CONTROLS ON FISHING BEHAVIOR ON THE NOME RIVER

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ABSTRACT

Very few chum salmon were observed escaping upriver to spawn in the Nome River in 1982 and 1983. Attempts to close a portion of the river to net fishing met strong opposition in 1980. The problem is how to effectively manage fishing without causing unnecessary hardship or disruption. The objectives of this study were (1) to describe the history of the Nome River fishery from earliest records (about 1880) through the present and (2) to identify factors that control fishing behavior among Nome River fishers today. Special attention is given to controls other than Fish and Game regulations; these controls were labeled "internal" controls.

Before the gold rush to Nome in 1899, the Nome River was the site of a small, perhaps seasonal, settlement of Inupiat Eskimo. During the gold rush, the Inupiat were displaced by gold miners and the U.S. Army, (who built a fort at the river mouth). After the army closed Fort Davis in 1921 and mining slowed in the thirties, fishing and other subsistence activities again became the primary use of the river. During World War II, mining virtually ceased. Inupiat immigrants to Nome -- principally from the western Seward Peninsula -- established a camp at the mouth of the river on the site of old Fort Davis.

Following statehood in 1959, commercial salmon fisheries began to develop in the area. The Nome subdistrict commercial salmon fishery, however, was quite small until 1974. In 1974 a fish buyer began flying chum salmon fresh on ice to distant markets: commercial harvests in the subdistrict increased ten fold. At the same time, subsistence fishing effort on the Nome River increased, because a severe storm wiped out

camps elsewhere and new restrictive regulations were placed on other nearby fisheries. Thus the Nome subdistrict and the Nome River, especially, have seen dramatic increases in harvest over the past decade from commercial fisheries and increases in harvest and effort in the subsistence fishery. In the past four years, effort and harvest by sport fishers has been increasing, too, because coho salmon abundance in the Nome River has been increasing.

Fish and Game regulations recognize three uses of the fishery: commercial, subsistence and sport. But these uses are not mutually exclusive; one fisher may use the fishery in all three ways. The three uses are described in detail; who fishes, where they fish, how they fish, and what have they caught in recent years.

Based on previous studies, researchers suspected that some fishers had different assumptions than managers about salmon abundance and salmon reproduction. Fishing behavior seemed to be influenced strongly by "internal controls." Interviews and observations confirmed that some older Inupiat believed salmon abundance was related to natural factors such as water conditions, channel configuration, and the presence of other animals including man. Harvesting salmon when salmon were not abundant was considered essential. "You have to make use of them so they will come again." Fish and Game wants to restrict or eliminate harvests when salmon are not abundant.

Interviews, observations, mapping, kinship, and fishing participation revealed the existence of an elaborate and traditional Inupiat social system in the midst of the Nome River fishery. The Fort Davis campers were virtually all from Wales, Brevig Mission, Shishmaref and Teller. These people -- who had traditional alliances -- function

as a discrete village in the midst of a major regional center. Inupiat from other villages apparently recognize the claim these people have on the Nome River and fish elsewhere. Within the fishery, claims to individual net sites are recognized by long-term fishers. "Public" sites are reserved by Inupiat fishers for seine netting and sport fishing, although there is no such requirement in Fish and Game regulations.

In effect, traditional Inupiat fishers are influenced by two sets of controls; one set imposed by Inupiat culture and one set imposed by the State of Alaska. This puts the traditional Inupiat at something of a disadvantage. If the state closes the Nome River to net fishing or sets permit limits so low as to be impractical for subsistence fishers, a non-Native or non-traditional Inupiat would feel no restraint in moving to another river. But if other rivers in the Nome area have "limited entry" for traditional Inupiat -- there is some evidence they do have -- then a traditional Inupiat would not feel free to move to another river.

In isolation, the Inupiat system would function effectively to limit entry and competition in the fishery. But the sudden growth of the commercial fishery and the presence of many non-Native fishers have disrupted the traditional system.

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INTRODUCTION

Very few chum (dog) salmon were observed escaping upriver to spawn in the Nome River in 1982 and 1983. The Division of Commercial Fisheries of the Department of Fish and Game has been concerned for several years about the chum stocks, on which the commercial fishery depends. The chum are also taken by subsistence fishers and sport fishers. Even as chum salmon stocks decline, more people seem to be fishing on the Nome River. Nome's population is expected to increase as oil development continues. Thus, pressure is building from different directions, prompting concern about chum salmon stocks in the Nome River.

On April 4, 1983, the Norton Sound Fish and Game Advisory Committee discussed the problem. Members of the committee asked the Department staff for information and assistance. They resolved to meet again after the 1983 fishing season to hear public comment about the problem and to draft proposals to protect the chum salmon. In response to the committee's concern, the Division of Subsistence designed and conducted a study of the Nome River fishery during the summer of 1983. A camp was established on the river. Fishers were observed, interviewed and surveyed. Data from eleven years of Nome River subsistence fishing permits were analyzed. This report presents a history of the river, a description of fishing groups, a review of the regulations that protect it today, and a summary and discussion of the findings of the summer 1983 study.

THE RESEARCH PROBLEM

The problem is how to effectively protect Nome River salmon by managing people's fishing without causing unnecessary hardship or disruption. In 1980, the Department proposed a restriction on subsistence fishing upstream. Local people responded angrily and vigorously. They packed a public meeting and challenged the department's assumptions about their fishing. The closure proposal was dropped.

To effectively manage the Nome River fishery -- or any fishery -- the department must:

(1) understand salmon reproduction,

(2) know how many salmon are in the river each year,

(3) know how many salmon are harvested each year,

(4) understand fishing behavior of the users,

(5) communicate effectively with the public, and

(6) have the confidence of the public.

It was apparent after the 1980 meeting that quite a few people felt the department was deficient in all areas. Among some fishers, there is skepticism that the biologists really understand salmon reproduction. Among many fishers, the department's aerial escapement counts are disputed. Among the subsistence fishers, there was anger that the Divisio: of Subsistence failed to understand and document where and how they fished. Among the Natives, there is difficulty in understanding the complex language of the regulations and the biologists weekly

reading of fishing announcements on the radio. All these factors combined undermine public confidence in the department.

Understanding salmon reproduction, monitoring harvests, and counting salmon are the responsibilities of the Division of Commercial Fisheries. Data from that division will be used in this report to explain the development of the Nome River fishery. Understanding fishing behavior -- especially subsistence fishing behavior -- is one responsibility of the Division of Subsistence. This report will describe in considerable detail the fishing practices of the people who harvest Nome River salmon. The discussion is not limited to people who hold subsistence permits, but includes commercial fishers and sport fishers as well. Understanding the impact of and the relationships among these groups is important.

Based on information gathered by Dan Thomas and Alton Walluk (see Thomas 1980a, 1980b), which was analyzed by this researcher (see Magdanz 1981), several topics were identified.

(1) Fishers and managers have different assumptions about salmon reproduction and salmon abundance.

(2) Fishing behavior is influenced strongly by factors other than the state management system.

(3) One goal of the managers -- to maximize chum salmon harvests -- may not be the same as the fishers' goals.

A majority of the fishers on the Nome River are local Inupiat. In the past, managers have come from outside the local area. Cultural differences appear to be fundamental to misunderstandings surrounding Nome River management.

Purposes and Objectives

The purpose of this study is to document the Nome River fishery from the fishers' points of view. The following questions are central to the inquiry:

(1) How do fishers explain the recent history of the fishery, the increasing effort and the decreasing stocks?

(2) How do fishers explain the behavior of the salmon, in relation to the environment and in relation to the fishers?

(3) Aside from the environment and the regulations, what controls fishing behavior?

(4) Are there identifiable systems of beliefs among fishers to explain the relationships between fish, fishers and managers?

(5) If the fishers were managing the fishery themselves, what would they do?

The objective is to identify and describe the factors controlling fishing behavior among the different fishing groups on the Nome River, and to evaluate the implications for state management.

There is a growing interest in subsistence self-regulation (Wolfe and Behnke: 1982, Nelson 1982). This study enlarges the body of information on this topic.

Literature Review

Information specific to the Nome River has been gathered by the Division of Commercial Fisheries in the course of managing the river. This information is in annual management reports and Department files.

The Division of Subsistence administered a survey to Nome River Subsistence permit holders in 1980 which showed marked differences among fishers holding subsistence permits. One distinguishing factor was length of residency in northwest Alaska. Short-term residents (5 years or less) comprised 32 percent of the permit holders in 1980, while long-term residents comprised 68 percent. Long-term residents show a greater dependence on the fishery, use traditional methods of processing, pass on skills and activities from generation to generation, and participate in a wide range of other subsistence activities (see Magdanz 1981:i).

Two recent studies include information not specific to the Nome River, but germane to the inquiry. These studies examined internal controls of subsistence systems. Wolfe and Behnke (1982) described physical and economic controls; Nelson (1982) described intellectual and spiritual controls.

METHODOLOGY

The principal method was formal and informal interviews. Questions above in the "Purpose and Objectives" section guided these interviews. Researchers observed and participated in actual fishing operations. In late July and in August, researchers set a gill net of their own to better learn the river environment and to test fishers' reaction to encroachment. Cases of conflict between user groups and within user groups were documented when observed or when told to researchers by fishers. Fishing effort was mapped when observed, on a daily basis. A

survey was administered to sport fishers (see Appendix 1).

Limitations on the Study

The principal limitation was time. Field work continued for only one season (June 28 to September 15, 1983). Field work was interrupted repeatedly by other demands on researchers' time. Ideally, the fishery could have been observed through several seasons. The character of the fishery changes from summer to summer, depending on the strength of the different salmon runs. Every other year, the pink salmon overwhelm the chum salmon. In 1980, for example, 170,000 pink salmon filled the river; the approximately 8,000 chum were scarcely apparent. In 1983, approximately 9,000 pink salmon escaped to spawn, along with less than 200 chum salmon. Different fishing strategies are necessary under different conditions. In addition, weather and the local economy may influence participation. Nonetheless, the study was limited to one season because the Norton Sound Fish and Game Advisory Committee needed information to make management recommendations.

A portion of the analysis depends on subsistence permits returned by fishers each year. The permits include information on gear used, number of salmon caught (by species) and dates of harvest (in some years). Not all people who receive permits return them after the season. Fishing by those people cannot be recorded or considered in analysis. Permits are issued to individuals, although regulations state that one permit will be issued per family. In some families, the same

individual obtains permits each year; in other families different individuals obtain permits each year. This makes it difficult to track family fishing behavior, and distorts some data on fishing participation in the discussion of fishing groups (Chapter 3). To cite an example, a man who has fished on the Nome River for several decades appears in the permit record only once, because his wife typically applies for the permit. This limitaion is minimized by researchers' personal knowledge of the relatively small number of fishing families.

The researchers were hampered by their affiliation with Fish and Game. Some fishers were suspicious of the researchers' intentions and cautious about cooperating. The affiliation may have influenced answers to questions, since Fish and Game's "position" on management is fairly well known. To minimize this problem, two researchers were employed. One was a non-Native from Nome; one was an Inupiat from a local village. The two field workers interviewed many of the same subjects independently, compared notes, and noted contradictions. Several key informants were interviewed in considerable depth many times to overcome skepticism or suspicion about the researchers' intent.

The Sample

The sample analyzed statistically through permit records approaches 100 per cent, limited only in cases of people who failed to return permits. The sample for the field study was small -- about 10 per cent

of each of the three fishing groups. Researchers concentrated in depth on a few key informants, individuals heavily involved in the fishery. From information gathered in previous studies and observations during the initial stages of the study, researchers identified typical individuals among the commercial and subsistence fishers, based on:

(1) residency typical of the group as a whole,

(2) processing typical of the group as a whole,

(3) distribution of the catch typical of the group as a whole, and

(4) average and continuous participation in the fishery.

With their permission, researchers interviewed these individuals and members of their fishing operation, accompanied some of them on their fishing trips, and helped them process their catch.

Because it was difficult to identify sport fishers, midway through the study a survey was conducted. A random sample of sport fishers was contacted while they fished along the river.

Procedures

In late June, researchers secured permission from the owner of an allotment near the mouth of the Nome River to set up a tent frame on his land. A camp -- complete with a wall tent, camp stove, wood stove, desk, cot and a skiff with an outboard motor -- was open until mid September. Researchers spent part or all of each day at this camp during open fishing periods throughout the summer. On occasion, the principal researcher spent the night in the camp, and arose early in the

morning to observe and participate in fishing activities.

The sport fish survey was administered every fifth day from August 3 through September 2, 1983. Thus, seven four-hour surveys were attempted, one on each day of the week. Twice each day, researchers walked along the river contacting as many sport fishers as possible in two hours. The two-hour sessions were conducted in the morning and afternoon, or morning and evening, or afternoon and evening, in an attempt to contact a cross section of sport fishers each day. The survey period coincided with the run of coho salmon, which has been subject to increasing pressure from sport fishers.

The permit data from 1972 through 1983 (except for 1974 data which are missing) were examined through SPSS. Researchers conducted frequency and condescriptive runs to determine how many people fished each year, how many salmon of each species were caught, which gear was used, etc. Crosstab and scattergram helped identify relationships among variables.

Data Analysis

Because a major research goal was to describe fishing behavior and primary methods were interviews and observations, the researchers' task consisted in large measure of organizing information in a useful fashion.

With the sport fish survey, results were tabulated by hand because the number of respondents was relatively low (n=31). With the subsistence permit data, results were tabulated by computer because the number of cases was relatively high (n=539). Data from 11 years of

subsistence fishing permits were collected, coded for entry into a computer file, and examined with the Statistical Package for the Social Sciences (SPSS). These data included the name of the fisher, the year the permit was issued, the gear used, and the number of salmon of each species harvested. The goal in the latter analysis was to learn how many salmon of which species were being caught by which fishers using what gear. Researchers looked for changes or trends. This analysis provided some unanticipated insights into the development of the subsistence fishery, such as the finding that actual fishing effort has been relatively stable over the past decade. It had been believed effort was increasing because permits were increasing in number, but many of the permits from recent years were not being fished.

Information from the interviews, observations, participation, mapping, survey, and permit analysis are presented in the following chapters. Chapter 2 describes the river itself, summarizes the history of human use, and describes modern settelment patterns. Chapter 3 describes the fishing groups -- commercial, subsistence, and sport. Who is in each group, how do they fish, where do they fish, what do they catch, and how much? The chapter concludes with a chronological summary of regulations affecting each group. Chapter 4 reports on salmon abundance observed by the Department and by fishers themselves. It includes fishers' own theories and explanations of salmon reproduction and abundance. Some of these differ from department assumptions. Chapter 5 examines con rols on fishing behavior, other than the environment and the regulatory system. Researchers discovered, among other controls, a de facto limited entry system operating among Eskimo

subsistence fishers. Chapter 6 summarizes the findings and discusses their implications for management.

CHAPTER 2

THE NOME RIVER

The headwaters of the Nome River are in the Kigluaik Mountains, about 30 miles north of Nome. The river flows south through a narrow valley 3 to 4 miles across with steep, rocky slopes rising 1,000 feet or more above the valley floor. At its origin, the river is 750 feet above sea level. But it falls rapidly, tumbling 150 feet in the first mile and 500 feet in the first 10 miles. Approximately 15 miles below its origin, the river begins to meander and the valley broadens. For the remaining 26 miles to its mouth on Norton Sound, the Nome River falls more gradually, about 10 feet per mile. From its source to its mouth, the river extends approximately 41 miles, and drains more than 150 square miles.

Under normal summer conditions, the river is navigable by outboard motor from its mouth to a riffle just above Laurada Creek, only six miles upstream. Jet boats can travel further, but above 29 miles there is no longer enough water to float a canoe. The river is often shallow; pools are no more than ten feet deep. Of the numerous small tributaries, Osborn Creek (13 miles above the mouth) is the largest; it and Dexter Creek (17 miles) are the most well-known locally.

By Alaska standards, the Nome River is not large. But compared with nearby streams, it is of average size and length (see Fig. 1). The Sinuk River (30 miles west) is somewhat longer. Between the Sinuk and the Nome, the Cripple, Penny and Snake Rivers are smaller. Ten miles to the east is the Eldorado River, and 25 miles east are the Bonanza and

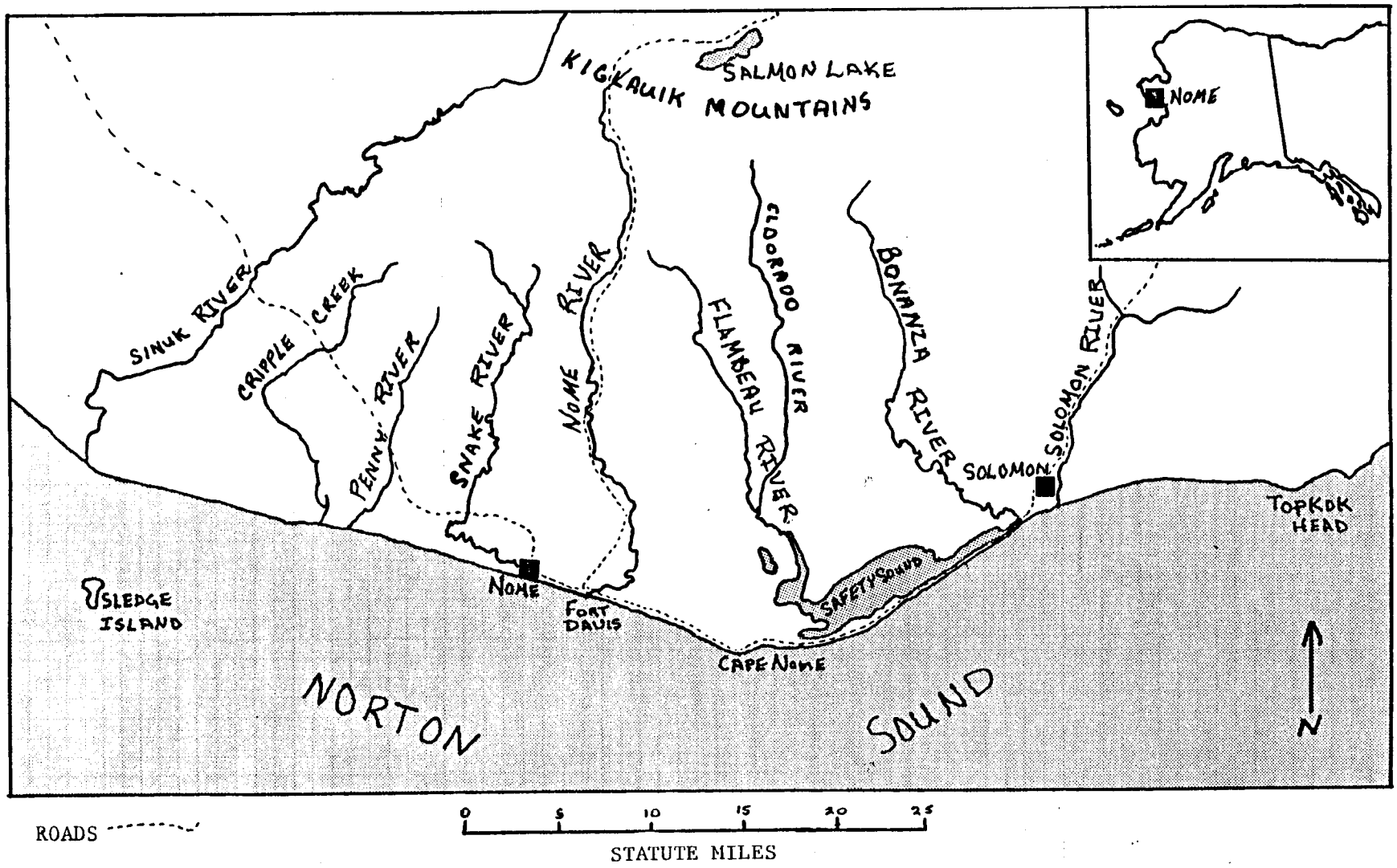


Figure 1. The Southern Seward Peninsula. Nome residents fish for salmon in the ocean and in all the rivers above. The "Nome Subdistrict" includes all ocean waters from Penny River mouth to the tip of Topkok Head.

the Solomon river. None of these rivers is larger than the Nome river. Of these rivers only the Snake (which runs through town) is closer to Nome. The Nome River is easily accessible by road at its mouth, at Osborn Creek, and at Dexter Creek. The Beam Road crosses the river 21 miles upstream, then parallels the river for the rest of its course. Although roads do cross or parallel other rivers for short distances, no other river on the Seward Peninsula is so easily accessible by so many people as the Nome River.

RESOURCES

Despite its small size, the Nome River is a productive river. Biologists have counted 17 fish species, including arctic char, grayling, least cisco, round whitefish, slimy sculpin, ninespine stickleback, chum salmon, pink salmon, king salmon, coho salmon and Bering cisco (ADF&G Division of Sport Fish 1979:107, 109). The river provides spawning habitat for the four salmon species (ADF&G Division of Habitat 1983:NOME B1) for approximately the first 30 miles. The best spawning beds are found below the "13 Mile Bridge" on the Beam Road (21 miles above the mouth).

Salmon are the most abundant fish. More than 325,000 pink (humpy) salmon were counted in the river on July 17, 1982. Pink salmon escapements of 20,000 to 30,000 fish are not uncommon. Chum (dog) salmon escapement in 6 of the last 10 years has been greater than 2,000 fish. But in 1982 and 1983, observed chum salmon escapement was down sharply. While chum have been declining, coho (silver) salmon have been

increasing. The first recorded coho escapement, in 1980, was 1,145 fish. In 1983, 365 coho were seen. The king salmon run is marginal; observed escapement in 1983 was only two fish. Yet a few kings return each year. Arctic char (trout) overwinter in the Nome River. Most move to the ocean to feed during and after break up, and return in late July and August. Char are heavy feeders on salmon smolt and salmon eggs. Grayling are also present, and also feed heavily on salmon eggs during spawning. Although they can be large, Nome River char and grayling are not the trophy fish found in the Sinuk, Pilgrim or Niukluk rivers.

In addition to fish, waterfowl frequent the Nome River watershed in spring and summer. Ducklings paddling furiously after their hen are a common sight for boaters. Willow thickets along the shores provide browse and cover for moose and smaller game like rabbits and ptarmigan. Three moose were seen together in late July 1983 just four miles above the mouth. The river's plume into Norton Sound attracts food for different marine animals; a sea lion and a grey whale were observed feeding just off the mouth in 1983. Three species of seals -- bearded, ringed, and spotted -- are found near shore, especially in spring and fall. King crab are available offshore in winter and spring.

HISTORY OF HUMAN USE

Naturalist Edward W. Nelson, collecting artifacts for the United States National Museum (Smithsonian), was the first to record contact with people on or near the Nome River.

> "About the middle of March, 1880, between Cape Nome and Sledge Island, I found a village occupied by a mixture of people from King Island in Bering Strait, Sledge Island, and others from different parts of Kaviak [Seward] Peninsula. These people had united there and were living peacably together in order to fish for crabs and tomcods and to hunt for seals as the supply of food had become exhausted at their homes." (Nelson 1899:24-25).

Nelson conducted a census of the region and gave it to Ivan Petroff, who later used it in his "Population and Resources of Alaska" (Petroff 1880:59). On Nelson's map of the region (Nelson 1899:following page 22) the name "Uinakhtagewik" appears in the approximate location of the Nome River mouth. The name "Chitnashuak" appears in the approximate location of the Snake River mouth. Sixty four years later, anthropologist Dorothy Jean Ray identified these names:

> Uinakhtaguik. This is the name of the Nome River as well as a summer fishing camp. It might have been the winter settlement of a family or two. Petroff reported the population of "Oo-innakhtagovik" in the 1880 census as 10 (1884:11). Today a dozen or more families have summer fishing camps there. Some are year-round residents.
>
> Sitnasuak. "Chitnashuak," a village on the Snake River, known by the same name, had a population of 20 according to the 1880 census (ibid.) Nome now staddles the river. The consensus today is that the Nome River long ago was a better salmon fishing stream than the Snake. (Ray 1964:73)

Human use of the Nome River probably extends back hundreds if not thousands of years. Archeologists have not examined any sites along the river. But Cape Nome, 10 miles to the east, has been partially excavated. Archeologist John Bockstoce found the site had been occupied for about four thousand years (Bockstoce 1979:88). He identified "a Cape Nome phase, from the fifteenth through the nineteenth centuries A.D., that utilized sea mammals, caribou and fish" (Bockstoce 1979:89). He wrote, "That intensive fishing was carried out by the early Norton

people is implied by the quantity of net sinkers found in their sites," dated before A.D.1 (Bockstoce 1979:89).

There is little record of what effect the arrival of whalers and traders after 1849 may have had on people who used the Nome River. Perhaps the lack of food noted by Nelson, above, was caused partly by the commercial whaling and spurred movement of Bering Strait people to coastal rivers further east, like the Nome. The record is incomplete.

The modern record begins in 1898, with the discovery of gold on Anvil Creek, a tributary of the Snake River. Miners began working the Nome River valley as early as 1899. They found the most gold not on the river itself, but along the tributaries. Dexter Creek alone produced approximately $300,000 in 1900, the third highest producing creek on the Seward Peninsula (Collier 1908:28). By 1908, eleven different tributaries had been mined (Collier 1908:170-182). In 1918, two dredges were operating, one on Dexter Creek and another on Osborn Creek (Martin 1918:187). The Nome River valley contained "some of the richest diggings on the peninsula" (Collier 1908:171).

As important as it was for gold, the Nome River was equally important as a source of water. Experienced miners soon abandoned pick and shovel in favor of hydraulic operation; for that a dependable water supply was essential. W.L. Leland and J.M. Davidson built the first ditch, the Miocene, in 1901 (Collier 1908:29). It was extended to the headwaters of the Nome River in 1903 and delivered water to mines on Dexter, Glacier and Anvil creeks. The Campion, the Seward and the Pioneer Nome River ditches all diverted water from the Nome River to various mines (Brooks 1909:382).

The disruption mining caused to Natives must have been tremendous. In 1901 miner L.H. French wrote, "The villages all over this section of Alaska have been decimated. Scores of deaths have occurred at St. Michael, Golovin Bay, Nome River..." (French 1983:31). To provide some semblance of law and order in the new mining district, the U.S. Army dispatched troops from St. Michael in 1899. They camped in town that year, then "in April 1900 a military post named Fort Davis was established down the coast a little more than three miles east of town" at the mouth of the Nome River (McLain 1969:2). The army established a "reservation" at Fort Davis, "where as many sick natives as can be found are being 'herded' and provided for" (French 1983:34). The army occupied the fort for the next 20 years. Historical photographs show numerous substantial wooden buildings which are no longer apparent today. An elder resident of Nome recalls soldiers fishing with large dip nets during World War I, taking mostly pink salmon.

The army abandoned Fort Davis in 1921 (McBirney 1983). The land at the mouth of the river was converted into a reindeer corral sometime in the 1930s. Current residents have identified a deteriorating wooden building at Fort Davis as a reindeer slaughterhouse. An undated photograph in the Carrie McLain Museum in Nome shows the corral and a small number of reindeer. It may have been used into the late 1950s. Today reindeer still graze in the Nome River valley, but the corral is 20 miles upriver. Mining declined over the years; World War II effectively shut it down because machinery and parts were no longer available. The fixed price for gold made further development unprofitable.

There is apparently no written record of salmon escapement or salmon fishing on the Nome River until the 1960s. There is no way to identify with certainty who fished where and when. The son of one of Nome's early miners remembers, "You were liable to find tents most anywhere along the river. The camps were originally there in the twenties, possibly even earlier. Undoubtedly, the miners used the river for subsistence, for themselves and for the camps" (Ullrich B. pers com. 1984). He remembers one local mining family in particular that fished at Osborn almost every summer during the thirties. "I always remember it as a place to sport fish," he said.

A number of people fished near the mouth immediately before and after World War II. There was,

> "an old fisherman who used to fish at Fort Davis. He was kind of a commercial fisherman. After World War II, a Greek man fished there for years, just west of the mouth. His camp was wiped out in the storm of '74. But he had died some years before. We bought salmon from him in '46, '47, along there. I know he was there before because he had that camp, two or three cabins. There were another one or two who sold fish in town." (Ullrich 1984)

A Native man also had a cabin on the west side of the river mouth before World War II. "He sold a few, but more he just fished for food. He lived there year round" (Ullrich 1984). Probably there were others who lived or fished along the river; it is impossible to know today.

By 1950, old Fort Davis was nearly gone, its wooden buildings scavenged for building materials and firewood. Hulks of abandoned dredges slowly rotted and collasped on sand bars. The soldiers and most of the miners were gone from the Nome River. But the fishing tradition was to reemerge and grow.

MODERN SETTLEMENT PATTERNS

Today, the Nome River is used primarily for hunting, fishing, gathering and recreation. Permanent seasonal settlements have developed near Dexter Creek, near Osborn Creek and at Fort Davis (see Fig. 2). A new settlement may be developing near the 13-Mile Bridge as a result of recent land sales. A few people live in the valley year round, but most people use their cabins in spring, summer and fall. The road and modern vehicles make it easy for people to live in Nome and commute to the river.

The predominantly Inupiat fishing community on the site of the old Fort Davis is the largest of the settlements, with more than 40 cabins and tent frames. Most residents claimed their camp under the Native allotment program. Current residents date their occupancy to the late 1940s and 1950s. Two brothers and a cousin were among the first to move (from Wales) to old Fort Davis. More relatives from Wales came in the early 1950s; one family arrived in the 1960s. Several families from Shishmaref arrived in early and mid-1950s; the men went to work for a local mining company while the women set up fish camps on the Nome River. In the 1950s and 1960s, several Nome people -- Eskimo and non-Eskimo -- fished at Fort Davis. But a storm in 1974 wiped out almost everyone's camp. When the camps were rebuilt, the Nome families (who were on the west bank of the river) did not rebuild. That same storm also destroyed camps at Safety Sound. Some of the Safety Sound families moved their fishing to Nome River. A few of them have remained to the present day. Likewise, in 1972 when the Board of Fisheries and

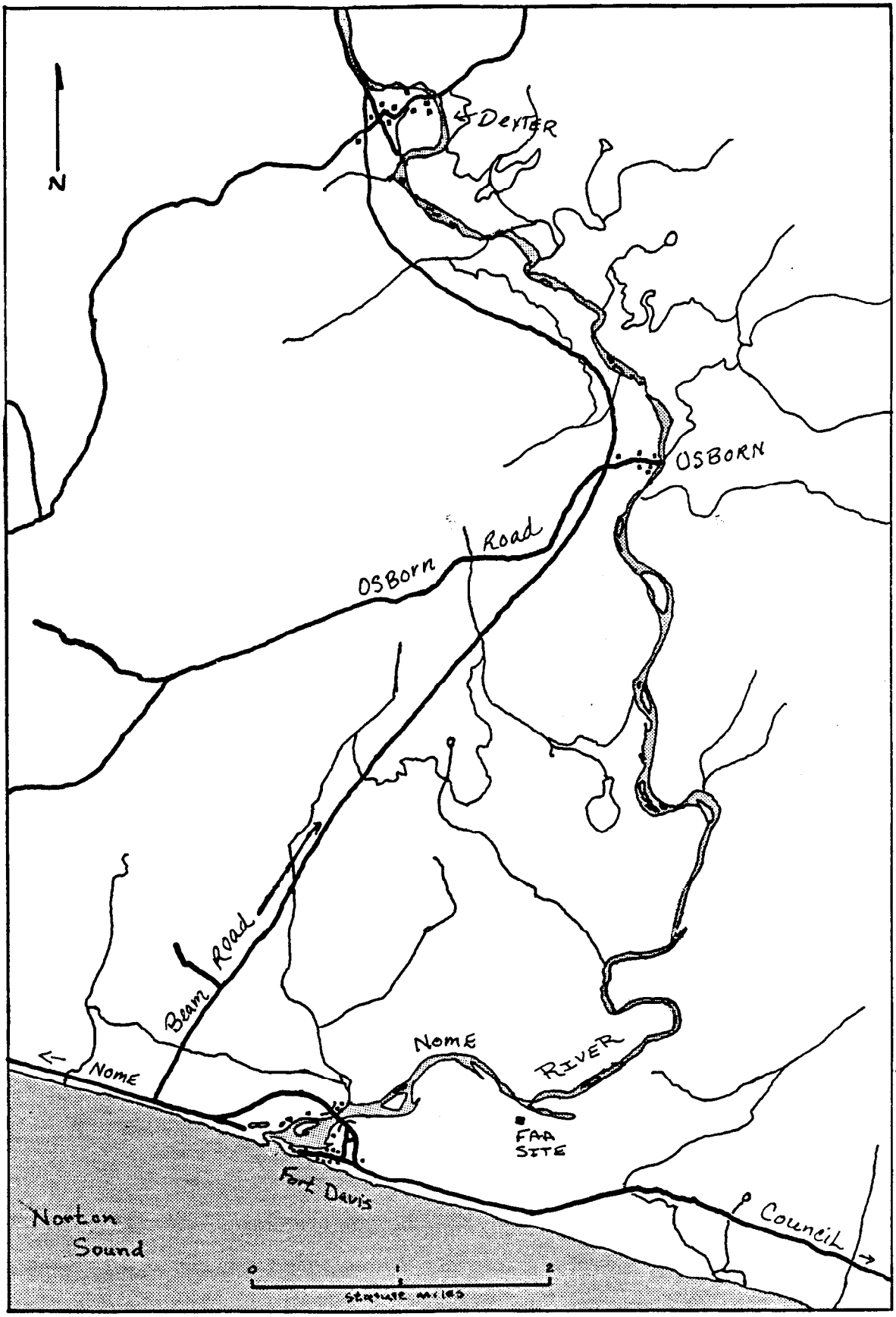


Figure 2. Modern Settlement Patterns on the Nome River.

Game closed salmon fishing at Salmon Lake between July 15 and August 31 each year, several families moved their fishing to the Nome River. At least two of these families still fish here.

Fort Davis today is a cluster of plywood cabins of one or two rooms, heated with small wood stoves. The cabins are surrounded by tent frames, caches and fish racks. Lots are small and houses are close together. Most of the cabins are built on a small peninsula that ends in a sand spit which forms the mouth of the river and contains a small lagoon. Three or four new cabins were being built during the summer of 1983; all were additions to existing camps.

Osborn is the next community upriver, and it is smaller than Fort Davis. About six families have cabins here. In contrast to Fort Davis, the families are both Native and non-Native. At least one family dates its camp back to 1939; others arrived after World War II. A beached dredge lies just across from the community, near the mouth of Osborn Creek. The only permanent building prior to World War II was a boy scout camp. The others had tents. Osborn houses are generally larger and more substantial than the houses at Fort Davis. The lots are larger, and well separated by willow shrubs. Whereas virtually every camp at Fort Davis is surrounded by fishing racks and fishing gear, some houses at Osborn show no evidence of these things. One Osborn resident characterized his camp there as a summer cottage, a recreational camp. But other residents clearly use their camps for fishing, and have for many years.

Dexter has existed for considerably longer than Osborn. In the 1920s, it was a collection of tents, semi-permanent buildings, and permanent buildings. A roadhouse is still standing. It was in

operation until World War II, although its heyday came during the gold rush. Once the road from Nome reached Dexter, there was no point in having a roadhouse. A young couple was recently granted a liquor license and are operating a new "Dexter Roadhouse" today. Several families live at Dexter year round, and more come out to stay in the summer. The Nome River, however, is closed to most net fishing above Osborn. So people who want to fish with seines or small mesh gill nets must travel downriver. Like Osborn, Dexter springs from a mining tradition.

The newest settlement extends from Dexter to near the 13-mile bridge. Local developers have been selling lots; a realtor reports that about 20 lots have sold of 48 available. Three cabins were built during 1983; one man completed a $100,000 home in the area. Materials for three or four more cabins are expected to arrive on the barge in 1984. The lots are larger than those in the other settlements, so development will be more spread out. No previous settlement has existed here. The owners of the new lots include people who have no other camps on the Nome River. Whether or not they will fish (several are dog mushers) remains to be seen. If they do, however, they will have to go down river at least to Osborn, unless they fish with large-mesh nets (the only legal gear).

CHAPTER 3

THE FISHING GROUPS

Everybody fishes in the Nome River: tourists and locals, Natives and non-Natives, subsistence families and individual businessmen, long-term fishers and one-day visitors. Among the fishers encountered during 1983 were a helicopter pilot from Aberdeen, Scotland, an Eskimo confused by fishing announcements read in English, an airline agent from Anchorage, a tourist from Wyoming, a dog musher, and dozens of people from Nome. Fort Davis campers gossiped when a well-known businessman hired a scuba diver to search the bottom for his $10,000 diamond-and-ruby-encrusted gold watch, dropped overboard while picking his "subsistence" net. (He didn't find it.) The Nome River is a busy place. Its easy access, productivity, and visibility have made it the river of choice.

Fish and Game regulations in the Norton Sound District recognize three uses of fisheries: commercial, subsistence and sport. These uses are not mutually exclusive (see Fig. 3). Some people use the fishery under all three sets of regulations. Different gear restrictions, fishing locations, fishing times, harvest limits, and entry qualifications apply to the different uses.

> "Commercial" fishers fish with nets in the ocean just offshore and sell most or all of their catch. Fishing begins when opened by emergency order on or after June 8 and ends August 31, with two 48-hour periods per week. Openings may be changed through Emergency Orders. The 10-20 commercial fishers who fish the Nome subdistrict have a harvest guideline of 5,000 to 15,000 chum salmon. Harvests are reported on each delivery. Only people who

own limited entry permits (worth about $10,000) may fish under commercial regulations and sell their salmon.

"Subsistence" fishers fish with nets in the river or ocean. Between June 15 and August 31, fishing schedules are the same as for commercial fishers. Before and after those dates, fishing is open seven days a week. Nome River fishers are limited to 250 salmon of any species per family. Limits in other rivers vary from 100 to 200 salmon; there is no limit on ocean-caught salmon. Harvests must be reported at the end of the season. Only Alaska residents (one-year) may obtain subsistence permits (free from Fish and Game). Salmon may not be sold, but can be bartered or traded.

"Sport" fishers fish with rods and reels in the river and in the ocean. Fishing is open year round, seven days a week. Individual fishers are limited to 15 salmon per day, with no possession or size limits. No harvest reports are required. Anyone in the world may obtain an Alaska sport fishing license (25¢ to $36.00, depending on income and residency). Salmon may not be sold.

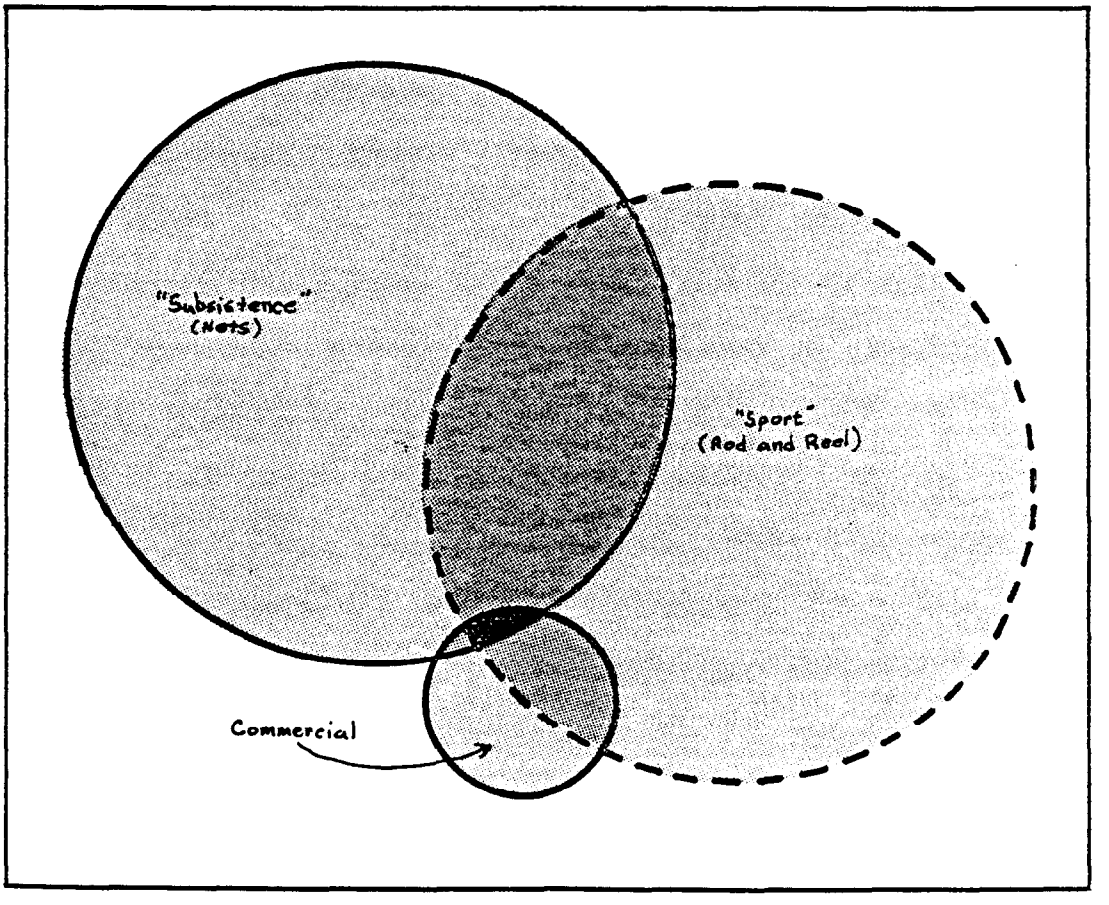


Figure 3. Fishing Uses Defined by Regulation. Fish and Game Regulations recognize three uses of fisheries in the Norton Sound District: commercial, subsistence and sport. One person, given the appropriate licenses and permits, may fish under two or all three sets of regulations.

Some people in Nome think that "subsistence" permits are granted only to select individuals, based on race (Native only), on level of income, or on past use. This is not the case; any Alaska resident can apply for a subsistence permit to fish in the Nome River. Of the three regulatory schemes above, the most restrictive applies to commercial fishers; the least restrictive applies to sport fishers. These regulations were developed one-by-one over 25 years of state management. They were modeled on similar regulations in other parts of the state. They are based primarily on the department's needs for control over harvests and information about harvests.

Commercial fishing is not allowed in the Nome River. But commercial fishing is allowed in the ocean 300 yards beyond the mouth. In 1978, the Department conducted a study to see how many salmon caught by commercial fishers were headed for the Nome River. Three gill nets were set at intervals along 15 miles of coast east of the Nome River mouth, one at Fort Davis, one at Six-Mile Beach, and one at Hastings Creek. The 423 chum salmon and 496 pink salmon were tagged between June 20 and July 16 (Schaefer 1978:6). When caught, 64 percent of the chum salmon were headed east (away from the Nome River); 36 percent were headed west. Seventy five tags were recovered from chum salmon during the fisheries and along the streams in the area. Approximately one-third (22 salmon) were caught by commercial fishers in the Nome subdistrict, approximately one-third (23) were recovered on the Nome River, and the remaining third came from other areas (Schaefer 1978:12). Five chum salmon tagged near the Nome River were recovered in Kotzebue Sound, three in the Fish River and three in Port Clarence. Schaefer wrote, "The tag return data indicate a definite interception of salmon

migrating to areas outside of the Nome subdistrict 1 of the Norton Sound. The magnitude of the contribution to the local fishery by these migrating stocks is not known" (Schaefer 1978:15).

In sum, chum salmon taken commercially in the Nome subdistrict are bound for a variety of rivers. Reducing commercial harvests by 5,000 fish, for example, would not cause an increase in Nome River escapement of 5,000 fish. However, as many as one third of those fish may be bound for the Nome River. If Nome River salmon are to be managed, commercial fishers' impact must be considered, along with subsistence fishers' and sport fishers' impacts.

Each of these three fishing groups is discussed below: who are they, how do they fish, where do they fish, and what have they caught in recent years? At the end of this section is a review of the regulations that now affect the Nome River.

THE COMMERCIAL FISHERS

Commercial fishing probably began with the gold rush, but who fished and how much they caught are unknown. After World War II, three or four individuals apparently sold fish locally, notably John Kost. He had a camp on the west bank of the river (Ullrich B., pers. com., 1984; Oman L., pers. com. 1984). Commercial fishing was clearly a cottage industry. "In those days you could sell fish to anyone," said Lela Oman. "My boy used to deliver papers. He used to get orders and come down to the river in the afternoon. I'd get salmon for him. Then he'd

deliver them on his bicycle." Adequate transportation and processing facilities were not available in Nome; the market for salmon was entirely local.

In the 1960s, when commercial fishing was growing in other Norton Sound communities, commercial fishing in the Nome subdistrict was a very small proposition. This paragraph from a 1966 annual management report could have described virtually any of the years up until 1974:

> As in previous years the commercial salmon catches in sub-district Z-1 (Nome) continue to be small. In 1966, a total of 1 king, 32 cohos, 1 pink and 581 chums were harvested... Fishing commenced on June 20 and continued to August 22. The majority of the chums were caught in the first two weeks of the season. Due to sporadic fishing effort throughout the season, the peak of the run is difficult to determine. Salmon taken in this sub-district were marketed as fresh or frozen salmon in the Nome stores. (ADF&G Division of Commercial Fisheries 1966:62)

In 1966, 12 licensed commercial fishers fished from 8 vessels. Because of the small effort and limited gear, the Nome subdistrict was open 7 days a week in the 1960s (ADF&G Division of Commercial Fisheries 1964:52).

The "modern" era of commercial fishing in the Nome subdistrict began in 1974. "Probably I'm to blame for the commercial fishing in the area," C.J. Phillips told the Norton Sound Advisory Committee (Phillips, C.J., pers. com., 1984). "When I first started to buy fish down in the Golovin and the Moses Point areas, there was only one other person who had bought fish commercially, other than possibly somebody for a store." Phillips flew fresh salmon on ice from Nome to markets in Anchorage and beyond. It has never been a big proposition. "The commercial fishing we do in this area is minute compared to what they do elsewhere. Ten thousand salmon, which somebody has proposed we take, is about what a

boat will take in one day someplace else" (Phillips, C.J., pers. com., 1984).

Hard on the heels of Phillips' market development came the commercial fisheries limited entry system. Twenty five fishers fished in 1974; 24 in 1975, and 21 in 1976. Not all these fishers qualified when limited entry was put into effect, so effort declined again to 14 in 1977. Since 1977 an average of 16 commerical fishers have fished in the Nome subdistrict each year.

The individuals who hold the limited entry permits are a diverse group. They range from elderly unemployed Inupiat to government workers. No one makes enough money commercial fishing to consider it a primary business. Most support themselves in other ways, by subsistence hunting, fishing, and trapping, or by wage employment. The commercial fishery is short enough (June 16 to July 1 in 1983) that some fishers fish during annual leave or vacation from full-time jobs. Of the current fishers, all but four earned limited entry permits in 1976. Three purchased their permits; one in 1978, one in 1980, and one in 1981 (Compton 1983). One obtained a permit by transfer from a spouse in 1983. More turnover of permits is anticipated. Three of the original permit holders are well past retirement age and fished little if at all in 1983.

With fishing returns so small, it doesn't pay to invest in expensive equipment. The typical fisher uses a small open skiff with an outboard motor. He may use a small camp on shore for storage of gear and motors. No fisher may set more than 100 fathoms of gill net. Drifting and seining are not allowed in the commercial fishery.

The Nome subdistrict extends from the mouth of the Penny River (10 miles west of Nome) to the tip of Topkok Head (50 miles east of Nome). But most fishing is concentrated around Safety Sound. Phillips estimated that 95-98 percent of his purchases in 1983 were Safety Sound fish. One fisher fishes regularly from Fort Davis and sells fish to other buyers, including a local fish market.

Prior to 1974, chum salmon commercial harvests in the Nome Subdistrict ranged from 102 (1968) to 2,643 (in 1972). The ten-year average chum salmon harvest from 1964 to 1973 was 1,188 fish. After the market developed in 1974, the harvest of chum salmon increased almost ten-fold to 10,431 fish (see Fig. 4). Since 1974, chum salmon harvests have never been less than 5,391 (1979) and set a record high of 18,666 (1981). The ten-year average chum salmon harvest from 1974 to 1983 was 10,375 fish. (ADF&G 1983 Division of Commercial Fisheries in press)

Pink salmon harvests prior to 1974 were never more than 330 fish. Harvests after 1974 ranged from 65 (1977) to 22,869 (1978). The problem with pink salmon is, and always has been, lack of a market. King, sockeye and coho salmon are minor features of the fishery in the Nome Subdistrict. The coho run, though, is increasing and may be more important in coming years.

In 1983, Nome subdistrict commercial fishermen harvested 11,691 chum, 308 pink, 261 coho and 23 king salmon. The total value of the harvest was approximately $25,000. On the average, the nineteen fishermen earned about $1,300.

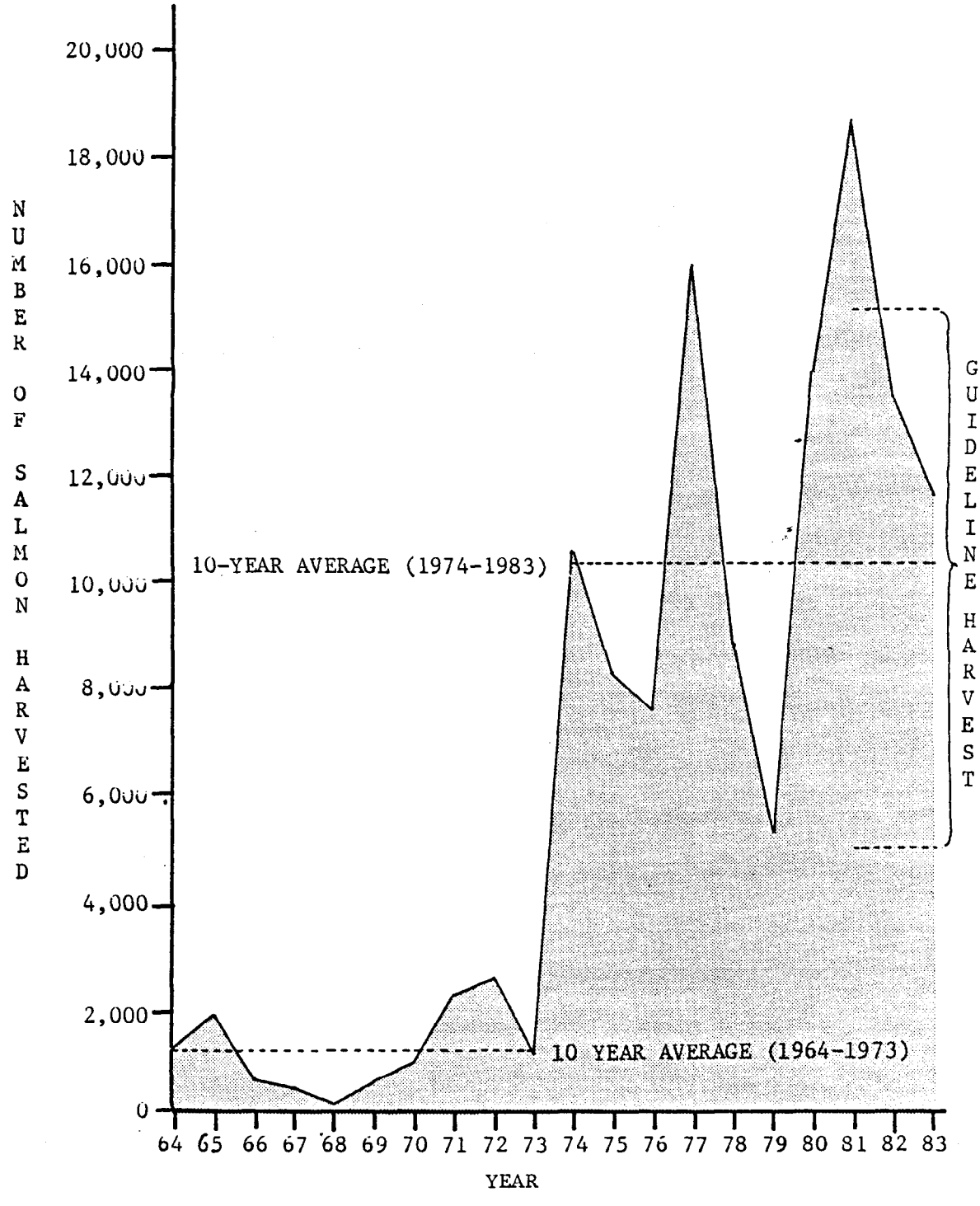


Figure 4. Commercial Harvests of Chum Salmon in the Nome Subdistrict from 1964 through 1983. This figure shows the number of chum salmon taken by commercial fishers in the ocean between Penny River mouth and the tip of Topkok Head. The introduction of new markets in 1974 resulted in a ten-fold increase in average harvests. The guideline harvest range of 5,000 to 15,000 chum salmon was adopted by the Board of Fisheries in 1980. Only a portion of the chum salmon taken in the commercial fishery are bound for the Nome River.

THE SUBSISTENCE FISHERS

Of the three fishing groups on the Nome River, the subsistence fishers claim the longest history of use. Inupiat have fished with nets in the area -- and almost certainly in the Nome River -- for thousands of years. Some of the people fishing on the Nome River today began fishing there in the 1930s, 1940s and 1950s. Primarily based at Fort Davis and Osborn, these fishing families were joined over the years by Eskimos moving to Nome from the villages and by non-natives moving to Nome from Fairbanks, Anchorage, and Outside. The half-dozen or more fishing families on the river after World War II were joined by the Wales immigrants in 1950 or 1951, by Shishmaref immigrants in 1954 or 1955, by Salmon Lake "refugees" in 1972, and by Safety Sound "refugees" in 1975. The Alaska Native Claims Settlement Act (ANCSA) corporations and state government provided many new employment opportunities in the late 1970s and early 1980s. People attracted to Nome by work were also attracted to the Nome River.

Permits have been required for net fishing on the Nome River since 1968. Seventeen permits were returned the first year. Permits issued between 1969 and 1971 are missing. From 1972 through 1983, an average of 49 permits have been returned each year by Nome River fishers (see Fig. 5). Not all people who have permits actually fish. On the average 35 of th. 49 permit holders per year (71 percent) actually fished. With very few exceptions everyone who holds a subsistence permit is a resident of Nome.

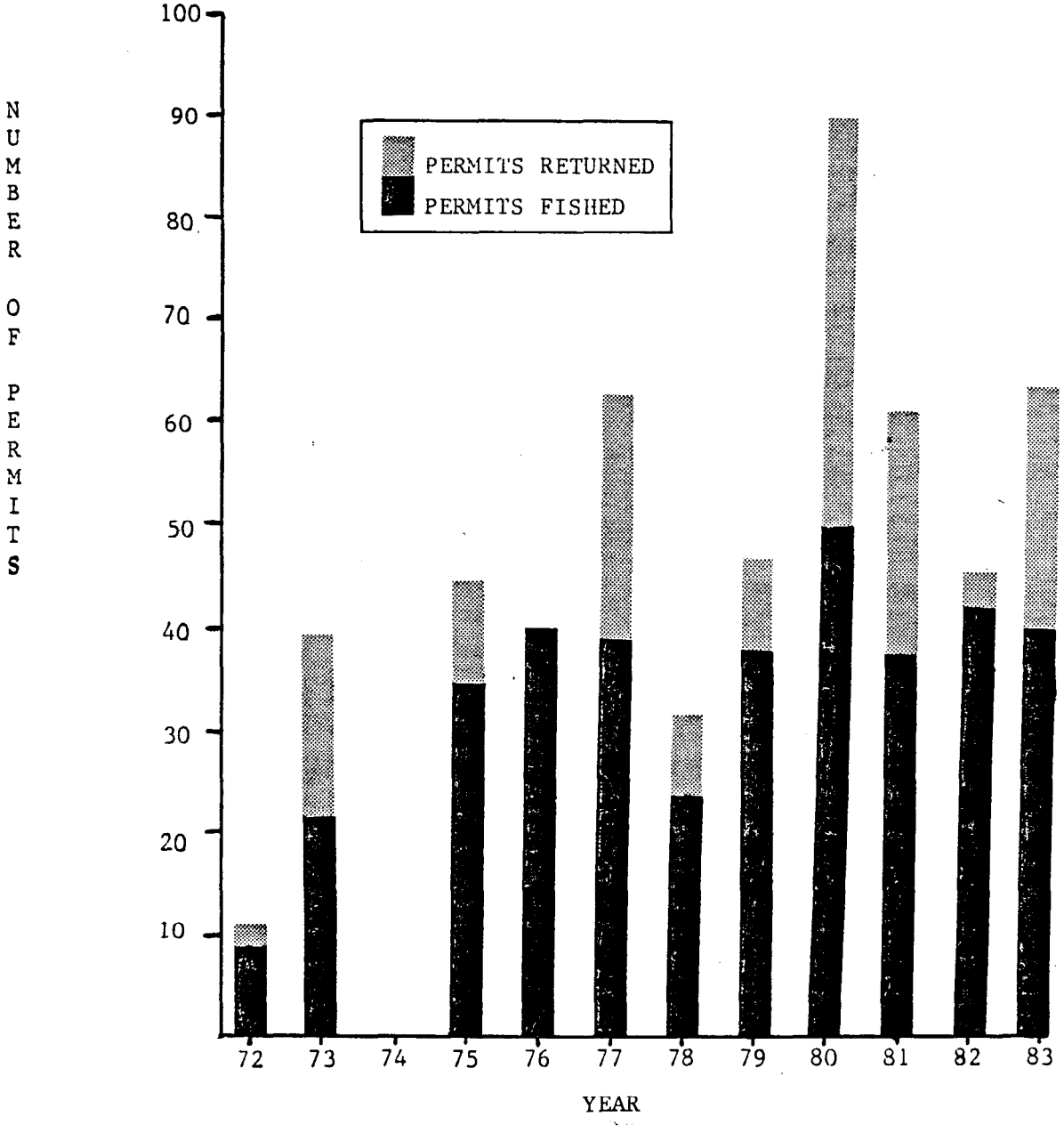


Figure 5. Subsistence Permits Returned by Nome River Fishers. Permits have been required for net fishing in the Nome River since 1968. Permit files from early years are incomplete, but since 1972 an average of 49 permits have been returned each year. An average of 35 permits report harvest; the remainder report no harvest or no effort. (In 1976, all permits returned reported harvests.) The number of permits actually fished is much more stable from year to year than the number of permits returned. (Permits from 1974 are missing.)

The number of permits returned varies year to year. Many people believe that more fishers are using the Nome River each year. Permit returns did increase from 47 to 91 in a single year (1979 to 1980). But only 50 of those 91 permit holders in 1980 actually fished. And by 1982, only 46 permits were returned. Analysis of permit data suggests that the number of people who actually fish the Nome River with subsistence permits has been relatively constant since 1975.

Yet there are new faces on the Nome River. Every year, long-term fishers make room for someone new with a seine or a gill net. The reason is turnover. There is a core group of fishing families -- most of them based at Fort Davis -- who have been fishing on the Nome River for years (see Fig. 6). Many grew up fishing and have been fishing all their lives. When permits issued between 1972 and 1983 are examined, these family names appear year after year. Of the 63 permit holders who returned Nome River permits in 1983, 25 were Fort Davis families and six were long-term Nome or Osborn families. On the other hand, 25 fishers in 1983 were apparently not from these families and had never received a permit to fish in the Nome River before.

This is not unusual; more than one third of the fishers in the Nome River in a given year are likely to be "transient." That is, they will fish on the Nome River for only one year. Then they "disappear" from the permit record, perhaps to fish in other rivers, perhaps to leave Nome, or perhaps to quit fishing altogether. A few of them are younger members of established fishing families taking over another member's permit (see limitations). But most are simply one-year fishers. Since 1972, 182 of the 539 permit holders have been "transient" fishers. Their presence in the fishery has ranged from only 9 percent of all

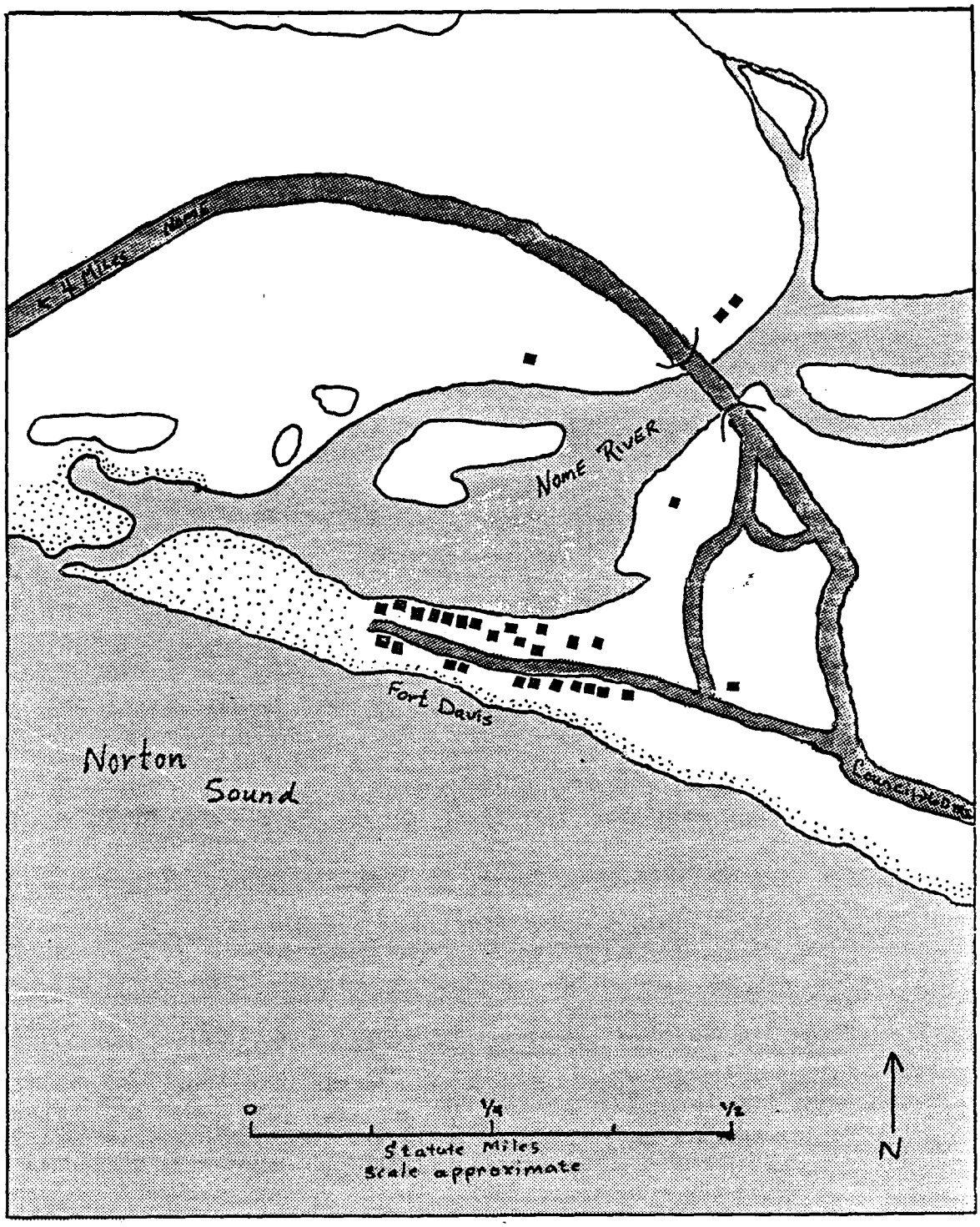


Figure 6. The Mouth of the Nome River and Fort Davis. Map shows the location of the fishing camps in the Fort Davis community. Not all structures are represented; black squares represent fishing camps. Of the 63 families that returned Nome River subsistence permits in 1983, 25 were based at Fort Davis. Sport fishers tend to congregate along the narrow channel at the mouth of the river (on the left, above) and on the bridge. The lagoon between the mouth and the bridge is used by subsistence fishers for both seine and gill net fishing. At least one commercial fisher sets in the ocean in front of Fort Davis.

fishers (in 1972) to 49 percent (in 1983). They appear to be increasing gradually. In the past six years, transient fishers have never been less than 30 per cent of all fishers in the Nome River.

The transient fishers are just as productive as the tenured fishers (see Table 1). The average one-year fisher takes 28 chum (21 is the average for all fishers), 12 coho (10 is average) and 94 pinks (112 is average). They are more likely than tenured fishers to have the largest individual catches of the season. Transient fishers have reported six of the top ten chum harvests on record (in 1975, 1978 and 1980). They have reported four of the top ten coho harvests (in 1981, 1982 and 1983). Transients are less likely than tenured fishers to harvest pinks.

A survey of Nome River fishers in 1980 showed subsistence fishers were a diverse group. Some had fished all their lives; others were fishing with nets for the first time. Some were involved in many subsistence activities; others in only a few. Some made less than $3,000 a year; others made more than $50,000 (Magdanz 1981:40). The single factor that most clearly separated this diverse group was residency in northwest Alaska. The report concluded:

> Long-term residents show much greater dependency on the fishery, use traditional methods of processing, pass on skills and activities from generation to generation, and participate in a wide range of other subsistence activities. Short-term residents do not display these characteristics to the degree long-term residents do, except for sharing, which is a common trait of both groups. To a certain extent, these two groups reflect sub communities extant in Nome. (Magdanz 1981:i)

Some short-term fishers in the 1981 report appear to be the same fishers described as transient in this report. A one-to-one correlation of the two study groups would involve considerable expense and computer time.

TABLE 1. AVERAGE NUMBER OF SALMON CAUGHT BY PERMIT HOLDERS WITH DIFFERENT LEVELS OF PARTICIPATION.

YEARS OF PARTICIPATION	PINKS	CHUMS	COHOS	KINGS
ONE n=118	93.7	28.1	12.0	0.39
TWO n=49	67.4	16.5	13.6	0.08
THREE n=46	121.0	15.9	5.0	0.04
FOUR n=55	108.8	15.5	10.0	0.31
FIVE n=29	111.8	13.4	10.3	0.07
SIX n=23	119.0	9.7	5.8	1.60
SEVEN n=27	118.3	36.1	9.1	0.04
EIGHT n=35	166.6	26.5	4.1	0.17
NINE n=27	184.3	23.6	21.2	0.07
TEN n=9	114.7	6.3	9.7	0.00
AVERAGE n=418	112.3	21.3	10.4	0.28

Table 1 compares the average annual harvests reported by transient (one-year) fishers with harvests reported by tenured fishers (two or more years participation). The comparison reveals that transient fishers report higher annual harvests of chum and coho salmon. Tenured fishers report higher harvests of pink salmon. The number of cases (n=) refers to the number of permits actually fished. Thus, there is one fisher who has returned Nome River permits for 10 years and reported harvests in 9 of those years (n=9).

More discussion of the differences and similarities between the short-and long-term fishers can be found in the 1981 report.

Seine nets are preferred by almost three out of four people who have reported fishing in the Nome River since 1972. The remainder reported using gill nets or simply "nets." There is a local perception that use of seine nets has been increasing in recent years. Permit data are somewhat ambigious because "nets" could mean either seine or gill. But the percentage of fishers using seines has always been greater than 50 percent (except in 1975, 44 percent). In the past five years it has varied between 64 percent and 82 percent. In 1983, 73.2 percent of the fishers reported using seines. "I never use a gill net," said one woman who has been fishing at Fort Davis since 1951. "You cannot use a gill net in the summer because the salmon see the net."

Seine fishers are slightly more likely to catch pinks than are gill net fishers. With 71 per cent of the fishers using seines over 11 years, 80 per cent of the pinks were caught by seiners. But only 65 per cent of the chums and 69 per cent of the cohos were caught by seiners. Seine netters generally fish in the lagoon between the bridge and the mouth of the Nome River, where the bottom is reasonably free of obstructions and relatively flat. Just below the bridge is a favorite location, as is the widening channel 300 yards above the river mouth. Thomas found that seining occurs along the entire length of the Nome River to Osborn (Thomas 1980:Appendix 1). The tailing ponds (four miles upstream) are a frequently mentioned location, as is Osborn itself.

Gill nets generally are set across the current and anchored on one end by a pole set in the bank. During coho salmon runs in 1983 several gill nets were set in the channel, parallel to the current, and attached

to anchors set in the bottom of the river. It is legal to drift in the Nome River with a subsistence net, but apparently no one does.

Thomas also found, and this study confirmed, that some Fort Davis fishers will move their fishing efforts upriver in bad years (1980b:10). If they miss the fish at the mouth, one fisher said, they go up river to get them. It was this activity the department tried to prevent with a 1980 upstream closure at about one-and-one-half miles above the mouth.

More pink salmon are harvested from the Nome River than any other salmon. An average of 4,267 pinks have been taken each year since 1972; the average fisher took 112 pinks each year (see Table 2). An annual average of 810 chum salmon have been taken; the average fisher took 21 chum. An annual average of 394 coho have been taken; the average fisher took 10. The trend for annual harvests of pink and coho salmon has been upward. No trend is evident for annual harvests of chum salmon. Chum salmon harvests in the Nome subdistrict and the Nome River are shown in Figure 7.

THE SPORT FISHERS

While there is archeological evidence that Eskimos fished with hook and lines (e.g. Bockstoce 1979:Plate IV, 24 and Plate VII, 1) most artifacts relating to hook-and-line fishing are identified "burbot lure" or "tomcod lure," rather than "salmon lure." In aboriginal times, salmon fishing was most likely done with nets, arrows and fish spears. Sport fishing for salmon on the Nome River probably began with the gold rush.

TABLE 2. TOTAL AND (AVERAGE) NUMBER OF SALMON CAUGHT BY PERMIT HOLDERS

YEAR	PINKS	CHUMS	COHOS	KINGS
1972 n=9	2,419 (268.8)	137 (15.2)	0 (0)	6 (0.67)
1973 n=21	3,407 (162.2)	1,333 (54.0)	70 (3.3)	4 (0.19)
1974 n=0	no data	no data	no data	no data
1975 n=36	4,993 (138.7)	1,249 (34.7)	97 (2.7)	2 (0.06)
1976 n=42	4,386 (104.4)	347 (8.3)	91 (2.2)	37 (0.88)
1977 n=43	1,898 (44.1)	1,477 (33.7)	195 (4.5)	4 (0.09)
1978 n=27	2,031 (75.2)	402 (14.9)	57 (2.1)	2 (0.07)
1979 n=47	3,662 (77.9)	297 (6.3)	422 (9.0)	10 (0.21)
1980 n=71	9,611 (135.4)	1,071 (15.1)	621 (8.7)	14 (0.20)
1981 n=38	3,527 (92.8)	1,520 (40.0)	1,028 (27.1)	10 (0.26)
1982 n=43	5,394 (125.4)	279 (6.5)	785 (18.3)	14 (0.33)
1983 n=41	5,605 (136.7)	1,025 (25.0)	963 (23.5)	14 (0.34)
TOTALS n=418	46,933 (112.3)	8,907 (21.3)	4,329 (10.4)	117 (0.28)

The table shows the total number of salmon harvested by Nome River permit holders from 1972 through 1983. The average harvest per permit is shown in parenthesis. Pink salmon are the most abundant species; they account for more than three-fourths of the average subsistence harvest. Coho salmon are only recently available; they account for about 15 percent of the average harvest in the past 3 years. The number of cases (n=) refers to the number of permits reporting effort (some fishers harvested no salmon).

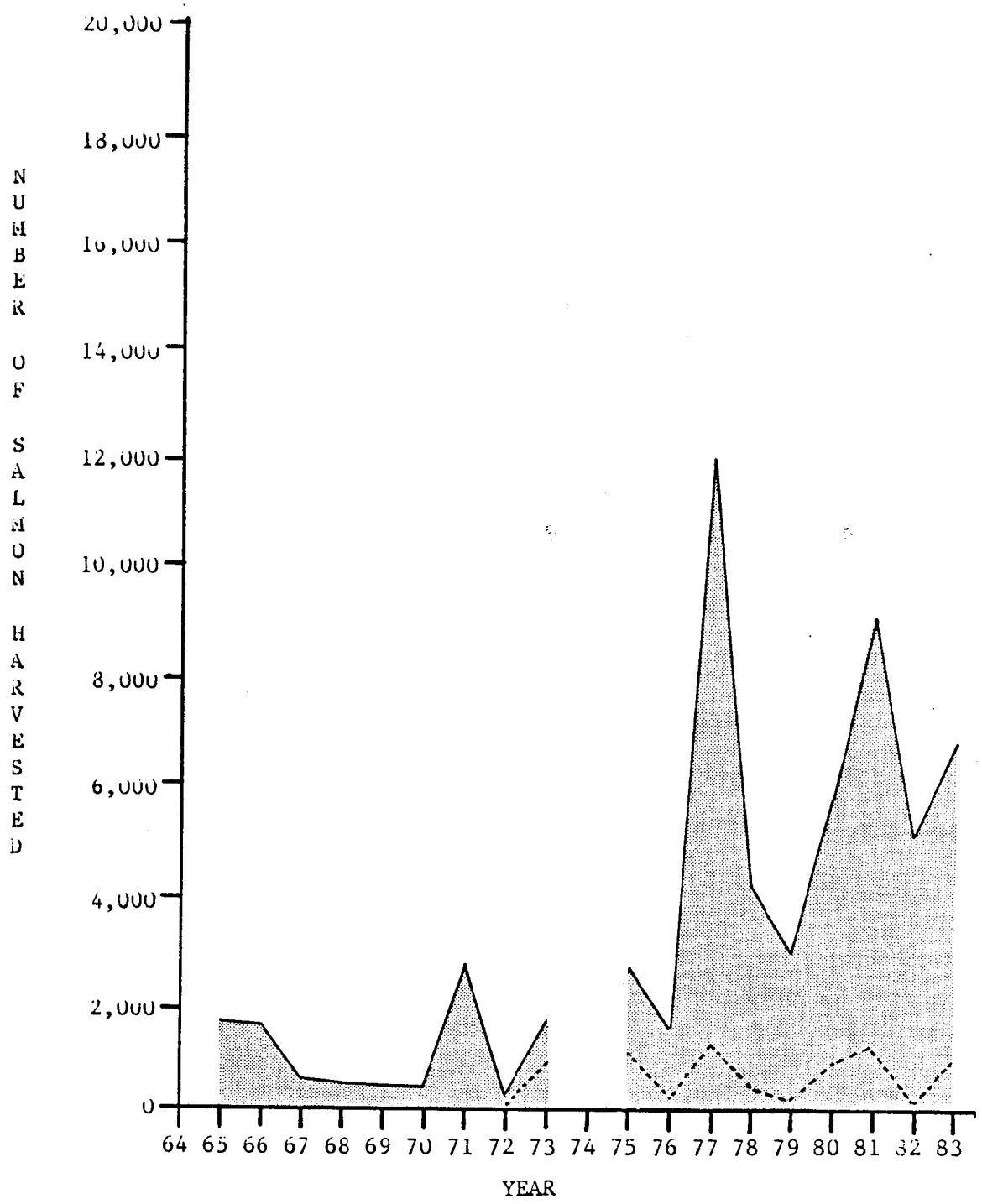


Figure 7. Subsistence Harvests of Chum Salmon in the Nome Subdistrict from 1965 through 1983. Figure 7 shows the number of chum salmon reported by subsistence fishers from rivers and from the ocean in the Nome subdistrict. Dashed line shows the number of salmon reported taken in the Nome River. Permits were not required in all rivers until 1975, thus the harvests prior to 1975 were greater than shown above. Data from 1974 is missing. (This figure is drawn to the same scale as Figure 4, which shows the number of chum salmon taken by commercial fishers in the same area.)

Today, everyone does it. Of all the fishing groups on the Nome River, the sport fishers are the most diverse and the most numerous. Children barely old enough to hold a pole battle against pink salmon while parents watch and help. Elders no longer active enough to pull a seine catch cohos with rod and reel to fill their freezers. People from other parts of Alaska -- attracted by the improving coho salmon runs -- are coming to fish in the Nome River. One couple surveyed in August 1983 flew up from Anchorage for the weekend just to fish cohos.

The best estimates of the number of sport fishers were made several years ago by biologists with ADF&G Division of Sport Fish . "The 1977 Nome River angler count program conducted between June 14 and September 4 gave a total angler count of 1,214 fishermen. It was estimated that 66 per cent of the anglers were contacted, thus the expanded angler count is 1,836 anglers" (ADF&G Division of Sport Fish 1978:39). The Division of Sport Fish repeated its program in 1978, and estimated 1,200 anglers. A smaller chum run, fewer grayling and a rapid char migration were suggested as reasons for the decline in anglers between 1977 and 1978.

During August 1983, the Division of Subsistence interviewed some of the sport fishers on the Nome River. (See methodology and Appendix 1.) The objective was not to estimate the total number of fishers, although it is clear that fewer people fished in 1983 than in 1982, 1978 or 1977. Instead, the objective was to learn something about the people who came here to fish.

Between August 3 and August 28, 31 fishers were surveyed. The greatest number of sport fishers observed at one time was 24, at 4:00 p.m. on Saturday, August 13. On many other days, no more than half a

dozen fishers were observed. On September 2, the final day scheduled for the survey, not one fisher was observed using a rod and reel. Compared to 1982, when literally scores of people lined the river during the pink and chum run in early July, and again during the coho run in August, this was unusual. The probable reason for the poor turnout was below average runs of pink and chum salmon, and a coho run that was weaker than the run of 1982. The Sinuk River, on the other hand, was a fairly good producer in 1983. The survey data below suggest -- and some long-term fishers confirmed -- that people moved from the Nome River to other rivers in 1983. The people who fished the Nome River in 1983 tended to be people who had no transportation or who "didn't know any better," while long-term fishers came only occasionally to test the strength of the runs. Missing during the summer of 1983 were the hordes of school children that descended in 1982 on the pink salmon. So the data below is probably not typical, though it is instructive.

Thus, more than one-third of the fishers contacted had never fished the Nome River before 1983; two-thirds had begun fishing within the past five years. Asked how long they had lived in Nome, 15 of 26 respondents (58 percent) had lived in Nome for five years or less. In the subsistence fishery, by comparison, 27 of 81 fishers (34 percent) surveyed in 1980 had lived in Nome for five years or less (Magdanz 1981:13). Because there are no permits required for sport fishing in the Nome River, there is no way to examine an individual's fishing participation year by year. Some long-term fishers did report fishing here every year.

Asked when they first fished on the Nome River:

12 fishers	1983
4 fishers	1982

2 fishers	1981
1 fisher	1980
1 fisher	1979
2 fishers	1974-1978(6-10 yrs ago)
5 fishers	1958-1973 (more than 10 years ago)
4 fishers	did not respond

It should be noted that many -- perhaps most -- of the people who have subsistence permits for net fishing also fish with rods and reels. One "sport" fisher told us, "I can catch more fish with a rod and reel for my own use than I can catch with a net." Thomas' unpublished notes from 1980 include an interview with a woman who has had a camp and fish rack at Osborn for at least 20 years. Although they dry fish in the traditional way, rarely do they seine. At Osborn, the river is too swift to seine without help; she has seined down at Fort Davis. She and her children fish instead with a rod and reel for pink salmon in the Nome River at Osborn and in the Solomon River. They bring the fish home to dry at Osborn. A man with a camp at Fort Davis said he fishes with rod and reel during periods closed to net fishing. Another man reported catching 400 salmon in 1982 with a rod and reel, more than he could legally catch with a river net, but legal under sport regulations (15 per day times 30 days equals 450 fish). These fish are not counted by the department because there is no reporting requirement for sport fishing. The department does occasionally survey sport fish.

In a year of strong pink runs, the predominant group of sport fishers is school children, most typically teenaged boys. When runs are strong, they walk, hitchhike or bicycle to the river and fish from dawn to dusk. One such young man testified during a Norton Sound Advisory Committee hearing on the Nome River:

> WITNESS: I've been fishing every year down at Osborn and Nome River. We don't have a dad or a car to take us out to the Nome River. We take a cab. If the Nome River is cut off, we just have nowhere to go. My favorite sport is fishing. Probably can't even live without it. Since there's so many humpies, I only catch two or three dogs (chum salmon) a year. We go out to the Solomon River maybe once a year. Since the Nome River's open, we get all the salmon we need. If the Nome River is closed off, we couldn't get our fish any other place. If it wasn't for fishing, I'd be bored all day. I only get out to Solomon about once a year, but Nome River, about 2,000 (sic) times a year.
> COMMITTEE MEMBER: You sport fish there, is that what you do?
> WITNESS: I catch them and let mom make dry fish. (Omilak, J., pers. com. 1984)

When the Department of Fish and Game talks about "subsistence" it means "with nets." But when Nome River fishers talk about "subsistence," they mean "fish for food." The gear is not important to them.

This attitude causes some problem for enforcement officers. A very popular technique, especially among younger fishers, is snagging with large treble hooks. From the vantage of the Nome River bridge, they can see down into the clear waters where the big salmon swim. The older boys snag them from the bridge, and maneuver them to the shore. There younger "apprentice" fishers unhook them and string them up. Certainly some, if not most, of these fish are processed in the same way as net-caught salmon by some of the same families. Some sport fishers think snagging is reprehensible, but other fishers reply, "It's crazy. It's legal to use a net, but illegal to use a snag hook." Fish and Wildlife Protection officers plan to take snagging hooks away from offenders in the summer of 1984.

The two most popular locations for sport fishing are on or around the bridge and along the channel at the mouth. Both areas are easily accessible by car. The bridge offers the advantage of seeing fish take a lure. Some fishers fish from boats in deep holes along the lower

reaches of the river; boat fishing is limited by the shallow waters upstream. The Beam Road runs within 50 feet of the river just above Osborn. The 13 Mile Bridge is also good fishing, though fishers are more likely to get char or grayling than salmon.

No record is kept of the number of salmon caught by rod and reel from the Nome River. Biologists did do a creel census during their projects in 1977 and 1978. Their results were:

	1977	1978
pink salmon	51 fish	350 fish
chum salmon	74	28
coho salmon	5	16
king salmon	4	1
arctic char	183	69
grayling	15	6
round whitefish	10	2

(ADF&G Division of Sport Fish 1978:40, ADF&G Division of Sport Fish 1979:105)

But the biologists warned, "Little meaningful information on catch by species and catch per effort was obtained, as many anglers were snagging salmon and believed that the biologist was a protection officer and would force them to surrender their fish" (ADF&G Division of Sport Fish 1979:39). Probably a more accurate guide to catches comes from the harvest survey mailed each year by Sport Fish to a random sample of sport fishing license holders. This information is not to specific to the Nome River; the report describes the entire Seward Peninsula and Norton Sound area as a unit. In 1981, 92 people returned surveys from this area (ADF&G Division of Sport Fish 1981:85). They reported fishing an average of 118 days a year, and reported catching an average of 175 fish (ADF&G Division of Sport Fish 1981:69).

The reported catches, broken down in average per fisher, were:

pink salmon	34 fish
chum salmon	21
coho salmon	16
king salmon	1
arctic char	43
grayling	23
whitefish	1

(ADF&G Division of Sport Fish 1981:69)

Fishers in the Nome River probably have been catching fewer chum salmon recently than these data would suggest. One sport fisher in Nome estimated that he and his wife catch about 50 fish a year, of which 15 to 25 are salmon. "Very few are ever dogs (chum salmon)," he said. Another person reported catching 36 cohos and 6 chums at the Nome River mouth in 1983. Fifteen of the 31 sport fishers surveyed during August 1983 reported catching pinks and cohos, 12 reported catching char or grayling, and only 6 reported catching chum. Except for kings, chum were the least abundant salmon, according to sport fishers.

Most of the sport fishers surveyed in 1983 had no opinion when asked to compare current fishing with past fishing on the Nome River, because they had never fished here before. Nine fishers thought fishing was not as good as before, one thought fishing was about the same, and three thought fishing was better than before. The latter three all mentioned the growing abundance of coho salmon.

SUMMARY

From its beginnings as a small, perhaps seasonal, hunting and fishing camp for local Inupiat, the Nome River has come to support a wide range

of activities by many area residents. While little mining occurs on the river today, the river is still a popular destination for hunters, fishers, berry pickers and tourists.

Of the recent changes affecting the river, probably the most significant has been the rapid expansion of the commercial fishery. In recent years, Fish and Game has encouraged development of the commercial salmon fishery through larger and larger guideline harvest ranges. At the same time, it has instituted increasingly restrictive regulations and permit limits for the subsistence fishery. A summary of regulations affecting the Nome subdistrict and the Nome River is presented as Table 3. These regulations control the kinds of gear that may be used, the openings and closings of fishing periods, the closures of certain waters to certain gear, etc. Many of these regulations affect fisheries all over the state. Some were designed specifically for the Nome subdistrict or the Nome River.

The following chapters in this report discuss "internal controls" on the fishery. These may be thought of as "regulations" people impose on themselves in addition to those imposed by law. Since fishery management rests on assumptions about fish behavior, Chapter 4 examines "The Salmon" as perceived by Nome River fishers. Chapter 5 describes complex social mechanisms that serve to control fishing behavior.

TABLE 3. CHRONOLOGY OF FISHING REGULATIONS IN THE NOME SUBSDISTRICT

DATE	REGULATION	COMMERCIAL	SUBSISTENCE	SPORT
1958	Alaska becomes a state, state management begins.	X	X	X
1961	Nome River above Osborn is closed to nets with stretched mesh smaller than 4 1/2".		X	
1962	Six subdistricts created in the Norton Sound district for management purposes. The Nome subdistrict is open to commercial and subsistence fishing seven days a week.	X	X	
1964	No salmon net or device can obstruct more than two thirds of a stream.		X	
1965	Catch calendars or questionaires distributed to fishers in the Nome area for the first time.		X	
1968	Permits are required to fish in the Nome, Sinuk, Snake and Solomon Rivers. 500 salmon per permit.		X	
1969	Subsistence fishing in Norton Sound put on same schedule of openings and closures as the commercial fishery. But Nome subdistrict is still open seven days a week.		X	
1970	Sport fishers limited to 15 salmon per day.			X
1971	No salmon net or device can obstruct more than one half of a stream.		X	
1972	Salmon fishing prohibited in Salmon Lake from July 15 to August 31. This increases effort in Nome subdistrict.		X	

CONTINUED ON NEXT PAGE

TABLE 3 (CONTINUED)

DATE	REGULATION	COMMERCIAL	SUBSISTENCE	SPORT
1973	Commercial fishing in Nome subdistrict restricted to four days a week. Subsistence fishing restricted because of 1969 regulations, above.	X	X	
1974	Nome Subdistrict closed July 10 - earliest ever - after record 10,431 chum are taken	X		
1976	Permit limits in Nome River reduced from 500 salmon because of high effort. The fishers are asked to move, voluntarily, to other rivers.		X	
1977	First year limited entry is in effect. Subdistrict reduced to two 24-hour openings, then closes July 9.	X		
1978	Annual Management Report sets guideline harvest of 5,000 chum, except in years of above average chum escapement.	X		
1979	Annual Management Report sets guideline harvest of 5,000 to 10,000 chum.	X		
1980	Board of Fisheries sets guideline harvests of 5,000 to 15,000 chum.	X		
	Permit limits increased from 100 to 250 salmon on the Nome River, in an attempt to get more honest and accurate reporting. Fishery opened seven days a week because of record pink escapement.		X	

CHAPTER 4

THE SALMON

In managing Alaska's salmon fisheries, the Department of Fish and Game follows the principle of "maximum sustained yield." The assumption is that there is a "harvestable surplus" of salmon under normal conditions. The "extra" fish can be taken by fishers; there will still be enough fish left over to spawn. Taking too few salmon is a waste of the resource; taking too many endangers reproduction. The department estimates how many salmon are escaping upriver to spawn each year (see Fig. 8), and estimates how many can safely be caught. The Board of Fisheries allocates fish among different uses of the fishery. It is rather like slicing up a pie, with one piece left over for mother nature.

To western minds, this approach seems self-evident. Allowing for factors like cold winters, unusual predation, or disease, the biologists are reasonably confident in their assumptions. But to some Inupiat this approach is not self-evident. They are not at all confident in the biologists' assumptions.

This chapter presents some Inupiat explanations of salmon biology. Some concepts are common to both Western biologists and Inupiat fishers. Western concepts of biology are generally well established among the younger and more-acculturated Inupiat fishers. But a few concepts held by older Inupiat fishers differ from western concepts. The concepts are

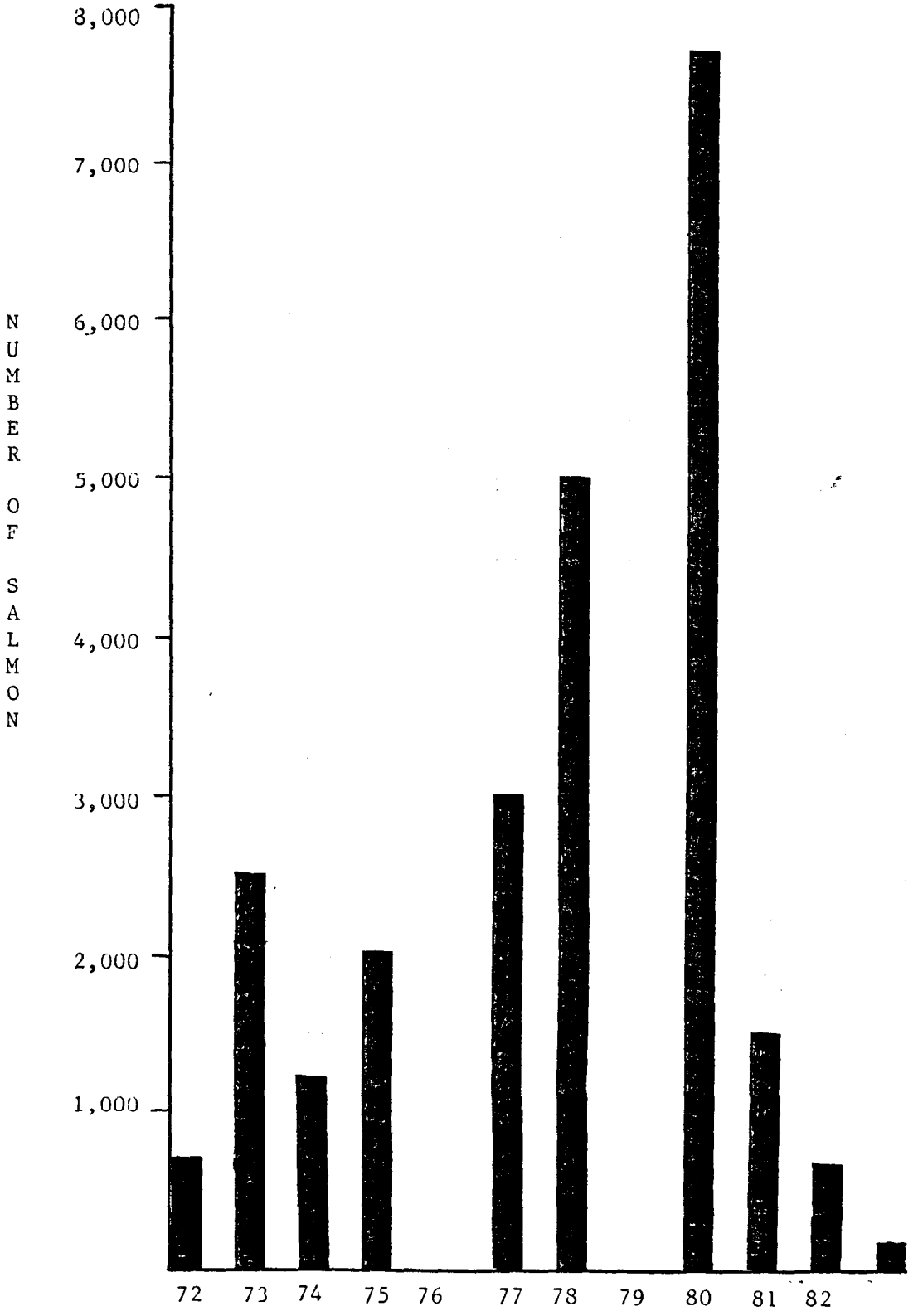


Figure 8. Observed Peak Escapement of Chum Salmon in the Nome River. The graph shows the number of chum salmon observed in the Nome River from aerial and boat surveys. The 1980 count is suspect because of high pink salmon escapement; the actual chum escapement was probably lower. No counts were made in 1976 and 1979.

presented here for three reasons. One, they are ethnographically valuable. Two, they may explain some fishing behaviors. Three, knowing that these theories exist might help managers better relate to Inupiat fishers.

Most fishers -- but not all -- agree that chum salmon have declined in Nome River. The fishers who disagree usually cite their own catches -- which have not declined -- as evidence of salmon abundance. More typical is the story told by one long-term fisher:

> I've been fishing on the Nome River since 1951. At that time we could fish anytime we want to and no regulations. No rod and reel fishers at the mouth, then. In just one evening, (we) caught 200. In one evening, just chums alone, not humpies.

In 1983, less than 200 chum salmon were observed escaping upriver. King and sockeye salmon have long been present in the river, though are rare. Pink salmon are currently quite abundant in even years, and have been abundant in past years.

Fishing in 1983 was unsually slow, most subsistence and sport fishers agreed. The Fourth of July is usually a big day for fishers. But as late as July 6, W.S. reported seining one and one-half miles upriver and catching no fish. Seining by the mouth, she caught "not very many." The chums were "slow" in 1983, many subsistence fishers reported. Even the cohos, suddenly very abundant compared to five years ago, seemed a little scarce in 1983. So it was a good year to ask fishers, "Why?"

THE ENVIRONMENT

Western biologists and Inupiat agree that the environment can play a big part in influencing salmon abundance. The water level in the Nome River was lower this year, several fishers said. They said that would keep salmon from coming into the river. "High water," said K.O., "They go up quick, real fast. But low water, they stay out in the ocean." K.O. also said water temperature is a factor, but it isn't clear what temperature is correct. Western biologists would agree these factors influence salmon migration.

Several fishers also felt the channel configuration was a factor. Elders told W.S. that the mouth of the Nome River was too narrow. Some noted that it had changed directions. It used to flow eastward into the ocean, now it flows westward. The change, they felt, discourages inmigrating salmon.

Other environmental changes were noted, too. W.R. said that the last two years on the Nome River have been unusual in several respects:

* fishers are catching a different kind of flounder
* fishers are catching a different kind of sculpin
* wolffish, rarely caught before, are suddenly common
* candlefish came early this year
* king salmon seem more abundant.

W.R. -- who has an excellent knowledge of western biology -- did not attempt to tie any of these factors to chum salmon abundance.

PREDATORS

Asked why salmon were "slow" in coming to the Nome River in 1983, four fishers blamed a sea lion. K.O. and others reported seeing the animal just offshore from the Nome River mouth in late June. It was eating two salmon, K.O. said. It is unusual to see one so close to shore. After the animal had been seen a number of times, some young men went after it. "When they shoot at it and it went way," said K.M., "the salmon came in right away." Western scientists might agree:

> Despite the amazingly acute sense of smell, chinooks apparently do not respond to a wide variety of pollutants and are not deterred by them. On the other hand, minute amounts of extracts from mammaliam skin (human hands, bear paws, deer feet, dog paws and sea lion meat) produce an immediate alarm reaction and a temporary halt to upstream migration. (Morrow 1980:69)

Two-legged predators are a factor, too, according to O.O. Besides the sense of smell, salmon can see people and avoid them:

> People (sport fishers) are at the mouth night and day. The salmon see their shadows. They see the casting. Those big fish are afraid to come in when they see somebody casting. Trout and humpies are fearless. But big salmon are like big game. One time we were waiting for big salmon (chum) upstream, waiting and waiting. But no fish come. Finally we give up. Then we notice two people rod and reel fishing.

People can inadvertantly frighten salmon away, O.O. contends:

> People started cutting oogruk (bearded seal) on the snow, by the river mouth. They leave a big pile of bones right there. When that snow melts, that oil and fat goes down into the sand. It seeps through the sand and goes out into the ocean. Those big salmon can smell that, and they go right on by. They pass by the Nome River and go to other rivers.

The people who cut the seal, of course, say this is nonsense. Criticism of human activities at Fort Davis is not limited to seal cutting, and will surface again in the next chapter. It has dimensions other than salmon biology. But most Nome River fishers agree that predators influence salmon behavior.

A RELATIONSHIP

What is the proper way to treat salmon? The answer from the western scientists is quite different than the answer from the Eskimo fisher. First, the western point of view, as expressed by a sport fisher during the Norton Sound Advisory Committee hearings in January 1984:

> We took too many. We take them from the ocean, from the river mouth, we even net them right off the spring spawning beds... Nature doesn't care, if a salmon is taken for subsistence use, for sport fishing, or for commercial use, or simply because some kid wants to use it for target practice. As far as nature is concerned, it is still a fish lost to the river system... The laws of nature are not subject to the democratic process. We may have to "bite the bullet" and suffer some short-term pain. Or, if we don't do that, we are going to pay a worse price in the long run, when the Nome River is dead to everyone.

The witness advocated eliminating net fishing in the Nome River. At least one of the Inupiat in the audience must have silently disagreed. The same day, she told researchers:

> The Natives tell stories, about what it is like to be on the animals side. "If you don't make use of us, we will disappear," (the animals say).

> There is a little plant that Eskimos use. Long time ago, (an old woman) saw a few little shoots poking up in the ground. "Oh, there's some here," she said. "Let's pick some. Then they'll grow here." When we first saw them, there were only about a dozen. Now they're all over. It's just red, even above the bridge where they never grew before.
>
> If you don't make use of the things that are presented to you, they won't be presented anymore. You have to make use of them so they will come again.

During research for the 1981 Nome River study (Magdanz 1981), another Nome River fisher related a similar theory. If you don't use the salmon, she said, they will disappear. She said the theory applied to trapping. A trapper opening up a new territory will find few animals. But as time goes on, his trapping luck will improve. The animals will come to him, if he uses them.

The idea that animals have spirits and can return from hunter to nature and back to the hunter is certainly not new in Inupiat lore. Ritual surrounds the taking of certain animals. There are proper and improper ways to butcher animals. During the Nome River research, few people discussed the proper handling of fish, other than avoiding waste. But the idea that salmon must be used, if they are to be abundant, came up several times. Sadly, for these Inupiat, non-Natives don't recognize their theory. They believe that biologists are harming the river.

> White people come in and put in a lot of regulations. Salmon don't show up anymore. Seems like the animals and the fish know what is going on. When there is controversy and unrest, they know. All this science. Animals don't know about science.

Inupiat who believe this are angry towards Fish and Game managers, believing that not only is Fish and Game taking fish away from them (through permit limits), it is endangering the salmon run by doing so. No wonder there are so few salmon, they say, because Fish and Game won't let people fish.

CHAPTER 5

CONTROLS ON FISHING BEHAVIOR

Some controls on fishing behavior -- such as the weather -- are universal and inescapable. Other controls are imposed by regulation. But the most interesting controls -- for the purpose of this study -- are the controls besides nature and state management. These "internal" controls fishers impose on themselves, sometimes unwittingly. They may be inherent in the nature of the fishery. They may be unwritten (even unspoken) agreements among fishers to avoid competition or interference. They may be norms of behavior imposed by society.

The question is especially interesting on the Nome River because people from more than one cultural system share the river. Fishers recognize different legal systems, different organizations and different styles of interpersonal relationships. Further, although Nome is predominantly Native, it is a mixture of several different and competitive Native societies (Ray 1967:392).

Like Chapter 3, this chapter is organized by fishing group: commercial, subsistence and sport. Inupiat are members of each group. Of the three groups, commercial fishers seem least subject to internal controls and consequently are most subject to external controls (the state). Sport fishers are somewhat subject to internal controls, but are limited mostly their inefficient gear (i.e. hooks). The subsistence fishers are subject to internal controls and offer the best

opportunity for study. Subsistence fishing has been evolving for centuries, whereas commercial fishing and sport fishing are relatively recent in this area.

THE COMMERCIAL FISHERS

The principal non-natural, non-regulatory control on commercial fishing is the market. Without belaboring the point, chum salmon harvests in the Nome subdistrict were once so small that the Department didn't bother to monitor them (see ADF&G Division of Commercial Fisheries 1962:64-80). When a market developed in 1974, chum salmon harvests increased ten fold and remained at the new high level for a decade. Market influence can also be seen in the harvest of pink salmon. Pink salmon are far more abundant than any other salmon in the Nome subdistrict. But no one wants to buy them, process them or transport them. Commercial fishers harvest only a small percentage of the pinks available each year.

In addition to market factors, the state's limited entry system has some side effects. Several of the commercial fishers in the Nome subdistrict are elderly; the oldest is about 80. These fishers, if they fish at all, make a handful of deliveries each season. They earn enough money to buy gasoline, or fuel oil, or a new rifle. Then they quit. They seem reluctant to sell or transfer their permit to others who might fish intensively. This effectively reduces the number of productive fishers in the subdistrict. But it does not reduce the number of fish

taken; other fishers simply get a larger share of the harvest. This study did not examine cases of permit transfers, other than to document them.

THE SUBSISTENCE FISHERS

Controls on subsistence fishing are much more extensive, and more subtle, than those on commercial fishers. Controls apparently operate on several levels. First, fishers have limited needs and limited processing facilities; thus they can use a limited number of salmon. Second, some fishers recognize rights to fish on the Nome River, other fishers do not). Third, some fishers recognize claims to territory within -- (not merely along the river. Transient subsistence fishers apparently do not recognize these controls (or they wouldn't be transient fishers). Tenured fishers may or may not be able to describe these controls, but are affected by them. The controls on fishing rights and territorial rights are evidence of a system of social constraints among Fort Davis fishers that has not been described before.

Other researchers have examined "self-regulation" of subsistence fisheries. Wolfe and Behnke (1982) identified factors that account for harvest levels of particular resources from year to year. They wrote that subsistence economies are self-regulating despite institutional managment an' monitorin . The local economy is regulated internally by many individual decisions about consumption, distribution and exchange. A household does not seek to accumulate an infinite amount of subsistence food. Rather, enough food is stored to see a family through

the production cycle. Air drying or smoking of salmon -- the most important means of preservation -- is relatively slow and is labor intensive. Rather than quickly catching many fish, the best strategy is to stretch harvests over a long time. All these factors -- individual decisions, limited needs, one-year storage, slow and labor-intensive processing -- serve to limit subsistence production. Examples from the Nome River seem to support Wolfe and Behnke's findings:

* "We quit fishing when we get enough," was a common refrain.
* "I'd quit fishing," A.X. replied when researchers asked what he would do if one morning his net was plugged with salmon. "What I couldn't use, I'd give away."

Incidentally, A.X. is a short-term resident of Nome, a three-year fisher, and not an Eskimo. If people quit fishing when they get enough, they also appear to fish harder when they don't. In 1981 researchers asked B.Q. what she would do if she hadn't caught enough salmon. B.Q. replied, "Try still to fish. Get dry fish for my family." Not having enough fish wasn't acceptable. Thomas found that when people didn't catch "enough" fish in normal places, they moved further upriver to fish (1980b:10).

Analysis of permit data lends support to a theory of self regulation. Using SPSS's scattergram procedure, researchers graphed reported harvests of pink and chum salmon against the escapement observed for those species each year. Each case consisted of the number of salmon that escaped upriver in a given year (on the x-axis) paired with the number of salmon caught by an individual fisher in that year. The scattergrams showed that individual fisher's harvests have little or no relationship to escapement. A linear regression showed a slightly

positive relationship, that is, if there were more salmon escaping to spawn, people caught a few more. But the significance of the regression was practically zero, because cases were so widely distributed. The scattergram for chum salmon appears as Figure 9. This analysis was repeated, after seperating one-year fishers' permit records from tenured fishers' permit records. The results were similar. Both transient and tenured fishers seem to be unaffected by changes in salmon abundance.

Limitations on this analysis should be noted. Escapement data is not the same as salmon abundance, since escapement is measured after the commerical, subsistence and sport fisheries have harvested salmon. Escapement data is very accurate some years and completely unreliable other years, depending on stream conditions, weather, and human factors. Even if escapement data were precise, it doesn't appear the harvest patterns in one year are significantly different from those in other years. Fishers' harvests do not seem to correspond to changes in salmon escapement.

Fishers may respond to salmon abundance in another way. In years when few pink salmon were available in the Nome River, two long-term Fort Davis families transferred their effort to other areas.

* In 1981, W.S. took her family to fish in Safety Sound about 20 miles east of Nome. They fished there until people started catching salmon at Fort Davis. They they moved back. This family left behind a considerable camp at Fort Davis; two cabins, a wall tent frame, 30 dogs, and assorted drying racks.

* In 1983, S.R. went home to Brevig Mission to fish for salmon. He brought his fish back to Fort Davis, however, and hung them on the racks there to dry. Brevig Mission is about 70 miles west of Nome.

One other fisher, K.O., contemplated moving to Cripple River in 1983 to fish for pink salmon (he did not). His stated reason was not that fish were too few, but that people were too numerous on the Nome River.

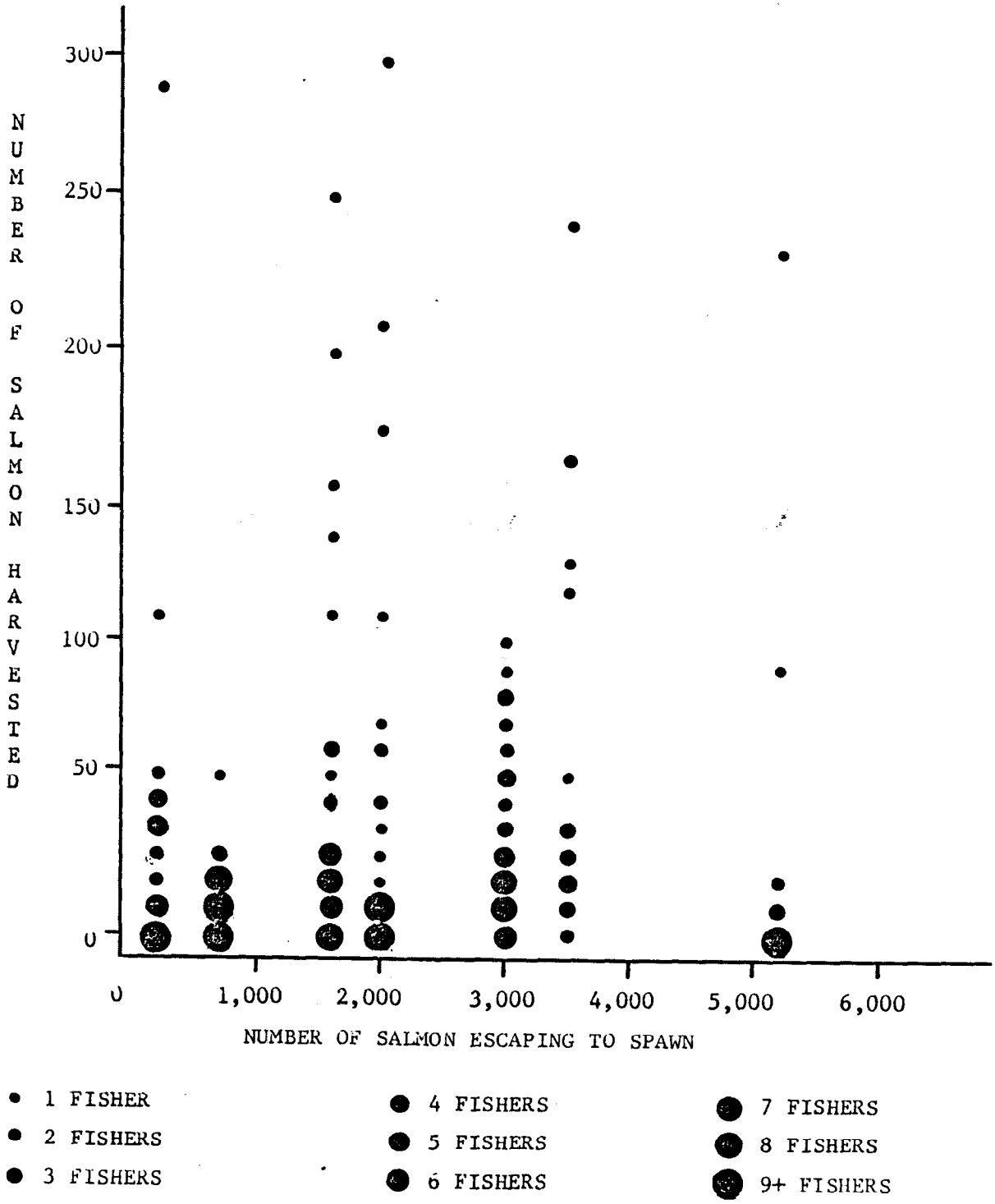


Figure 9. Subsistence Chum Salmon Harvests Compared With Escapement. Each dot on the figure represents annual harvests reported by one or more subsistence permit holders, paired with the escapement of chum salmon observed by biologists in the same year. As an example, the dot in the upper right hand corner represents one fisher who caught 238 chum when escapement was 5,242 (in 1978). Subsistence harvests do not seem to be influenced by escapement. SPSS's scattergram procedure produced this figure.

These three families are among the oldest, most established Fort Davis fishers. There is some evidence that fishers respond to strong runs of pink salmon by moving to the Nome River (in 1980, 91 permits were returned). But the evidence is not consistent. In 1982, a record pink year, only 46 permits were returned.

So it appears that salmon abundance does not affect fishing behavior except in extreme cases. If fishers catch "enough" they quit. If fishers don't catch "enough" they continue fishing. In extreme cases, fishers move to other rivers and even to villages (where no doubt they fish until they catch "enough"). "Enough" has no fixed value. For a short-term fisher, "enough" may be 25 cohos for the freezer. For a long-term fishers, "enough" may be 250 pinks for the drying rack. But for fishers as a group, "enough" seems to be a stable quantity. These data do not -- in and of themselves -- prove a theory of subsistence self-regulation. But they certainly do support one.

What good are limits on individual fishing behavior, though, if the number of fishers keeps increasing? This would be expected in a growing community like Nome. It is something of a puzzle that the number of permits fished over the past ten years has been so stable (see Fig. 5). Apparently there is another kind of control on the Nome River, a control that has not been previously documented in a modern fishery.

A Fishing Community

The largest, most visible, and most productive fishing community on the Nome River is Fort Davis at the river mouth. There are about 40 dwellings, ranging from wall tents to comfortable cabins. Fish racks

and caches abound. Of the 31 tenured fishers who returned permits from the Nome River in 1983, 18 have their base of operation here. The remaining 13 fishers are based in Osborn or in Nome. The sandy peninsula on which most of the dwellings are built is an ideal fish camp location -- open to drying winds, not muddy like the up river tundra camps, and close to the best fishing sites for seining, gill netting and rod and reel fishing alike.

Researchers had assumed that people who fished on the Nome River were a cross-section of Nome's population. They definitely are not. Nowhere is this more apparent than at Fort Davis.

The people who maintain permanent fishing camps at Fort Davis are virtually all from one of four Seward Peninsula villages: Wales, Brevig Mission. Teller, or Shishmaref. Other than cases of in-marriage to a family from one of these four villages, no camps are maintained by people from King Island, Little Diomede, White Mountain, Golovin, Elim, or any of the other Seward Peninsula villages that might be expected in a cross section of Nome.

The importance of these connections was encountered when researchers wanted to rent a cabin or a tent frame along the Nome River. The most promising location seemed to be the Fort Davis fishing camp. Throughout the camp are scattered apparently empty cabins and unused tent frames. It should have been an easy matter to rent one.

"My sister <u>might</u> want to stay there," said one person.

"It's full of junk," said another.

Not having much luck, we enlisted the help of a local Native leader. He provided the name of a man who he was confident could be of some help. "I don't have any place to rent," the man said. "I don't

know why he told you that." Fishing time grew near; still we had no cabin. We asked a 25-year, non-Native resident of Nome for ideas.

"Good luck," he said. "People are 'funny' down there, if you know what I mean. It's like a clique."

We finally received permission to set up a tent camp on the allotment of a well-known elder, who had his own camp at Fort Davis. The difficultly we had in gaining entry raised questions about how others had gained entry.

Campers' own repeated references to "Shishmaref people" and "Wales people" suggested an hypothesis: "Geographical ties allow entry." Researchers mapped the camp, identifying the owners and occupants of each camp, and their birthplace communities. The pattern described above was quickly apparent: Fort Davis is composed almost exclusively of people tied to western Seward Peninsula villages. Interestingly, the location of camps roughly mimicks the location of the villages on the peninsula. Wales people are on the Western point, while Shishmaref and Port Clarence people line the north and south shores (see Fig. 10).

The presence of large, extended families at the camp suggested another hypothesis: "Kinship ties allow entry." Kinship information was gathered from several elder informants, diagramed, reviewed with the original informants and with others, and revised. Initially, the kinship diagrams showed extended family groups occupying clustered camps with two or more tents or cabins. Such a group is diagrammed in Figure 11. This Wales family consists of an elderly woman, her five children, and her numerous grandchildren. This one family accounts for six physically distinct camps at Fort Davis.

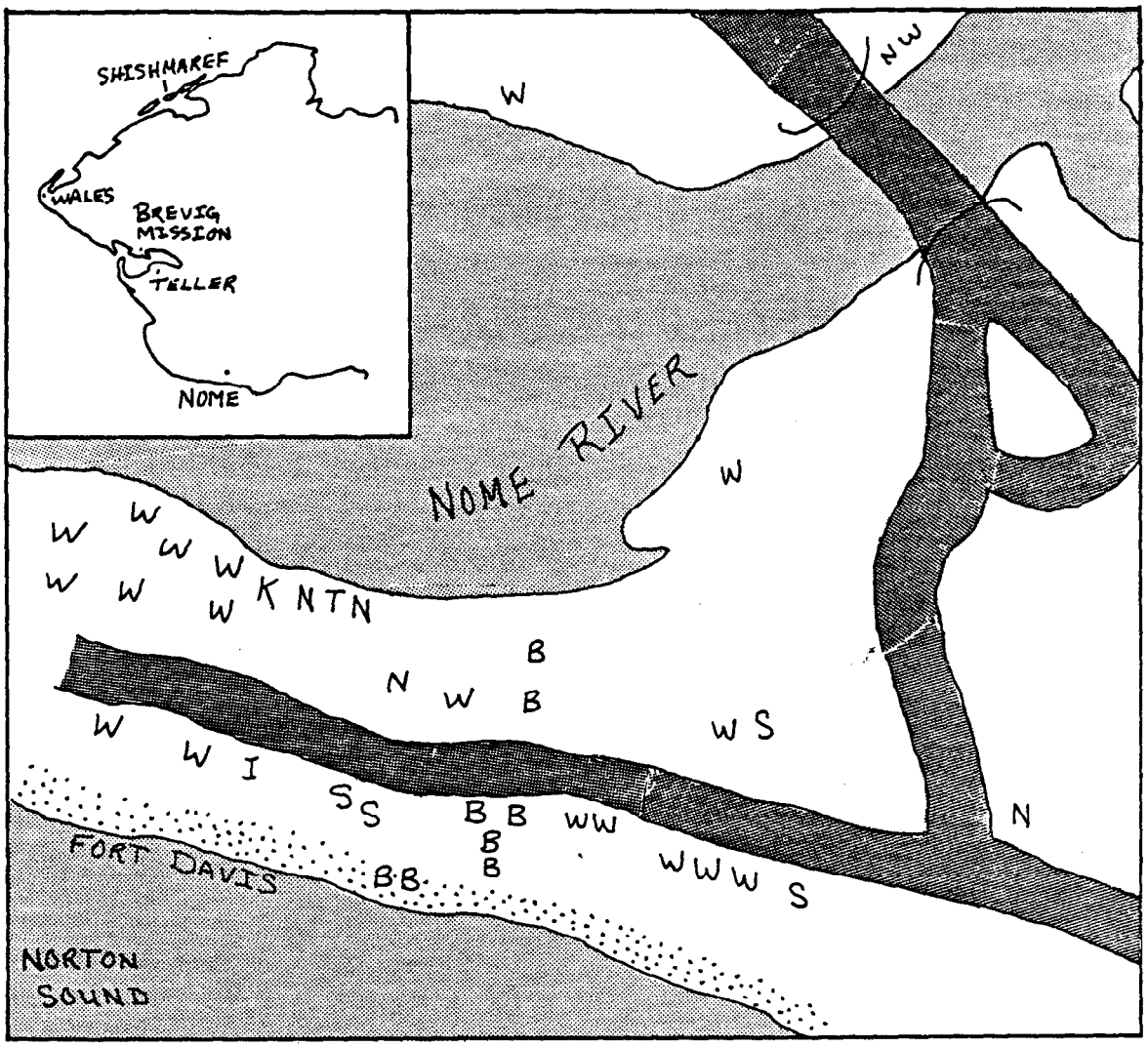


Figure 10. The Location of Fishing Camps at Fort Davis Keyed to Birthplace. This schematic shows the location of fishing camps keyed to the birthplace of the principal fisher in each camp. Interestingly, the camps are arranged at Fort Davis in roughly the same way as the birthplace communities are arranged on the Seward Peninsula (inset map). Clearly, fishers from Wales predominate. Several fishers come from Brevig Mission and Shishmaref. The Nome fishers are descendents of Teller or Brevig Mission fishers. No camps are maintained by fishers from any of the other 18 Seward Peninsula and Norton Sound villages that might be expected in a random sample of the population of Nome.

W = WALES
B = BREVIG MISSION
S = SHISHMAREF
I = KIANA
T = TELLER
K = KOTZEBUE
N = NOME

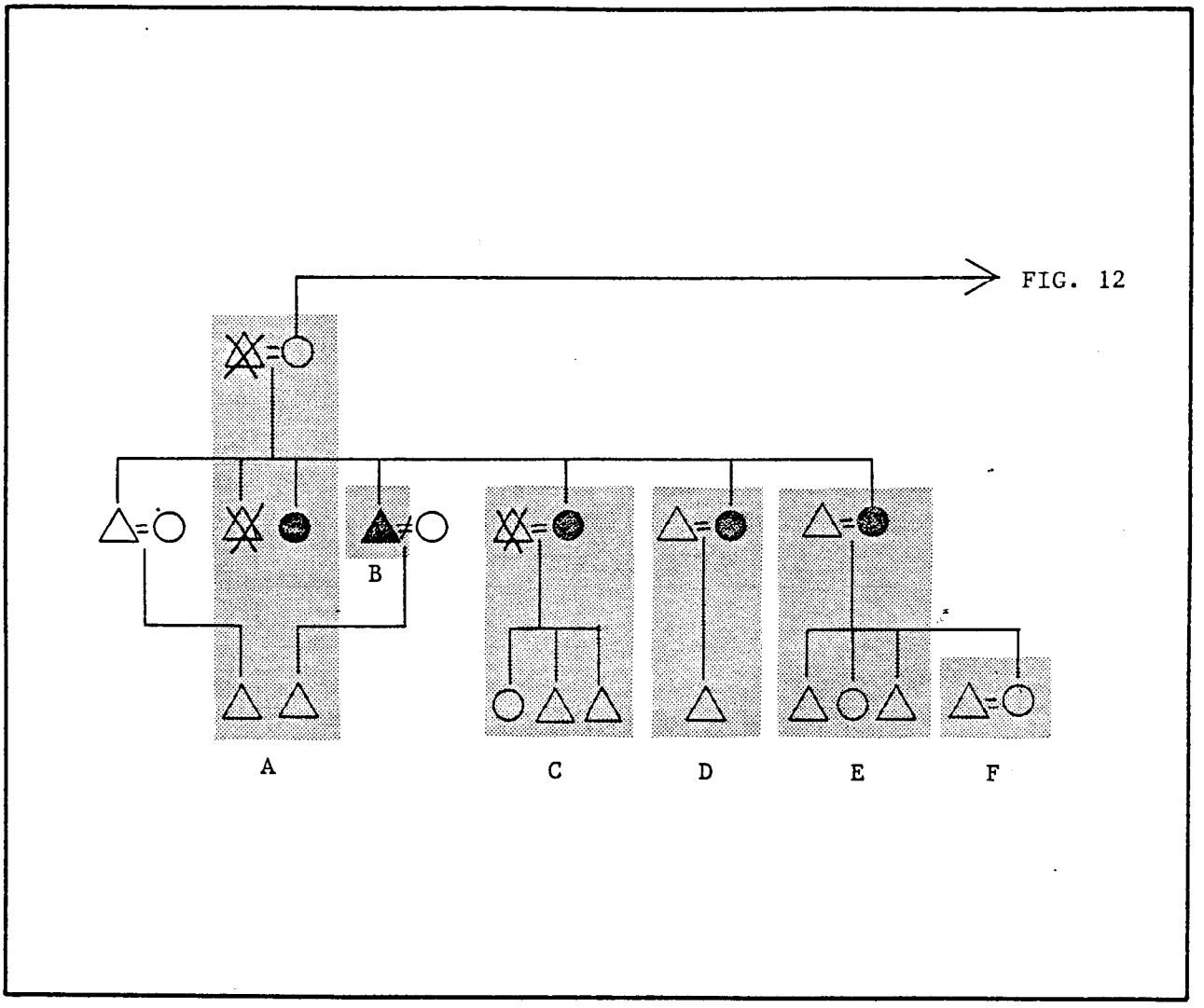


Figure 11. A Wales Family at Fort Davis. This kinship diagram shows members of a Wales family that has camped at Fort Davis since the 1950s. It is organized around the cabin of an elderly widow, her daughter, and her two grandsons (Camp A). An adult son camps one half-mile upriver from his mother (Camp B), but he usually brings his fish to her camp to cut and dry. An adult daughter (Camp C) camps midway between her mother and brother. She generally catches and processes her own fish. But she frequently visits her mother's camp. Camps D, E, and F are clustered around the mother's cabin. They often assist one another in fishing, hunting and processing activities.

(Notes on Figures 11-14: Only people who actually camp at Fort Davis or who are necessary to show descent are diagrammed. Families are actually much larger. The screened blocks represent physical structures such as tents or cabins.)

Kinship connections continue throughout Fort Davis. Figures 12, 13 and 14 diagram some of the ties that researchers were able to document. In some cases, there are multiple links between families (e.g. cousin marriages). No single informant could provide all the relationships diagrammed here. But most informants knew that the relationships existed, even if they didn't know the exact relationship. Only two camps of the approximately 40 camps at Fort Davis were not kinship related.

In a few instances, such as Camp I (see Fig. 12), camps were completely atonomous. But in most instances, camps cooperated with one another to share resources, equipment, fish, labor and meat. Cooperation was along family lines. The Wales family in Figure 11 is a good example. The families of the Shishmaref brothers in Figure 14 is another. Members of these families could often been seen hauling seines together, or just visiting.

Several camps play important "linking" roles. The elder man in Camp K, recently deceased, was captain of a marine mammal hunting crew that drew members from several other camps. Ill health forced his retirement, and his captaincy has passed to the man in Camp J. in addition to crew leadership, this man provided salmon and seal meat to several camps outside his immediate family and his crew. Marriages in Camps L and O (see Fig. 13) are important links between the Shishmaref campers and the Wales campers.

These extended families -- especially the Wales family in Figure 11 -- closely resemble what Ernest Burch has described as a "local family" (Burch 1975:237). Each camp corresponds to Burch's "domestic family." The camps combined correspond to Burch's "local families."

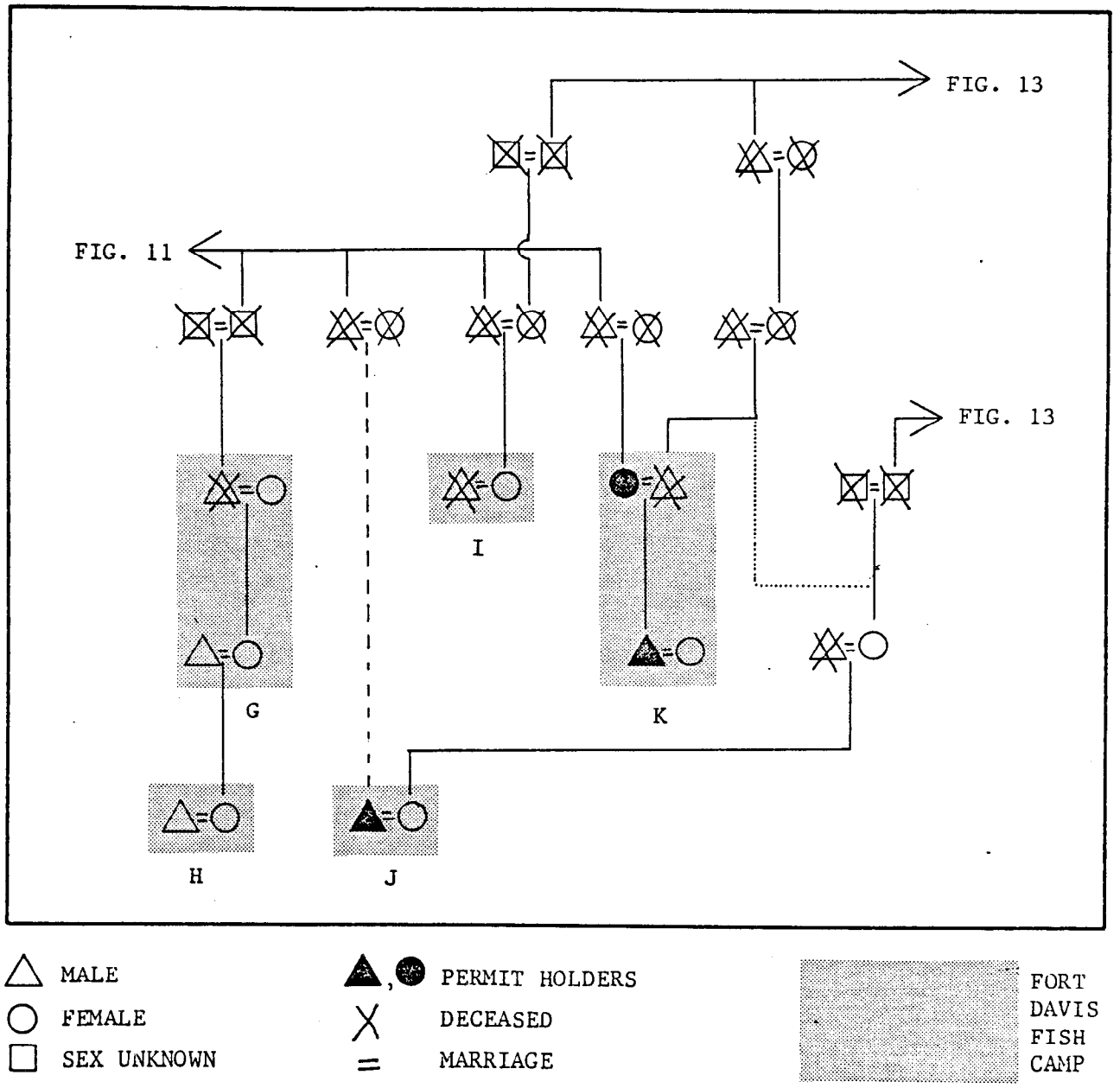
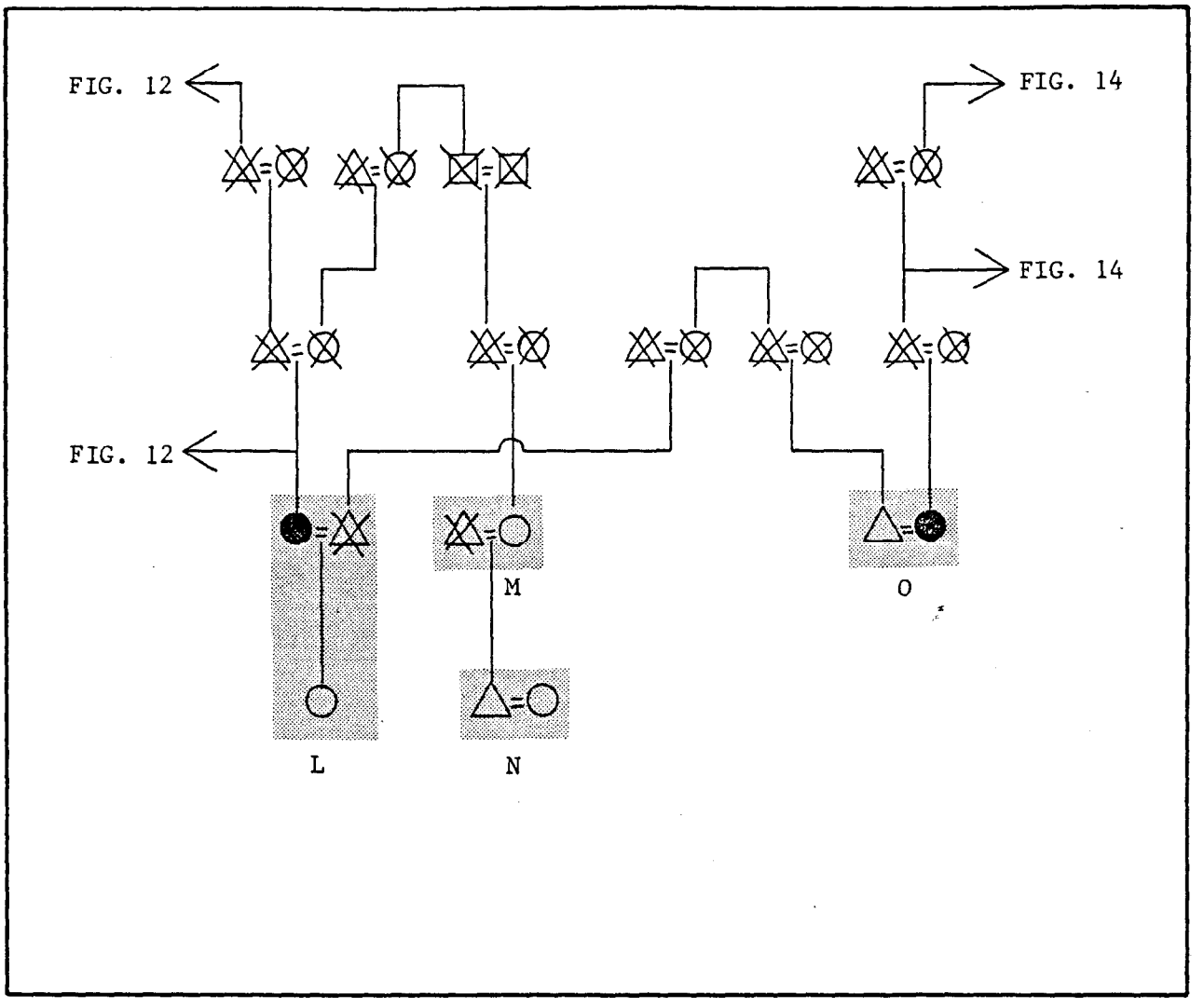


Figure 12. Five Fish Camps at Fort Davis. Members of these five camps are the descendents of the siblings of the elderly widow in Figure 11. Camps G and H work closely together, but the other camps are more independent. The woman in Camp I fishes without assistance from relatives; she recruits assistants from her church. Camps J and K are focal points for the activities of the Wales people at Fort Davis. Members of these two camps work together, but each has a full complement of equipment for fishing and hunting. The deceased man in Camp K formerly headed a marine mammal hunting crew composed of men from the camps in Figure 11. The current captain is the man in Camp J.

(Note: the dashed line represents a questionable kinship link. The nature and strength of the relationship is confirmed by informants, but the actual descent is unclear. The dotted line represents an adoptive relationship.



△ MALE
○ FEMALE
□ SEX UNKNOWN
▲, ● PERMIT HOLDERS
X DECEASED
= MARRIAGE
FORT DAVIS FISH CAMP

Figure 13. Four Fish Camps at Fort Davis. This kinship diagram shows four camps located at the opposite end of Fort Davis from the camps shown in Figures 11 and 12. During 1983, these camps were less active than Camps A-K. Camp L relied on Camp J to provide some of its salmon and seal meat. The marriages in Camps L and O are important links between the Wales people in Figures 11 and 12, and the Shishmaref people in Figure 14. Camps L, M, N, and O are considered to be allied with Wales people.

(Notes: Figures 11-14 are drawn to show not only kin relationships but also spatial relationships. The camps shown in Figure 13 above are clustered together, as are the camps in Figures 12 and 14. The camps in Figure 11 are somewhat more scattered, but, ironically, seem to work most closely together.)

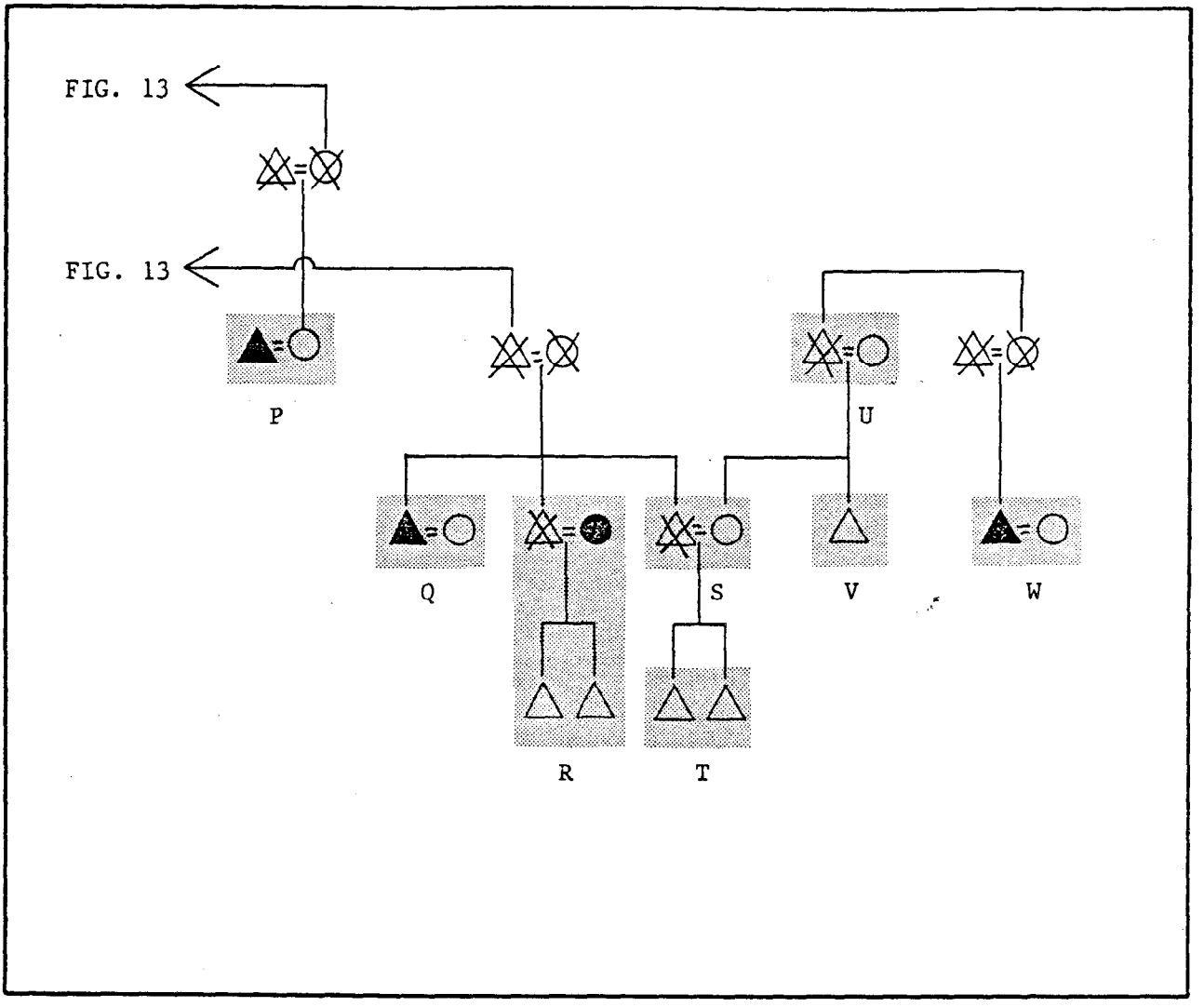


Figure 14. Seven Camps at Fort Davis. This kinship diagram shows members of seven camps located in the center of Fort Davis. The families of three brothers (two now deceased) in Camps Q, R, and S form the core group. Camps S and T provide salmon for the elderly widow in Camp U. Camp P is included in this group instead of the previous group because it is located adjacent to Camp Q. All these people are identified as "Shishmaref" people, except Camp W which is considered "Brevig Mission." Interestingly, Camp W was criticized by Wales people on several occasions for fishing incorrectly and for its entry into the camp. The kinship diagrams show its link to the predominant Wales faction to be very weak. Figures 11-14 may be representative of what E.S. Burch called "local families." The family in Figure 11 most clearly fits his model, but the camps in Figures 12-14 share raw materials, labor and finished goods in similar ways.

The whole of Fort Davis seems to resemble a village. "A traditional Northwest Alaskan Eskimo village...may be thought of as being occupied by the members of two or more autonomous local families whose members happen to live very close together more or less by accident" (Burch 1975:246-247). The 40 camps ("domestic families") are grouped in several family organizations ("local families"). The local families, attracted by the salmon, the natural harbor, kinsmen and other features, have settled in the same locale.

Apparently few of today's Fort Davis residents trace direct descent from original Inupiat users of the Nome River. Gold miners and the U.S. Army ignored, displaced and obscured any claims Inupiat may have had on the Nome River. After World War II, when villagers began to migrate to Nome, the Nome River may have been relatively "public," as far as Inupiat were concerned since any aboriginal Inupiat claims had been disrupted. Fort Davis fishers following World War II were not a homogoneous group: some were Native, some were not, some were from Wales, one was from Candle, some were from Nome. But over the past three decades, Wales, Brevig Mission, Teller and Shishmaref people have come to predominate. These are, according to Dorothy Jean Ray, traditionally allied societies. "During the early nineteenth century, primary alliances were in effect between Wales, Port Clarence, and Little Diomede Island; (and between) Wales and the Tapkakmiut tribe of Shishmaref, Cape Espenberg and Goodhope River" (Ray 1967:384). As these people came to predominate at Fort Davis, some Inupiat probably recognized what was happening:

> Small areas for fishing and sometimes for hunting were claimed by families within all tribal territory of the Bering Strait area. Claims were established at the mouth of almost every large tributary of large rivers, on various sections of productive

> streams like Tuksuk Channel, Agiapuk River and Fish River, and in certain coastal areas. Some sites had been in the same families for many generations, and were usually patrilineally inherited. Once they were abandoned, they could be claimed by others. Clearly, then, the holdings were strictly by usufruct (Ray 1967:383).

The extent to which local Inupiat recognized the situation is reflected in the absence of Inupiat from other villages on modern permit record. They are not completely absent, but the permit record includes far fewer people than would be expected in a random sample of Nome residents.

At Fort Davis, there are only two exceptions: a woman who had no ties to Wales, Brevig Mission, Shishmaref, or Teller, and a man who considered Kotzebue his home. Where did they fit in? The man moved to Nome as a young man and stayed at Fort Davis as early as 1929, before any of the other current fishers showed up. His early use -- even as a child -- may have given him access later. The woman also arrived before most of the current fishers, having come to the Nome River in 1951. Researchers explained their hypothesis to her and she agreed with it. She said:

> When Natives know that a certain group of people are in that area, other Natives respect that. This country is big, so Natives know that they can go somewhere else. Other people respect that, this area is where you fish from. But even Natives are changing. They're land claims conscious. They're even fighting among themselves.

The apparent exception supported the "rule." All this -- common ancestory, kinship ties, territorial respect, even infighting -- add up. The old widow said it best, "It's just like a small village when all the campers stay at Fort Davis."

Claims on Territory

In addition to limits on who can fish on the Nome River, there are also limits on where people can fish. There is a finite number of

places on the Nome River where a gill net or a seine net may be used effectively. The best gill net sites are in the first mile of the river, especially in the lagoon adjacent to Fort Davis. The best seine net sites are in the lagoon, upriver about one and one half miles (below the FAA navigational beacon), at the tailing ponds, and at Osborn.

Researchers regularly mapped fishing as it was observed during the summer of 1983. Within a few weeks it was apparent that the same fishers consistently used the same locations for their gill net fishing. In addition, there seemed to be a few places where gill nets were never seen, but where many people seined. An exchange from researchers' 1983 field notes illustrates this clearly.

> A.Z. was sitting outside his tent frame on the Fort Davis spit on morning of August 12. His gill net -- less than 30 feet long -- was staked to a post on shore and extended into the clear waters of the lagoon. It was empty of fish.
> "Any luck?"
> "Only one silver a day in that one." he said, pointing to his net.
> "You ever try anyplace else?"
> "No." A.Z. thought about the question for a minute. "I used to set over there." He pointed to a pole about 50 feet downstream. "When he started using that one, I move here?" The pole he referred to had been claimed by E.N., who preceeded A.Z. to the river more than 30 years ago.
> "When was that?"
> "I don't know. A long time ago." The site A.Z. was using was less productive than the site E.N. had taken over. There were other locations nearby that were more productive and -- to our eyes -- available. A.Z., though, remained rooted to his net site. He seined in various places, but he set here.

Often there would be several set net poles vacant around Fort Davis during open fishing periods. The usual fisher might have been out of town, or have enough fish already, or otherwise was unavailable for fishing. Generally, no one else from Fort Davis would set from these poles. On one occasion, K.O. was observed checking S.M.'s net.

Researchers asked him about it. He was checking it for S.M., he explained. S.M. was in Anchorage, and while he was gone K.O. fished for him. K.O. was not keeping the fish; he was giving them to S.M.'s wife.

This is not to say that Fort Davis fishers don't set nets in different locations. Some do, especially K.O. He was observed setting in the ocean, in the lower part of the lagoon, in the upper lagoon and in the middle of the channel. But K.O. was very aware of -- and protective -- of his set net sites. One of the researchers' first indications of set net claims came when K.O. visited our camp early in the season and wanted to know what he could do about someone who was "corking" his net by setting very close to it (see Appendix 2). (Nothing could be done. Minimum distance regulations apply only to commercial nets.)

S.M. also complained about encroachment. "Last summer that man from town, that Army man, came down. He shouldn't be able to set his net here, right from my pole. That's where I fish. There should be some kind of protection." Researchers asked if he thought there should be regulations to limit entry, or to set a minimum distance between nets. He did not.

One way to test net site claims is to encroach upon them. In August, we began fishing our own net. Magdanz first asked permission of two of the older, more influential people in Fort Davis. "Where could we set our net?"

"In the ocean?" K.O. suggested.

"I don't know. Whereever we won't be in people's way. In the river or in the ocean."

"Maybe up by Osborn," he said, and then laughed. Then he said, "There's not too many people fishing. You won't be in their way." Later, we went over to his camp to have coffee. "Maybe you could set off the island (in the lagoon)," he suggested. He told me where he was going to set his own net.

Olanna approached K.O. another time, to ask the same questions. "Where specifically would you want to set your net," K.O. responded.

"I don't know. Where would you recommend?"

"What about the ocean?" he said. Then he said that if we wanted to set our net in the river, we could set it anywhere. He didn't recommend a certain spot.

When S.M. was approached with the same question, he suggested that there was no need for us to fish at all. If we needed fish, we could simply ask for them. He would share his fish with us.

When fishing opened at 6 p.m. on August 12, we set out a short gill net. We chose a location about one and one-half miles upriver, on the point of a small peninsula between the main river and a long lagoon. In the course of the summer, we had never observed a set net here. There was no evidence on the shore of any net stakes, from this summer or previous summers. The grass showed no evidence of trampling. When we finished setting, we motored back down to our camp in Fort Davis. K.O. was waiting.

"Where did you set your net?" he asked. We told him. "Oh, that's D.G.'s place," he said. He qualified his comment, saying, "He hasn't used it this year." Then he gently suggested that, "He won't want to fish there until a little later."

Subsequently, we set our gill net in two different locations on the river, and in the ocean. For the ocean set, we tied our net to A.X.'s net. A.X. is a short-term, but regular, fisher on the Nome River. He lives in town, does not have a camp, and is not an Eskimo. K.O. observed us setting together and inquired about A.X. I told him who A.X. was, and K.O. noted exactly where A.X. had set his net before -- not only in 1983, but in 1982. For the two additional river sets, we also set in places where we had never observed a net. Upon our second set, K.O. said "No one ever fishes there. No salmon go that way." He was right. The third set, far up the river at the tailing ponds, elicited no comments. (But when we told A.Z. that we had seen about 60 coho salmon, A.Z. and his family went upriver themselves and seined out 30.)

Seining apparently functions under different "rules" than does set netting. Since a seining operation can be concluded in 30 minutes, whereas a set net operation takes hours or days, many people can seine in one location. There are several places on the river that would make good set net sites -- one immediately adjacent to Fort Davis, another just below the bridge. But rarely did we see a set net there. The short-term fisher above, A.X., even asked whether it was illegal to set below the bridge. In three years fishing, he had never seen anyone do it. The closest set net to the bridge belonged to K.O. His explanation for the absence of nets above his was, "We leave that for seiners." He himself used the place for seining on several occasions.

Seining is also a way to circumvent set net claims of the established fishers. One long-term fisher described the bridge: "Newcomers go there." A.X. observed that it was a problem finding a

place to set that didn't encroach on some one (short-term fishers do become aware of territoriality). He was thinking about giving up gill netting in favor of seining, even though it takes more people to fish with a seine. "You can catch what you want, when you want, and take them home with you right away," he said.

Both seiners and set netters -- at least the tenured fishers -- refrain from fishing in the channel that forms the mouth of the river. About 200 yards long, this channel is a favorite location for sport fishers. Never during the summer was a set net observed in the channel. Never was a seining operation observed (see Appendix 3). In 1982, a transient fisher seined numerous coho salmon (his permit records 131) from the channel. The department received complaints from sport fishers and subsistence fishers. Several Fort Davis people clearly felt it was wrong for him to seine there, and said so. K.O. considered seining himself there once this summer. But it was 6 a.m. and he made it clear that he did so only because there were no sport fishers around. After looking things over, he moved elsewhere.

So there are recognized claims on territory around fishing sites on the Nome River. The claims are most clearly recognized by long-term fishers at Fort Davis but even some short-term fishers recognize them. Seining is one way around the set-net claims; The set netters purposefully avoid setting nets in several locations. These locations give seiners -- including many of the set netters -- access to the river. The set netters avoid the mouth, giving access to sport fishers. None of these commonly accepted behaviors among Fort Davis residents are recognized in state regulations. Similar territorial claims on fishing sites did exist in aboriginal Inupiat culture:

> Permission was always asked to use any part of water or land belonging to the sites, which varied in size from only a few thousand square feet to the length of an entire creek. Women of the family gave permission to gather eggs, roots, greens and berries, especially salmonberries. The more plentiful cranberries and blueberries found on hillsides and hilltops were usually not included within a fishing site.
>
> Permission to fish was accompanied by payment of a certain percentage of fish caught. On the other hand, if a man or woman asked to help with fishing (or possibly had been asked to help), he would be paid with fish. At a one-mile-square fishing site at the mouth of the North River near Unalakleet, the usual payment to a person for each drag of the seine was as many salmon that could be strung on a large willow branch (usually about five). (Ray 1967:383)

On the Nome River, it did not seem that fishers laid claim to thousands of square feet. Rather it seemed that claims were attached only to individual set net sites and the adjacent water necessary for the net to fish effectively. These claims are remarkably stable.

More Than a Fish Camp

The individual fishers at Fort Davis are bound together in many ways. They are related by blood and marriage. They recognize and respect (usually) one another's territories. They share fish. They share labor. In one case, in fact, a widow with a fully equipped fishing camp had not fished at all, relying on K.O. and others to share part of their catch with her. There is considerable and continuous community interaction among Fort Davis fishers. Much of this centers, naturally, on fishing. But fishing is certainly not the only activity at Fort Davis.

On June 11, 1983, fifteen seal skins were staked out to dry and bleach in the sun between two Fort Davis camps. A nearby camp had half-a-dozen skins of its own. All were secured with a series of wooden stakes driven around the edges, six to eight inches apart. K.O. and other fishers confirmed that several marine mammal hunting crews operate out of Fort Davis. K.O. has become captain of a crew that includes men from several domestic families (but a single local family). Another crew includes men from a single, domestic family. Roles such as "captain" and "gunner" are identified within these crews.

Fort Davis fishers hunt moose along the Nome River, too. Two moose were taken on September 1, 1983. K.O. took one and B.Q.'s son took one. Butchering B.Q.'s moose was clearly a family operation. K.Y. was there, along with B.Q.'s elderly mother, A.Z. and A.W., representing four domestic families from one local family.

Cases of Conflict

This is not to suggest that Fort Davis is free of internal tensions. As noted above there are apparently several local families using the site. The social separation between local families can be considerable. On the first visit to Fort Davis, Magdanz attempted to locate K.O.'s camp. Not knowing where it was, we stopped at the first camp to ask directions. Three young women working outside said K.O.'s camp was "down there," with a wave toward the river mouth. None of them was able to be more specific. A young man further down the road was

equally vague. None appeared to know which side of the road the camp was on, what size his house was, etc. We found K.O.'s house within 500 yards of the young people. Later Olanna went to K.Y. to ask for help in mapping camps at Fort Davis. K.Y. could identify the camps in or near her family's camps. But she didn't know some of the people at "the other end." K.Y. said to ask S.M. (an elder) or some of the people from the Shishmaref area. Olanna walked to the Shishmaref area and talked with S.R. He identified the people who camped around him. The camp appeared to be divided along village lines; i.e., Wales people knew Wales camps, Shishmaref people knew Shishmaref camps. People from one local family appear to be reluctant to provide information about other local families, although they have been living together for 25 years.

Disparaging remarks were occasionally heard about other families in the community, often expressed in terms of a home village (e.g. "Those Wales people..." or "Those Shishmaref people..."). The complaints about seal oil driving away salmon (in the previous chapter) may be one dimension of this intra-community bickering. Disparaging remarks were occasionally heard about other Eskimo societies, too, (e.g. "Those Igloo people..." or "Those King Islanders..."). Such remarks often were in context of comparing negative social behavior ("We're not like those ----- people.") All this is to be expected among traditional Eskimos. "Rivalry and hostility could be fairly intense if residential proximity was maintained over any length of time" (Burch 1975:247). Interestingly, the hostility within Fort Davis seemed to occur most often between families on the border between the Wales sector and the rest of the community. There is historical precedent for this, too. Ray reports that Wales was once actually two distinct villages (Ray

1964:79). Burch wonders if the two "villages" weren't highly evolved local families (Burch 1975:243). In Appendix 4 of this report is a description of a land dispute between two Fort Davis families. The dispute was between a Teller family with Wales ancestory and a Brevig Mission family. It is interesting to note that BIA allotments -- which most permanent campers have -- support claims to territory at Fort Davis.

But allotments don't control fishing and social behavior. Traditional Eskimos have several ways to encourage conformity with cultural norms; principal among them is gossip. It is not hard to discover which behaviors are condoned and which are not, because fishers readily gossip about misbehavior. For instance:

> * Waste is not condoned. One woman was considered wasteful, because she did not take proper care of her catch. She did not fish with her relatives, instead she fished with young people (non-Native) from her church. After they had cut and hung her catch, the fish began to spoil. Other fishers started to gossip. Magdanz wondered why she would cut all those fish and then let them spoil. She doesn't do any work," a fisher replied. "Those other people do it for her. They don't know how to cut the fish. They always spoil." People complained about her handling of the fish guts. They were left to rot in a bucket, and smelled terrible. Suggestions made to the woman had no effect. One fisher lodged a complaint with the state sanitarian. Finally, another fisher disposed of the bucket, just to be rid of it.
>
> * Encroaching on fishing sites is not condoned. When K.O.'s net was "corked" by W.T.'s family, he first suggested to them that they were a little close. He complained to Fish and Game, and found no law would help him. He sat on the bank, watched them pick their net, and talked about their fishing. W.T. did not set there again. (See Appendix for a more detailed account of this conflict.)

In the first instance, gossip seems to have had little impact. The women fishes without assistance from her extended family. She has a camp at Fort Davis, but did not stay there regularly during 1983. In the second instance, the fisher spends much of the summer camping at

Fort Davis. She would be less able to ignore other fishers' gossip and observation.

The Inupiat controls -- unlike formal Western controls -- diminish outside of a Native community. Many non-Natives, in fact, completely fail to see the subtle gestures or to hear the gentle suggestions that comprise Inupiat communication (see Magdanz 1982). If one is not present to hear -- at least second-hand -- gossip about one's self, then the gossip will have no effect. The ultimate traditional Inupiat control -- banishment from the community -- meant death in traditional times. But today, an Inupiat who choses to function completely without support from kin, from community, or from allies can do so by moving into the Western world. The woman in the first instance above may find such support in her church.

THE SPORT FISHERS

Sport fishers may be influenced by the same cultural factors that influence subsistence fishers, but the influence seems to be slight. No pattern emerged when sport fishers were asked, "Where were you born?" Researchers did notice that sport fishers tended to fish on the west bank of the river near the mouth, away from the Fort Davis community on the east bank. It was theorized that the presence of Fort Davis inhibited sport fishers from fishing on the east bank. But sport fishers who were asked said that was not so. When researchers fished themselves with rod and reel, we found casting and retreiving lures was easier from the west bank, because of the channel and the current.

Because so few sport fishers were observed on the Nome River in 1983, information on sport fishing was limited. The very lack of sport fishers was evidence of an obvious control -- salmon abundance. Sport fishers are not tied down to a camp nor burdened with heavy gear. They can easily move from place to place in search of fish. Judging by responses to the sport fish survey, many do so. Only 3 of the 31 respondents reported fishing in no other river. Other respondents reported fishing in as many as four other rivers. Nome River sport fishers named nine other Seward Peninsula rivers, when asked, "Where else have you fished?" Thus, in a poor year like 1983, sport fishers chose to fish in the Solomon (10 respondents), the Snake (9), the Sinuk (6), and elsewhere. The best evidence that this occurs was the overwhelming presence of inexperienced fishers on the Nome River in 1983 (12 of the respondents had never fished the Nome River before 1983 and 8 more had only been fishing here for 5 years or less). A similar survey administered in a year when salmon were abundant would probably find that long-term fishers outnumbered short-time fishers.

CHAPTER 6

SUMMARY AND CONCLUSION

Although it is not large, the Nome River has played an important role in the local economy for centuries. The current chum salmon problem -- while of concern to managers and fishers today -- is certainly not the most serious threat to the Nome River in its history. Since 1898, the gold miners, the army, the subsistence fishers, the commercial fishers and the sport fishers have all had their impacts.

Further intensive mineral development on the Nome River is unlikely. But fishing, hunting and gathering of natural renewable resources by Nome area residents will probably continue for the forseeable future. Adequate management of all salmon stocks, then, is very important.

The three fisheries recognized by regulation in the Norton Sound District -- commercial, subsistence, and sport -- are characterized principally by the type of gear and the disposition of the catch. One fisher may fish in two or all three of these fisheries. Of the three fisheries, the subsistence fishery has the longest history.

The commercial and the subsistence fisheries catch the most salmon. Both the commercial and subsistence fishery changed about ten years ago. The commercial harvest of chum salmon increased nearly ten-fold, as the result of new marketing efforts. Participation in the subsistence fishery increased somewhat (two- or three-fold; 1974 data is missing), then stabilized at perhaps less than twice previous levels. Transient (i.e. one-year) fishers are about one-third of the subsistence fishery

today. Participation in the sport fishery apparently has been increasing in recent years, but data are scarce.

Most fishers seem to agree with managers that chum salmon are less abundant today than before. But Inupiat fishers are much more likely than others to cite environmental factors like water conditions or predation as factors influencing salmon abundance. There is some finger-pointing in all fishing groups. Some subsistence fishers blame commercial fishing for depleting the chum. Some commercial fishers blame subsistence fishing. Some sport fishers blame both subsistence and commercial fishing. Some Inupiat fishers blame Fish and Game; they believe that restrictions on subsistence fishing can adversely affect salmon.

It is perhaps more than a coincidence that the salmon species in trouble is the species targetted by the commercial fishery. The problem became most apparent eight years (or two chum-salmon cycles) after the commercial harvest increased almost ten-fold. The increase in subsistence fishing around 1974, although much less pronounced, probably did not help matters. It is interesting to note that, since that time, the Department of Fish and Game has attempted to decrease subsistence fishing harvests several times, while it supported increases in the commercial guideline harvest.

Other than the environment and state regulation, "internal" controls appear to be operating on all fishers, but especially on subsistence and on Inupiat fishers. The commercial fishers respond to market conditions, primarily. The subsistence fishers have limited needs and limited processing facilities; thus they can use a limited number of salmon. Controls on Inupiat fishing are much more extensive,

and more subtle. Controls apparently operate on several levels. Some fishers recognize claims to camp and fish on the Nome River (other fishers do not). Some Inupiat recognize claims to territory within (not merely along) the river. The controls on fishing and the claims on territory are evidence of functioning, traditional Inupiat culture among Fort Davis fishers that has not been described before. Sport fishers may recognize some of the controls on subsistence fishing described above. They respond to salmon abundance, and are limited by their gear. Subsistence fishers seem to avoid areas popular among sport fishers.

The question of controls on fishing behavior is especially interesting on the Nome River because people of different cultural backgrounds share the river. Traditional Inupiat culture had a different legal system, social organizations, and style of interpersonal relationships than the dominant western culture. Further, although Nome is predominantly Native, it is a mixture of several different and competitive Eskimo societies. The Inupiat culture is most evident at Fort Davis. Inupiat controls on fishing behavior are most highly developed there. Norms from the western culture are more prevelant among fishers based at Osborn, Dexter, and Nome, although there are Native fishers among these other groups. For the purpose of this study, Fort Davis offered the most opportunity for insight.

THE ROLE OF CULTURE

Fort Davis is more than a random collection of people behaving in random ways. There are clear standards for entry and behavior. A cultural system operates here, as it includes many features of traditional Inupiat society, including means of social control. Early

observers did not recognize the non-codified legal system of Inupiat culture. Inupiat behavior, when observed by non-Natives, seemed to argue against codes of conduct. "The Eskimo individually behaves like the sovereign state," wrote Arctic explorer Vilhjalmur Stefansson. "The laws of others do not bind him, and he makes new laws for himself whenever he likes" (Stefansson 1938:302). But as anthropologists learned more about Inupiat, it became clear that Inupiat culture has well-defined norms, values and standards for behavior. Obligations between individuals are well-defined. These obligations, however, are different from those recognized by other cultures. Summarizing these obligations, Lawrence Henigh wrote, "Traditionally Eskimo recognized obligations to kin, to community and to allies" (Hennigh 1971:89-90). To turn Stefansson on his ear, an Inupiat might say, "The western man behaves like a wealthy orphan. He has no relatives to control him, and he demands things from people who are not his kin, his villagers, nor his allies."

The three traditional obligations cited by Hennigh are all features of Fort Davis. Fishers are predominantly kinfolk. There is internal strife and factionalism. But they have banded together as a community in the face of others (people wanting a place to fish, Fish and Game telling them how to fish). They are camping with allies from adjacent villages.

Federal law -- the Native allotments -- has partly supported fishers' traditional claims to fish camps (although land status at Fort David is confused by the Army's prior use). But Alaska law has not supported their claims on the resources. Alaska law reserves ownership

of fish and game resources to the public, regardless of property rights. Alaska management controls fishing through:

* written laws and regulations
* uniformed game wardens
* written tickets
* arrest
* court trials
* fines (and possibly jail)
* confiscation of fishing equipment.

Inupiat culture reserves ownership of fish and game to owners of the property they are on -- much like European law. Inupiat control fishing with:

* unwritten codes of conduct
* territorial claims
* kinship obligations
* community mechanisms such as gossip
* alliances
* ostracism

The state management system is difficult for anyone to ignore. The consequences of ignorance are severe. But the Inupiat system can be ignored, especially by non-Natives. The consequences of ignorance are minor, for the non-Native. Indeed, the very system is transparent to many non-Native. If you never hear gossip about yourself, for example, you certainly aren't likely to be influenced by it. But for the Inupiat who remains part of his traditional family structure, ignoring the system is not so inconsequential. A century ago, ignoring it meant ostracism and probably death. Today, ignoring it means abandoning your family and village ties in favor of non-Native friends and ways. Most westerners probably cannot appreciate the anxiety this can cause an Inupiat.

It was something of a puzzle to researchers during this study that Fort Davis fishers seemed reluctant to endorse regulations that would

support their way of fishing. Although S.M. complained about someone from town setting from his net pole, he did not think limited entry was a good idea. Perhaps he felt there were enough regulations already. Or perhaps he was -- in Inupiat fashion -- controlling fishing behavior by gossiping about others' behaviors. That may have been regulation enough.

The dual system on the Nome River puts a traditional Inpiat at something of a disadvantage. A non-Native fisher or a non-traditional Inpuiat feels free to fish the Nome River limited only by state regulations. A traditional Inupiat does not. Should Fish and Game close the Nome River to net fishing or set permits so low as to be impractical for subsistence users, a western fisher or non-traditional Inupiat would feel free to move to another river of his choice. But if other rivers in the Nome area have "limited entry" for traditional Inupiat, and there is some evidence they do have, then a traditional Inupiat would not feel free to move to another river.

Limited entry based on age and prior fishing participation was among options considered briefly by the Norton Sound Advisory Committee. During a committee hearing on January 11, 1984, various Nome River fishers suggested an age preference be applied ("Let the elders fish"). But the committee did not propose this to the Board of Fisheries. The proposals the committee did submit to the Board of Fisheries were squarely in the Western tradition (see Appendix 5).

It is not possible, under the Alaska constitution, to enact regulations or laws that would mimic the traditional controls on fishing behavior described in this report. Such laws are probably not desirable from either the Native or the western point of view. The laws

themselves would be western; written codes are a western, not a Native, custom. Such laws would be extremely unpopular, extremely complicated, inflexible, and probably unfair.

The Inupiat system requires a closely knit society, where all members communicate regularly. Fort Davis is such a society, but the Nome River permit holders are not. Western management requires literacy, in lieu of close personal ties. The Department of Fish and Game would do well to increase its efforts at communicating with Inupiat fishers in more traditional ways -- through personal contact and Inupiaq language announcements on the radio. To communicate with western fishers, this report, with its description of traditional Inupiat management, could be provided to all applicants for Nome River fishing permits.

APPENDIX 1

Following are the 11 questions researchers asked sport fishers on the Nome River. Interviews were conducted orally; researchers recorded the answers on notecards. Surveys were conducted for four hours every fifth day from August 3 through September 2, 1983. Thirty one fishers were contacted.

1. What could Fish and Game do to improve things on the Nome River for fishers?
2. What kind of fish are you catching this summer? What kind do you want to catch?
3. How does fishing here compare with other years?
4. How do you put away your fish? Frozen? Dried?
5. When did you first fish on the Nome River? Why here?
6. Where else have you fished this year?
7. Where were you born? When? How long have you lived in Nome?
8. Do you also fish with a net? Where?
9. Why fish with both a net and with rod-and-reel?
10. How many people are you fishing for?
11. Where do you like to fish? Why?

APPENDIX 2

A CASE OF CONFLICT: NET SITES

On the afternoon of July 5, K.O. came over to the researchers' tent. "You can earn your pay," he said. "You can help me out." He pointed to a boat just offshore from Fort Davis. "Isn't that illegal? Aren't they supposed to be 300 feet away?"

W.T. and her family were in the process of setting a gill net in the ocean, about 100 feet east of K.O.'s net. In commercial fishing, set nets are required to be set at least 300 yards apart. No such restriction exists, however, for subsistence nets. Magdanz told K.O. what he thought the regulation was, and promised to check on it.

K.O. explained what happened. He saw several young men prepare to set their net. He said, "I told those boys, 'That's kind close to my net. Maybe you could set it further down.' They stopped. But then W.T. came along and told them to set it there. So they did."

K.O. then came to us, as Fish and Game, to see if we would solve the problem for him. It wasn't the first time this had happened to him.

"S.R. did that to me one time," K.O. said. "It was so close I couldn't even turn my boat around between the nets. I was fishing commercial that time. He was fishing subsistence. I didn't do anything. I didn't say anything. He set his net like that two times."

S.R. had K.O. in a double bind. No subsistence regulations prevented S.R. from setting next to K.O. But since K.O. was fishing commercially, S.R.'s action put K.O. in violation of commercial regulations.

When researchers left Fort Davis that day around 5 p.m., the problem between W.T. and K.O. was unresolved. Magdanz returned that evening about 9 p.m. K.O. came over and we sat down on the beach to talk. As we were talking, W.T.'s family came to check their net. We watched; they didn't seem to be catching any fish at all. K.O. seemed to be feeling better about it.

"It's alright," he said. "They need the fish. They'll use the fish. I don't mind if they set there."

At the end of the fishing period, both fishers pulled their nets. W.T. did not set next to K.O. again.

The next day, researchers raised the problem with S.M., a relative of K.O. and an elder. He disapproved of K.O.'s complaints. "That's his neighbor," S.M. said. "He shouldn't talk about his neighbor that way."

NOTES: Faced with an encroaching fisher, K.O. tried a variety of strategies. First, he gently suggested that they fish elsewhere. When that failed, he turned to Fish and Game for assistance. Failing there, he let it be known that he might fish somewhere else. Finally, he sat down with a Fish and Game researcher and watched as the offending fishers picked their net. All these behaviors were probably noticed by W.T.'s family; in any case, they did not set net next to K.O. again. But such behaviors might go completely unnoticed by a transient, non-Native fisher.

APPENDIX 3

A CASE OF CONFLICT: SUBSISTENCE AND SPORT FISHERS

Pink salmon began running into the Nome River during the second week of July. Sport fishermen began congregating at the mouth of the river. On July 12, researchers observed 8 fishers on the west bank and three fishers on the east bank. We went over to observe.

At the mouth, pink salmon were jumping and milling. Sport fishers were having some luck; one fisher was stringing a pink salmon. After 10 or 15 minutes, we left the mouth of the river to walk back towards Fort Davis.

K.M. and S.S. were sitting on the bank of the river, about 300 yards above the mouth. A small rowboat and a seine net were nearby. We stopped to talk. We told them there were pink salmon jumping down by the mouth of the river. Olanna asked they why they didn't seine down there. They replied that they didn't want to get in trouble. "In trouble?" we asked.

"With the game warden," they replied. We told them that subsistence fishers could fish in the mouth of the river. Only commercial fishers were prohibited from doing so.

They complained about M.Q., a transient subsistence fisher from town who had seined in the mouth in 1982. "He put his seine all the way across the river," K.M. said. "He shouldn't do that. If it was an Eskimo, we said, they'd stop him."

We told them that M.Q.'s fishing had been a subject of many complaints to Fish and Game. But that his fishing had been legal, regardless of his race.

"Maybe when K.O. comes, we'll go across," K.M. said. In a short while K.O. arrived in his boat. They all talked about the fish jumping. Then the five of us -- K.M., K.O., S.S., Olanna and Magdanz -- piled into K.O.'s boat and went down river pulling the rowboat behind. K.O. pulled into the west bank, about 200 yards above the mouth, just above the sport fishers. The boat and the net were around a small point, out of sight from the sport fishers.

K.M. and S.S. sat down on the bank with Olanna to watch for fish. K.O. and Magdanz walked down the bank towards the mouth. K.O. talked with a few sport fishers, and watched the fish. They weren't jumping so much now. We waited for 30 minutes. At one point, K.O. hurried to the boat and readied the net, but then stopped. "They went by already," he said. "They're going right upriver." K.M. and K.O. had seined here the night before. The shore was littered with small flounders they had hauled in with the salmon. Usually they throw the flounders back, they said. But this time there were so many. They didn't want to catch them over and over again.

They usually catch some trout (dolly varden), too. The trout they don't use they throw back. When the pinks are running strong, K.O. said, he uses a pink gill net to seine with. That way some of the trout can swim through. "We don't want to catch all those trout," he said. Later, K.M. said, "It's more fun in the winter, to catch them through the ice."

As we watched, the sport fishermen gradually departed. Fish were seen jumping near the far shore, in front of the place we had been before. K.O. decided to go back across. We hadn't been back more than 15 minutes when K.O. hurried to set the seine. K.M. grabbed hold of the

end rope on the net; K.O. jumped in the row boat and rowed furiously across the channel. K.M. let out the rope so the net stayed in the boat. When K.O. was about 100 feet offshore, K.M. shouted, "Now?"

"Tura (there)," K.O. replied.

K.M. held fast to the rope and the seine began tumbling out of the boat into the river. K.O. turned and rowed downstream, making a large circle with the seine. A pink salmon jumped within the seine. S.S. was visibly pleased. "See?" she said.

K.O. began rowing back to shore, rowing hard. Magdanz grabbed the end rope of the net as he touched shore and began pulling. K.O. jumped out of the boat and pulled quickly on the rope, slapping it against the water. The net was heavy, very heavy. "Lots of sand in the net," said K.O." We continued to pull the seine; several sport fishers stopped to watch us. Soon, we could all see fish in the seine. Then, a four-foot-long, 12-inch-diameter log came to the surface with the lead line. "That's how come it was so heavy," K.O. said.

The net held 20 pink salmon, one chum salmon, and five trout. K.O. gave the trout away to the sport fishers, who were delighted. "Remember me when you take the first bite," he said.

The fish were put in a plastic tub and covered with a tarp. K.O. began straightening the seine, K.M. went to retreive the rowboat. They loaded the net back in the boat. Another sport fisher, a friend of K.O.'s, stopped by. They offered her a pink salmon, but she declined.

Someone asked if they had caught any chum salmon. "Only one," said K.O. It was quarter to five. "Time to fix dinner," K.O. decided. So we disbanded.

NOTES: The Fort Davis fishers clearly felt that game wardens were more likely to enforce regulations against Inupiat like them than it was against white people like M.Q., who fish in the mouth of the river. But even when Fish and Game researchers made it clear there was no prohibition against subsistence fishing in the mouth, they were reluctant to interfere with sport fishers. On another occasion, K.O. was observed with a seine net at the mouth of the river about 6:00 a.m. But he did not actually fish, and made it clear that the only reason he might do so was that there were no sport fishers around.

It is interesting to note that K.O. fishes at times with a gill net for a seine, to avoid catching trout. Trout are "more fun" to catch in the winter through the ice.

APPENDIX 4

A CASE OF CONFLICT: TERRITORY

A.R. and M.W., his daughter, own a fishing camp and adjacent land at Fort Davis. They fish there each summer with the family. A.R.'s grandaughter, C.O., wanted to move a cabin to her family's allotment at Fort Davis; she has no allotment in her name. A.R. gave her permission to do so.

But there was a problem. Some other Fort Davis families had personal belongings (boats, trailer, drying seal skins) on A.R.'s lot. So one evening, some of A.R.'s family went to look for B.L.M. survey markers, to locate their boundary. They found the markers, and decided that someone should talk with the other families to have their belongings removed. C.O. was facing a deadline to move her cabin, since she had to obtain a permit to move the cabin over the state highway from Nome to Fort Davis.

C.O. and A.N. asked S.W.'s family in the closest cabin who owned the belongings. S.W. owned one boat and the trailer; he told C.O. they would be moved. Word was passed that the property was to be cleared.

In a few days, all the equipment was gone, but five seal skins were still drying on A.R.'s lot. C.O. returned on a Sunday evening to find two women, T.T. and M.O., scraping oil off the skins. They asked when C.O. was moving her cabin out there. The permit expired on Tuesday, they were told. So, the women said they could mov. the skins then, because they were too oily to move now.

A.R.'s family waited to see what would happen. They also discussed a dispute between two other Fort Davis families. W.Z. claimed O.O. was

building a cabin on W.Z.'s property without permission. W.Z. went to the B.L.M. land office and requested that O.O. be informed of the ownership of the land. B.L.M. initially agreed with W.Z., but O.O. said later that the land was indeed O.O.'s, not W.Z.'s.

As it turned out, C.O. was unable to move the cabin as planned by Tuesday because of complications with the moving equipment. On Friday, the skins were still on the lot. C.O. said that she would move them herself if they weren't gone when the cabin arrived.

The cabin was moved Saturday. C.O. made good on her threat, and moved the skin. Everything went well, as far as the cabin move was concerned.

Two weeks later, the dispute had intensified. A.R. said that someone uprooted the B.L.M. lot markers between A.R.'s and W.Z.'s lots, and replaced them to the east, well into A.R.'s property. A.R. believed that W.Z. moved the stakes to get more land. So C.O. got two galvanized iron pipes for markers and drove them in the holes where the original markers had been, so they could not be moved.

NOTES: This case is presented as an illustration of the nature of territorial disputes and their resolution among Fort Davis residents. It reflects the perspective of A.R.'s family, and is not intended to be a precise factual account of the incidents. Before the Native allotments system established fixed lot lines there might have been no problem at all. It is interesting that A.R. and his family did not call on B.L.M. personnel to directly intercede. They buttressed their position with the government's land markers, but when the markers were apparently moved, they simply moved them back. They did not call on

surveyors or other officals. They relied on word of mouth and personal action to resolve the problem.

APPENDIX 5

PETITION

NOME SUBDISTRICT SALMON MANAGEMENT

By Norton Sound Advisory Committee

January 18, 1984

The following recommendations are to serve as a petition to the Alaska Board of Fisheries, to conserve a resource which has been threatened by low runs and high fishing effort. We would hope that these recommendations could be made into regulations for the upcoming (1984) season. Also, these recommendations are intended as directives from the Advisory Committee to the Department of Fish and Game on how we feel the fishery should be managed to conserve the resources.

1. CHANGE THE OPENING DATE FOR THE COMMERCIAL FISHERY TO JULY 10.

This will allow the department more time to assess the run strength before the commercial harvest occurs. During the past two seasons, large chum harvests have occurred in early July, before chum salmon entered local rivers. As a result, below average escapements have occurred.

2. CLOSE THE MOUTH OF THE NOME RIVER FROM THE MOUTH TO 200 YARDS UPSTREAM TO FISHING WITH NETS.

This will allow salmon an opportunity to migrate upriver before being captured. Also, this will prevent gear conflicts between sport and subsistence fishers.

3. ESTABLISH THE SUBSISTENCE HARVEST PERMIT LEVELS IN THE NOME RIVER AS FOLLOWS: 250 SALMON, OF WHICH NO MORE THAN 20 MAY BE CHUM, AND NO MORE THAN 20 MAY BE COHO.

This will help conserve chum and silver salmon, which are less abundant, and allow a greater harvest of pink salmon, which are usually more abundant. The current permit limit is 250 salmon, regardless of species.

4. CHANGE THE SPORT FISHING LIMIT IN THE NOME RIVER TO: 15 SALMON PER DAY, OF WHICH NO MORE THAN 2 MAY BE CHUM SALMON AND NO MORE THAN 5 MAY BE COHO SALMON. CHUM MAY NOT BE TAKEN BEFORE JULY 10.

This will help conserve chum and coho salmon, which are less abundant in the Nome River.

NATE PERKINS (signed)

Chairman

The Norton Sound Fish and Game Advisory Committee

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