11

> We do not depend on whiteman food very much. Because if we did we would be very poor. I like hunting, and I hope my kids in the future can do the same with no trouble.
>
> Male student, grade 10

> I just want to keep on eating Eskimo food.
>
> Female student, grade 7

> I would feel ashamed if the land was spoiled for our future children. I would like to try and keep our tradition still going. We, the people, can't just let the tradition fade away.
>
> Male student, grade 12

> If anything should ruin our sea mammals and fish, it would be like taking everything away from us; our native foods are our only guarantee to life if we have a bad time.
>
> Male student, grade 12

> The things I value most is the wilderness around Unalakleet: the clean drinking water upriver, the clean wilderness with hardly any pollution, and the clean air we breathe. Let all this stay the same so my children may live a happy life with many things to do in the wilderness like I did.
>
> Male student, grade 12

> I look forward to going hunting, fishing, and camping, I also enjoy eating many Eskimo foods such as black meat, dried fish, Eskimo ice cream and many other kinds of food.

(continued....)

If, in the future something happened to cut off any activity for the people, it would feel to me that another part of our culture would be cut off and it would also feel a great loss to many people in the village. It would also make me feel sad because many people in this village live off of the land and wildlife itself, who don't have any jobs or only know how to do certain things and can't qualify for any jobs because their only experience is living off the land.

Also in the future my children may not learn anything about many things because they have been cut off. If anything would happen such as a food shortage, in the village, I would like my children to know how to live off the land so that they could survive. Many of the things we do like ice fishing, skiing, camping, hunting, trapping, and many other activities, are the only activities we enjoy doing. And if they were to be cut off, the people in the village may become lazy and bored, even their activities may change from happy to angry all the time.

Many of the people will probably turn towards drinking and breaking the laws, because they don't have anywhere to turn. Everything will change. .

The season I enjoy most is summer because it's the time I get to work, go fishing, hunting, camping, egg hunting, and do many other activities which I can't do in the winter.

If any of the things I listed happened (adverse consequences to the environment that terminated native activities) in the future, I would do my best to put something against them, to help the people in the village for their own good and also mine.

To get the people's opinions and to cooperate I would try to have village meetings and encourage the people to go. I would even go or write to whoever is setting things up and talk to them personally if I had to.

Female student, grade 11

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PART II

SUMMARY OF FIELD INVESTIGATIONS, VILLAGE OF UNALAKLEET, NORTON SOUND

By: Joseph G. Jorgensen

SUMMARY OF FIELD INVESTIGATIONS

In February, 1982, Joseph G. Jorgensen and Jean A. Maxwell commenced field research in the village of Unalakleet. To their surprise, they learned that immediately prior to the commencement of the ethnographic investigation, the City Council and the Indian Reorganization Act Government had, at separate meetings, voted unanimously to reject the harvest disruption study that we sought to conduct within the village. Maxwell, the Field Investigator on the project, was notified by village leaders of their decision after her arrival. Jorgensen travelled to Unalakleet and opened discussions with village leaders to determine whether it might be possible to conduct a study if the villagers had more information on which to base a decision. Many topics were discussed, but the role of the Alaska OCS Office as lease sale agent, as well as contractor and preparer of environmental documentation, posed important and crucial questions about our research. Villagers expressed no confidence in the environmental documentation process, the oil and gas lease sales procedure, nor the relations among the OCS office, the oil companies, and the ethnographic researchers.

Ultimately, the village's governmental bodies allowed Jorgensen and Maxwell to begin the study in earnest in April 1982. Jorgensen made three separate trips to Unalakleet to conduct research. Maxwell remained in the village continuously from April, 1982 through January, 1983. Paul, Vernita (Zyllis), and Virgil Katchatag assisted throughout the April to September period. Virgil assisted in writing the ethnographic baseline (Part I).

Multiple methodologies were employed to satisfy questions of validity, including open-ended interviewing (structured observations), the collection of household subsistence schedules completed by residents, participation, the collection of texts, and the collection and analysis of archival data from village, state, and federal sources. A key component of the methodology was participation in daily subsistence tasks, attendance at public meetings, attendance at church services and extra-curricular activities sponsored by the church, visiting the schools, discussions with institutional leaders, and observing every day life in the village.

Unalakleet, situated on a spit at the mouth of the river of the same name, is backed by the Nulato Hills and fronted by Norton Sound, the easternmost waters of the Bering Sea. The village is located at 63°52'N, 160°47'W, on the western edge of the Alaska-Hawaii Time Zone. It is about 400 miles northwest of Anchorage and 150 miles southeast of Nome.

The earliest known habitation in the Norton Sound area occurred at about 2,000 B.C. at Cape Denbigh on Norton Bay. The subsistence pursuits of the original inhabitants was, in all likelihood, balanced between hunting and fishing, with special emphasis upon caribou and salmon. By 1,000 B.C., inhabitants of the Norton Sound area were emphasizing the use of resources of the sea, sea mammals in particular, but there is also evidence of renewed emphasis on the extraction of salmon from the spawning rivers, and caribou from the tundra regions. From at least 100 B.C. through the present, Unalakleet has been continuously occupied, although village sites have shifted to several locales near the river mouth over that period. Adaptations to the coast, rivers, tundra, and forests characterized the earliest inhabitants of Unalakleet, much as they characterize the subsistence pursuits of modern residents.

The earliest contacts between Europeans and Unalakleet residents occurred around 1833 when the Russians constructed Fort St. Michael a scant 48 miles from Unalakleet near the Yukon River delta. A trading hut was established in Unalakleet by the Russian-American Company about 1839, only three years after an epidemic had cut a swath through Unalakleet, reducing the village population from perhaps 120 people to 13. The residents of Unalakleet at the time were Yupik speakers, but the epidemic on the one hand, and the desire for native trappers and traders to supply furs for the Russian-American Company,stimulated a migration of Inupik speakers, first Malemiut from above Norton Bay, and later Kawerak from the Seward Peninsula, into Unalakleet. They joined the Yupik and became the largest group within the village. The trading hut was used through 1867 by the Russian-American Company. After Alaska was purchased by the United States, the trading hut was controlled by the Alaska Commercial Company, whose major post was at St. Michael.

Over the next century Unalakleet became a center for missionary activity for the Swedish Evangelical Mission Church of America, a center for school activities in the region, and a place in which an early reindeer herding venture, owned and

controlled by the Swedish Evangelical Mission was maintained. The Nome gold rush lured some herdsmen to take the reindeer to Nome; and the gold rush was attended by both measles and pneumonia epidemics which reduced native and reindeer populations. A second herd was created at Unalakleet in 1911, but its animals had been sold, butchered, or joined the caribou herd by 1966.

During World War II a U. S. Army base was established at Unalakleet, and soon after the war the Army base was decommissioned, but a U. S. Air Force radar and radio transmission base was located on a hill northeast of the village. The Air Force base was occupied for over 20 years, and when it was vacated highly toxic PCB oils and other volatile, toxic, and dangerous chemicals were left at the site in transmission towers, drums, and untended cannisters--some in and some outside of buildings.

In 1941 the Village of Unalakleet became a reservation under provisions of the Indian Reorganization Act (52 Stat. 593), and was granted 870 acres to be held in trust. The village ratified a constitution under the Act and organized a government to direct and regulate its internal affairs, its municipal and public activities, and its economic enterprises.

After World War II residents from small villages near Unalakleet began to relocate in Unalakleet, while Unalakleet began to grow by natural increase as well. Between 1880 and 1930 the Unalakleet population grew from 100 to 247, and by 1950 the population had grown to 469, most of the spurt following the conclusion of the war. At that time, rifles, guns and ammunition came to replace weirs, traps, snares, and, for many purposes, harpoons. Dog ownership and the reliance on dog traction began to decrease. By the late 1950s skiffs and outboard motors became popular for subsistence fishing and hunting, and by the 1960s snow mobiles became crucial to winter subsistence pursuits.

The village population followed an erratic growth and decline pattern during the 1950s and 1960s, growing to 574 in 1960, only to plunge to 434 a decade later. Federal job and school policies precipitated the population decline, as children were sent away from the village to be educated and as parents were encouraged to move to Seattle and other cities for on-the-job training sponsored by the Bureau of Indian Affairs.

Eskimos who stayed at home were encouraged to begin commercial fishing by the Alaska Department of Fish and Game in 1961, and buyers were located to purchase

the fish. Commercial fishing soon became the principal source of cash income for over 50 Unalakleet families (the majority of the village at the time). Commercial trapping was the other important source of local income beyond some limited jobs in the public sector.

The passage of the Alaska Native Claims Settlement Act (ANCSA) in 1971 had profound effects on the village, as did the trans-Alaskan oil pipeline that was made possible by ANCSA. Although Unalakleet, in large part through the influence and actions of Frank Degnan, a local man elected to the House of Representatives (first territorial, then state), was electrified before ANCSA was passed into legislation, after 1972 the village built a water and sewage system, many new houses and buildings, and new schools. Between 1970 and 1982 the village population grew from 434 to 790 people, an 82 percent increase in twelve years. Much of that growth was caused by the return of native villagers from residences in Anchorage and the contiguous 48 states. Another large segment of the population (12 percent of the current total) are non-native experts in the employ of state and regional institutions.

ANCSA, while extinguishing all native claims to naturally-occurring resources, including land, also fostered a formidable framework of new native organizations. The IRA government was reshaped as the village's non-profit corporation through which federal programs made available to Native Americans have been channelled and administered. The IRA Government has a five-member council that, through thoughtful, philosophical, and practical counsel, controls tribal operations, deals with Kawerak, Inc., the regional non-profit corporation, sponsoring boat-building classes, fisheries management classes, elders' conferences, and the like, and it also administers many federal programs that play significant roles in village affairs, including health care, employment assistance, college assistance, and social services.

The IRA government carries the thrust of native interests, particualrly long-term interests in the environment, regional relations, and native culture in village affairs, particularly in dealing with persons and institutions in the village. IRA leaders work well with elected and appointed officials in the City Government (which embraces natives and non-natives), and the village profit corporation (which is chartered to conduct the corporate business affairs of the native shareholders in the village). Indeed, IRA leaders provide the counsel to guide the villagers

over rough places and through tight situations, and their lead, although shared by city councilmembers, is followed by leaders of other institutions on all crucial issues confronting the village.

The City of Unalakleet, which was incorporated in 1974, has a seven-member city council from which a mayor and a vice mayor are elected. Although non-natives recently have comprised the majority of council members, the mayor and vice mayor are invariably natives, and the directions taken by the council are quintessentially native, being agreed upon through discussions among IRA and city leaders. The cooperation and coordination is evident in all important decisions. The City government provides Unalakleet with state revenue sharing funds and access to block grants for municipal purposes. It levies taxes, provides police protection, provides fire fighting equipment, maintains the roads, and so forth.

The third key institution is the Unalakleet Village Corporation (UNC), mandated by ANCSA and established in 1973. An eight-member Board of Directors is elected, and the Board elects its chairman. The UNC, which is the profit-making arm of the village, began with 829 original native shareholders, each with 100 shares of stock. As its portion of the Alaska land settlement, UNC has received 100,000 acres through the conveyance process established by ANCSA and is to receive another 61,280 acres. UNC is in the process of conveying some of the acreage to shareholders. The corporation acquires funds to conduct business through the public monies made available to Alaska Natives through the $952 million settlement award that accompanied ANCSA. UNC operates a grocery and dry goods store in competition with the Alaska Commercial Company's similar operation in Unalakleet. The two also compete in snow mobile, outboard motor, and ATC repairs. The UNC created a construction contracting division and has been successful in garnering public funds for several construction projects, including buildings, roads, and the like.

The UNC, although its current manager is a non-local native from a Nevada Indian Tribe, gets its direction from its Board. In turn, the members of the Board work closely with the IRA and City leadership, so much so that natives regard the UNC as a public institution whose interests are identical to those of the IRA, but which provides jobs, financial assistance, and services that are not obtainable through the IRA. The UNC and Kawerak (the regional non-profit corporation), for example, purchased non-voting shares in the Norton Sound

Fisherman's Cooperative so as to capitalize the operation while not influencing its daily operation.

The Norton Sound Fisherman's Cooperative (NSFC), created in 1973, is presided over by the same group of men who serve as city, IRA, and UNC leaders. These men change positions in and among organizations, and a few drop out of public service for a year or so at a time, but the overlapping nature of personal roles in governing bodies is well established and generates real consensus among institutions. No better evidence need be offered than the unanimous rejection of the harvest disruption study by the city council and the IRA at separate public meetings, and by the UNC leadership's decision not to assist in such a study after the IRA and city votes were taken.

In the past twelve years Unalakleet villagers have been drawn ever deeper into public sector dependencies as their traditional lands and resources have been expropriated. But Unalakleet natives have also become influenced by, and participants in private sectors of the market economy through trapping, commercial fishing, and the sale of by-products from subsistence activities. Significantly, the private sector activities of native villagers are based on the harvests of naturally-occurring, renewable resources. Even commercial fishing, however, requires federal assistance in some forms, through loans, grants, and the like, to co-ops and to individual fishermen. The transfers and loans may come through statewide (Alaska Native Foundation), regional (Kawerak) or village (UNC) institutions.

There are 181 permanent full time jobs in Unalakleet: 147 are public sector jobs, 34 are private sector jobs. The private sector employment is possible because of public sector funds, that is, the airlines that service the village carry publicly-funded passengers and goods; the local lodge provides room and food for persons employed on public projects, or for people providing publicly-funded services, and the like. Natives, comprising 88 percent of the population, hold 60 percent of the full time employment in the village. Non-natives, comprising 12 percent of the population, hold the remaining 40 percent of the jobs. Although only 104 of Unalakleet's 355 native adults under the age of 65 are employed full time, about 115 fish commercially in Unalakleet or elsewhere in Alaska, and 25 of that number also trap commercially. (A few of the full time employed natives also fish commercially, taking short leaves to do so.)

Full time and part time employment, especially seasonal self-employment such as commercial fishing and trapping, provides income that is allocated to subsistence harvesting pursuits at a very high rate. The average household expends about $10,000 annually on provisioning and engaging in subsistence harvest trips, and another $5,000 annually on equipment and maintenance. About half of the village's households engage in commercial fishing, so some of their commercial equipment is also used for subsistence pursuits. In such households, however, between $6,500 and $8,500 is invested annually in commercial fishing (depending on whether both salmon and herring are fished), so a large investment is required in order to obtain equipment that is also beneficial for subsistence tasks. Unalakleet residents invest at least 30 percent of their before-tax income into subsistence pursuits.

To hunt, fish, and collect wild plants of the land and sea, given the modern costs of technology and fuel, cash must be contributed by several persons in a household, or by several persons in a network of kinspeople who share from the bag, quarry, collection, or catch.

Unalakleet villagers are not dependent on a single resource for their sustenance, but seals, salmon, moose, and caribou are dominant staples. The environment is bountiful in a variety of harvestable species, although except for salmon there is no great abundance of any single species. Yet various species are available within a relatively short distance from the village throughout the year, providing some predictability as well as variety to the food supply. If one or two species that are customarily harvested are scarce during a harvest period, Unalakleet residents have always been able to shift their activities to the pursuit of other, perhaps less desirable, species, or to go greater distances to procure species that are scarce in the habitats in which Unalakleet natives normally harvest them.

The single native food item most desired in the village is seal oil, which is eaten as a condiment with almost all native foods, especially dried or smoked foods. In order to provide the 164 native households with sufficient seal oil and black meat for a year, about 10 seals are required for each household (fewer if one or two oogruk(bearded seal) are procured per household.) Seal hunting, then, takes a principal focus in the village and it is conducted in the fall and spring, but also during the winter and incidentally around commercial fishing nets in the summer.

A great variety of species is harvested throughout the year, including six (6) species of sea mammals, nine (9) species of land mammals, twenty-two (22) species of birds, five (5) species of saltwater fish, ten (10) species of anadromous fish, three (3) species of freshwater fish, between five and ten (5-10) species of marine invertebrates, herring roe-on-kelp, fourteen (14) species of green plants, and ten (10) species of berries. In addition, eggs are collected from twenty-two (22) species of birds, about half of which are different from the species that are hunted; eleven (11) species of fur-bearing mammals are trapped for commercial sale; and driftwood is collected for firewood and construction.

Purchases of food in the local stores, or from Anchorage food distributors who specialize in filling and delivering orders to the bush, supplement the basic native foods. Native foods constitute an estimated 80 percent of all proteins and 60 percent of all calories consumed by native villagers. The calorie contribution is high because sea mammals and salmon, particularly fresh salmon, are very high in fat-oil content.

The social organization of Unalakleet encompasses nuclear family, closely related households, wider networks of kinspeople, and networks of friends. These various kinds of organizations are interrelated through overlapping memberships, and they function to extract, distribute and consume naturally-occurring, renewable resources. The "families" which are the bases of Unalakleet social organization are not necessarily households, nor are they nuclear families: Unalakleet "families" are best understood as bilateral kindreds, somewhat open but not unbounded, which encompass a person's most immediate relatives as well as more distant relatives with which a person or the members of a household interact. Families coordinate labor for extraction, share resources and skills, and often pool cash to extract and distribute the items that are extracted. Efforts in preparing and storing foods are often shared. As children grow and marry, the families of orientation of each spouse, particularly if both reside in Unalakleet, come to undertake joint activities that they may not have engaged in in the past. If one spouse is from a village other than Unalakleet, affinal networks are created through which visiting occurs and through which locally available resources flow between the families in each village.

There are 119 native couples in the 164 native households in the village (some households have several couples, yet many are single persons, single parents, widows, widowers, and the like). The majority of marriages are between residents of Unalakleet. Of the 33 marriages with natives from other villages, 29 are with spouses from Norton Sound or Yukon-Kuskokwim villages, areas sufficiently close and similar to Unalakleet to facilitate regular gifting and reciprocating of foods, visiting, and help in times of stress, but particularly when resource scarcities occur in the village of either spouse.

Unalakleet villagers have bestowed special meanings of significance to their environment--particularly the river, the Whale-back Mountains in which the Unalakleet River rises, and the coast. Symbols have been attached to the environment--its total space as well as particular places throughout it--and they are willing to defend and protect it from encroachment. Villages respect their dependency on, and relations with the phenomena of their environment, and they fear for its persistence, in tact.

PART III

METHODS, STANDARDS, ASSUMPTIONS, IMPACT CATEGORIES, SYSTEM PARAMETERS, METHODS AND ASSUMPTIONS

By: Joseph G. Jorgensen

INTRODUCTION

Unalakleet, a village of 790 residents in mid-1982, is located on a spit at the mouth of the Unalakleet River on the far eastern edge of Norton Sound. Historical and field investigations conducted in Unalakleet from February, 1982 through January, 1983, and analyzed in Part I, above, were used to produce an empirical portrait of the village, its institutions, and its inhabitants. We refer to the empirical generalizations embodied in that report when specifying the key elements in Unalakleet culture--its subsistence, economic, political, social and kinship, its organizations and its values, or the significant symbols attached by villagers to their environment. We also refer to the portion of that report, particularly to the analysis and the narrative, that explicates the relations among the key elements in Unalakleet culture. For example, the enactment of ANCSA (the Alaskan Native Claims Settlement Act) in 1971 affected the Unalakleet economy, political organization and demography. Changes to these aspects of village culture, in turn, had the unintended consequences of effecting changes in family and kinship organization, ideology, sentiments, and relations to the state. Unintended consequences from ANCSA continue to emerge and often create ripples throughout the village, affecting ideas, sentiments, political actions, intravillage or intraregional disputes, and related phenomena.

It is not our intention to analyze the changes that have come about from the impetus of ANCSA, but merely to point out that ANCSA has been a primary source of change to Unalakleet culture, extinguishing aboriginal hunting, fishing, and land rights, providing for the reorganization of its government and corporate structure, providing new recognition of sovereignty and authority (self-government) to the village, providing new sources of unearned income, providing for village-level institutions that seek and acquire state and federal funds, providing regional institutions (profit and non-profit corporations) and formal relations with them, and providing for title to land, some of which is conveyed to the village, and some of which, in turn, is conveyed to individuals. Although these are but a few of the provisions in ANCSA, the point is that changes to villager access to fish, game, and land, and to the political and economic institutions of the village have had much wider consequences, affecting relations among residents, household economies, family-household organizations, subsistence pursuits, and other key elements of Unalakleet culture.

Inasmuch as all methodologies are based on certain explicit assumptions, we will explicate our assumptions as we progress. The standards by which we evaluate or measure certain impact categories, too, will be explicated throughout. Let us begin on an important point about the assumption of relations among key elements of Unalakleet culture.

METHODS AND ASSUMPTIONS

An ethnographic analysis conducted within a single village at one point in time--a "static" or timeless state of twelve months (six were contracted and paid for, twelve were taken) in this case--poses problems of validity. Validity, for our purposes here, is synonymous with the truth-value or logical consistency of a research finding. OMB (Office of Management of the Budget) regulations forbid the use of interview schedules or structured questionnaires with more than nine people in any study funded by a federal government contract, unless OMB approval is obtained. Obtaining OMB approval was specifically forbidden by OCS (Contract AA851-CT1-59, p. 6). Moreover, surveys and statistical analysis requiring formal methods of data collection were not desired by OCS (Contract AA851-CT1-59, p. 6). Therefore, the ethnographic field research was structured so as to seek validity without the benefit of explicit, formal survey techniques wherein a large and representative sample of village residents would be asked the same questions on several different topics. Such a procedure would allow the researchers to compare responses and information on two or more topics, and to exercise sufficient controls to evaluate, statistically, the relations so as to determine whether one part of a relation varied when another part of that relation varied, and that other sources of influence did not intervene to influence that relation. This research methodology was denied by OMB and OCS.

The ethnographic research involved three methodologies and three data sets focused on the same issue, to wit: the relations among the harvest of renewable resources and the key aspects of Unalakleet culture. By using several methodologies and several data sets we arrived at answers that are relatively more valid than would be generalizations obtained from any single methodology, including a statistical survey. Statistical surveys conducted at one point in time are fraught with weaknesses, but they are of considerable value when used in conjunction with other methodologies.

The three methodologies used in Unalakleet are, first, anthropological observations, that is, collection of information, especially texts, from open-ended discussions and from attendance at public meetings; and the collection of information from daily participation in and observations of village life. The second method, protocol observation, comprises the collection of focused responses to sets of topical questions. The responses were obtained from respondents selected from several different institutions (e.g., political, economic, educational, helping services, religions), and from several different kinship networks. The third method, archival observation, comprises the collection and analysis of written records and reports pertaining to Unalakleet. Those reports include the sparse ethnographic literature pertaining to Unalakleet, as well as state and federal archival data.

Each of these methodologies has strengths and weaknesses, so we use the strengths of one methodology to control for the weaknesses of another.

Anthropological Observations

A field investigator and three native field assistants living in the village observed and recorded village life over a twelve month period. The principal investigator visited the village for about twenty days: two research visits were made during winter months and one during the summer. Some of the observations were structured inasmuch as the investigators pre-arranged to look for certain techniques, acts, objects, ideas, and sentiments in relation, say, to the harvest of naturally-occurring resources, or to family subsistence practices. Investigators asked open-ended questions about those observations while on egg-gathering, kelp-roe gathering, fish-net clearing, or other tasks with relatives. Resource areas were mapped, and the ideas and sentiments attached to those places were recorded.

Other observations were unstructured and unanticipated, amounting to discoveries in some instances. The native field investigators were helpful in pursuing the significance of these discoveries.

The two types of observations--structured and unstructured--informed by open-ended questioning, stimulated discoveries as well as puzzlements which, in turn, opened more leads and prompted further inquiry. Texts were collected from the statements made by native participants at public meetings, especially, but not only at those that were called to discuss crucial questions and problems confronted by the village. And texts were collected from natives who discussed the history and lore of certain resource areas. These texts, too, led to further inquiry.

This methodology is the most crudely empirical of the three, and that is its strength. Anthropological observations, including various degrees of participation in some village activities--institutional, familial, subsistence--provide the richest possible understanding of village life. Quite often phenomena are discovered from these data that could be discovered in no other way. Subjective understanding, beyond impressions, accrues to the observer and allows that person to interpret relations obtained from other methodologies and data sets.

The weaknesses of anthropological observations are obvious. The data are synchronous--observations recorded at one point in time--and hence, inadequate for inferring change. The data are also prone to reactive arrangements, that is, they are subjective, not benefitting from formal, structured interviews that are, ideally (but seldom in fact) controlled for bias, purged of error, and administered to all residents of a community. We can never be certain that what we saw and interpreted was what happened, or what prompted the happening, or what the investigator heard is what the villager said, or that the villager understood what the field worker requested, or, more generally, that a villager has not misled the field worker for some reason. Finally, anthropological observations are not easily analyzed, or do not yield easily to formal analysis.

Protocol Observation

The investigators collected focused responses to several protocols, or sets of topics resembling an open-ended interview schedule. They were administered in conversations in any sequence that seemed to work. Some redundancy can be avoided in this fashion. Protocols were not administered as scheduled interviews or questionnaires. Protocols were administered to determine the organizations and activities of the village institutions, including the economy, polity, religions, helping services, and sodalities, and also the family households and kinship networks. From the last mentioned, data were collected about how respondents used, or articulated with village regional, state, and federal agencies and institutions. Household data were also collected on income, and the harvests, distribution (especially through networks of kinspeople, affines, and friends within and among villages), and consumption of renewable resources by species.

The strengths of these data are best illustrated by comparing them to the anthropological observations. Unlike anthropological observations, protocol observations allow repeatable contrasts among families, among institutions, and between

families and institutions on many topics. This permits some generalizations. Yet protocol observations have weaknesses. Because they are synchronous measurements, they are inadequate for inferences about change. They also have weak construct validity, but not so weak as those of questionnaires or scheduled interviews used in surveys that require multiple choice-type responses and often trivialize the link between a phenomenon and its measure. The protocol observation, though by design restricted in focus, can be understood, and connections among data can be interpreted from the understanding that accrues through anthropological observations. So a narrative can develop from the interplay between understanding acquired through anthropological observations and information culled from protocol observations, even though protocol observations as administered here do not allow for formal, multivariate, statistical analyses of relations.

Archival Observations

Village level data, some reported as time series, were collected and analyzed, including data on commercial and subsistence fisheries, health services, population, crime, causes of death, and educational institutions. Traditional ethnographic reports and contract research documents covering time periods before 1982 were also collected and analyzed. Some of these data are longitudinal, constituting several observations of similar phenomena through time; others are merely temporal, but from points in time before 1982. But taken together, they allow us to contrast the past with the present. Hence, they can support inferences about change over time. On the other hand, archival data and ethnographic reports have several weaknesses, namely: most have weak construct validity. Often they have not been collected for the same purposes that motivate our study. Often the data pertain to the Arctic Bering Straits region rather than the village, so have little value. Most frequently, regular time series reporting is not available. And many of the longitudinal data sets we seek are not available in government archives. Nevertheless, when temporal data can be used to compare generalizations drawn from synchronic data--either to confirm or disconfirm them--they are so used.

Triangulation: Assumptions About Relations Among Three Methodologies

Anthropological observations, structured and unstructured, appear in our research as explanatory narrative and as anecdote. During the research process both

types of observations served to generate hypotheses. Such hypotheses cannot be tested deductively, and because they apply to a village, they cannot be tested inductively to show similarities and differences within a village. When combined with an analysis of protocol observations, however, the rich basis of understanding derived from anthropological observations takes on another dimension.

Focused responses derived from protocol observations allows us to evaluate similarities and differences among respondents within a village or among village institutions. In short, we can determine whether generalizations derived from the anthropological observations and attributed to the village as a whole (a case study), are supported by comparative, individual-level data. Following the guidelines of the contract with OCS, formal statistical analysis beyond descriptive statistics have not been employed to evaluate variation and will not be employed in the final report. But descriptive statistics, alone, allow us to demonstrate variation while confirming or rejecting the hypotheses derived from anthropological observations. Therefore, the quantifiable, objective nature of the focused response data compensate for the weaknesses of the anthropological observation data.

Neither of the two data sets, anthropological and protocol, support inferences about change because both are synchronous. Yet Unalakleet village life, from all reports available to us, has changed markedly in the last ten years, particularly since enactment of ANCSA in 1971 and the extension of U.S. territorial waters to 200 miles from the shore in 1977. Wherever possible we use longitudinal data to analyze changes. Thus we put our anthropological observations and focused responses to another validity check.

Assumptions About External Validity

Because most of our data are synchronous, hence time-bound, and because the archival data are too meager to lend validity checks to many of the generalizations obtained from those synchronous data, the ethnographic baseline from which impact categories are drawn is an empirical statement of "what is", rather than a causal explanation of "what must be". That is, it is a non sequitur to claim that time-bound data yield generalizations about temporal relations. Comparable data from at least three points in time are required to evaluate causal sequences. Put simply, our empirical statement about Unalakleet in the present will require external validity checks before it will be generalizable beyond the present. For instance,

whether Unalakleet society will be the same ten years from now, even if no sources of influence intervene to change it, cannot be generalized from the present conditions. Our research guarantees nothing here, even though we have confidence in that research. The only sure method for strengthening the validity of our findings is for temporal replication at two more points in time.

Indeed, even if the probable consequences that are posited in the harvest disruption analysis occur in accordance with those postulates, there is no way to know that they occurred because of the factors specified or because of other, unmeasured, factors unless followup studies are conducted.

ASSUMPTIONS ABOUT GOVERNMENT REGULATIONS

The federal government and Alaska state government affect Alaskan native communities in many ways, but especially through fish and wildlife regulations, including quotas. The ADF&G (Alaska Department of Fish and Game) Division of Commercial Fisheries regulates commercial fishing in the state. By law, subsistence is the primary beneficial use of the fishery resource. We assume that if commercial fishing harvests increase with efficiency and threaten subsistence uses, that the law will be enforced, rather than changed, and that subsistence requirements will be the first served. We have no way to know whether limited entry permits, which are not currently required for the commercial fishing of herring, will ever be required, but if they are required, we assume that Unalakleet fishermen who have been active in the fishery will be granted permits.

We have no way to predict the changes that will be made to the regulation of large land mammals, especially moose and caribou. Recently ADF&G determined that the Northwest Alaskan caribou herd was much larger than had been estimated previously, and the restriction on subsistence hunters of five caribous annually was lifted. We have no special information that will allow us either to predict the size of the Northwest Alaskan caribou herd five years from now, or the hunting restrictions that will be placed on subsistence hunters of caribou. We assume that the herd will remain large for an indefinite period and that restrictive take quotas will not be applied. We make this assumption even though we are aware of the rapid changes that can occur to the size of the herd through famine (limited access to forage), or through overhunting, or to the location of, and accessibility to the herd through unpredictable migrations out of formerly occupied areas.

We assume that state-regulated restrictions on moose hunting will be unchanged indefinitely, and that moose will continue to browse year around throughout the Unalakleet River system drainage. We recognize, however, that moose moved into the Unalakleet area from the Yukon drainage only 50 years ago, pushed by a large forest fire. A natural event could well push the moose from the Unalakleet drainage.

We assume that bowhead whale quotas, since 1977 suggested by the International Whaling Commission, imposed on Alaskan native whaling communities by the National Marine Fisheries Service, and policed by the U.S. Fish and Wildlife Service, will continue in force. We assume that these quotas will not severely affect Unalakleet villagers who do not hunt bowheads. Bowhead whales rarely enter Norton Sound, although we are cognizant that Shaktoolik hunters, led by an experienced whaler from the North Alaskan whaling community of Barrow, killed and landed a bowhead whale in 1980 against the regulations of the National Marine Fisheries Service. We also assume that if so unusual a combination of factors occurred in Unalakleet, i.e., bowhead whales passed by the village, several experienced whalers were visiting Unalakleet, and Unalakleet hunters possessed hunting technology adequate for the kill and retrieve, that National Marine Fisheries Service allocations would have a high probability of being violated.

The Marine Mammal Protection Act of 1972 gave the Department of the Interior responsibility for managing the nation's manatees, polar bears, walruses, sea otters, and dugongs. The U.S. Fish and Wildlife Service is responsible for managing and for enforcing the moratorium on taking and importing marine mammals and marine mammal parts. Walruses are not on the endangered species list and walrus hunting is not currently limited by quota. The U.S. Fish and Wildlife Service estimated the Pacific Walrus population at 300,000 in 1983, 120,000 of them in U.S. territorial waters. The walrus population appears to be increasing, and they are migrating to the head of Norton Sound for the first time in recent memory. We assume, because of the size of the walrus population, that quotas on their take will be indefinitely lifted, and that Unalakleet hunters will continue to bag them.

Federal law does not allow international sales of marine mammal parts, although exemptions allow natives to sell worked (carved) ivory. We assume that this exemption will remain in force indefinitely. We assume that if the management of marine mammals is returned to the State of Alaska, there will be no changes in the provisions that allow natives to take walruses and to sell by-products.

The imposition by the United States of a 200-mile territorial limit to waters off its shores in 1977 has had a marked effect on western Alaskan fisheries, including the Norton Sound fisheries. Harvests and, it appears, escapements have generally increased since 1977. We assume that the federal territorial limits will remain indefinitely.

ASSUMPTIONS ABOUT ANCSA

ANCSA provisions, in conjunction with the Indian Reorganization Act of 1934, the Indian Self-Determination Act of 1975, the Indian Financing Act of 1974, the Indian Health Care Improvement Act of 1976, and the Indian Child Welfare Act of 1978, confer upon native villages several types of sovereign immunity, the authority to acquire jurisdiction over child welfare cases, the authority to contract with the Bureau of Indian Affairs and Indian Health Service for programs, and the authority to manage those programs. It is assumed that these acts will remain in force and that tribal ordinances and customs, as consonant with P.L. 280, should be honored in State of Alaska civil courts.

We recognize, however, that many of the provisions of ANCSA are undergoing investigation and review by the Alaska Federation of Natives (AFN) and Alaskan Native Foundation (ANF). It is likely that legal challenges will be mounted by these combined organizations to state fish and game regulations, ownership of some state land, stock ownership provisions in native corporations, control of ocean waters between the six and thirty-five mile territorial limit, and several provisions of ANCSA that have proved bothersome or unacceptable to natives. Nevertheless, as we cannot predict either the courts or the federal legislature, in preparing the harvest disruption report, we assume that ANCSA will remain in force in its present form.

ASSUMPTIONS ABOUT OFF-SHORE/ON-SHORE ACTIVITIES

Disruptions to harvests can occur from off-shore as well as on-shore activities, including staging areas, recreational uses, and so forth. We assume that activities of either type will affect naturally-occurring species. The growth of the public sector, alone, in Unalakleet, can affect native access to harvests.

IMPACT CATEGORIES

Assumptions About Relations Among Categories of Culture

The real and measurable relations among "categories" of culture, or of society, have been recognized by social scientists for over one century (see Tylor 1871, Morgan 1877, Marx 1857-8, Durkheim 1897, Weber 1904-5 (for examples)). Measuring those relations and explaining the meanings of them have spawned controversies and the developments of new methodologies during the long course of that history. We take as given that regular relations obtain among ideologies, technologies, economies, and social phenomena. Such relations have been demonstrated within cultures over time, and among cultures measured at one or more points in time on many occasions (see Naroll 1970, Driver 1973, Jorgensen 1979, and Lewis 1956, for examples). Several modes of social science inquiry have focused on the causes and mechanisms of social change. Perhaps none of those modes of inquiry has been more successful or more enduring than those that have sought to determine the relations among environment, technology, economic organization, and ideology. On the general level of culture change, scholars from Marx (1857-8) to Kroeber (1939), to White (1959), to Harris (1980) have sought to account for the effects imposed by environments on forms of production and organization, and the manner in which technology mediates and limits the effects of environments. On the specific question of change to Native American communities, case studies by social scientists such as Graburn (1969) and Aberle (1966), comparative case studies by Jorgensen (1972), and a spate of social impact assessments and critiques of those assessments have been produced (see Jorgensen et al 1978, Geisler et al 1982, and Jorgensen, ed. 1983).

It is evident that as technologies have been developed to increase hunting efficiency and territorial mobility, or to harness river systems, or to produce agricultural surpluses, and the like, that populations have grown, organizations of production (including ownership, inheritance, extraction, labor by sex, age, and task groups), consumption, distribution, and exchange have changed, as have family household organizations, polities, and ideologies. We do not challenge the basic tenets of this rich social science literature inasmuch as changes in some aspects of Eskimo culture have been quick and dramatic since the introduction and widespread adoption of snowmobiles, outboard motor boats, and all terrain cycles. Populations have become more concentrated in villages. Wintertime movements for

subsistence pursuits have come more to involve lone hunters or groups of men rather than entire families and wider networks of kinspeople and friends, and those activities can complete in a few hours or days what once required a few weeks. Dog teams have been drastically reduced in numbers, lessening the necessity of daily hunting to feed the dogs. Indeed, dog teams dwindled to a half dozen until the Iditarod Race rekindled interest. There are currently 34 dog teams that must be fed daily. Yet except for the slow growth of commercial fisheries in Unalakleet, some benefits of which accrue to natives and some not, and the long term role played by trapping, the local economy has become increasingly dependent on sources of unearned income through federal and state grants, transfer payments, legislative programs, agencies, and awards, to provide the cash income to acquire the technology and fuel required to maintain subsistence pursuits and provide health, shelter, and clothing.

The penetration of state and federal government ever more deeply into village affairs has brought about changes to the political economy of village life, influencing the regional corporations, village corporations, city government, and the IRA council, while also prompting residents to seek services and income from those institutions. The relations among local institutions and state and federal government introduce legal, professional relations, tempered, if not shaped and controlled by local natives, where few had existed before. Relations between representatives of local institutions and the residents of the villages, to this point, have not converted traditional relations among leaders and followers to professional-client relations. Leaders have been successful in shaping formal, legal relations to reflect local idioms and local styles, rather than to fit universal, formal, legal relations.

We do not presume that the harvests of naturally occurring, renewable species can be neatly separated from the cultural milieu in which the subsistence economy is embedded, but we can isolate several cultural categories that influence or are influenced by harvests of naturally occurring species. We assume that we can demonstrate the interplay of the organization of subsistence extraction, its current dependence on certain technologies that require cash for their purchase and use, the relations of local institutions to families and to their environmentally-based subsistence economies, the ideas and sentiments that people hold and express about the resources of their environments, proper relations to those resources, and more.

For the reasons listed above, a synchronic study cannot infer cause, so the scanty temporal data available to us will be adduced, whenever possible, to lend credence to the concluding hypotheses about the consequences of harvest disruptions to Unalakleet culture. Before listing the categories that we assume may be "impacted" by disruptions to the harvests of naturally occurring species, we provide a brief narrative on assumptions about relations among categories of Unalakleet culture.

The harvests of naturally occurring renewable resources by Unalakleet residents and the uses to which those resources are put are embedded in a nexus of cultural relations whose origins were in the distant past. The subsistence economy, with its organization of production, subsuming ownership, inheritance, stewardship, and authority, its organization of distribution, and its organization of consumption, are some of those relations, but there are many more. Should we choose to analyze subsistence economy separately from other aspects of Unalakleet culture, we assume that we should do so for analytical purposes only. For instance, family, household, and wider networks of kinspeople are organized not merely as kinship qua kinship units to rear children, or even for additional purposes such as to provide shelter, and to provide emotional support. These organizations are integrated as core units for the extraction, preparation, and storage of natural resources, for the distribution of natural resources and the products derived from them (receiving as well as giving), and for the consumption (including use) of those resources or the products derived therefrom. Family household units, and often kinspeople living in other households, pool technology required for subsistence, such as boats or snowmachines, pool cash for gas and oil, share skills, and the like, and contribute cash from earned and unearned sources of income to the family larder. Members of these same units provide gifts of resources, whether locally abundant or even scarce, to affines, kinspeople, or friends in distant villages. They often provide labor and share technology as well.

Accompanying the organization of kinship, which itself is deeply embedded in the organization of the subsistence economy, is a very wide array of ideas and sentiments associated with obligations to contribute to the household economy; to consume naturally occurring resources because of their life sustaining, even spiritual and medicinal, value; to share resources with the aged, with kinspeople, with affines, and with friends; to work willingly so as to provide food, revere the beauty of the environment--in its finite detail--in which they extract resources,

and so forth. The ideology of sharing and helping is paramount among basic ideas in Unalakleet society, and finds expression in values, in sentiments, and in helpful and generous acts. Furthermore, the ideology of sharing and helping takes expression in acts of sharing and helping that run counter to the ideology of choice that allegedly motivates market behavior. Many examples of Unalakleet native behavior in commercial activities demonstrate that sharing and helping, not choice, motivates native actions.

We assume that the sense of community in modern Unalakleet is institutional. That is, it is long lived, habitual, and expected. This sense comes from the sharing of resources and skills through wide networks of kinspeople and friends, through the helpfulness that is extended to persons in need, through a common history stretching to the late nineteenth century that has drawn together Kawerak Inupik, Malemiut Inupik, and Unalakleet Yupik, through the sharing of sentiments about the beauty of the land and waters that they inhabit, and from commonly-shared sentiments about threats posed by natural forces as well as by industries and governments to the village and the natural resources on which life in the village is based.

We assume that Unalakleet natives remain wedded to their environment and to their subsistence economy in largest part because they prefer to do so. Wage labor and salaries are recognized as short term, as are the transfer payments and legislation on which both are based. Personal income from productive labor in the commercial fisheries is seen, apprehensively, as a potential long-term contributor to a Unalakleet economy, but that long-term source of earnings is recognized to be threatened by on-shore and off-shore energy-related developments. Cash income is sought and much of that income is used to purchase technology that will enhance subsistence harvest activities, as well as to sponsor resource extraction trips which make family and community life more predictable. We assume, therefore, that the continuance of Unalakleet village life is predicated on this continued presence, extraction, and use of naturally occurring, renewable resources. We further assume that formally organized institutions in Unalakleet that have been legislated into being during the past thirteen years will be used in attempts to assure the continuance of access to, and protection of those resources, and to provide transfer payments and federal and state relief should those resources be severely altered and reduced. Institutions, then, we assume will be used in culturally explicit ways, much as Unalakleet cultural practices and ideology are explicit and related to the extraction, distribution, and consumption of naturally occurring resources.

A Special Note on Sharing

Central to the subsistence economy in its manifold connections to other aspects of contemporary Unalakleet culture is the concept and the practice of sharing. Sharing is institutionalized in such a way that raw resources are given, labor is contributed, and equipment is borrowed and loaned among networks of kinspeople and friends. The concept of helping persons is so deeply held as to not require second thoughts about economic choices when an able person contacts a person in distress, nor is it expected that thanks will be expressed or reciprocation explicitly offered. The able person acts to help the disabled person, to repair his equipment or the like. We assume that this practice and its accompanying ideology have accommodated Eskimos to their arctic and sub-arctic habitats and have caused in the past, and will continue to cause natives not to behave as "economic men" in the western market tradition (see Knight, 1921 and Polanyi et al, 1957 for lucid analyses of the assumption of economic man and choice in economies). The practices of sharing, giving, and helping are so widely spread and so persistent in the Arctic and sub-Arctic (see, for recent examples, Jorgensen, McCleary, and McNabb, 1982; Wolfe, 1981; and the review article by Moran, 1981) that their collective significance is often overlooked, and apparently accepted as a given by many arctic researchers (see, for example, Nelson, 1959:378-380, and especially Ellana, 1980:108-116). But the contrast between sharing, giving, and helping among arctic and sub-arctic Eskimos is not only conceptually different from the concepts of market exchange for standard values and higgle-haggle in bartering, but it is also conceptually different from the concept of reciprocity that recognizes that the donor of a service or an object will receive a service or object from the original recipient at some future date. Some Eskimos give much more than they receive, but the recipient is conceived of as the community, not the personal recipient, and the donor does not expect specific reciprocity. He accepts the cultural institution of giving. He helps and is helped. Nevertheless, esteem accrues to the big giver, i.e., to the successful extractor who shares his catch.

We assume that sharing, helping, and giving among arctic and sub-arctic Eskimos is, then, conceptually different from market exchange practices and also from concepts of reciprocity and redistribution as applied to non-market exchange systems (see Polanyi et al, 1957, Sahlins, 1965).

Categories of Culture Assumed to be Impacted by Harvest Disruptions

A. Subsistence
   1. Native foods consumed
   2. Naturally occurring species sought
   3. Distances travelled to acquire naturally occurring species
   4. Strategies employed to acquire species
   5. Processed foods consumed
      a. purchased
      b. purchased with transfer payment assistance
      c. received as transfer payments
   6. Skills and knowledge about harvest locations

B. Technology
   1. Motorized transportation equipment (needs and amount invested)
   2. Fuel
   3. Hunting equipment
   4. Fishing equipment
   5. Shelter
   6. Clothing
   7. Discretionary technology, e.g., electronic equipment for home and motorized equipment (CBs, TVs, digital barometers, telephones, etc.)
   8. Storage technology, including energy-dependent chest freezers and refrigerators

C. Economic Organization
   1. Resource ownership and control
      a. relations between village and region
      b. relations between or among villages in regard to conveyance
      c. relations between or among family members in relation to inheritance
      d. recognition of stewardship for family-household resource areas
      e. significance of stewardship
      f. requests to stewards and from stewards

2. Organization of Labor
   a. subsistence tasks
      1.a. by sex
           by age
           by task group composition, including networks of kinspeople or friends
      2.a. authority of stewards to organize
   b. productive commercial tasks (e.g., fishing, boat building, net building) and commodity by-products (e.g., ivory carving)
      1.a. by sex
           by age
           by task group composition
   c. wage labor for non-productive (public sector) employment
      1.a. amount
      2.a. demands
   d. dependency of transfer payments for earned income (employment) and unearned income (including welfare)
3. Production
   a. amount of species harvested
      1.a. birds
           land mammals
           sea mammals
           fish
           shellfish
           wild plants
   b. amount of species stored
      1.a. birds
           land mammals
           sea mammals
           fish
           shellfish
           wild plants
   c. amount and kinds of by-products from naturally occurring species
      1.a. income from products and by-products

4. Organization of Distribution
    a. sharing, giving (and receiving): items
        1.a. naturally occurring resources
        2.a. technology
        3.a. cash income
    b. sharing, giving (and receiving): donors and recipients
        1.a. within households
        2.a. within networks of kinspeople
        3.a. between affines
        4.a. among friends
        5.a. between residents of different villages (intervillage)
        6.a. authority to give
    c. pooling and redistributing, ceremonial or institutional
        1.a. within villages
        2.a. within villages but also to foreign guests
    d. by-products as commodities
        1.a. sales volume
        2.a. price
        3.a. cultural definitions of commodity value (to be shared or to be sold, and if to be sold, for personal gain or for other uses)
5. Organization of Exchange
    a. definition of commodities
    b. authority to sell
    c. pressures to sell (and to buy)
    d. prices
    e. purchases of commodities for standard values
6. Organization of Consumption
    a. relations between units of production and units of consumption
    b. family-household consumption

D. Ideas and Sentiments about the Importance of Naturally Occurring Species
1. Ideology and sentiments about village place and space
    a. beauty
    b. perpetuity
    c. Inupik-Yupik relations to land (including water, ice, sky)
    d. abundance
    e. proper use
    f. community (shared meanings, also space)

2. Ideology about consumption of foods from naturally occurring resources
   a. medicinal (threats to health if not eaten, restoration of health if eaten)
   b. spiritual (relation to completed, or whole, or good person)
   c. native reality (traditional foods as "real" food rather than unnatural or processed foods)
3. Ideology about acquisition of naturally occurring renewable resources
   a. effort to procure is beneficial to the extractor and all who receive parts of the products
   b. sharing is helpful, expected, beneficial to the person (extractor-distributor) and to the species
   c. cash income, in large part, is to be invested in technology for extraction, extractive ventures, and/or supplies and fuel to assist extractors in their pursuits
4. Ideology about proper understanding of abiological and biological phenomena
   a. necessity to learn by precept, rather than oral instruction
   b. bad form to criticize person for ineptness in subsistence tasks
   c. potential loss of skills within community without explicit oral or written transmission of skills
      1.a. seamanship
           knowledge of ice
           knowledge of attributes and behavior of game
           ability to call birds by species, age, sex, and predicament (wounded, ailing, distressed, etc.)
5. Ideology about threats to abundance of naturally occurring and renewable resources from non-native activities
   a. beliefs that non-natives expropriate and deplete environments without regard to native needs for and uses of those environments
   b. beliefs that government regulators of the environment possess inadequate knowledge and are poorly informed about the environment and the consequences of their regulations

E. Social Organization

1. Kinship (also see Economic Organization categories)

a. family household composition

1.a. size of household

pooling and sharing within household

authority within household

stability of household

male-female relations within household

husband/father and wife/mother roles

b. kinship networks

1.a. pooling and sharing

requests for help

adoptions

c. affinal networks and activities

1.a. within village

between villages

d. friendship networks and activities

1.a. within village

between villages

2. Village Community

a. camping together during spring bird and oogruk season, or near one another during fall silver salmon and hunting seasons

b. village festivals based on first harvests or redistributions of naturally-occurring species

c. genesis of social movements (political/religious: alterative, redemptive, reformative, transformative)

1.a. issues

leadership

goals

means

philosophy of history

F. Religion

1. Organized Religions

a. counseling services

b. social services

G. Political-Economic Institutions

1. Village Corporation
   a. requests from village residents
   b. requests to, and relations with regional corporation
   c. staff stress (including burn-out)
   d. management stress (including burn-out or dismissal)
   e. requests to and relations with externally-based financial institutions
2. IRA Government (non-profit)
   a. requests from village residents
   b. requests to regional non-profit for assistance
   c. activities and programs to provide helping services
   d. requests to federal government
   e. relations with federal government
   f. employment provided by IRA and programs for which it contracts
   g. stress to employees
   h. stress on leadership to enter new areas, such as securing and distributing unearned income as transfer payments or for services rendered (job)
   i. growth of role in providing and distributing unearned income
3. City Government
   a. requests for helping services from residents
   b. requests for employment from residents
   c. requests by city for grants, contracts, and aid from state and federal sources
   d. relations of city with state government
   e. stress to staff; burn-out and resignation rates
   f. resignation of elected leaders
   g. relations with village corporation and IRA Council
   h. requests to change state and federal regulations
   i. growth of role in providing public sector jobs
4. Regional Non-Profit Corporation
   a. requests for help in relations with state and federal government
   b. requests to exert influence to change state and federal wildlife regulations

c. requests to take lead in relations with externally-based corporations
   1.a. provide jobs
        curtail deleterious effects on environment presumed to be caused by corporations
d. requests from village for regional to seek grants and contracts to provide options and employment to villagers
e. stresses on leaders and staff
f. growth of role in acquiring and distributing unearned income to village

5. Regional Profit Corporation
   a. disputes with the village over
      1.a. sub-surface rights
           contracts with corporations
           relations with externally-based corporations
           allocation and distribution of income
   b. requests for income, jobs, relief, equipment
   c. stresses on leaders and staff

6. Norton Sound Fisherman's Co-op
   a. requests from members for funds for equipment
   b. complaints from members to lessen controls exercised by ADF&G
   c. requests from members for more competent management of finances, processing plant, contracts
   d. acrimony toward and criticism of NSFC leadership
   e. default on loans
   f. withering of Co-op
   g. stress and burn-out of leadership
   h. resentment of and acrimony against non-native commercial, subsistence, and sport fishermen
   i. requests to regional non-profit, village corporation, and other agencies and offices--native, state, and federal--for funds

H. Helping Services
   1. Social Services
      a. requests for counseling and aid
      b. stress
   2. Health Services
      a. requests for counseling and aid
      b. stress
   3. Law and Order
      a. requests for services
      b. stress

The special features of the categories of culture that, in likelihood, will be influenced by disruptions to harvests of naturally occurring, renewable resources, and the degree of that influence, will be postulated in the harvest disruption analysis.

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PART IV

EFFECTS OF RENEWABLE RESOURCE HARVEST DISRUPTIONS ON SOCIOECONOMIC AND SOCIOCULTURAL SYSTEMS IMPACT ANALYSIS UNALAKLEET, NORTON SOUND

By: Joseph G. Jorgensen

INTRODUCTION

At the outset of this project it was assumed that archival and field investigations would allow the researchers to collect a sufficient data base from which empirically sound ordinal definitions of harvest disruptions to renewable resources could be made. Empirically warranted definitions require that the phenomena being defined fit some specific criteria, such as a measure of quantity or a measure of specifically diagnostic attributes (phenomena that vary in kind, or quality, rather than quantity). We think that we have satisfied those criteria. We think, also, that our definitions are logically adequate. We meet the test of logical adequacy by making sure that the three definitions jointly form a mutually inclusive and mutually exclusive possibility set. The possibility set comprises all possible types of disruptions to harvests of naturally occurring, renewable resources used by Unalakleet natives. Furthermore, each rank in the set (low, medium, high) is mutually inclusive and mutually exclusive so that disruptions of one type cannot be misclassified as disruptions of another type. But because our study is time-bound, essentially to the present, we cannot determine through standard postdictive techniques whether our definitions discriminate sufficiently well to be of scientific value.

A second problem is that valid forecasting is not possible from synchronic research in which severe restrictions have been placed on the use of survey techniques and the use of statistics in the data collection and analyses phases of the ethnographic baseline research (see Part III). Moreover, the paucity of time series in the archival data sets pertaining to the natural resources of the Norton Sound region and their uses by Unalakleet natives do not allow us to compensate for validity problems inherent in our synchronic data.

A third problem is that the consequences we propose, as concluding hypotheses, from the three levels of disruptions to harvests of naturally occurring, renewable resources are not validated. That is to say, we cannot demonstrate that the relation between level of disruption and type of consequence is real and determinate. In brief, "real" in a statistical sense means that whenever the level of disruption varies, the type of consequence varies (systematically and in the predicted direction). "Determinate", in a statistical sense, means that no other sources of influence are intervening to affect the relation. So general problems of validity obtain. They can be resolved only through retests at several points in time, and only by incorporating survey techniques of network samples with ethnographic observations and formal time series analyses.

The strategy of this report is first to provide a background for the situational logic that will be employed in the consequences section, then to propose the consequences to Unalakleet society and culture from harvest disruptions of increasing severity to naturally occurring, renewable resources. In the background sections we will define the levels of disruption and provide a rationale for the distinctions, and then we will provide a comparative assessment of consequences to Native American culture from rapid, large-scale energy developments--focusing on similarities and differences between Eskimos and American Indians. Comparisons of American Indian experiences with energy development are deemed appropriate inasmuch as the impacts of oil, gas, and other non-renewable energy resources are well documented among Indian societies in the American West, and because American Indian societies, although different from Unalakleet Eskimo society in many particulars, not the least of which is the dependence on naturally occurring resources for subsistence as well as for cash income, are also similar to Eskimo societies in many ways. The similarities include some traditional, non-commodity valuations of environments, similar kinship network gifting and reciprocity patterns, similar household composition forms in relation to stability and amount of income, similar concepts of community, and some similar dependency relations and relations of subordination to the federal government.

The analysis of the social and cultural consequences from harvest disruptions to naturally occurring, renewable resources to Unalakleet culture will follow the background sections.

HARVEST DISRUPTIONS TO NATURALLY OCCURRING, RENEWABLE RESOURCES: DEFINITIONS AND RATIONALE

As has been amply demonstrated in Part I (pp. 40-196), the space used by Unalakleet natives to acquire subsistence resources, fish and roe for commercial sales, and fur-bearing animals for commercial sales, is bountiful in naturally occurring, renewable species. There are many different species available for extraction throughout the year, but except for four species of Pacific salmon--king, dog, silver, and pink, particularly pink--no naturally occurring species is inordinately abundant. That is to say, except for the increasingly large salmon spawning runs that have entered the Unalakleet and Egavik Rivers since 1977, no single species or combinations of harvestable species occurs in large quantities in a locally concentrated area. But even the salmon species, although they jointly constitute one of the predominant staples in native diets, may not be quite so vital to native subsistence as, say, are walruses to the residents of St. Lawrence Island, or caribou to the residents of Wainwright on the North Slope. On the other hand, because of the extremely important role played by salmon in the village's private sector economy, a severe disruption to harvests of those species would have immediate and wide-spread deleterious consequences for Unalakleet natives.

The point is that for subsistence pursuits, the Unalakleet region is endowed with a very wide variety of resources. If one resource is not available during the season in which it normally is harvested, Unalakleet natives switch to a second, or a third, or a fourth species. The manner in which switching to alternative resources occurs is conditioned by one or more of several factors which intervene between the anticipation at the beginning of a season of what can be harvested and the foods and their quantities which are actually harvested. Natural factors vary the abundance and location of resources from year-to-year. Natural factors also affect the success with which the harvesting and preservation activities can be carried out. The availability of time and cash, and how these are allocated in subsistence pursuits, can also change over a season by necessity or preference.

Differences Between Family and Village Harvests

It is necessary at the outset to distinguish between disruptions to the harvests of subsistence resources engaged in by particular families, and disruptions to harvests of species or combinations of species for the entire village. In this study we focus on the latter rather than the former, but let us distinguish

between them. In each season of each year it is not uncommon for the members of a family to experience a "slump", or "bad luck", or to be "shut out", as natives might say, in the pursuit of certain crucial species sought for subsistence, such as spotted seals, caribou, or moose. A snow machine might fall through the ice, or be stranded because of a quick thaw. Family hunters might become ill, or other fortuities that cannot be predicted might occur. If that family has difficulty in compensating for major items such as caribou, moose, or seals, particularly if they do not bag sufficient quantities of all of these large mammals, they will receive food as gifts from kinspeople within the village, from friends within the village, and from affines in other villages. Villagers always know, through communication networks, what families have been unsuccessful as well as what hunters have had unusually "good luck". No person who has had unusual success could, or would, withhold resources from a family in need.

Failure to extract resources sufficient for a family's needs during a season, or in regard to particularly important species, such as seals, caribou, and moose, is not uncommon, and compensation with native foods occurs through switching to the extraction of less preferred species, such as tom-cod (saffron cod) and rabbits, small animals that occur in relatively large quantities, but that are diffusely distributed over restricted areas. Such alternative resource use usually leaves a shortfall, so relatives and friends within the village and affines and relatives in other villages are called on to contribute. One family's misfortune affects many other families.

Disruptions to the harvests of naturally occurring resources to the entire village is a different issue. For example, weather and ice conditions may reduce resource availability below their normal levels, distribution, and seasonal span. They may restrict access to resources by impeding or preventing travel, and they may cause spoilage to food already harvested. Late spring ice formation break-up in Norton Sound and still later break-up of the Yukon negatively influences seal and oogruk hunting for all villagers, just as early spring break-ups negatively influence the harvests of greens, birds, roe-on-kelp, and herring. Both early and late spring break-ups occur often enough so that they are regarded as normal conditions by villagers: if seals and oogruk cannot be bagged in large quantities, plentiful but probably not sufficient amounts of birds, roe, greens, and herring can be extracted as compensation. The subsistence problems for villagers become dire when the harvests of predominant staples are interrupted for

successive seasons, or when harvests of several predominant staples are interrupted in the same season. In such instances, villagers share their preserved and stored foods, and lean heavily on assistance networks in other villages.

Cultural and Natural Factors in Subsistence Harvests

Whereas a plethora of factors influence native diets from season to season and year to year, four factors are isolated here as being especially significant in analyzing Unalakleet subsistence resource practices, and they must be defined before we can present our typology of levels of disruption. The four factors, the first three being cultural and the fourth natural, are contribution by resource to diet, efficiency in extracting, taste preferences, and resource availability. These factors are interdependent, rather than being independent or mutually dependent. That is to say, the contribution of a species to Unalakleet villager diets does not invariably increase with efficiency in extracting, preferences for, and availability of the species, nor do the relations among contributions to diet, preferences, efficiency, and availability vary at random.

Contribution to Subsistence

We have classified the most frequently harvested, naturally-occurring, renewable species in Unalakleet diets on the basis of their contributions to those diets, by seasons, over the past five years. The classification of contributions are ranked estimates. There is no assumption of lineality or continuity between ranks, only that decreasing ranks contribute less to the diets than those ranked species that precede them. Moreover, a predominant staple during one season may be a secondary, tertiary, or unavailable food source during another season. The ranks are: I = Predominant staples in quantity. II = Secondary food sources; no single secondary species contributes as much to the native diet as the predominant staples, yet jointly the secondary staples can contribute much more than the predominant staples. III = Tertiary food sources; normally no single tertiary species contributes as much as any secondary species, and jointly the tertiary species do not contribute as much to diets as the staples in any season (unless disruptions to harvests of staples were total), nor as much as the combined secondary sources.

Efficiency in Extracting

The efficiency of the tools and the techniques of their employ in harvesting is important, and the advent of guns, rifles, ammunition, and motorized, petroleum-dependent equipment has greatly altered some aspects of Unalakleet subsistence practices in the past five decades. We do not here wish to compare past efficiencies with current ones, yet there is little doubt but that they have changed. We focus on current extraction practices, but call attention to past ones no longer in use that may prove useful in the future as exigencies and protracted conditions warrant.

Efficiency in extracting can be loosely defined as the amounts harvested in relation to the allocation of labor-time, distances travelled, cash, and equipment. In extractive pursuits, as distances travelled, petroleum burned, equipment purchased and repaired, or labor expended increase, the yield* should increase commensurately in quantity. Preference for certain foods over other foods is not a consideration here, nor is pleasure that is derived from the practice a consideration. We deal with preferences below, whereas pleasures in subsistence pursuits are assessed in some detail in Part I. Suffice it to say here that if cleaning fish nets is boring and tedious, journeys up and down the river are not. And if untangling a net is vexing, fishing with spinning tackle before and after in the company of relatives or friends brings delight.

The efficiency-in-extracting scale comprises six ranks, each an estimate of the following composite: amount of yield per allocation of labor-time, cash, equipment, and distances travelled (petroleum burned is merged in the estimate of cash allocation). Efficiency ratings can vary for species by seasons, as will be evident below, but the following ranks best characterize the extracting efficiency ratings of most species that are regularly extracted by Unalakleet villagers. Moreover, as costs increase, particularly in seal and oogruk hunting, or moose hunting, other resources are sought in addition to those mammals. 1 = salmon, herring (short distances, long-lived subsistence set nets, long-lived subsistence boats and motors, concentrated collection, preparation, and preservation labor). 2 = char, grayling, whitefish, (seining, see 1 above); caribou (long distances, long-lived rifles, expensive ammunition, short-lived snow machines, extensive labor-time, large yields). 3 = seals (short to long distances, long-lived rifles,

*Bag, quarry, harvest, collection

long-lived seal boats, several trips, considerable labor-time, stalking skill required); walrus, oogruk (moderate to long distances, see "seals"); beluga (long distances, long-lived rifles, nets variable, long-lived boats, considerable labor-time, variable success); moose (short to moderate distances, frequent trips, long-lived boats and rifles, stalking techniques, variable success); waterfowl (short distances, long-lived guns, long-lived boats, expensive ammunition, concentrated bags). 4 = rabbits (hares) (short distances, many trips, long-lived rifles and guns, expensive ammunition, moderate labor time); berries, greens, roe-on-kelp (short to moderate distances, several trips, extensive labor-time); shorebirds (see "waterfowl", but more selective in shorebird hunting, seeking cranes and some other species). 5 = smelt, saffron cod, birds' eggs, marine invertebrates, (modest equipment, short distances, extensive labor-time); black bears (stalking, see "moose"). 6 = ptarmigan, spruce grouse (short distances, long-lived equipment, modest ammunition, stalking, moderate labor-time); ling cod (short to moderate distances, modest equipment used for other fishing, often incidental to other catches, moderate time).

Preferences for Resources

It is first important to distinguish between preferences and "tastes". Preference is not necessarily a function of either "taste", that is, a food desired in some quantity (tiny, small, or large; rarely, infrequently, often), or availability. Some preferred foods, such as moose, provide large quantities of food for people and dogs and are sought on several trips if early successes are not registered. Others, such as beluga whale, provide very small quantities of food to natives, but they are pursued with rather slim chances for success because beluga appeals to villagers for its "taste", symbolic value, and the oil that is rendered from the blubber. Unalakleet villagers, on the other hand, usually desire a "taste" of walrus each year, but they do not assign unusual symbolic significance to the animals, do not render the blubber, and do not prefer walrus as a regular or even as an irregular part of their diets. For several decades walruses did not migrate very far easterly into Norton Sound, but during the past five years, walruses have annually penetrated to the head of the Sound in several herds numbering as many as 300 animals. This species could have contributed much more significantly to native diets in the past five years than they have in fact, and the extraction efficiency would have been at least equal to that of moose and

seals. But Unalakleet villagers have not pursured walruses nearly so assiduously as they have pursued moose or seals, and actually have only modest experience in hunting these rather dangerous animals. It is plausible that walruses will be hunted more frequently if exigencies require such.

The foregoing examples suggest the following: "taste" is variety in some instances and endless desire in others. Unalakleet natives express desires for a taste of this and a taste of that, particularly when they have not experienced the taste in a long time. Indeed, they express real desires for a "taste" of all native foods at one time or another through the year. "Preference", however, may well be for resources whose taste is desired over most others, but it also is assigned to species which traditionally have been used for large portions of native diets, or which, through tradition, are considered to be "good" and "appropriate" foods. Waterfowl may provide no more than 25 family meals per year, but those meals are cherished. Perhaps only two or three meals of walrus meat would really be enjoyed before the "taste" is satisfied. The "taste" for more walrus meat may return a year later. Natives will pursue geese, ducks, and swans rather than walruses.

We define preference, then, as resources that are sought even when more abundant or more readily available resources can be extracted for subsistence.

The variable code for preferences are P (1) = Preferred food item in the native diet. L (2) = Less preferred food item in the native diet. N (3) = Not preferred food item in the native diet, perhaps shunned if more preferred food items are available.

Resource Availability

The fourth and final factor which is natural rather than a cultural phenomenon, seeks to measure the concentration and abundance of resources. A (1) = Abundant in large quantities in locally concentrated areas for two weeks or longer: e.g., spawning or schooling fish, migratory birds prior to and after nesting period, cloudberry, bilberry, and low-bush cranberry faciations. R (2) = Relatively abundant, either diffusely distributed small game or plants in concentrated areas, or wide-ranging herds of fluctuating sizes whose whereabouts are not predictable with much surety: e.g., hare (rabbit) colonies, seal-oogruk herds, caribou herds. N (3) = Not abundant, usually solitary or diffusely distributed plants and animals: e.g., ptarmigan, spruce grouse, whitefish, some greens.

Relations Among Four Cultural and Natural Factors in Subsistence Harvests

In the following two tables (17-18) three of the factors that we have defined as ranked, ordinal variables, are ordered on the basis of their relations to the fourth variable, contribution to diet. Inasmuch as formal statistical analyses were not desired by MMS as specified in the contract and work statement, ordinal statistics are not calculated nor are partials. Nevertheless, it is clear through observation alone that the resources that contribute the most to Unalakleet diets tend to be the most abundant, most preferred, and the most efficiently extracted, with a few notable and important exceptions, yet it is also clear that cultural factors, in some instances, outweigh natural factors in the selection of predominant staples in the diet.

The most important cultural factor of note is the significance of seals, including oogruk, in Unalakleet native diets. Seal oil is used as a food preservative and stored with berries, greens, and some meats. It is eaten as a condiment throughout the year, so large stores of oil are required. It is a particularly important adjunct to all meals in which dried, or smoked and dried meats are consumed. And seal meat (black meat, liver) for human and dog consumption has been central to adaptations in and around Unalakleet for 3,000 years. A second factor requires time perspective as well as some understanding of natural and cultural factors. A mere century ago, and continuing until perhaps 50 years ago, the most available and efficiently extracted resources during the long winter season were seals and, somewhat less predictably, caribou. The persistence of Eskimo preferences and diet compositions reflects the customs of adapting to and pursuing those species during winter months and the use of the oil rendered from seal fat to make palatable the large quantities of dried and smoked salmon eaten during the winter months.

Inspection of Tables 17 and 18 will confirm that the long winter season stands out as the only period in the year in which there are no reversals among the averaged ratings for efficiency, preference, and availability as ordered by contributions to diet. As in the more distant past, during that season the greatest contribution to native diets of freshly bagged or caught quarry are from the most available resources--seals and caribou--which, during the winter season alone, are also the most efficiently harvested and the most preferred food sources. Interestingly, the efficiency with which seals are extracted during the winters in the 1980s has decreased since the 1930s, but seals, with caribou, still predominate among the freshly bagged quarry. The contradiction requires brief comment.

TABLE 17

FOUR CULTURAL AND NATURAL FACTORS IN SUBSISTENCE HARVESTS BY SEASONS, RANKED IN RELATION TO CONTRIBUTION TO SUBSISTENCE, UNALAKLEET, 1982*

SPRING — Late-April Early-June

Cont.	Eff.	Pref.	Abund.	Resource
I	3	P	R	Seals
II	3	P	N	Oogruk
	3	P	A	Waterfowl
	1	L	A	Herring
III	3	N	A	Walrus
	3	P	N	Beluga
	4	L	A	Shorebirds
	5	P	R	Birds eggs
	4	P	N	Roe-on-kelp
	5	N	N	Bears

SUMMER — Mid-June Mid-August

Cont.	Eff.	Pref.	Abund.	Resource
I	1	P	A	Salmon,King
	1	P	A	Salmon,Dog
	1	P	A	Salmon,Pink
	1	P	A	Salmon,Silver
II	2	P	R	Char
	2	L	N	Whitefish
III	3	P	N	Beluga
	5	P	R	Birds eggs
	4	P	N	Roots,greens
	4	P	A	Berries
	6	P	N	Smelt
	6	P	N	Ling cod
	5	N	N	Bears

FALL — Mid-August Early-October

Cont.	Eff.	Pref.	Abund.	Resource
I	3	P	R	Seals
	1	P	R	Salmon,Dog
	1	P	A	Salmon,Silver
	3	P	N	Moose
II	3	P	A	Waterfowl
	2	P	R	Char
III	3	P	N	Beluga
	4	P	A	Berries
	2	L	R	Grayling
	2	L	N	Whitefish
	6	P	N	Ling cod
	5	N	N	Bears
	5	P	N	Marine Invert.

WINTER — Early-October Late April

Cont.	Eff.	Pref.	Abund.	Resource
I	3	P	R	Seals
	2	P	R	Caribou
II	3	P	N	Oogruk
	3	L	N	Moose
	4	L	R	Hares(rabbits)
	5	P	R	Smelt
	5	L	R	Saffron cod(tom-cod)
III	6	L	N	Ptarmigan
	6	N	N	Spruce grouse
	5	P	R	Char
	5	L	N	Grayling

*Legend (see text for complete variable codes):

Cont. = Contribution to Diet; Eff. = Efficiency in Extracting; Pref. = Preferences for Resources; Abund. = Resource Availability

I = Predominant staple
II = Secondary food source
III = Tertiary food source

1 Amount of yield per allocation
2 of labor-time, cash, equipment,
3 and distances travelled.
4
5
6

P (1) = Preferred food item
L (2) = Less preferred food item
N (3) = Not preferred food item

A (1) = Abundant
R (2) = Relatively abundant
N (3) = Not abundant

Special Note: Distances between ranks in each of the four variables are not presumed to be equal. A predominant staple may be secondary, tertiary, or unavailable in other seasons; a secondary food source may be tertiary in other seasons, and so forth.

TABLE 18

ORDINAL RANKINGS OF COMPOSITE CULTURAL AND NATURAL FACTORS
IN SUBSISTENCE HARVESTS BY SEASONS
RANKED IN RELATION TO CONTRIBUTION TO SUBSISTENCE
UNALAKLEET, 1982*

Spring				Summer				Fall				Winter			
C	E	P	A	C	E	P	A	C	E	P	A	C	E	P	A
1	(3)	1	(2)	1	1	1	1	1	2	1	(2)	1	2.5	1	2
2	2.3	1.3	1.6	2	2	(1.5)	2.5	2	2.5	1	1.5	2	4	1.6	2.4
3	4	1.7	2.1	3	4.6	1.3	2.5	3	3.7	1.6	2.6	3	5.5	2	3

*Legend:

C = Contribution to Diet, E = Efficiency in Extraction, P = Preferences for Resources, A = Resource Availability.

Scores are derived from averaging the numbers assigned to ratings of resources in Table 17. See the legend in Table 17. The averaged score for P (Preferences for Resources) in relation to secondary food sources in the contribution to diet for Spring is 1.3. The average is obtained by dividing the sum of oogruk (P=1) + waterfowl (P=1) + herring (L=2)(Σ = 4) by the number of resource types (3) $4 \div 3 = 1.3$.

Reversals of ranks (scale errors) are circled. Ties are neither reversals nor scale errors.

It appears, then, that the cycle of resource harvests by Unalakleet natives corresponds rather well to the availability of resources and the efficiency with which they are extracted, with the exceptions of seals, including oogruk, and waterfowl in the spring, and seals, waterfowl and moose in the fall. To understand these few contradictions we must recognize that new technologies and old preferences have coalesced, i.e., some preferred species in spring and fall, although less efficiently extracted and less available than other species at the same time, contribute more to Unalakleet diets than those other species. Seals are the key resource in question, although waterfowl, too, are important. The significance of seals is such that they are pursued during spring when walruses might provide more to the family larders for the same expenditures of energy, and during fall when char (Arctic Char and Dolly Varden) might provide more to the family larders for less espenditures of energy and cash. These are, however, isolated examples and can be understood only by examining other factors. First, walrus are recent migrants past the head of Norton Sound, and Unalakleet natives have had but moderate experience hunting these often fiesty and dangerous sea mammals. Second, walrus blubber is not rendered by Unalakleet natives (a major reason for pursuing seals). Third, seal oil, now as in the past, has wider uses than any other food consumed by Unalakleet natives.

The foregoing do not exhaust the factors that influence the few scale errors that appear in Table 18, or the specific reversals in Table 17. The reversals and errors boil down to "taste" and tradition issues as families prepare their winter stores during spring and fall. Moose are the most glaring exception. Moose began migrating into the Unalakleet drainage about 50 years ago, and family hunters with the use of rifles became expert at hunting them, often doubling up their silver salmon and char seining or netting activities with fall hunts in the vicinity of their upriver camps. Moose are usually pursued, then, when more efficient resource extraction activities are underway, or coming to an end. Hunters will risk large allocations of time because if a few moose are bagged, the large quantity of meat contributes significantly to the family stores. It is significant, it is averred here, that moose have been available in reasonable quantities in the Unalakleet drainage for a longer period than have walruses in the far eastern reaches of Norton Sound. Assuming greater availability of walruses in the future, they too will probably be harvested in larger quantities as expertise in extraction grows.

Traditional preferences dominate in the question of seals (all kinds) and waterfowl (all kinds), but new technology in the form of shotguns, rifles, ammunition, and motor boats have arguably reduced the native's extraction efficiency of seals during the ice-bound season, and waterfowl during the fall season. On the other hand, this same technology has increased the efficiency of extracting seals during spring and fall, and of waterfowl during the spring. A century ago during winters seals were hunted by stalking at breathing holes and at haul-out areas on the ice, and with nets under the ice which produced many seals for relatively little effort, rather than solely by stalking. And during fall seasons thousands of moulting waterfowl weighing more than a ton in aggregate, and their downy young which were discarded, were driven into salmon nets staked in the ground and clubbed to death (Nelson 1899: 131-134). In the spring rather ineffective bolas were used to hunt waterfowl before they nested. These techniques in seal and waterfowl extraction have given way to shotgun and rifle hunting techniques which are more efficient for spring bird hunting and spring and fall seal hunting than previously, but less efficient for fall bird hunting and winter seal hunting.

It is likely that the preference for seals has never abated, but that more efficient spring and fall hunts, made possible by new technology, are made more necessary by the reliance on that same technology for winter seal hunting--a technology that is not so efficient during that season of the year as the netting technique.

Levels of Disruptions to Harvests of Naturally-Occurring, Renewable Resources: Low, Medium, and High

We assume that availability of the resources extracted by Unalakleet natives forms a continuum from scarcity to abundance. Pursuant to this assumption, however, we know of no temporal measures of species quantities, concentration (or diffuseness), or locations (ranges from the village in which the species occur), that will allow us to create a continuous variable comprising the aggregate species. We have, thus, created an ordinal variable comprising three ranked attributes--low, medium, and high. We assume an underlying scale to the variable property, but we do not assume equal distances (intervals) between each rank.

Low Harvest Disruptions

The head of Norton Sound and its hinterland experience high winds, violent storms, summer rain, ice or waves rumbling up and over the sea wall, floods, and a lesser array of abiological phenomena to which residents normally and characteristically adjust. Some years never see ice or waves pushed over the spit from the Sound, or do not see winds so great as to continually blow the shore ice from its moorings and out into the Sound, but weather and ice conditions account for a wide variety of obstacles people face in extracting subsistence resources each year. Because some kinds of obstacles, but seldom the same obstacles, hinder the harvests of some resources, but not always the same resources, for the entire village of Unalakleet annually, and because for the past five years Unalakleet residents have coped with the disruptions to resource harvests that they have encountered, we treat the current situation as low level disruption.

Weather and ice conditions, on an unpredictable but anticipated basis, reduce resource availability below their normal levels, distribution, and seasonal span; restrict access to resources by interfering with travel; and cause spoilage of resources already harvested. Ice or waves pushed easterly over the spit have caused evacuation of the village for one or more months and inhibited fishing and sealing. Poor snow cover has inhibited travel to hunt caribou and to check trap lines. Stormy seas have inhibited all sea mammal hunting, late spring herring fishing and roe collecting, waterfowl hunting, and summer salmon fishing. River overflow on the ice has impeded travel by snow machine to pursue quarry inland, and also impeded winter jigging for smelt, tomcod, char, and grayling.

Protracted rains during the summer when pink and dog salmon are air-drying can cause them to spoil (mildew fungi and/or other bacterial growth). Exposing air-drying salmon to excessive sun and heat, on the other hand, causes sun baking which renders the fish dangerous to human consumption if eaten in conjunction with fresh fruits (eaten when available by natives). A condition similar to botulism occurs in such instances. And air-drying fish during hot, dry periods are especially vulnerable to flies which lay eggs on the fish, spoiling them in that fashion. During the fall, unexpected warm spells can ruin entire catches of char and grayling (hundreds of pounds per family) inasmuch as the fall preservation techniques for the fish require day-night alternation between light thaw and freeze.

Early break-up of Yukon River ice reduces the bag of spring waterfowl hunting, the herring catch, and roe and greens collection. Late break-up of the Yukon reduces the bag of seals, especially oogruk.

During these annual fluctuations of kinds of disruptions to harvests, some resources are available, but not at the desired time (when seals are fattest, say, or when silver salmon are leanest and closest to spawn). These disruptions do not deny natives the resources that they seek, but they deny them access to the resources in the conditions at which they are desired.

Finally, low level disruptions may be influenced by the population growth of the village through internal growth, and through in-migration of natives and non-natives. Local natives protested the use of North River by U. S. military personnel during the periods in which bases were located nearby, and currently some residents decry catches and bags of subsistence resources of all kinds by non-native residents, and also decry the fish harvesting practices of sport fishermen who are guests at the commercial lodge located upriver. More growth coupled with increased competition for subsistence fishing stations (places for set nets), for moose, and for commercial fishing net locations may strain the limits of low levels of disruption.

Medium Harvest Disruptions

Disruptions to combinations of three predominant staples and secondary food sources (any combination, one staple, two secondary or vice versa) for two consecutive seasons that render those resources inaccessible, or that destroy them after they are acquired, would constitute the base for medium harvest disruptions. Disruptions to three key types of resources in spring-summer, or summer-fall would not only restrict severely the stores on which natives rely to see themselves through the winter, but would deplete whatever stores of preserved foods were on hand from the previous year while denying them the hundreds of meals that are normally composed of freshly caught or bagged resources. Fall-winter, or winter-spring disruptions, stretching over eight to eight and one-half months would drain the caches and freezers and require heavy concentration of efforts on extracting less preferred and less available resources for immediate consumption. Moreover, the very kinds of conditions that disrupt winter harvests of staples or secondary food sources can disrupt the harvests of most resources by inhibiting travel and access.

High Harvest Disruptions

Disruptions so as to render inaccessible combinations of four predominant staples and secondary food sources throughout a year would constitute high level harvest disruptions. Inasmuch as twelve of the sixteen types of naturally occurring resources on which Unalakleet natives rely are dependent on the sea, a major and protracted disruption to the area of eastern Norton Sound affecting some combination of four key sea mammals, and/or fish and/or waterfowl would have severe consequences for native subsistence harvests, regardless of the availability of land mammals, inland birds, and plants, and might affect tertiary food sources as well (marine invertebrates, roe-on-kelp, less exploited sea mammals). A major oil spill, in conjunction with heavy and persistent storms through a winter, spring, summer, and fall, could affect access to resources, access to the spill (ice-locked, either stationary or moving), deposition of oil on tidal kelp, herring spawn, spawning migrations of anadramous species, haul-out areas for sea mammals, freezing of sea mammals (oil covered), freezing of waterfowl (oil covered), inaccessibility of food for diving birds (shorebirds, waterfowl, cliffbirds) and migratory routes for beluga and walruses.

CULTURAL CONSEQUENCES FROM RAPID, LARGE-SCALE INDUSTRIAL DEVELOPMENTS AMONG NATIVE AMERICANS

The bids for the U. S. Interior Department's oil lease sale #57 for Norton Sound were opened on March 15, 1983. The sale fetched $318 million for the petroleum rights to 59 tracts of the outer continental shelf. The Interior Department has predicted a fourteen percent chance of finding 500 million barrels of oil in the Sound. Should exploratory wells prove to be productive, large-scale oil operations, dominated by EXXON and its bidding partners, will require staging areas, recreation areas, and use of available primary and secondary transportation areas. Unalakleet is a rapidly growing village sought by state and regional bureaus, agencies, and offices for the location or relocation of administrative centers. It is a secondary transportation hub for Norton Sound and the eastern half of the Yukon Delta. And it is prized by recreational hunters and fishers for its beautiful, salmon-rich, wild river region.

Unalakleet natives do not share the definition of environment, ownership of nature's resources, and economic uses of those resources that are held by the dominant classes of United States society, but they are well aware of that definition

and the ideas and values that define the cultural scene in society.* Unalakleet leaders express dismay at the inevitability of oil development and the potential demise of their nascent commercial fishing industry, whereas subsistence hunters and fishers fear the negative transformation of the river system and their way of life through oil developments and the spin-offs of those developments (see Chapter 9, Part I).

Unalakleet natives do not treat the land, plants, animals, and air as commodities, although they harvest and sell fish so as to make their own lives secure. Yet leaders among them recognize that the dominant classes' interpretation of the world--especially the social and economic world and how it works--is accepted by society's decision-makers at all levels, if not all non-native members of that society, as correct,and this acceptance of that "correctness" renders natives powerless in opposing dominant plans for development. Although they do not express hegemony in the following words, they recognize that public opinion and the hegemony exercised over them by state and federal governments, and corporations, are rooted in economic power. It is not the simple persuasiveness of a group's ideas, but the union of economic control and intellectual leadership which has produced and maintained dominant classes in secure control of American and Alaskan society.

The ideology of Unalakleet natives on the other hand is similar in many ways with the ideologies of Western American Indians. Symbols are assigned to the environment--land, water, air, animals, plants--that incorporate values of tradition, persistence, continuity, beauty, respect, reverence, and the expectation that its features should persist intact for future generations. These symbols are integrated with customs of labor, gifting, sharing, and helping. Neither among Western American Indians nor Unalakleet natives is the environment symbolized as or treated as a commodity. The similarities between Western American Indian ideologies and those of Unalakleet natives, and the differences of both from the ideology of the dominant society in regard to the environment and its economic uses as well as the economic behavior expected of all persons are crucial in anticipating cultural consequences from large-scale, rapid industrial developments in Unalakleet (Jorgensen 1982).

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*A very extensive literature has addressed the topic of American economic ideology in relation to competition, development, and the environment, as well as personal responsibilities in economic behavior. A brief list might include (McClelland 1961, Hofstadter 1967, Bennett 1979, Jorgensen 1972).

Similarities and Differences Between Unalakleet Eskimos and Western American Indians

Unalakleet Eskimos are different from American Indians as well as similar to them in many ways. An assessment of significant similarities and differences, followed by brief assessments of the social and cultural consequences to American Indians in the western United States and to North Slope Inupiat from large-scale, rapid, energy developments in their midsts, will provide us with a comparative framework from which concluding postulates about the consequences from medium and high levels of disruptions to the harvests of naturally occurring, renewable species can be drawn.

Differences are crucial principally because of (1) the uniqueness of the harsh and challenging arctic environment and the Unalakleet dependence for a large majority of their subsistence on the natural resources of that environment. Western American Indians reside in more salubrious climates and less challenging environments, and whereas some subsistence hunting, gathering, farming, or herding occurs on all of the reservations in which energy developments have occurred, only on reservations where food production dominates (farming, stock-raising) are some natives as dependent on the natural environment as are Unalakleet natives. (2) Although the village of Unalakleet is a secondary air transportation hub for the Norton Sound area, it is an isolated community. Information flows in and out through air travellers, commercial fishermen, radio, newspapers, satellite television, and the like, but Unalakleet is not connected anywhere by roads, and the nearest villages are about 50 miles distant, whereas the closest small city (Nome, the regional hub) is 150 miles distant. Snow machine or small boat travel to Nome is arduous. Air travel is expensive. Western American Indian reservations are not isolated. Reservations possess one or more paved roads, as well as arteries connecting them to border towns (practically all reservations are checkerboarded with Anglo residents and non-Indian towns). Regional cities much larger than Nome are accessible by auto, and often by bus within 100 miles of all energy resource-rich reservations in the West. (3) The fish, game, forests, ocean, and rivers in the Unalakleet region are controlled by either federal or state government. Western American Indian tribes own and ostensibly control the fish, game, and forests on their reservations, and the waters that rise on or traverse them. (4) Unalakleet natives possess very little village and privately-conveyed land, and do not own the subsurface mineral rights beneath those lands (they are owned by the regional corporation). Western American Indian tribes own and control--dejure but

not always de facto--the subsurface rights on their rather large reservations. Often Indian-owned subsurface rights extend to ceded territory (lands relinquished to the federal government by treaty).

Crucial differences, then, distinguish Unalakleet Eskimos from Western American Indians with respect to dependence on naturally occurring resources, isolation, local control over fish, game, waters and forests, and ownership of subsurface mineral rights. Significant similarities, however, must also be recognized so that we can evaluate some plausible consequences from energy developments near Unalakleet.

Similarities include (1) the growth of universalistic achievement orientation and functional specificity in village and tribal organizations through federal and state government domination; government expropriation of native resources; formal rules and regulations about access to, and use of resources off-reservation or everywhere in the case of Unalakleet; establishment of native forms of government and defining their powers through legislation, such as the Indian Reorganization Act (Wheeler-Howard Act of 1934); and the establishment of federal and state bureaus, agencies, and offices which either administer native affairs, or receive reports from and provide services to natives. (2) public sector dependencies as they characterize reservation and Unalakleet economies. (3) control of energy resources from extraction through transformation to energy and sales as they are held by multinational corporations. (4) non-commodity values of nature, unlike the dominant society's definition in which there is no currency in ideology, in the courts, or in the market-place, for non-commodity values of nature.

The patterned variables of universality and functional specificity should not be overdrawn, because on reservations as well as in Unalakleet, local governmental institutions are shaped by kinship obligations and expectations and the particularism and functional diffuseness that characterize the persistence of traditional cultures.

Cultural Consequences to Western American Indians from Energy Developments

Energy-related developments have exercised profound effects on many rural regions of the western United States from the Grants Mineral Belt in New Mexico to the Skagit River in northwestern Washington. The consequences of these developments for American Indian societies are summarized in Jorgensen (1983), and analyzed at greater length in Jorgensen et al. (1978, 1983).

In practically all energy extraction on conversion projects on reservations, and in every energy-related project near reservations, after the permitting and licensing procedure is completed, decision-making and financial control is exclusively in the hands of transnational corporations. Employment from energy-related developments on and near reservations, even when preferential hiring clauses are included in tribal/corporation agreements, is almost exclusively non-Indian; and jobs held by Indians are usually restricted to the construction phases of projects and are the most menial types of general labor and custodial maintenance. (Navajos have held 3,000 of 47,000 energy-related jobs on that reservation between 1957 and 1980; and during the peak of construction phase employment at coal-fired power plants near the Northern Cheyenne Reservation, Cheyennes held 34 of the 895 total jobs, later dropping to six custodial maintenance jobs.)

Revenues accruing to tribes from resources leased and/or extracted, water allocations sold, leased, or given away, and rights-of-way granted have been tiny relative to their collective worth, and small relative to the tax revenues accruing to states from sales, severance, and property holdings of those same energy operations. Western American Indian economies, as measured by personal and tribal income, are steadily losing ground each year in comparison with that of the United States, generally. Whereas public sector income in the form of jobs, grants, contracts, and transfers in cash and in kind to welfare recipients far exceeded revenues from energy-related production through 1980, the Reagan Administration policies and programs have made deep cuts from all public sector transfers in the past three years.

The income from employment in jobs that are created in either the private sector or public sector by energy-related developments is spent either in off-reservation towns, or in businesses owned by non-Indians, so multiplier effects have not strengthened Indian economies.

Surveys of Indians suggest that traditional concerns for land cannot be accommodated to most known extraction techniques for minerals, and consequences from oil extraction have caused concern about land and animals in some instances, and personal, social, political, and economic conflicts in other instances (see Jorgensen et al, 1978 and 1983 for discussion of surveys,and the relevant bibliography pertaining to them,among Cheyenne, Crow, Navajo, Utes, Colville, and other tribes). Surveys further show that most Indians lack information about the companies doing business on their reservations, about the probable financial

beneficiaries of future developments, and about the monetary value of the resources that they own. Surveys also report favorable attitudes toward energy developments so long as jobs are provided to natives, no changes occur to the environment, no disrespectful whites discriminate against Indians, Indian culture is not denigrated by non-Indians, Indian sacred areas are not defiled, and their birthrights will not be transformed.

Yet one of the clearest trends in the consequences of energy developments on Indian reservations is an increase in conflicts. Tribal members have sued their elected leaders in federal courts over contracts that tribal authorities have signed with transnational energy corporations. Indians whose traditional residences and resource areas for farming, stock-raising, and extracting have been threatened by energy-related developments have sued corporations and federal agencies for failing to analyze the communities, ways of life, and dependencies of those tribal people on their traditional areas. Residents in small hamlets on reservations have accused their tribal governments of failing to protect them from discrimination and to protect their land from abuse by employees of energy corporations operating in their midst. Turnovers of elected and appointed officials in tribal governments have been high, and factional disputes within tribes often focus on issues of energy-related developments.

Within communities, households have been involuntarily relocated from their traditional residences and resources because of the opening of mines, mills, electricity generating plants, railroads, and related developments. Reciprocity-based kinship networks have been broken, as relocatees have been caused to sever ties with kinspeople and friends. In some instances sacred shrine areas and burial sites have been damaged by energy-related operations, and in other instances relocatees have been separated from them. Relocatees long to return to their home areas and grieve because their progeny cannot reside in those areas as well. (For fuller discussions of the preceding summaries see Jorgensen, 1983, and Jorgensen, et al., 1978, 1983).

Because oil extraction may occur in the Norton Sound area, the experiences of Western American Indians with oil developments are instructive. The first example is of rebellious social movement.

In the Aneth-Montezuma Creek section of the Navajo Reservation gas and oil operations conducted by Texaco, Phillips, and other leasees for over two decades were almost completely staffed by non-Indians who ridiculed Navajo behavior, allegedly beat and mistreated Navajos on occasion, carelessly spilled oil around

the rigs, and recklessly killed cattle and sheep grazing, browsing, or resting near roads or oil operations. Local Navajos had many other complaints, but when they took them to the tribal leadership for help, help was not forthcoming. In response, Navajos in the Aneth region rebelled and took over all the gas and oil operations, driving off the workers and shutting them down completely. The rebels demanded that the oil leases be voided, or renegotiated, that Navajos be hired for jobs, that the oil companies make substantial financial contributions to Navajo education, and that discriminatory acts by non-Navajo employees of the oil companies cease immediately. The oil companies made some concessions but would not renegotiate leases. The Aneth Navajos also castigated the Navajo Tribal Council for taking the money obtained from oil and lease royalties at Aneth--against the will of the local residents--but providing few resources and services to the Aneth people in return.

For example, from personal mistreatment to economic and political powerlessness and rebellious response, is a harbinger of non-native/native, corporation/native relations in oil developments, but also, perhaps, in village/regional corporation relations.

In other oil extraction projects, the Wind River Shoshone and Arapaho of Wyoming have alleged that over $3 billion worth of their oil for which they should have received royalties had been stolen by companies and persons engaged in extracting, storing, and transporting the oil. The allegations have been supported by a federal grand jury and an investigation conducted by the Department of Interior. Indictments have been brought down, one person has been convicted, one transnational oil company has recognized an "underpayment" and made compensation for it, and litigation continues. And among the Jicarilla Apache an oil firm doing business on the reservation refused to open its books to the tribe. Under federal court order it was forced to do so and a $600,000 underpayment was found. The Tribe assumed control of the oil operation.

Cultural Consequences to North Slope Inupiat from Energy-Related Developments

Recently Kruse, Kleinfeld, and Travis (1982) have summarized the effects of energy development at Prudhoe Bay among the Eskimo groups of Alaska's North Slope.

The results of the activities of corporations, lobbyists and state and federal legislators was the Alaska Native Claims Settlement Act and all that it portends. The State of Alaska received title to the land under which the Prudhoe Bay

oil reserves were located. But state legislation made it possible to form regional governments (boroughs) with taxing authority on property. Natives dominated the formation of the North Slope Borough which secured its taxing authority only after protracted litigation against the State and oil companies.

In the decade following ANCSA and the production of oil from Prudhoe Bay, few natives have gained employment in the private sectors of the energy and energy-related industry, and fewer yet have gained permanent employment. Gross receipts and profits have accrued to the transnational oil companies and the firms that supply them, and major revenues in the form of lease rents and royalties have accrued to the State. North Slope natives have received few direct benefits from oil production. Yet the North Slope Borough, through its taxing authority, has received large revenues from Prudhoe Bay oil production. These revenues, or public sector unearned income sources, have been supplemented by ANCSA award payments, federal and state contracts and grants, some federal and state agency employment, and many types of federal and state transfer payments to create an atypical dependency economy among Native Americans. It is atypical in the sense that public sector income from all sources is extremely high in comparison with that of say, Navajo, Ute, Northern Cheyenne, Crow, Hopi, Zuni, Wind River Shoshone, Jicarilla Apache, and other Western American Indian societies.

Tax revenues have been used in a myriad of community improvement projects planned for and approved by the North Slope Borough. Employment on such projects, which have developed community infrastructures of varying sorts and configurations throughout North Slope villages, has fallen far short of being either full or permanent for those employed. Low multipliers have operated to keep some monies circulating locally that were earned on borough, Arctic Slope Regional Corporation, state, and federally-related jobs, but viable investments and/or industries or businesses that will provide sustained employment and economic growth for North Slope inhabitants have not been developed. Oil revenues and ANCSA award monies, when depleted, have no foreseeable replacement. And petroleum and motorized equipment dependencies have increased.

The wealth of the North Slope is illusory inasmuch as it is based on public sector funds, many of which derive from the extraction of non-renewable resources, and many others of which derive from one time legislation for the extinguishing of native claims to resources and from legislation sustaining human services programs (McBeath, 1981, and Luton and Cortese, 1983). Job training and skill

development in community improvement project employment have been inadequate to make workers competitive in the private labor market (McBeath, 1981). Interest in such work opportunities among residents of Wainwright, a North Slope village, is low because living away from the village so as to work at Prudhoe Bay or on off-shore stations interferes with and disrupts important and highly valued subsistence activities (Luton and Cortese, 1983).

Recent research by Luton and Cortese (1983) and Nelson (1982) for the village of Wainwright, and Worl, Worl, Lonner (1981) for the villages of Barrow and Nuiqsut point out that cash income is allocated to subsistence activities (equipment, provisions, petroleum, repairs), that subsistence resources are harvested because of preferences to do so, and that natives are wary of activities in the environment which might disturb the naturally occurring and renewable resources on which those residents gain large portions of their diets. (According to Kruse, Kleinfeld, and Travis (1982: 102), in 1977 about half of all North Slope families in their survey acquired half or more of their food from subsistence extraction.) Luton and Cortese (1983) estimate a greater contribution to diets for Wainwright residents in 1982. They add that subsistence behavior in Wainwright is symbolic of what it means to be an Eskimo. Luton and Cortese learned that whether Eskimos have been educated and/or employed away from the village, the return to the village to reestablish residence there also entails the resumption of "being an Eskimo", i.e., extracting the naturally occurring resources that have been the bedrock of native subsistence for generations, sharing those resources, and during the spring seasons, clearing out ice cellars of the past year's catch so that, as tradition instructs, the current year's resources will be made available to the Eskimo extractor. These cultural phenomena--pinned to naturally occurring, renewable resources and their uses--are contradictory to the commodity assumptions of the dominant society and the economizing-maximizing principles by which economic men are supposed to make decisions in a market economy.

In 1977,35 percent of sampled North Slope residents "perceived that village living conditions worsened (since before the oil revenue period) ... and only 7 (percent) observed that village living conditions had improved" (Kruse, Kleinfeld, Travis 1982). Residents believed that the borough had met their needs, but they did not know whether it had controlled oil development. Community institutions have proliferated, single family housing has proliferated, and average household size has decreased. Yet subsistence extraction, consumption, and distribution groups have maintained much of their pre-1970s organizational character in size and relations that connect them, at least in Wainwright (Luton and Cortese 1983).

Relevance of Energy-Related Developments in Norton Sound to the Village of Unalakleet

Oil company representatives have informed Unalakleet residents at public meetings not to expect oil-related employment, but on the other hand, to expect regularly to see in Unalakleet non-native employees, federal and state officials, and consultants on oil and gas-related business, and for recreation. This advice fits with the experiences of western Indians and North Slope Eskimos.

There is no borough government and the state cancelled its lease sale #38 for the Unalakleet area so oil revenues cannot accrue to Unalakleet villagers. Income from OCS oil and gas extraction will not be shared with affected village or regional corporations. Unalakleet Native Corporation, Ryan Air, and small local service businesses may grow to accommodate some of the demand. Native experiences elsewhere suggest that local suppliers and service businesses will be owned by absentee persons and corporations, and that most discretionary and large purchases, including groceries, will be made elsewhere.

Local residents are most likely to be uninformed or poorly informed about business ownership beyond the village level, as well as the nature and amount of benefits that accrue to corporations from oil and gas-related activities. Hunting and fishing pressures on the local river systems are likely to increase, as will apprehensions about the consequences of those pressures for Unalakleet native life and the persistence of their traditions.

Inflation in rents, durables, food, and services likely to occur along with population increases and a greater non-native in-migration rate than native in-migration rate.

Law suits, as those filed against OCS Lease Sale 57 by Bering Sea and Yukon Delta villages, seeking to forbid oil extraction are apt to be filed by Unalakleet, perhaps in conjunction with other villages. If legal remedies fail, social movements could well occur as the discrepancy between what Unalakleet natives have, and what they think they are legitimately entitled to, widens. If they acquire few jobs, have no control over the developments nor the income or revenues generated by the developments, and if large numbers of non-native employees of energy-related firms come into sufficient contact with villagers and discriminate against them in some of those contacts, the potential for measured, as well as unmeasured response, is considerable.

Although the following is not specifically an OCS or even a state of Alaska concern, non-OCS oil extraction, too, could have unsettling consequences in Unalakleet. If the regional corporation, for example, discovers and chooses to develop oil on native, village, or regional corporation land in the vicinity of Unalakleet, there is potential for conflict between village and region (as among the Navajo) or for factional disputes (as among the Crow, Northern Cheyenne, and several other Western American Indian societies).

PLAUSIBLE CULTURAL CONSEQUENCES WITHIN UNALAKLEET FROM MEDIUM AND HIGH LEVEL DISRUPTIONS TO THE HARVESTS OF RENEWABLE, NATURALLY OCCURRING RESOURCES

Introduction

In this final section we restate, for emphasis, that cultural consequnces cannot be forecast or predicted in the absence of validated time series or temporal relations. Although some archival data assessed in Part I are temporal, they are neither on topics that are appropriate to our interests nor are they sufficient in observations to yield valid forecasts. The historical and ethnographic data available to us from field investigations prior to our own are not sufficient in quantity or topical coverage to make for adequate comparisons with our own. And our ethnographic baseline data, because of OMB restrictions and OCS/JMI contract-work statement directives, do not include statistical analyses of survey data. We present, therefore, plausible consequences to Unalakleet.

As is stated in the definitions of levels of disruption (above), the low level of disruption is defined as the conditions experienced over the past five years. Consequences to that level will not be analyzed (see Part I for consequences to the village from low level disruptions).

Non-Natives

A final introductory issue (see TM #NSI-6) is the difference between natives and non-natives in Unalakleet. Whether or not the Unalakleet population continues to increase and non-natives increase disproportionately to natives, economic, social, political, and cultural differences distinguish natives and non-natives. Non-natives, with the exception perhaps of those persons who are married to natives, are temporary residents of the village, usually located there because of high-paying public sector employment. They share neither the language nor

traditions of the native residents, and their subsistence economies, social organizations (family and kinship networks, in particular), and ideologies are at considerable variance from those of native Eskimos as well. They do not participate in IRA government nor the UNC, but may participate in city government or on the school board. Whites do not share Eskimo culture, but they participate in the formal institutions created by the state. Some white residents harvest naturally occurring species for their families' consumption, for dog teams, and for commercial sales. Other non-natives visit Unalakleet during the summers to assist in the annual refurbishing of the Swedish Covenant Church property, and these people, too, extract naturally occurring resources. And sport fishing operations, one run by a private lodge upriver and the other operated by the Swedish Covenant Church, bring still other non-natives to Unalakleet during the summer and early fall to extract anadromous species and moose.

Friction between natives and non-natives over access to, and harvests of naturally occurring, renewable species have occurred in the past. Pressures were brought upon U.S. Air Force personnel to stop them from fishing in the Unalakleet system. Some acts, presumed to be perpetrated by non-native commercial fishermen, are recognized as being unusually competitive, even criminal (cleaning someone else's untended nets). Some local non-natives have been vocal in seeking the passage of a statewide referendum giving non-natives full subsistence rights, whereas at IRA, city council, and other public forums in which subsistence resources and the environment have been discussed, especially in relation to the prospects for oil extraction projects, criticism of current extraction of resources by non-natives is voiced, and the possible increased extraction in the future is protested.

Consequences from Medium Level Disruptions

Disruptions to any combination of three predominant staples and secondary food sources for two consecutive seasons would have the immediate effect of depleting each native family's caches of preserved and stored food, and cause villagers to pursue less abundant and less preferred resources. The need to work harder and push the equipment harder will result in more breakdowns and more repairs, as well as more chances for accidents as hunters and fishers approach the ragged edge of control. In general, the least available resources are also the least efficiently harvested of all naturally occurring resources (cash and time allocations are included).

As cash is allocated to gas, oil, equipment, repairs and provisions to extract less available resources, cash also will be expended to purchase food at the local stores to supplement the dwindling preserved food and the meager resources fresly extracted.

The allocation of ever larger portions of each family's cash will require extensions of credit at the UNC and ACC stores for basic necessities for home consumption and subsistence extraction trips. And the widespread demand for larger credit lines, coupled with the use of most or all available credit, may have three consequences for the local stores: (1) personal requests that cannot be accommodated may precipitate public complaints. The UNC will likely respond by underwriting larger credit lines to members at its food and dry goods store. (2) The UNC and ACC may be refused deliveries by some vendors if credit lines are large and payments are slow. (3) The Bering Straits Regional Corporation and the federal government may be requested to provide emergency cash transfers to the UNC and the ACC respectively.

The welfare programs--state as well as those contracted by the IRA-Kawerak--will process increased requests for temporary assistance.

Within the village the kinship, affinal, and friendship networks in which each family participates will redistribute preserved and freshly extracted resources to those in need, caring for the elderly and infirm first.

As the disruptions to harvests continue, requests for native foods will be made to relatives and affines residing in nearby villages of Norton Sound and the Yukon-Kuskokwim area. Gifts of food will be made by those people, thereby depleting their own reserves and, depending on the circumstances, causing them to allocate more time and money on resource extraction trips and, perhaps, to seek resources from networks in their own villages. In the event that the disruptions to Unalakleet harvests are widespread events, affecting other Norton Sound villages, requests on kinspeople, affines, friends, and trading partners in unaffected villages will be even greater than if Unalakleet, alone, were affected. That is because Unalakleet residents and the residents of other Norton Sound villages will be collectively pressed to make similar kinds of requests for assistance to residents in villages beyond the Sound, as well as to their village corporations, the Bering Straits Regional Corporation, Kawerak, state agencies, and the like.

Aid in the form of food packages or cash will be sought from relatives residing in Fairbanks, Anchorage or other cities in Alaska, and cash assistance may also be sought from relatives residing in the lower 48 states.

The local leadership of the Swedish Covenant Church may appeal to its mission headquarters in Minnesota for assistance in goods or finances to be distributed among native residents of the village.

During the second season of a medium level disruption, or during the latter part of winter if the disruptions begin during the winter period, many household consolidations will occur as the most hard pressed families combine their residences with single or conjugal pair parents or grandparents living alone, or with younger families who have recently established their own households in separate residences. Combining of closely related families which are already participating in cooperating networks allows for the reduction of many high cost expenses, such as fuel for heating, at the cost of crowding and reduced privacy. Some children may be sent to distant villages or cities to reside, temporarily, with relatives.

Native owners of dog teams will either use those teams more frequently for traction on hunting, fishing, and wood-harvesting trips, or will kill the animals that they cannot afford to feed.

Expressions of dismay at, and criticism by natives of, non-native users of subsistence resources may become more frequent, acrimonious confrontations may occur, and frictions may occur in city council meetings, public places, and resource areas that are unsettling to the village and/or to entrepreneurs who have solicited non-native sportsmen to fish and hunt at Unalakleet.

Criticisms of ADF&G regulations may increase, and the violation of some of those regulations, particularly for some land mammal species, may increase if those species have not been disrupted.

Natives will evaluate the causes of the disruptions. If they are the consequences of weather or natural factors alone over which agencies have no control and did not set into motion, the preceding impacts will probably be accompanied by some temporary out-migration. If, however, the causes of the disruptions are influenced by the actions of state or federal agencies or corporations, law suits will probably be filed against the appropriate bodies.

The permutations and combinations of disrupted species and their impacts are not endless, but they are large in number. If, for instance, the impacts are to the caribou herds--overhunting, famine, unpredictable migrations--most villages in the region will be affected. If impacts are to the anadromous fish in the ocean, many or all Norton Sound and Yukon Delta and upriver villages may be affected in subsistence pursuits as well as commercial pursuits. If the impacts to

anadromous species are caused by oil operations, lawsuits against oil corporations, state, and federal governments will probably be filed, and social movements will likely precede and attend the lawsuits and their aftermath.

The local native leadership of the NSFC, UNC, IRA, and city council will work actively and cooperatively to seek solutions to village and regional problems, and will use their connections with the regional profit and non-profit corporations, ANF and AFN, state legislators, the BIA, and the Bering Sea Fisherman's Association to do so.

Consequences from High Level Disruptions

Disruptions to combinations of four predominant staples and secondary food sources during each season for a year, regardless of the combinations of resources, would exercise such severe and protracted consequences to the village population, its institutions, its solvency, its neighboring villages, and the regional corporations, that very large federal transfers would be required in order to maintain the village's native population. Substantial out-migration would occur, and all other impacts specified for medium level disruptions would be intensified so as to require major state and federal governmental intervention. The non-natives, particularly those employed by the state, federal government, or school district, would not be severely affected, whereas if oil operators are using Unalakleet for various activities, including transportation, oil company employees and the businesses that service them will be less affected, making up with earned income that which natives must seek through federal and state transfers.

If consequences from oil operations, such as a major spill, noise, and navigation activities combine with extreme weather conditions to disrupt the harvests of the major and minor species that inhabit or use the resources of the sea (birds, mammals, fish, shellfish), the combined reactions of the affected villages would plausibly generate pressure groups and social movements focused on the causes of the disruptions and their perpetrators, and attempts to bring about the immediate removal of all such activities from the region and the barring of them in the future. The social movements most likely would not be restricted to local concerns, but would involve active support and membership from other natives throughout Alaska.

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