

RESOURCE UTILIZATION IN UNALASKA,  
ALEUTIAN ISLANDS, ALASKA

by  
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## CHAPTER 1

### INTRODUCTION

#### Purpose

This report outlines the nature of resource utilization in the community of Unalaska, on Unalaska and Amaknak Islands in the eastern Aleutian Islands (Figures 1-1 and 1-2). The city of Unalaska (which includes that area known as Dutch Harbor on Amaknak Island) is home to some 2000 residents, approximately 200 of whom are Aleut. The population fluctuates greatly, however, due to large numbers of seasonal workers who come to Unalaska to work at the seafood processing plants.

Unalaska, in addition to being a center for the fishing industry, is also likely to become strongly involved in petroleum exploration and production in the near future. Indeed, with oil lease sales in the Bering Sea, Unalaska has already witnessed interest by oil companies in utilizing both land and sea facilities near and in the community for various facets of their work. Among other possible developments are hydroelectric and geothermal projects.

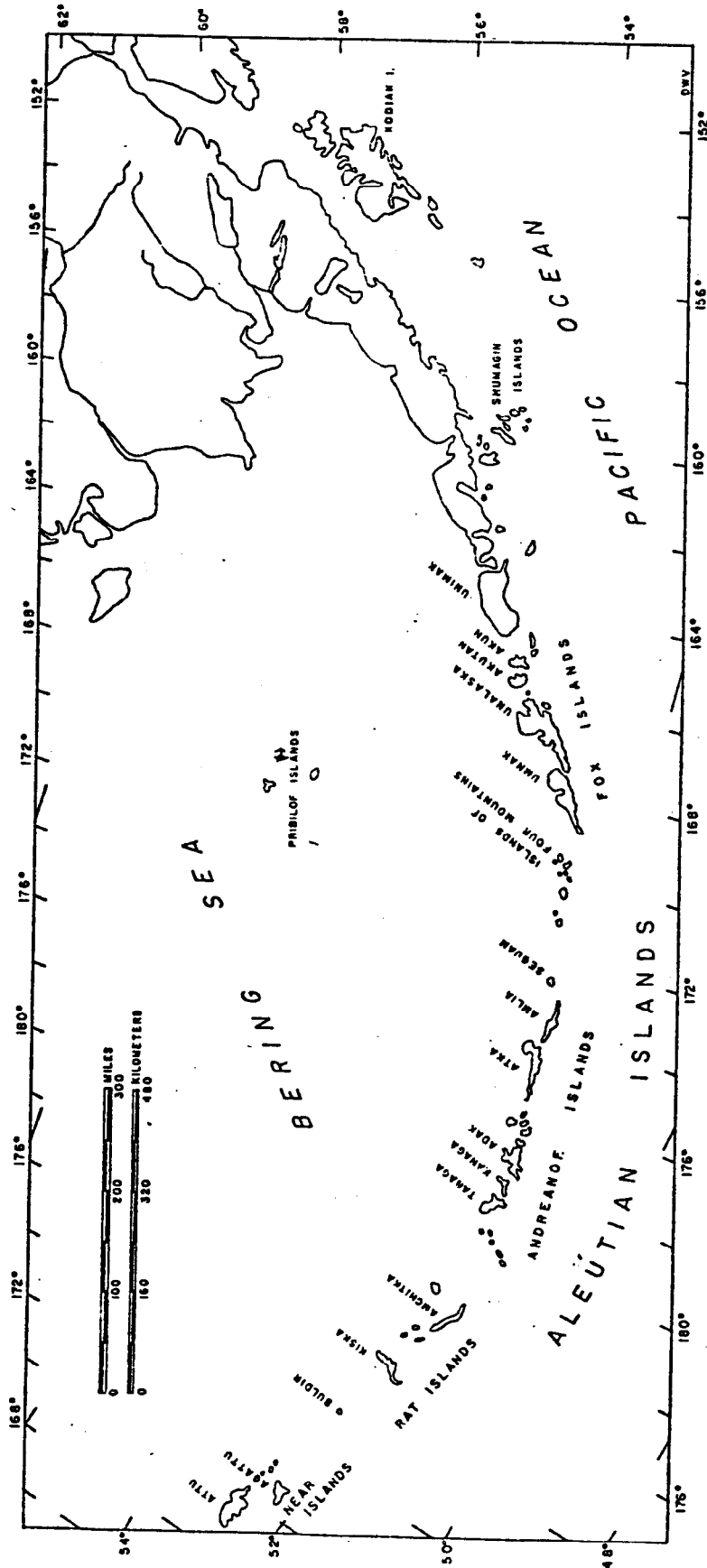


Figure 1-1:--The Aleutian Islands and Southwest Alaska



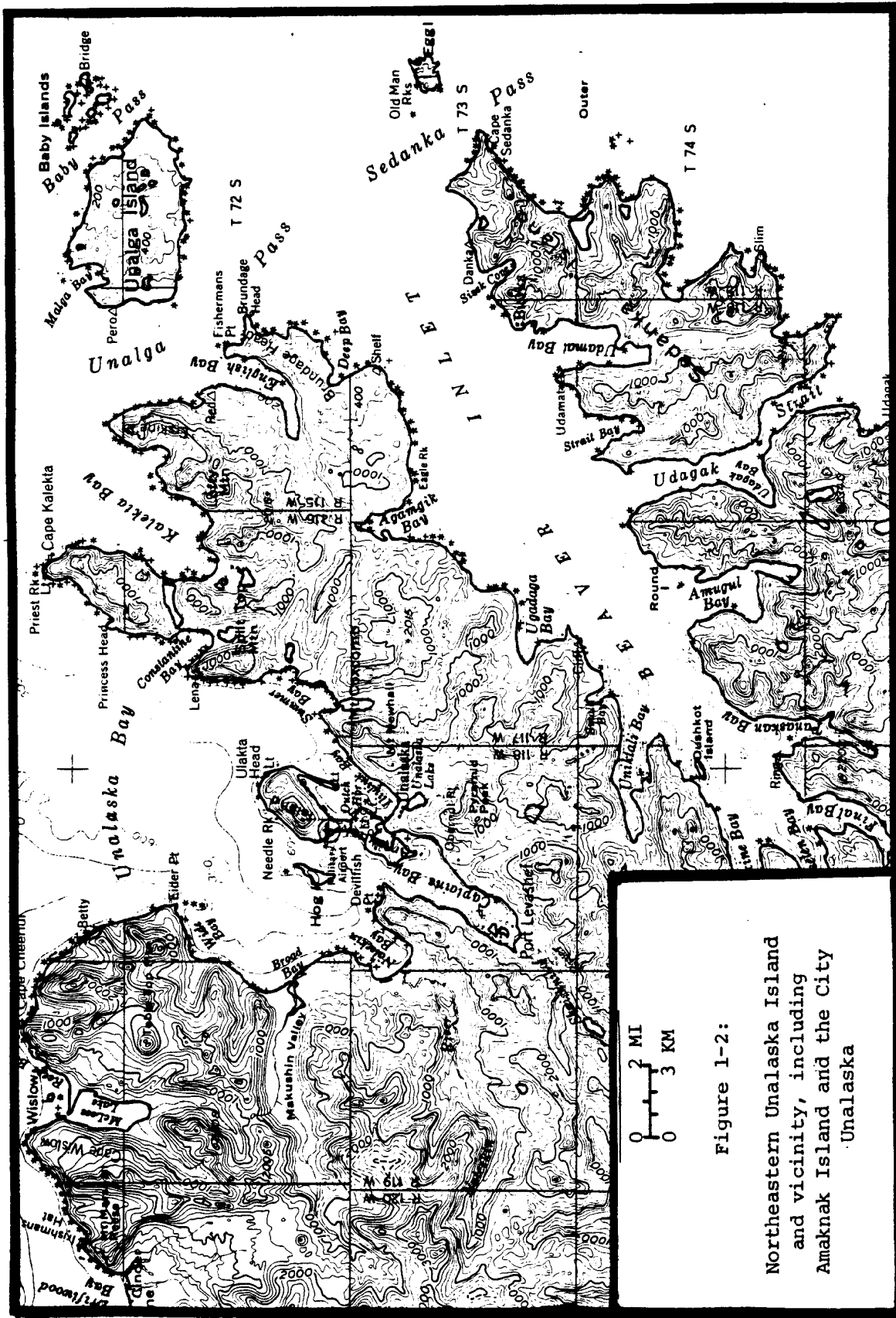


Figure 1-2:

Northeastern Unalaska Island  
and vicinity, including  
Amaknak Island and the City  
of Unalaska

No detailed study of the use of resources has ever been conducted in Unalaska, nor in any other Aleut community of the Aleutian chain. Only in the Aleut communities of the Pribilof Islands, St. Paul and St. George, has substantial subsistence research been undertaken (Veltre and Veltre 1981). The present study will largely parallel the format of that work, emphasizing the view that subsistence use of resources involves more than just the actual utilization of fish, game, and plants: the harvest, distribution, and consumption of resources are an integral part of a society, having ties to the technoenvironmental, the social, and the ideological aspects of a complex cultural system.

It may be noted that the present work was not undertaken to address issues regarding the impact on the subsistence use of resources of specific developments in the Unalaska area. Instead, the focus was to provide baseline resource use data which in turn should be useful in future impact assessments. The following sections detail the objectives and methods of the research.

#### Research objectives

A number of research objectives covering a broad range of topics served to guide the investigation of subsistence resource utilization in Unalaska. These objectives are as follows:

- (1) To establish which species of plants and

animals are taken for local use. Also to be determined were the area(s) from which each item is obtained, the technology, methodology, and time of year of procurement, the use(s) to which each resource is put, and the distribution of each item within the community.

(2) To establish which community members (by analytic category, not by name) engage in subsistence economic pursuits and to investigate the social and cultural links which exist for the acquisition, distribution, and consumption of subsistence resources. These issues are to be examined in light of the ethnic diversity present in Unalaska today.

(3) To establish the general relationship between the subsistence and cash economies. The proportion of subsistence foods in the diet of the community, the monetary cost of providing and maintaining the necessary subsistence technology, and the influence which cash employment has upon subsistence endeavors are among the factors to be considered.

(4) To investigate the ideological aspects of local resource use among community members.

(5) To determine the role of local resource harvest in land use; specifically, to determine the relationship

between settlement patterning (including the use of seasonal camps) and subsistence economic endeavors.

(6) To provide perspective on the manner in which various historical factors may have influenced contemporary resource utilization. In this regard, it may be pointed out that the present study was specifically designed to focus most attention on contemporary subsistence patterns. Historical materials will be utilized not to provide a comprehensive history of resource use in Unalaska, but rather to gain an appreciation for the use of various resources and to place current use patterns in temporal perspective.

#### Research methods

To address the objectives listed in the preceding section, research employing a variety of methods was conducted. Except for field research time, the authors were contracted by the Division of Subsistence on a part-time basis for this project. Approximately 15 days were contracted for background research between January and May, 1982, and an equivalent amount for report preparation between July and October, 1982. Research methods used during this project may be itemized as follows:

(1) The literature pertaining to Aleut resource use was surveyed. As mentioned in the previous section, relatively little time was spent investigating historical

sources, with emphasis given instead to recent and contemporary materials. Literature research took place largely between January and May, 1982.

(2) Three periods of field research in Unalaska were conducted by the authors. An initial trip from 11-14 January 1982 provided time to meet with several local bodies, including the Aleut Ounalashka Corporation, for which the authors presented a brief overview of the purpose and field research plans to its Board of Directors. City officials and several local individuals were also consulted concerning the project.

A second trip was made to Unalaska from 20-28 May 1982, and a third from 22 June to 5 July. During these subsequent trips, contact was maintained with the office of the City of Unalaska and especially with the Ounalashka Corporation and the Unalaska Aleut Development Corporation, the Aleut non-profit corporation in the community. Altogether, 27 days were spent in Unalaska by two researchers.

Data collection during fieldwork consisted of both formal and informal interviews with community members as well as observation and participant observation of resource use activities. Formal interviews generally consisted of questioning with a predesigned, though

flexible, list of topics and mapping resource areas on special large scale maps of the island. As mentioned above, contact was maintained with various local bodies, and a public slide presentation concerning the research which the authors conducted in 1981 in the Pribilof Islands furthered community knowledge of research focused on local resource use.

(3) A local assistant was hired in Unalaska to aide in gathering data on community businesses and store prices.

#### Discussion of research methodology

Several additional points may be made regarding the research methods used. First, all persons who participated in the formal interviews (usually including mapping of resource areas) were paid an hourly rate for their time. Second, the anonymity of each individual from whom information was obtained will be maintained throughout this report. This decision was made by the authors prior to the start of this project and was made clear to potential informants.

Third, the reception given by the community to this project was generally enthusiastic. Most individuals were extremely interested and gave generously of their time and knowledge. The only reservations which informants conveyed concerned two related points: namely, that disclosure of a "secret" hunting or (especially) fishing location could

possibly encourage new hunting or fishing regulations, or that it could encourage commercial fishing boats to fish in that area. In such cases, informants were assured that no such secret locations would be reported.

Fourth, the individuals who were interviewed for this project were consulted on the basis of recommendations from other community members. For the most part, they were those people who were most involved in local resource use, but they also included knowledgeable older persons and respected community leaders. Approximately 30 persons were interviewed, including both men and women and Native and non-Native individuals.

Fifth, the major limiting factor of this project was the amount of field time which budget and time factors permitted. Thus, since the authors could not spend an entire year in Unalaska, resource use activities during certain times of the year are better documented and more fully understood than during others.

Sixth, prior to writing the final version of this report, the authors sent draft copies to Unalaska for community review. Those individuals who were interviewed during fieldwork as well as the Aleut corporations and city officials were sent personal letters inviting them to read and comment on the review copies. These persons were also

encouraged to invite other community members to review the draft report. Information received in this manner was incorporated in the final report.

#### Organization of the report

In the report that follows, Chapter 2 offers a brief background on precontact and early postcontact Aleut resource use patterns. Chapter 3 provides an historical overview of the Unalaska Island area, from precontact times to the present, and contains a contemporary profile of the community of Unalaska. Chapter 4 presents background data on the natural environment of Unalaska, and Chapter 5 gives a detailed examination of resources used locally, their history of use, and their contemporary use in Unalaska. Chapter 6 discusses various issues and conclusions regarding local resource use in Unalaska.



## CHAPTER 2

### BACKGROUND ON ALEUT RESOURCE UTILIZATION

#### Introduction

This chapter provides a brief overview of precontact Aleut resource use patterns. This review will offer a general perspective from which to view both historic and contemporary subsistence economic adaptations in Unalaska. It should be noted that in Chapter 5 more detailed treatment of certain resources and their history of use in Unalaska, specifically, will be presented. The material that follows is taken, with some changes, from Veltre and Veltre (1981:13-26).

#### Aleut distribution

Prior to Russian contact, Aleuts occupied a territory consisting of the entire Aleutian archipelago, from Attu Island in the west to Unimak Island in the east, as well as the Shumagin Islands and the tip of the Alaska Peninsula from Port Moller westward (see Fig. 1-1). Although the more distant past is less certain, it is apparent from archaeological data that at least from 4000 years ago, and likely from 8500 years ago, to the present,

Aleuts have been the sole occupants of this area and they have, over this period, maintained a fundamental cultural adaptation that was focused on the sea as the direct or indirect provider of virtually all basic necessities of life.

To the east on the Alaska Peninsula and continuing onto the mainland of Alaska, various Eskimo groups were the neighbors of the Aleuts. To the north of the Aleutians, the Pribilof Islands were most likely not inhabited by anyone in the precontact period, although Aleut legend maintains that the islands were, in fact, known to exist prior to their "rediscovery" in the late 1700s (Veniaminov 1840, quoted in Elliott 1881:146).

It may be pointed out that most Aleutian scholars (e.g., Laughlin and Aigner 1975) agree that the Aleutians have exhibited remarkable cultural stability over a relatively long time, much of this attributable to a stable and uniform environment as well as to Aleut residence in a geographic cul de sac, which effectively limited interactions with other people.

#### Precontact resource use patterns

Knowledge of precontact and early postcontact resource use in the Aleutians comes primarily from two sources: artifactual, faunal, and settlement data obtained from the usually very rich archaeological sites throughout

the archipelago, and the historic and ethnographic accounts of early hunters, travellers, and missionaries. Each of these two sources has obvious limitations in providing accurate insight into Aleut resource use patterns. Archaeological data, though easily quantified, are limited by preservation, the difficulty in identifying food versus fabrication use of faunal remains, the vagaries of which sites have been dug and in what manner, and so on. Historic and ethnographic data likewise are biased, primarily because the early writers were not trained observers, and also because such information has rarely been recorded in a quantified manner. In sum, we may reliably itemize what was being utilized, but not necessarily when, by whom, where, how, or in what quantity.

Thus, the following outline will concern itself with general patterning: those characteristics of Aleut resource use which were pan-Aleutian. Only rough estimates of the relative importance of particular food items will be possible. Consideration will first be given to an inventory of food resources and the technology related to their acquisition. Next, the social and economic aspects of subsistence economies will be discussed.<sup>1</sup>

Table 2-1 presents an inventory of the major resources and the means by which they were obtained. Included in this table are items important exclusively for

TABLE 2-1:--Major precontact resources and harvest techniques in the Aleutian Islands

Resource	Hunting/Gathering Techniques and Implements
1. <u>Sea mammal hunting offshore</u> (includes whales, hair seals, sea lions, sea otters, fur seals)	Sight and surround animals with bidarkas or baidars; use of harpoon, spear, and/or club except for large whales which wash ashore when dead; possible use of aconite poison for whales.
2. <u>Sea mammal hunting onshore</u> (includes hair seals, sea lions, and sea otters)	Surprise animals on mainland shore or on islets; approach by foot or boat; kill by spear, harpoon, and/or club; possible use of nets.
3. <u>Bird hunting on water</u> (includes all species of ducks)	Stalk birds on water surface; capture with bird spear or arrow; net birds on lakes from blind.
4. <u>Bird hunting at nesting sites</u> (includes all species of nesting birds)	Bird cliffs approached by boat from below or by rope from above; birds caught with snares, bolas, handnets, leisters, clubs, or by hand at nests as well as away from nesting areas.
5. <u>Fishing offshore</u> (primarily halibut and cod)	From boats with hook and line or leister.
6. <u>Fishing onshore</u> (primarily salmon and Dolly Varden, but also other fish, including halibut and cod)	Hook and line from shore; use of nets, leisters, weirs, and hands at stream mouths and in streams.
7. <u>Intertidal and beach collecting</u> (various marine invertebrates, including sea urchins, clams, periwinkles, etc., and algae; also washed up fish, sea mammals, birds and driftwood)	Combing the beach and intertidal zone for these items; use of prying tool to loosen items from rocks and use of grass collection baskets or gut or skin containers.

TABLE 2-1:--(Continued)

Resource	Hunting/Gathering Techniques and Implements
8. <u>Onshore collecting</u> (terrestrial plants, raw materials such as stone for fabricational use)	Techniques and implements: travel to areas of resource availability; use of wedges, digging tools, etc., to ex- tract materials; grass, gut, or skin containers to carry collected items.

SOURCE: Adapted from McCartney (1977:81-82). See that source for detailed citations concerning specific items, techniques, and implements.

fabricational use (such as stone for knives, etc.), although it must be realized that many of the food items listed were additionally utilized for non-food purposes. This point will be reiterated again in Chapter 5, particularly in the discussion of sea lions.

Although precontact Aleut sites lend themselves well to quantification of archaeological faunal remains and determination of corresponding food values, relatively little research has been directed towards these ends. Therefore, it is possible only to suggest the general relative importance of the various food items listed in Table 2-1. Denniston has presented data from the site of Ashishik Point on the north end of Umnak Island. Her figures for the relative food values represented by remains at that site of marine invertebrates, birds, fish, and sea mammals are 1:1.75:35.88:51.74, respectively (1972:208). The precision of these figures should not be mistakenly interpreted as an accurate reflection of resource use throughout the Aleutians, however. As various authors have pointed out (e.g., Denniston [1972], Yesner [1977], McCartney [1977]), substantial variations exist with respect to seasonal and local abundance of virtually all resources, and no single site may be taken as "typical" of Aleut resource use patterning. Nevertheless, Denniston's ratios very likely portray the correct order of magnitude of food importance of those major categories, and, as McCartney points out, the ratios constitute "a more precise estimate

of the Aleut diet than that suggested by the ethnographic literature" (1977:82). (See also McCartney [1975:293-295] in this regard.)

The ethnographic literature, however, supplies valuable evidence lacking in archaeological sites, such as the importance of eggs. Laughlin's (1980:49) proportions of basic food items, most likely based on ethnographic as well as archaeological data, are less precise, but perhaps more accurate, than those provided by archaeological data alone. His estimates (which he states may have varied by as much as 10% over time and space) are as follows: marine mammals, 30% of the diet; fish, 30%; birds and eggs, 20%; invertebrates, 15%; plants, 5%.

Although many resources could be obtained through individual effort, cooperation was an important theme in much of Aleut food procurement. Aleuts were required to work together, especially for such activities as sea mammal hunting, egg collecting, and fishing (with nets and weirs). It is not at all surprising, then, that food was shared among Aleuts, certainly within extended family households and perhaps within an entire community. Veniaminov states: "From time immemorial it has been the custom of the Aleuts, when there is a shortage of food, to divide among themselves all that is obtained. For example, he who has caught some fish divides them among all who are in need and not only

does he not take a larger share than the rest, but not infrequently he gets less than the others" (1840b:56). Similar examples regarding sharing exist, and it may be assumed that in most instances of food exchange a system of general reciprocity was followed.

Aleut religion and ceremonialism, although less well known than that of many other Alaska Natives, certainly included features pertaining to resource use common to many northern cultures: the belief in human and animal spirits, the necessity of placating animal spirits in order to assure continued hunting success, and the ability of shamans and human mummies to influence and assist in hunting endeavors. Sarychev, for example, reports that the person who obtained the first sea lion of the season shared it with all the members of his village. Afterwards, all of the bones were returned to him, and he threw them back into the sea (1807:57-58). Whaling, too, was surrounded by behavior governed by spirits: a man, after wounding a whale, would go into seclusion and behave as though he were sick, thus hastening the whale's demise (Veniaminov 1840b:133-134). Merck reports from Unalaska around 1790 that

During the first six months the Aleuts hang a piece of anything they kill on the infant's cradle. Birds they attach whole to the cradle. Of sea lions, fur seals and harbor seals they attach only the muzzle, and also pieces of fish. This is done by the closest relatives so that the mother and child might have food (1980:72).

Numerous additional examples exist which exemplify the important ideological component of hunting and fishing



pursuits in precontact Aleut culture (see Lantis 1947 and Ransom 1946).

#### The early postcontact period

The early Russian period -- from 1741 to 1800 -- was clearly a period of profound cultural change for Aleuts. Population declined, settlements were relocated, and Aleuts were forced to labor either directly for the fur trading companies or indirectly for them to produce the required tribute. Although the specific changes that occurred in subsistence activities can only be suggested at this stage in our knowledge of archaeology and ethnohistory, the following general points can be made. First, the utilization by the Russians of Aleut males to hunt sea otters could very well have limited the amount of sea mammal hunting done for local use. Second, if Aleut males were removed from their villages for non-subsistence hunting or other activities, dietary proportions of various food items likely would have changed. Third, although the Russians gradually introduced foreign foodstuffs (sugar, tea, flour, etc.), these items did not assume a significant portion of the Aleut diet since they were expensive and limited in quantity. Thus, Aleuts continued to be highly dependent on traditional resources obtained, especially in this early Russian period, with traditional technology.

#### Conclusions

From the foregoing outline of precontact Aleut

resource use, the following conclusions may be offered:

(1) An inventory of food items utilized by Aleuts closely mirrors an inventory of edible foodstuffs in the Aleutian archipelago. Stated differently, it appears that Aleuts made use of almost all available edible food sources (albeit, of course, to varying degrees).

(2) Aleut resource use was by necessity directed almost exclusively to the sea as the direct or indirect source of food and of fabricational materials. Land resources provided very little in terms of total dietary intake.

(3) Although local differences do exist in the presence and abundance of some species, the archaeological record supports the notion of basic resource use uniformity over space and time for precontact Aleuts. Uniformity is evident in the specific food items, the hunting and gathering technology, and the social and economic aspects of food acquisition and use.

(4) The wide variety of edible foodstuffs, especially the marine invertebrates, enabled most members of an Aleut community to participate to an important degree in the acquisition of food. In other words, food getting was not limited to a single category of people, although the

bulk of the food was undoubtedly provided by the able-bodied younger males, who did all of the sea mammal hunting and participated as well in other activities.

(5) The early Russian period was characterized more by shifts in traditional economic pursuits (through movement of people, reduction of population, etc.) than by the introduction of new resource harvest endeavors or reliance on imported foodstuffs.

(6) Cooperation in hunting and fishing, and sharing of food within a community, was a precontact cultural pattern which continued into the historic period. Subsistence for Aleuts must be viewed as an economic system of adaptation which involved technological, social, and ideological components, and which continued from the precontact period into the Russian period.

#### NOTE

1. Discussion will be limited to traditional Aleut subsistence as revealed by precontact and early postcontact sources as well as by archaeology. Only a few studies of Aleut subsistence in more recent times exist (e.g., Ransom 1946 and Veltre and Veltre 1981), but these do not deal directly with Unalaska; hence, they will not be dealt with in the present study.

## CHAPTER 3

### HISTORICAL BACKGROUND

#### Introduction

Following a brief look at the archaeological resources of the Unalaska area, this chapter presents a brief outline of the Russian and American periods in the Aleutians generally and in Unalaska specifically. This background will be useful in subsequent discussions of the history of resource utilization in that community.

#### The precontact period

As discussed in the previous chapter, Aleuts have resided in the Aleutian Islands for many thousands of years. Throughout the archipelago there are literally hundreds of known archaeological sites, and Unalaska Island and Unalaska Bay, specifically, possess a good number of these. However, systematic archaeological research has been infrequent on the island, although for over a century a number of persons have conducted excavations. Dall in the 1870s (1873; 1875; 1877), Jochelson in 1909-1910 (1925), Hrdlicka in the late 1930s (1945), Cahn during World War II (McCartney 1967), and

Bank in the early 1950s (1953) are among the primary investigators of Unalaska archaeology. McCartney (1967) has provided an excellent review of the work of these individuals.

From what has been learned about the archaeology of Unalaska, the following general conclusions may be offered:

(1) Aside from what may be described as evidence of intra-Aleutian variation, the types and styles of artifacts from Unalaska are for the most part "typical" Aleut forms.

(2) The sites themselves are situated similarly to virtually all Aleutian sites -- along the coast -- and they are similar in the nature of their midden deposits.

(3) The artifactual and faunal material from the sites attest to nearly total dependence on the sea since the earliest period of occupation.

(4) Amaknak Island and nearby areas are especially rich archaeologically, with a relatively dense distribution of sites.

## The Russian period<sup>1</sup>

Russian contact in Alaska began with the 1741 voyages of Vitus Bering and Alexei Chirikof, made on behalf of the Russian government. Although only brief landings and encounters with natives occurred during these voyages, the return of the crews to Kamchatka in 1741 and 1742 with the skins of sea otters and foxes from the Commander Islands insured the future of Russian contact in the Aleutians and farther eastward. As early as 1743, Emelian Basov journeyed to Bering Island, hunting there until the following year. He sailed again in 1745, returning from Bering Island in 1746 with a cargo of 1,600 sea otters, 2,600 fur seals, and an equal number of blue fox pelts (Berkh 1974:2). Basov journeyed again and again to the Aleutians, his ventures anticipating those of dozens of other promyshlenniki, or fur hunters. By the early 1770s, no fewer than 31 fur hunting expeditions had successfully been made to the Aleutians, the promyshlenniki pushing ever farther eastward in their pursuit of the sometimes elusive, and ever fewer, sea otters.

The Commander Islands (Bering and Copper) became a frequent wintering stopover for these voyages, and by 1768 the crews had exterminated the last of the sea cows which were found there and which had been easily hunted for food. The Near Islands (Attu, Agattu, and Shemya) were discovered by 1745, the promyshlenniki pushing to the Andreevskys of the

central Aleutian archipelago by 1750, to Umnak and Unalaska of the eastern Aleutians by 1759, to the Alaska Peninsula by 1761, and to Kodiak by 1763. The voyages made during these early years of Russian contact -- until 1799 -- were usually of several years' duration, not returning until a profitable number of skins had been amassed. The promyshlenniki were ruthless in their pursuit of fortune, and over the latter half of the 18th century their activities brought exploitation, disease, and death to many of the Aleut residents of the islands. Standard procedure for the hunters included the collection of yasak, or tribute, from the Aleuts, usually in the form of sea otter skins, and to insure "good" relations with the natives, the promyshlenniki took hostages from among the Aleuts.

From the first interaction between Russians and Aleuts on Agattu Island (Bancroft 1886:102-105), violence seemed to be the rule rather than the exception, and the precontact Aleut population dwindled to perhaps twenty percent of its size within the first 75 years of contact (Lantis 1970:277). Men like Soloviev and Glotov were personally responsible for the murders of thousands of eastern Aleuts in the 1760s (Davydov 1977:188; Veniaminov 1840b:194), and many other Aleuts died at the hands of promyshlenniki throughout the islands.

Aleuts were subjected to extraordinary hardships by the fur hunters. Aleut men were taken from their homes and



forced to accompany the Russians eastward, often in the face of hostilities from neighboring native groups. Such was the case in southeastern Alaska, for example, when in 1793 nine Aleuts were killed and 15 wounded while accompanying Baranov and again in 1802 when 130 Aleuts perished defending the new settlement at New Archangel (present day Sitka) (Tikhmenev 1978:33). Similar examples abound.

Lacking firearms, the Aleuts never posed a serious threat to the advancing promyshlenniki, although there were relatively few Russians in Alaska at any given time, and what population there was was always scattered among various small settlements. In 1778, for example, there were approximately 462 Russians between Unalaska and Prince William Sound, and these were divided among 8 settlements (Fedorova 1973:116-117). In the following decade, from 1778-1788, the Russian population never exceeded 500, dropping to about 400 by 1794 (Fedorova 1973:124) and to no more than 225 by 1799 (Gibson 1976:7).

The 1780s and 1790s saw the formation and elaboration of a number of trading companies, among them ones owned by Grigorii Shelikov and Ivan Golikov as well as by Mylnikov. It was the merger of companies owned by these three men into the United American Company in 1797 that led directly to the 1799 formation of the Russian-American Company. The latter company was given legal monopolistic

rights to all hunting activities north of latitude 55° and was authorized the support of the Russian military forces, including its navy.

While payment of tribute by natives was eliminated in 1795 (Fedorova 1975:16), the Russian-American Company's success was based on the availability of Aleut and other indigenous labor. Not only was it difficult to maintain a Russian population large enough to undertake hunting pursuits, but, as one Russian naval officer observed in 1820,

"If the company should somehow lose the Aleuts, then it will completely forfeit the hunting of sea animals, because not one Russian knows how to hunt the animals, and none of our settlers has learned how in all the time that the company has had its possessions here" (quoted in Gibson 1976:8).

Thus, Aleuts were a valuable labor pool for the Company, and they were forced to work for it:

As a result of a need for competent hunters and the availability of Aleuts for service, the company compelled Aleut men to catch primarily sea otter, fur seal and sea lion. In effect, it turned Aleut men into serfs, for compulsory hunting for the company was similar to forced labor . . . by Russian serfs on a lord's land. . . . Thus, the Company followed the very practice which promyshlenniki had begun and the government knew that the company was forcing Aleut men to hunt sea mammals, but permitted this practice apparently because the company was unable to obtain the sea otter fur wealth of the North Pacific Ocean in any other way (Sarafian 1970:155).

Over the years, the activities of the Russian-American Company changed. Plagued by various misfortunes

during its early years (Gibson 1976:13-15), by the 1830s the Company had settled down to more conservative administration. Increasing foreign competition (British and American) encouraged northward exploration and expansion by the Company; humanitarian needs were attended to, with doctors, priests, and teachers brought into service in the colonies; fur production was down sharply from earlier years, so that prices rose and alternate sources of income were sought.

The later years of the Russian-American Company were times of diminishing financial success. Not only was the supply of furs down, but so were world demand and prices, and the Company diversified its activities in order to spread its risks (Gibson 1976:25). Attempts were made at such enterprises as whaling and coal mining, and these yielded certain financial rewards. The Company, however, slowly lost ground, and by the early 1860s its stability was on the wane. The Russian government had its own interest directed to Europe at the time, and the Company was in debt to the Treasury. In 1867, the unprofitable American operations of the Russian-American Company came to an end with the sale of Alaska to the United States.

During the Russian period, the settlement at the present site of Unalaska (formerly called Iliuliuk) was of major importance. Situated on the excellent harbor of

Unalaska Bay, this location was a frequent port of call and base of operations for many travelers during the late 1700s and early 1800s. With the formation of the Russian-American Company in 1799, the settlement at Unalaska became the administrative center for the eastern Aleutian area, and the Aleuts of that general area came under strong Russian influence. Various writers of the time describe the life and culture of the Aleuts, but none as fully as Veniaminov, a priest who resided in Unalaska from 1824-1834. In Chapter 5 substantial use will be made of the detailed information provided by him concerning resource use.

Unalaska (or Iliuliuk) was but one of several Aleut communities on Unalaska Island during the Russian period (and well into the American period). Table 3-1 itemizes the population of Unalaska Island, the Unalaska/Dutch Harbor area, as well as the number of settlements on the island for selected years.

#### The American period

In the years following the purchase of Alaska, Unalaska remained an important community. Dall (1870:260) states that Unalaska was a major refueling and resupplying port and that it was the third most important settlement in Alaska next to Sitka and Kodiak. The Alaska Commercial Company and the North America Commercial Company followed the Russian-American Company's departure.

TABLE 3-1:--Population and number of settlements, Unalaska Island and Unalaska/Dutch Harbor Area, 1759-1982

Year	Population Unalaska/Dutch Harbor Area	Population Unalaska Island	Number of Settlements, Unalaska Island
1759 <sup>a</sup>	--	1000+	24
1805 <sup>b</sup>	360	800	15
1834 <sup>c</sup>	196	470	10
1879 <sup>d</sup>	304	--	--
1890 <sup>e</sup>	317	549	5
1897 <sup>f</sup>	250	482	5
1900 <sup>g</sup>	428	--	4
1910 <sup>h</sup>	281	--	4
1920 <sup>i</sup>	299	--	4
1930 <sup>j</sup>	226	--	4
1940 <sup>k</sup>	350	406	4
1950 <sup>l</sup>	173	173	1
1960 <sup>m</sup>	218	218	1
1967 <sup>n</sup>	246	246	1
1970 <sup>o</sup>	342	342	1
1977 <sup>p</sup>	725	725	1
1980 <sup>q</sup>	1322	1322	1
1982 <sup>r</sup>	1944	1944	1

a-j, l-n From Jones (1969:66).

<sup>g</sup>Figure probably represents increases due to the Nome gold rush.

<sup>k</sup>Rollins (1978)

<sup>o, q</sup>U.S. Dept. of Commerce (1982:3-10)

<sup>p</sup>Alaska Consultants, Inc. (1981:9)

<sup>r</sup>Personal Communication, Unalaska City Office, 1982

Because a number of outlying villages were occupied on Unalaska and Sedanka Islands well into this century and, hence, are well known to today's residents of Unalaska, a brief review of their history is profitable. In the course of resource use analysis in Chapter 5, occasional reference will be made to these communities.

Makushin village was located on the north shore of Makushin Bay, southwest of Makuskin Volcano (Figure 3-1). Likely dating to precontact times, Makushin had a population of about 50-70 persons in the recent past (Table 3-2). Petroff, who visited the settlement in 1878, wrote the following:

Makushin is a very poor village of fifty inhabitants, with a chapel, but no store (cited by Hinckley 1966, in turn cited in Unalaska High School 1978:6).

The people of Makushin are mere auxiliaries of the inhabitants of Oonalashka village, and furnish a contingent every year for the regular sea-otter hunting party that leaves Iliuliuk for Sannakh. They have an opportunity better than that enjoyed by any other settlement in their country to capture the young fur-seals in their passage through the straits of Oomnak in the fall. . . (Petroff 1880:19-20).

Chernofski, located on the northern coast of Unalaska Island near its western end, was apparently not well endowed with food resources, according to Veniaminov:

This village is the most poverty stricken of any on Unalaska. The principal food supply of the present inhabitants is black mussels, which they collect on the bay and terpugs which are caught on a rocky reef jutting

TABLE 3-2:--Population of outlying settlements in the  
Unalaska Island region.

Year	Makushin	Chernofski	Kashega	Biorka
1880 <sup>a</sup>	62	101	74	140
1890 <sup>b</sup>	51	78	46	57
1900 <sup>c</sup>	71	61	52	48
1920 <sup>d</sup>	--	51	51	46
1930 <sup>e</sup>	--	38	38	22
1940 <sup>f</sup>	10	26	26	20

a,b Rollins (1978)  
c-f Jones (1973:8)

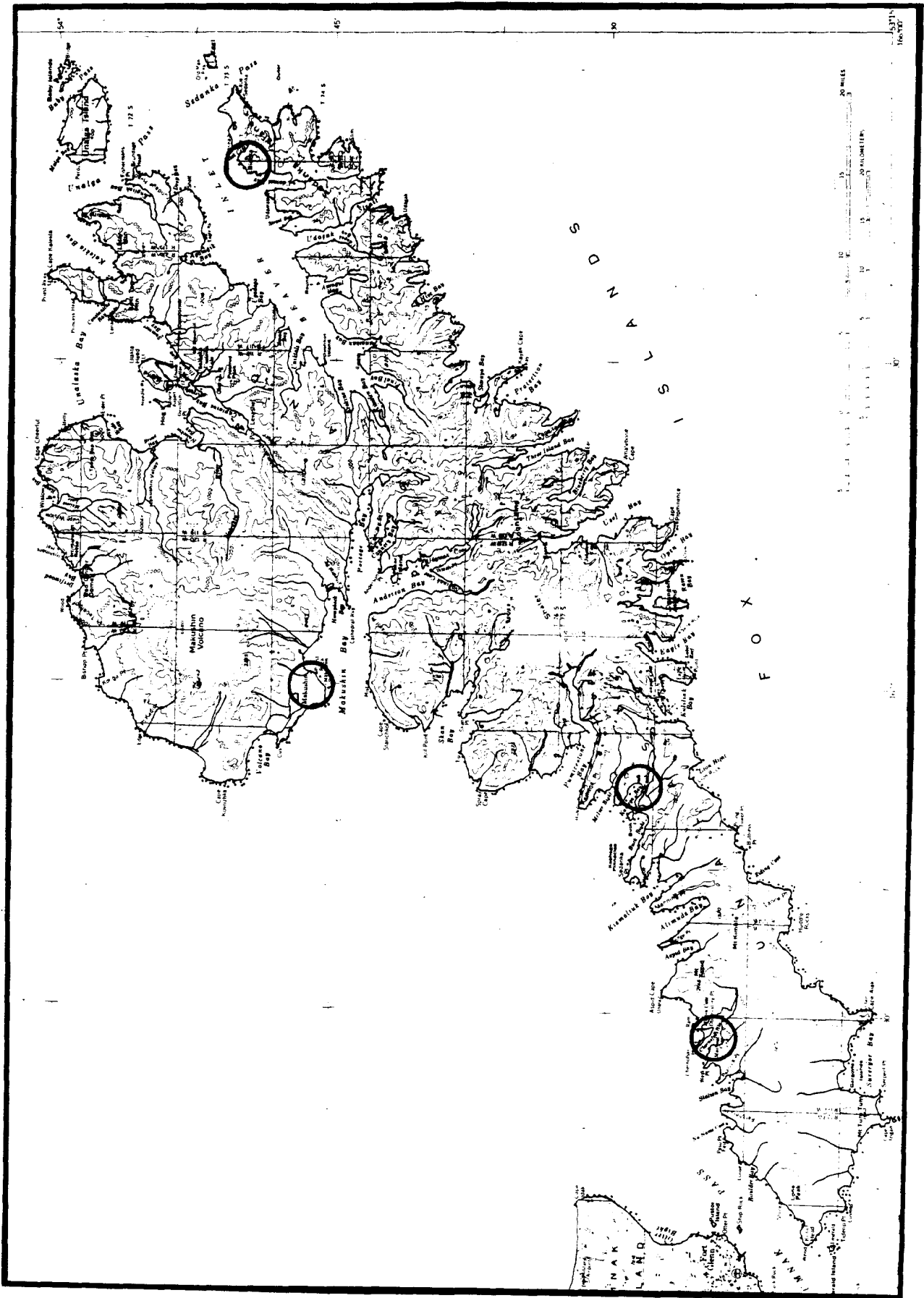


Figure 3-1:--Locations (west to east) of the former settlements of Chernofski, Kashega, Makushin, and Biorka.



out into the sea. Fish do not come into the rivers, except a few into a stream at the head of the bay. As for deep sea fish, although they are always to be found on the neighboring shores, yet the natives, either from lack of time, or by reason of unfavorable winds etc. are rarely able to supply themselves with a sufficiency (Veniaminov 1840a:58).

Around the year 1890, Chernofski was described by Z.L. Tanner in the following manner:

[The village] is situated on a narrow neck of land between the harbor and the sea, and is conspicuous when passing along the coast. The Greek church, store, and residence of the Alaska Commercial Company's agent are frame buildings, and the native population, forty-six souls, live in barabaras. The men, like those of the other villages on the island, are hunters, and were away on their summer cruise at the time of our visit (1891:245, cited in Unalaska High School 1978:10).

Kashega village, also located on the northern shore of Unalaska, was described by Veniaminov in part in these words:

Koshigin Village is within Koshigin Bay on the left shore at a fairly level spot along the mouth of streams flowing from the lakes. The buildings here are a yurt, a shed, a barabora, a bath-house and a cow-house belonging to the Company, -- which has here its baidarschik [sic], overseeing all the western half of the island, -- and eight Aleut yurts. The dwellers here, besides the baidarshchik, are 41 persons, 18 males and 23 females.

The products of the village are not very enviable, though red-fish are found at the mouth of the stream almost from January to July, and Alpine, humpback and silver salmon from June to October; still the quantity is very small, so that even in the best times, the catch hardly exceeds 300 fish. Salt water fish are taken outside the bay at a distance, and it is sometimes possible to catch sea lions on the southern shore. A small number of seals, hunted on the rocks, with roots, sarana lilies, and chagitka [orchids] growing in great quantities, form the important articles of food. Since 1833, the Company has established cattle-breeding at

this place (1840a:56-57).

Biorka village, on the Beaver Inlet shore of Sedanka Island, was described by Veniaminov as depending chiefly on deep sea fish and mussels for food. In the late 1800s, Biorka was described by Elliott as having some 28 buildings, including frame houses, barabaras, and a chapel (Elliott 1886:177). In the early years of this century, Applegate wrote the following:

Burka Natives get most of their fish from a small stream and lake opposite their village, on Unalaska side of Beaver Inlet. The stream is four feet, or less, in width. Not may fish at this place (cited in Unalaska High School 1978:8).

Regarding the decline in the population of Makushin, Chernofski, Kashega, and Biorka and the eventual abandonment of these villages, Jones states that they "did not have local economies sufficient to support their populations after sea otter hunting ended [in 1911]" (1973:17). She continues as follows:

In the prewar period, members of these villages were moving to Unalaska, the nuclear village, which offered the best job opportunities and community services in the Unalaska village complex.

The migration was interrupted early in World War II when the federal government evacuated all Unalaska Aleuts to southeastern Alaska. When the evacuation ended in 1945, the government completed the consolidation process; it returned evacuees to Unalaska Village, and officials informed them that no government services would be provided to the other villages (1973:17-18).

During World War II, Unalaska/Dutch Harbor was a major Navy and Army base, and in the years since, the

community has grown (slowly at first) into a seafood fishing and processing center of major importance.

#### Unalaska community profile

Unalaska today has a resident population of nearly 2000 (see Table 3-1), up sharply from that of only a decade earlier. During that time, although the Native population has also risen, the resident non-Native population has changed most dramatically. Thus, the proportion of Natives within the population declined to 23.2% in 1977 (Bantz 1977) and is about 10% today. These figures do not include a large (1000+) transient workforce. The number of housing units in Unalaska has risen from 110 in 1970 to 323 in 1980 (U.S. Dept. of Commerce 1981:4).

The growth of population in Unalaska in recent years is the direct result of the growth of the seafood industry. Commercial fishing and processing began rapid growth in Unalaska in the early 1960s. In 1967, there were 5 processing plants in the city, and in 1980 there were 15 (Alaska Consultants, Inc. 1981:5). A wide range of seafoods is processed in Unalaska, including king and tanner crab, salmon, halibut, and shrimp.

The City of Unalaska includes land both on the mainland of Unalaska Island as well as on Amaknak Island, the latter often referred to as the Dutch Harbor part of

town (Figure 3-2). Services are fairly well distributed between the two locations, each having a post office, hotel, restaurant, bar, and grocery store. Additional services in the city include gift shops, hair stylists, building supply stores, taxis, laundries, newspaper, and bookstore. The community is served by daily flights on Air Pac and Reeve Airlines. The school, located on the Unalaska "side," offers grades K-12. Church services are held by the Church of the Latter Day Saints, the Russian Orthodox Church, St. Christopher's Catholic Mission, and the Unalaska Christian Fellowship.

Unalaska was incorporated as a first class city in 1942. It has a city manager form of government, in which a city council oversees the daily administration of a city manager. The local Aleut corporation, the Ounalashka Corporation, owns approximately 90% of the land in the city, and is currently expanding its investments in various enterprises.

### Conclusions

On the basis of archaeological remains, it is evident that the Unalaska Bay area was occupied by Aleuts for thousands of years prior to the coming of the Russians. During the Russian period, Aleut population throughout the islands was considerably reduced, and settlements were



consolidated into ever fewer communities as time went on. By the early years of World War II, the last of the outlying villages on Unalaska Island and nearby Sedanka Island (Kashega, Chernofski, Makushin, and Biorka) were abandoned, with the contemporary community of Unalaska the island's only permanent settlement today.

World War II had a major effect on the island, both in the influx of personnel and materials as well as in the removal of the Aleut population to Southeastern Alaska. Following the war, the local economy was generally depressed until the early 1960s, when the commercial fishing industry emerged as a major entity. Since that time, dramatic growth and shifts in the population have left the former relatively sizeable Aleut population as approximately 10% of a growing, predominantly non-Native, population.

As a major fishing port in the United States in terms of the value of landings, Unalaska today is very different from what it was like a half century ago. It is now a large, complex, ethnically diverse community intimately tied into the larger economic world. It is in this light that contemporary resource utilization, as presented in this report, must be viewed.

NOTE

1. The section of the Russian period is taken, with some revision, from Veltre (1979:64-67).

## CHAPTER 4

### THE NATURAL SETTING

#### Introduction

This chapter presents background information concerning the natural environment of Unalaska. Geographical, climatological, and biological characteristics of the Aleutian Islands generally and Unalaska Island specifically provide a basis on which to view the resource use activities discussed in the next chapter.

#### Location, geography, and geology

Unalaska Island (Figure 4-1) is located near the eastern end of the Aleutian Archipelago, a chain of islands extending generally westward some 1800 km from the tip of the Alaska Peninsula (see Figure 1-1). Of the more than 200 islands in the Aleutians, Unalaska is second only to Unimak Island in size, being about 140 km in length and covering about 3100 km<sup>2</sup>. It is one of the Fox Islands group, which includes those islands from Unimak Island in the east to Umnak Island in the west.

Unalaska and neighboring Sedanka Island, which is



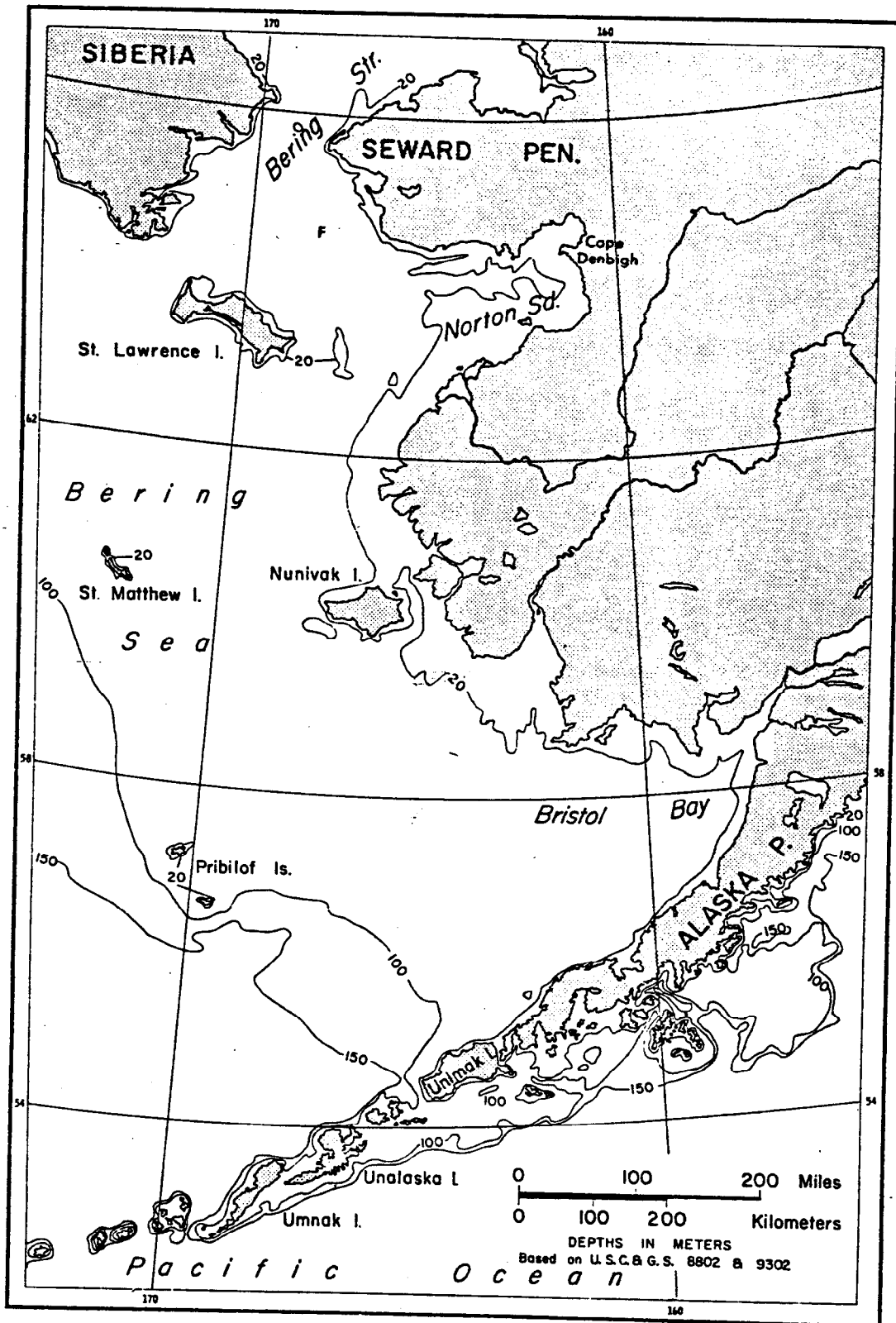


Figure 4-1:--The Eastern Aleutian Islands and Southwestern Alaska (from Black 1966:20).

separated from the former by narrow Udagak Strait, have highly convoluted coastlines, especially on the northeast-southwestward trending long body of the islands, with numerous deep bays. Beaver Inlet on the east, Unalaska Bay on the north, and Makushin Bay on the west are the most prominent arms of the ocean which penetrate the island, each in turn dividing into numerous smaller bays and coves. The coastline around the northern segment of Unalaska (north of Makushin Bay and west of Unalaska Bay) lacks such complexity, characterized instead by steep cliffs with few bays. By nearly a factor of two, Unalaska's 735 km of coastline is the greatest of any island in the Aleutians (McCartney 1973:124).

The bulk of Unalaska is characterized by steep topography, with numerous ridges and peaks rising to 600 to 900 m. The large, and still active, Makushin Volcano rises to 2036 m and dominates the northern portion of the island. From Kashega to the southwestern tip of the island, the island is generally less steep and of lower elevation, with only a single peak, Mt. Aspid, greater than 600 m.

#### Climate

The climate of Unalaska Island is generally similar to that of the entire Aleutian Islands chain. The North Pacific Ocean and the Bering Sea are the primary influencing factors in the area, which is characterized by a high frequency of overcast skies, wind, and precipitation. However,

although precipitation is frequent, total annual amount in Unalaska is moderate, about 157 cm. Temperatures remain within a relatively narrow range, with winter average daily lows only slightly below freezing and summer average daily highs around 10°C. Table 4-1 presents selected meteorological data for Unalaska and other Aleutian localities.

Except for the extreme eastern Aleutian area, the entire archipelago lies well south of the distribution of winter sea ice. Ocean temperatures in the Unalaska region range from about 3°C in February to about 9°C in August (AEIDC 1976:34, Fig. 49). Tides are generally diurnal in the Unalaska area, although to the northeast along the Alaska Peninsula they are of mixed type. The average tidal range is somewhat over 1 m. Surface circulation is southwestward in the Alaska Current of the North Pacific Ocean south of Unalaska and northwestward in the Bering Sea to the north.

Unalaska Island lies near the edge of the undersea continental shelf. Water depths within 25 km of the island are generally less than about 100 m, gradually deepening on the shelf to the north. To the south, however, the arcuate Aleutian Trench plunges to depths of over 7000 m some 150 km from the island. The nutrient rich upwelling systems which exist in and around the Aleutian interisland passes

TABLE 4-1:--Selected meteorological data for Unalaska and other Aleutian localities

	Unalaska	Nikolski	Adak	Shemya	Attu
Mean Annual Precipitation (cm)	157	--	173	69	--
Mean Annual Percentage, Frequency of Occurrence of Rain and/or Drizzle	24.0	15.5	27.0	20.6	25.7
Mean Annual Sky Cover (tenths)	8.6	8.2	8.7	8.7	8.6
Mean Annual Percentage of Occurrence of Fog	8.3	34.9	14.1	25.7	15.0
Mean Date of Last Spring Occurrence of 0°C	6 May	--	3 May	7 May	9 May
Mean Date of First Fall Occurrence of 0°C	30 Oct	--	23 Oct	30 Oct	13 Oct

SOURCE: AEIDC (1976:16-20)

result in part from mixing of the Pacific Ocean and Bering Sea and provide an important base for the food chain of the area.

#### Terrestrial fauna

As in virtually all of the Aleutian archipelago, terrestrial mammals on Unalaska Island are few in number. Chief among those that do occur is the red fox (Vulpes fulva), which thrives mainly around the coast of the island in the red, cross, and silver phases. Arctic ground squirrels (Citellus parryii), shrews (Sorex spp.), collared lemmings (Dicrostonyx groenlandicus), voles (Microtus oeconomus), and rats (Rattus norvegicus) are found on the island as well, although the rat, as elsewhere in the Aleutians, is a species introduced during the Russian and American periods.

#### Marine fauna

Mammals. A wide variety of marine mammals are present in the Unalaska area. Table 4-2 itemizes these by common and scientific names. Several of the species listed in the table (for example, the common dolphin, the right whale dolphin, and the bowhead whale) are probably actually quite rare in Aleutian waters, according to distributional maps presented by Haley (1978), although they have been reported to occur (Collin et al. 1945). The extent to which these species are utilized locally will be discussed in Chapter 5, but it may be noted here that a sharp decline in the numbers of at least one marine mammal, the sea lion,

TABLE 4-2:--Marine mammals of the Unalaska area

Common Name	Scientific Name
Sea otter	<u>Enhydra lutris</u>
Harbor (or hair) seal	<u>Phoca vitulina</u>
Steller sea lion	<u>Eumetopias jubatus</u>
Northern fur seal	<u>Callorhinus ursinus</u>
Long-nosed (or spinner) dolphin	<u>Stenella longirostris</u>
Rough-toothed dolphin	<u>Steno bredanensis</u>
Common dolphin	<u>Delphinus delphis</u>
Bottlenose dolphin	<u>Tursiops truncatus</u>
Right whale dolphin	<u>Lissodelphis borealis</u>
Striped porpoise	<u>Stenella coeruleoalba</u>
Killer whale	<u>Orcinus orca</u>
Grampus (or Risso's dolphin)	<u>Grampus griesus</u>
False killer whale	<u>Pseudorca crassidens</u>
Pilot whale	<u>Globicephala macrorhynchus</u>
Harbor porpoise	<u>Phocoena phocoena</u>
Dall's porpoise	<u>Phocoenoides dalli</u>
Beluga whale	<u>Delphinapterus leucas</u>
Baird's beaked whale (or giant bottlenose whale)	<u>Berardius bairdii</u>
Stejneger's (or Bering Sea) beaked whale	<u>Mesoplodon stejnegeri</u>
Cuvier's beaked (or goosebeak) whale	<u>Ziphius cavirostris</u>
Sperm whale	<u>Physeter macrocephalus</u>

TABLE 4-2:--(Continued)

Common Name	Scientific Name
Pygmy sperm whale	<u>Kogia breviceps</u>
California gray whale	<u>Eschrichtius robustus</u>
Finback whale	<u>Balaenoptera physalus</u>
Sei whale	<u>Balaenoptera borealis</u>
Little piked (or minke) whale	<u>Balaenoptera acutorostrata</u>
Blue whale	<u>Balaenoptera musculus</u>
Humpback whale	<u>Megaptera novaeangliae</u>
Pacific right whale	<u>Balaena glacialis</u>
Bowhead whale	<u>Balaena mysticetus</u>

SOURCE: Collins, et al. (1945:75-76) and Haley (1978).

has been reported in recent years. Table 4-3 details the magnitude of this change. A comparison of the numbers of birds, sea lions, hair seals, and sea otters is given in Table 4-4.

Fishes. The main fish resources of the Unalaska area, from a local use point of view, are the various species of salmon, the Dolly Varden "trout" (actually char), halibut, and cod. Five species of salmon are present in the waters of Unalaska Island. That which occurs in greatest numbers is the pink, or humpback, salmon. Also found are the red, the silver, the dog, and the king salmon. The Dolly Varden, like the salmon, is anadromous, being found along the shore as well as in streams.

Fishes of the open ocean include the Pacific cod, halibut, and a number of fish of lesser importance locally, including flounders, pogies, and herring.

Invertebrates. The near shore intertidal zone of the Unalaska area, like that of the entire Aleutian archipelago, is rich in marine invertebrates. Chief among these in terms of local resource utilization are sea urchins (Strongylocentrotus sp.), shrimp, octopus, limpets (Acamea sp.), mussels (Mytilus edulis), chitons, clams, and crabs.



TABLE 4-3:--Comparison of Steller sea lions sighted in the eastern Aleutian Islands and Unalaska between 1957 and 1980-1981

Area	1957	1977	1980
Eastern Aleutian Islands	31,774	17,373	7,783
Unalaska Island only	NR	1,722	120*

NR = Not reported

\*Data from 1981

SOURCE: Nysewander et al. (1982:113). See this source for further citations and qualifications.

TABLE 4-4:--Birds and marine mammals of the Unalaska Island area and the eastern Aleutian Islands, 1980-1981

Species	Hog Island and Captain's Bay	Unalaska North Coast	Unalaska South Coast	Eastern Aleutian Islands
All birds	1,237	20,345	20,663	1,791,021
Steller sea lion	0	495	285	8,218
Hair seal	0	205	628	2,476
Sea otter	0	65	249	740

SOURCE: Nysewander et al. (1982:28-29, 32)

## Avifauna

Some 183 bird species, some of which are listed in Table 4-5, have been reported in the Aleutian archipelago and surrounding waters (Sekora 1973:143). The most numerous of these are the pelagic species -- those birds of the open sea beyond two miles from shore -- which have been estimated to number in the millions. Other marine birds also exist in large numbers, but terrestrial species are limited to a few with relatively small populations.

## Flora

The plant life of Unalaska is dominated by three major plant communities. The beach zone is characterized by beach rye (Elymus sp.) and other grasses, beach pea (Lathyrus sp.), cow parsnip (Heracleum lanatum), angelica (Angelica lucida), and sedges (Carex sp.). The lowland tundra contains sedges, marsh marigold (Caltha palustris), bog blueberry (Vaccinium uliginosum), crowberry (Empetrum nigrum), salmonberry (Rubus spectabilis), mosses, and dwarf willow (Salix sp.). The upland tundra is dominated by crowberry, dwarf willow, lichens, mosses, and sedges (Sekora 1973:78).

One of the principal characteristics of the Aleutian flora is the absence of substantial, sizeable, tree growth. For the Unalaska area, it is worth noting that Sitka spruce

TABLE 4-5:--Bird species of the Unalaska Island area

Species	Scientific Name
Common Loon	<u>Gavia immer</u>
Yellow-billed Loon	<u>Gavia adamsii</u>
Red-throated Loon	<u>Gavia stellata</u>
Red-necked Grebe	<u>Podiceps grisegena</u>
Horned Grebe	<u>Podiceps auritus</u>
Northern Fulmar	<u>Fulmarus glacialis</u>
Greater Scaup	<u>Aythya marila</u>
Bufflehead	<u>Bucephala albeola</u>
Barrow's Goldeneye	<u>Bucephala islandica</u>
Common Goldeneye	<u>Bucephala clangula</u>
Oldsquaw	<u>Clangula hyemalis</u>
Scaled Petrel	<u>Pterodroma inexpectata</u>
Fork-tailed Storm-Petrel	<u>Oceanodroma furcata</u>
Leach's Storm-Petrel	<u>Oceanodroma leucorhoa</u>
Double-crested Cormorant	<u>Phalacrocorax auritus</u>
Pelagic Cormorant	<u>Phalacrocorax pelagicus</u>
Red-faced Cormorant	<u>Phalacrocorax urile</u>
Canada Goose	<u>Branta canadensis</u>
Emperor Goose	<u>Philacte canagica</u>
Mallard	<u>Anas platyrhynchos</u>
Green-winged (or Common) Teal	<u>Anas crecca</u>
Harlequin Duck	<u>Histrionicus histrionicus</u>
Steller's Eider	<u>Polysticta stelleri</u>
Common Eider	<u>Somateria mollissima</u>
King Eider	<u>Somateria spectabilis</u>
Common Scoter	<u>Melanitta nigra</u>
Surf Scoter	<u>Melanitta perspicillata</u>
White-winged Scoter	<u>Melanitta deglandi</u>
Common Merganser	<u>Mergus merganser</u>
Red-breasted Merganser	<u>Mergus serrator</u>
Rough-legged Hawk	<u>Buteo lagopus</u>
Bald Eagle	<u>Haliaeetus leucocephalus</u>
Steller's Sea Eagle	<u>Haliaeetus pelagicus</u>
Peregrine Falcon	<u>Falco peregrinus</u>
Gyr Falcon	<u>Falco rusticolus</u>
Rock Ptarmigan	<u>Lagopus mutus</u>
Willow Ptarmigan	<u>Lagopus lagopus</u>
Black Oystercatcher	<u>Haematopus bachmani</u>
Semipalmated Plover	<u>Charadrius semipalmatus</u>
Bristle-thighed Curlew	<u>Numenius tahitiensis</u>
Bar-tailed Godwit	<u>Limosa lapponica</u>
Common Snipe	<u>Gallinago gallinago</u>
Wandering Tattler	<u>Heteroscelus incanus</u>
Ruddy Turnstone	<u>Arenaria interpres</u>
Lesser Yellowlegs	<u>Tringa flavipes</u>
Sharp-tailed Sandpiper	<u>Calidris acuminata</u>
Rock Sandpiper	<u>Calidris ptilocnemis</u>

TABLE 4-5:--(Continued)

Species	Scientific Name
Least Sandpiper	<u>Calidris minutilla</u>
Northern Phalarope	<u>Lobipes lobatus</u>
Red Phalarope	<u>Phalaropus fulicarius</u>
Glaucous Gull	<u>Larus hyperboreus</u>
Glaucous-winged Gull	<u>Larus glaucescens</u>
Black-legged Kittiwake	<u>Rissa tridactyla</u>
Bonaparte's Gull	<u>Larus philadelphia</u>
Aleutian Tern	<u>Sterna aleutica</u>
Common Murre	<u>Uria aalge</u>
Thick-billed Murre	<u>Uria lomvia</u>
Pigeon Guillemot	<u>Cepphus columba</u>
Kittlitz's Murrelet	<u>Brachyramphus brevirostre</u>
Marbled Murrelet	<u>Brachyramphus marmoratus</u>
Ancient Murrelet	<u>Synthliboramphus antiquus</u>
Cassin's Auklet	<u>Ptychoramphus aleuticus</u>
Whiskered Auklet	<u>Aethia pygmaea</u>
Crested Auklet	<u>Aethia cristatella</u>
Horned Puffin	<u>Fratercula corniculata</u>
Tufted Puffin	<u>Lunda cirrhata</u>
Short-eared Owl	<u>Asio flammeus</u>
Belted Kingfisher	<u>Megaceryle alcyon</u>
Bank Swallow	<u>Riparia riparia</u>
Common Raven	<u>Corvus corax</u>
Winter Wren	<u>Troglodytes troglodytes</u>
Water Pipit	<u>Anthus spinoletta</u>
Dipper	<u>Cinclus mexicanus</u>
Gray-crowned Rosy Finch	<u>Leucosticte tephrocotis</u>
Savannah Sparrow	<u>Passerculus sandwichensis</u>
Fox Sparrow	<u>Passerella iliaca</u>
Song Sparrow	<u>Melospiza melodia</u>
Lapland Longspur	<u>Calcarius lapponicus</u>
Snow Bunting	<u>Plectrophenax nivalis</u>

SOURCE: Nysewander et al. (1982:94-110) and local residents.

(Picea sitchensis) trees planted at various times since 1805 are still growing in numerous locations around the community, but especially on Amaknak Island.

As a final note on the flora of Unalaska, mention may be made of the abundance and variety of seaweeds and kelp around the coast of the island. In addition to a their value to the human inhabitants of the area, such vegetation is an important food for certain mammals, birds, fish, and invertebrates.

### Conclusions

The natural environment of Unalaska is generally typical of that of the rest of the Aleutian Islands. The climate is quite moderate, exhibiting extremes only in terms of frequent sky cover and high winds. Animal life is especially abundant, with marine-based species vastly outnumbering terrestrial ones.

## CHAPTER 5

### NON-COMMERCIAL UTILIZATION OF RESOURCES IN UNALASKA

#### Introduction

This chapter presents an item-by-item discussion of the various local resources used by residents of Unalaska. Although major emphasis is on the contemporary utilization of these resources, some historical information is provided as well.

The resource categories discussed in this chapter are itemized in Table 5-1. The list is organized for convenience only, and no significance should be attached to the order in which resources are presented or to the grouping of various resources in certain categories. The resource categories in the table are numbered to correspond to the inventory in the text. Discussion of the ranking of these resources in terms of dietary and cultural significance will be undertaken in Chapter 6.

TABLE 5-1:--Inventory of resources  
of Unalaska

Resource	Chapter Section*
Sea lions	1
Harbor seals	2
Other marine mammals	3
Salmon	4
Halibut and cod	5
Other fish	6
Birds and eggs	7
Marine invertebrates	8
Berries and other plants	9
Other resources	10

\*Numbers correspond to those used in the resource discussion sections in this chapter.



## Inventory of resources

### 1. Sea lions

Sea lions have been a major resource of the Aleut people since precontact times. In the past, these animals were of value not only for the food which they provided but also for the raw materials which they supplied. Table 5-2 itemizes the diverse uses to which sea lion products were put by Aleuts. Such full use of natural resources was not unique to the sea lion, but characteristic generally of Aleut adaptation to an environment in which virtually all food and fabricational materials came from the sea.

Sea lions are large animals, with adult males 4 m in length and weighing as much as 1000 kg and females about 2 m and 360 kg. They exist throughout the Aleutian archipelago, having established hauling areas and rookeries. They generally favor water of less than 50 fathoms.

Sarychev, describing events in Unalaska in the early 1790s, wrote that hunting of all sea mammals followed certain similar customs:

The first successful darter receives half the skin and the entrails, and has besides the right of assigning the other half to any one of the hunters he pleases; the second successful aim entitles the person to the neck, and the remaining entrails; the third takes the bladder; the fourth and fifth can claim the fore feet; the fifth and sixth the hind feet. The flesh is shared equally among all the parties concerned (1807:57).

TABLE 5-2:--Utilization of the Steller, or Northern, Sea Lion

Part of Animal	Partial List of Uses
1. Hide	Cover for bidarka and baidar; line for harpoon
2. Flesh	Food
3. Blubber	Food (eaten with meat; also rendered for oil)
4. Organs	Food
5. Bones	Ribs for root diggers; humerus for club; baculum for flaker
6. Teeth	Decorative pendants; fishhooks
7. Whishers	Decoration on wood hunting hats and visors
8. Sinew	Cord and thread for lashing and sewing
9. Flippers	Soles used for boot soles; contents gelatinized in flipper and eaten
10. Pericardium	Water bottle; general-purpose container
11. Esophagus	Parka, pants, leggings of boots, pouches
12. Stomach	Storage container
13. Intestines	Parka, pants, pouches

SOURCE: Laughlin (1968:40)

Regarding sea lions specifically, Sarychev shed light on the apparent placation of these animals by Aleuts:

At the commencement of the year's chace [sic], the person to whose share the first sea-lion falls, distributes his portion of flesh among all the Aleutians of his place; but they are obliged to return him all the bones, which being collected together, are thrown back into the sea (1807:57-58).

Veniaminov, writing of Unalaska in the period from 1824 to 1834, acknowledged that sea lions were "extremely useful for the local inhabitants. They use its meat for food, its skin for the sheathing of the baidari and baidarki [the Aleut open skin boats and covered skin boats, respectively], the throat for boot tops, the stomach in place of dishes, while they make the finest kamleika [rain garments] from the intestines" (1840b:387).

Veniaminov reported fewer sea lions in the Unalaska region than were formerly there: "In former times the sea lions, just as other beasts, were quite numerous, but they have decreased considerably due to continuous and sometimes unsupervised hunting" (1840b:387-388). He further stated that sea lions were seen "now scarcely at all, and only to a rock separated from the shore by a high, narrow passage, not far from Usov [Usof] Cove on the south shore of the island [of Unalaska]" (1840a:47). Finally, the Aleuts of the Unalaska area called themselves Qawalangin, "Sons of Sea Lions" (Black 1980:82).

As mentioned briefly in Chapter 4, the number of sea lions in the eastern Aleutians has declined over the past few decades (see Table 4-3). The causes for this decline are not known, but may include possible pathogens and reduction in sea lion food supply due to increased commercial fishing (Braham et al. 1980:32-33). In this regard, it may be noted that one local hunter reported that sea lions are not particularly hard to find, especially in fall and spring when they come nearer to the community.

Prior to passage of the Marine Mammal Protection Act of 1972, sea lions were hunted by the Native population of Unalaska as well as by a limited number of non-Natives. Today, there are about 12 active Native sea lion hunters in Unalaska. Estimates of the number of sea lions killed per year range from 5 to 50, with the most frequent figure being around 20. Skiffs are used for hunting, and if long trips are planned (as are sometimes done between mid-May and the end of August), two boats or more will hunt together. In winter, most hunting is done within the confines of Unalaska Bay, but at other times of year more distant trips to the rookery at Bishop Point (several kilometers west of Driftwood Bay on the north shore of the island), to the Wislow Island area, to Unalga Island, and to Beaver Inlet are made on occasion (Figure 5-1).

In addition to the skiffs, which are generally from 14-16 feet, engines of from 25-50 horsepower are used.

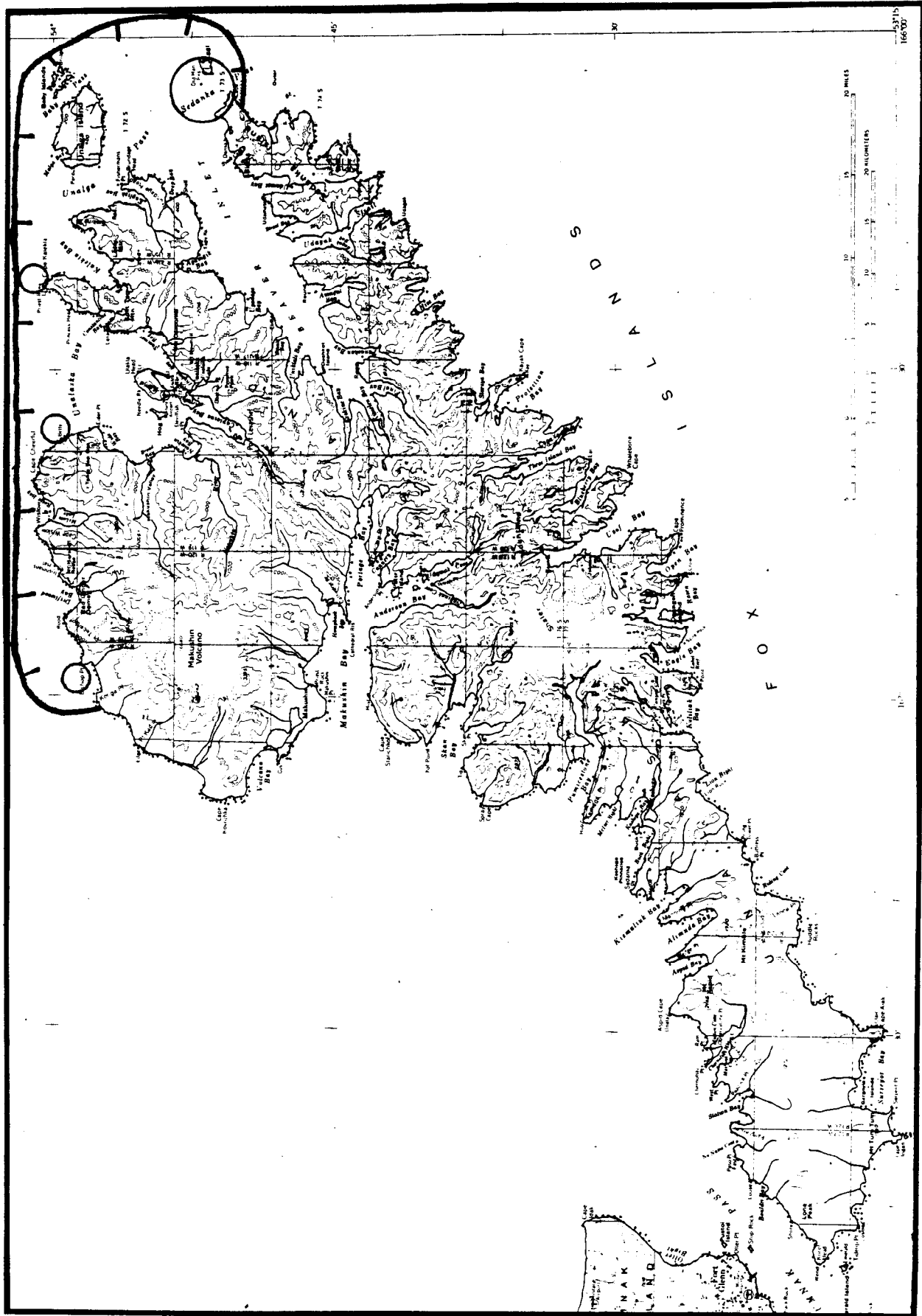




Figure 5-1:---Primary sea lion hunting area  and rookeries  --- 1982

Popular rifles for sea lions are .222s or .30-30s, since smaller calibers can have difficulty penetrating the thick skulls of the animals. Some hunters use CB radios, although communication back to Unalaska is impossible beyond certain headlands. Survival suits are not used, although emergency food and repair equipment are usually brought along.

Most killing of sea lions is done with the animals in the sea, rather than hauled up on land. While there is the risk that sea lions may sink after they are shot in the water, landing a skiff at the hauling areas can be a dangerous undertaking due to the multitude of animals as well as to ocean swells. Sea lions are sometimes chased at sea until exhausted, when they may be shot more easily. If a sea lion sinks after it is shot, it is sometimes possible to retrieve it with a weighted hook. A floating sea lion may be retrieved with a similar device. While most wounded sea lions are retrieved, some are lost.

It appears to be the general consensus among the Native population of Unalaska that sea lion meat is preferred to that of harbor seal. A hunter will characteristically share his sea lion, giving portions to older persons, relatives, and friends. Informants say that sharing is not as extensive as it was formerly, primarily due to the fewer animals being killed. Before World War II, more sea lions were hunted, and the meat was shared on a community-wide basis.

Fresh sea lion meat is prepared in many ways, similar to the manner in which other red meats are used. Methods of preserving the meat for future use include freezing, drying, smoking, and salting. It was reported that sea lion flippers in former times could be hung and aged for several days and then cut up and boiled. Also, sea lion heads could be skinned, cooked, and eaten. Likewise, a kind of head sausage was made from sea lion flipper, brains, and spices.

Aside from use of the meat of sea lions, there is limited use of the skins for such items as gun and knife cases and mittens, of the throats and intestines for dolls, and of the bones for carving.

## 2. Harbor seals

Harbor seals, with sea lions, were the sea mammals of greatest dietary importance for Aleuts throughout the Aleutian Islands. Although great numbers of seals may haul out together, they do not maintain established hauling areas and rookeries nor do the males establish harems, as is the case among fur seals and sea lions. Male harbor seals may reach 2 m in length and weigh as much as 120 kg, and females are about 25% lighter. Table 4-4 in the previous chapter gave the number of harbor seals in the Unalaska Island region in 1980-81 as somewhat over 800.

Veniaminov stated in the early 1800s that harbor seals came to Unalaska "in such small numbers that it is doubtful if more than 100 skins are taken . . ." (1840a:47). It is interesting to note that Veniaminov reported that harbor seals lived in at least two lakes on the island (1840a:47-48). As with sea lions, there were many non-food uses to which harbor seals were put. Veniaminov mentions, for example, that seal skins were used for bedding covers over grass mats (1840b:217).

In Unalaska today, harbor seals are hunted for the most part by the same persons who hunt sea lions. The same basic hunting techniques are employed, although smaller rifles such as the .22 may be used. Figure 5-2 indicates the areas in which harbor seals are found. Hunting is often



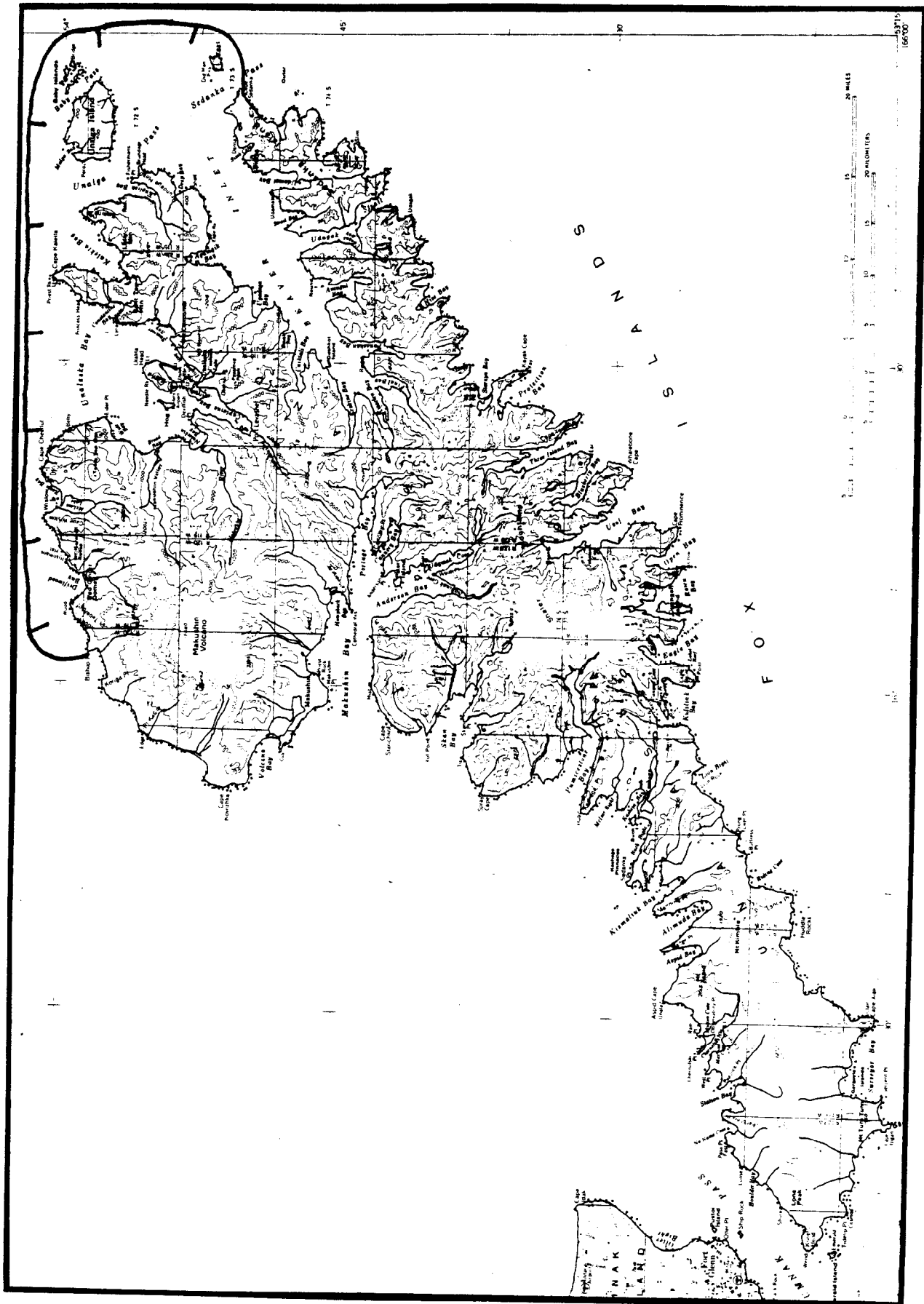


Figure 5-2:--Primary harbor seal hunting area --- 1982.

focused near known hauling areas, such as that near Wide Bay on the western side of Unalaska Bay, although harbor seals may be found over the entire extent of the bay, especially along the immediate coast. Hunting trips are sometimes taken as far as the Baby Islands and Beaver Inlet. Like sea lions, harbor seals are occasionally not retrievable after shooting, although the return rate is better than for sea lions.

The number of harbor seals reported killed in the past year ranges from 5 to 35, with most informants estimating about 20. Since, as discussed in the previous section, sea lions are generally preferred to harbor seal, many of the harbor seals that are killed are obtained on hunting ventures on which no sea lions are found.

Sharing of harbor seals in the past and today follows the same pattern as that described earlier for sea lions. Preparation of harbor seals usually includes soaking the meat in water overnight, sometimes with baking soda added, to remove the strong blood taste. Harbor seal liver is a delicacy, and it and the meat may be eaten fresh. The meat may be frozen, dried, smoked, or salted. Within the memory of informants, harbor seal intestines were braided with blubber and cooked, to be eaten cool with hot mustard. Certain limited use of harbor seals for fabricational purposes today includes use of skins for mittens and of intestines and skins for dolls' clothing.

Almost all of the Aleut families in Unalaska today use seal oil. In the old days, seal oil was made by putting washed strips of blubber in a dried seal stomach. This would produce especially clear oil. Today, seal oil is made by putting thin strips of blubber in a jar in a cool dark place for regular oil, or in a warm dark place for "stinky" oil. Oil is commonly eaten with rice, potatoes, fish, and other foods. It may also be combined with berries and salmon liver. Another method for making oil is to simmer seal blubber in a pot, producing an oil good for frying, lamp fuel, and gun lubrication. While many people use seal oil today, only a few families actually make it, sharing their precious commodity.

One interesting aspect of the hunting of harbor seals is that the Marine Mammal Protection Act of 1972 put an end to non-Native hunting of these animals. Prior to that year, several non-Native hunters took a substantial number of harbor seals yearly, oftentimes making the meat available to all members of the community. Special consideration was given to providing meat to older Aleuts as well. Since the 1972 Act went into effect, people have reported that less harbor seal is available in the community for subsistence use. More will be said concerning this issue in the next chapter.

In addition to the hunting of seals for local use, harbor seals (as well as sea lions) are also killed by commercial fishermen to protect their nets. Some informants believe that this is having a substantial effect on the seal population, greater even than when the animals were hunted for their skins prior to 1972. Killing harbor seals to protect fishing gear is not new in Aleutian waters; Ransom (1946:611) describes the same situation over 30 years ago.

### 3. Other marine mammals

A number of marine mammals, less important than sea lions and harbor seals, includes the following:

Whales. Although it is difficult to ascertain the degree to which precontact and early contact period Aleuts made use of whales (either hunted or obtained from beachings), they nevertheless were an important subsistence resource, not only in terms of food value but also for the ceremonialism which surrounded their capture.

Merck, part of a Russian expedition in the late 1700s, provided the following details concerning the use of whales in Unalaska:

Whoever finds a whale stranded at the coast has the right to keep half of the outer skin of the liver [sic] and of the tongue, which they use to make rainshirts. Half of the blubber and meat belongs to the toion of the village. The other half is then portioned out equally among the rest of the people. The one who had found the whale will then wear a wreath around his head. This is made of colorful feathers and goat hair. He wears this wreath until all the lard and meat has been consumed (1980:171).

Veniaminov described the method of hunting whales, which likely involved the use of aconite poison, as well as the ritual aspects of the hunt:

In connection with whale hunting there was a specially large number of omens and vagaries. The points of the javelins with which they hunted the whale they smeared with human fat or else they tied to them some part of the human body, which they took from the corpses called askhanan [mummies] and found in caves, or a part of women's menstrual matter, or part of the clothing of a widow in mourning, or some poisonous roots and grasses.

To each of these substances was assigned its particular attribute and effect, and whale hunters always had them in their baidarki. The hunter, having flung his javelin, to which such substances were attached, at the whale, immediately breathed upon his hands. If this javelin found its mark, he would not hurl a second one even if he could, but he immediately returned home and kept apart from people in a specially constructed hut where he must remain for three days without food or drink, not permitting women, especially unclean ones, to enter.

During this period, from time to time he would give forth a deep sigh like a wounded and dying whale, in order that the whale which he had wounded should not depart from the shore, but likewise suffer and quietly die. On the fourth day he issued from his confinement and bathed in water, uttering savage cries and striking the water with his hands. Then, taking his comrades with him, he rode to the place where he assumed the whale to be. If the whale had died, then they began to cut it up (throwing away the place of the wound); if the whale had not yet died, then the hunter returned home and again began to torment himself until the whale should die (1840b:132-134).

Veniaminov further reported that while the Unalaskans could wound from 30 to 60 whales per year, they only were able to retrieve from 10 to 33. These whales, moreover, were what Veniaminov described as "small," to the extent that a single animal could be transported in one baidar (1840b:231).

In addition to the writings cited above, many other authors described whaling in the Aleutians in the 1700s and 1800s. Heizer (1943) discusses whaling at length and includes further information from early sources.

Aleut residents of Unalaska today recall stories from earlier times about whaling. One interesting account

was related by Andrew Makarin to Nick Galaktionoff:

The chiefs [from the villages in Beaver Inlet] would go to the main village and ask for food or for permission to hunt sealion or whale. Sometimes they would get permission and sometimes they wouldn't. They would request a particular number of whales or seals. Then the leading chief would set a day when they would be allowed into the bay for hunting.

With that the men would return to their own villages. These small villages would again have a meeting, and at that time these people would start weaving the grass rope. They would braid the grass rope all the way from the beach to the top of a mountain two times. It would then be long enough to stretch across Beaver Inlet. The mountain they braided the rope up and down was called kichgix kangaxtax, and the grass was called kichgix. I don't know where they gathered that poison grass.

When the grass rope was ready two baidarkas would load up and get ready, and they would set a watch. As soon as they saw something, a sealion or a whale, come into the bay the two men in the baidarkas would take off and block that Pass with the rope. The grass they used on the Pass would rest on the water and nothing could pass under it.

After the Pass was blocked the chiefs would go around and find the best hunters because they couldn't afford to miss the animal. It might take them two or three days to finish the hunt.

The hunter who speared the whale would have to cut the spear out of the animal and leave some of the meat still on the spear. He would cook the meat and fat over an open fire. The hunter would have to eat the meat first. Nobody would touch the whale until the next day to see if that guy was still all right. The reason nobody would touch it until the next day was because the people used poisoned tips for hunting the whale. You couldn't tell who was using it or what was being used, so they let the hunter eat it first. These small villages were like families, I think. They would come in and the chiefs would sit down and give orders for dividing the meat. They did it this way for many years.

. . . After butchering the whale, two or three days of partying followed. The second chief would take several men and return to the main chief and tell him what happened -- if they got the whale or what. If they didn't get the whale they would have to report that also. Sometimes if they failed to get the whale they would have to tell what special poisons or weapons they had used (Unalaska High School 1978:54-55).

Some residents today can also remember a few whales over their lifetimes that washed ashore near the community and were used for food. This happened as recently as a few years ago. Other than this use of whales, however, no whaling is done by any of the Native residents of Unalaska today.

Fur seals. Fur seals, which breed in the Pribilof Islands in the Bering Sea, do not regularly haul up in the Aleutian Islands. Traditionally, these animals were hunted on their yearly migrations north and south through the island passes. It is probable that the focus of such hunting was on the newborn pups, as the quotation concerning Makushin village presented in Chapter 3 indicates. Today, residents of Unalaska report observing fur seals in the late autumn on their southerly migration.

While hunting of fur seals is not undertaken in Unalaska today since it is prohibited by federal law, there is nevertheless a longterm and continuing use of fur seal meat, since men from Unalaska traditionally went to the Pribilofs seasonally to work in the fur seal harvest, bringing meat home with them. More will be said concerning fur seal meat and the Pribilofs in Chapter 6.

Sea otters. Sea otters have been entirely protected from hunting since 1911, although in precontact times until



shortly after the turn of this century, sea otters were a highly prized animal. Prior to the coming of the Russians, sea otters were undoubtedly more numerous, and as Merck notes, they could be clubbed to death on the beaches (1980:171).

Traditionally, Aleuts felt a special bond with sea otters, who were thought to be descendants of humans. Veniaminov wrote the following: ". . . Since the Aleuts consider the sea otter to be a transformed human being, they sought to beautify the baidarki, their garments, and all the arrows as well as possible, assuming that the otter, loving women's finery, would come up to the hunter" (1840b:134). Illustrative of the beliefs concerning sea otters is Merck's statement that "Not only are the otters supposed to be without fear of boats which are adorned with such [falcon] feathers, but they are actually supposed to be attracted to that boat" (1980:171). It seems likely that the primary value of sea otters in the precontact period was for their skins, which provided excellent clothing and bedding material, rather than for their meat, which some people today claim is not particularly tasty.

During the postcontact period, hunting of sea otters by Aleuts was done largely for Russian and American commercial purposes, and the sea otter hunt combined aspects of traditional Aleut culture as well as the new commercialism. This is evident in such descriptions as that

provided by Fassett (1960), who wrote about the sea otter hunt of the late nineteenth century. Fassett's account touches both on traditional Aleut ritualism regarding sea otters as well as on more recent facets of acculturation, such as the cash value of the skins, changed patterns of leadership, and the influence of the church.

Today, residents of Unalaska note increasing numbers of sea otters in the area, with corresponding reduction in the amount of shellfish available. It is also claimed that there is a connection between increased sea otter populations and increased growth of kelp beds, due to the fact that sea urchins, which feed on kelp, are a favorite food of sea otters.

Porpoise. Although several species of porpoise and dolphin are known in Aleutian waters (see Table 4-2) and were probably occasionally hunted aboriginally, it was reported that porpoise are eaten very rarely in Unalaska.

Walrus. Walrus are not native to the Aleutian Islands, since they are associated with more northerly regions of winter sea ice. They generally occur no closer than the Alaska Peninsula area, although in extreme winters today (and presumably in the past) it is possible that they may reach Unalaska Island. The following account documents this possibility:

In May, 1937, a dory-load of hunters set out from Makushin on the west side of Unalaska island. They did not return. Searchers found where a walrus had pulled ashore but departed, and scattered along the rocky beach were broken-up parts of the dory. Through the keel portion were found several bullet holes, as if the hunters had attempted to kill a large animal which was underneath, apparently attacking the small boat. It could only have been a walrus, judging by what appeared to be tusk marks on pieces of the wrecked boat (Ransom 1946:612).

#### 4. Salmon.

Salmon are the most important subsistence resource in Unalaska today (see Chapter 6), and they have a long history of use on the island. Veniaminov noted in the early 1800s that "there are twenty streams on the island that are frequented by fish; four of these are important, and in order of the abundance of fish are as follows: (1) the Makushin, (2) the Natykin [Nateekin], (3) the Veselov [Wislow], and (4) the Koshigin [Kashega]" (1840a:40).

Methods of obtaining salmon in the last two centuries focused chiefly on fishing in streams, rather than in the bays, with weirs and traps used to catch the fish. Describing salmon fishing on Unalaska Island in the late 1700s, Merck wrote the following:

Near a small waterfall of this river the Aleuts had made a barrier with small rocks. . . . They place wicker traps . . . into several gaps left in this barrier. These traps have the conical form of sugar hats. They are three-and-a-half feet long, not counting the end point. Three strong willow-hoops are beset with willow sticks. The top-hoop is crossways knotted, too, with fishbone; and with it they wait for their catch. Between the places where they had put the traps they had placed pots fashioned out of heaped rocks . . . . This is where they put the fish after catching them, to keep them fresh (1980:167).

Sarychev, writing at the same time as Merck, described what appears to be a celebration marking the arrival of the first salmon of the season at Makushin:

The performers wear masks, resembling the faces of the spirits which have appeared to the Shamans; and, although these men no longer possess the implicit confidence of the people, the Aleutians always celebrate

the arrival of a fish with these games. The person first making the discovery announces it by wearing a narrow fillet on his head, and has a right to half the entrails, skin, tongue, and sinews. The rest is divided by the trojars [headmen] of the village among the other Aleutians (1807:61).

Veniaminov offers additional information on the abundance of salmon as well as on the use of nets:

A source of profit by no means negligible is the periodic fish. The stream flowing from the mountain into Natykin Cove is esteemed the best in this respect, for in and about it there is always such a quantity of humpback salmon that it is difficult to draw in a net. It is said that the stream at the chief village [Unalaska] was formerly the finest so far as the number of fish was concerned, but since the village was established [sic] there, this stream has become almost entirely depleted (1840a:51).

Veniaminov also mentions the role of women in salmon fishing:

The task of laying up the supply of fish for iukola [dried fish] is always woman's work, and for this purpose women, with their children, settle down beforehand by certain streams especially abundant in fish. In each party there are one or two oldsters or sickly men who are there not so much to assist in the fishing, but to carry the necessary equipment and for protection against runaways (1940b:234).

In more recent times, salmon were still obtained by building weirs and using traps. Nick Galaktionoff recalled fishing at Makushin:

A long time ago the people at Makushin would get fish from the creek. The men used to block the creek with rocks and make it like a lagoon in Makushin and Volcano Bay when the red salmon started running in early summer. The fish traps were made out of wood and looked like today's crab pots. When I see a crab pot it reminds me of the fish traps. These traps were placed in the creeks with rocks along the side of them so the fish

couldn't swim past. The fish were forced into the trap, and the trap could hold over two-hundred fish. The stream wasn't always blocked. The people would let the fish go up-stream for two or three days and then close it and let the trap and lagoon fill up again. They knew what they were doing and would let all the fish go up-stream to spawn near the end of summer. After they spawned the fish would be taken and people would dry them or salt them or smoke them. They would live on these fish during the winter (Unalaska High School 1978:28).

Sophie Pletnikoff, who was born at Chernofski but moved to Kashega when she was very young, told of her experiences fishing in the latter village:

As I grew up I would go fishing in the creek during the summer. The creek would be full of reds and humpy salmon, and sometimes silver salmon. I would fish like mad and make dried fish and store them in a sealion stomach. The sealion stomach when cleaned and prepared would hold 200 fish. I would make two or three sealion stomachs full of dried fish and about ten barrels of salt fish for winter. We used to have lots of fish in Kashega! (Unalaska High School 1978:38).

Two main factors distinguish salmon fishing today from that described above for earlier times. One is that most fishing is done in the ocean bays rather than the streams, and the other is that fishing is done almost exclusively with nets rather than with weirs, traps, or poles. Figure 5-3 shows the major salmon fishing areas.

The first salmon of the year are king salmon, appearing in about February and remaining until about April. It is possible to catch these fish by trolling as well as



with a gill net, but for the most part kings remain an incidental species of salmon in Unalaska and relatively few are caught.

From mid-May until the end of June the red salmon run, though these very popular fish are obtained in only moderate numbers. Some reds run up the river through town, but very few are obtained here since the fish do not frequently bite at lures. Before World War II, Unalaska Creek had a much larger red salmon run, and some seining was done in Unalaska Lake. It was reported that during the war a military officer who did not like the smell of fish had the creek blue-stoned, destroying for several years the run of all salmon. Informants said as well that the creek was blue-stoned again in the mid-1950s by commercial fishermen, who wanted to keep the salmon in the bay where they could be caught. Between 1977 and 1981 the red salmon run to Unalaska Lake has decreased to an estimated 100 fish; the creek and lake are capable of supporting 1000 red salmon (Alaska Dept. of Fish and Game 1982). For the most part, reds are caught using gill nets set in several areas in and just outside of Unalaska Bay.

It may be noted here that no subsistence or commercial fishing is allowed within 500 yards of the mouth of any salmon stream. Subsistence fishing is allowed in Unalaska Creek, but snagging of fish is not permitted, although this is somewhat of a problem, especially with



children. Snagging is allowed in ocean waters, however.

Pink salmon run from about mid-June to the end of October and constitute the largest salmon run in Unalaska. Especially good areas for pinks within Unalaska Bay include Nateekin Bay, Broad Bay, Captains Bay, and Humpy Cove (in Summer Bay), with beach seining as well as gill netting used.

Dog salmon run from July to October, but not many are obtained. Captain's Bay is one of the few places where they occur, though some make their way up Unalaska Creek.

Silver salmon run from September to mid-October and are gill netted in generally the same areas as are pinks.

Subsistence salmon fishing in Unalaska falls under the jurisdiction of the Alaska Department of Fish and Game, which sets limits on the number of fish a person may take yearly. In 1981 the subsistence limit for salmon was 250 fish, and in 1982 it was 75 fish. Figures 5-4 through 5-6 are the reporting forms used in those two years as well as a summary of the 1981 regulations concerning subsistence fishing for salmon. It appears that the primary reason for requiring such permits is to maintain records concerning the fish populations. Although the 1982 permit limit is

STATE OF ALASKA  
DEPARTMENT OF FISH AND GAME  
PERMIT TO SUBSISTENCE FISH  
FOR SALMON

DATE: \_\_\_\_\_

PERMITTEE NAME AND ADDRESS: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

EFFECTIVE DATES OF THE PERMIT: \_\_\_\_\_

EFFECTIVE AREA(S) OF PERMIT: \_\_\_\_\_

LIMITS TO NUMBER(S) OF SALMON TAKEN: \_\_\_\_\_

LIMITS TO TYPE OF GEAR USED TO TAKE SALMON: \_\_\_\_\_

DATE	AREA OF CATCH	NUMBER OF SALMON					TOTAL
		KINGS	REDS	COHOS	PINKS	CHUMS	
SEASON TOTAL:							

1. CATCH MUST BE REPORTED TO ONE OF THE FOLLOWING OFFICES BY OCTOBER 31 OF THE YEAR ISSUED. FAILURE TO REPORT CATCH COULD RESULT IN FUTURE PERMITS BEING DENIED.

ALASKA DEPT. OF FISH AND GAME BOX 127 COLD BAY, ALASKA 99571	ALASKA DEPT. OF FISH AND GAME BOX 308 DUTCH HARBOR, ALASKA 99692
--	--

2. STREAMS AND MOUTHS OF STREAMS MAY NOT BE OBSTRUCTED BY SUBSISTENCE NET GEAR.

3. SUBSISTENCE NET GEAR MAY NOT BE LEFT UNATTENDED FOR MORE THAN A 24 HOUR PERIOD.

I CERTIFY THAT I HAVE RESIDED IN ALASKA FOR AT LEAST 12 CONSECUTIVE MONTHS.

PERMITTEE SIGNATURE: \_\_\_\_\_

CERTIFYING OFFICER: \_\_\_\_\_

TITLE: \_\_\_\_\_

Figure 5-4:--1981 subsistence salmon permit

1981

SUMMARY OF REGULATIONS PERTAINING TO SUBSISTENCE FISHING  
(SALMON)

WHO MAY FISH?

You must be a resident of Alaska for a minimum of twelve consecutive months to obtain a subsistence permit. Each permit allows 250 salmon to be taken by the permittee, (unless otherwise specified on the permit). No permit is to be issued the following year if this permit is not returned to the local Fish and Game Office by October 31 of the year issued.

HOW MAY YOU FISH?

A record of subsistence caught salmon must be kept on the permit. This record must be filled in immediately upon taking subsistence salmon. Permits shall be retained in the possession of the permittee and be readily accessible for inspection while fishing or while transporting the salmon. Salmon may be taken by seine and gill net, or with gear specified on the subsistence fishing permit. Gill nets used for subsistence fishing for salmon may not exceed 50 fathoms in length, unless otherwise specified by the regulations in particular areas set forth in this chapter. No person may use a gill net web that contains less than 30 filaments in the taking of salmon for subsistence purposes.

WHEN YOU MAY FISH?

In the Unalaska district salmon may be taken at any time except within 24 hours before and within 12 hours following each open weekly commercial salmon fishing period within a 50 mile radius of the area open to commercial salmon fishing, or as may be specified on a subsistence fishing permit. In the Akutan, Umnak and Adak districts salmon may be taken at any time.

WHERE YOU MAY FISH?

The waters of Unalaska Lake (at Unalaska Village), its drainages and the outlet stream and within 500 yards of its terminus are closed to subsistence fishing, and other areas to be listed on the permit.

MARKING OF GEAR?

Each subsistence fisherman shall plainly and legibly inscribe his first initial, last name, and address on his fishwheel, or a keg or buoy attached to gill nets and other unattended subsistence fishing gear.

Figure 5-5:--1981 subsistence fishing regulations  
(Alaska Department of Fish and Game)

ALASKA DEPARTMENT OF FISH AND GAME  
 SUBSISTENCE PERMIT FOR SALMON  
 ALEUTIAN ISLANDS AREA

Date Issued \_\_\_\_\_ Permittee Name: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 \_\_\_\_\_

EFFECTIVE DATES OF PERMIT: \_\_\_\_\_

EFFECTIVE AREA(S) OF PERMIT: \_\_\_\_\_

LIMITS TO NUMBER(S) OF SALMON TAKEN: 75 Salmon Total

An additional permit(s) may be issued allowing more fish to be taken after this permit has been returned and the permittee can demonstrate a need for more salmon.

LIMITS TO GEAR USED TO TAKE SALMON: All Legal Subsistence Gear

Date	Area of Catch	NUMBER OF SALMON CAUGHT					Total
		Kings	Reds	Cohos	Pinks	Chums	
Permit Total							

ADDITIONAL RESTRICTIONS:

1. No subsistence fishing in the waters of Unalaska Lake (at Unalaska Village), its drainages and the outlet stream and within 500 yards of its terminus.
2. No subsistence fishing within 500 yards of the terminus or in the waters of all streams, lakes, and lake outlets draining into Summer Bay or Morris Cove.
3. Not more than one half the width of a stream or its mouth may be obstructed by a gillnet.
4. Subsistence net gear may not be left unattended for more than a 24 hour period.
5. This permit must be filled out (even if not used) and returned to one of the following offices by October 31 of the year issued. Failure to return permit could result in future permits being denied.

Alaska Department of Fish & Game  
 Box 308  
 Dutch Harbor, Alaska 99692

Alaska Department of Fish & Game  
 Box 127  
 Cold Bay, Alaska 99571

6. \_\_\_\_\_  
 \_\_\_\_\_

I certify that I have for the previous 12 consecutive months maintained a permanent place of abode within Alaska and have continually maintained a voting residence in the State of Alaska during the previous 12 months.

PERMITTEE SIGNATURE: \_\_\_\_\_

CERTIFYING OFFICER: \_\_\_\_\_

TITLE: \_\_\_\_\_

Figure 5-6:--1982 subsistence salmon permit

substantially lower than the 1981 limit, it should be noted in Figure 5-6 that "an additional permit(s) may be issued allowing more fish to be taken after this permit has been returned and the permittee can demonstrate a need for more salmon." In 1981 there were 114 subsistence permits issued, and as of 2 July 1982, 48 permits had been issued.

Although many people in the community fish for salmon on a small scale, a few individuals devote substantial time and effort to it. Those who fish most intensively often tend the gill nets of other permit holders and often work cooperatively with other people. The major expenditures for salmon fishing are a boat, motor, fuel, and net. Most people reported obtaining used nets, including cutting down old commercial nets, rather than purchasing new nets outright, since a new net would cost in the neighborhood of \$1000.

As stated above, salmon are Unalaska's most important local use resource today, and there are no families which do not use salmon. While many people fish for salmon, virtually the entire community is included in a network of sharing of salmon. Some families report using one hundred or more fish per year.

The chief methods of preserving salmon today include salting, drying, smoking, freezing, and canning. Fish to be salted are split, skinned, and brined carefully so they do

not turn yellow. Salmon preserved in this manner can be prepared in a wide variety of ways. For some families, salting is the preferred manner of perserving fish. One person reported that male salmon were salted, while female salmon were frozen. Fish to be dried are cut into strips and dried preferably in a cool wind. This method of preservation was more common in former years when quantities of salt were not available. About four families in Unalaska have smoking operations larger than the small "Little Chief" type smokers. Different woods are used, with cottonwood and alderwood preferred (although difficult to find), and there are many recipes for smoking fish. Most smoked salmon is hard-smoked, which will keep longer, especially when stored in jars with oil. Smoked salmon is highly prized, often given as gifts or served on special occasions.

Freezing salmon is, obviously, a relatively recent preservation method and requires the least preparation of the fish. A few people also preserve salmon by canning. In addition to the meat from salmon, both the eggs and milt are eaten fresh.

## 5. Halibut and cod

Halibut and cod are the primary open sea fish resources for the residents of Unalaska today, and their importance goes back to precontact times. Sarychev describes ocean fishing in the late 1700s:

The inhabitants of this place catch their fish on the western shore of Captain's-haven [bay], with tackling of whale-sinews or thin sea-cole [kelp], to which they tie a bone or iron-hook, sticking on it a piece of fish, or the root of Angelica, or some other herb of a particular description fetched from Alaksa [sic], which has a powerful smell (1807:56).

Describing fishing in Unalaska at the same time, Merck wrote that

The line for their fishing rods . . . consists in part of the thin end of that seaweed from around America. . . . The sections of that kelp-rope are tied together with gutstring. . . . They also use small fishbones tied end to end with knots.

They use the skins of fish -- usually halibut, Kabeljau and Keta -- to make glue. . . . They clean that skin below the teeth of scales. And whenever they want to glue something, then they take some of that skin, cut it in small pieces, and boil it with water in a shell. Sometimes, when they need to glue something in a hurry, they take pieces of that substance, wrap it in straw, and hold it over a fire to make it ready (1980:171-172).

Early writers also relate that fish was often eaten raw, although it was sometimes cooked. Sarychev notes that cod was cut into small pieces prior to eating it raw to help guard against parasitic worms (Sarychev 1807:72). He also mentions that fish were occasionally boiled in deeply carved stone pots (Sarychev 1807:73).

For the early 1800s, Veniaminov observed that ocean

fishing was only done with hook and line and that success depended largely on the winds (1840b:402). He also provides the following brief insight concerning ritual aspects of fishing:

For the successful catching of sea fish, they either whispered an incantation over the rod or tied something to it. The latter custom is still observed today, but nowadays they tie to the rod some fragrant and bitter roots or grass or simply some sort of greens and flowers (1840b:132).

In Unalaska today, halibut and cod fishing remain important resource harvest activities. They actually represent a single subsistence activity, for the most part, since both fish may be caught with the same methods and in the same places. Fishing is done from skiffs usually with hand lines with single baited hooks or with poles, although some people use skates for halibut. Halibut skates, with as many as 50 hooks, are baited and set and then left for up to one-half a day before they are pulled up. The limit of halibut is two fish per day per person. There are approximately 20 skiffs in Unalaska, and it was reported that virtually all people owning skiffs fish for halibut. Halibut fishing localities are shown in Figure 5-7, but informants requested that specific cod fishing areas not be reported.

More halibut than cod are caught today, but this may change, since people report that cod are returning to the





area. Halibut were once more frequent in Iliuliuk Bay immediately along the shore by the village, but the increased pollution of these waters now keeps the fish away. In the past cod livers could be stuffed into a cod stomach, cooked, and eaten with seal oil. A creamed chowder was made from cod tongues. In addition to freezing halibut and cod, preservation methods today include some drying, salting, and smoking. As with the other resources discussed above, halibut and cod are widely shared within the community.

## 6. Other fishes

In addition to salmon, halibut, and cod, a number of other fishes have been and continue to be utilized in Unalaska. Foremost among these are Dolly Varden, which, although present all year, are generally fished for in the summer months. Methods of obtaining Dollies include fishing with poles with lures, generally on the incoming tide, along the beaches of Unalaska Bay (including the shoreline adjacent to the beach road in town) and in Unalaska Creek as well as by gill netting. Fishing for Dolly Varden is a popular pastime for all segments of the population, since the necessary gear is relatively inexpensive and fishing locations are within walking distance. For this reason, it may be noted that members of Unalaska's transient population sometimes fish for Dollies. Dolly Varden may be preserved in the same manner as salmon. Other fishes occasionally caught include poggy, sea bass, pollack, and flounder.

## 7. Birds and eggs

As mentioned in Chapter 4, there are a tremendous number and variety of birds in the Aleutians, and many of them were traditionally used for food and fabricational purposes by the Aleut residents of the archipelago. Likewise, the eggs of many species were also eaten.

Fabricational uses of birds included the following: bones for tools, such as awls and sewing needles; skins (especially of murre and puffins) for clothing; beaks and feathers for ornamental purposes. Traditional hunting methods were outlined in Table 2-1. It is interesting to mention that in Veniaminov's time (1824-1834) birds apparently were being somewhat over-hunted around the villages on the island: ". . . [A]t present there are almost no birds near the villages, as a result of continuous and intensive attack upon them by the hunters, whose numbers have recently increased so that almost every man is a hunter" (Veniaminov 1840b:400).

Today, bird hunting is an activity of the fall and winter months. Although some ptarmigan are sought, most of the birds hunted are various ducks and geese, including emperor geese, mallards, teals, canvasbacks, scaups, goldeneyes, buffleheads, harlequins, eiders, scoters, and mergansers. These birds are, in general, found around much of the shore of Unalaska Bay and in most of the ponds, streams, and lakes of the region.

Hunting is done primarily by young and adult men using either 12- or 20-gauge shotguns, and weighted hooks on long lines are often used to retrieve birds downed in the water. Duck stamps are sold at the Unalaska Post Office (but not at the post office in Dutch Harbor); 48 were sold for the 1981-1982 hunting season at a cost of \$7.50 each. Natives as well as non-Natives are active in this activity.

The most popular eggs gathered today by the Native community are sea gull eggs, although some others, such as eider, mallard, red-breasted merganser, and puffin eggs, are also collected. Collecting is usually done on offshore islands. It appears that the number of eggs gathered yearly is not particularly large and that relatively few people engage in this activity. Eggs which are obtained, however, are shared and enjoyed widely in the community. As a final note, down is sometimes saved from geese and ducks for use in parka hoods, etc.

## 8. Marine invertebrates

Archaeological sites several thousand years old attest to the major importance of marine invertebrates from earliest times. The shells of such items as sea urchins, limpets, chitons, clams, mussels, and snails, in fact, are chiefly responsible for the buildup of large Aleutian sites due to their excellent preservation. Virtually all early writers mention Aleut dependence on these invertebrates, and use of them continues, although to a reduced degree, today in Unalaska.

The most popular invertebrates today include sea urchins, clams (including razor clams, butter clams, and cockles), chitons, mussels, crabs, and shrimp. Methods for collecting sea urchins, clams, chitons, and mussels include picking by hand or prying or digging. Because of increased pollution in recent years in the waters of Unalaska Bay near town, many people prefer to collect these invertebrates out of town some distance. Clams are found in most sandy bays of the region, and sea urchins, chitons, and mussels are are found throughout the bay in the intertidal zone. An interesting note regarding clams is Ransom's observation from the 1940s that "The hard-shelled clam is gathered in large quantities by natives and whites alike from Unalaska village and Dutch Harbor." He continues,

They have devised an ingenious method for efficient digging. This consists of backing a power dory up to the beach where it is held while full power ahead is coaxed from the engine. The violently turning propeller churns up the sand to a depth of two and three feet,

throwing the succulent clams to the surface. As a rule only the larger molluscs -- those approximately four to six inches across -- are gathered, and it is not unusual to pick up several gunny sacks of clams from five minutes of such power digging (1946:609-610).

Dungeness crabs are sometimes obtained directly from the beach in front of town. People with hip boots and rakes walk along in the water and search the bottom for these animals. When spotted, they are pulled out of the water onto the beach with the rakes and put into buckets. Some people in Unalaska also maintain personal crab pots in Unalaska Bay. Shrimp, likewise, are obtained by some families by means of pots put down in different parts of the bay.

The marine invertebrates discussed in this section are used by many residents of Unalaska to at least some degree, with Natives using more sea urchins and chitons than non-Native members of the community. Sharing of all of these foods takes place. As a final note, octopus is eaten by people in Unalaska today, although it is obtained from commercial fishing vessels.

## 9. Berries and other plants

A wide variety of berries and plants were used in traditional Aleut culture for food, medicinal, and fabricational purposes. Sarychev refers to two edible roots, macarscha (probably Pink Plumes, Polygonum bistorta) and sarana (the wild rice or Kamchatka Lily, Fritillaria camschatcensis), and describes a third (probably the bog orchis, Platanthera convallariaefolia) as follows:

[It is] a sort of yellow carrot, which the inhabitants maintain has so great a power of strengthening the sight, that, if they eat largely of it at night, they can on the following morning discern the smallest object at an incredible distance; for which reason they generally eat of it previous to going on the chace [sic] (1807:70).

Regarding Sarychev's macarscha, both the roots and leaves may be eaten, while the sarana has a cluster of rice-like kernels in its root which may be boiled.

Veniaminov also acknowledges these edible roots, and mentions two kinds of marine "cabbage," crowberries, raspberries, as well as "other berries" as plants eaten (1840b:229). Most early writers devoted little time to document Aleut use of plant resources, and on the basis of what is known about plant use among today's Aleuts (see below), it can be safely assumed that a wealth of information went unrecorded.

Today, the plants most commonly used are the following:



o A host of berries, including blueberries, salmonberries, mossberries, strawberries, and lingonberries. These varieties are found in very many locations on the eastern three-quarters of the island, with Captain's Bay and Summer Bay being popular berry-picking locales. Nateekin Bay and Broad Bay are also especially good berry locations. The salmonberries of Unalaska are particularly large, attaining diameters up to 4 cm. Berry-picking is a endeavor enjoyed by virtually the entire community.

o Wild celery, called "pootchky" locally, is a plant popular especially with Native residents. It grows in abundance and is usually eaten fresh, sometimes with seal oil. It may be stored for several months, unpeeled, in a barrel put into the creek.

o Petrusky (Ligusticum hultenii) also grows widely and is eaten in soups, stews, and similar dishes. It may be dried or blanched and frozen to preserve it for future use.

o Wild rice, described above, is probably rarely eaten now, but people do remember eating it in the past.

o Morel mushrooms, probably not a traditional food item among Aleuts (at least according to Veniaminov [1840b:233]), are gathered and eaten by some Unalaska residents. They may be dried for future use.

o Giant kelp (Nereocystis leutkeana) is pickled for food by at least one person today.

o Fiddlehead ferns are collected and are eaten fresh during the early summer or are blanched and frozen for winter use.

In the past, more plants were used for food and medicine than today. One technique for finding roots, for example, was to follow the trail of mice and lemmings to locate their cache. These roots could be steamed and then whipped, producing a sweet-tasting dish that has been likened to ice cream by a resident who remembers this technique. Also, a tea and gargle for sore throats were made from yarrow. Midwives, too, made use of a host of medicinal herbs. Several older Aleut residents of Unalaska remember many additional uses for a wide variety of plants. These are currently being documented by Ray Hudson, a high school teacher in Unalaska.

Fabricational uses of plants today are for the most part limited to the collection of wild rye for basket grass by a few people. Some driftwood is also used for building and carving.

## 10. Other resources

The following small assortment of other locally important resources warrants mention.

- o Cattle have been raised on Unalaska since the Russian period, although never on a large scale. Today, an Unalaska resident owns a remnant herd from an early 1960s ranching effort. These cattle are free ranging, and survival of calves is threatened to a certain extent by dogs. Occasionally, the owner will sell cattle on the hoof to someone wanting to shoot one for food, but sometimes cattle are lost to poachers.

- o Geese and reindeer are two food items for which individuals sometimes travel to either Cold Bay or the northern end of Umnak Island, respectively, to obtain. Only a few people, primarily non-Natives, engage in these pursuits, and such ventures are infrequent.

- o Gardening has been attempted since the Russian period, but never on a large scale. Problems with rats can make such efforts difficult.

## CHAPTER 6

### SUBSISTENCE ISSUES AND CONCLUSIONS

#### Introduction

This chapter presents a number of issues and conclusions regarding fish and game resource utilization in Unalaska.

#### Issues and conclusions

(1) Good hunters and fishermen, both Native and non-Native, are highly respected in Unalaska. They are looked up to for both their skill in harvesting resources as well as their generous sharing of foodstuffs.

(2) Today, most harvest activities are confined to the Unalaska Bay area. The bay is a well-defined geographical entity, with travel beyond its confines (i.e., past either Priest Rock or Cape Cheerful) much more difficult and dangerous than travel within it. Virtually all desired resources are present within the bay. The high density of archaeological sites in the Unalaska City area (as discussed in Chapter 3) attests to the resource abundance of the bay area.

In the past, resources were available even closer to the community. However, in recent years such factors as hunting restrictions, increased population, and pollution have forced people to travel farther from Unalaska to obtain desired resources. If continued pollution, for example, reduces the availability of wildlife in Unalaska Bay, subsistence ventures outside of the bay will certainly become more costly and more risky.

(3) Analysis of resource utilization in Unalaska is difficult due to the complex socioeconomic makeup of the community. In Unalaska, subsistence activities are interrelated with a host of variables, including a broad range of commercial enterprises (fishing, processing, services, etc.) and an ethnically diverse population. The present baseline study has attempted to shed some light on these variables; future research could profitably examine them in greater depth.

(4) One of the results of the incorporation of Unalaska as a city was a regulation prohibiting the use of firearms within the city limits. Formerly, seal and sea lion could be taken within Iliuliuk Bay and other waters close to the community. Today, although part of Captain's Bay is open to hunting (see Figure 3-2), problems can exist. Hunters, for example, have on occasion reported uneasiness over the use of firearms in this area.

(5) Employment in Unalaska appears to affect participation in local resource harvest endeavors in two ways. On the one hand, those individuals who are employed have the greatest financial capabilities to support their own subsistence pursuits, yet are restricted by their work schedules in the time they can spend at these resource harvest activities. On the other hand, those persons who are unemployed, and hence might have the greatest need for local resources for food, are often lacking in the financial backing needed to engage in subsistence hunting and fishing.

This "catch-22" situation, however, is less real than apparent for two main reasons. First, non-working hours combined with a certain degree of flexibility in work schedules allow some people with full time employment to engage in substantial local resource harvest activities. It is interesting to note that one of the community's Aleut leaders, employed full time, is one of the foremost hunters and fishermen. It is also worth noting that longshoring is an appealing source of employment for people with strong subsistence interests. A longshoreman may inform his boss, without penalty, that he will be unavailable on a particular day.

Second, unemployed persons can sometimes arrange to borrow the requisite equipment (usually skiffs and motors, not rifles) needed to hunt and fish from those who own them.

In exchange, the owners often receive a portion of the catch. It is also possible for people without equipment of their own to accompany a boat owner on a hunting or fishing trip. Moreover, people can pool their resources to enable them to engage in subsistence hunting and fishing, one providing the skiff and the other the motor, for example.

(6) Although only a portion of the community engages directly in the acquisition of local resources, networks of sharing of food items bring virtually the entire community into involvement with subsistence resources. In former years, however, sharing took place on an even larger scale. For example, in the years prior to World War II, a hunting party was sometimes stationed at Eider Point (on the western shore of Unalaska Bay) to provide meat for the entire community (which at that time was predominantly Aleut). It is interesting to note, finally, that freezer space for the storage of food items is also shared among some members of the community.

(7) Within the community, there are varying opinions concerning what it means to "need" or to "depend upon" subsistence resources. With only a few exceptions, most people view "need" exclusively in a dietary sense, not acknowledging possible underlying cultural needs in assessing the role of subsistence activities in Unalaska. To a great extent, subsistence may be most important in terms of the food contribution it makes to the community,

since the high cost of living combined with overall underemployment places a premium on resources that do not always require a direct cash outlay to procure.

Nevertheless, it was clear from interviewing Aleut residents of Unalaska that there are other "needs" fulfilled by obtaining and utilizing subsistence foods. One of these is certainly that the older Aleuts especially (though not at all exclusively) have a desire for traditional foods, although it appears that the amount of some of these foods eaten each year is likely small. For example, if the number of seals killed each year (as reported in Chapter 5) is accurate, then it is clear that relatively little seal is eaten per capita by the Aleut population. Nonetheless, the importance of seal was said to be high, indicating cultural, rather than dietary, importance.

(8) As mentioned in Chapter 5, fur seals are an important resource to residents of Unalaska, although they are not hunted locally. Fur seal meat comes from the Pribilof fur seal harvest, and the importance of Pribilof fur seal meat in Unalaska goes back to the first years of sealing in the Pribilofs in the late 1700s. At that time, Aleut men from throughout the Aleutians were taken seasonally to St. Paul and St. George to work in the sealing industry. Even after permanent Aleut settlements were established in the Pribilofs, Aleuts from the various



villages continued to work seasonally in those islands. This work pattern has declined in the past two decades, due to the general decline in the seal industry, to the point where today very few men from the Aleutians work in the Pribilofs.

Through this historical connection between the Aleutians and the Pribilofs, two important patterns have emerged. First, the Aleuts of Unalaska incorporated Pribilof Island fur seal meat into their dietary inventory. Second, there are many ties, primarily of kinship, between the people of the Pribilofs and the Aleuts in Unalaska. There developed long ago a system of exchange of resources between the Pribilof communities and Unalaska. Elliott (1881:75) describes such exchange over 100 years ago:

A few of [the Aleuts in the Pribilofs], in obedience to pressing and prayerful appeals from relatives at Oonalashka, do exert themselves enough every season to undergo the extra labor of putting up a few barrels of fresh salted seal meat, which, being carried down to Illoolook [Unalaska] by the company's vessels, affords a delightful variation to the steady and monotonous codfish diet of the Aleutian islanders.

Items traded from the Pribilofs to Unalaska include salted fur seal flippers (lastaŕ), salted and frozen fur seal meat, and frozen fur seal liver and hearts. Salted salmon and blueberries are traded from Unalaska to the Pribilofs. While there are about five families in Unalaska who trade with the Pribilofs, more people than this actually receive fur seal meat, since it is shared within the

community.

An interesting new factor regarding Pribilof-Unalaska food exchange is that the non-profit Unalaska Aleut Development Corporation (UADC) is currently considering becoming involved in this resource exchange. Various issues are under discussion, including fishing requirements, health codes, communication between the villages, etc. It is not yet known if UADC will actually procure and ship food to be traded or if it will act only as a clearinghouse to link up persons wanting trading partners.

In sum, the system of resource exchange between Unalaska and the Pribilofs may be viewed as an extension of patterns of sharing present within Unalaska itself (and the Pribilof communities as well), as long distance trade serves to maintain social ties with people far away as well as to distribute valued resources.

(9) Even though it was expressed that they have not experienced conflicts regarding local resource harvest to the degree of some other communities in the state, Aleuts in Unalaska are aware of general subsistence issues statewide and favor extension of the current subsistence priority law.

(10) World War II affected resource harvest patterns among the Aleuts of Unalaska in several ways. First, they, as well as those in the outlying villages on

the island, were taken to southeastern Alaska during the war. Those that returned were all resettled in the present community, in part because resources had become scarce at the former villages by that time. At Biorka, for example, the cod which were so plentiful before the war were gone, and although the buildings at the settlement were in good shape, people resettled in Unalaska. At Makushin, likewise, fish and seal reportedly had declined dramatically following the war.

Second, the chief-system of leadership among the Unalaska Aleuts did not survive the war years. The war experience had changed not only the Aleuts themselves but also the community of Unalaska, which had become an incorporated city. Further, some Aleuts never returned to Unalaska after the war, and some who did return left because of the depressed economic situation in the postwar years.

Third, following the war the residents of Unalaska depended to a substantial degree (perhaps 50%) on foods derived from local resource, yet the war had taken its toll on the local environment. Wartime pollution and other factors reduced the abundance of many food resources, including clams, seals, and fish.

(11) Grocery prices for selected at the three stores in Unalaska are given in Table 6-1. Averaging the

TABLE 6-1:--Prices of selected grocery items from stores  
in Unalaska and Anchorage, July, 1982

Item	Unalaska Store A	Unalaska Store B	Unalaska Store C	Anchorage
Folger's coffee, 16 oz.	\$3.65	\$4.29	\$3.49	\$2.99
Real Fresh Milk, canned, 32 oz.	1.49	1.77	1.50	1.25
Ground beef, lb.	2.43	2.36	3.40	1.39
Round steak, lb.	4.61	3.98	NA	3.39
Beef chuck steak, lb.	3.27	2.81	NA	2.29
Pork chops, lb.	4.16	3.23	3.15	2.89
Fryer chicken, lb.	1.56	1.39	2.00	1.59
Whole chicken, lb.	1.54	1.29	1.88	.68
White bread, 24 oz.	1.59	1.59	1.59	1.25
White flour, 10 lbs.	4.15	3.14	NA	2.99
Sugar, 5 lbs.	2.79	2.89	2.78	2.15
Corn muffin mix, 8.5 oz.	.45	.49	.54	.33
Rice-A-Roni, 8 oz.	1.05	.89	1.04	.79
Nalley's Beef Stew, 15 oz.	1.65	1.69	1.58	1.29
Corned Beef Hash, 15.5 oz.	1.69	1.69	1.85	1.49
Red apples, lb.	.99	.99	.80	.89
Cheese, Sharp Cheddar, 10 oz.	2.49	2.39	2.18	2.19
Cheese, Medium Cheddar, 32 oz.	6.95	7.29	6.69	5.99
Tomato Soup, 10.75 oz.	.51	.49	.50	.39
Hot dogs, 16 oz.	2.65	2.19	3.40	1.99
Canned creamed corn, 17 oz.	.85	.69	.89	.63
Eggs, 1 dozen	1.59	1.59	1.60	.89
Tide detergent, 10 lbs.	11.45	11.89	13.49	7.29
Aluminum foil, 75 sq. ft.	2.20	2.19	2.05	1.79
Bounty towels, 70 sq. ft.	1.49	NA	1.59	NA
Mayonnaise, Best Foods, 32 oz.	1.89	2.69	2.69	2.15

TABLE 6-1:--(Continued)

Item	Unalaska Store A	Unalaska Store B	Unalaska Store C	Anchorage
Heinz Ketchup, 14 oz.	1.15	1.19	1.04	.87
Top Ramen Noodles, 3 oz.	.45	.49	.45	.27
Potatoes, 10 lbs.	5.95	4.50	4.25	4.19
Boneless stew beef, lb.	3.48	3.07	3.07	1.99
Oranges, lb.	.99	.69	.65	.79
Yellow onions, lb.	.89	.79	.54	.69
Lettuce, lb.	1.15	1.39	1.10	.89
Wesson oil, 48 oz.	4.09	3.49	4.25	2.79
Blue Bonnet mar- garine, lb.	1.42	1.39	1.58	1.29
Canned butter, lb.	3.89	3.99	3.80	NA
Canned soda, per can	.50	.60	.55	.40
Total*	93.10	87.49	81.96	65.13

NA = Price or item not available.

\*Totals are not strictly comparable due to NA items.

costs per item in Unalaska and comparing this to the Anchorage cost (where known) gives a total cost 32.5% higher in Unalaska than in Anchorage.

(12) There was very good agreement among informants concerning most topics researched for this project. Consensus was evident regarding the range of resources used, the time of year of use, and resource locations. Less agreement was evident, however, concerning the degree to which different resources were used.

(13) While it was not possible in the context of this study to obtain precise quantified information concerning the use of different resources, the rank ordering of the most frequently used foods was elicited from informants. Both Native and non-Native members of the community listed salmon as the most important resource, followed, for the non-Natives by halibut and shellfish in general, in that order. Native informants most often followed salmon with halibut and seal/sea lion, in either order. Of course, a host of other resources followed those mentioned, but ordering of these was not possible because of varying individual preferences.

Also variable were the times of year during which certain resources were obtained. While salmon and duck, for example, are available only during specific, limited, times of the year, other resources, such as harbor seal and sea

lion, may be obtained throughout the year. Table 6-2 itemizes the major subsistence resources and the times of year each is obtained. Procurement of those resources for which the entire year is indicated is subject to a number of factors, such as weather and employment schedules.

As stated earlier in this chapter, virtually the entire community of Unalaska utilizes at least some local fish and game resources. The percentage of the diet based on local resource foods is, overall, higher for Native households. Estimates averaged about 20% of the diet for the amount of subsistence foods used by the Native community, with some families using as much as 50%. For the non-Native community, estimates were generally lower.

(14) In a long term historical sense, the uses of local resources by Aleuts have generally diminished in a fabricational and ritual/spiritual sense, though they have retained more of their dietary and social qualities. Thus, while placation of animal spirits and subsistence-related ceremonialism are things of the past, resource harvest activities are significant in the food which they provide and the interpersonal bonds which they foster. Local resource use by the Aleuts of Unalaska represents the continuation of a cultural tradition, which, though changed in certain aspects, has roots going far back to precontact Aleut culture. Those few non-food uses to which subsistence

TABLE 6-2:--Seasonal resource harvest activities

Subsistence Resource	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Sea lion	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Harbor seal	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
King salmon	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Red salmon	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Pink salmon	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Dog salmon	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Silver salmon	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Halibut	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Cod	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Dolly Varden	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Ducks	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Geese	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Eggs	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Clams	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Sea urchins	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Dungeness crabs	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Berries	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----



items are put include (among others) the following: grasses for basket-making; sea mammal gut, bones, and fur for dolls and other items; and plants for dyes, steambath beaters, and medicines.

(15) Differences in resource utilization between the non-Native and Native populations in Unalaska, although certainly not always sharply defined, may be described as follows:

- o By both cultural tradition and recent law (the Marine Mammal Protection Act of 1972), the Native people of Unalaska have utilized and continue to utilize more marine mammal food items than the non-Native population.

- o The Native members of the community generally make use of a wider range of foodstuffs (such as marine invertebrates and land plants) than does the remainder of the community.

- o Overall, the Native population depends more heavily on local fish and game resources than does the non-Native population.

(16) Some subsistence hunting and fishing is done by crew members (especially Natives) of commercial fishing boats while traveling in the waters around Unalaska Island. Crew members sometimes use the larger boat's skiff for such

harvest pursuits. Occasionally, a commercial fishing boat will take several skiffs to places such as Makushin Bay, where clamming, hunting, and fishing can be done. It is worthwhile noting that such travel helps Aleuts of Unalaska maintain familiarity with distant parts of the island that many of them know through oral traditions concerning their ancestors at the former villages.

(17) Precontact Aleut settlement patterning included the maintenance of both central permanent villages and outlying satellite camps. Such camps were usually utilized for seasonal resource harvest pursuits, such as salmon fishing, duck hunting, and so on. Today, that basic pattern of settlement persists, with residents of Unalaska using cabins at a number of locations around Unalaska Bay for hunting and fishing as well as for "get-away" spots. The locations of these camps are indicated in Figure 6-1. Occasional use is also made of camps in the Makushin Bay area.

Not all outlying camps in Unalaska are temporary. One Aleut couple maintains year-round residence at a home in Captain's Bay, and at least two non-Native individuals live at a camp in Summer Bay.

While some camp houses are privately owned, others are open for use by anyone. Even owners of private cabins,



however, often allow people to use their camps upon request. Permission to use camps is not always sought, though, and cabins are all too often vandalized by transient residents of Unalaska. Several camps today consist of refurbished military buildings from World War II.

In former years, camps were more frequently utilized, with families often living at them for weeks or months at a time, especially during the summer. One of the most important camps was that at Eider Point, which, as mentioned earlier in this chapter, was an especially important hunting location prior to World War II. Today, however, work schedules and other commitments often interfere with camp use, although some residents do spend considerable time at camps and others foresee increased use of them in years to come. A few residents are currently involved in building and repairing a series of cabins from Wide Bay around the north shore of the island to Makushin Bay. There are also plans to build a barabara, a traditional style Aleut house, on the western shore of Unalaska Bay.

(18) Today, the Russian-Orthodox church has little influence on the resource harvest activities of its members. There are no firm restrictions on when one may hunt or fish, although while church services are in session and during the last week of Great Lent (i.e., the week before Easter) hunting should not be undertaken. There is a general

restriction on eating meat during Lent, but, while people tend to eat more fish, they do not give up meat entirely. Fishing boats are blessed by the priest only upon individual request. The church, a focal point of Aleut cohesiveness within the community, reinforces patterns of sharing which are integral to their culture.

(19) The cost of subsistence hunting and fishing can be substantial; therefore, the subsistence economy is to a great degree dependent on the cash economy. Fishing, for example, requires two major items, a skiff and a motor. Boats, which are not currently for sale in Unalaska, cost in excess of \$1000, while a 25 horsepower outboard, a common size, retails in Unalaska for about \$1800. Life expectancy for skiffs is highly variable, while for outboards may be as high as five or more years. Gasoline currently sells for between \$1.35 and \$1.65 per gallon.

Hunting for sea lions and harbor seals requires rifles in addition to the boats, engine, and fuel. Popular rifles, such as a .223 or a .22 magnum, sell for around \$300 at stores in Unalaska. Ammunition for these rifles sells for up to about \$.50 per round. Hunting (as well as fishing) ventures can require up to \$40 in gasoline per trip.

(20) Today as well as historically, Native and non-Native men, women, and children participate in resource

harvest pursuits. Men do almost all of the hunting, although women sometimes accompany men on hunting trips. Women are more active in fishing than hunting, however, sometimes taking a predominant role in a family's fishing endeavors. During the years when Aleut men went to the Pribilof Islands during the summer months to work at the fur seal harvest, the women who were left behind often took their children and relatives to fish camps to catch and process large numbers of salmon for food throughout the year. Traditionally, women were responsible for much of the preparation of salmon, as was mentioned in Chapter 5.

Children today often fish along the beaches, pick berries, pick pootchky, gather sea urchins, help rake for crab, and assist in cleaning and processing of fish. Some parents make a special effort to involve their children in such activities, including hunting trips, as a means of passing down traditional hunting and fishing knowledge.

(21) An Aleut home economics class taught in Unalaska High School over the past two years has introduced some Aleut cooking to non-Aleut students. This class underscores the generally positive interaction between the Native and non-Native students, with all students taking active roles in school affairs.

(22) In July, 1982, a new organization for Aleut women in Unalaska was formed. Historically, women in

Unalaska have always been an important force in the community, with the Sisterhood of the Russian-Orthodox Church of the 1920s and later years a notable example. This new women's group plans to involve itself with a wide spectrum of issues and activities, including some (such as making a sea lion gut kamleika [a traditional Aleut rain parka]) which will be concerned with various facets of traditional resource use.

(23) As mentioned in Chapter 5, prior to passage of the Marine Mammal Protection Act of 1972 some non-Native residents of Unalaska hunted harbor seals for their skins, giving some of the meat to local people for food. Today, in addition to the hunting of harbor seals, commercial fishermen occasionally kill the animals to protect their gear. It is felt by some residents that a return to legal, controlled taking of seals for commercial purposes by Natives and non-Natives would be beneficial. Fewer seals would then trouble the commercial fishermen, pelts could be sold for profit, and more meat would flow to the residents of Unalaska. It was also suggested that the state, rather than the federal government, should control hunting of seals.

(24) Many Native residents of Unalaska reported that subsistence activities began to change significantly beginning in the early 1960s when the commercial fishing

industry began to grow rapidly. As the city grew and commercial enterprises expanded, the Native population did not, as a whole, emerge as a controlling entity (see Jones 1976).

This situation has changed somewhat in the last decade, since the passage of the Alaska Native Claims Settlement Act in 1971, which gave the local Aleut corporation, the Ounalashka Corporation, a sizeable land base. Nevertheless, the Aleut population as a whole does not yet have substantial control in the local market economy. Aleuts do, however, have a good deal of control in the realm of local resource harvest: for the most part they can set their own achievable goals and derive a great deal of satisfaction. Many Native people spoke of the values, both tangible and intangible, which subsistence activities provide.

(25) Views concerning local development are quite variable in Unalaska. The oil and bottomfish industries are two major potential developments, and, from the point of view of those most involved with local resource harvest activities, such developments pose serious threats to continued hunting and fishing ways of life. Concerns are expressed over direct threats to local resources, such as increased pollution, as well as indirect threats, such as an increased local population. An opinion frequently voiced is that there is simply too much at stake, environmentally as



well as culturally, to allow large-scale change to occur. On the other hand, there are people who look forward to the economic benefits to be derived from oil and fisheries development.

(26) Regarding the previous point, Unalaska's population is extremely likely to grow in future years. This growth may reach 13,221 people by the year 2000, without petroleum development in the St. George Basin, but with expected development of the fishing industry. With oil development, that figure rises to 14,117 (Alaska Consultants, Inc. 1981:217, 340). Thus, according to OCS research, the bottomfish industry will affect Unalaska much more than oil development in the St. George Basin. Unalaska is expected to face "extreme growth management problems" with the expansion of the bottomfish industry, but

[t]he growth impetus of the St. George Basin lease sale will have run its course by 1990, before the full brunt of bottomfish development is felt at Unalaska. While the projected scale of OCS-related growth is substantial in its own right for a town of Unalaska's size at the beginning of the forecast period, the visibility of any impacts attributable to OCS development will be greatly diminished by developments in the fishing industry (Alaska Consultants, Inc. 1981:357).

(27) There are a number of issues pertaining to current and future resource use in Unalaska. They are as follows:

- o With the growth of the fishing industry in the past

ten to twenty years, the amount of pollution in the waters of Unalaska Bay has increased. Sources of pollution include oil and fuel spills from boats, by-products from processing plants, sewage, and other waste materials. Individual fishing boats rather than the processors themselves are the major concern today. In the past, the processors were more frequent offenders of pollution laws, but their compliance is improving.

There are a number of outfall lines into the bays through which the processing plants dump seafood by-products. This is legal, and the outfall areas are inspected four times each year by divers to see what the effect on the bay is. In the last year, an Environmental Sanitarian of the Department of Environmental Conservation of the State of Alaska was stationed permanently in Unalaska, and this has helped ease the pollution situation in the bay. Only minimal equipment to handle oil spills exists in Unalaska to date, and special clean-up teams would have to be flown in from Anchorage at great expense if a large spill occurs.

o A minor point, but perhaps a portent of things to come, is that some especially good berry areas were destroyed on Amaknak and Unalaska Islands during the past few years in the course of various construction projects. With future development prospects, such occurrences may become more frequent.

o Certain natural forces exist in the Unalaska area which, in the long run, have the capability to dramatically affect local resource availability. These include volcanic activity, which, for example, so disturbed the fishing grounds near Makushin village in 1878 (from an Umnak Island volcano) that the village was relocated (Unalaska High School 1978:11, citing Petroff 1880). It has also been reported that salmon streams can become so blocked by driftwood and stones that salmon have been unable to make their way up the stream.

o Many people reported that if there were more skiffs in the community, more hunting and fishing would be done. This underscores the interrelationship between the cash and subsistence economies, since cash is lacking with which to purchase skiffs and engines. Thus, it is possible that an improving cash economy could positively affect the subsistence economy.

o In order to meet monthly housing payments, homeowners and renters must maintain employment. As more people move from older to newer residences, the concomitant financial strain has acted both to limit time available away from one's job for subsistence pursuits as well as to place a special premium on foods obtained from local resources, which do not necessarily require an immediate cash outlay to

procure.

o Aspects of traditional Aleut culture are being taught to Native and non-Native children during the summer of 1982. Some of the proposed projects included making fish spears to use in Unalaska Creek and making halibut hooks. An effort is thus being made to pass on knowledge concerning traditional subsistence tools.

o One Aleut elder is currently learning from an Aleut elder in another village how to make traditional Aleut items, utilizing locally available resources for their fabrication. He is sharing this knowledge by teaching school children what he has learned.

o Subsistence salmon fishing is the subject of a class to be taught during the summer of 1982 through the University of Alaska's Rural Extension Center in Unalaska. This class will include many aspects of salmon fishing, including gill net preparation to fish preservation.

o When asked about the future of subsistence in Unalaska, many residents took a positive outlook. They indicated that both from an economic standpoint and a personal value perspective, local resource harvests will increase in importance in the coming years. Involvement in these activities, including sharing of food, is felt to be an enriching facet of life in Unalaska.

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