Use of Fish and Wildlife by Residents of Angoon, Admiralty Island, Alaska

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Part Four in a Study of Relationships between Timber Harvest and Fish and Wildlife Utilization in Selected Southeast Alaska Communities

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Chapter 1

STUDY BACKGROUND

INTRODUCTION

This study of Angoon is part of a broader research project, involving several communities in southeast Alaska, to investigate the relationships between commercial timber harvesting and the harvest and use of fish and wildlife. The communities that are part of the larger study were selected so that a variety of community characteristics were represented (Fig. 1) (study site selection criteria appear as Appendix I). Angoon was selected because of its long history, its stable Tlingit population, and the fact that it is relatively remote from areas of active timber harvest. At the same time, there are a few areas near Angoon where timber has been commercially harvested over the past fifty years. This study site thus provides the opportunity to explore the history and current status of resource use in an area with relatively small amounts of historic timber production. Changes observed in subsistence hunting can be examined to identify variables other than timber management that effect land use. Also, the responses of Angoon residents to relatively small, old clearcuts can be examined.

Other study sites, which include Klawock, Yakutat and Tenakee Springs, contrast with Angoon with regard to their timber management histories, and in other ways. The overall study methodology will permit an eventual comparison of data from all study sites, leading to a more general assessment of timber management and fish and wildlife use relationships.

In recent years, the potential effects of commercial logging activities on fish and wildlife habitat in the Tongass National Forest and other lands in southeast Alaska, and the consequences of such effects for local rural uses of fish and

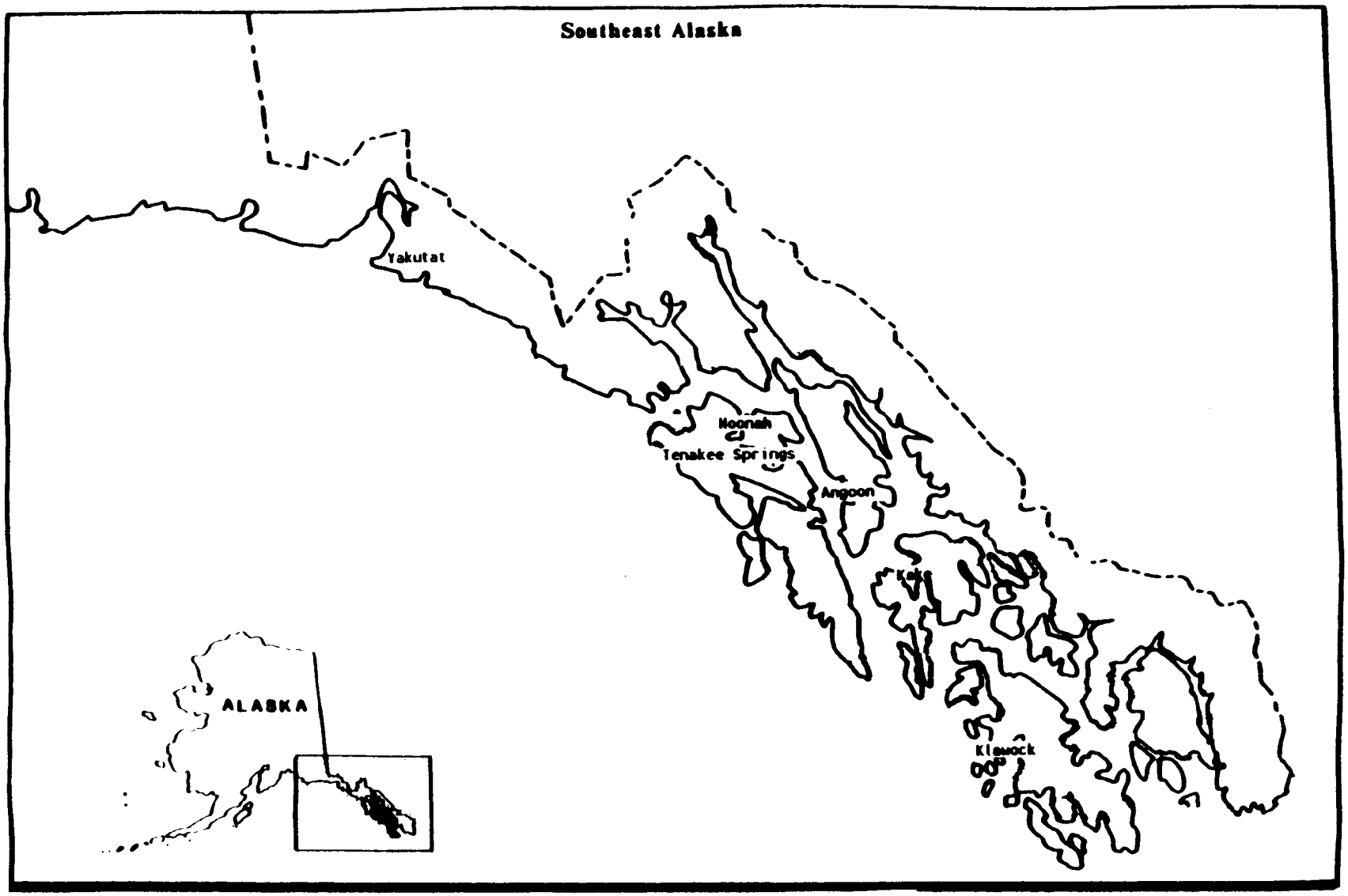


Figure 1. Location Map of Study Sites: "Timber Management and Fish and Wildlife Utilization in Selected SE Communities".

game, have been identified as high priority concerns by local community residents, government agencies, and wildlife managers. These concerns have particular relevance in view of provisions of the Alaska National Interest Lands Conservation Act (ANILCA) that stipulate that the subsistence use of resources by rural Alaska residents must be considered in the development of management policies and plans for all federal lands in Alaska. The Tongass Land Management Plan (TLMP), due to be updated and revised in 1989, is the principal policy document that provides for the harvest of timber from the Tongass National Forest. It is, therefore, the document that will attempt to accommodate the many conflicting demands on the resources of the Tongass, and will develop a resource allocation scenario that is consistent with the provisions of ANILCA. It is hoped that the information contained in this report, and its conclusions, will contribute to the process of effective forest planning.

This research has been jointly funded by the U.S. Forest Service and the Alaska Department of Fish and Game, Division of Subsistence. The draft version of this document was reviewed by the Forest Service and numerous Angoon community organizations including the Fish and Game Advisory Committee, the City Council, and the Alaska Native Brotherhood (Camp 7). Comments received as part of this review process were considered in the preparation of the final report.

STUDY OBJECTIVES AND METHODOLOGY

Objectives

This study has two primary objectives. One objective is to provide comprehensive information on the utilization of fish, wildlife and other wild, renewable resources by residents of Angoon. With this in mind, data were gathered that represent:

1. the seasonal round of resource harvest
2. harvest breadth
3. levels of household participation in resource harvest
4. estimates of harvest quantities
5. harvest strategies, including timing, technology, identification of production groups, and scheduling to accommodate multiple harvest tasks
6. geographic dimensions of harvest activities (land use mapping) and changes in use patterns through time.
7. the cash sector of the local economy, including information on wage employment and commercial fishing
8. the distribution of wild resources between distinct units of residence (households)
9. relationships between subsistence and cash sectors of the socioeconomic systems
10. community population size and structure

The second major objective was to document and analyze trends of change in land and resource use patterns of the local economy through time. The study was designed to document change in intensity of use of particular geographic units during the lifetimes of current residents.

Factors associated with the documented shifts in resource use areas were identified.

Methodology

This report is based primarily on field work that took place in Angoon between December 1984 and May 1985. Follow-up surveys of deer harvests also were conducted in 1985 and 1986.

Research was conducted by the Division of Subsistence, Alaska Department of Fish and Game, in coordination with similar investigations underway in the communities of Yakutat, Klawock, and Tenakee Springs. The principal researcher for the Angoon portion of the project was Gabriel George, a lifelong resident of Angoon.

Research proceeded in three basic segments. A literature review was made throughout the study. In-depth interviews were conducted with eleven key respondents (especially knowledgeable local residents), and a survey was administered to 38 randomly selected households, comprising 25 percent of the Angoon population.

Literature Review

Literature review began with a review of sources that pertain to the aboriginal occupation and settlement of the Pacific Northwest, especially southeast Alaska, and the economies of hunter-gatherer societies generally these sources provided an historical frameword for understanding patterns of change in Angoon. Important sources included Dimitrov (1984), Krieger (1927), Krause (1956), Niblack (1890), Olson (1967), Petroff (1884), Sahlins (1972), Salisbury (1962), and Swanton (1908). This review was followed by a review of material more directly related to the history and settlement of Angoon.

Although Angoon has long been recognized as a community that is dependent on the harvest and use of wild resources, only a limited amount of information is available that systematically documents resource harvest activities. Most available information is qualitative in nature, containing information on the species that have been used for food by the Angoon Tlingit and information on the important harvest areas (Garfield 1946, Goldschmidt and Haas 1946, de Laguna 1960, and Moss 1982). More recent information on deer and coho salmon is found in George and Kookesh (1982, 1983). The Angoon Comprehensive Development Plan (Alaska Consultants 1976) surveyed fifty

households and provided information from questions pertaining to resource uses and use areas.

Two reports that address management of Admiralty Island and its resources provided important historical and recent background information. Leopold (1972) includes management proscriptions and impact analysis related to a proposed Juneau Unit Timber Sale. This timber sale included timber located on Admiralty Island, on the adjacent mainland, and lands near Yakutat. Powers (1972) discussed the history of the island and the public involvement in its future management. This document includes an account of the history of timber harvest on Admiralty Island from the 1860s thru 1967. Beier and Cooper (1985) also provide an account of the documented historical timber harvest in the Admiralty Island and Chatham Strait area.

Issues related to timber harvest economics, assessment of timber harvest related impacts, and the socioeconomic implications of timber harvest in the Pacific Northwest are addressed by Harris and Farr (1974), Schoen et al (1981), Territorial Sportsmen of Juneau (1984), B.C. Forest Service (1983), Bunnell (1981), Doyle et al (1984), Gates (1962), McNay et al (1984), Willms (1971), Sigman (1985) and Wallmo and Schoen 1980.

Important sources of information on the economic development of Angoon were reports by Lipps (1936); the Bureau of Indian Affairs (1975); Fuller and Lantis (1948); the Alaska Consultants (1976); the U.S. Fish and Wildlife Service, Bureau of Sport Fisheries and Wildlife, (District Annual Reports 1936-48); and the State of Alaska, Commercial Fisheries Entry Commission (1984).

Key Respondent Interviews and Subsistence Mapping

Eleven key respondents were selected for in-depth interviews in this project according to criteria that emphasized knowledge about subsistence, and persons who were active or once active resource harvesters. First, a list of potential key respondent households was prepared through consultation with a range of community leaders,

advisory committee members, and other knowledgeable local residents. Key respondents were drawn from this list based on their knowledge of local history and community hunting and fishing patterns, and on their representation of different ethnic groups and occupational categories in Angoon. While most key respondents were long-term residents of Angoon, some were more recent arrivals.

The patterns of resource use of key respondents were then documented through a series of directed open-ended interviews. The information gained from key respondents was an important aid in the development of the survey instrument that was later administered to a larger randomly selected sample of the community (this part of the research methodology is described in greater detail below). The responses of the community respondents to the survey were used to validate or elaborate on the key respondent information.

For each key respondent any special circumstances were documented that may have affected their use of resources during their lifetimes. These included many aspects of the respondent's personal history including employment, health, family development, military service, changes in hunting, fishing or transportation technology, and environmental or regulatory changes that may have affected harvest activities. Interviews were lengthy, often lasting ten hours or more, over two or three sessions. Information on the changes in hunting and fishing activities that had taken place in the life of the respondent was of particular interest, and was evaluated in the context of the respondent's personal history. Possible correlations with change in forest management practices and habitat type were explored with the use of timber harvest history maps.

During the in-depth interviews, the geographic areas used by key respondents for hunting, fishing and gathering activities during the time of their residency in Angoon were mapped. These use areas were identified and recorded on 1:250,000 and 1:63,360 USGS topographic maps and in researcher field notes. Mapped information included

The methodology used for subsistence mapping was based on mapping systems first used in Canada's Northwest Territories (Freeman 1976). The result of the key respondent mapping sessions was a "map biography" of the lifetime use areas for each key respondent. The use areas for each resource category were then aggregated for all respondents, both to protect the confidentiality of individual use areas and to provide a community-wide picture of harvest geography. The composite maps then were reviewed for completeness by members of community organizations and the community as a whole, and necessary corrections were made.

Randomly Administered Survey

As the initial step in selecting a random sample of survey respondents, an up-to-date map of Angoon households was prepared. This map included apartments, duplexes, and individual houses that exist in and around Angoon. Each active dwelling was mapped and given a number to be used for random selection. A twenty-five percent sample (38 households) was selected and an additional ten households were identified as alternates. Key respondent households were included in the survey sample only if they happened to be picked in the random selection process. Characteristics of surveyed households are summarized on Table 1.

Based on the results of key respondent interviews, and with technical assistance from the USFS Forestry Sciences Laboratory, a survey instrument was developed and pre-tested for administration to the randomly selected households. The survey was designed to gather information on the 1984 household harvest and use of locally available subsistence resources, the distribution and exchange of resources in the community, and household demographic and economic characteristics.

Table 1. Characteristics of Surveyed Households

No. of Households	38	% of Households With a Non-Native	26.3%
% of Total Households	26.2%	% of Total Sample Alaska Native	87.6%
Size of Population	163	% of Households with Head of Household Born in Alaska	68.5%
Avg. Household Size	4.3	% of Total Sample Born in Alaska	75.4%
% of Households with an Alaska Native	73.7%		
Avg. Length of Residency in Angoon of Household Head	22 Years		

In addition to standard questions regarding the harvest and use of resources, the study also included questions about the use of 17 particular geographic areas in the vicinity of Angoon that were known to be important use areas. Respondents to the random survey were asked to indicate which years they had used each area for hunting, fishing and gathering. These questions about specific geographic units enabled collection of information on changes in use of geographic areas through time. Also, survey respondents were asked questions about their use of four case study areas for deer hunting. Questions focused on the uses of different types of habitat, and the change in habitat use through time.

Data Analysis:

Survey data analysis was accomplished with the use of the SPSS statistical analysis package. Analysis was initially accomplished on a Honeywell minicomputer on

the University of Alaska Computer Network, and was subsequently transferred to microcomputer. Data reports include a complete compilation of survey results, with tabular display of raw data variables including value, frequency, percent, valid percent and cumulative percent for each variable.

Information on the use of geographic areas over time was analyzed by computing running three-year averages for the percentage of households using a given area each year. These data were then plotted using a Lotus spreadsheet and graphics program.

Verifications and Limitations of Data:

Composite maps of resource use areas from the key respondent mapping sessions were verified for accuracy during a review period held in Angoon that included involvement of the Angoon City Council and Planning and Zoning Commission, the Angoon Fish and Game Advisory Committee and numerous individuals. Although minor adjustments to the maps were made,the key respondent information was generally found to be an accurate representation of the community subsistence use area. Nonetheless, information was not gathered from all persons in Angoon, so the maps, while generally accurate, may not be a complete representation of all areas used by all Angoon residents. Similarly, data gathered for this report from the combined key respondent and survey method covers a limited time period. Some harvest data (salmon, other fish, marine invertebrates) was collected for a single year (1984), but production levels and quantities may vary from year to year. These data should thus be considered estimates of subsistence production for the community of Angoon.

Chapter 2

DESCRIPTION OF ANGOON AND VICINITY

LOCATION AND ENVIRONMENT

Angoon is located on the west coast of Admiralty Island in southeastern Alaska, at the end of a peninsula where Kootznahoo Inlet meets Chatham Strait (Fig. 2). Angoon is the only incorporated municipality on the island. The closest neighboring community is Tenakee Springs which is located approximately 34 air miles to the northwest on Chichagof Island. Juneau is 68 air miles to the north, on the mainland, and Sitka is 41 air miles to the southwest, on the outer coast of Baranof Island. In 1984 the population of Angoon was 638 people, 83 percent of which were Alaska natives (City of Angoon 1986).

Figure 3 shows the area around Angoon in greater detail. Kootznahoo Inlet is a maze of tidal passages between small islands, leading eastward from Angoon to the interior of the island. Chatham Strait, to the west, is as much as 610 meters deep, separating Admiralty from Chichagof and Baranof Islands by distances of seven to 15 miles. Both water bodies are important features of the area, due to the abundance of food species that are found in and around them and their use as water transportation routes.

The landscape in the immediate vicinity of Angoon is characterized by hilly terrain and an extensive and complex coastline. The nearby mountains peak at over 3,550 feet in elevation, and the coastlines are indented with many bays and inlets. The vegetation is dominated by a mature forest of western hemlock and sitka spruce, interspersed with muskeg clearings. There is a wide variety of mosses, berries, devil's club, skunk cabbage and other shrubs found at ground level throughout the forest. The muskegs are poorly drained areas with vegetation characterized by sedges, grasses,

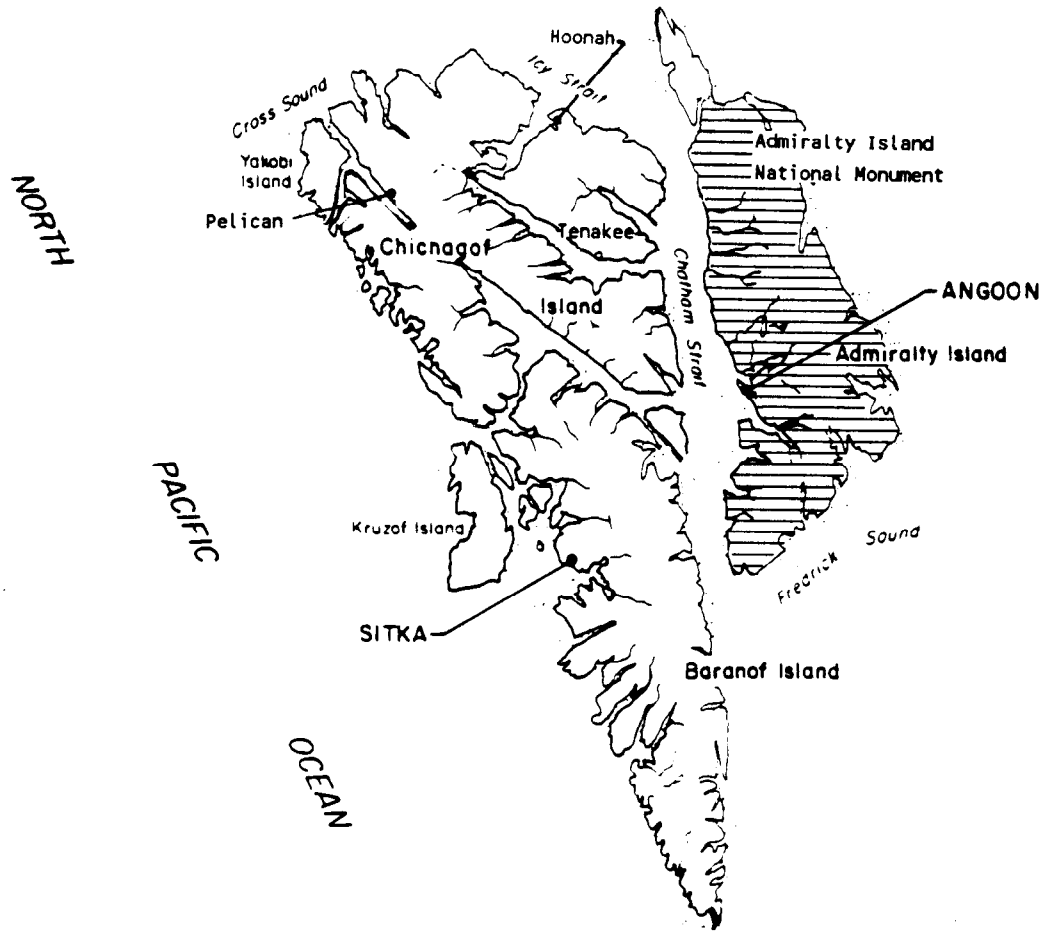


Figure 2. Location Map: Angoon, Admiralty Island, Alaska

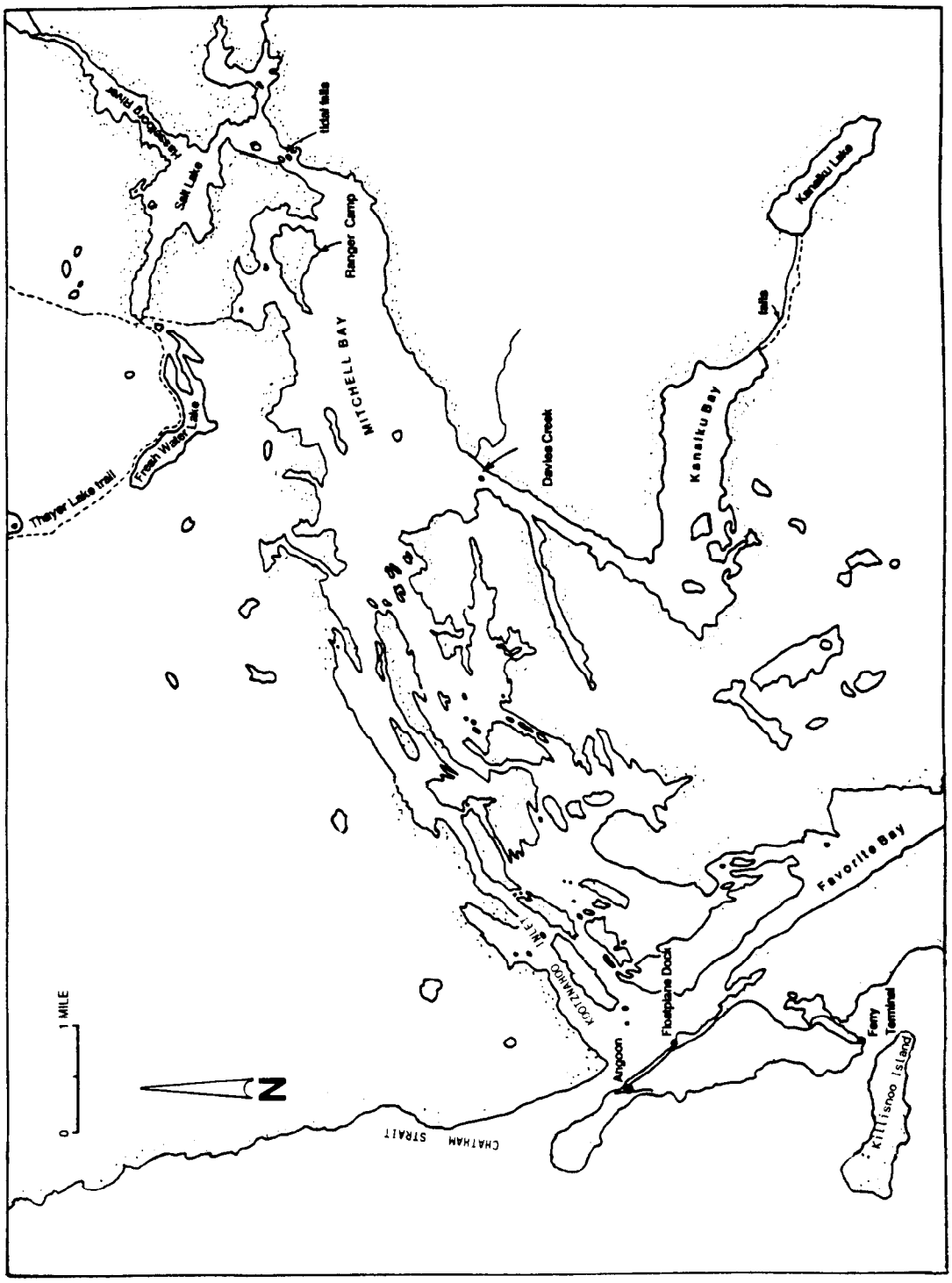


Figure 3. Angoon and Vicinity.

characterized by sedges, grasses, sphagnum moss and flowering plants, plus scattered mountain hemlock, lodgepole pine, mountain heath, sedges, crowberry and blueberry.

HISTORICAL BACKGROUND

According to Tlingit history, the site of Angoon was discovered by three Deisheetaan hunters who had followed a beaver they had spotted swimming in Kootznahoo Inlet. They followed it to the beach, now known in Angoon as the "little skiff harbor", and followed its trail to a beach on what is now known as Chatham Strait. The hunters saw that the place the beaver took them was a good site for their house so they went back to inform their people of their find. The decision was made to move to the site and the Deisheetaan built their house at the end of the beaver trail. The house was called Deishoo-hit, "end of the trail house".

The Deisheetaan living in Angoon say that when the first members of their clan arrived at the new village site there were already people living in the vicinity who were known as the Gaanax'adi (people of Gaanax). The Deisheetaan asked permission to move to the area, and lived side by side with the Gaanax'adi for some time. Trouble between the two groups later caused the Gaannax'adi to move out of the area and relinquish all of their land holdings to the Deisheetaan.

The antiquity of Angoon is such that no precise date can be established for the original occupation of the Angoon site. By the late 1700s and early 1800s, the Angoon-Killisnoo Island area was the principal settlement of the Hutsnuwu Tlingit, as the residents of the Angoon area came to be called. Smallpox epidemics of the early 1800s decimated many Tlingit villages, including one at Killisnoo Island, and it appears that many survivors assembled in the reconstituted village of Angoon, resulting in an overall Angoon population increase (Roderick 1983).

The first documented contact with European explorers was in 1794, when Vancouver noted the abundance of sea otter along the Admiralty Island shore, and observed fur trading activity at Angoon. Undoubtedly, fur trapping and trading with Russians from the Sitka garrison had been an important economic activity for the Angoon Tlingit for many years prior to Vancouver's observation, but no documentation exists as to the circumstances of contact and trade prior to Vancouver's visit.

By the time of the purchase of Alaska from the Russians in 1867, most commercial fur trapping in the Angoon area had ceased, probably due to a depletion of the furbearer supply. In 1880, a whaling station and trading post was established by the Northwest Trading Company, near the revitalized community of Killisnoo, on Killisnoo Island, and some jobs at the whale processing plant were made available to both Killisnoo and Angoon residents. The whaling station became a herring processing plant after a few years of whaling, but went out of business in 1885. During its short tenure, however, the whaling station was the focus of one of the most disastrous events in the history of Angoon. The following account is taken from the Angoon Comprehensive Plan (Alaska Consultants, Inc. 1976).

> In 1882, one of the Angoon members of a whaling crew was killed as the result of a premature explosion of charge on a whale harpoon. The crew of the whaling vessel, which included several other Angoon fishermen and two white men, took the boat and one other company vessel to shore near the village of Angoon, and, according to the custom of the time, issued a demand to the superintendant of the Northwest Trading Company for payment of 200 blankets to the dead man's clan. However, the superintendent of the company either ignored or misinterpreted these demands and instead went to Sitka on the company steamer, where he reported that the people of Angoon were holding the two white men as hostages and were threatening to destroy company property (the two boats) unless their demand for the blankets was met.
>
> The response to the alleged threat to white life and property was swift. The U.S. Navy immediately sent the U.S. Revenue Cutter "Corwin" to Angoon and the local chiefs were informed that not only would the original 200 blanket demand not be met, but as a punishment, the village was being fined double that number (400 blankets). Furthermore, if the 400 blankets

> were not delivered by the following morning, the village would be shelled.
>
> Despite the fact that the two white hostages had either never been confined or had already been released and the company boats had been returned, the failure of the Angoon people to produce the 400 blankets led the Navy to carry out its threat to destroy the village. Angoon was shelled on October 26, 1882, and the sailors and marines were then landed to burn the remaining buildings.

Although Angoon was rebuilt after this incident, the Navy's actions eventually led to a lengthy court suit, which resulted in a $90,000 settlement in 1973.

The community of Killisnoo continued to prosper during the 1880s and 1890s with the establishment of stores, a school, and regular mail and freight service. In 1885, following the bankruptcy of the herring processing plant, the Northwest Trading Company was reorganized as the Alaska Oil and Guano Company, which produced herring, fish oil, and fertilizer. The Killisnoo plant continued to process herring under a succession of owners until a fire at Killisnoo in 1928 destroyed the village. The people who had lived at Killisnoo chose to move to Angoon after the fire, and in 1930 poor market conditions forced the permanent closure of the plant.

Following the closure of the Killisnoo plant, many Angoon residents found employment at various salmon canneries along Chatham Strait. In 1947, the Angoon Community Association, with BIA assistance, bought the Hood Bay Canning Company and many people from Angoon moved to Hood Bay for the summer canning season. The cannery had been built in Hood Bay in the early 1920s providing employment opportunities for local residents with as many as 50 local people employed there in the 1930s. The employment picture improved further after 1947. At that time, many local people obtained jobs in the seine fishery, the cannery, and in support services such as child care, food service, and housekeeping for the workers. An Angoon salmon seine fleet was well developed in these years, based out of the Hood Bay cannery. Fish traps (which were eliminated throughout the region in 1962) also provided some jobs.

However, many of these jobs came to an end when the cannery burned down in 1961. The people who annually moved to Hood Bay for the summer now had to find other places of employment. Many chose to stay in the fishing industry and subsequently worked in canneries at Sitkoh Bay (Chatham), Hawk Inlet, Excursion Inlet, and Sitka. The majority of the seine fleet began to deliver fish to a cannery at Hawk Inlet, but the burning of the cannery was a disastrous blow to the Angoon fishing fleet, from which it has never fully recovered.

Angoon incorporated as a city in 1963, and acquired the municipal powers available to a second-class city under state law. In addition to the city council, important organizations in Angoon include the Alaska Native Brotherhood (ANB) Camp #7, which was formed in Angoon in 1921, and the Angoon Community Association, formed in 1939 as a tribal IRA Council under the terms of the Indian Reorganization Act. The Tlingit and Haida Council chapter and the ANCSA Village Corporation, Kootznoowoo Inc., also have become important organizations in Angoon, in recent years.

HISTORICAL AND CONTEMPORARY SOCIAL ORGANIZATION OF THE ANGOON TLINGIT

In Tlingit society, a person is born into one of the two matrilineal totemic moieties. The moieties are either Laayaneidee or Shangukeideei (Raven or Eagle). In the north, the Eagle moiety is often referred to as the Wolf. In addition, Swanton (1908) reported a third group from Cape Fox, in the south, as standing outside both moieties in such a way that its members could marry into either group. However, the Tlingit themselves conceive of their total society in terms of a duality (Stanley 1965).

The traditional moiety organization constituted, in a general sense, the pattern for reciprocal relationships between groups and individuals in the society. For example, it served to classify all individuals into groups that could only marry into the opposite

group. Each group was in a sense dependent on the other for such things as marriage partners, potlatching, and economic aid (Goldschmidt and Haas 1946:9-10).

Each of the major moieties contained over twenty major lineages, or clans. No one clan was present in every village of the Tlingit, nor, traditionally, were there villages that contained representatives of all clans. There appears to be a historical tendency for villages to contain about equal representation from both moieties and generally an equal number of clans from each (Swanton 1908). Most of the major clans were known to be found in particular geographic areas.

Minor lineages existed as the localized clan segments within a village, and were the most important social groups. In general, each minor lineage was the property owning group in the society, with property consisting of salmon streams, hunting grounds, berry patches, sealing rocks, house sites, rights to travel routes, and certain important stories, totems, and songs (Stanley 1965).

The following clans were represented in Angoon at the time of this study, and are lineages of either the Raven or Eagle moieties (in Angoon these are known as the "Eagle side" or "Raven side"). Not all of the clans listed here have a tribal house or houses in Angoon, however.

Laayaneidee (Raven side)
- Deisheetaan (Angoon Raven)
- Dakk dain taan (Sea Bird)
- Anxakitaan (Dog Salmon)
- Kiks. adi (Frog)
- L'uknax.adee (Coho)
- K'akweidee (Basket Bay Beaver)

Shangukeideei (Eagle side)
- Teikweidee (Brown Bear)
- Dukl'aweidee (Killerwhale)
- K aagwantaan (Sitka eagle)
- Tsaagweidee (Kake Killerwhale)
- Woosh kee taan (Shark)

Note that the clans may have more than one or two crests. For example, the Deisheetaan uses the beaver crest as well as the raven because it was the beaver that showed the Deisheetaan the site of Angoon.

It is common in contemporary Angoon to state one's lineage as being either Raven or Eagle. Also, a person may say that he or she is a Raven-beaver, Raven-coho, or Eagle-bear, as the case may be. Often, only the immediate crest is used for identification (as in "I am a wolf").

Clan membership continues to play an important role in the lives of the Tlingit residents of Angoon. A significant degree of social pressure, even among teen-agers, limits dating and marriage among members of the same moiety, who as children are often referred to as "sisters" or "brothers". Marriages are today considered to be important ways to emphasize clan membership, and as such they are often occasions for the display and exchange of totemic crests, houses, names, hats, blankets, rattles and histories. At a marriage party, the community ties among clans are often explained in detail.

The foremost opportunities for clan lineage to be detailed and reinforced are during important ceremonies, called an "Indian Party". Indian parties in Angoon are held by either the Eagle side or Raven side, depending on the purpose of the party. The death of a Raven member, for example, results in the Eagle side making all the necessary burial preparations. In return, the Ravens will sponsor a thank-you dinner after the funeral and will generally make a small payment to all the Eagles for their help. At the Indian party, nearly all the speakers will recognize their relationship to the deceased. As part of this re-identification process, they will also recognize their father's people, aunts, brothers-in-law, children and grandchildren, if there are any. In honor of one another, the speakers also may display the significant crests, hats, rattles, and other goods that are owned by their clan. The ceremonial speeches are conducted in Tlingit, which today is understood mainly by the elders in the community. The

Tlingit speeches contain clan histories and complex riddles with multiple levels of meaning. It is necessary for members of the opposite side than the speaker to respond to the riddles.

As indicated above, the contemporary village of Angoon is still a place where Tlingit traditions are alive and where the clan structure is largely intact. Nonetheless, culture change is manifested in Angoon in many ways. Commercial ventures increasingly introduce new capitalistic organizations, education is given an increasingly high priority, and sophisticated business skills are becoming a requisite for corporate and municipal managers.

A 1976 socioeconomic study showed the community to have a large proportion (80 percent) of life-long residents, who placed a high value on such attributes as the close family ties, good housing, and hunting and fishing opportunities (Alaska Consultants 1976). Issues that were cited in the study as being significant in the future of Angoon included employment opportunities, economic growth, and social problems such as alcoholism and drug abuse.

ANGOON POPULATION AND DEMOGRAPHICS

The historical population of Angoon is represented in Figure 4. The population of Angoon (including Killisnoo, from 1920 to 1930) has been dynamic over the past century, ranging between 300 and 600 for much of that time. A noticeable drop in population to about 200 in 1900 is characteristic of many villages in the region, and may be the result of disease, new employment opportunities away from the village (as in the mines), and possible aberrations in the census procedure for that year.

Alaska Consultants (1976) and Division of Subsistence studies in Angoon have both included an enumeration of community residents. According to the Alaska Consultants (1976) study the 1976 population of Angoon was reported to be 430 people living in 127 housing units, for an average household size of 3.38 people. The Division

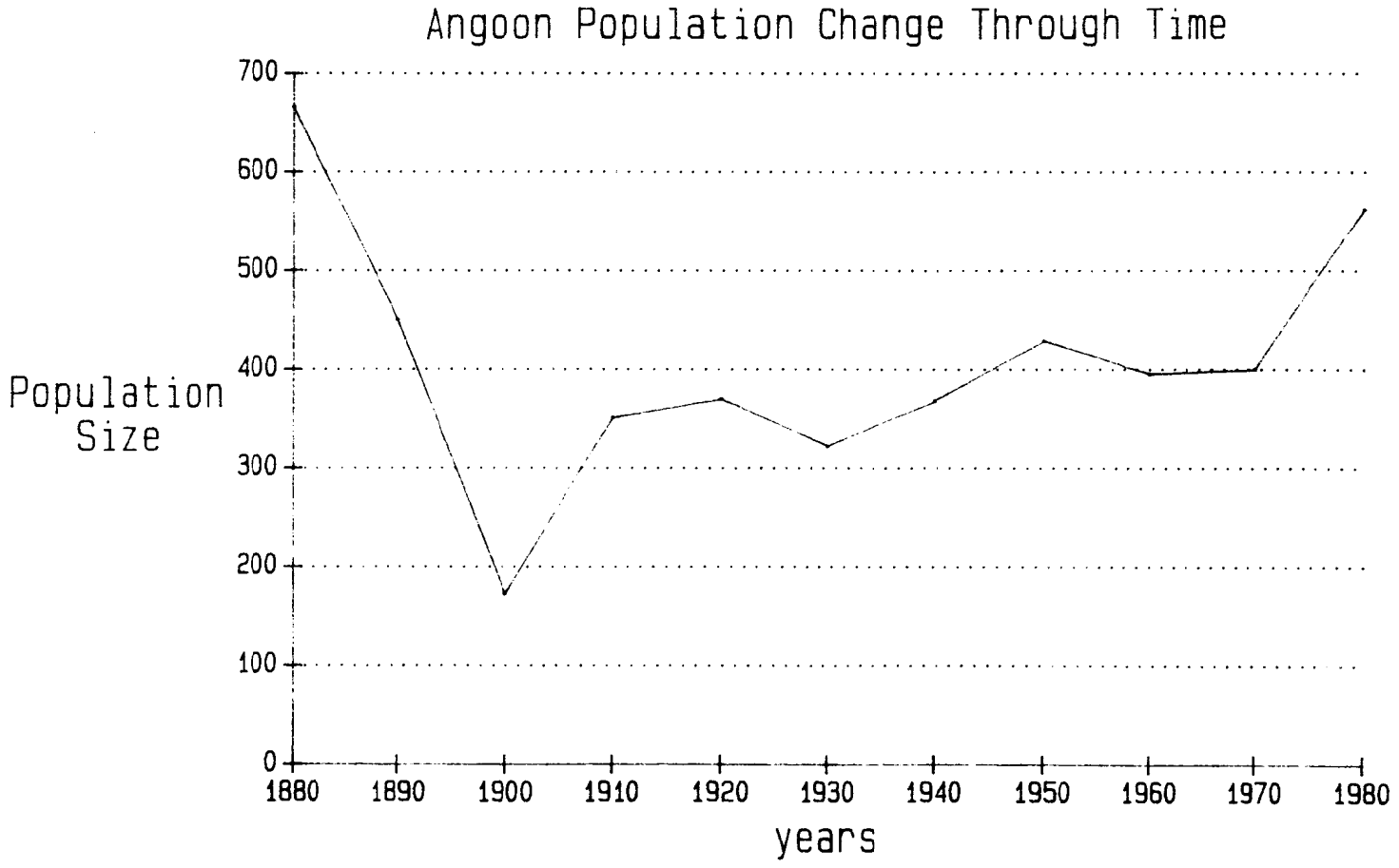


Figure 4. Angoon Population Change Through Time

of Subsistence study found that in 1985 there were 630 people living in 145 housing units, for a household size of 4.34 people. Teachers, many of whom had large families, were included with the 1984 population count, whereas in 1976 the teacher population consisted mostly of single persons or married couples with no children. Since 1976 there has been an increase in housing units and a trend toward former Angoon residents returning to Angoon to live.

The 1980 census shows Angoon with a population of 465, of which 83 percent are Alaska Native. The 1985 Division of Subsistence survey showed an Angoon population of 630, of which 78 percent of the sample were Tlingit Indian and 21 percent non-Native (Fig. 5). The population profile for Angoon, based on the 1985 survey, shows a balanced sex ratio with strong representation in the younger age groups (Fig. 6, Fig. 7). Length of residency in Angoon is shown on Figure 8, for both the longest residing household member and the head of household. This data suggests an influx of new households, for 47 percent of the sampled household heads have lived in Angoon less than 11 years. There are also many lifelong residents. As shown in Figure 8, heads of households in many cases are not the longest residing household member. This may be due to 1) marriage from outside the community by a household head, 2) residence of an elderly person in the household or a relative, or 3) household heads being younger than their spouses.

REGIONAL LAND STATUS AND LAND USE

The region that is used by the Angoon Tlingit includes most of the west coast of Admiralty Island, from Hawk Inlet to the south tip of Admiralty, and lands along the east coasts of Chichagof and Baranof Islands. Traditional and contemporary uses of these areas, by residents of Angoon, are described in greater detail in Chapter Three. As mentioned above, property title for traditional lands were previously held by clan groups. Currently, this area is predominantly United States public land managed by the

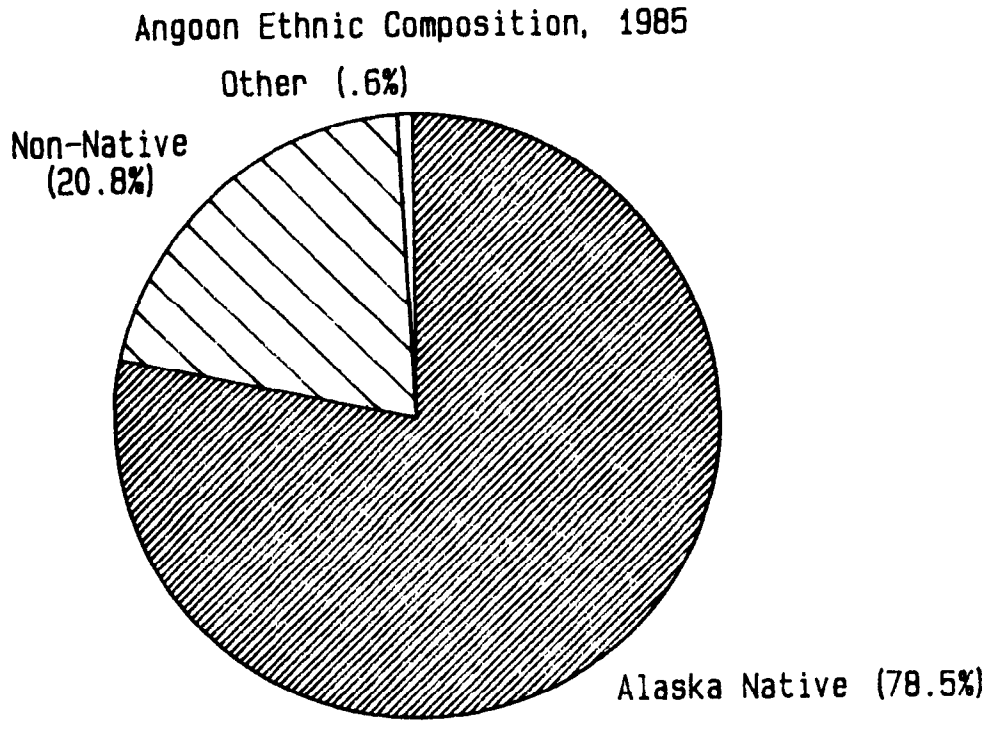


Figure 5. Ethnic Composition of Survey Households, Angoon 1985

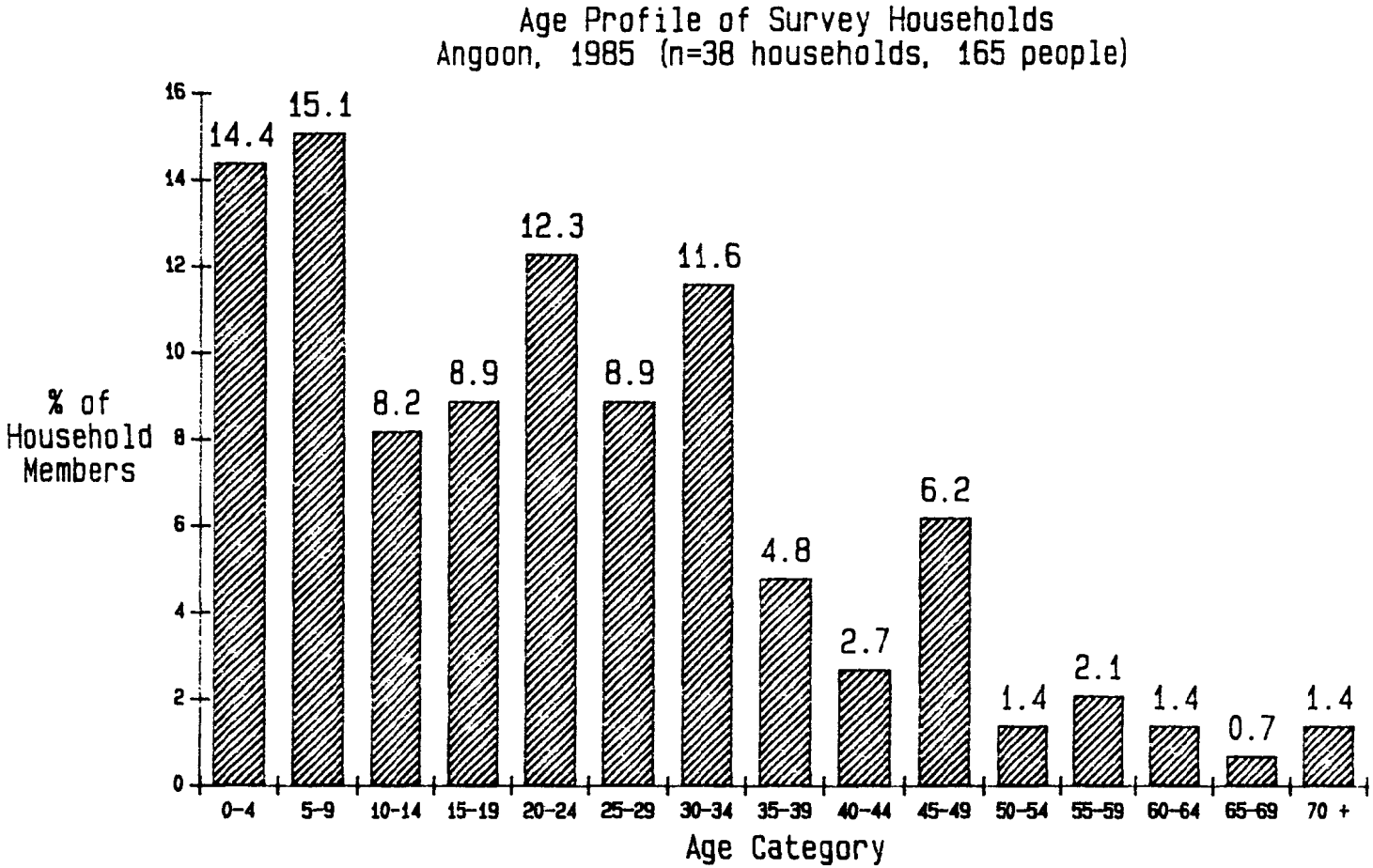


Figure 6. Age Profile of Survey Households Angoon, 1985

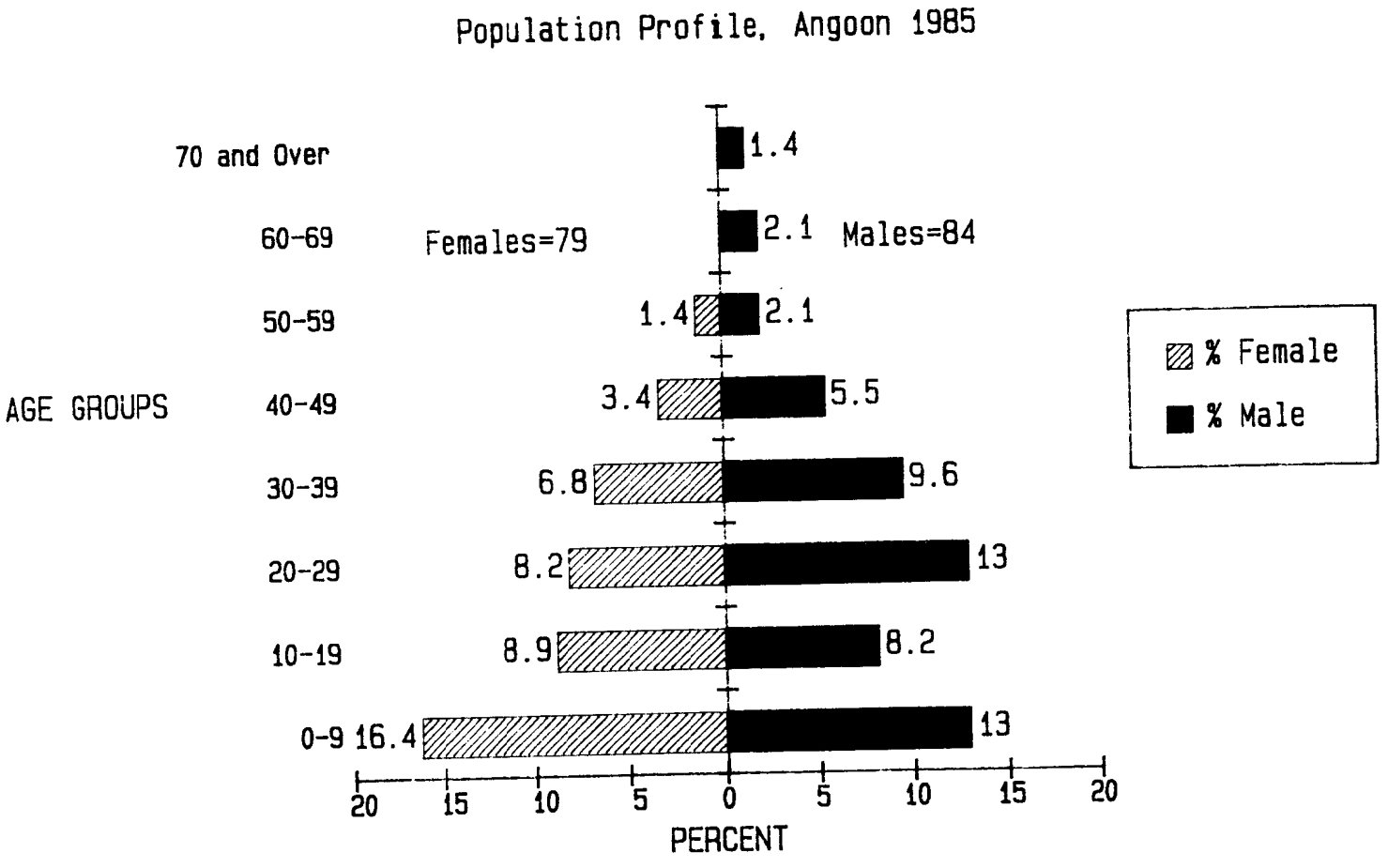


Figure 7. Population Profile of Survey Households, Angoon 1985

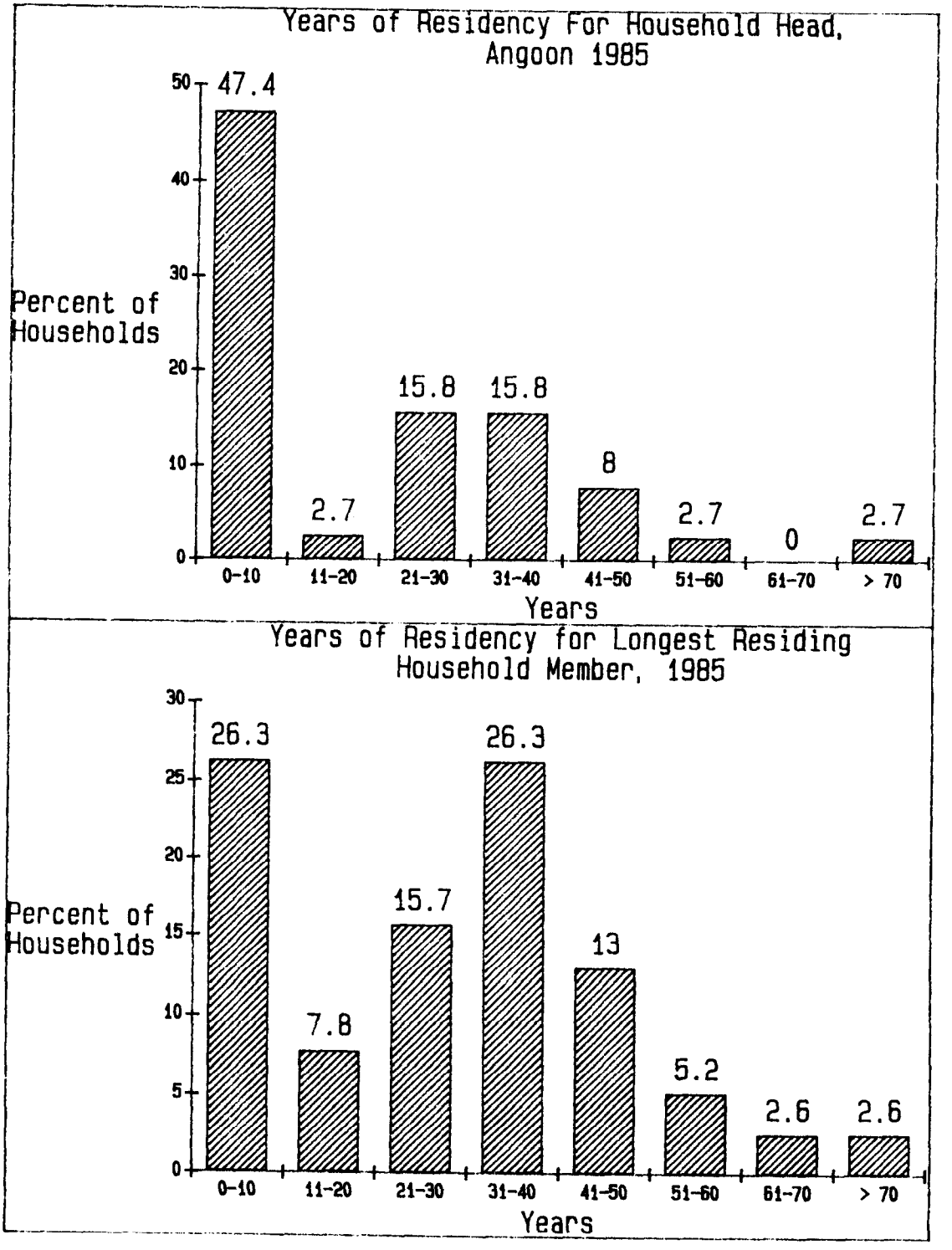


Figure 8. Years of Residency for Longest Residing Household Member and Household Head, Angoon 1985 (n=38 households)

U.S. Forest Service, but sizable amounts of private land are contained within the area also, predominantly on Admiralty Island. Most private lands are owned by Kootznoowoo, Inc., and Shee Atika, Inc., the Angoon and Sitka ANCSA village corporations. The breakdown of public and private lands on Admiralty Island is shown on Table 2. Most of the 1.1 million acres of Admiralty Island consists of designated wilderness.

Table 2. Admiralty Island Land Classification and Ownership

TONGASS NATIONAL FOREST		
Admiralty Island Island Monument Wilderness	937,396	acres
Non-Wilderness Forest	86,874	
Greens Creek Mine (leased)	17,225	
PRIVATE LANDS		
Shee Atika Inc.*	23,073	
Kootznoowoo Inc.*	3,500	
Other Private Lands	5,595	
TOTAL	1,073,663	acres

* Sealaska Inc. owns subsurface rights to 24,873 acres.

National Forest Lands

In general, wilderness lands are managed for purposes outlined in the Wilderness Act and ANILCA, which include wildlife habitat, hunting and fishing, other forms of recreation, and limited use of timber (not to include commercial timber harvest). Commercial mining and timber harvest may occur on lands north of the Hawk Inlet, which are outside the Admiralty Island National Monument, and are not designated as wilderness.

Across Chatham Strait from Angoon, lands that are used by Angoon are almost entirely within the Tongass National Forest in areas managed for multiple uses.

Management planning takes its overall direction from the Tongass Land Management Plan, which is due to be updated in 1989. This portion of the Angoon use area is also subject to the five-year planning cycle that allocates commercial timber to the Sitka pulp mill under the terms of a fifty-year timber sale agreement that was negotiated between the U.S. Forest Service and the timber industry in 1956.

Although timber harvest is no longer permitted on most of Admiralty Island, because of its National Monument status, both small and large scale logging activity has occurred on locations throughout Admiralty Island at various times over the past one hundred years or so, and has included areas in proximity to Angoon such as at Hood Bay, Whitewater Bay and Cube Cove. The first commercial logging activities probably started in the late 1870s with the harvest of timber for construction and fuel to run the canneries and steamships. Between 1860 and 1910 approximately 10,000 board feet of timber was cut from 800 acres in the Kootznahoo Inlet area as part of the developing herring processing industry. A major commercial use of timber came with the need of pilings and floats for commercial fish traps. Many trees were cut from the beach fringe, individually or in small clearcuts, from 1913 until 1947. Up until World War II, only about 100,000 board feet of timber had been cut from Admiralty Island, and that primarily occurred during the height of the fisheries (the 1920s and 1930s) mostly from Favorite, Mitchell, Chaik, Hood, and Whitewater Bays, as well as Seymour Canal, Eliza Harbor, Tyee, Hawk Inlet and Marble Cove (Roderick 1983).

The sole instance of contemporary large-scale industrial logging activity on the island is on the parcel of private land owned by Shee Atika, at Cube Cove, approximately 20 miles north of Angoon. Due in part to its proximity to Angoon, logging and habitat change at the Cube Cove site has been the subject of controversy in recent years.

Private Land Ownership

The City of Angoon occupies a site on a peninsula to the west of Kootznahoo Inlet, about halfway down the west side of Admiralty Island (Fig. 2, Fig. 3). The city limits cover slightly over 158 acres. Additional lands in the Angoon, Kootznahoo Inlet and Mitchell Bay area have been selected by Kootznoowoo, Inc., from the National Forest, under the terms of the 1971 Alaska Native Claims Settlement Act (ANCSA). In all, the Kootznoowoo Corporation received more than 3,500 acres of land on Admiralty, in addition to commercial timber land on Prince of Wales Island. This selection strategy has enabled the Corporation to gain profits from the sale of timber from lands far removed from the village of Angoon, while reserving much of the land near Angoon for wildlife habitat and subsistence activities. The city of Angoon has zoned most of the Kootznoowoo, Inc., land as "non-commercial". Also, the area encompassing a 660 foot corridor along the Mitchell, Kanalku and Favorite Bays are to be jointly managed with the Forest Service and Kootznoowoo Inc. and probably will be managed for uses other than timber harvest, although this land is not designated as wilderness. Some sites on corporation and other private land in the vicinity of Angoon are being considered for economic development, such as recreation and tourist facilities. To date, three commercial lodges have been built on other private land holdings on the island, at Pybus Bay, Tyee, and Killisnoo Island, and the Kootznoowoo Corporation is considering developing an additional lodge.

As indicated above, Shee Atika Inc. the Sitka village corporation, has selected a portion of its ANCSA land entitlement at Cube Cove, north of Angoon, and has chosen to harvest the commercial timber from this area. The Shee Atika and Kootznoowoo lands are also jointly owned by Sealaska, the regional Native Corporation, because the Alaska Native Claims Settlement Act (ANCSA) grants Sealaska ownership of the subsurface rights to most of the lands that are owned by the village corporations, Kootznoowoo retains subsurface rights to 1,700 acres in the Angoon area.

COMMERCIAL AND WAGE ECONOMY

History of Economic Development

Since the days of the Killisnoo Island herring processing plant and the community-owned salmon cannery at Hood Bay, commercial development at Angoon has been sporadic. Overall, the economy of Angoon is based on a combination of cash income and the harvest of wild food resources for home use. Commercial fishing, tourist services, transfer payments, government jobs, and village corporation (Kootznoowoo Inc.) enterprises provide the foundation for the contemporary Angoon cash economy.

Since the turn of the century, commercial fishing has provided a marginal but fairly consistent economic base in Angoon, despite the changes that have characterized the fisheries over the years. Residents of Angoon, along with most other Tlingit in the region, were early participants in the commercial fishing industry. Because they had been active in fishing prior to commercialization of the fisheries, working for and in the canneries fit easily into the annual pattern of food gathering activities. Cannery work provided an abundant supply of salmon for home use, and smokehouses as well as facilities for modern jarring and canning of salmon for home use were widely used. As early as 1900, 40 Angoon residents were reportedly working at the herring plant at Killisnoo, along with 47 whites, nine Japanese and five Chinese.

Coincident with the development of the canned salmon industry, a seine fishing fleet was established in Angoon that consisted of 12 boats in 1936 (Lipps 1936). In 1939, 23 Native fishermen working for the Hood Bay cannery made a total of $5,594.00 (averaging $243 each) while 35 cannery workers made $2,357 ($67 each) (USFWS, Bureau of Fisheries, Juneau District Annual Reports). It is likely that the size of the seine fleet increased following the 1947 purchase of the Hood Bay cannery by the

Angoon Community Association. A 1953 report indicates that the per capita income from commercial fishing (including income from cannery jobs) was about $400, which was determined to be most of the cash income received during the year by Angoon residents (82nd Congress, House Report No. 2503, 1953).

Seine boat owners in the region have typically relied on the canneries for financial assistance, and a 1948 BIA report states that this assistance often included cash advances for the purchase of the boat and seine, supplies, maintenance and repairs. Additionally, boat owners often depended upon the cannery for cash advances to cover medical expenses, funerals, necessary transportation, living expenses and other personal items (Fuller and Lantis 1948). According to this report, $2,000 to $3,000 per season was needed for boat maintenance, supplies and gear. The late 1940s were hard years, economically, for the seiners and it was not unusual for boat owners to finish the season with a deficit owing to the cannery.

The loss of the cannery at Hood Bay in 1961 was partly responsible for the subsequent loss of seine boats belonging to Angoon residents, for after the fire the skippers no longer had their own company to fish for, a company which extended credit and offered a place to store and repair boats and fishing gear. This preferential treatment for an established fleet of boats was practiced at virtually all canneries in the area, so although it was often possible for Angoon fishermen to sell fish at the Hawk Inlet or Sitkoh Bay canneries, other cannery services (such as boat financing and storage) were limited. A general decline in the salmon fisheries throughout the 1940s and 1950s eventually led to a serious collapse in seining by the late 1960s and early 1970s. In 1974, bankruptcy closed the Hawk Inlet cannery, and it burned in 1978. In 1975 the Angoon fishing fleet still consisted of 14 boats but was described in a BIA report as "deteriorating", due primarily to the difficulty of securing financing necessary for boat improvements (BIA 1975).

The limited entry system, implemented first in 1974 for most fisheries, provided Angoon boat owners with the opportunity to sell their permits at a time when failures in the seine fishery and the lack of a local cannery were still serious constraints on successful seine fishing. Limited entry thus provided some Angoon residents with the finances necessary to purchase smaller fishing boats for themselves and their children, and to gain a new start in the hand troll fishery. A 1976 study identified seven seine boats in the community at that time (Alaska Consultants Inc. 1976). Seven boat captains and 51 crew are identified as having been involved in the fishery that year, and average man shares yielded only $1,007. By 1986 there were only four seine boats operating out of Angoon, and only four purse seine limited entry permits were owned in the community (CFEC 1984). An increase in the hand troll fleet has paralleled the decline of the seiners (Fig. 9). Boat ownership in Angoon in 1982 is represented in Figure 10, which shows that most boats used in Angoon at that time were under 24 feet long.

Historic participation in the seine fishery allowed Angoon fishermen the capability of traveling long distances in relative safety, and the opportunity to harvest various food resources while traveling to and from canneries. Loss of these boats required a shift in subsistence harvest technologies. The hand troll fleet that has developed in recent years has consisted of boats from 12 feet to 36 feet. As was the case with seine boats, the development of the troll fleet has had an impact on the use of subsistence resources by Angoon residents; using these smaller boats, hunters now can travel to hunting areas quickly, often making day trips. Boat ownership in Angoon in 1982, based on a tabulation by George and Kookesh (1982) is shown in Figure 10.

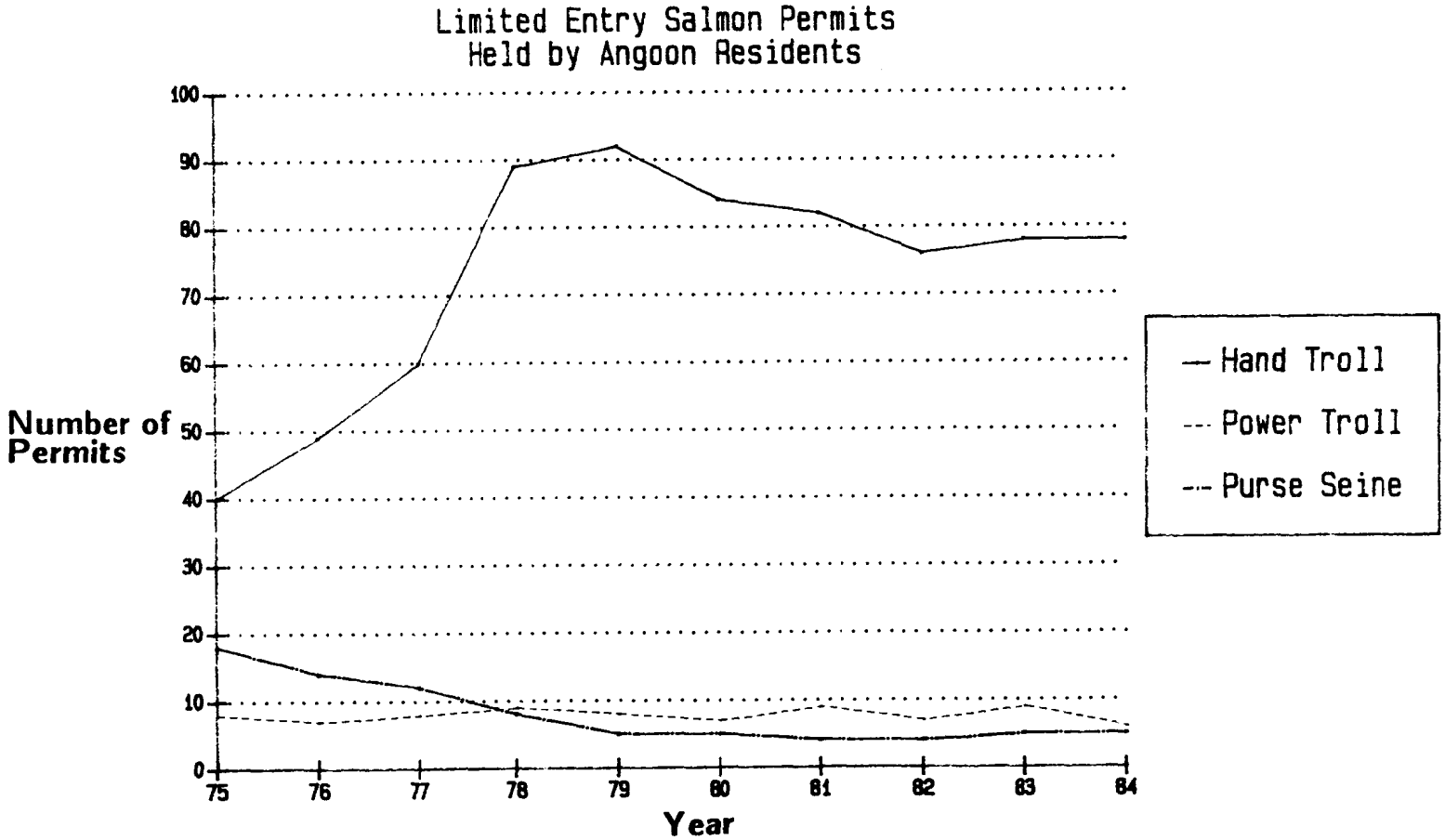


Figure 9. Limited Entry Salmon Permits Owned by Angoon Residents

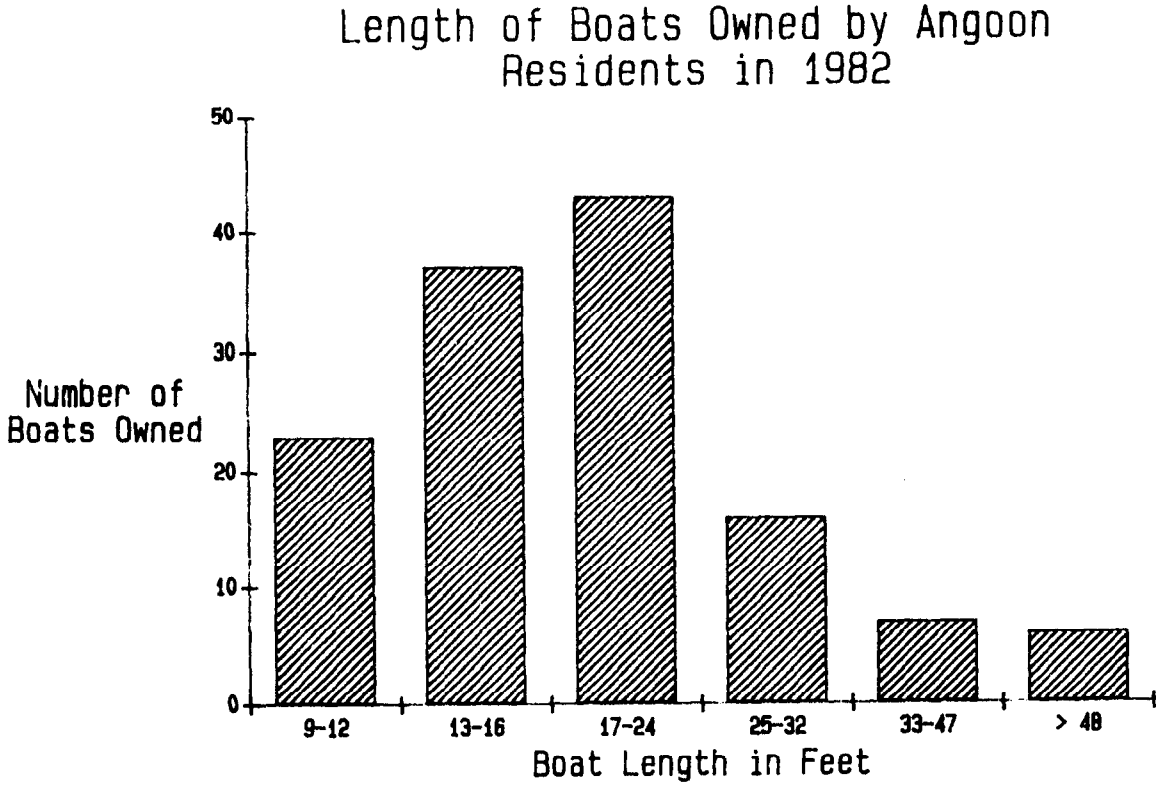


Figure 10. Length of Boats Owned by Angoon Residents in 1982

The Contemporary Cash Economy

Increasing local participation in the commercial salmon troll fishery resulted, by 1984, in 78 hand troll permits being owned by Angoon residents. Entry into the power and hand troll fisheries requires much less of a capital investment than net fisheries. But trolling is a labor-intensive, small-boat fishery that produces a relatively smaller volume of fish than net fisheries. Thus, while the economic risks are less to the individual fisherman, the economic profits are also less. Nevertheless, it is the fishing method currently best suited to economic conditions in Angoon. A fish buyer must be located at Angoon in order for the small-boat troll fishery to be economically feasible.

Most Angoon fishermen also participate in the commercial halibut fishery. Although in recent years the halibut season has lasted only a few days, it can yield an important income to Angoon families. Also, some local fishermen have recently shown an interest in the developing sablefish (black cod) winter fishery.

In 1984 the per capita gross earnings in Angoon from all fisheries amounted to $1,028.00. This income is often used with other sources to purchase the equipment necessary for participation in subsistence hunting and fishing activities. Commercial fishing income is, in fact, an important element of the Angoon "mixed" economy, which greatly depends on a relatively secure cash flow and a productive subsistence resource base.

Other elements of the Angoon commercial economy include several small businesses. The main commercial enterprises include two grocery and mercantile stores, three lodges, a restaurant, the local electric company, Kootznoowoo Inc., a teenage recreation hall, a fuel oil distributor, a small engine repair shop, and the branch offices of three flying services. Government services providing wage employment include public health and welfare, housing assistance, city government, senior citizen services, U.S. Forest Service administration for Admiralty National Monument, the Alaska

Department of Fish and Game (Division of Subsistence), and public school administration.

There is considerable interest in developing the recreation and tourism sector of the Angoon economy by providing lodging, fishing and hunting charter boat and guide services, and organizing events that display aspects of Tlingit culture. Several independent guides and two lodges already operate out of Angoon, and Kootznoowoo, Inc., is also considering ways to develop and market the considerable recreational values of the Angoon area.

Employment and Income:

Angoon employment in 1984 is represented on Figure 11, which shows that most jobs are in the government and commercial fishing sectors. Unemployment is high in Angoon. At the time of a 1986 Tlingit and Haida Central Council (THCC) survey, 45 percent of those respondents over age 16 were employed and 55 percent were unemployed (THCC 1986). Seasonality of employment in 1979 is reflected in U.S. Census statistics (U.S. Census, 1980) on Figure 12, which shows a pattern of low unemployment in the summer months and high unemployment in the winter months (U.S. Census data report an average unemployment rate of 14 percent, which differs from the "real" unemployment measure at a point in time that is used by the THCC survey cited above). This employment pattern is typical of communities in the region with a high proportion of jobs tied to resource extractive industries such as commercial fishing. Figure 13 shows the number of months that household members were employed in 1984 (based on Division of Subsistence survey data). It shows that there were high rates of unemployment and a high degree of seasonality of employment the year of the study. Only about 20 percent of household heads had yearround employment (11-12 months). About 30 percent of household members had jobs lasting less than six months.

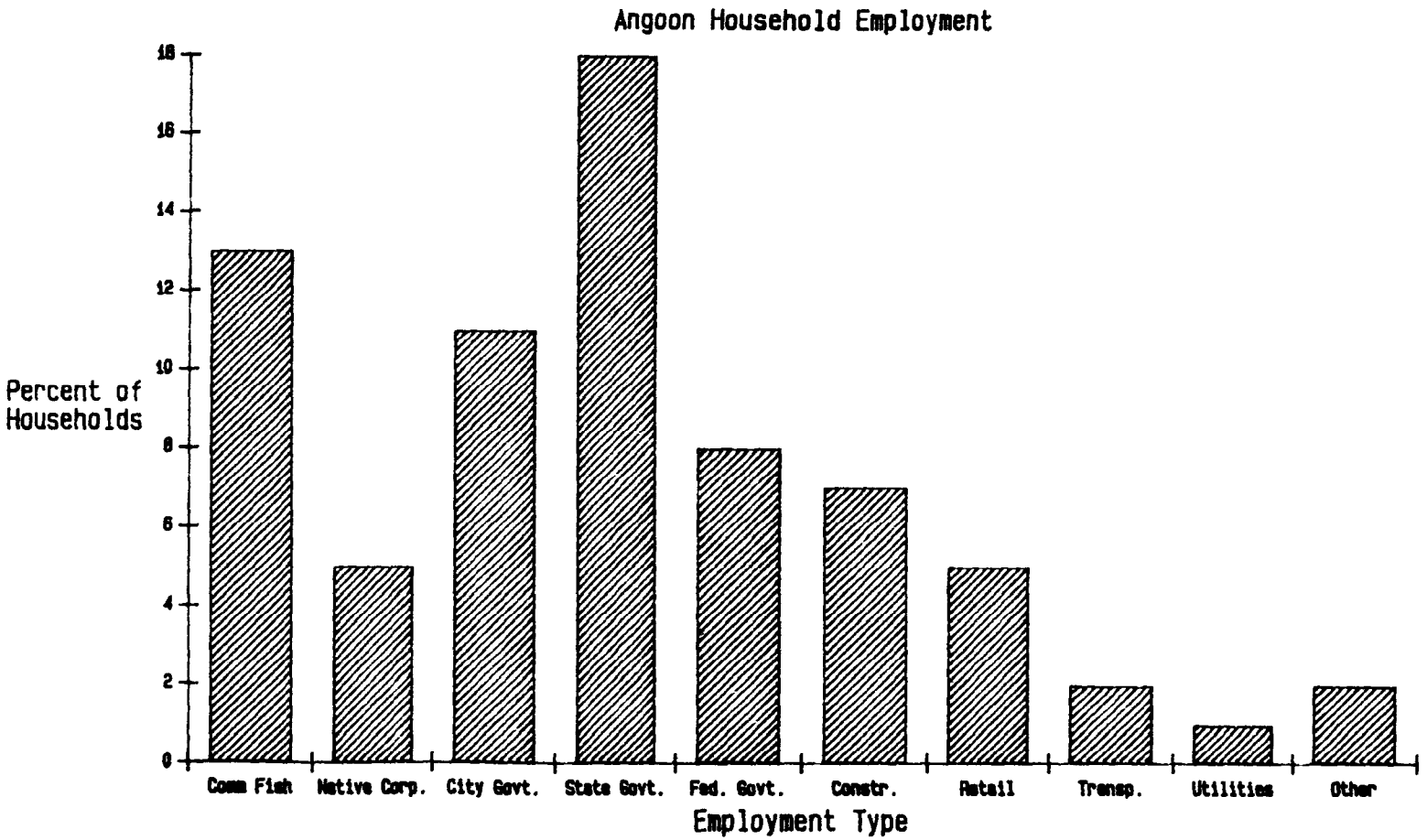


Figure 11. Employment Profile, Angoon 1984

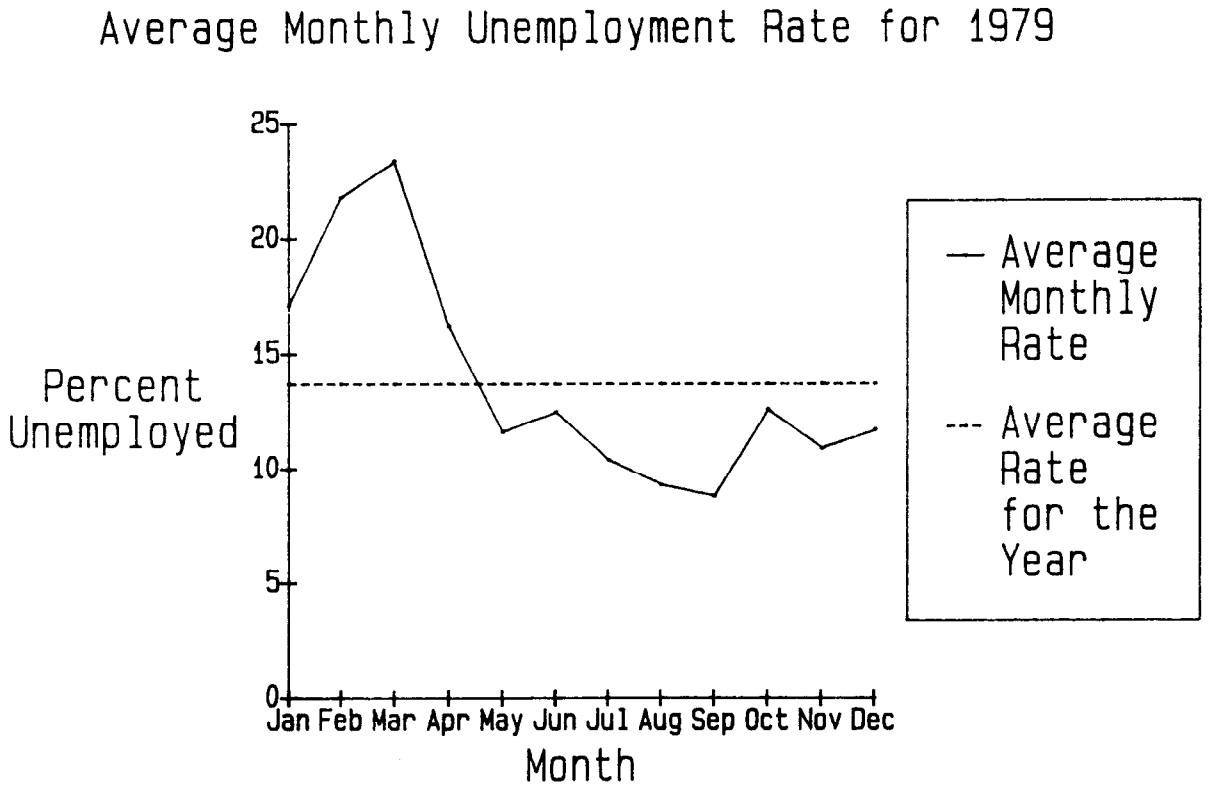


Figure 12. Average Monthly Unemployment Rate for 1979 (source: U.S. Census 1980)

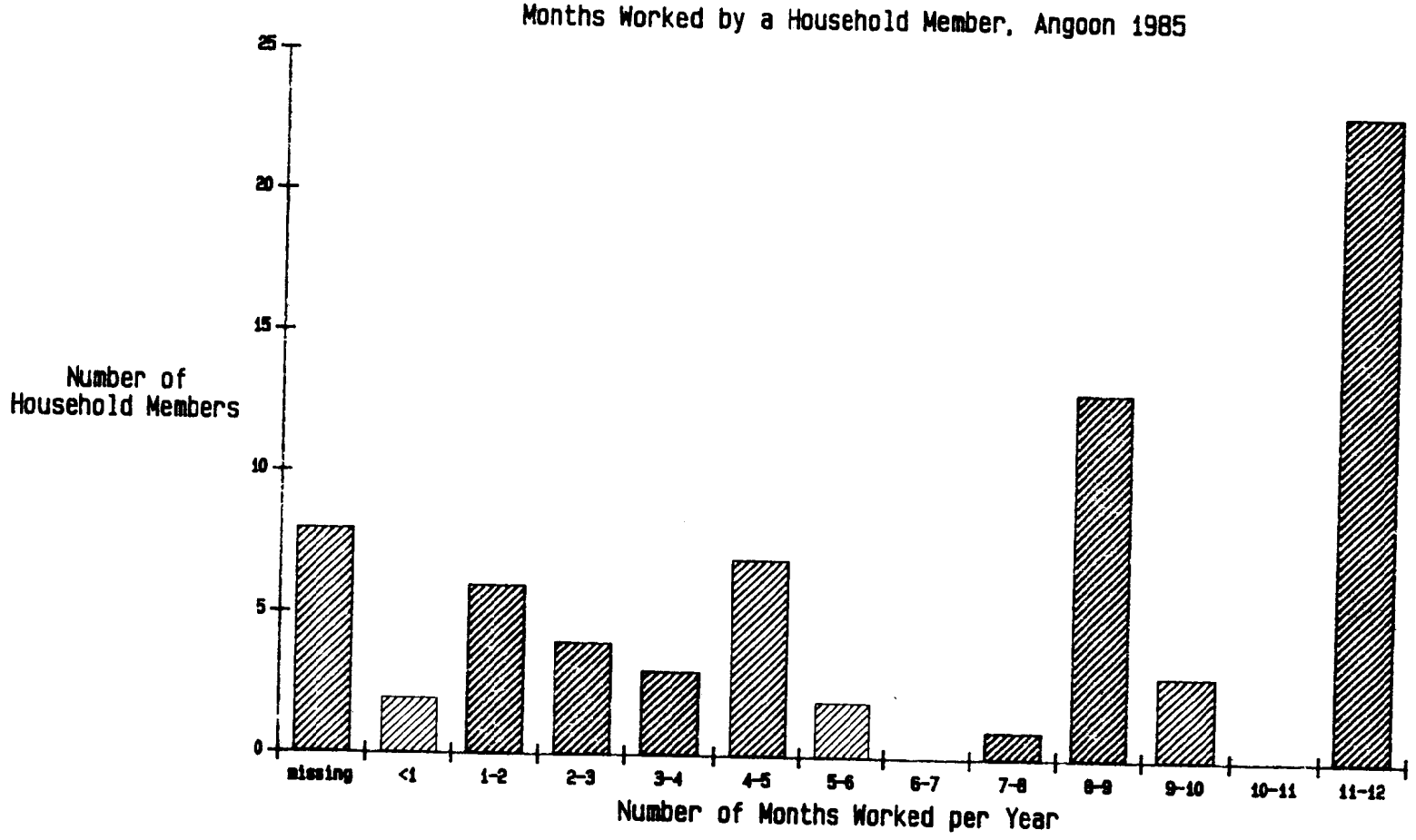


Figure 13. Months Worked by a Household Member, Angoon 1985

Unemployment benefits statistics are compiled by the State of Alaska by census district, which combines Angoon and Tenakee, so precise figures on unemployment benefits disbursed to Angoon residents alone are unavailable. However, in 1984 85 persons (17 percent of the combined populations in Angoon and Tenakee) received unemployment benefits amounting to $156,603 or an average of $1842.38 per recipient.

The Alaska Department of Labor reported a per capita personal income for Angoon residents of $9,933., in 1984, which is the lowest reported for the region and compares to a per capita personal income for southeast Alaska residents as a whole of $17,556. The income profile reported by the THCC in 1986 is found on Figure 14. It shows the largest proportion of individual incomes to be under $5,000 (40 percent of surveyed individuals), with 80 percent of those surveyed earning under $25,000.

Household income sources by job type, derived from the 1984 Division of Subsistence survey, is shown on Figure 15. The largest proportion of all jobs were in the government services, commercial fishing construction and "other" categories. "Other" income included unemployment benefits reported above, and transfer payments including Aid for Dependent Children (AFDC), Adult Public Assistance, General Relief, and medical emergency payments. During the period October 1986 to September 1987, these payments totaled $206,982. A total of 550 payments were made, at an average of 46 per month.

It is not uncommon for household members to be employed in several job categories in the course of a year, as for example in the case of a commercial fisherman who works on a building project during the winter.

Household incomes compiled for the community as a whole (Fig. 16) were similarly derived from government, services, commercial fishing and construction, with some contribution from retail sales.

These figures point to several major characteristics of Angoon's cash economy. The contribution of government jobs and services in providing wage employment to the

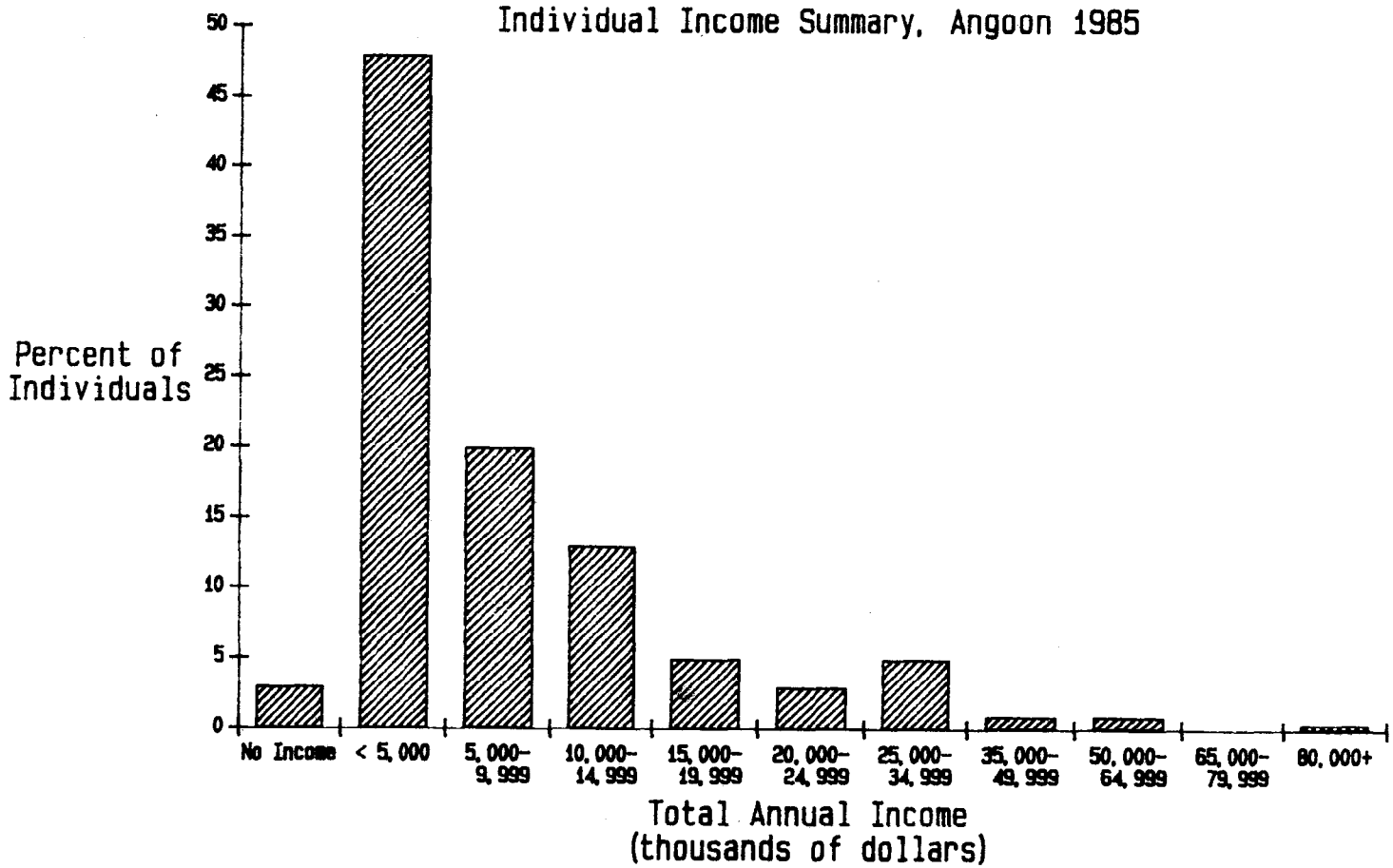


Figure 14. Individual Income Summary , Angoon 1984
(source: THCC 1986)

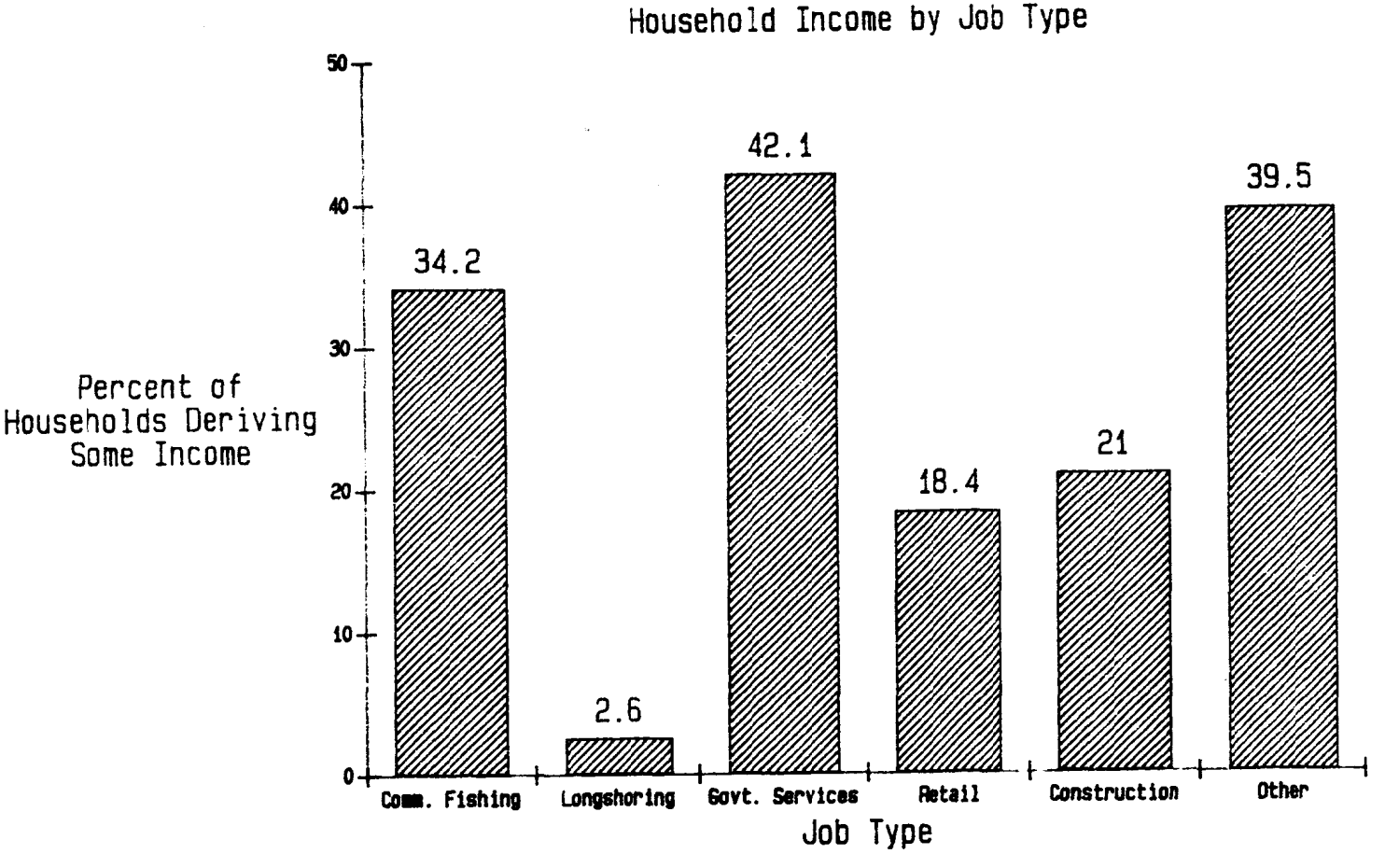


Figure 15. Household Income Sources by Job Type, Angoon 1985

community is particularly notable. Government-related sources of income appear to play a major role in an otherwise weak cash economy. While there are some prospects for a diverse local economy in the future, Angoon currently is dependent on government employment, commercial fishing, and a relatively meager cash flow from seasonally available jobs in construction and longshoring. Most wage earners rely for their yearly income on a combination of income sources, often including transfer payments such as unemployment. In this context the subsistence hunting, fishing and gathering of wild foods takes on considerable economic significance.

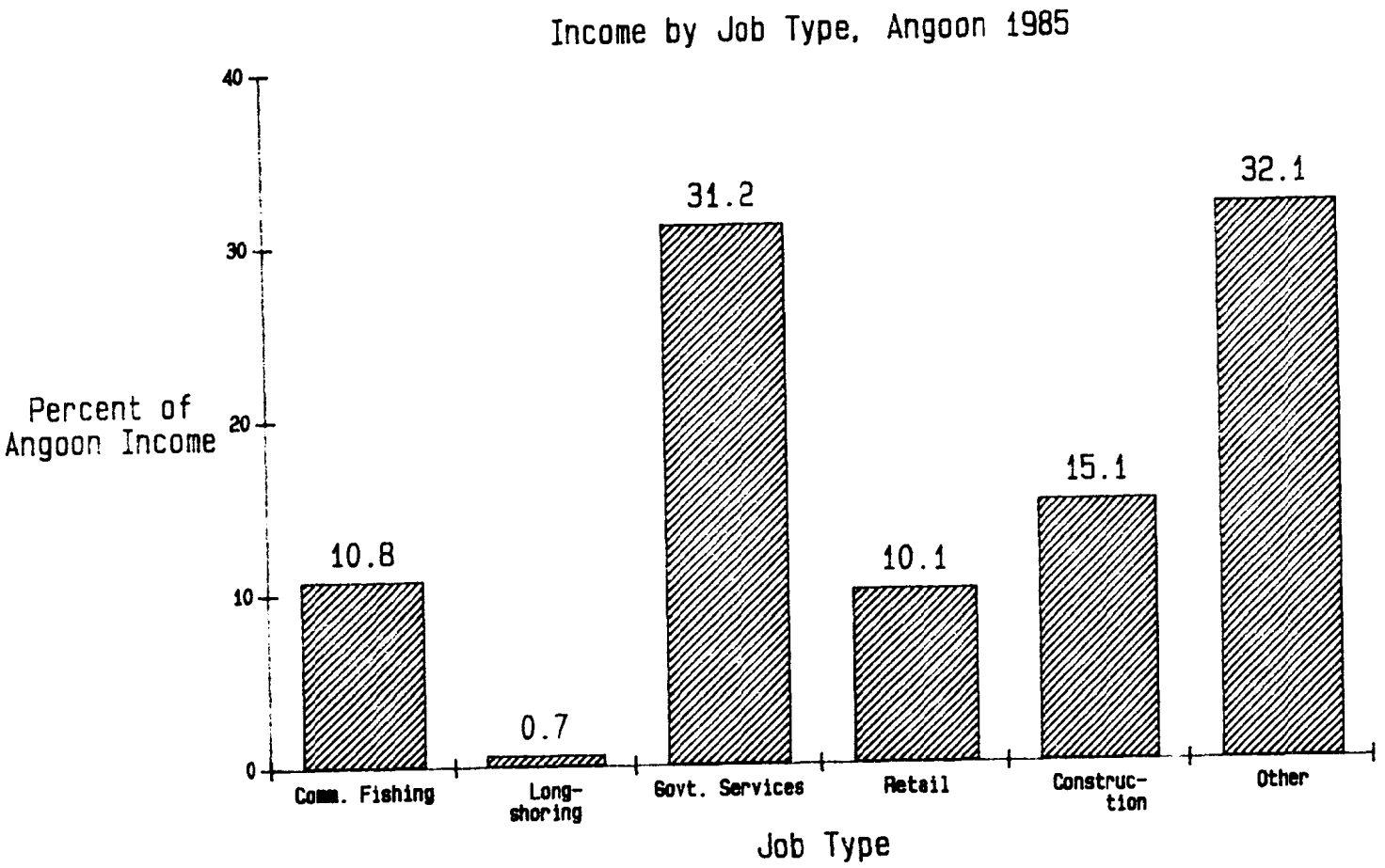


Figure 16. Income by Job Type, Angoon 1985

Chapter 3

SUBSISTENCE IN THE ECONOMY OF ANGOON

HISTORIC RESOURCE USE

"The world of the people of Angoon is made by the wide arms of the sea. The sea dominates both the life and death of the people. The sea is also the source of life." With this description, de Laguna begins her narrative describing the relationship between the Angoon Tlingit and the sea (de Laguna 1960). The waters around Angoon provided the Angoon Tlingit with salmon, halibut, cod and shellfish, and it provided them access to other resources farther away from the villages and camps, such as deer, bear, birds and furbearers. The importance of the sea to Angoon residents is still reflected in their resource harvest patterns, which are described in this chapter.

A review of Tlingit social organization is necessary in order to fully understand the relationship that the Angoon Tlingit had, and still have, with the land, waters and resources around their community. Clan groupings are a fundamental organizing principal. Members of a local clan group historically shared a dwelling, although particularly large clans may have required several houses. These clans and their associated house groups were primary economic units for fishing and hunting. A resource territory of adequate size and resource abundance was essential to the economic viability of this unit. Concepts of property and ownership, including ownership of land and of hunting and fishing areas, were well established among the Tlingit. Sockeye salmon stream systems were especially highly valued food-gathering locations to which property relations were held. Other resource territories included hunting areas, halibut fishing areas, berry and root gathering areas, hot springs, trade routes, and shellfish grounds. Permission had to be obtained from a clan leader before anyone other than a member of the owner clan could harvest from the area, and the

ownership of important sites was often codified in the form of a totemic carving or potlatch (Goldschmidt and Haas 1946, Lydia George 1984, Alaska Consultants 1976).

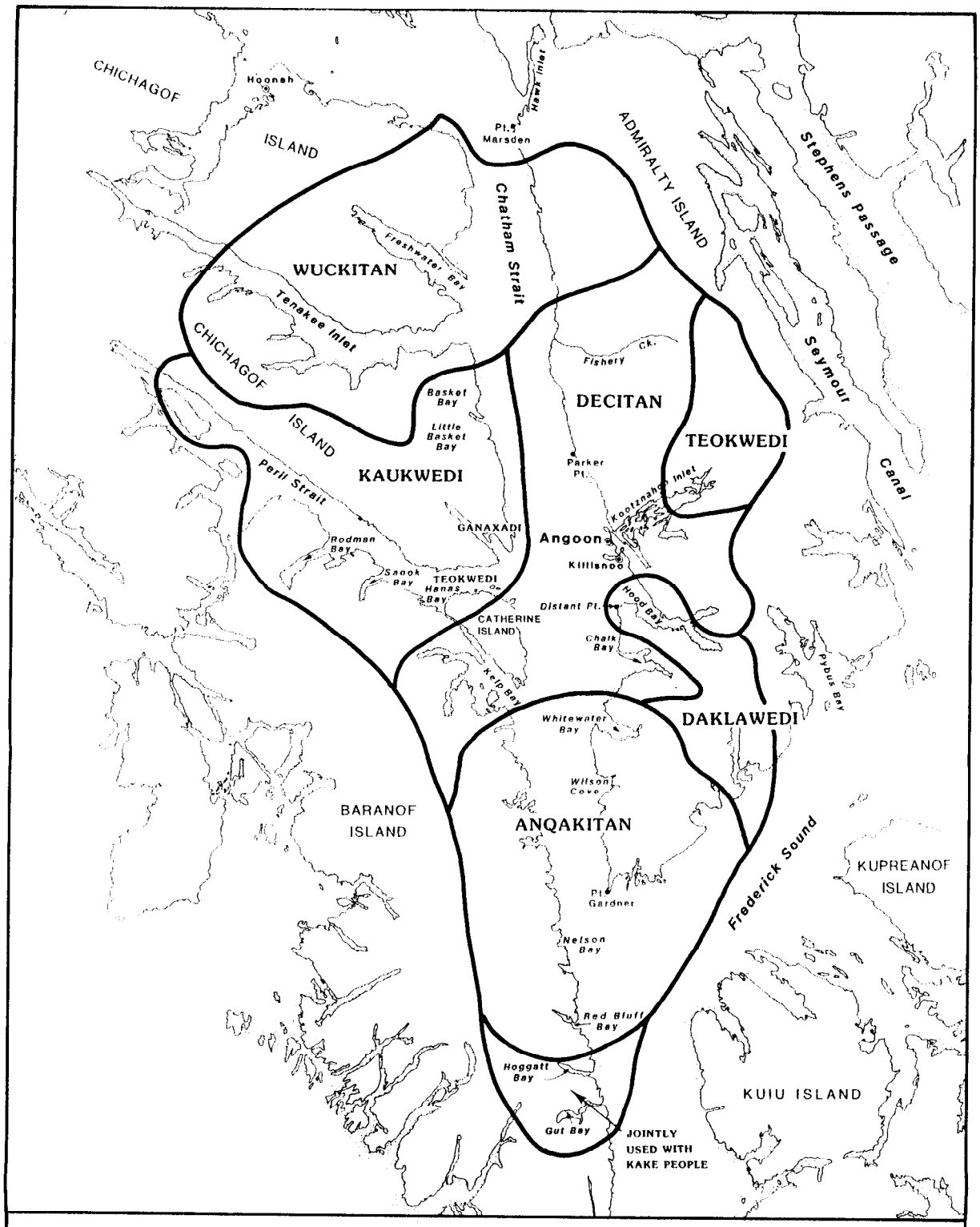
The traditional use area of the Angoon Tlingit, which is the composite of several clan territories, is found on Figure 17. It shows an area of use, occupancy and ownership that closely approximates areas still used by residents of Angoon which are described in some detail below.

CONTEMPORARY RESOURCE USE

The people of Angoon continue to adhere to many traditions related to the procurement and use of wild resources around their village. In doing so they maintain deep cultural ties with important land and water areas, and with the plant and animal species that have sustained their culture for many thousands of years. In contemporary Angoon, as in the past, the production, consumption, and distribution of wild foods weaves a network of interdependencies and strengthens human relationships in the community in ways that are now viewed as characteristic of a subsistence way of life. The Angoon subsistence system is described in this report with information gathered during 1985 about the uses of fish and wildlife within the lifetimes of Angoon survey respondents.

Major Influences on Hunting and Fishing Activities

Figure 18 depicts the seasonal round of resource harvests by Angoon residents in recent years. It represents a pattern of harvest that in its major form is typical of most years, but in its detail it is affected on a yearly basis by many factors including fish and game regulations, relative abundance of animals, competition, habitat disruption, weather, transportation, and economics. Some of these factors are discussed below.



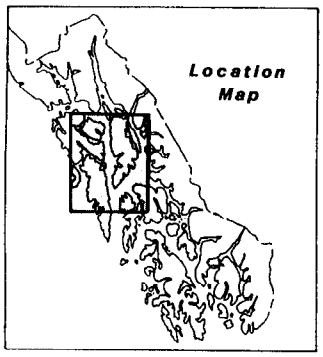


FIG.17. TRADITIONAL USE AREA OF THE ANGOON TLINGIT
adapted from Goldschmidt and Haas 1946

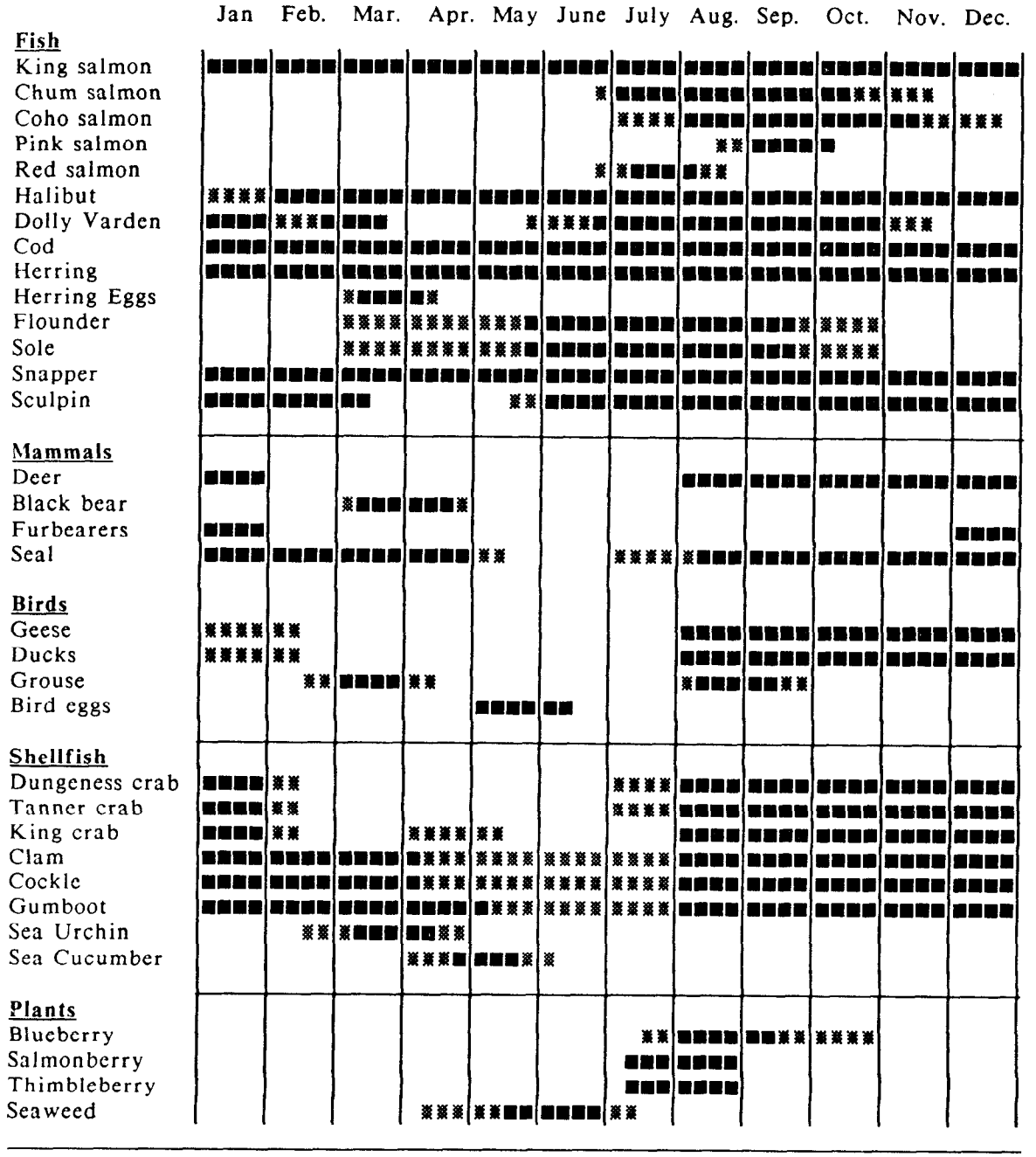
Use Area Boundary

See: "Timber Management and Fish and Wildlife Utilization in Selected Southeast Alaska Communities: Angoon, Alaska. Technical paper 159, for further information.

SCALE
0 5 10 15 20 Miles

STATE OF ALASKA DEPT. OF FISH AND GAME
Subsistence Division

Angoon Seasonal Round of Harvest Activities



▒ occasional harvest effort
■ primary harvest effort

Figure 18. Seasonal Round of Harvest Activities: Angoon

State and federal hunting and fishing regulations are one pervasive influence on the harvest of resources. As an example, deer hunting in the Angoon vicinity has been subject to periodic regulatory change since the 1960s. The deer season in 1960 consisted of a five month season with a four deer bag limit. At times since then, the regulations have changed to allow a four month season, an early portion of the season that is for bucks only, and a limit of one deer a day in some areas. In 1982, the deer hunting season on the west coast of Admiralty Island was extended into the month of January, and an additional two deer were allowed. Regulations now in place for the 1987 deer season call for a six deer limit for the general hunt, a five and one-half month season, and a January hunt on west Admiralty Island.

Species abundance and migratory patterns also affect resource use and the timing of harvests. The harvests of foods such as herring eggs, berries, or salmon will depend on factors that affect annual production, such as weather conditions or ocean temperature. Weather patterns affect the ease of access to hunting and fishing areas.

Employment opportunities are one factor that appear to have significantly influenced patterns of resource harvest by Angoon residents. As later material in this report will indicate, historic changes in the availability of cannery jobs dramatically affected the areas used by Angoon residents for hunting and fishing activities. The timing of certain harvests also was affected by employment options, as in the case of cannery workers who arrived early at the Chatham cannery to obtain and smoke fish for home use. Today, Angoon residents still must coordinate work schedules with hunting and fishing activities. Many Angoon residents have found that commercial fishing is an occupation that minimally interferes with traditional seasonal harvest cycles.

Seasonal Round of Hunting and Fishing Activities

The following section describes a generalized annual round of harvest activities for the Angoon Tlingit. The timing of the salmon run and subsequent harvest is one of

the key times in the yearly life cycle of the Angoon Tlingit. Oberg (1973) wrote: "The Tlingit year begins with the July moon. This is the month when the great schools of salmon first appear in the rivers, when the period of abundant and easily obtained food supply begins." Thus it is appropriate to begin the summary of the years activities with the summer months of salmon fishing.

July-September

The first salmon to return to the streams near Angoon is the sockeye. The sockeye run often begins as early as the middle of June and lasts through July and into August. The first sockeye harvested are generally eaten fresh, but much of the remaining sockeye salmon are preserved by smoking or drying for later consumption. Many Angoon residents combine smoke drying with freezing and canning their salmon for later use.

The sockeye are typically followed by returns of pink and chum salmon. The chum salmon has both an early return and a late return, which sometimes lasts through the last part of November. Pink salmon are found in abundance as they return to spawn in numerous shallow creeks throughout the area. The last salmon that is harvested in fresh water is the coho (silver) salmon, which can be found in some areas in late July or August but is most frequently caught by Angoon residents in late September through November.

The return of salmon to the streams coincides with a return of many other species, including those that rely on the salmon for food. Crab, halibut, trout and other fish return to the shallow waters of the bays around Angoon in order to feed on spawned out salmon and their eggs, and these species are easily harvested while concentrated in the shallows. The harbor seal is also drawn into shallow water to feed on salmon. Seal hunting during summer is an activity that most often takes place in

conjunction with another activities including salmon fishing. It also takes place with deer hunting during the fall and winter hunting season.

During the late summer, before the fall frost, deer occupy the alpine areas around Angoon. The Angoon hunter frequently starts the hunting season with one or two hunts in the alpine. The hunting parties are often relatively large, with as many as five to eight hunters in a party. The hunt will last anywhere from one to three days. The alpine areas are open country and the deer can be spotted at a distance. Alpine hunting for deer also provides an opportunity to harvest grouse that are often found in flocks in these areas.

Waterfowl hunting starts the first of September and lasts through the middle of December with a few exceptions. Canada geese, mallards, pintails and assorted other common ducks are taken. This hunting takes place within the confines of the fall hunting season, although spring waterfowl hunting was common in the memory of many Angoon residents. Restrictive regulations are cited by local hunters as the reason for the fact that waterfowl are no longer hunted in the spring. Some hunting continues into January and February, particularly for ducks and geese.

The harvesting of berries begins in mid to late July and may last through October. The majority of the berry picking occurs in the months of August and September. The species most often utilized are salmonberries, huckleberries, thimbleberries and blueberries.

October-December

Although not as productive as summer, the winter months of October, November, and December are still an important harvest time for Angoon residents. In October, the fishing for coho is at its peak, along with the harvesting of crab, seal, and waterfowl. Deer hunting now competes for the remainder of the time of the active harvester. The

deer are generally down in the woods and muskegs by the time the snow starts to fall, and by December many deer are harvested on the beaches (George and Kookesh 1983).

The harvesting of shellfish, particularly clams and cockles, also occurs in the fall months due to the extreme equinox tides and the belief that the harmful "red tides" are no longer prevalent. Other ocean resources that are available for harvest in the fall include chum salmon, halibut and other marine fish. Much of this harvest is consumed fresh.

The few trappers in Angoon begin the trapping season in December and will trap through January. A portion of one's fish catch may go toward trap bait. Fur trapping was a once lucrative business prior to the 1970s. In more recent years trappers have received only modest returns from considerable effort, so trapping effort has decreased with the price of fur. Higher marten prices in the last year may reverse this trend.

January-March

January is the month when hunting, fishing, and gathering activities have reached a low ebb for the year, but still many people are active. Some Angoon fishermen harvest king salmon, halibut, and other marine fish. In recent years, the extended deer season has allowed for the taking of deer through January. The majority of the harvesting activity in winter involves the taking of shellfish, mostly clams, cockles and black gumboots.

Late February and early March is the time for harvesting Dolly Vardon trout, an activity that predominantly involves young people. The trout are said to arrive at the mouth of the salmon streams at this time of the year to feed on the young outmigrating pink and chum salmon.

March is the time of the year when the herring return to spawn. The people of Angoon, like many other Tlingits in Southeast Alaska, wait with anticipation for the herring to deposit their spawn on intertidal and nearshore kelp and on hemlock

branches that are placed in intertidal areas as a spawning substrate. The herring spawn in the Angoon area has been relativity small in recent years, compared to the spawn that occurs in Sitka Sound, so only a few local people currently harvest herring eggs near Angoon. Many Angoon residents travel to the Sitka area to participate in the larger herring egg harvest. After spawning, herring still may be found in marine waters near Angoon, where they are often caught with hook and line or nets for bait and for home use.

The herring that return to the bays near Angoon also attract king salmon, so early salmon fishing begins at this time. Spring has been found to be one of the most productive times for catching king salmon. Angoon fishermen fish for spring kings in the bays along the shores of Chatham and Peril Straits.

Blue grouse, or hooters, are heard in the woods throughout the area around Angoon during the months of March and April, and at this time many hunters begin to hunt these birds.

April-June

The harvest of king salmon for local use may last until July, and is probably the activity that takes up most of the time of active harvesters during the spring months. An occasional deer is taken by a few of the fishermen while fishing for king salmon.

June is probably the only time that the Tlingit does not hunt the seal, for at this time they are having their pups. The Tlingit name for this time of the year means "calm waters", and in the words of one Tlingit elder, "...even the weather recognizes that the seals are having their pups" (personal communication: Jimmie A. George Sr.).

Traditionally, seagull eggs were harvested during the month of June. The Angoon Tlingit used to have to venture out to the outer coastal waters in order to participate in the harvest of seagull eggs. Time constraints and the expense of travel

are probably the two main reasons that the annual seagull egg harvest has been more sporadic in recent years.

The major harvest of seaweed occurs generally during May and June. Black seaweed and red sea ribbons are collected in large quantities and dried for later use.

Year round harvest of species

There are a few species that are available year round and consequently are harvested most of the year by Angoon residents. These are king salmon, halibut, herring, cod, red snapper, and harbor seal. Weather conditions may be constraints on harvest of these species, but their availability makes them desirable sources of fresh food, especially in winter months when other wild foods may be scarce.

SUBSISTENCE RESOURCE HARVEST AND USE

Subsistence harvest levels for Angoon households were gathered during 1985 from a randomly selected sample of 38 Angoon households, comprising 25 percent of the households in Angoon. These households included 165 members who ranged in age from newborn to over 90 years old. Questions were asked in the survey about resource harvests that took place during 1984. Survey respondents were asked about the harvest, use, and distribution of numerous species by their households. A conversion of harvest units to pounds dressed weight was accomplished using the conversion factors listed in Appendix II. A detailed compilation of the quantitative resource harvest and use information that resulted from this survey is shown on Table 3.

Participation in Resource Harvests

Table 3 shows levels of resource harvest and use in Angoon, and participation in harvest activities. About 45 percent (44.8 percent) of all households reported subsistence fishing, and over 30.7 percent reported hunting during 1984. The head of

Table 3. Profile of Household Harvest and Use of Natural Resource by Angoon Residents During 1984

Resource	Percent of Households Using	Percent of Households Harvesting	Mean Quantity[1] Harvested Per HH ACTIVE[2]	Mean Quantity[1] Harvested Per HH TOTAL	Mean Edible Lbs Harvested Per HH ACTIVE[2]	Mean Edible Lbs Harvested Per HH TOTAL	Percent of Households Receiving	Percent of Households Giving
COMMERCIAL SALMON								
King Salmon	34.2	34.2	10.7	3.7	176.4	60.4		
Chum	7.9	7.9	10.0	0.8	77.0	6.1	Data Not	
Humpback (Pinks)	15.8	15.8	26.8	4.2	93.9	14.8	Collected	
Sockeye	7.9	7.9	6.3	0.5	35.5	2.8		
Coho	28.9	23.7	11.1	2.6	96.7	22.9		
NON-COMMERCIAL SALMON								
King	44.7	36.8	5.1	1.9	83.7	30.8	15.8	13.2
Chum	28.9	26.3	21.9	5.8	168.6	44.4	2.6	7.9
Humpback (Pinks)	31.6	21.1	23.0	4.8	80.5	16.9	7.9	7.9
Sockeye	28.9	21.1	46.7	9.9	262.5	55.3	10.5	5.3
Coho	50.0	39.5	17.7	6.9	154.3	60.9	13.2	5.3
OTHER FISH								
Cutthroat Trout	15.8	15.8	12.2	1.9	18.3	2.8	7.9	5.3
Dolly Varden	28.9	28.9	12.5	3.9	17.5	5.5	5.3	7.9
Steelhead	2.6	2.6	7.0	0.4	42.0	2.2	0.0	0.0
Herring	39.5	36.8	--	--	32.2	11.8	7.9	5.3
Herring Eggs	60.5	15.8	--	--	193.3	30.5	50.0	10.5
Flounder	15.8	15.8	5.2	0.8	20.7	3.3	0.0	5.3
Halibut	84.2	81.6	--	--	139.8	114.1	26.3	39.5
Ling Cod	7.9	2.6	5.0	0.1	25.0	0.6	5.3	2.6
Pacific Cod	21.1	21.1	6.6	1.4	26.4	5.6	7.9	13.2
Rock Greenling	2.6	2.6	4.0	0.1	8.0	0.2	0.0	0.0
Tom Cod	2.6	2.6	12.0	0.3	24.0	0.6	2.6	2.6
Sablefish	21.1	13.2	11.6	1.5	69.6	9.0	10.5	5.3
Blue Rock Fish	2.6	0.0	0.0	0.0	0.0	0.0	2.6	0.0
Red Snapper	36.8	26.3	11.5	3.0	34.5	9.0	13.2	13.2
Sea Bass	7.9	7.9	12.6	1.0	25.2	2.0	0.0	2.6
Irish Lords	2.6	2.6	5.0	0.1	5.0	0.1	0.0	0.0

[1] All quantities are given in numbers unless otherwise indicated. A dash means that data were collected in pounds.

[2] Active households are those who attempted to harvest the species.

Profile of Household Harvest and Use of Natural Resources, Continued

Resource	Percent of Households Using	Percent of Households Harvesting	Mean Quantity[1] Harvested Per HH ACTIVE[2]	Mean Quantity[1] Harvested Per HH TOTAL	Mean Edible Lbs Harvested Per HH ACTIVE[2]	Mean Edible Lbs Harvested Per HH TOTAL	Percent of Households Receiving	Percent of Households Giving
MARINE INVERTEBRATES								
Blue Mussels	5.3	5.3	1.3	0.1	6.3	0.3	2.6	2.6
Basket Cockles	2.6	2.6	0.5[3]	*	1.0	*	0.0	0.0
Heart Cockles	60.5	52.6	4.3[3]	2.3[3]	8.6	4.6	26.3	5.3
Clams	73.7	71.1	3.9[3]	2.8[3]	7.8	5.6	23.7	28.9
Dungeness Crab	44.7	23.7	12.9	3.4	32.3	8.5	31.6	13.2
King Crab	23.7	13.2	9.6	1.3	67.2	9.1	18.4	7.9
Tanner Crab	18.4	10.5	15.0	1.6	33.0	3.5	13.2	5.3
Red Gumboot	5.3	2.6	1.5[3]	0.1[3]	18.0	0.9	0.0	2.6
Black Gumboot	68.4	63.2	1.6[3]	1.0[3]	19.0	12.0	15.8	23.7
Sea Urchin	2.6	2.6	12.0[3]	0.3[3]	60.0	1.5	0.0	0.0
Limpet	2.6	2.6	1.0[3]	*	5.0	0.1	2.6	0.0
Octopus	23.7	21.1	--	--	45.0	9.5	5.3	2.6
Sea Cucumber	2.6	2.6	0.5[3]	*	5.0	0.1	2.6	2.6
Shrimp	5.3	2.6	--	--	1.0	*	2.6	0.0
MARINE PLANTS								
Black Seaweed	50.0	21.1	5.3[3]	1.1[3]	106.0	22.2	34.2	2.6
Sea Ribbons	2.6	2.6	0.1[3]	*	2.0	0.1	0.0	0.0
Bull Kelp	2.6	0.0	0.0	0.0	0.0	0.0	2.6	0.0
MARINE MAMMALS								
Harbor Seal	31.6	15.8	2.5	0.4	450.0	71.1	23.7	13.2
LAND MAMMALS								
Deer	89.5	60.5	5.0	3.1	396.7	250.5	44.7	50.0
Moose	5.3	0.0	0.0	0.0	0.0	0.0	5.3	0.0
BIRDS AND EGGS								
Grouse	7.9	7.9	3.3	0.3	5.0	0.4	0.0	0.0
Geese	2.6	2.6	1.0	*	5.0	0.2	0.0	0.0
Whistling Swan	2.6	2.6	1.0	*	8.0	0.2	0.0	2.6
Ducks	13.2	7.9	17.5	1.8	26.3	2.8	7.9	2.6
PLANTS AND BERRIES								
Berries	71.1	63.2	17.7[4]	11.2[4]	17.7	11.2	23.7	36.8
Plants	15.8	13.2	1.8[4]	0.2[4]	1.8	0.2	5.3	5.3
Wood	76.3	73.7	7.1[5]	5.2[5]	n/a	n/a	n/a	n/a

[1] All quantities are given in numbers unless otherwise indicated. A dash means that data were collected in pounds.

[2] Active households are those who attempted to harvest the species.

[3] 5 Gallon Buckets

[4] Quarts

[5] Cords

* Less than 0.1

the household was the person most frequently reporting participation in hunting (76.3 percent of all households) and fishing (78.9 percent) in 1984.

The breadth of resource harvests by Angoon residents is represented on Figure 19. Only one household in 38 (2.6 percent) did not harvest any wild resources in 1984. Nearly 60 percent of all households harvested ten or more different species in 1984. Ten percent of the households harvested 20 or more. About 24 percent of the households harvested one to four species, and 21 percent of the households reported harvesting five to nine species.

Species were grouped to show the harvest and use of eight major resource categories (Fig. 20). The two resource categories used by the greatest number of Angoon households in 1984 (89.5 percent) were land mammals and fish other than salmon. Land mammal harvest consisted entirely of deer, so slightly over 60 percent of all households harvested deer, indicating a significant amount of sharing of deer in the community. "Other fish" were harvested by 84.2 percent of the households in Angoon. Differences in harvest and use are explained by the fact that many persons who do the actual hunting, fishing, or gathering of wild foods give foods to others or are given foods by other harvesters. Thus, one might use a certain food, but not harvest it. The reciprocal exchange of resources is further described below. Deer and "other fish" use was followed closely by marine invertebrates at 86.8 percent, which were harvested by 84.2 percent of all households. Salmon was used by 68.4 percent of the surveyed households (71.1 percent harvested), berries and plants were used by 73.7 percent of all households (68 percent harvested), and marine plants were reportedly used by 50 percent of the households (21.1 percent harvested). Additionally, 31.6 percent used marine mammals (15.8 percent harvested), and 18.4 percent reporting the use of birds and their eggs (13.2 percent harvested).

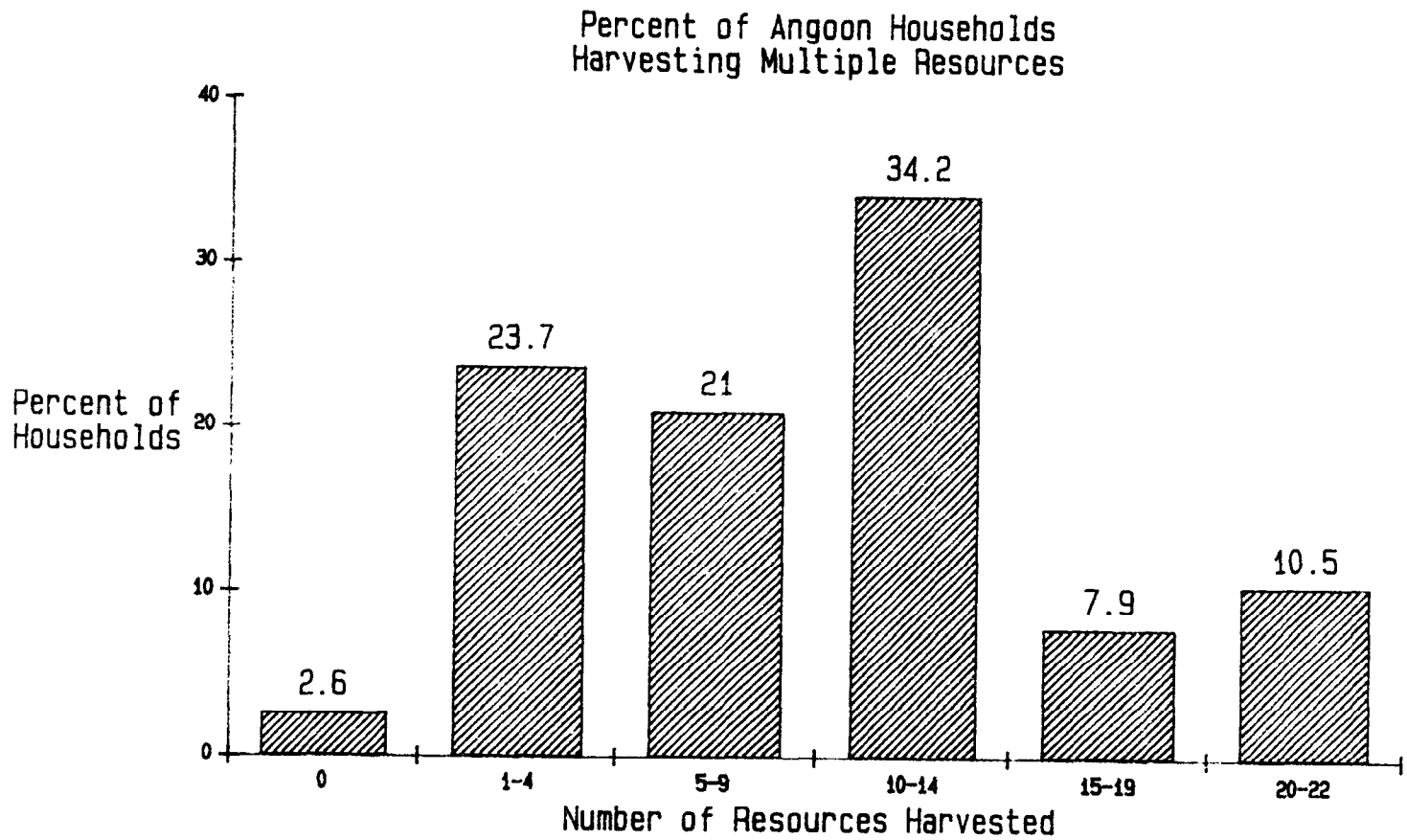


Figure 19. Percent of Households Harvesting Multiple Resources, Angoon 1984 (n=38 households)

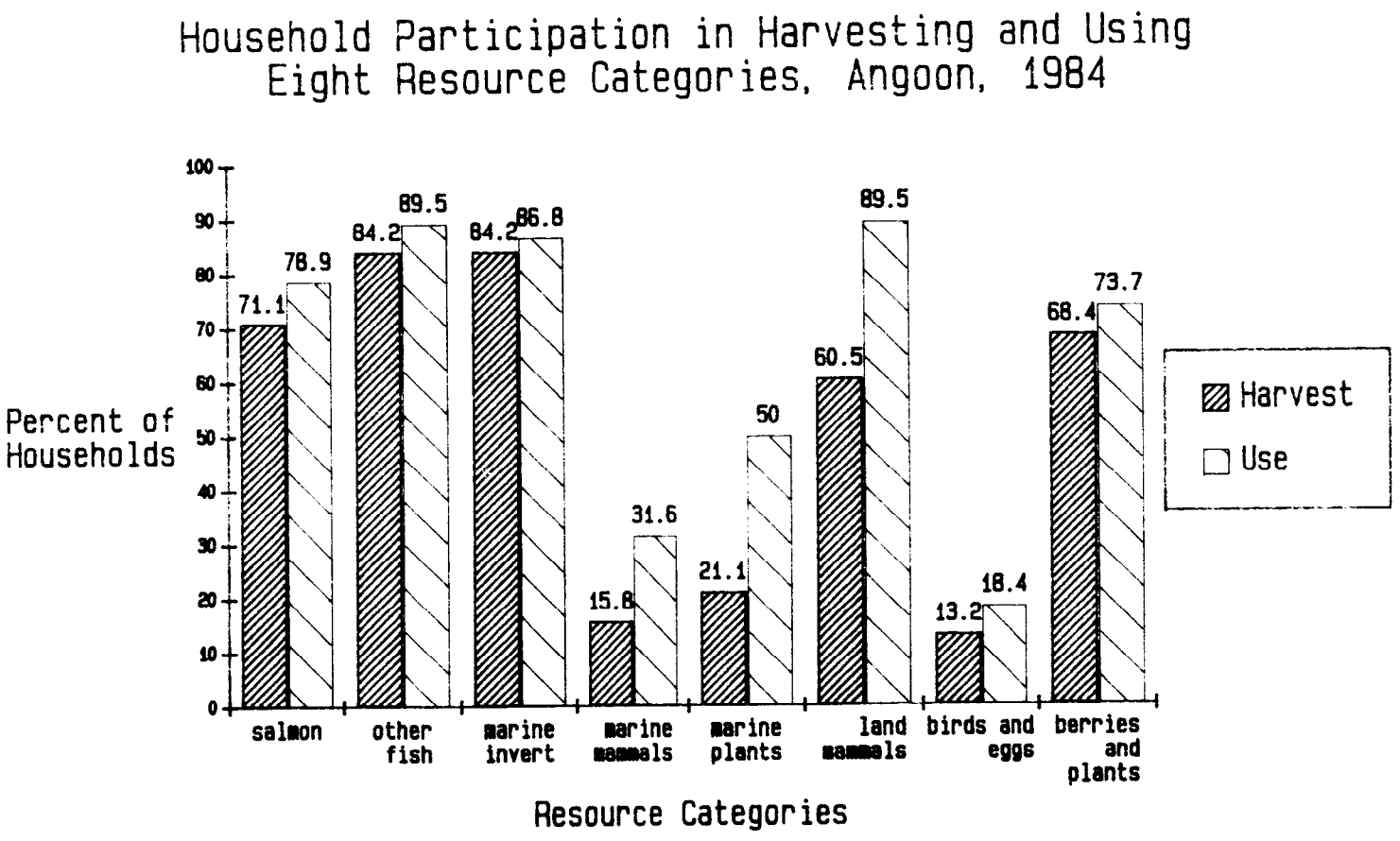


Figure 20. Household Participation in Harvesting and Using Eight Resource Categories, Angoon 1984 (n=38 households)

Participation in harvest and use of the ten resource types that were most commonly used by Angoon residents is represented on Figure 21. This chart illustrates the importance of marine resources to residents of Angoon, since eight of the ten most commonly used species are marine species. This may not be unexpected, considering the location of Angoon and the abundance of marine species in its vicinity. Levels of participation in harvesting these species is another indicator of their importance to the community. Seven out of ten species were harvested by over half the households in Angoon, and nine out of ten were used by over half the households.

Resource Harvests in Pounds

The average number of pounds of edible resources harvested by Angoon households during the 1984 season is represented in Figures 22 and 23. Total household harvest of all resources came to 928 pounds dressed weight per household, or 216 pounds per capita. The number of pounds of resources harvested by Angoon households ranged from zero to 4,795 pounds per household.

Figure 23 illustrates the composition of household harvests in Angoon, during 1984. This shows that the three major catagories were salmon, representing 34 percent of the total weight used per household, followed by deer at 27 percent, and other fish at 21 percent. The remaining categories of marine invertebrates, marine mammals, birds and eggs, and berries and plants accounted for about 18 percent of the total pounds harvested.

As illustrated in Figures 22 and 23, salmon is one of the more important resources harvested in Angoon, in terms of weight, with an average total of 315.3 pounds harvested per household. The significance of salmon in the community is reinforced by the high participation rates in the harvest and use of salmon (71.1 percent and 79 percent, respectively.) Land mammals (entirely deer, in the case of Angoon)

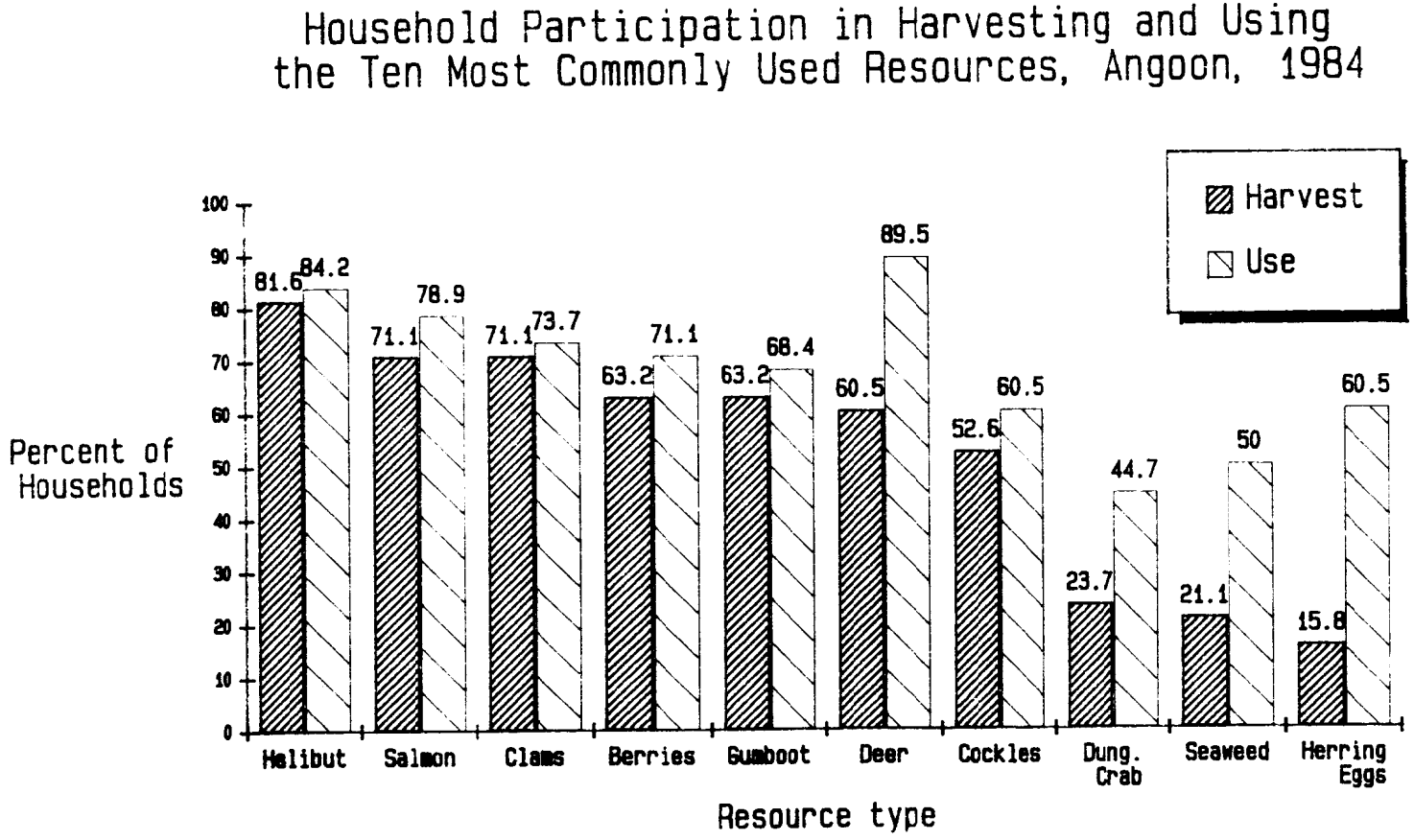


Figure 21. Household Participation in Harvesting and Using the Ten Most Commonly Used Resources, Angoon, 1984 (n=38 households)

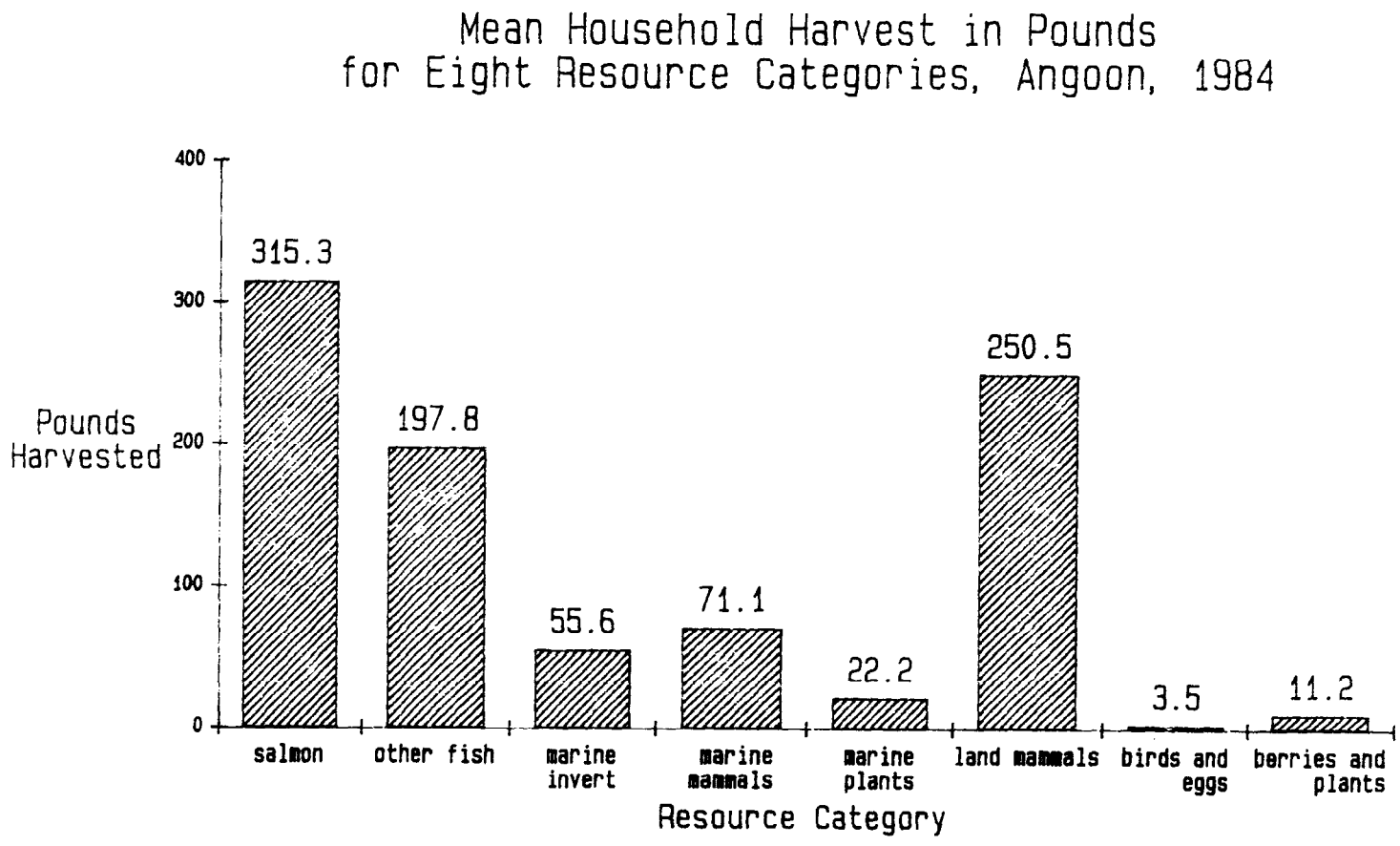


Figure 22. Mean Household Harvest in Pounds for Eight Resource Categories, Angoon, 1984 (n=38 households)

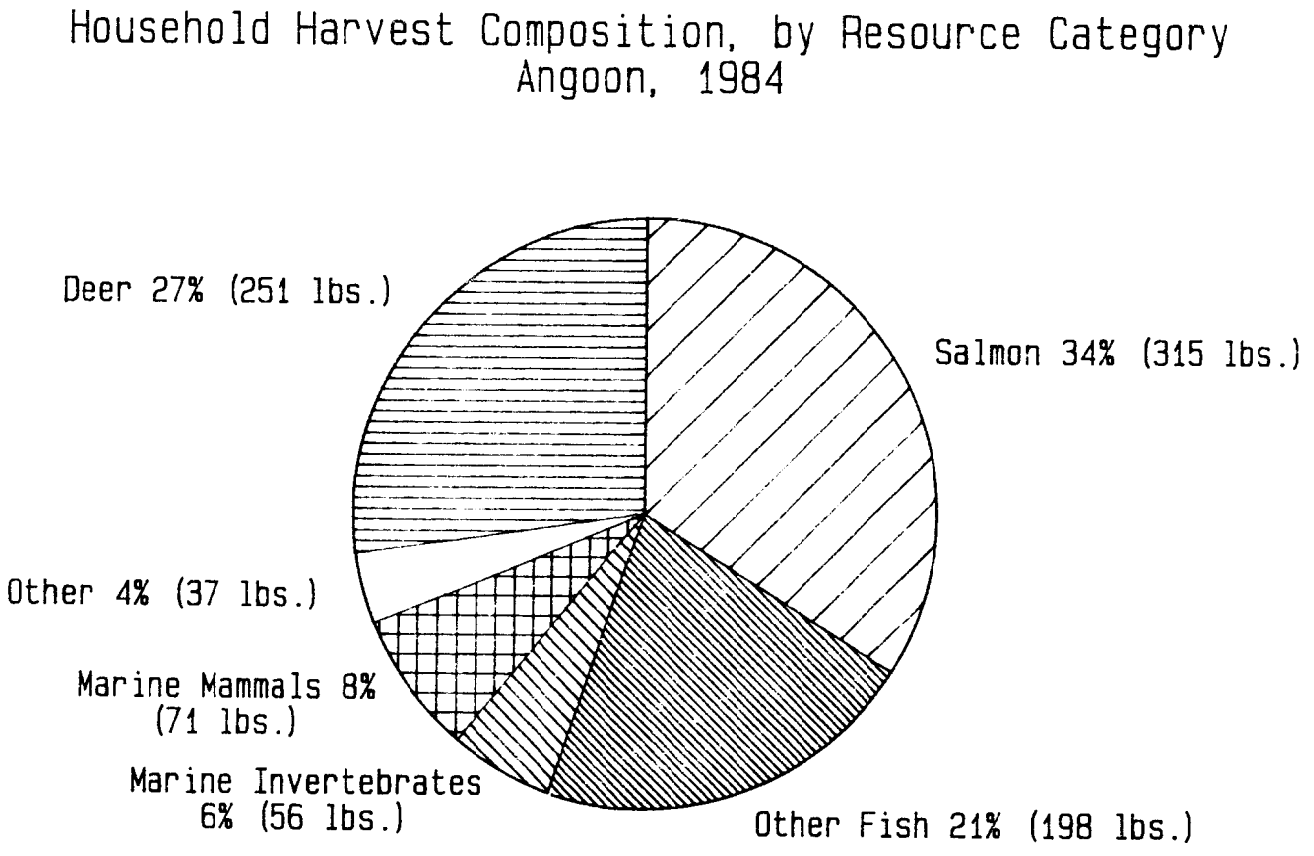


Figure 23. **Household Harvest Composition, by Resource Category, Angoon, 1984 (sum= 928 lbs.)**

comprised 250.5 pounds of the household harvest in 1984. "Other fish", were harvested at an average of 197.8 pounds per household. Halibut accounts for most (57.7 percent) of this weight, but other fish species included herring, trout, cod and rockfish. Next in descending order is marine mammals, consisting exclusively of harbor seal, which are harvested mostly for the oil. This harvest amounted to 71.1 pounds per household for 1984. The harvest of marine invertebrates, primarily gumboots, octopus, and crab, was 55.6 pounds per household. Marine plants, which includes black seaweed and sea ribbons comprised 22.2 pounds of the mean household harvest. Rounding out the household harvests were berries and plants at 11.2 pounds and birds and eggs at 3.5 pounds per household. Comparing these quantities with rates of participation in harvest and use is one way to show the importance of these resources and harvest activities to the Angoon community.

Giving and Receiving Resources

Another important aspect of the Angoon subsistence economy is the sharing of foods between households. Sharing of food resources is an important part of the social and cultural dynamics in Angoon. Figures 20 and 21, showing harvest and use of resources, indicates how foods are distributed from those who harvest them to those who use them. Giving and receiving foods is illustrated in more detail in Figures 24 and 25. Land mammals (deer) were harvested by 60.5 percent of the households, with 50 percent of the sample reporting giving away deer meat (Fig. 24). Many of the respondents also reported giving away marine invertebrates and fish other than salmon (44.7 percent and 50.0 percent of the households, respectively). Berries and plants also appear to be shared by large portion of the population. The significance of the use of harbor seal is reflected in the fact that even though the percentage of households harvesting seals was reported to be 15.8 percent, seal was widely shared, either by the original hunter or by those who had themselves been given seal meat, or both. The

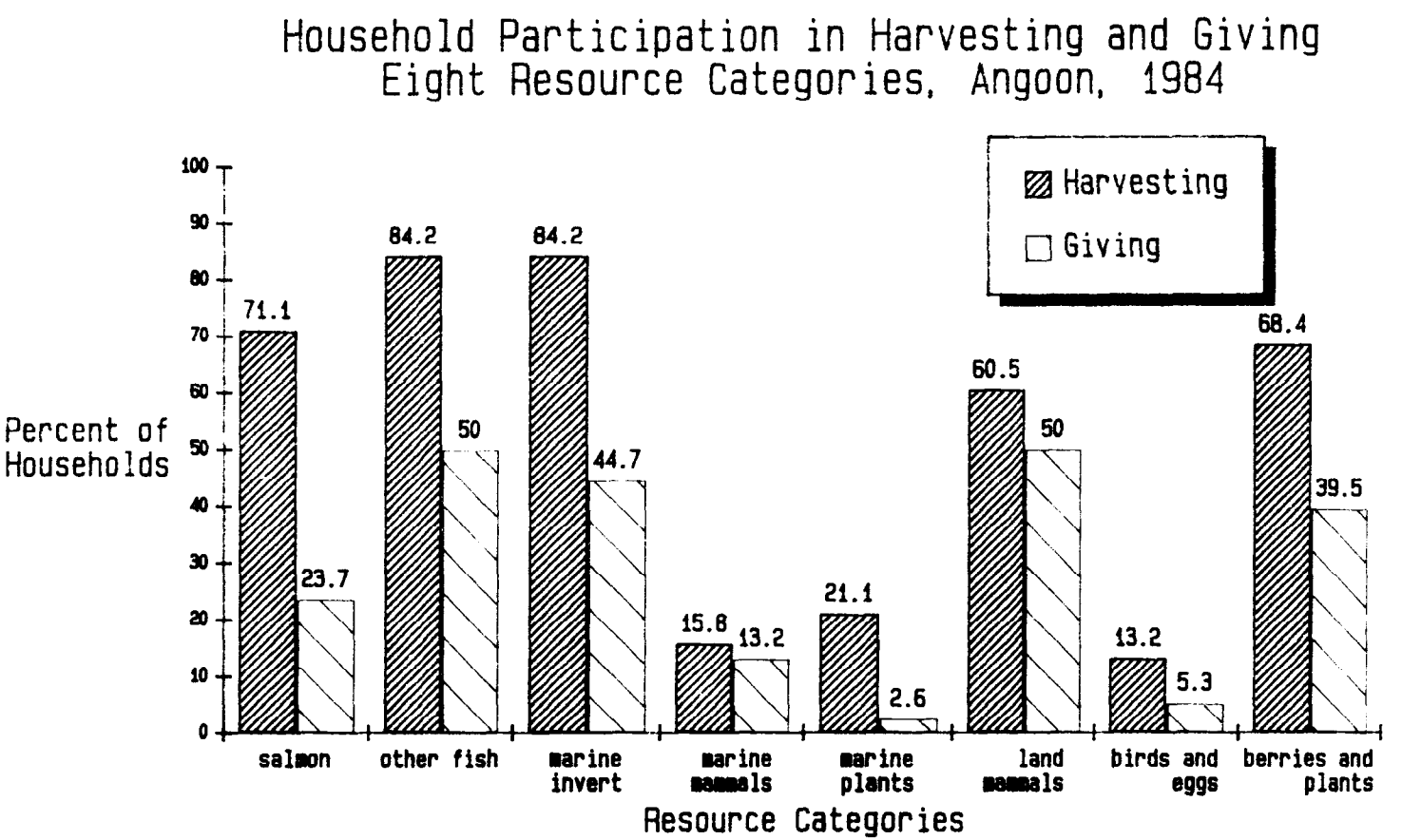


Figure 24. Household Participation in Harvesting and Giving Eight Resource Categories, Angoon, 1984 (n=38 households)

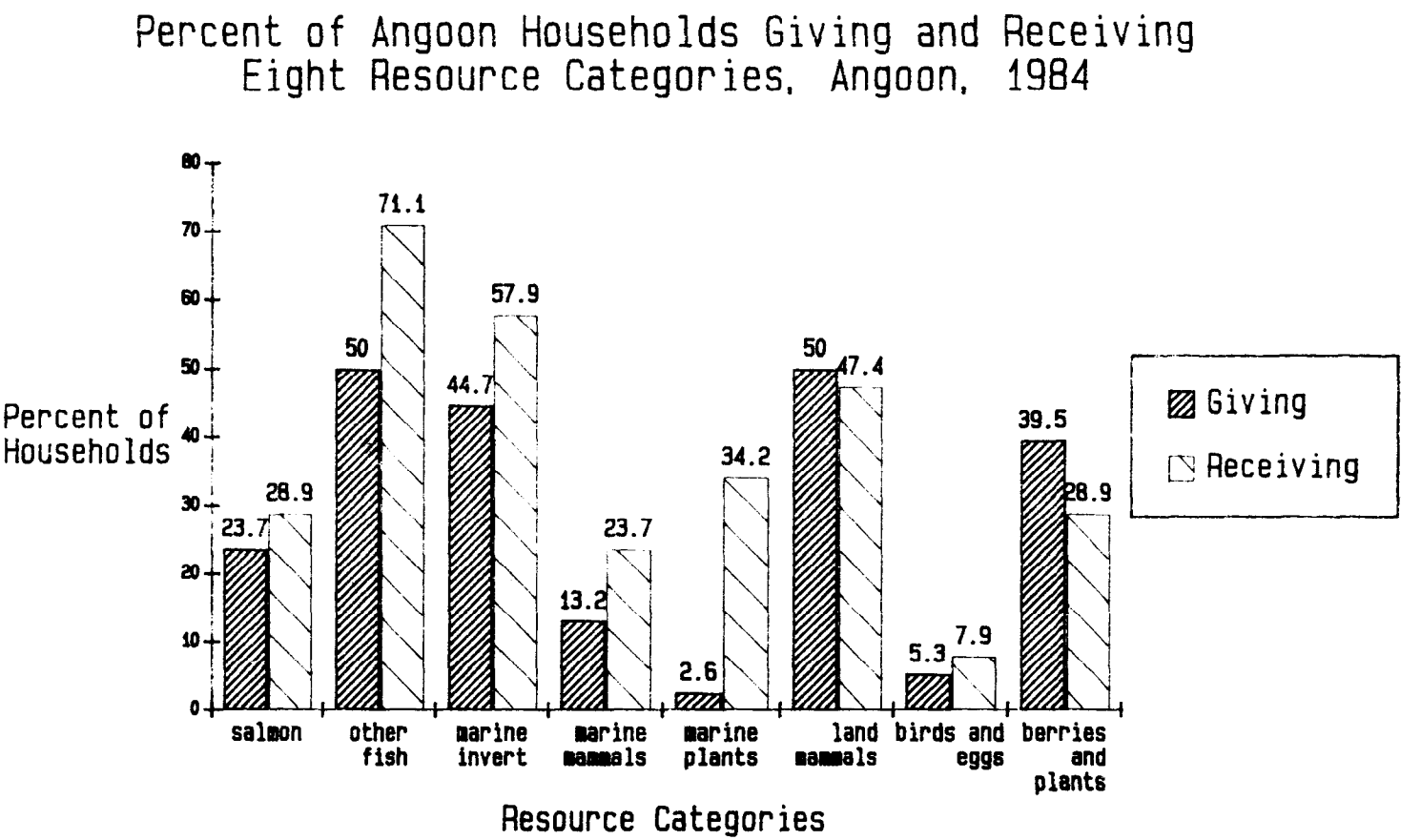


Figure 25. Percent of Angoon Households Giving and Receiving Eight Resource Categories, Angoon, 1984 (n=38 households)

resources that appear to be given away the least are marine plants and birds and eggs (Fig. 24) (many people reported receiving marine plants, however, so it would appear that at least a few seaweed harvesters did share seaweed widely in the community).

Information on the receiving of foods from other households provides another view of the distribution network (Fig. 25). "Fish other than salmon" (composed primarily of marine species including halibut) is the category that the greatest number of households (71.1 percent) reported receiving from others. Other categories showing high levels of receiving were marine invertebrates at 57.9 percent and land mammals at 47.4 percent. The remaining categories of marine plants, salmon, marine mammals, berries and plants were reportedly received by approximately one-third to about one-fourth of the households. Birds and bird eggs (which were not often given away) were received by less than 10 percent of all households.

These findings suggest that the general subsistence pattern in Angoon involves high levels of household participation in harvest and use of a wide variety of locally available food species. Marine invertebrates, other fish and deer are the most widely shared species, although all species are shared among households to some degree. Key respondent interviews revealed that some processed foods, such as berries and smoked salmon may be shared most often along kinship lines. Some resources, such as halibut and seal, are given away by a large percentage of harvesting households but they are received by a smaller percentage. Other resources, such as salmon and deer, appear to be given away by as many households as receive them.

The Angoon resource sharing network is both extensive, and complex. Additional data analysis that is beyond the scope of this study could illustrate the dynamics of community sharing of foods in greater detail. Quantities of foods shared and relationships of those who share would be particularly interesting areas of study. Sharing of foods in the fall time at "Indian parties" involves nearly all Angoon

households as well as members of other communities. This important and very traditional activity is not captured in the resource sharing statistics of this study.

HARVEST AND USE OF SALMON

As indicated by the preceeding data on use of wild foods, salmon is one of the more important resources harvested by the Angoon Tlingit. Salmon represented over one third (34 percent) of the total poundage of resources harvested in 1984. The historical importance of the salmon harvest by residents of Angoon is well documented (eg, Goldschmidt and Haas 1946, de Laguna 1960, Moss and Newton 1981, George and Kookesh 1982).

Salmon Harvest by Gear Type

Angoon households reported harvesting five species of salmon (king, sockeye, pink, chum, coho) for home use with the use of both commercial and non-commercial gear. Figure 26 shows the relative amounts of salmon taken for home use from commercial and non-commercial catches. It shows that 26.8 percent of the salmon used by households was harvested using commercial gear. Figure 27 illustrates salmon catches by particular gear type, distinguishing between commercial (seine, power troll, hand troll) and non-commercial (gaff, rod and reel, beach seine) harvests (it is important to note that rod and reel fishing for salmon generally involves trolling from a small boat, but is distinct from the "hand troll" fishing, which uses commercial gear). Commercial fishing provides an important part of the subsistence food supply, but the majority of fish that are used at home are taken with non-commercial gear.

King salmon that were obtained for home use in 1984 were taken with hand troll gear, rod and reel, power troll gear, and purse seine. Total harvests of king salmon for home use averaged 5.5 salmon for the survey sample (Fig. 28). Hand troll gear contributed the greatest number of kings for home use, at 39 percent of all kings

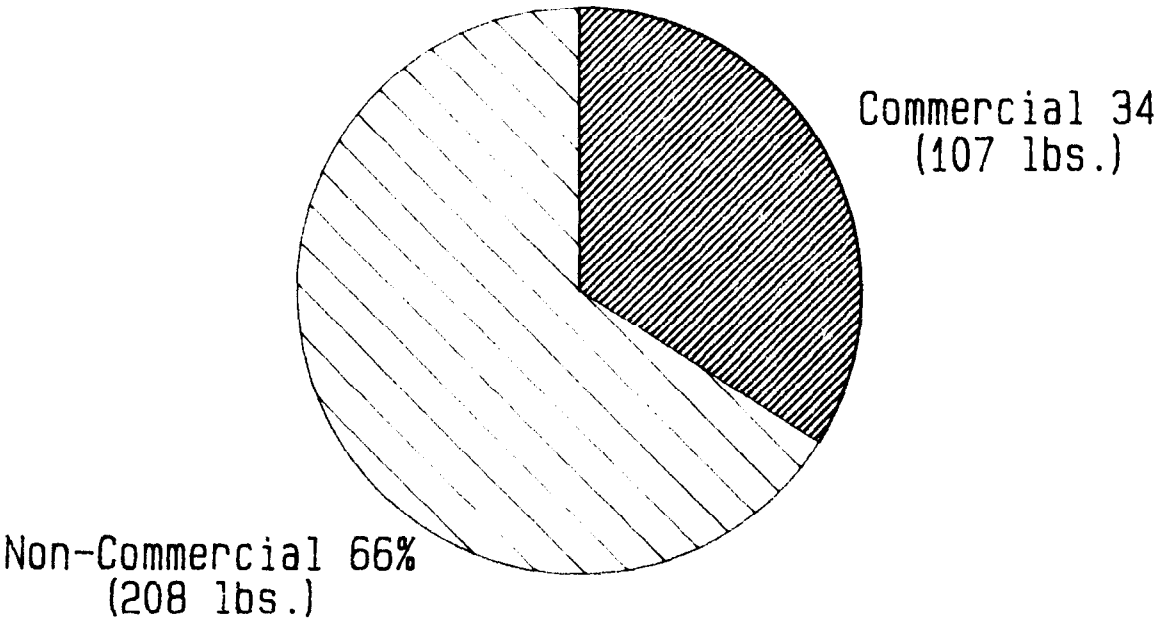


Figure 26. Proportion of Household Salmon Harvest Coming From Commercial and Non-commercial Catch (in pounds per household), Angoon 1984

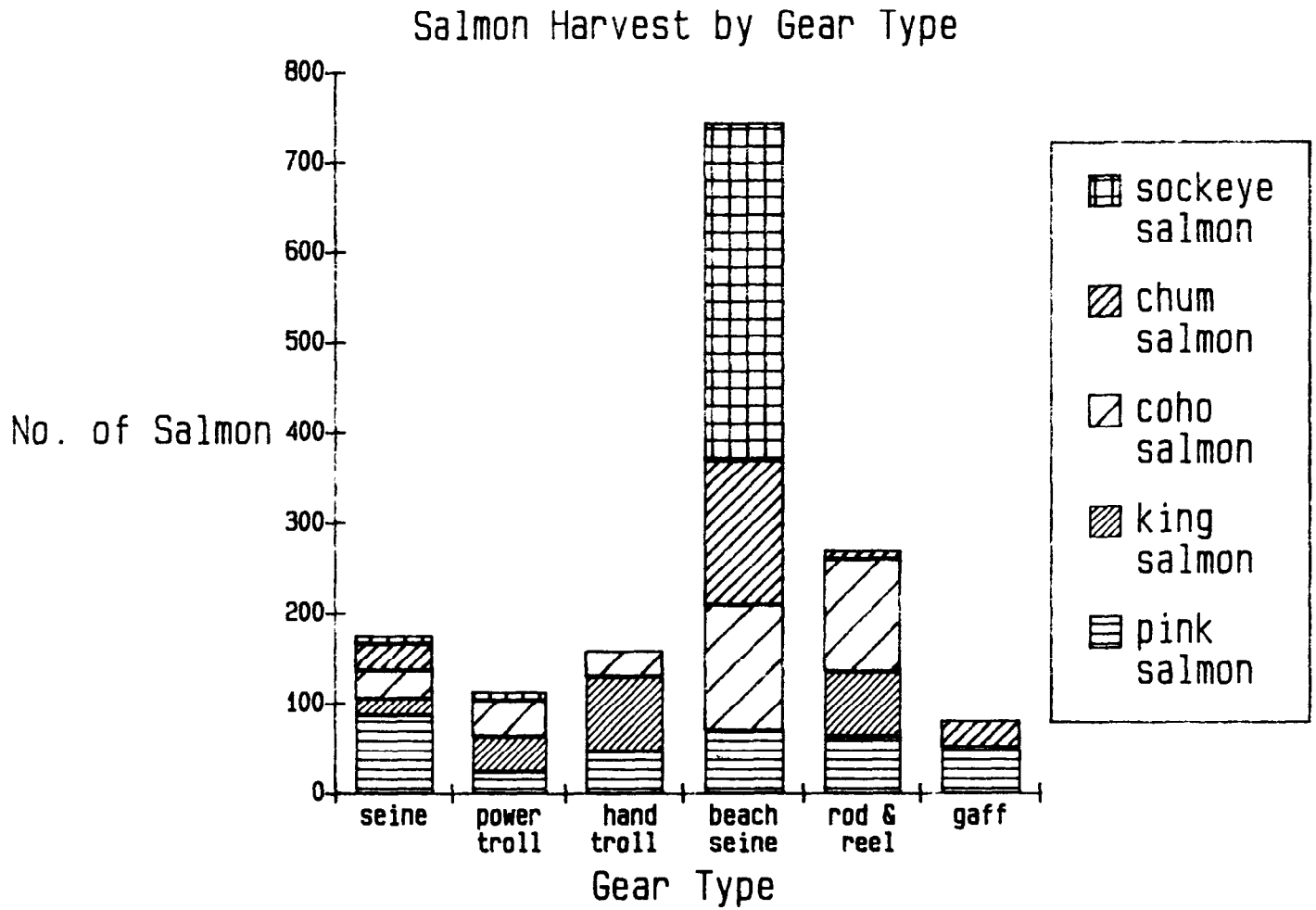


Figure 27. Salmon Harvest by Gear Type, Angoon, 1984

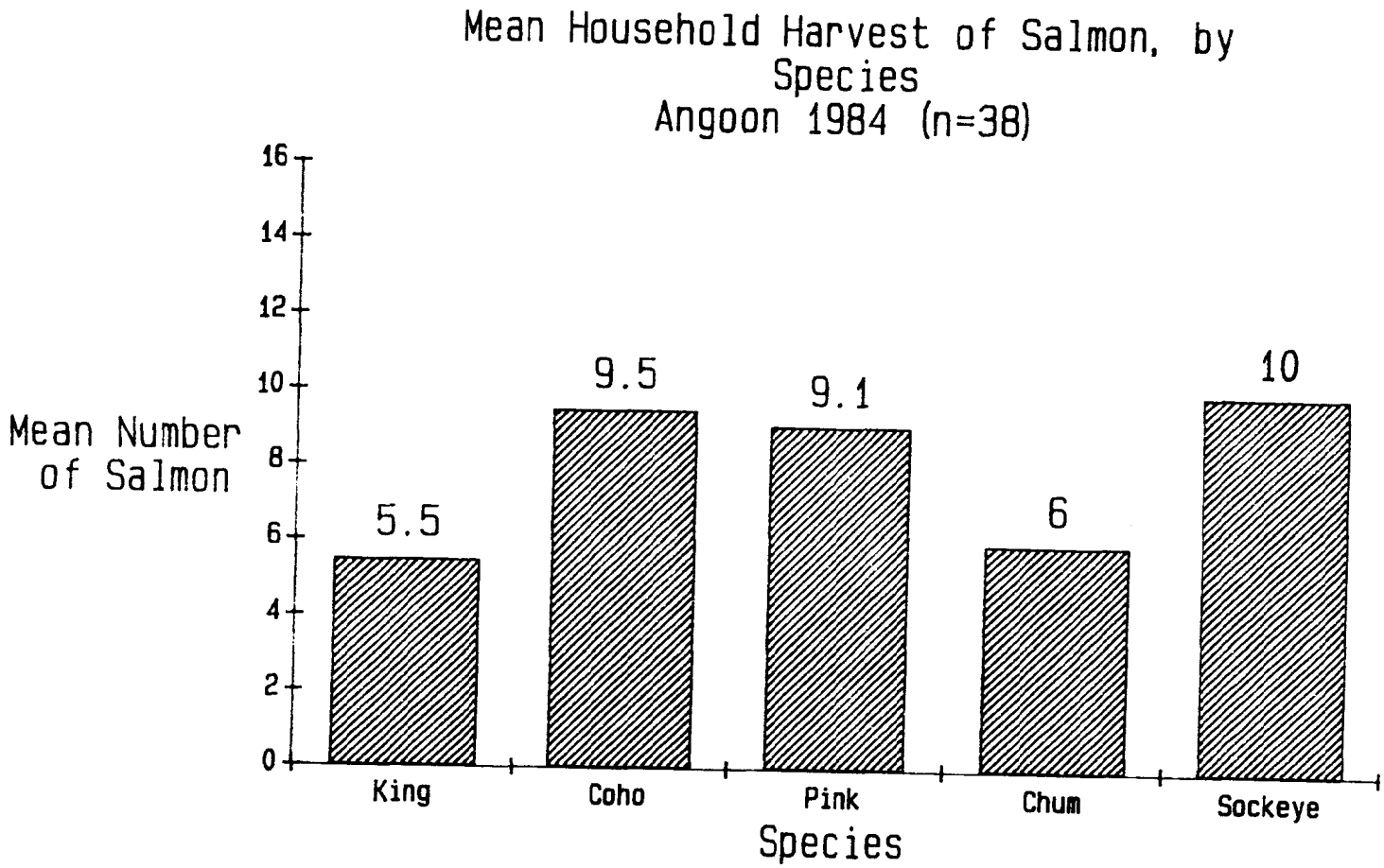


Figure 28. Mean Household Harvest of Salmon, by Species, Angoon 1984

caught. Rod and reel followed as the second most frequently used gear type for taking kings (33.8 percent). Power troll gear and purse seines were responsible for 18.6 and 8.6 percent of the catch of kings, respectively (Fig. 29).

An average of 9.5 coho salmon per household were harvested in 1984 (Fig. 28). The two gear types responsible for harvest of the great majority of the cohos used in Angoon were beach seine at 38.3 percent, and rod and reel at 34.2 percent. The remaining coho were taken with purse seine, hand troll gear, power troll gear and gaff (Fig. 29). These data reflect the importance of the traditional harvest of coho at Salt Lake, where subsistence fishing regulations permit the use of beach seines.

Ten sockeye per household, on the average, were taken by Angoon households in 1984 (Fig. 28). Ninety-five percent of all sockeye salmon were reported harvested by the use of beach seine, while the remaining five percent of the sockeye harvested for home use in 1984 utilized purse seine and handtroll gear (Fig. 30). Once again, these data reflect the importance of the taking of salmon (in this case sockeye) by the beach seine. Subsistence sockeye fishing is regulated through the issuance of subsistence fishing permits which specify a harvest limit, a fishing season and a specific harvest area.

Chum salmon harvests averaged six fish per household (Fig. 28) and were reportedly taken mainly by the use of beach seine, with 69.4 percent of all chum being taken with this gear (Fig. 30). Purse seine gear accounted for 13 percent of the chum harvest. An equal percentage of the households harvesting chums used a gaff (13.1 percent). Use of beach seines for the harvest of chum is permitted under subsistence fishing regulations as described above for sockeyes, cohos and pinks.

Angoon residents obtained pink salmon for home at an average of 9 fish per household (50 fish for active households) (Fig. 28). Purse seines accounted for 25 percent of the harvest, indicating these were commercially caught fish that were kept for home use, beach seines for 20 percent of the harvest, the combined hand and power

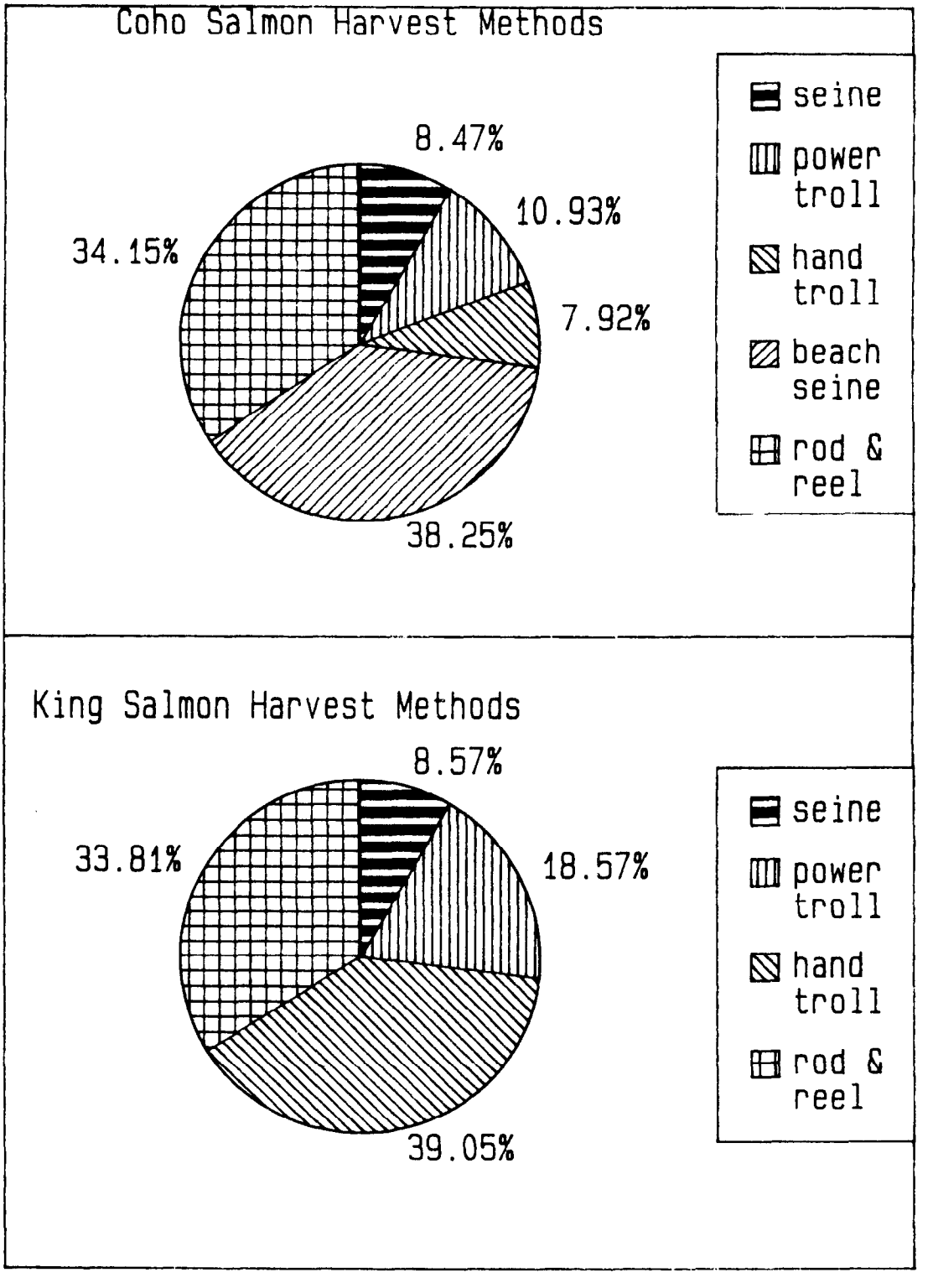


Figure 29. Coho and King Salmon Harvest Methods

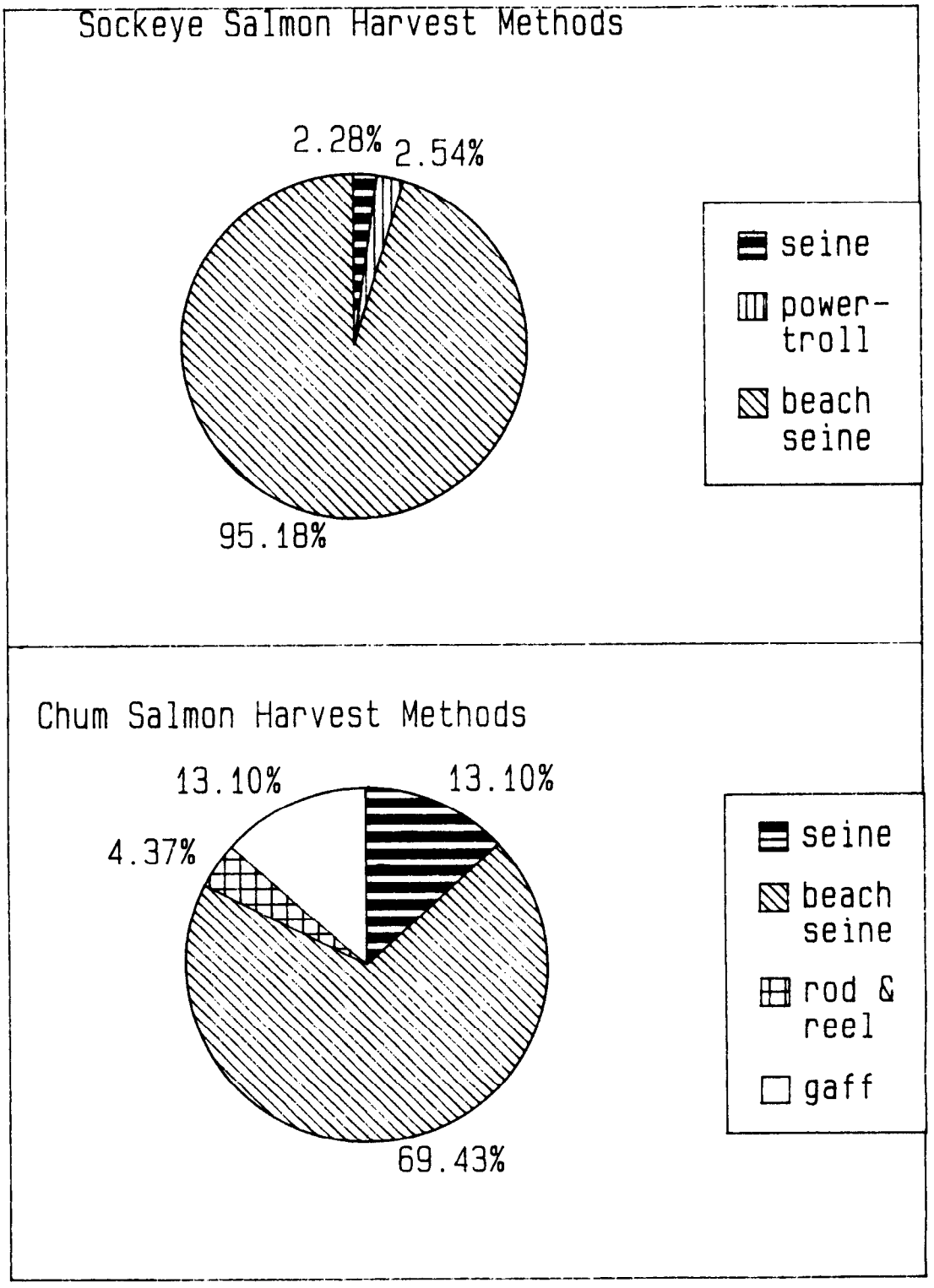


Figure 30. Sockeye and Chum Salmon Harvest Methods

troll gear types took 21 percent, and about 19 percent were taken with rod and reel. Additionally about 15 percent of all pinks were taken by gaff (Fig. 31).

Overall, the most productive gear type used by Angoon residents for obtaining salmon for home use was the beach seine (Fig. 27). It was used in harvesting all species except king salmon. Rod and reel were used in harvesting all salmon other than sockeye. Commercial troll gear was used in the harvesting of all salmon species except chum salmon. The gaff hook was used in harvesting chum and pink salmon with one household reporting taking coho with this type of gear.

Subsistence Salmon Permits

As referenced above, subsistence salmon fishing takes place today under the terms of a permit system administered by the Alaska Department of Fish and and Game. Locations of subsistence permit fisheries and the reported subsistence salmon harvest for the years 1980 to 1986 are reported on Table 4.

In recent years, out of concern for the salmon stocks in some areas, bag limits imposed by the Department of Fish and Game have limited sockeye harvests to twenty-five fish per permit. However, it is not unusual for fishers to take the number of fish they feel they need for subsistence regardless of the permit limit. Continuing efforts are underway to develop subsistence regulations that conserve the salmon resource and are still consistent with customary and traditional fishing practices. Action by the Board of Fisheries that is scheduled for the fall of 1988 will determine the communities whose residents will be eligible to obtain subsistence permits in the fishing areas used by Angoon. These will be the communities with "customary and traditional" uses of the salmon stocks found in these areas. It is likely that these determinations by the Board will reduce the overall harvest of some sockeye stocks in the Angoon area, providing more salmon for local use.

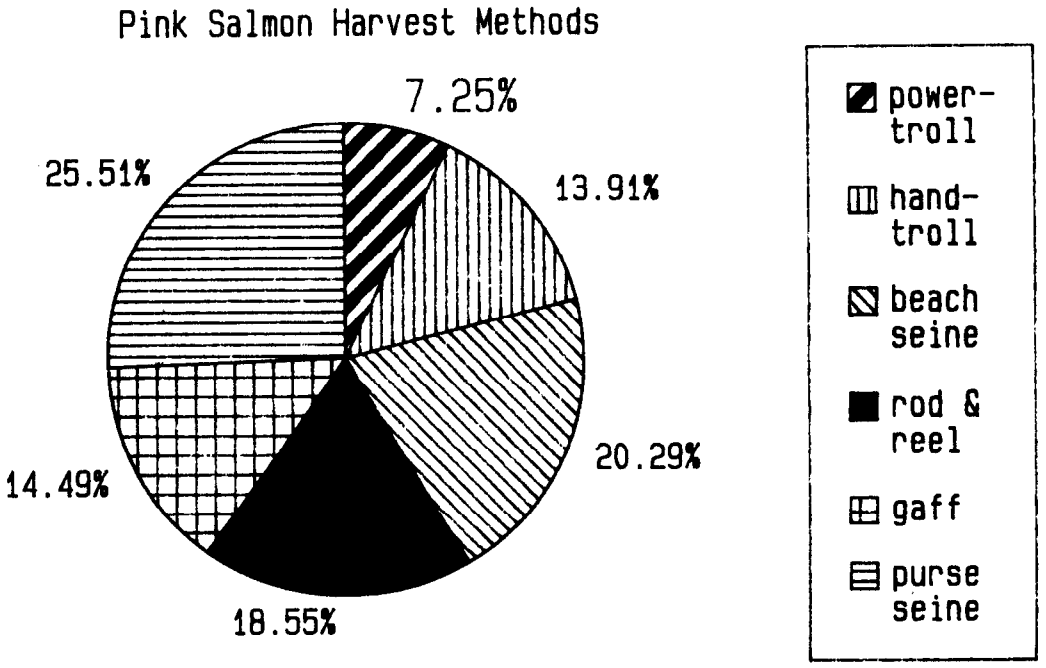


Figure 31. Pink Salmon Harvest Methods

Table 4. Salmon Permit Harvest Data, Angoon, 1981 and 1982. (Source: Division of Commercial Fisheries, ADF&G).

1981

Location	Number Permits Issued	Number of Fish Caught					TOTAL Number Fish	Number Pounds
		Sockeye	Chum	Pink	Coho	King		
Basket Bay	61	238	0	0	0	0	238	1,333
Chaik Bay	19	0	30	0	0	0	30	231
Favorite Bay	3	0	0	250	0	0	250	875
Hood Bay (So. Arm)	8	0	0	0	0	0	0	0
Kanalku Bay	66	552	0	0	14	0	566	2,054
Salt	6	0	0	0	16	0	16	139
Sitkoh Bay	2	0	0	0	0	0	0	0
Thayer Creek	6	0	0	0	0	0	0	0
	171	790	30	250	30	0	1,100	4,632

1982

Location	Number Permits Issued	Number of Fish Caught					TOTAL Number Fish	Number Pounds
		Sockeye	Chum	Pink	Coho	King		
Basket Bay	69	321	0	0	0	0	321	1,798
Chaik Bay	40	0	310	0	25	0	335	2,605
Favorite Bay	4	0	0	0	0	0	0	0
Hood Bay (So. Arm)	28	0	0	0	0	0	0	0
Kanalku Bay	79	510	0	0	0	0	510	2,856
Salt Lake	29	0	0	0	48	0	48	418
Sitkoh Bay	12	90	0	0	0	0	90	504
Thayer Creek	2	0	0	0	0	0	0	0
Fishery	2	0	0	0	0	0	0	0
Excursion	1	0	0	0	0	0	0	0
Home Shore	1	0	0	125	0	0	125	438
	267	921	310	125	73	0	1,429	8,617

Note: In this table the Number of Permits is understood to indicate all request for fish whether it be the permittees' first, second, or third choice. Thus if someone requests 12 fish from one location, eight more from another, and five more fish from a third, they have effectively been issued three permits. Likewise, if two different species are requested from the same location, two permits are considered to have been issued.

Table 4. Salmon Permit Harvest Data, Angoon, 1983 and 1984. (Source: Division of Commercial Fisheries, ADF&G).

1983

Location	Number Permits Issued	Number of Fish Caught					TOTAL Number Fish	Number Pounds
		Sockeye	Chum	Pink	Coho	King		
Basket Bay	94	422	0	0	0	0	422	2,363
Chaik Bay	58	0	0	0	0	0	0	000
Favorite Bay	36	0	4	0	0	0	4	31
Hood Bay (So. Arm)	40	0	0	50	0	0	50	175
Kanalku Bay	91	90	0	0	0	0	90	504
Salt	71	0	0	0	45	0	45	392
Sitkoh Bay	56	121	0	0	25	0	146	1,270
Thayer Creek	15	0	0	0	0	0	0	000
	461	633	4	50	70	0	716	4,735

1984

Location	Number Permits Issued	Number of Fish Caught					TOTAL Number Fish	Number Pounds
		Sockeye	Chum	Pink	Coho	King		
Basket Bay	112	440	0	0	0	0	440	2,464
Chaik Bay	161	0	176	0	0	0	176	1,355
Favorite Bay	83	0	75	325	0	0	400	1,715
Hood Bay (So. Arm)	158	0	275	0	0	0	275	2,118
Kanalku Bay	105	359	70	15	0	0	454	2,680
Salt Lake	84	0	0	162	0	0	162	1,409
Sitkoh Bay	3	29	1	0	0	0	30	1,170
Thayer Creek	1	0	0	0	0	0	0	0
	707	828	597	325	177	0	1,927	11,911

Note: In this table the Number of Permits is understood to indicate all request for fish whether it be the permittees' first, second, or third choice. Thus if someone requests 12 fish from one location, eight more from another, and five more fish from a third, they have effectively been issued three permits. Likewise, if two different species are requested from the same location, two permits are considered to have been issued.

Table 4. Permit Harvest Data, Angoon, 1985 and 1986. (Source: Division of Commercial Fisheries, ADF&G).

1985

Location	Number Permits Issued	Number of Fish Caught					TOTAL Number Fish	Number Pounds
		Sockeye	Chum	Pink	Coho	King		
Basket Bay	86	259	0	0	0	0	259	1,450
Chaik Bay	90	0	75	0	0	0	75	547
Favorite Bay	81	0	65	245	0	0	310	1,111
Hood Bay (So. Arm)	6	0	0	0	0	0	0	0
Kanalku Bay	30	398	0	0	0	0	398	2,228
Lake Eva	1	0	0	0	0	0	0	0
Salt L./Hasselbor	108	0	0	5	260	0	265	2,093
Sitkoh Bay	5	0	0	0	0	0	0	0
Thayer Creek	12	0	0	0	0	0	40	320
	419	657	140	250	300	0	1,347	7,751

1986

Location	Number Permits Issued	Number of Fish Caught					TOTAL Number Fish	Number Pounds
		Sockeye	Chum	Pink	Coho	King		
Basket Bay	59	66	0	0	0	0	66	369
Chaik Bay	44	0	320	0	0	0	320	2,336
Chaik Bay Inlet	9	0	0	0	0	0	0	0
Favorite Bay	54	0	0	0	0	0	0	0
Gartina Creek	1	0	0	0	0	0	0	0
Hood Bay (So. Arm)	28	0	20	0	0	0	20	146
Kanalku Bay	58	701	0	0	0	0	701	3,925
Salt L./Hasselborg	55	0	0	0	160	0	160	1,280
Salt Lake	26	0	0	0	25	0	25	200
Sitkoh Bay	5	25	0	0	0	0	25	140
Spasski Creek	1	0	0	0	0	0	0	0
Thayer Creek	3	0	0	0	0	0	0	0
	343	792	340	0	185	0	1,317	8,397

Note: In this table the Number of Permits is understood to indicate all request for fish whether it be the permittees' first, second, or third choice. Thus if someone requests 12 fish from one location, eight more from another, and five more fish from a third, they have effectively been issued three permits. Likewise, if two different species are requested from the same location, two permits are considered to have been issued.

In the meantime, subsistence permit data cannot be considered to represent the total subsistence salmon harvest. Reliability of harvest data probably will improve as regulations and permitting procedures are improved.

HARVEST AND USE OF DEER

Angoon deer hunters have a long history of hunting the islands of Admiralty, Baranof and Chichagof Islands. Goldschmidt and Haas (1946) reported that the Angoon Tlingit traveled farther in pursuit of deer than any other resource.

Today, the areas that Angoon hunters use for deer hunting are contained in the Alaska Department of Fish and Game's Game Management Unit (GMU) 4. The 1984-1985 season and bag limit regulations for this area were as follows:

UNIT 4, All drainages on the west side of Admiralty Island from Point Marsden to Point Gardner-- 4 deer during Aug 1-Dec. 31: however antlerless deer may be taken only from Sept. 15-Dec. 31.

Two deer by registration permit only during Jan. 1-Jan 31.

UNIT 4, all drainages of Baranof Island north and west of the divide between North Cape and Portage Point and all drainages of Chichagof Island south of the divide between Point Leo and Point Hayes and all adjacent islands within this area, including Kruzof and Catherine Islands.

Four deer; however antherless deer may be taken only from Sept, 15-Dec. 31 and the daily bag limit from Dec. 1-Dec. 31 is one deer. (ALASKA GAME REGULATIONS No.27-July 1,1986-June 30,1987, Alaska Board of Game, Alaska Department of Fish and Game.)

The January registration hunt described above for Unit 4 was proposed by the Angoon Fish and Game Advisory Committee in 1981. The regulation was created in 1983 as a measure designed to accomodate part of the subsistence needs of Angoon residents.

Deer Harvest Data

Division of Subsistence harvest estimates from 1980 to 1986 are reported on Table 5.

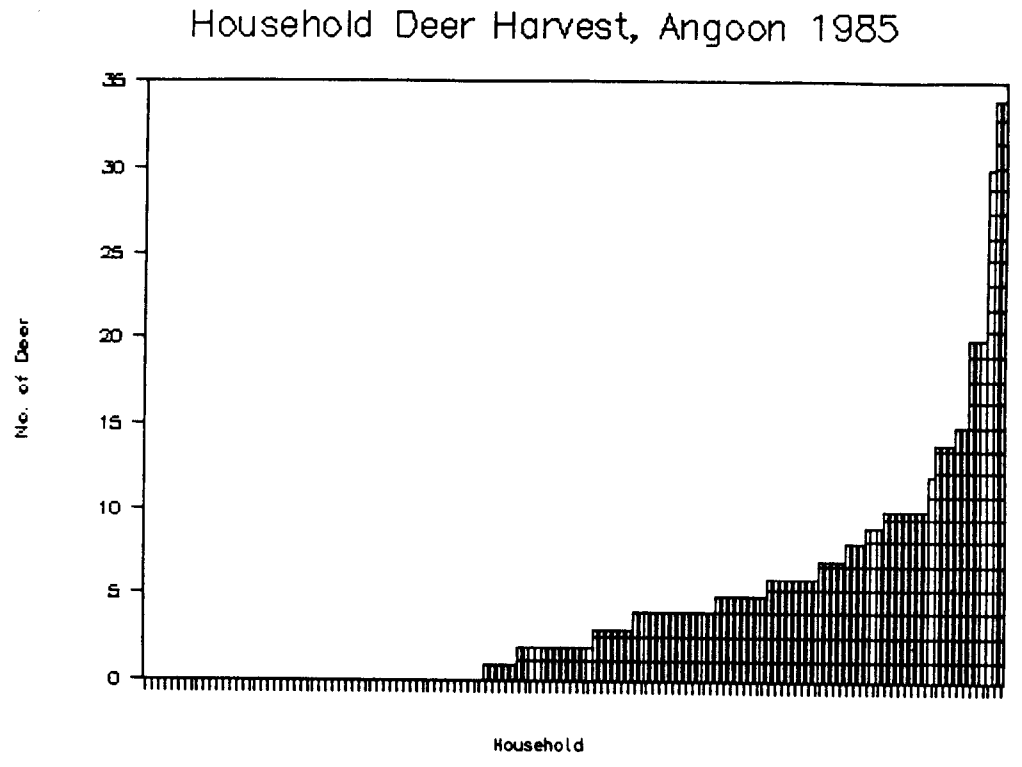
Table 5 . Deer harvests 1980-1986 (Division of Subsistence Surveys).

YEAR:	1980[1]	1981[1]	1982[1]	1983	1984[2]	1985[3]	1986[3]
No. households attempting to harvest	25	25	24	--	24	81	86
Percent of all households harvesting	76	76	73	--	61	57	61
No. of deer harvested *	436	422	383	--	478	606	490
Mean no. deer per active household	4.3	4.2	4.0	--	5.0	7.1	5.2
Mean no. deer per household	3.3	3.2	2.9	--	3.1	4.2	3.3

* Total Angoon harvest, extrapolated from survey data

[1] N=33 (25% household sample) George and Kookesh 1982
[2] N=38 (26% household sample) Division of Subsistence data files
[3] N=136 (93% household sample) Division of Subsistence data files

The range of household deer harvests for 1985 and 1986 are shown on Figure 32. To gather this information, nearly all households in Angoon were contacted by a local interviewer. As shown on Figure 32, a small proportion of households in Angoon are responsible for taking large numbers of deer. Deer harvest data also are routinely



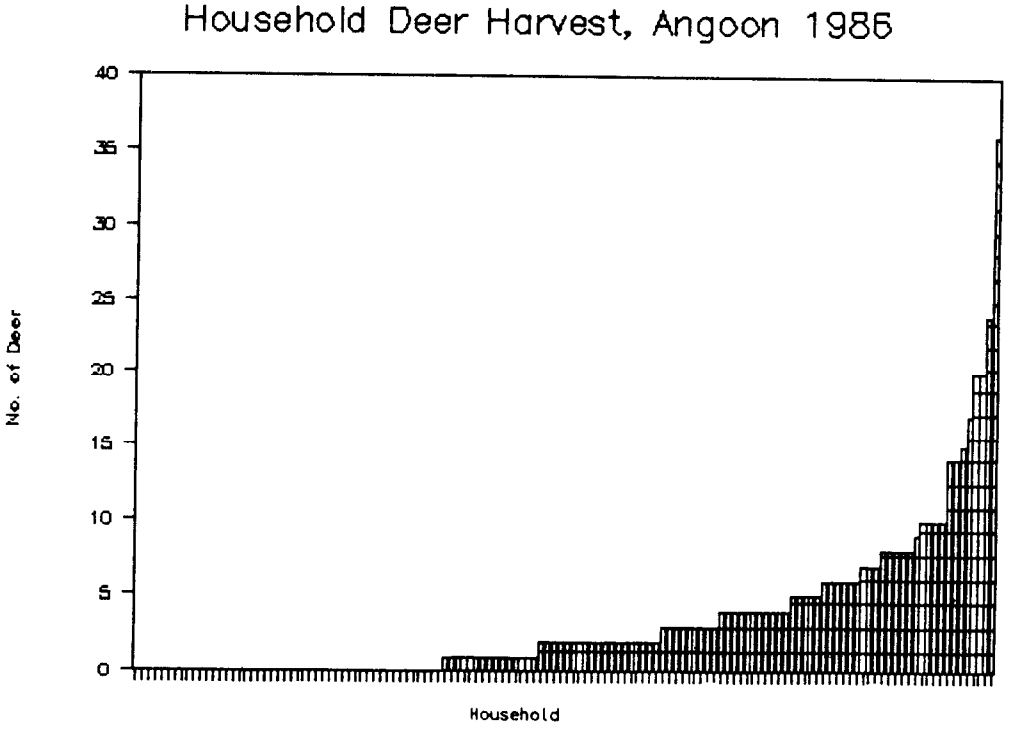


Figure 32. Number of Deer Harvested, by Household, Angoon 1985 and 1986

collected by the ADF&G, Division of Game. This information is based on results of a mail questionaire that is sent to a random sample of hunters in Southeast communities (including Angoon). Information received from respondents is then expanded to the community as a whole. The results of the Division of Game hunter survey for the years 1980-1985 appear on Table 6.

The data that are presented on Table 5 for 1985 and 1986 probably best represent actual harvest levels, due to the face-to-face survey method and the large survey sample for those years.

Table 6. Deer Harvest Estimates, Angoon, Based on Mailed Surveys, Division of Game, ADF&G.

	1980	1981	1982	1983	1984	1985	1986
No. Harvest Tickets	86	--	98	100	130	137	128
No. of Hunters	55	--	85	80	95	97	91
Percent Successful	91%	--	82%	75%	53%	78%	60
No. of Deer Harvested	140	--	210	215	180	312	128

The harvest estimates represented on Table 6 probably under-represent the contribution of households that take large numbers of deer. It is likely that some hunters who have exceeded the legal bag limit are reluctant to provide a complete reporting of their harvests. Also, mail survey response rates are low for Angoon and most other rural communities in Alaska.

Deer Harvest by Access Type

Figure 33 illustrates access modes used by Angoon hunters to obtain deer during 1984. The open skiff is shown to be by far the predominant means of hunting access (used by 81 percent of all hunters), with larger vessels being used by 16 percent of all hunters. This finding is consistent with information presented earlier regarding the predominant use of small vessels for commercial fishing, mainly hand trolling. These commercial fishing vessels, along with other work skiffs, are used extensively in the fall for hunting trips to destinations that are reached along the marine passages in all directions from Angoon.

Previous information also has pointed to the increasing use of beach habitat for deer hunting, a technique that makes use of the ability of the small skiff to negotiate rocky intertidal areas while looking for deer. Also, skiffs may be pulled onto shore or anchored in shallow embayments while a hunting party walks along the beach or inland.

Harvest of Deer in the Angoon Area by Residents of Other Communities

Game Management Unit (GMU) 4 is subdivided into Major Harvest Units (MHUs) for the purpose of data analysis (Fig. 34), and using these MHAs it is possible to evaluate the use of hunting areas around Angoon by residents of Angoon and other communities. Deer harvest by hunter residence for all of GMU 4 is shown on Figure 35. But in 1985, according to ADF&G, Division of Game, deer harvest data, 78 percent of the harvest effort by Angoon residents reportedly took place in the portion of Unit 4 called MHU 40 (W. coast of Admiralty Island) and 22 percent took place in MHU 33 (Kelp Bay to Basket Bay, including Peril Strait). The relative amounts of hunting success in GMU 4 and MHUs 33 and 40, by residents of Angoon and other communities, in 1985, is shown in Figures 36 and 37. In MHU 40 Angoon hunters took most of the deer, with Juneau hunters taking the next largest amount. In MHU 33, which is an

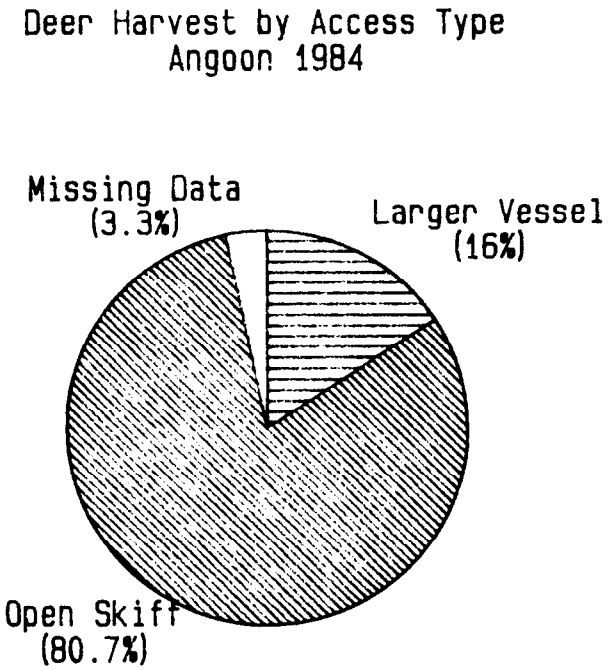


Figure 33. Deer Harvest by Access Type, Angoon 1984

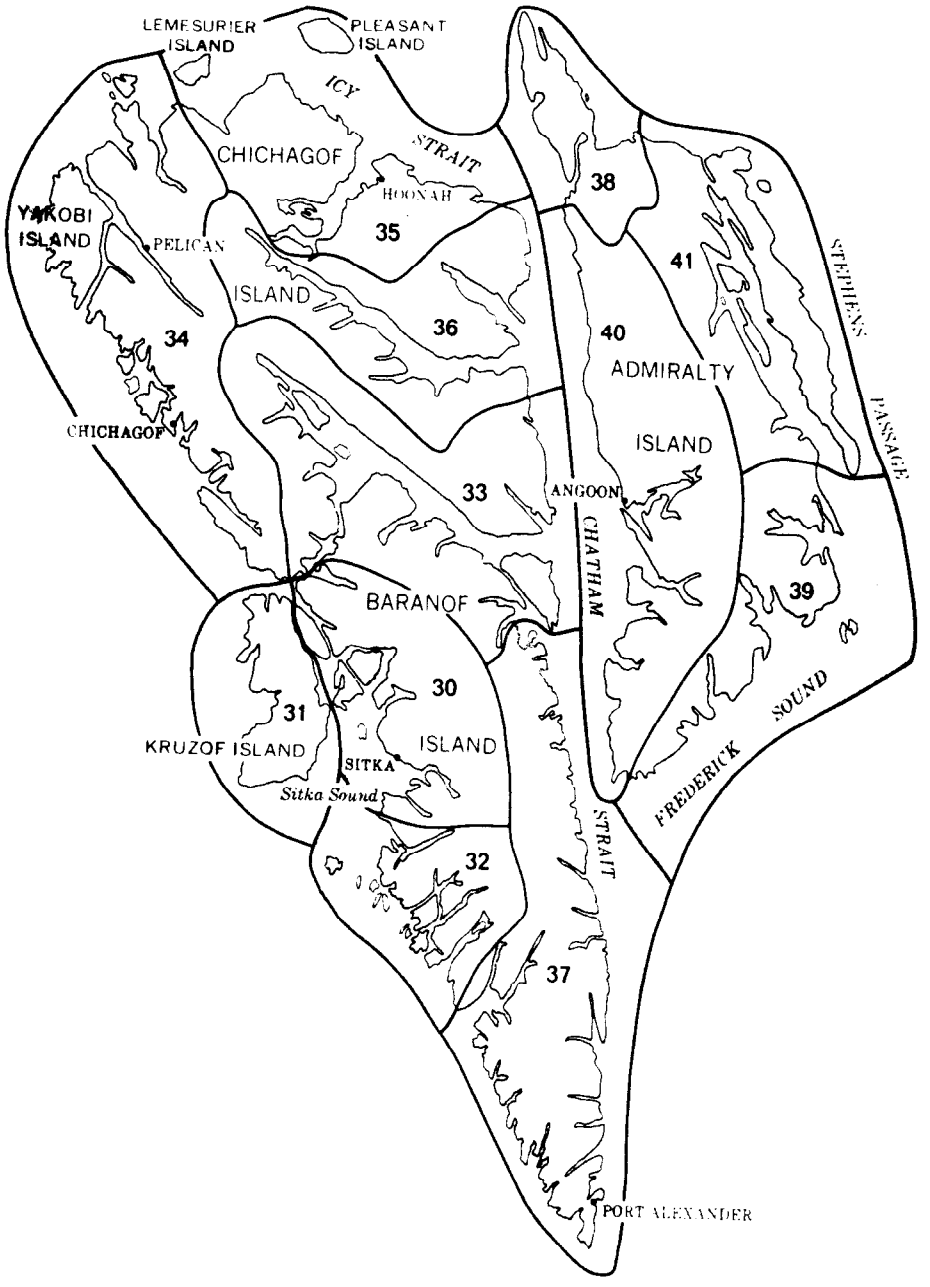


Figure 34. Game Management Unit 4, Showing Major Harvest Units in the Vicinity of Angoon.

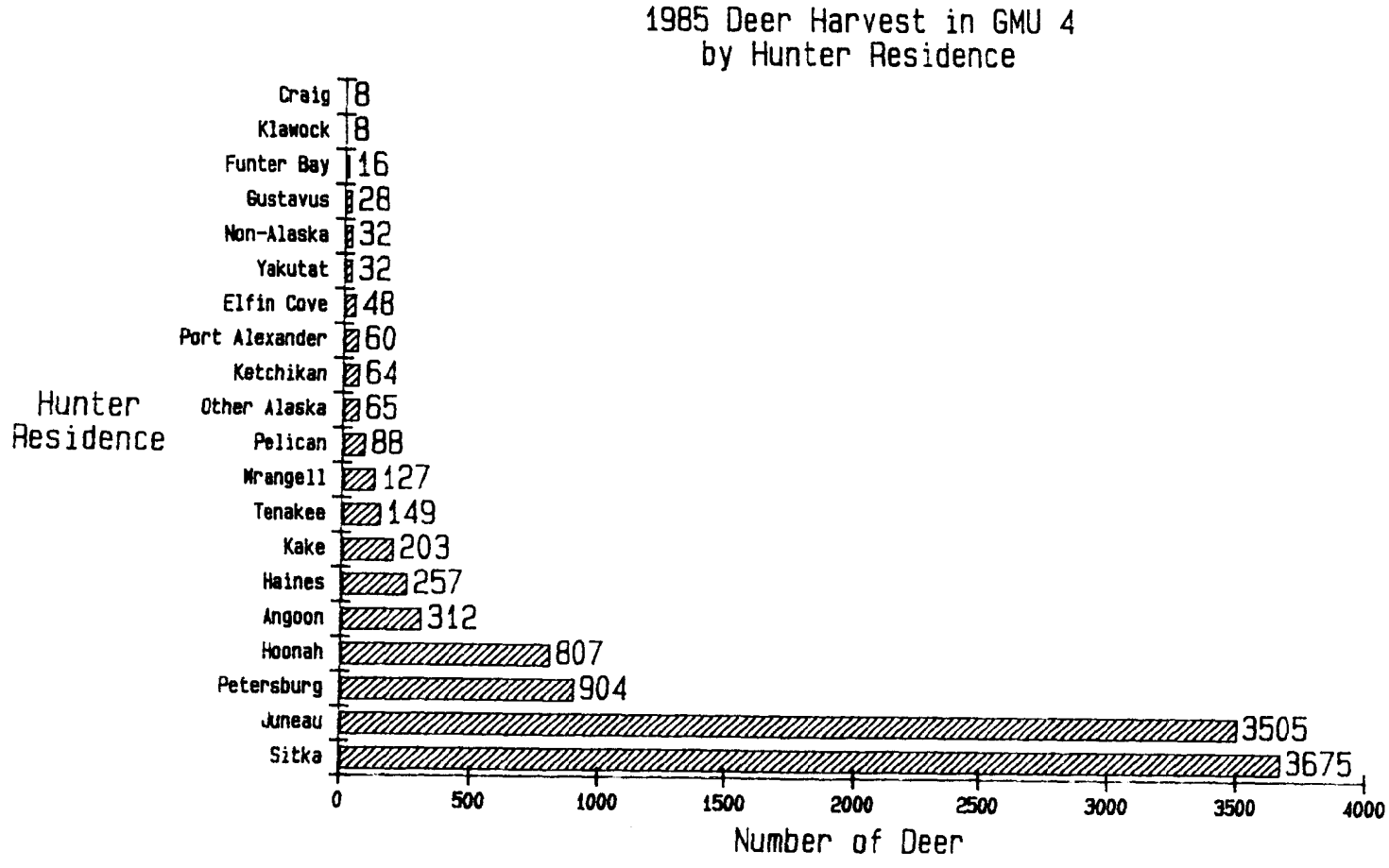


Figure 35. 1985 Deer Harvest in GMU 4 by Hunter Residence (source: ADF&G, Division of Game)

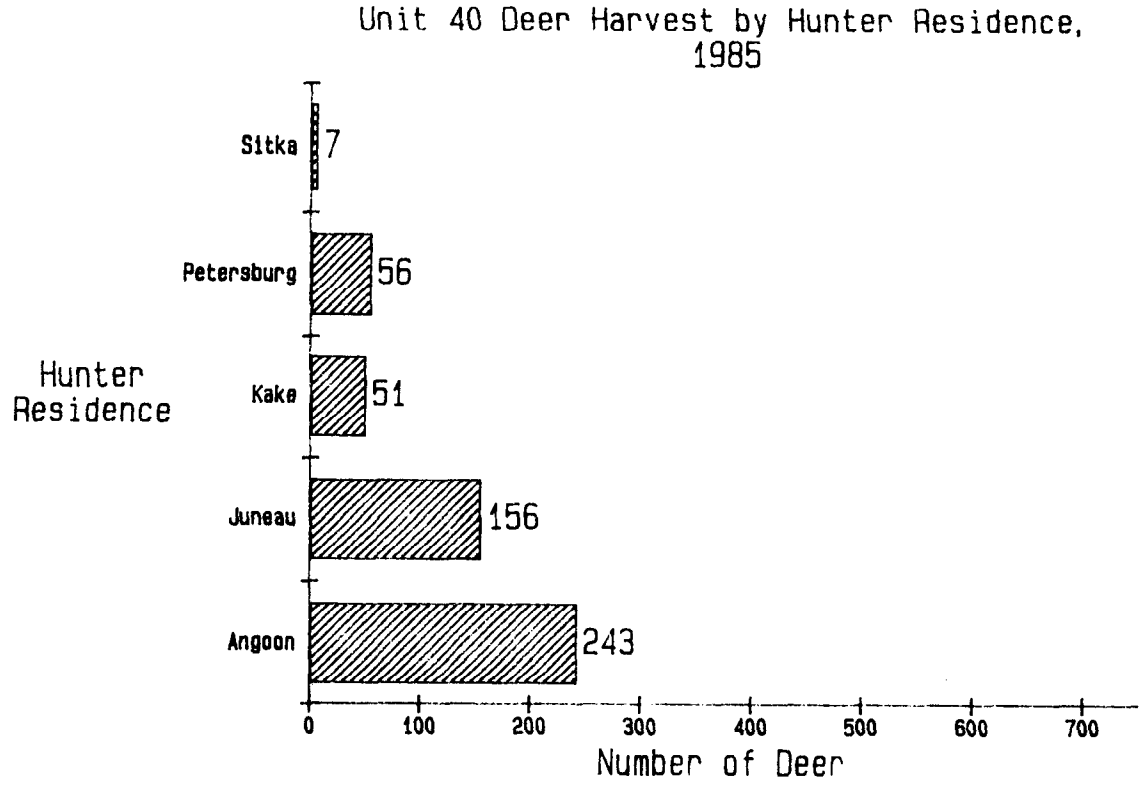


Figure 36. Unit 40 Deer Harvest by Hunter Residence, 1985 (source: ADF&G, Division of Game)

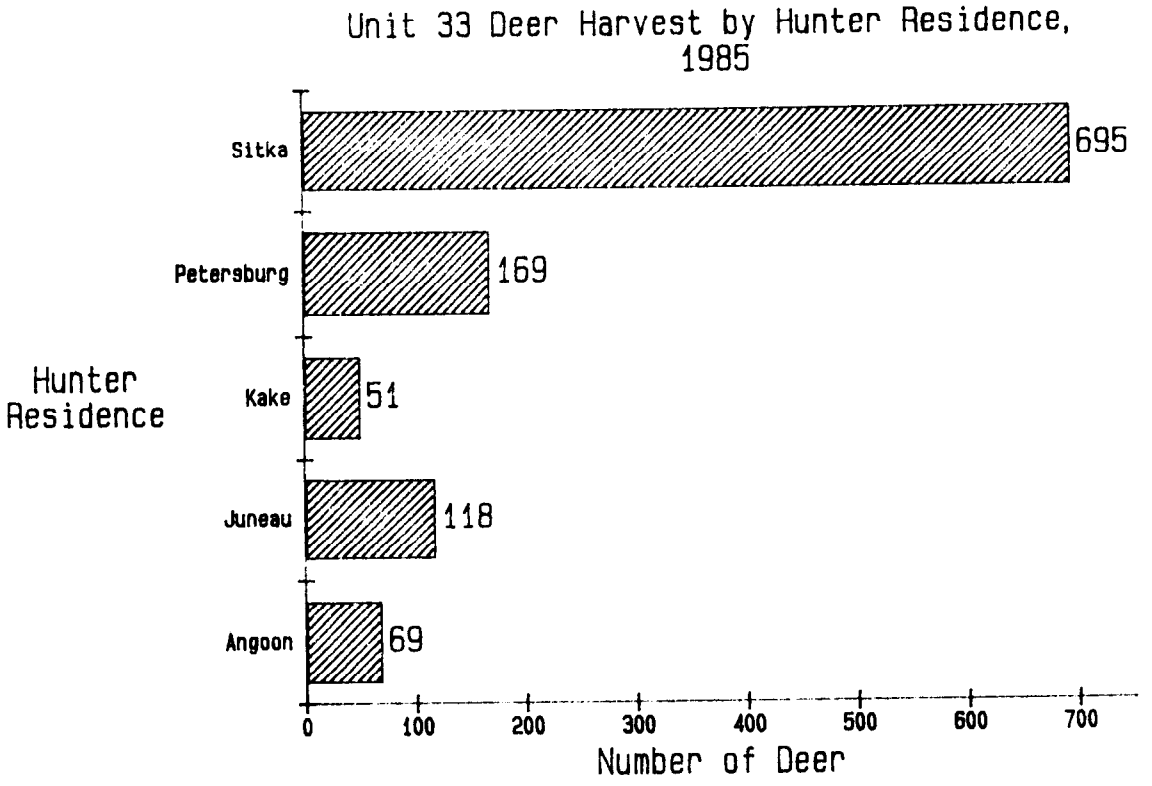


Figure 37. Unit 33 Deer Harvest by Hunter Residence, 1985 (source: ADF&G, Division of Game)

important Angoon deer hunting area, Angoon hunters reportedly took many fewer deer in 1985 than did hunters from Juneau, Petersburg or Sitka.

Desired Levels of Deer Harvest

Respondents to surveys in 1982 and 1985 were asked about the number of deer they needed for an average year. In 1982, respondents indicated they needed from one to 18 deer per year for their household. The majority of respondents (52 percent) said five to nine deer would fulfill their household needs. In 1985, responses were more varied, with approximately 34 percent desiring from 0-4 deer and 66 percent indicating a need for more than that (Fig. 38).

These responses suggest that despite the relative abundance of deer in the area, most residents of Angoon still felt they needed more deer than regulations provided for. Bag limits for the past several years have allowed six deer per hunter, but these deer have been widely shared in the community so the average household deer consumption has been less than four deer. Because most households in 1985 indicated a need for more than four deer per year, regulations thus appear to be a factor that limited the Angoon deer harvest to a level that was lower than what would have been the case in the absence of any harvest limits.

THE GEOGRAPHY OF RESOURCE USE

Historic Use Areas

The historic use areas of the Angoon Tlingit can be best explained by describing how these people came to be in Angoon. Members of the Deisheetaan clan say that they have lived in this area since the time of The Flood. They traveled to the interior of Alaska during the Flood but migrated back to their coastal homes some time after. The

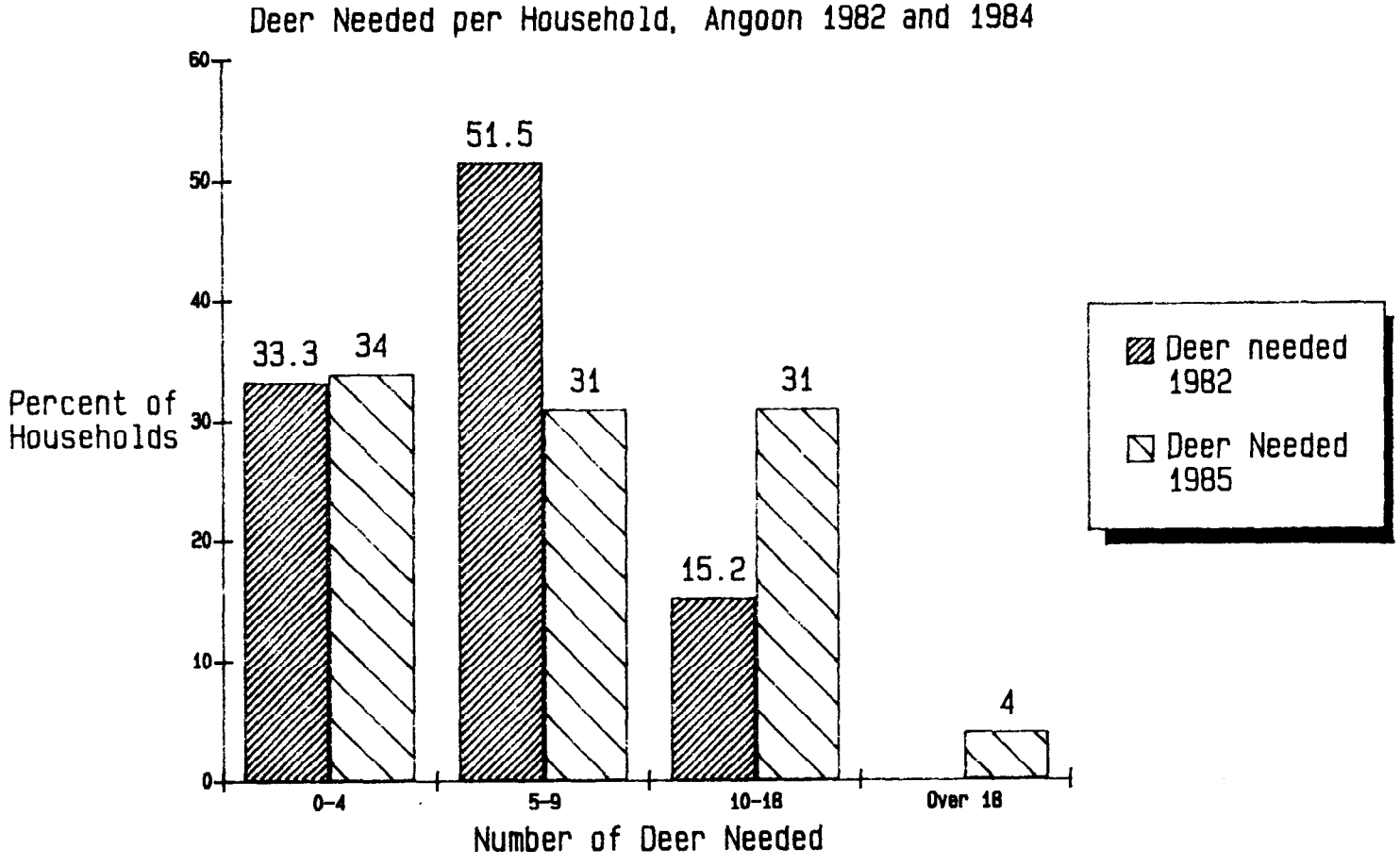


Figure 38. Deer Needed Per Household, Angoon 1982 and 1984

Deisheetaan claim to have returned to the salt waters at the Haines area and lived there for a while. There is a mountain near Haines that the Chilkat area Tlingits say belongs to the Angoon Deisheetan. They moved from Dei shu (Haines area) to what is now known as Freshwater Bay and built a winter village there. They then moved to Tenakee and stayed there for a while, eventually giving the place to the Wooshkeetaan in payment for a death.

The Deisheetaan then moved to the Killisnoo area. But it is said that this area was too noisy. The noise from the surf kept them awake, so they then decided to move into Kootznahoo Inlet, to the Kanalku Bay and Salt Lake/Hasselborg areas. The Salt Lake/Hasselborg area was given to the Teikweidee clan (bear clan) in payment for the death of a Bear woman and her child. The Deisheetaan then moved to Stillwater Anchorage and stayed there until they finally settled at the present site of Angoon. Some of the sites that they had previously settled continued to be used as summer fish camps. Generally, the Deisheetaan people maintained two places of domicile, one in a winter village and the other a summer village or camp.

Goldschmidt and Haas (1946) documented the use and occupancy of the Tlingit and Haida Indians in southeastern Alaska. The following is a general description of the Angoon traditional use area, adapted from their report.

The Angoon people have traditionally occupied the shores of Chatham Strait on Admiralty Island from Point Marsden southward around the southern tip of the island as far as Chapin Bay and on Chichagof and Baranof Islands from Basket Bay southward to Gut Bay. Reportedly, Tenakee Inlet, Freshwater Bay, and False Bay were at one time all part of the Angoon territory, but in later years they came to be owned and occupied by the Wooshkeetaan clan. The Angoon Tlingit use the southern end of the west coast of Baranof Island below Gut Bay in conjunction with the people from Kake. There is general agreement that Herring Bay and Chapin Bay and Eliza Harbor belong to Angoon people, while small Pybus and Pybus Bay are Kake territory.

Goldschmidt and Haas' 1946 report documented both the historic use and current use areas (in 1946) of 12 communities in southeastern Alaska. They spent four days in Angoon and interviewed many of the important and knowledgeable people with the help of a Tlingit interpreter. They noted that not all of the best key informants may have been interviewed, for they may have been off fishing, working in the cannery or otherwise unavailable. They did make efforts to cross- check the information obtained from each key informant and community. The map they completed, showing the traditional territory of the Angoon Tlingit, appeared above as Figure 16.

Goldschmidt and Haas recognized that the traditional use areas were not static, but that they changed over time, and the same holds true today. Lydia George, an Angoon Tlingit elder, stated at a public meeting recently that the Angoon people have come from all over. She stated that there are more than just the Deisheetaan people now living in Angoon, and that while people do use the area around Angoon, sometime they will return to use the lands of their ancestors for hunting and fishing as well.

Contemporary Use Areas

Contemporary use areas of the Angoon Tlingit are represented on Figures 39 through 43. These maps show areas used for hunting and fishing the species and species groups that are important to contemporary Angoon residents. The areas used for resource harvest, within the lifetimes of Angoon key informants, are nearly contiguous with the traditional use area described by Goldschmidt and Haas (1946). Deer hunting areas (Fig. 39) cover the shorelines along both sides of Chatham Strait, and most of Peril Strait. Upland areas that are used for deer hunting include lands around Kootznahoo Inlet, Hood and Chaik bays, and Kelp Bays. Use of these areas is described in greater detail below, and the graphs of use through time will give an indication of the relative intensity of use of portions of this area.



THIS MAP DEPICTS AREAS USED FOR RESOURCE HARVESTING BY A SAMPLE OF ANGOON RESIDENTS. INTERVIEWS WERE CONDUCTED DURING THE WINTER OF 1985. BECAUSE NOT ALL RESIDENTS WERE INTERVIEWED, IT IS LIKELY THAT SOME USE AREAS HAVE BEEN OMITTED THEREFORE, THIS MAP MUST BE CONSIDERED TO BE AN INCOMPLETE REPRESENTATION OF ALL ANGOON USE AREAS

FIG. 39 AREAS USED FOR DEER HUNTING DURING THE LIFETIMES OF ANGOON KEY RESPONDENTS.

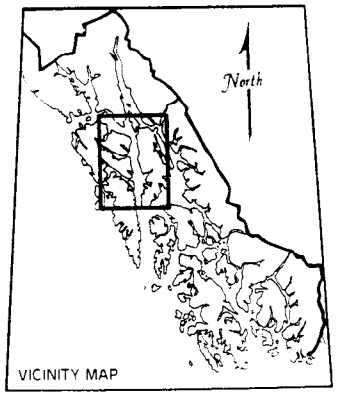
DEER HUNTING AREA

INFORMATION COLLECTED FROM 38 HOUSEHOLDS AND 10 KEY RESPONDENTS BY GABRIEL GEORGE DURING THE WINTER OF 1985.

SEE "TIMBER MANAGEMENT, FISH AND WILDLIFE UTILIZATION IN SELECTED SOUTHEAST ALASKA COMMUNITIES: ANGOON, ALASKA", BY GABRIEL GEORGE, DIVISION OF SUBSISTENCE, 1986, FOR FURTHER EXPLANATION.

BASE MAP ADAPTED FROM USGS SITKA 1:250,000, QUAD. AND USGS JUNEAU 1:250,000, QUAD.

0 5 10 15 miles



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FIG. 40 AREAS USED FOR NON-COMMERCIAL SALMON HARVESTING DURING THE LIFETIMES OF ANGOON KEY RESPONDENTS.

NON-COMMERCIAL SALMON HARVESTING AREA

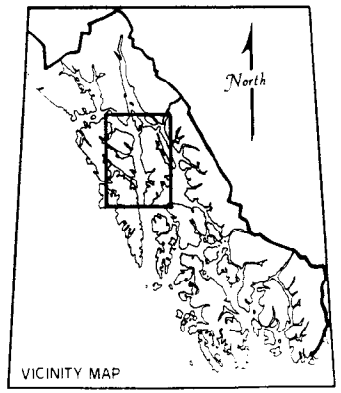
BEACH SEINE AREAS

INFORMATION COLLECTED FROM 38 HOUSEHOLDS AND 10 KEY RESPONDENTS BY GABRIEL GEORGE DURING THE WINTER OF 1985.

SEE "TIMBER MANAGEMENT, FISH AND WILDLIFE UTILIZATION IN SELECTED SOUTHEAST ALASKA COMMUNITIES: ANGOON, ALASKA", BY GABRIEL GEORGE, DIVISION OF SUBSISTENCE, 1986, FOR FURTHER EXPLANATION.

BASE MAP ADAPTED FROM USGS SITKA 1:250,000. QUAD. AND USGS JUNEAU 1:250,000. QUAD.

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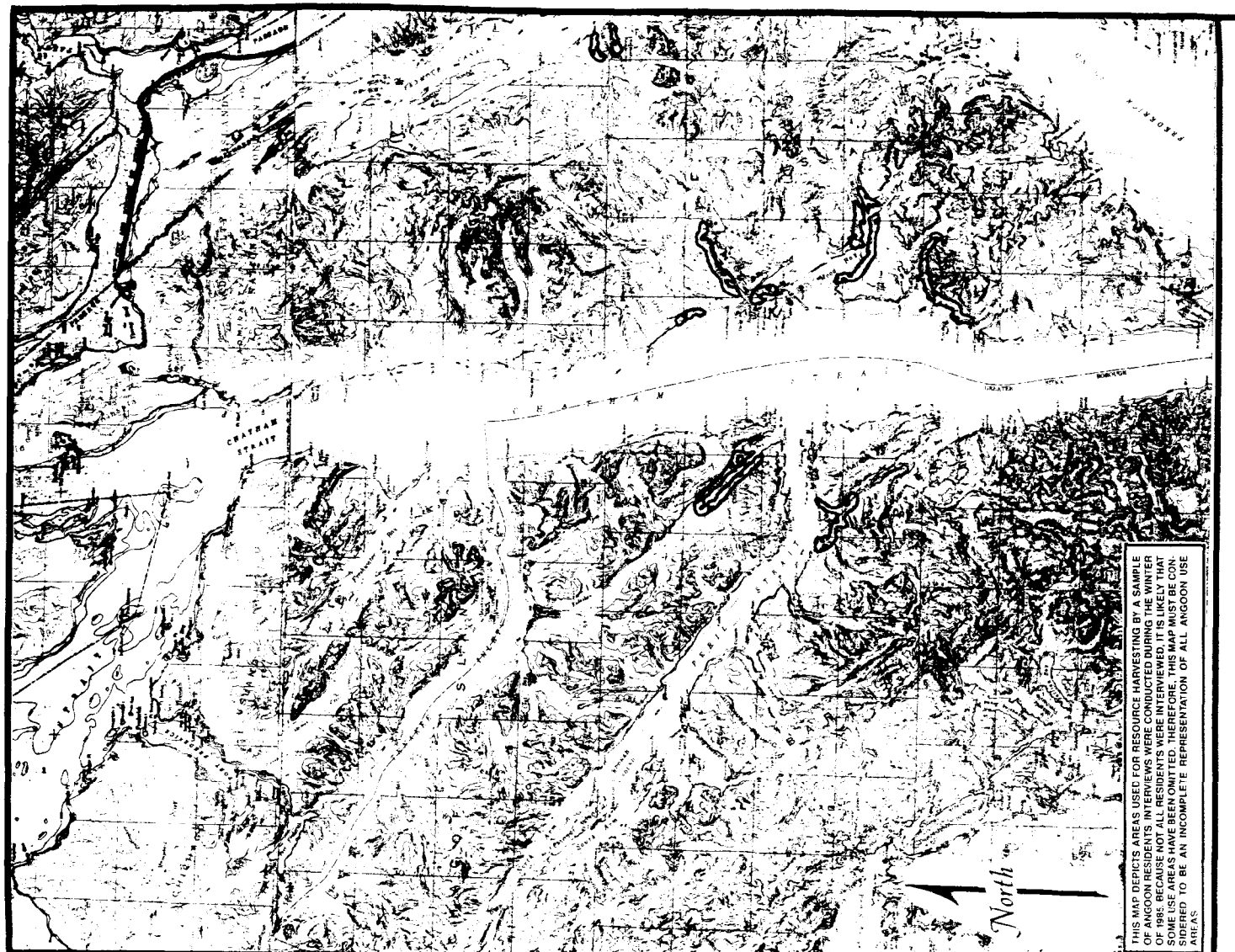


FIG. 41 AREAS USED FOR TRAPPING DURING THE LIFETIMES OF ANGOON KEY RESPONDENTS.

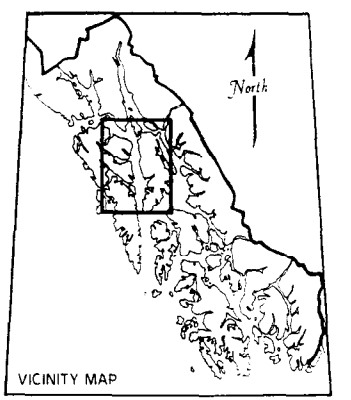
TRAPPING AREA

INFORMATION COLLECTED FROM 38 HOUSEHOLDS AND 10 KEY *RESPONDENTS BY GABRIEL GEORGE DURING THE WINTER OF* 1985.

SEE "TIMBER MANAGEMENT, FISH AND WILDLIFE UTILIZATION IN SELECTED SOUTHEAST ALASKA COMMUNITIES: ANGOON, ALASKA", BY GABRIEL GEORGE, DIVISION OF SUBSISTENCE, 1986. FOR FURTHER EXPLANATION.

BASE MAP ADAPTED FROM USGS SITKA 1:250,000. QUAD. AND USGS JUNEAU 1:250,000, QUAD.

0 5 10 15 miles



ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF SUBSISTENCE

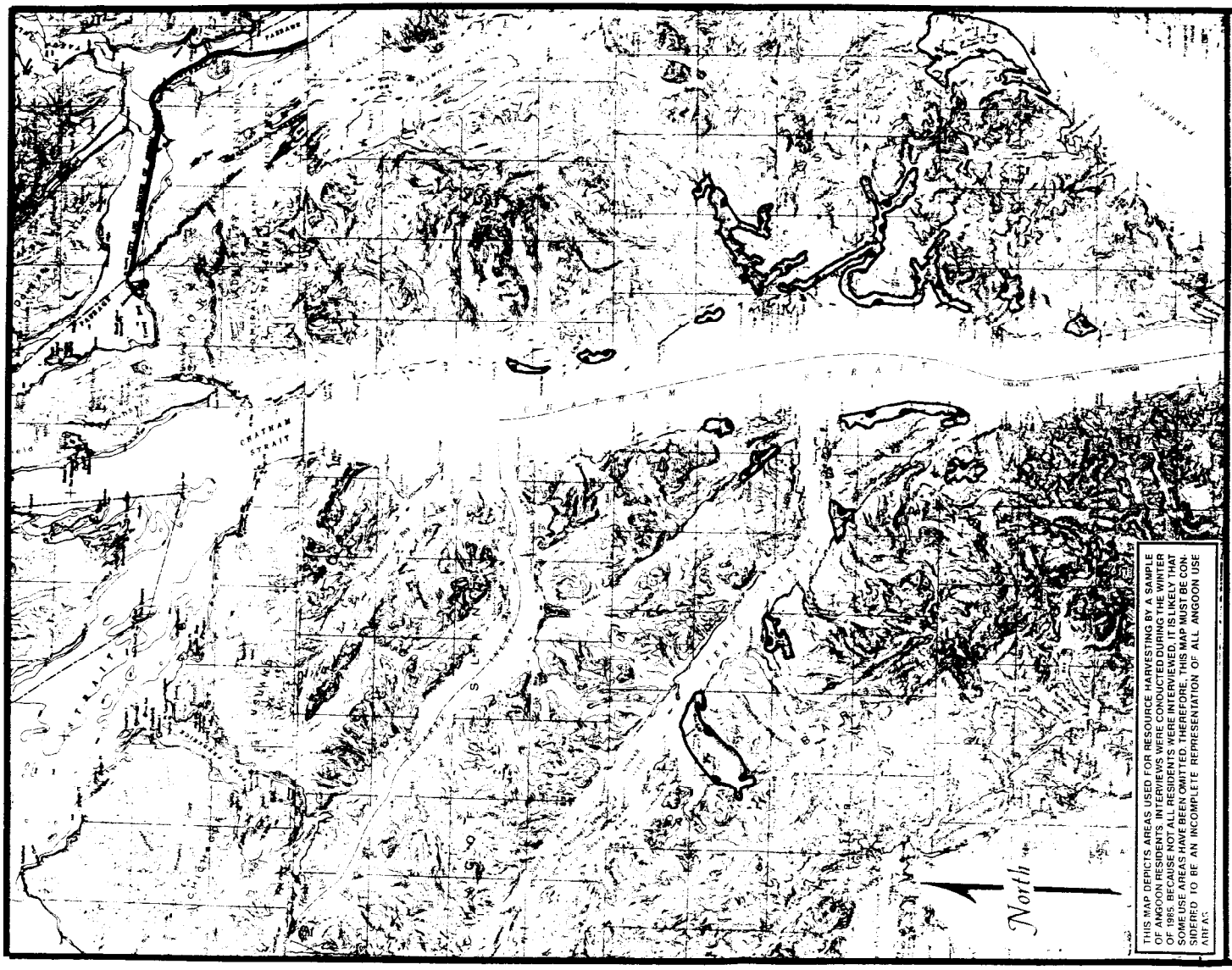


FIG. 42 AREAS USED FOR SEAL HUNTING DURING THE LIFETIMES OF ANGOON KEY RESPONDENTS.

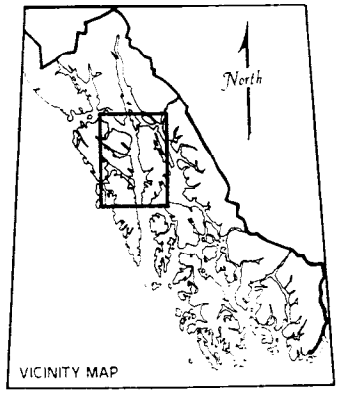
SEAL HUNTING AREA

INFORMATION COLLECTED FROM 38 HOUSEHOLDS AND 10 KEY RESPONDENTS BY GABRIEL GEORGE DURING THE WINTER OF 1985.

SEE "TIMBER MANAGEMENT, FISH AND WILDLIFE UTILIZATION IN SELECTED SOUTHEAST ALASKA COMMUNITIES: ANGOON, ALASKA", BY GABRIEL GEORGE, DIVISION OF SUBSISTENCE, 1986, FOR FURTHER EXPLANATION.

BASE MAP ADAPTED FROM USGS SITKA 1:250,000, QUAD. AND USGS JUNEAU 1:250,000, QUAD.

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FIG. 43 AREAS USED FOR SHELLFISH AND BIRD HARVESTING DURING THE LIFETIMES OF ANGOON KEY RESPONDENTS.

SHELLFISH AND BIRDS AREA

SHELLFISH AREA

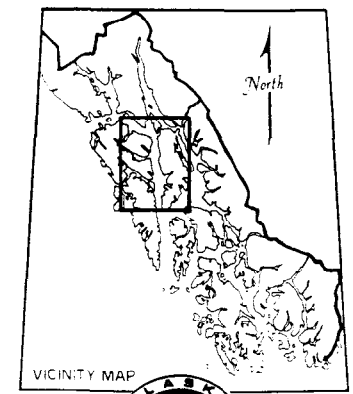
BIRDS AREA

INFORMATION COLLECTED FROM 38 HOUSEHOLDS AND 10 KEY RESPONDENTS BY GABRIEL GEORGE DURING THE WINTER OF 1985.

SEE "TIMBER MANAGEMENT, FISH AND WILDLIFE UTILIZATION IN SELECTED SOUTHEAST ALASKA COMMUNITIES: ANGOON, ALASKA", BY GABRIEL GEORGE, DIVISION OF SUBSISTENCE, 1986. FOR FURTHER EXPLANATION.

BASE MAP ADAPTED FROM USGS SITKA 1:250,000, QUAD. AND USGS JUNEAU 1:250,000, QUAD.

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Important non-commercial salmon harvest areas are found near Angoon, including nearshore waters from Fishery Creek to Whitewater Bay, including Hood and Chaik Bays and Kootznahoo Inlet. Important subsistence sockeye fishing areas are also found across Chatham Strait as well, at Sitkoh and Basket Bays (Fig. 40).

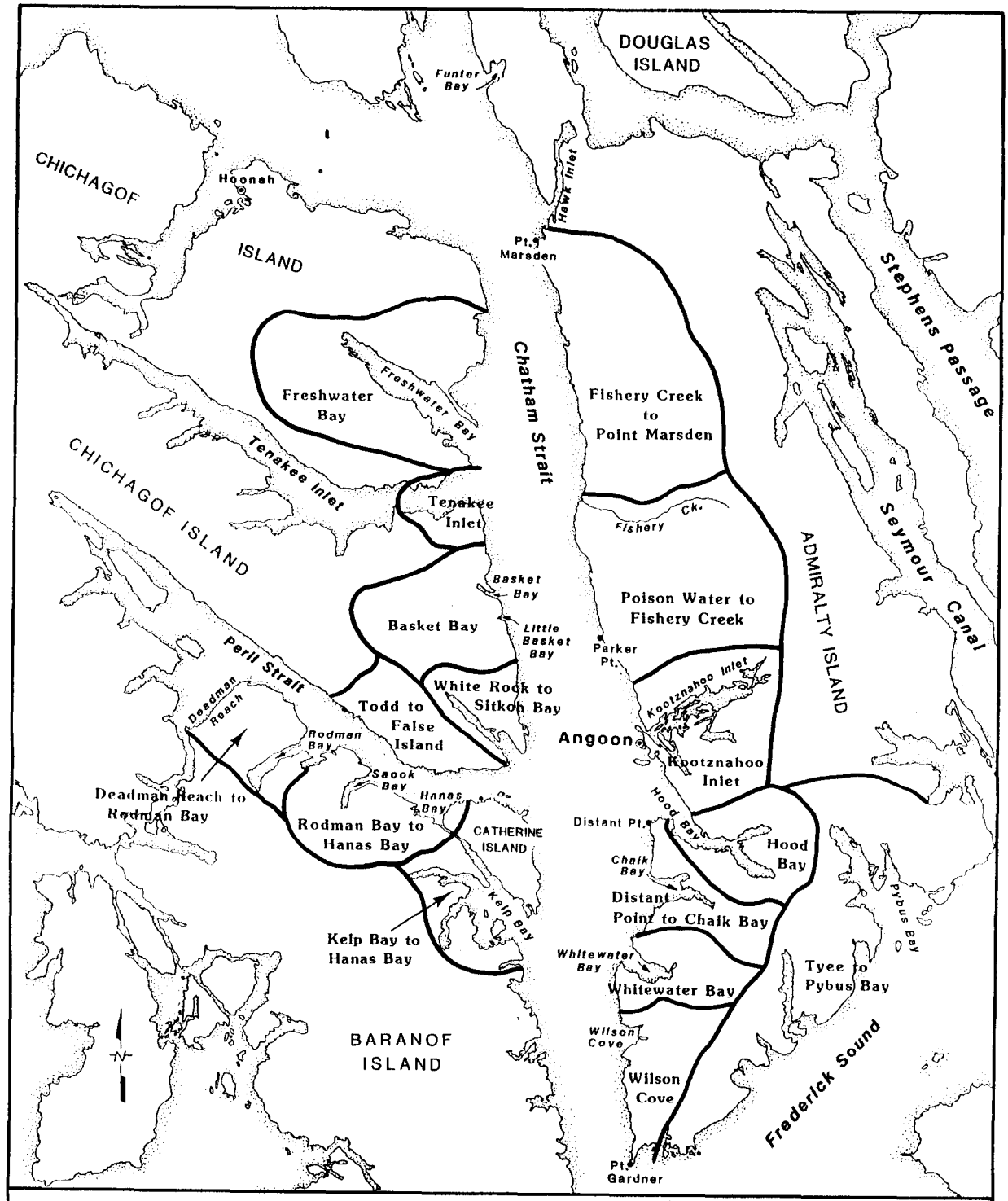
Trapping is generally confined to the shorelines along Sitkoh and Hood Bays, and Kootznahoo Inlet, with additional areas used just to the north and south of Angoon (Fig. 41).

Seal hunting is an activity that frequently takes place along with deer hunting, and the areas for sealing are coincident with many of the deer hunting grounds. These include beaches and rocky headlands in Peril Strait, Kelp Bay, Kootznahoo Inlet, Hood Bay and Chaik Bay (Fig. 42).

Areas used for shellfish gathering and bird hunting are illustrated on Figure 43. Because most bird hunting involves taking waterfowl in intertidal areas and shallow bays, bird hunting areas overlap in some cases with crabbing and clamming areas.

Changes in use through time

As a second method of learning about the geography of resource use in the Angoon area, Angoon survey respondents were asked to describe their individual histories of subsistence use of subunits of the overall use area that is described above. Figure 44 identifies the location of the subunits of the Angoon area that were used in this portion of the survey. Use of these subunits for hunting and fishing is represented in the graphs that accompany the area use descriptions. These graphs show variations in the amount of use each sub-unit received, through time. The graphs are referred to here as useful indicators of relative amounts of use each area has received, by Angoon residents, over the past thirty years.



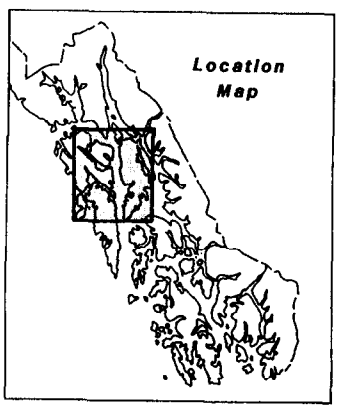


FIG 44. SUBUNITS OF THE ANGOON SUBSISTENCE USE AREA

Subunit Boundary

See "Timber Management and Fish and Wildlife Utilization in Selected Southeast Alaska Communities: Angoon, Alaska", Technical Paper No. 159, for further information.

SCALE 1:500,000

0 5 10 15 20 MILES

STATE OF ALASKA DEPT. OF FISH AND GAME
Subsistence Division

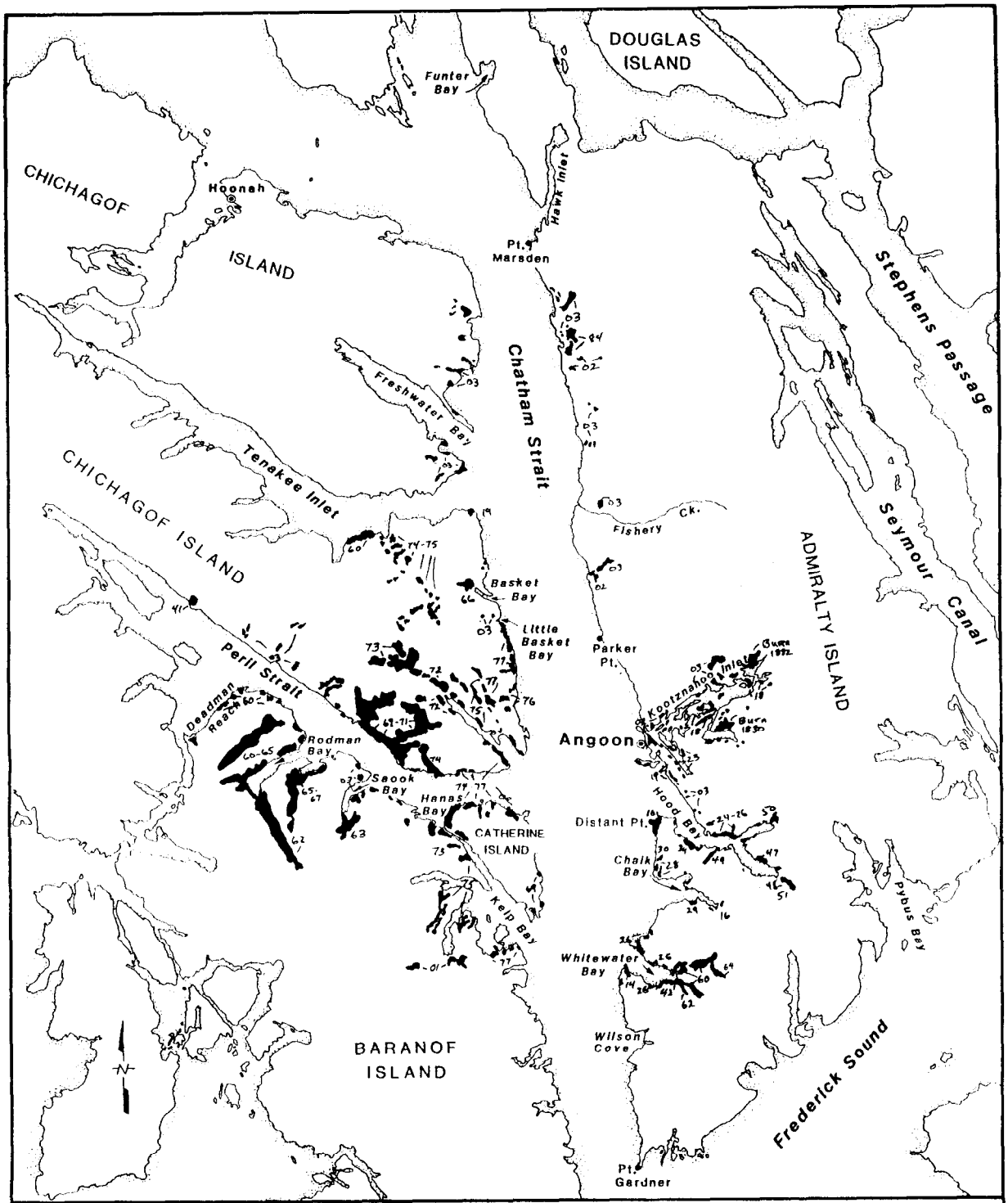
Because some changes in use of areas may be related to timber harvest activities, a reference map of historic timber harvest within the Angoon subsistence use area appears as Figure 45. Historic timber harvest data are also summarized on Table 7.

Use of Areas to the North of Angoon

For the purpose of the 1985 survey, the northern shore of Admiralty Island was divided into two areas, one extending from Poison Water to Fishery Creek and a second area from Fishery Creek to Point Marsden (Fig. 44). The first area shows a significant increase in use over time. Twenty-five percent of all Angoon households who hunted deer in 1957 stated they used this area that year, and this use increased to 68 percent of all hunting households in 1984. The average percent of active Angoon households using the area over the past twenty-five years was 46 percent (Fig. 46A).

The second area of the northern shore, from Fishery Creek to Point Marsden, demonstrated less overall use than the first area, and less of an increase in use over time. In the late 1950s, about 25 percent of Angoon active households used this area. This use increased slightly over the next twenty years, with occasional fluctuations. An average of 34 percent of Angoon's active households used the area during this period of time. Use of a portion of this area, at Cube Cove, is described in greater detail in Chapter 4.

The northern shore of Admiralty Island is exposed, with little protection from the winds and storms that frequent Chatham Straits, yet the 1985 survey data indicate it is an area that is used by many residents of Angoon. Hunters travel along the northern shore in small boats, with stops in numerous places to hunt in the muskegs and woods.



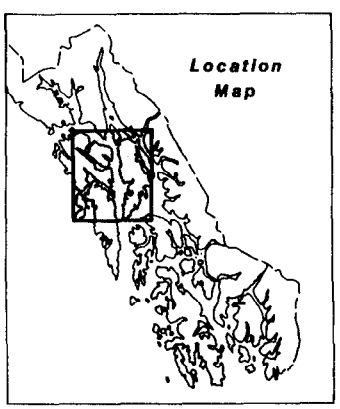


FIG. 45

Timber Harvest Areas Within the Angoon Use Area (Harvest Dates 1902-1984)

Source: Kirchhoff 1985. For more detailed maps, consult source maps at the Division of Subsistence, Juneau.

See "Timber Management and Fish and Wildlife Utilization in Selected Southeast Alaska Communities: Angoon, Alaska", Technical Paper No. 159, for further information.

SCALE 1:500,000

0 5 10 15 20 MILES

STATE OF ALASKA DEPT. OF FISH AND GAME
Subsistence Division

Table 7. Summary of Historical Timber Harvests Within the Angoon Subsistence Use Area, 1820-1980.

Area	Acres	Year
POISON WATER TO FISHERY CREEK	62	1915, 1916
FISHERY CREEK TO POINT MARSDON	272	1912-1915
KOOTZNAHOO INLET	2,025	1820, 1830, 1888, 1892, 1913-1915, 1923-1925
HOOD BAY	1,228	1913-1918, 1920-1926 1940-1951
DISTANT POINT TO CHAIK	520	1916-1930
WHITEWATER BAY	2,786	1860-1920 1926-1927 1942-1943 1960-1968
KELP BAY TO HANUS BAY	2,682	1969, 1973, 1974-1977
HANUS BAY TO RODMAN BAY	6,481	1903, 1962-1963, 1965-1967
RODMAN BAY TO DEADMANS REACH	10,830	1918, 1960-1967
FALSE ISLAND TO TODD	2,966	1912-1913, 1927, 1967-1971, 1974-1975
SITKOH BAY	4,355	1972-1973, 1975-1978
WHITE ROCK	803	1976-1977
BASKET BAY	?	1966, 1975
E. TENAKEE INLET	90	1903, 1911, 1919
FRESHWATER BAY	?	1903

Sources: Beier and Cooper 1982, Powers 1972

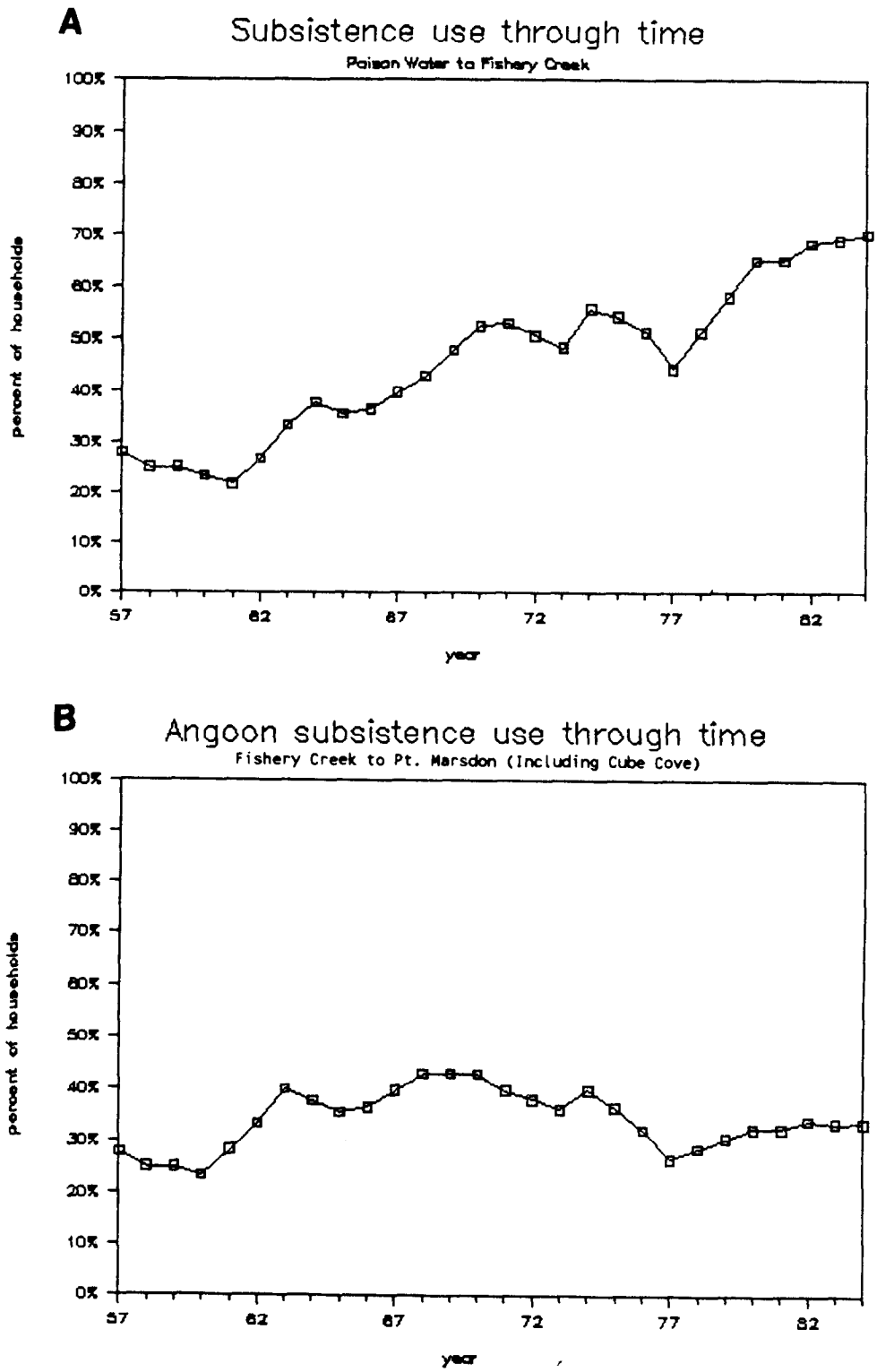


Figure 46. Subsistence Use: Poison Water to Fishery Creek and Fishery Creek to Point Marsdon (includes Cube Cove) (running 3-yr. avg.)

Factors affecting the use of the northern shore included weather conditions and employment variables. When Angoon's Hood Bay Canning Company burned down in 1961, many of the people employed there began working at the Hawk Inlet cannery, located 20 miles to the north. This change in employment location was reflected in increased use of the northern shore for hunting and fishing. However, this change was followed by a decrease in use of the northern shore when the Hawk Inlet cannery closed its doors in 1974. When the weather was good for beach hunting, as it frequently was in 1969, 1970 and 1971, (ie: heavy winter snows brought deer to the beaches) there was an increase in use of the northen shores (Fig. 46B). An increase in the price of gasoline may account for a drop in the percentage of households using the northern shore (and other areas remote from Angoon) after the mid 1970s.

Use of Areas Near Angoon and Southward

Kootznahoo is defined here as the area that encompasses nearly all of Kootznahoo Inlet, Favorite Bay and the lands extending to the north shore of Hood Bay (Fig. 44). This is both a historic and contemporary use area that was shown in the 1985 survey to be the most frequently used of all Angoon hunting and fishing areas. Changes in use of this area over time are represented on Figure (47A). Nearly all species that are included in the diet of Angoon residents can be found in this area, including all species of salmon, trout, halibut, other bottom fish, rockfish, octopus, crab, gumboots, cockles and clams, waterfowl, grouse and deer.

Hood Bay, which is located approximately seven miles south of Angoon, was also noted in the 1985 survey as one of the more important use areas for Angoon. Over fifty percent of the active Angoon households reported using the area in 1957 (Fig. 47B). This number increased to 75 percent in 1985, with an average of 55 percent over the 28 years. Use of Hood Bay is described in greater detail in Chapter 4.

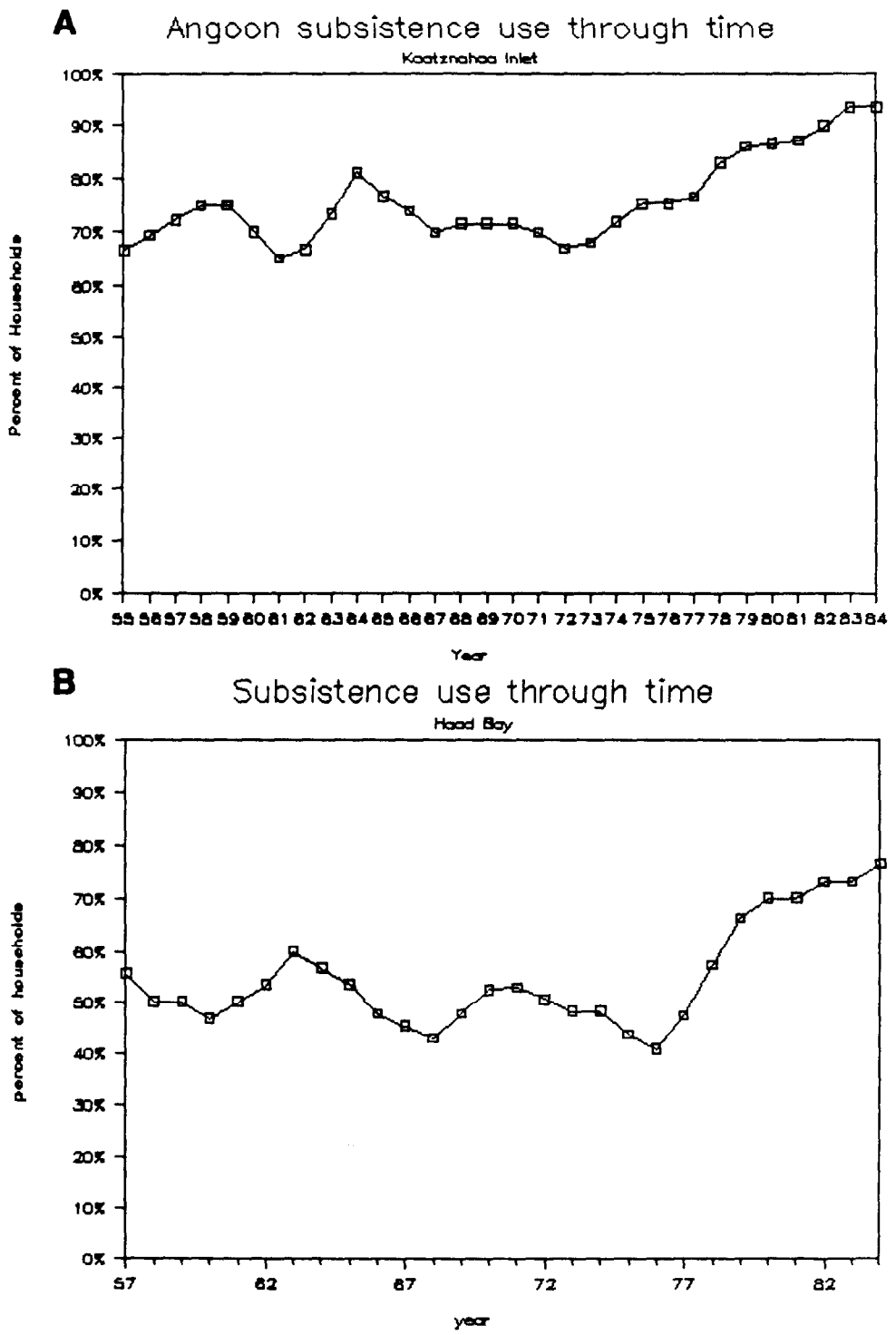


Figure 47. Subsistence Use: Kootznahoo Inlet and Hood Bay (running 3-yr. avg.)

Another Angoon use area, known locally as Distant Point to Chaik, includes the area of Distant Point and Chaik Bay to the outside of Whitewater Bay (Fig. 44). This area actually can be described as two areas, one being Distant Point proper, mostly low lands with muskeg and beaver ponds, and Chaik which consists primarily of woods and mountains with limited alpine country. The percentage of household participation in resource harvest in the Distant Point area was about 25 percent in 1957, but greater use after that, and an average of 48 percent over the next 28 years (Fig. 48). Use of the areas south of Hood Bay is conditioned by factors such as travel costs and weather, and generally has been lower than areas closer to Angoon.

Whitewater Bay, another important Angoon use area, is located three bays south of Angoon and is approximately 20 miles away by water. The south shore of the bay has some woods and muskegs and a mountain with limited amounts of alpine. The rest of the bay is primarily wooded with some muskeg areas up both valleys. The area is used for deer hunting and is known to be an area where large deer may be found. There are reefs located along the south shore where seals are harvested incidental to deer hunting trips.

Whitewater Bay use data show that in 1960 25 percent of the active Angoon households used the bay for deer hunting. Use increased in the 1960s and mid 1970s to about 40 percent of all hunters, but decreased again in the late 1970s. The average use of the Whitewater Bay area was about 32 percent over the last 25 years (1960-1984) (Fig. 49A). Use of Whitewater Bay is described in greater detail in Chapter 4.

Wilson Cove is a small bay with a large area of shallow waters located south of Whitewater Bay. This bay does not have any safe boat anchorages, for it is exposed to Chatham Straits, and the shallow waters make it particularly unsafe. It is dangerous to travel across the mouth of the bay due to the presence of several reefs. The beach of the bay is figure 49, therefore hunted only by those with expert knowledge of the area. Survey data indicates that Angoon hunters do use this area and have done so since 1961.

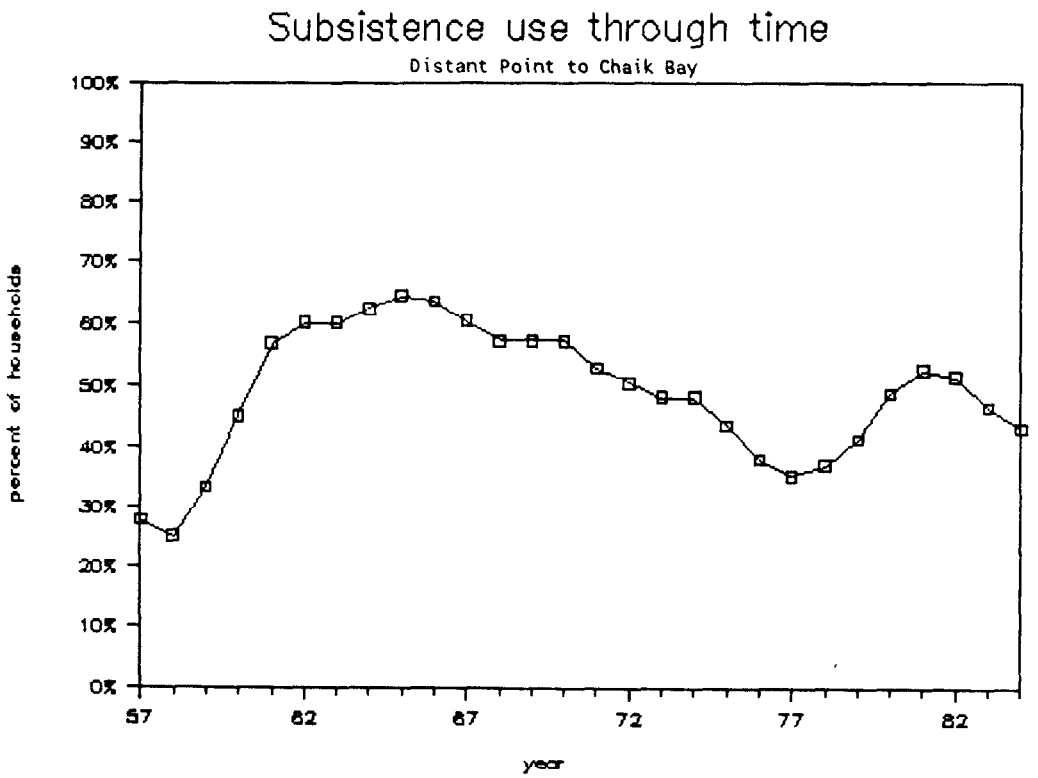


Figure 48. Subsistence Use: Distant Point to Chaik Bay (running 3-yr. avg.)

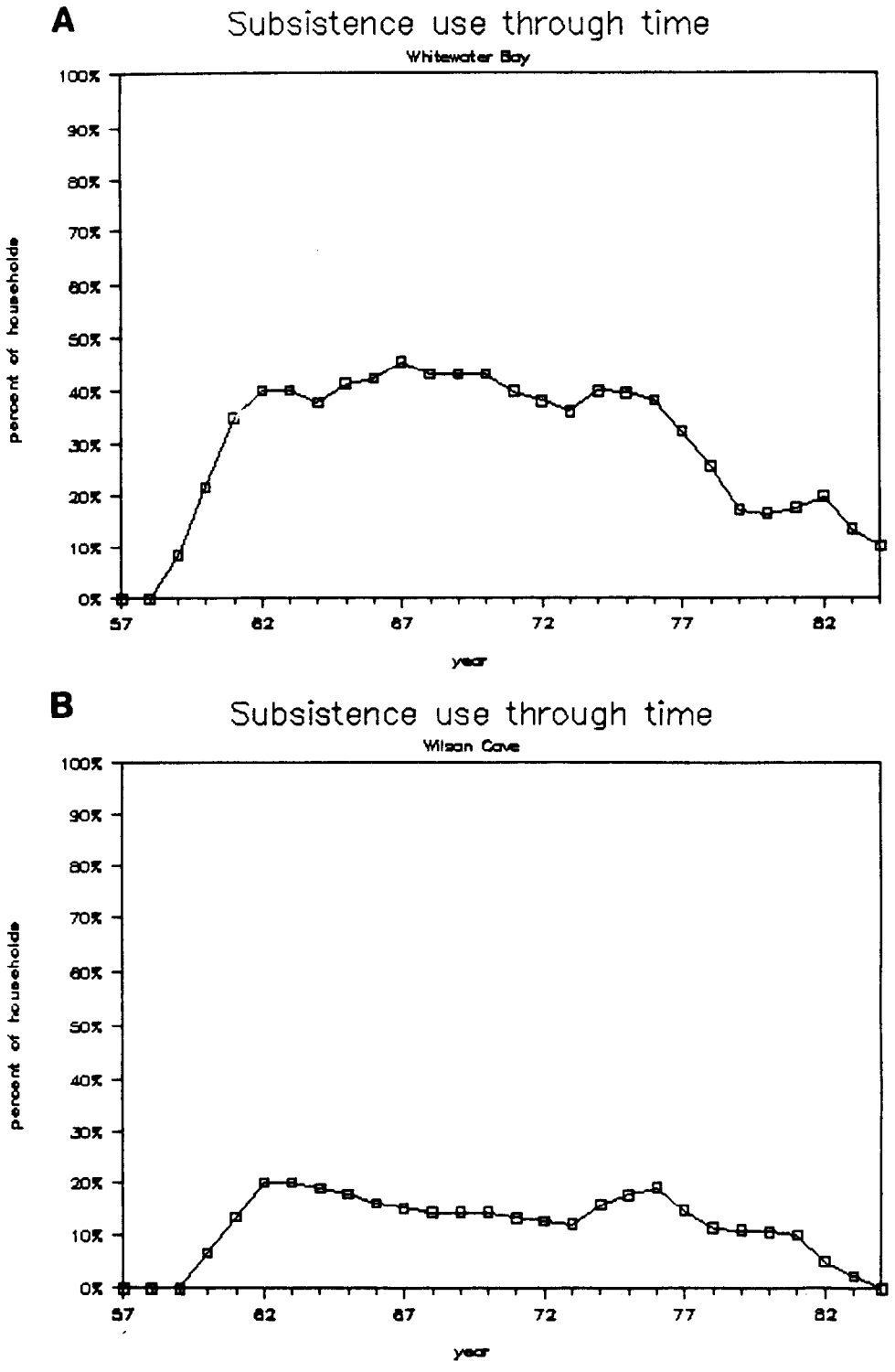


Figure 49. Subsistence Use: Whitewater Bay and Wilson Cove (running 3-yr. avg.)

About twenty percent of the Angoon active hunters reported using Wilson Cove in the 1960s and 1970s, and there was less use of the area in recent years (Fig. 49B).

The Tyee/Pybus Bay area was the southernmost area that respondents from the random sample stated that they had used in their lives. Historically, there has been a whaling station, a cannery and a cold storage located in Tyee, and some Angoon residents worked in these facilities. Survey respondents reported limited use of the area between 1974 and 1979, with a high of 11 percent in 1976 (Fig. 50).

Use of Areas on the West Side of Chatham Strait

The Kelp Bay to Hanas Bay area is located on the northeast coast of Baranof Island and is recognized as one of the Angoon traditional use areas. Kelp Bay was traditionally owned by the Deisheetan who are reported to have had a summer camp at Kelp Bay, on Crow Island. It is also known that the Anxatkeetan (dog salmon people) also used the area. Hanas Bay was claimed by the Teikweidee (Brown Bear people). These areas have been used by all people from Angoon in recent times. (Goldschmidt and Haas 1946, de Laguna 1960) (personal communication, Lydia George 1984).

The Kelp Bay area was used by Angoon residents for harvesting deer, seal, halibut, and salmon, and one key informant used this site for obtaining ice from the snow field that extends down to near the salt water. Kelp Bay is an area that has steep mountains that terminate at the waters edge. The alpine area is rocky, and is fairly low in elavation. There are few actual muskegs in the area except on Katherine Island, which is at the northern shore of Kelp Bay.

Catherine Island, immediately north of Kelp Bay, is well known as good deer country by the Angoon hunters. There also are shallows off the coast where seal can be harvested and easily retrieved. The Island does have mountains on it and some alpine, but no one in the 1985 study reported hunting in the alpine area for deer. The island also makes up the east side of Hanas Bay.

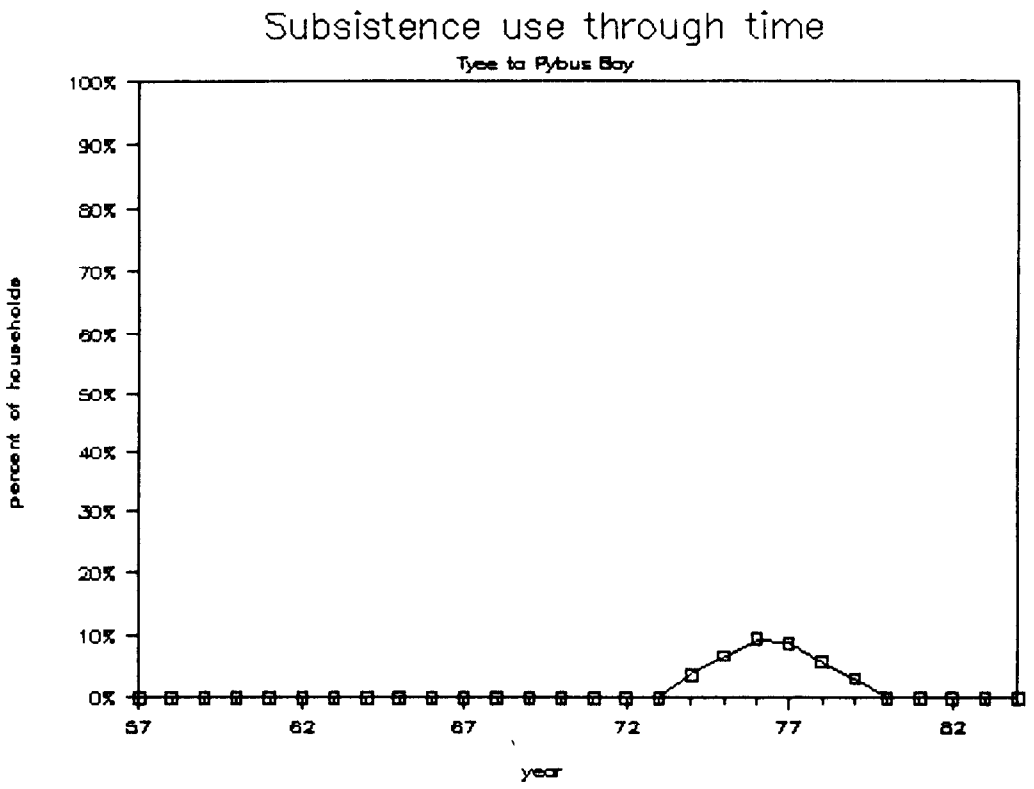


Figure 50. Subsistence Use: Tyee to Pybus Bay (running 3-yr. avg.)

Hanas Bay is an area that has good beaches for deer hunting, as well as salmon streams. Lake Eva, westward from the bay, is a system that supports a small run of sockeye salmon that a few Angoon residents have used in the past. This is also a place where seal can be found. One key informant claimed that the last time the area was used as a trapping area was during 1979 when three Angoonians spent their trapping season at Hanas Bay. Hanas Bay also is known as a source for King, Tanner and Dungeness crab.

Over the years from 1957 through 1984 an average of 35 percent of all active households reported using the area (Fig. 51A). However, use fluctuated significantly in this time, from a high of 60 percent in 1964 to a low of five percent in the late 1970s. A sharp decline in use began in the 1960s and continued until about 1980. It is possible that use of the area corresponds somewhat with employment patterns, since the most dramatic change in use of the area corresponds roughly with the closure of the Chatham cannery, at nearby Sitkoh Bay, in 1974 (Fig. 51A).

Rodman Bay to Hanas Bay lies to the west of the area just described. The main use of this area is for deer hunting, with the usual incidental harvest of seal. As the area is further from Angoon than Kelp Bay, the percentage of active households using this area was lower, with an average of 25 percent of the active Angoon households reporting use of the area during the period from 1957 through 1984 (Fig. 51B). The increase in use of this area during the decline in use of the Hanas-Kelp Bay area is unexplained.

Deadman's Reach to Rodman Bay is the area furthest west along Peril Strait that survey respondents still use for hunting and fishing, and because of its distance from Angoon only about five percent of the active households used this area (Fig. 52A). Historically, areas further west including Salisbury Sound and the open ocean were used by the Angoon Tlingit (Goldschmidt and Haas 1946, Alaska Consultants Inc. 1976).

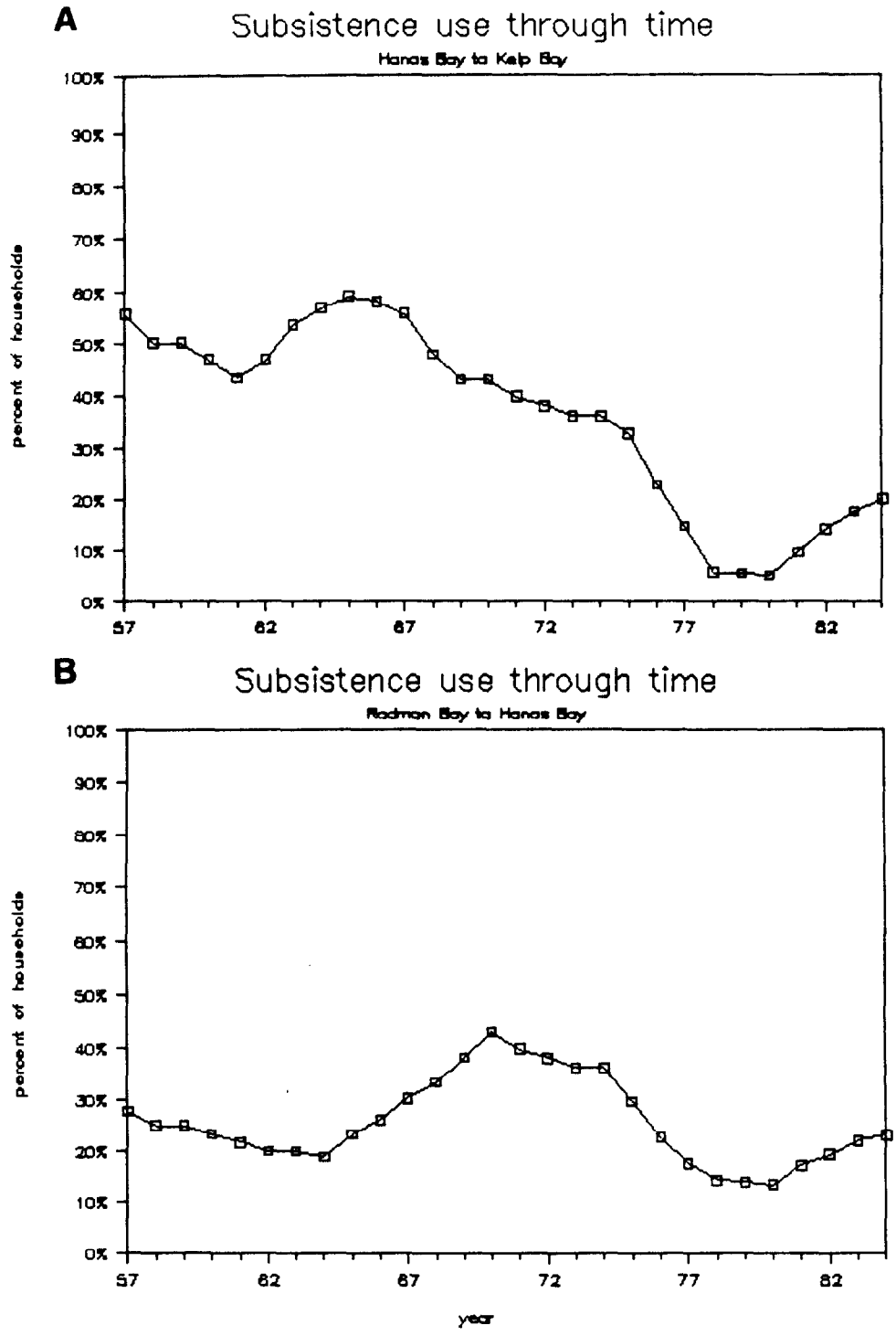


Figure 51. Subsistence Use: Hanas Bay to Kelp Bay and Rodman Bay to Hanas Bay (running 3-yr. avg.)

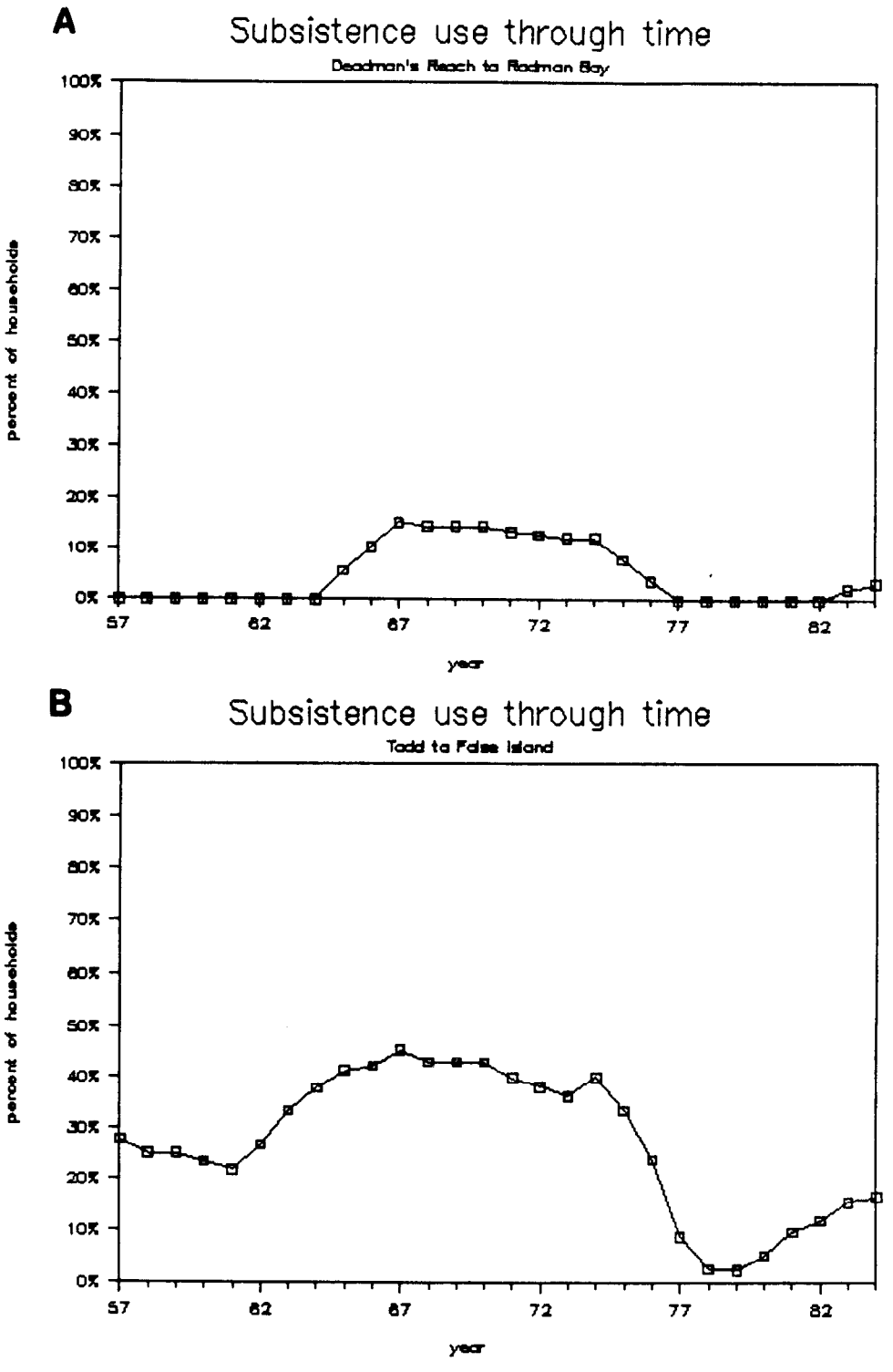


Figure 52. Subsistence Use: Deadman's Reach to Rodman Bay, Todd to False Island (running 3-yr. avg.)

Along the north shore of Peril Strait, the area from Todd to False Island is also part of the Angoon use area. Todd was one of the main Teikweidee settlements in Peril Strait (de Laguna, 1960). The average use of this area over the time period 1957-1984 was about 27 percent of the active Angoon households. The amount of use of the area dropped considerably in the mid-1970s, as it did in nearby areas, probably as a result of the closure of the Chatham cannery in 1974 (Fig. 52B).

North of Peril Strait, Whiterock to Sitkoh Bay is located on the southeast end of Chichagof Island, and is approximately 10 miles west of Angoon, across Chatham Strait. It was last claimed by the Deisheetan clan of Angoon. There is a historic Tlingit village site located 3/4 of a mile above the present Chatham Cannery site. Althrough none of the key informants claim to have had a house there, it is acknowledged that the Angoon Deisheetaan owned and used this area (de Laguna 1960).

The Chatham cannery was built in Sitkoh Bay in 1912, and it employed residents of Angoon until it closed in 1974. Angoon employment increased after the burning of the Hood Bay cannery in 1961. The Angoon residents who worked at the cannery used to move to the cannery a couple of weeks earlier than the rest of the workers in order to harvest the sockeye.

Residents of Angoon still go to Sitkoh Bay to fish for king salmon in the spring and sockeye in July, and few go there to pick berries in the summer. Deer hunting occurs in the fall. Two of the key informants stated that they hunted the roads and clearcuts in the bay (resulting from logging in the 1970s). All the informants have used the area at some point in their lifetimes. Access to Sitkoh Bay was initially by canoe, than power boat and more recently by fast small outboard motor boats.

The results of the random survey show that the Sitkoh Bay area was used by at least 25 percent of the households prior to 1960. The use increased to over 60 percent of the households in 1967 and remained high for the next 10 years. The use dropped in the mid 1970's, presumably because of the closure of the Chatham Cannery,

compounded by the high price of gasoline, with about 27 percent of the households using the area in the low use years (Fig. 53A). Use of the White Rock area, to the south of Sitkoh Bay, is described in greater detail in Chapter 4.

The Basket Bay area is located on the east side of Chichagof Island, between Sitkoh Bay and Tenakee Inlet, approximately 16 miles to the north west from Angoon. The area was owned by the Deesheetaan clan of Angoon (de Laguna 1960, Alaska Consultants 1976). A Tlingit village site is thought to have been located in Basket Bay next to a stream in the Bay that has a run of sockeye, pink and chum salmon. The residents of Basket Bay are said to have left because, according to Tlingit history, the village was turned up side down by a giant beaver (personal communication: Jimmie A. George Sr.) de Laguna (1960), in her studies of the area, admits that there may be some foundation to the legend of the destruction of the village at Basket Bay.

Currently, the area is known best for its reliable run of sockeye salmon, but Angoon people also harvest seal, deer, halibut, shellfish and other resources in the area. Althrough the people of Angoon obtain sockeye from Sitkoh, Kanalku and Basket Bay, they claim that the sockeyes from Basket Bay are larger than those obtained from the two other sources.

Seven of the eleven key informants stated that they have used the Basket Bay area in their lifetimes. The results of the random sample indicate that use averaged a little over 21 percent of the active households from 1957 thru 1984, and use of the area seems generally to be increasing. This increase may be due to its importance for subsistence salmon fishing (Fig. 53B).

The Tenakee Inlet area, just north of Basket Bay, once was owned by the Deisheetaan and was given to the Wooshkeetaan before contact. Different versions are related of the origin of the name for Tenakee, including T'aakw aanee (meaning winter village) and t'enage (meaning"Bay on the other side".) Goldschmidt and Haas (1946) verify the Deisheetaan ownership claims. There is a mountain that lies on the south

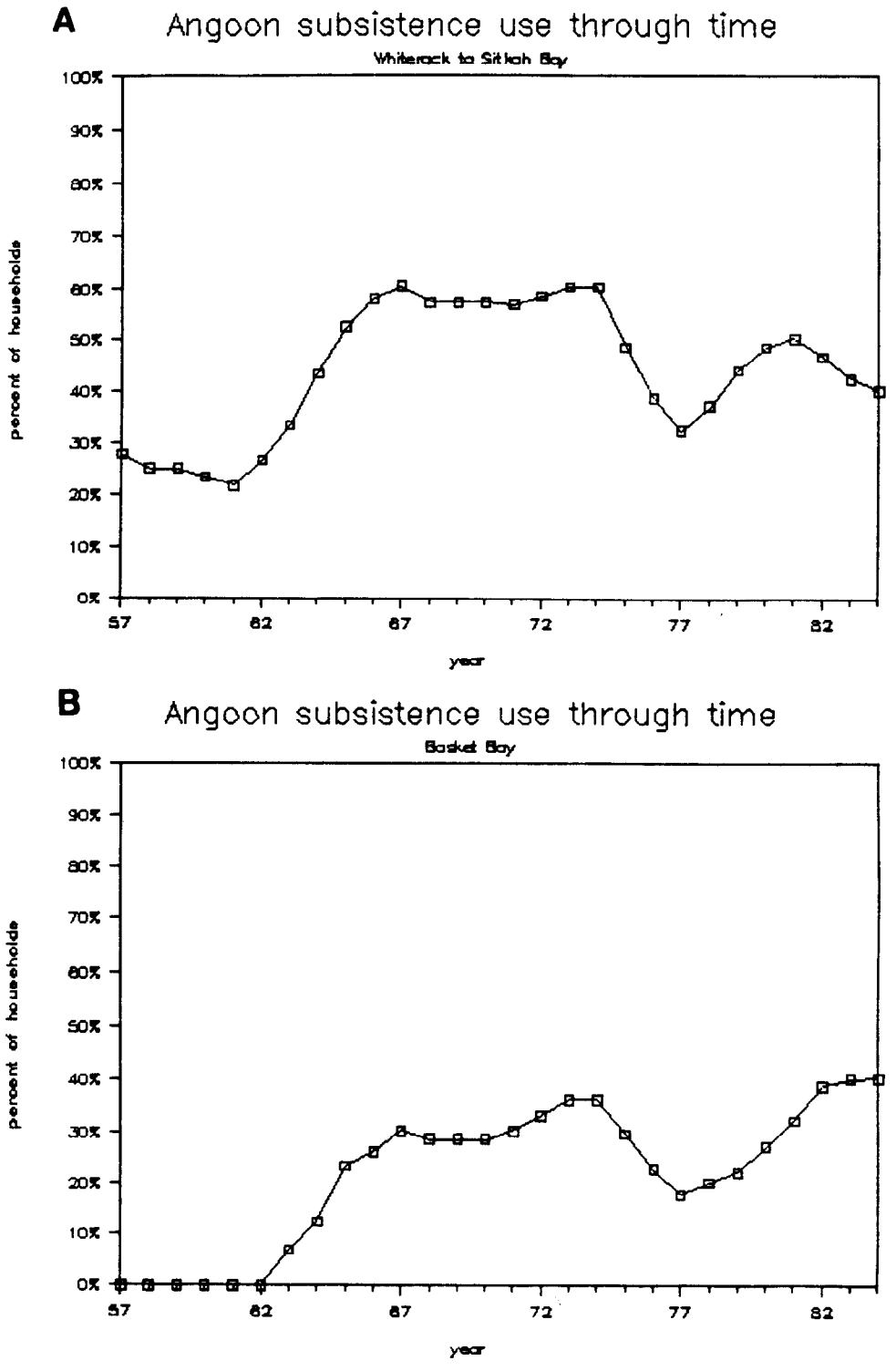


Figure 53. Subsistence Use: Whiterock to Sitkoh Bay, Basket Bay (running 3-yr. avg.)

shore of Tenakee Inlet that the Angoon Tlingit claim was one mountain that they used to take refuge from the Great Flood (de Laguna 1960).

Contemporary use of the Tenakee area follows a similar pattern to that of other nearby areas, with a moderate use in the late 1960s and early 1970s followed by a dramatic drop in use in the mid 1970s. In general, use of the area over the past 30 years follows the sequence of employment shifts from the Hood Bay cannery to the Chatham cannery that has been described earlier.

Current use of the Tenakee Inlet area is low--averaging ten to 15 percent of active Angoon households (Fig. 54A). Use of the inlet is limited to the outer Chatham Straits side, for deer hunting, and up to the Tenakee town site for crabbing. One key respondent said that there were a lot of places closer to Angoon where he could get his deer that were a lot cheaper with not as many people.

Freshwater Bay is the farthest area on the east side of Chichagof that was documented as an area used for resource harvesting by Angoon residents. The Freshwater Bay area extends from Tenakee Inlet north to include Freshewater Bay, Iyoukeen Cove and False Bay. The last recognized owners of the area are said to be the Wooshkeetaan (Goldschmidt and Haas 1946)

Although there are salmon streams in the area, including a sockeye stream that de Laguna records as once used by the Angoon people, the contemporary use of the area is for deer hunting. Four of the eleven key informants claimed to have used this area in their lifetime. The results of the random sample indicate that an average of nine percent of the active households used this area over the years 1957 thru 1984 (Fig. 54B).

Survey data show an overall low level of use that may be expected due to its distance from Angoon, and show the levels of use from 1961 to 1974 that has been mentioned as attributable to changes in the Hood Bay and Chatham cannery employment options.

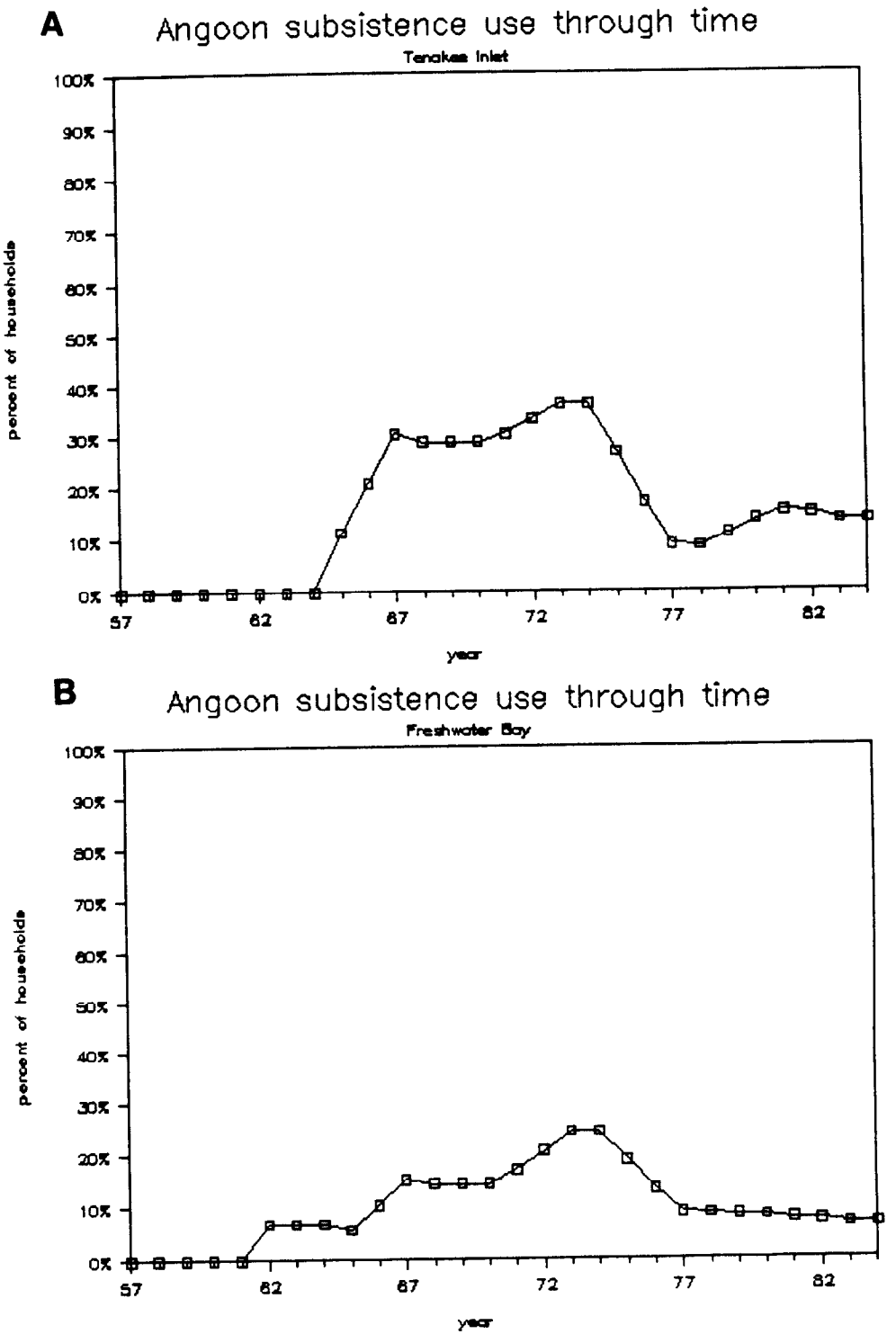


Figure 54. Subsistence Use: Tenakee Inlet, Freshwater Bay (running 3-yr. avg.)

COMPARISON WITH OTHER SURVEY DATA

Table 8 compares results of the 1985 Division of Subsistence survey with qone completed in 1976 (Alaska Consultants, 1976), showing the percent households in Angoon using various resources.

Table 8. Percent of Households Using Selected Resources n = 50 for 1976; n = 38 for 1984

	1976	1984
Salmon	76	71
Halibut	74	84
Shellfish	72	73
Deer	84	89
Seaweed	70	50
Blueberries	68	73
Sea mammals	46	31

Source: Alaska Consultants, 1976.

The differences between the two years' data for resource use suggest that there has been little change in use of most of these species over recent years. Seaweed use appears to have decreased in the Angoon area by 20 percent of the households, for unknown reasons, and the use of seal shows a decrease. However, because these data are valid only for the year they were collected, it is not possible to determine whether a trend exists.

Differences between the conditions for the two studies include changes in population and housing in Angoon. The 1976 population of Angoon was reported to be 430 people living in 127 units, for a household size of 3.38. In 1984 there were 630 people living in 145 units, for a household size of 4.34. The increase in population included more non-native teachers with larger families. Reasons for the household size increase is unclear. However, since 1976 there has been an increase in housing units,

and a trend toward former Angoon residents returning to Angoon to live. Additionally, several multi-family households have recently moved into seperate houses made available by two housing projects.

Chapter 4

CASE STUDIES OF CHANGING SUBSISTENCE ACTIVITIES

The following four case studies were developed from interviews with key informants, combined with information obtained from the random household survey. These case studies describe changes in resource use by residents of Angoon that have taken place over the last fifty or more years, in areas that have been subject to varying degrees of timber management activity. The case study areas are Hood Bay, Whitewater Bay, Cube Cove, and White Rock. For each of the four subject areas, the case studies will address the characteristics of the area, the history of use by Angoon residents, natural and human induced environmental changes, changes in fish and game regulations, and any relevant socioeconomic changes that may have taken place over the past fifty or so years.

The purpose of the case studies is to enable a close examination of the relationships between timber management and subsistence uses in the Angoon resource use area. This case study methodology is being followed in all study sites in the series of "Timber Management and Fish and Wildlife Utilization..." research projects. As was discussed in Chapter 1, Angoon was selected as an example of an area that has experienced little timber harvest activity relative to other study sites.

HOOD BAY (TSA GWA)

History of Use

Hood Bay is the first bay southward of the Angoon/Killisnoo area, and it has been identified elsewhere in this report as an important resource use area for the residents of Angoon. It is located approximately 10 miles from Angoon and is accessed by water, with the use of skiffs and small fishing boats.

The Tlingit residents of Angoon state they that have used this area since before the Flood, and point to land marks such as "Tsa qwa canuk", which translates to "Hood Bay old woman", which is the name of a mountain top at the head of the south arm of Hood Bay. The Tlingit say that they took refuge on this mountain at the time of The Flood, and that this is evidence of their long use of the area.

The Daklaweidee (Killerwhale clan) are the last recognized Tlingit owners of the bay. They are the original owners of the south arm, named Tsa qwa, and they received ownership of the north arm because of the accidental death of a young boy of the Killerwhale clan by a bear while he was attempting to get salmon from the salmon stream named "Xa yah". This occurred before western contact. The Killerwhale clan had at least eight smokehouses and maintained extensive gardens in the Hood Bay area up until the 1940s, with the last garden still being used in the 1960s.

Use of the area has changed dramatically over time since the early 19th century when the Killerwhale people made their annual spring migration from their winter villages to summer fish camps at Hood Bay. One of the key respondents in the 1985 study had used the area as early as 1904 when he was fifteen years old. He remembers traveling there by canoe with his family to visit the people at "Tsa gwa" and remembered being invited to use the subsistence fish trap and one of the smoke houses. He said that there used to be plenty of fish taken there by the owners of the smokehouses.

A dozen years later (around 1916) this respondent purchased a power boat for fishing. After that time, he still frequented the Hood Bay area in order to obtain deer, salmon, birds and seal, but because of improved transportation possibilities and his involvement in commercial fisheries, Hood Bay was no longer the area he used most often for hunting and fishing.

The Hood Bay area was used by many Angoon residents for obtaining a winter supply of subsistence salmon, and for obtaining vegetables from the gardens that were

planted along the south-facing shores of the bay. Both deer and brown bear were hunted in this area. One Angoon key respondent reported having sold bear skins from Hood Bay to people in Kake. Bear hunting is said to have ceased when it was thought that it was illegal. None of the key respondents reported any personal involvement in trapping in the Hood Bay area, but stated there were others who did have their trap lines in Hood Bay.

Tlingit families from numerous villages and camps in the west Admiralty Island area moved to Killisnoo/Angoon in the late 1800s to take advantage of employment opportunities and because of school attendance requirements. A school was built in Killisnoo in 1880 and one was built in Angoon in 1890. The oldest survey respondent went to school in Killisnoo in 1911-1913.

In 1928 Killisnoo was destroyed by fire, and the Tlingit community that was located there moved to Angoon. During these years the Angoon Tlingits continued to use the Hood Bay area for hunting, fishing and gathering.

A cannery was built in Hood Bay in the early 1920s, providing employment opportunities for local residents, but it is unknown exactly how many of the local Tlingits were initially employed there. The Angoon Community Association purchased the Hood Bay cannery in 1947, and in the purchase obtained 14 seine boats. Participation in the commercial seine fishery allowed Angoon fishermen the capability of traveling long distances in relative safety, and the opportunity to harvest various food resources while traveling to and from canneries. The Hood Bay cannery operated until it was destroyed by fire in 1961. In the following years the Angoon commercial seine fleet deteriorated and the opportunity to continue seining diminished. In the years from 1961 to 1980, the fleet composition converted from seiners to hand trollers due to economic factors and to limited entry in the fisheries. The hand troll fleet consisted of boats from 12 feet to 36 feet, and once again has had an impact on the use

of resources by Angoon residents. Using these boats, hunters now can travel to hunting areas quickly enough to avoid overnight trips.

Contemporary Uses of Hood Bay

The residents of Angoon continue to hunt nearly all the mountain tops around Hood Bay for deer in the early fall through September. The area continues to provide excellent hunting opportunities due to its proximity to Angoon, the safe boats anchorages, and availability of trails that lead to the alpine. The woods and muskegs are hunted later in the fall through December, when the deer move down from the alpine. Many hunters hunt along the beaches throughout the deer season. Nine of the eleven key informants interviewed in 1985 had used most of the Hood Bay area at one time or another. The oldest informant has hunted the area since 1904, but has since stopped because of old age.

Seal are taken from within the bay area, especially around the reefs and rocks upon which the seal rest. Seal also are taken near the mouths of the salmon streams. Most of the seal harvested in the area are taken incidentally in the course of deer hunting trips.

Salmon for home use are still taken from Hood Bay, both under the terms of subsistence fishing permits and as fish that are taken from a commercial catch. The area is particularly noted for its summer runs of pink salmon and for summer and fall chum salmon.

Habitat Change at Hood Bay:

The first commercial logging activities in the region probably started with the harvest of timber for wood to build and operate canneries in the late 1870s. Another commercial use of timber came with the need of pilings and floats for commercial fish traps owned by the canneries. Many trees were cut from the beach fringe of Hood Bay, individually or in small clearcuts, from 1913 until 1947 (Fig. 45).

In 1947 a 154 acre area in the South Arm of Hood Bay was clearcut by a private logging company. Between 1948 and 1951 an additional 524 acres were harvested at the extreme end of South Hood Bay. Survey respondents say that Tlingits from Angoon were not involved in this timber harvest in Hood Bay, although some local residents were involved in logging elsewhere. The Hood Bay clearcut caused a lot of distress at the time among the Angoon Tlingit, for they saw the timber harvest area as belonging to an Angoon clan, and questioned the right of the U. S. Forest Service to sell the timber to the logging company. In the late 1940s a suit was filed on behalf of the Angoon Tlingit against the U.S. Forest Service, challenging the legality of this particular timber sale. This suit was resolved in 1955 as part of the Tee Hit Ton case.

Patterns of Use of Hood Bay for Deer Hunting:

Survey data showing changes in use of Hood Bay from 1955 to 1984 are represented on Figure 55A. The graph shows use fluctuating between 40 percent and 60 percent of Angoon households until recently, when nearly 80 percent of Angoon households reported using the area. The influence of the Hood Bay cannery closure and subsequent changes in the fishing fleet composition appear to be reflected in the graph as an abrupt decrease in use after the early 1960s followed by an increase in use that was particularly evident in the late 1970s. Influences on use prior to 1960 are less clearly represented, probably due in part to the relatively few survey respondents who were active in those years. The changing use of particular habitat types in the Hood Bay area are described below, and are graphically displayed on Figure 56A.

BEACH HUNTING

The data obtained from the 1985 random survey indicate that only 20 percent of those actively hunting in the 1950s hunted the beaches of Hood Bay. This method of hunting increased to 44 percent in the 1960s, and to 75 percent in the 1970s and 1980s.

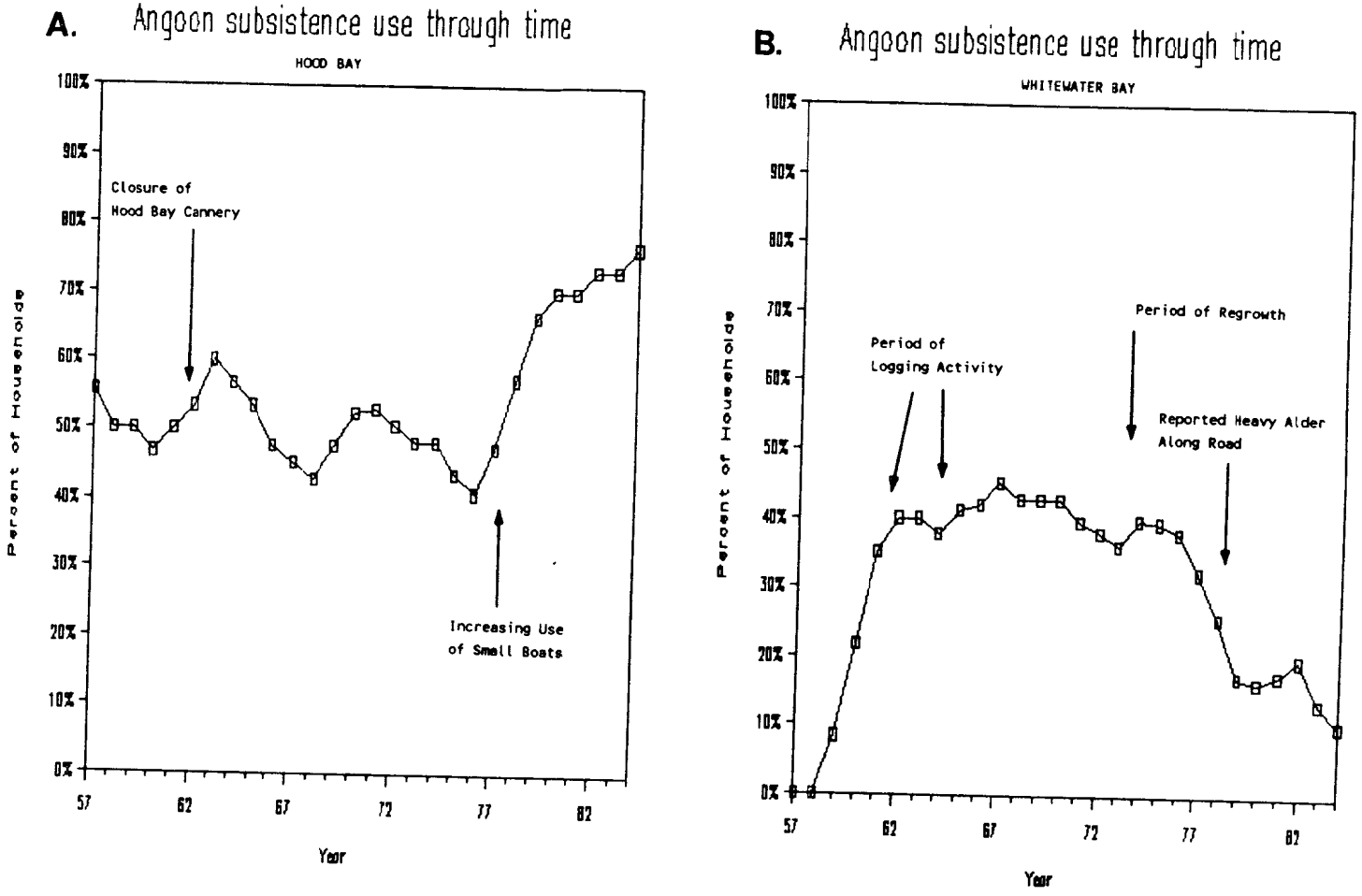


Figure 55. Subsistence Use of Case Study Areas: Whitewater Bay, Hood Bay (running 3-yr. avg.)

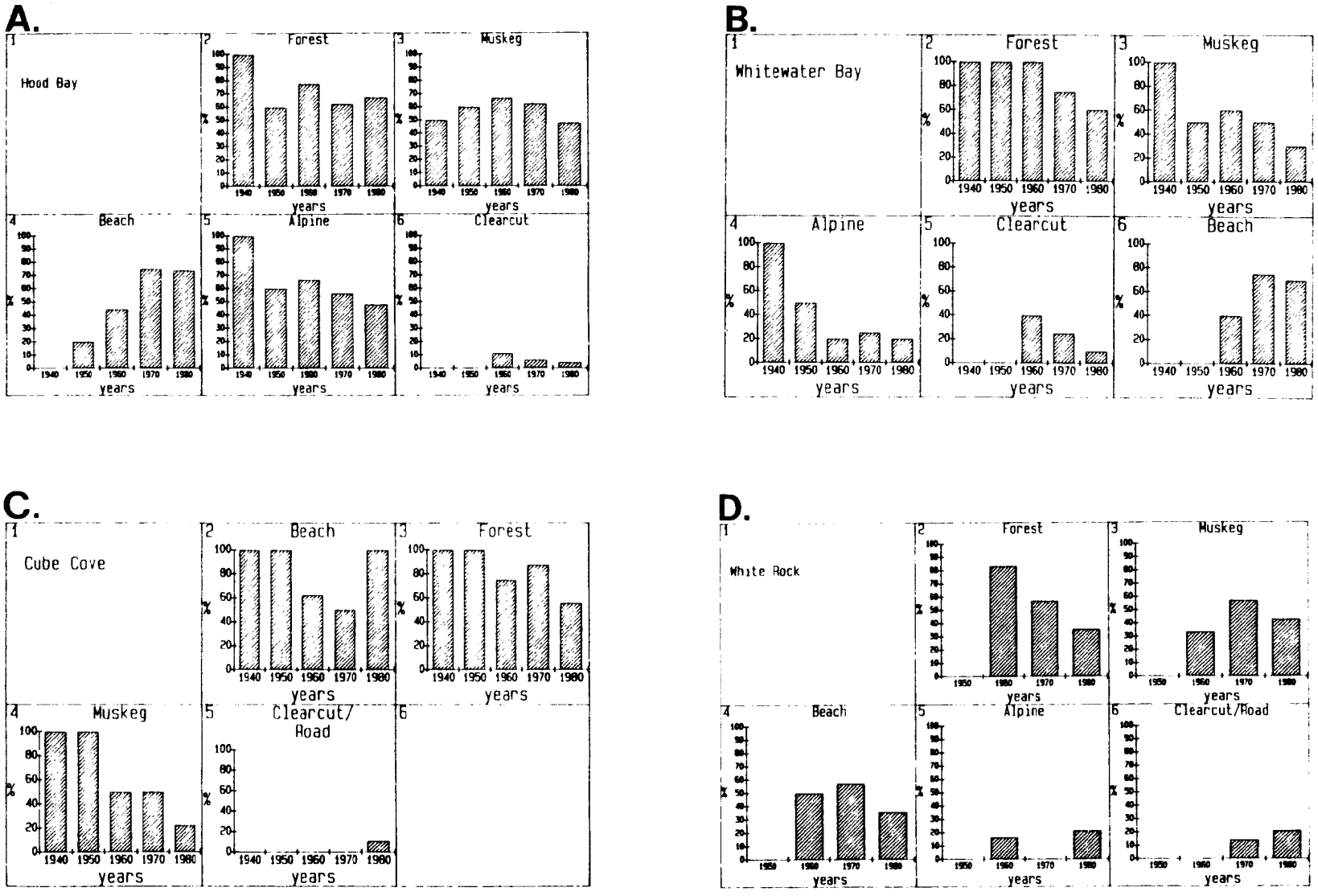


Figure 56. Percent of Hunters Using Case Study Habitat Types, Habitat Types, by Decade

FOREST HUNTING

The forest areas of Hood Bay have been consistently used by the hunters from the 1950s to the 1980s (Fig. 55): 60 percent of the active households hunting the woods in the 1950s and 78 percent in the 1960s. There was a slight decrease in the 1970s at 63 percent, and in the first five years of 1980s it rose again.

MUSKEG HUNTING

There are numerous muskeg areas located in Hood Bay, everywhere from near sea level to a few hundred feet below the alpine country. Muskegs are known to provide excellent deer hunting during certain times of the year. As was true with forested areas, Angoon hunters from Angoon have used the muskegs consistently over time with 60 percent stating that they hunted the muskegs in the 1950s, 67 percent in the 1960s, and 62 percent in the 1970s. The early 1980s showed a decrease, with only 48 percent of the hunters hunting the muskeg in Hood Bay.

ALPINE HUNTING

The alpine country in the Hood Bay area is extensive. Because of several well-known trails, it is more accessible than other alpine areas within the Angoon hunting territory. All the hunters who hunted Hood Bay in the 1940s said they used the alpine areas. This use decreased to 60 percent in the 1950s and increased again to 67 percent in the 1960s. The 1970s showed a decrease in the percentage of hunters using the alpine, to 56 percent, followed by a further decline to 48 percent in the early 1980s.

CLEARCUT HUNTING

There are no roads in Hood Bay. The hunting of the old clearcuts in various areas does occur, however, by a very few hunters. As reported above, a small area of timber was clearcut in 1947 in the south arm of Hood Bay. None of the respondents

reported hunting the clearcuts in the 1950s. Eleven percent of the survey respondents said they had hunted this clearcut in the 1960s but this number declined to six percent in the 1970s and only four percent in the first five years of the 1980s.

Discussion

Important factors influencing use of Hood Bay by Angoon residents include:

* Hood Bay as a traditional use area
* Hood Bay as a place of seasonal employment
* Changes in access to Hood Bay
* Proximity to Angoon
* Habitat changes at Hood Bay

The residents of Angoon have strong cultural ties to the Hood Bay area. They have used the area consistently over the years and continue to use it today as a location for a variety of food harvesting activities. Probably the biggest single factor affecting recent use of the Hood Bay area was the purchase and operation of the Hood Bay cannery in 1947, the ownership of commercial seine boats, and employment of many Angoon residents in the operation of the cannery. The loss of the cannery in 1961 ultimately resulted in a shift in employment location for many Angoon residents and eventually in a change in the composition of the fishing fleet to trollers. With the development of the troll fleet, Hood Bay began to be used more for day trips to harvest areas, and with the change in transportation technology, beach hunting methods were increasingly used for deer hunting.

Another factor affecting use of portions of the bay was the clearcut timber harvest that occurred in 1947. In a 1982 public meeting held by the U.S. Forest Service to discuss a five-year timber harvest plan, one Angoon resident testified that nothing is found in the Hood Bay clearcut areas, for the trees in that area are so close together that nothing can move (testimony of George Jim Sr.). One key respondent, on a field

visit to the Hood Bay area, pointed out the areas that had been clearcut, and said "I avoid areas like this, and I have learned early on that deer are not found in areas like this, for there is nothing here for them".

Displacement also appears to be a factor influencing use of another part of Hood Bay. One mountain that many people have used in the past is now recognized as the "teacher's mountain". Two key respondents no longer hunt the mountain because of the number of Angoon school teachers who hunt there.

Adverse weather is not considered to be a primary factor affecting use of Hood Bay for hunting and fishing. Because of its proximity to Angoon and its relatively protected harbors, weather seldom impedes use of the Bay.

WHITEWATER BAY

History of Use

Whitewater Bay is located three bays south of Angoon, approximately 20 miles away. The Leencidee (Dog Salmon clan), were the original owners of this bay. They had a winter village, Neltushkin, located on the outer north shore of the bay, where they built their homes, smokehouses, and gardens. There were also smokehouses located near the opening of the salt lake (de Laguna 1960). The Tlingit people claim use and occupancy of the area since the time of The Flood, and point to Table Mountain as a place where they took refuge from the rising waters.

The remains of the village houses, smokehouses, gardens, and storage pits are still visible today. According to the oldest respondent in the 1985 survey, some of the older residents of Angoon spent their childhood at Whitewater Bay. One key respondent stated that he had fished the Salt Lagoon for obtaining salmon. He was married to a woman from the Leencidee clan and he fished in the area with his in-laws, fishing the

salt lake for coho in the early 1920s with a beach seine. This was verified by a person from the Dog Salmon clan who fished there for the first time as a boy in the 1920s.

Before this time many of the people in Neltushkin used traditional fishing gear, consisting of gaff hooks and subsistence fish traps. de Laguna (1960) reports the use of impaling stakes for the harvesting of salmon in the salt lake area.

The Dog Salmon people of Neltuskin moved to the Killisnoo/Angoon area in the early 1900s, primarily for employment opportunities and to meet school attendance requirements. When they moved to Angoon, the Deisheetan people were so pleased that they moved houses apart at the center of town and had the Dog Salmon house built in the middle of the village. This is how the Leeneidee people came to be locally known as Aanxakeetan meaning "people from the center of the village house".

In summary, Whitewater Bay was a traditional place of residency for some of the Angoon Tlingit. They once lived all year in the area and had homes, garden sites, storage pits, deer, bear, seal hunting areas, traplines, salmon traps, halibut fishing grounds and other gathering areas. The original means of access to the bay was by canoe, followed by power boat and, more recently, by outboard motor vessels.

Habitat Change at Whitewater Bay

The use of timber in Whitewater Bay began with domestic uses by the Leeneidee people for houses, smokehouses, cooking utensils, fishing gear, and cooking and heating fuel. The first commercial timber harvest activities were probably for logs for commercial fish traps, followed by small scale commercial hand logging and by select logging for spruce trees in the 1920s. All of these logging activities were on a relatively small scale until 1911 when 80 acres were harvested at once. From 1911 to 1960 slightly over 323 acres of timber were harvested commercially. Then in the 1960s a new type of logging started in this area. A road system was put in both the south and north arm of

the bay by a logging company and more than 1,870 acres were clearcut from 1962 to 1964 (Fig. 45).

Patterns of Use of Whitewater Bay for Deer Hunting:

The 1985 survey indicated that use of Whitewater Bay was very low by surveyed households throughout the 1950s, but increased in the late 1950s and early 1960s, with 40 percent of the active Angoon hunters using the area by 1963. Use of this area remained nearly constant until the mid 1970s, when it began to decrease, and by the 1980s as few as 10 percent of Angoon households used the bay (Fig. 55B)

BEACH HUNTING

Although Angoon residents have traditionally harvested deer along beaches, the Whitewater Bay beaches were not reported used by early hunters in the 1940s-1950s (Fig. 55). The use of the beach in this area appears to have started in the 1960s, just as use of the bay increased dramatically, with about 40 percent of the hunters using the beach. Beach hunting increased to 75 percent of all hunters in the 1970s, and it remained high in the 1980s (Fig. 56B).

FOREST HUNTING

Survey results indicate that nearly all household hunters using the bay from the 1940s on hunted in forested areas. From then on the percentage of forest hunters decreased to 75 percent of the active hunters in the 1970s and to a low of 60 percent in the 1980s.

MUSKEG HUNTING

There is only a limited amount of muskeg in the Whitewater Bay area, but all the hunters who used the area in the 1940s said they used the muskegs for deer hunting.

Half of those using Whitewater Bay in the 1950s used muskegs. This increased to 60 percent in the 1960s and then decreased to 50 percent in the 1970s and 30 percent in the 1980s.

ALPINE HUNTING

The amount of alpine habitat found in this area is very limited and hard to reach. The results of the survey indicate that the alpine areas in the Whitewater Bay area have been used by 20 to 30 percent of the active Angoon hunters since the 1960s. Prior to then, nearly all hunters using the area said they hunted the alpine areas.

CLEARCUT AND ROAD HUNTING

Prior to the construction of the logging roads in Whitewater Bay, in the early 1960s, there was no hunting in clearcuts. No surveyed households reported using clearcuts during the 1940s-1950s (Fig. 56B). Angoon hunters reported using the roads and clearcuts of Whitewater Bay after the loggers left the bay in 1965. One key informant stated that the use of the roads and clearcut came after one hunting party ventured into the area and saw a lot of deer from the road. The news travelled fast and soon many hunters began to use Whitewater Bay logging roads. A second key respondent said, "Everyone from Angoon could be seen at Whitewater Bay after a couple of hunters saw 18 deer and got three from the road." Use data for Whitewater Bay (Fig. 55A) shows a peak in use of the area in 1967, shortly after the logging in the area stopped. A third key respondent stated "It was good to hunt there after it was let alone for awhile. After a storm, the road and clearcut would be good for some deer. Otherwise deer in the area would be spooked."

Use of roads and clearcuts was steady in the late 1960s and 1970s, with 40 to 50 percent of the hunters who used the area reporting use of the road system (Fig. 56B). Use of the roads and clearcuts decreased to 10 to 20 percent in the 1980s. When asked

for a reason why he discontinued using the roads and clearcut areas, one key respondent laughed and said: "You can't walk on the road after the alders take over. Its so thick that no one or nothing can find its way through that wall of trees."

Discussion

Subsistence use patterns at Whitewater Bay suggest several factors that influence use of the area, including:

* Cultural ties to the Whitewater Bay area
* Access to the area
* Displacement
* Weather
* Habitat Change

Some people from Angoon have historic cultural ties to the Whitewater Bay area and this is an important factor in the use of the area. As one key informant put it, "Many of the older adults grew up in this area". The Dog Salmon clan did have a winter village and summer fish camps and gardens located in this Bay so that they knew the area. The use was probably very high during this time, prior to the turn of the century. The use dropped when they moved to the Angoon/Killisnoo area for jobs and schooling.

There were three or four slight decreases in use that are revealed by the random sample information. These occurred in 1967 and 1968, which is when logging was taking place, and again in 1975, which is when the road is said to have become overgrown with alder. A major decline in use began in 1976 and lasted through 1980 to its low level of under 10 percent (Fig. 55B). The short term increase in use in the early 1980s was not explained by survey respondents. The relative abundance of deer plays a major role in the use of Whitewater Bay, because reports of good hunting are an

important inducement for hunters to travel the 20 mile distance to the bay. Key respondents stated that in the 1970s, reports began to circulate that Whitewater Bay was no longer as productive for deer hunting, so hunting effort shifted to closer areas.

Displacement may have been a factor affecting use of this area by some hunters, inasmuch as some hunters reported having avoided the area during the period of active logging, in the mid 1960s. Key respondents report a general feeling that logging activities would drive away the deer. Only one key respondent demonstrated an unequivocal aversion to logging *per se*, stating: "I will not hunt an area that is clearcut, whether there is deer there or not."

Finally, because the Whitewater Bay area is about 20 miles from Angoon, or longer if one follows the beach into Hood Bay and Chaik before reaching Whitewater Bay, travel cost (especially the cost of gasoline) is a factor that has influenced hunter selection of the Bay in recent years. When hunting is good in areas close to Angoon, the cost of fuel is a strong incentive to minimize travel distances. There is also a safety factor involved, in that the long distance to Whitewater Bay from Angoon involves travel across open water and several reefs, which make small boat travel hazardous. Ultimately, the distance of Whitewater Bay from Angoon probably serves to make the other factors listed above more important considerations for hunting site selection than they would be otherwise.

CUBE COVE

Historic and Contemporary Use of Cube Cove

Cube Cove is located approximately 30 miles north of Angoon, along the west coast of Admiralty Island. The area is part of the traditional use area of the Angoon Tlingit, and is said to have been owned by the Wooshkeetan (Goldschmidt and Haas 1946). The cove is located just south of Hawk Inlet, which has been identified as the northern boundary of the Angoon Raven territory (Alaska Consultants 1976). Angoon

residents recall that a smokehouse and at least one cabin were once located in Cube Cove area.

The use of the shore of Admiralty north of Angoon was probably greatly influenced by employment in both the Funter Bay and Hawk Inlet salmon canneries, and the mine at Funter Bay, all of which lie to the north of Cube Cove. The Funter Bay Cannery was open in 1902 and employed several residents of Angoon until its closure in the 1950s. The cannery at Hawk Inlet operated from 1911 until 1974. The mine, which operated from 1918 to 1930, also employed some Angoon residents off and on for a few years. One key respondent said that he and his buddy worked at Funter Bay mine in the 1920s.

Travel to the canneries and the mine involved passing by Cube Cove, so in the years from 1900 to 1960, employment opportunities probably had a major influence on the use of Cube Cove as a hunting, fishing and gathering area. With the burning of the Hood Bay cannery in 1961, much employment shifted to the Hawk Inlet cannery, and travel to that area increased dramatically. One key respondent said, "We would nearly always get deer after the fall fishing season on returning to Angoon from Hawk Inlet. There are plenty of places to find deer on the beach on the way home."

In 1985 Cube Cove was identified by Angoon key respondents as an area that was still used for hunting, commercial fishing, seal hunting, and intertidal harvesting of gumboots, crab, clams and seaweed. Although the Hawk Inlet cannery burned in 1975, the location of Cube Cove along the water route to Hawk Inlet and Juneau still makes Cube Cove one of the few important stopping points for Angoon residents while travelling in small skiffs and fishing boats.

Habitat Change at Cube Cove

Earliest logging records for the North Admiralty Island area show that hand logging for select timber started in 1903 and was occasional in 1913-16. Logs were

probably used for commercial fish traps, which were numerous along the shoreline in the area well into the 1950s. Regionally, the fish trap industry accounted for over ninety-seven million board feet of timber between 1909 and World War II (Powers 1978). Canneries made additional use of timber in the early 1900s, for dock pilings, building construction and packing crates, and it is probable that Cube Cove timber was also used for these purposes (Fig. 45).

The most recent commercial timber activity in Cube Cove area is the result of the Alaska Native Claims Settlement Act (ANCSA). Under the terms of the Alaska Native Claims Settlement Act, the Cube Cove area was selected in 1979 as part of the land entitlement of the Sitka Native Corporation, Shee-Atika, Inc. Development of the timber resources of the Cube Cove uplands began in 1983. A law suit was filed by the City of Angoon, the Sierra Club, and others, that sought an injunction to stop the logging activity, based on information gathered from Angoon residents that logging in the area would have a detrimental effect on their subsistence activities. The legal challenges were unsuccessful, and since the time of this study, Shee-Atika lands have been extensively clearcut.

Patterns of Use of Cube Cove for Deer Hunting

The Cube Cove area has been used historically by Angoon hunters for fall and winter deer hunting. Historical use areas included beach, forest and muskeg habitats. The alpine areas are not easily accessed from the Cove. Use of the area through time is illustrated on Figure 57A, which indicates an increase in use of the Cube Cove area beginning in 1962 about 20 percent to about 40 percent of active hunters. This is about the time many Angoon residents began to work at the Hawk Inlet cannery and the Angoon seine fleet started fishing for the Hawk Inlet Cannery.

Use of the area peaked at about 40 percent in the years 1969-1972, which were years when there was a heavy snow fall. Deep snow created ideal conditions for beach

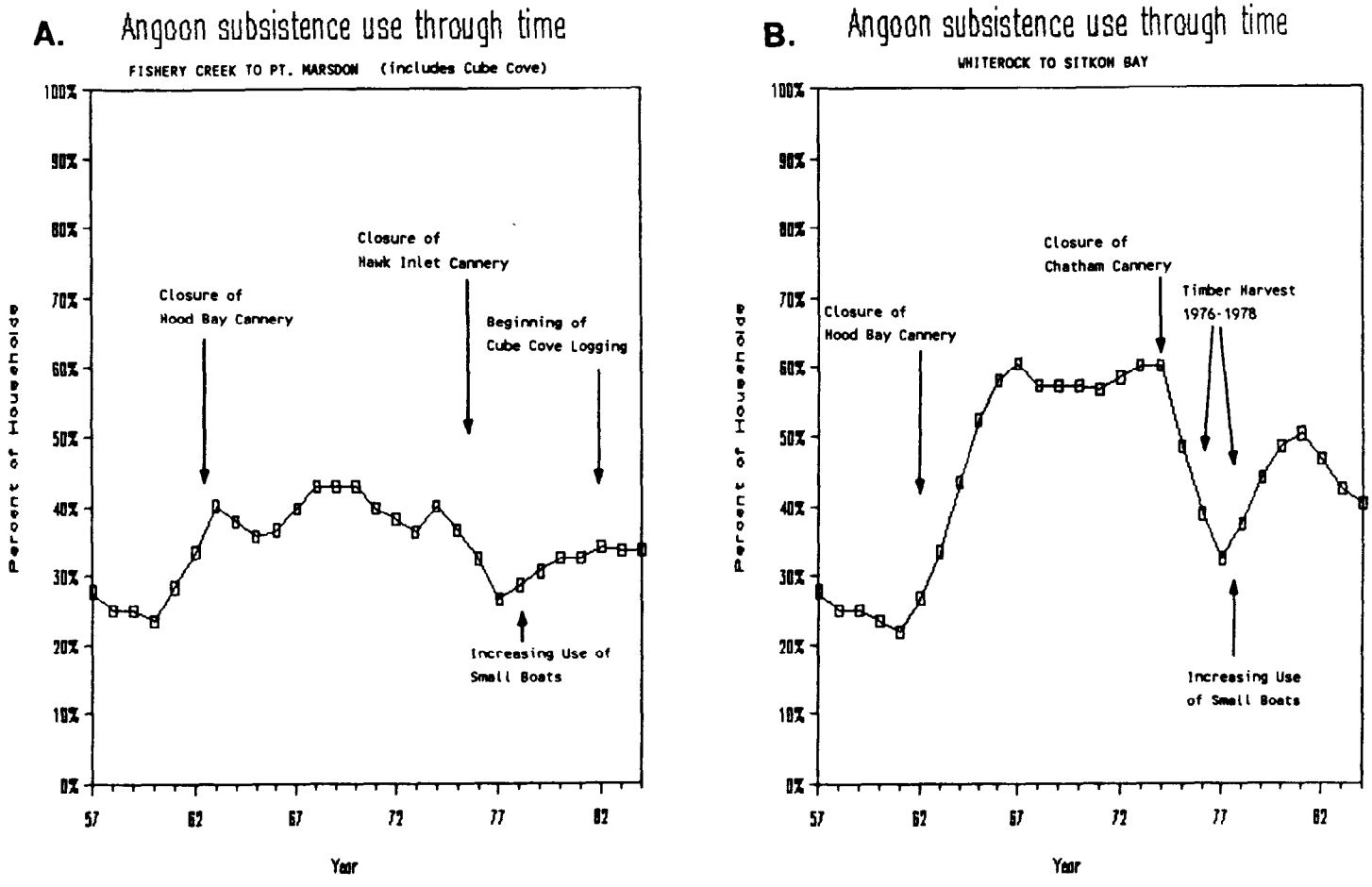


Figure 57. Subsistence Use of Case Study Areas: Fishery Creek to Point Marsdon (including Cube Cove), Whiterock to Sitkoh Bay (running 3-yr. avg.)

hunting. A decline in use of the area to about 20 percent of active hunters occurred between 1974-76, which is when the Hawk Inlet cannery closed. From 1977 to the present, the use of Cube Cove and the northern shore of Admiralty started to increase slightly again, to about 30 percent of the active hunters (Fig. 57A). It was pointed out by a key respondent that this increase of over all use of this area was probably due to the increase in number of smaller vessels in the Angoon hand troll fleet. As was discussed previously, the Angoon fleet converted during these years from purse-seiners to smaller and faster hand-troll vessels, largely in response to changes in fishing opportunities. The faster boats used in the hand troll fishery also were used in the harvesting of other resources and in the 1970s many hunters were able to make quick day hunting trips from Angoon to areas as far as Cube Cove. The hunters learned where deer were most likely to be found while commercial fishing and they used this knowledge when hunting on their own. One key informant said that he still makes one or two hunting trips along the north shore on his seiner to obtain deer for the winter. He takes his crew along with other members of his family.

BEACH HUNTING

All the hunters who hunted the Cube Cove area in the 1940s and 1950s hunted the beach (Fig. 56C). In the 1960s the percentage of active hunters using the area hunting the beach was 63 percent. This declined to 50 percent using the beach for deer hunting in 1970s and it increased to 100 percent of the hunters stating that they used the beach in 1980s (Fig. 56C).

FOREST HUNTING

All survey respondents who used Cube Cove in the 1940s and 1950s hunted the forest area. Use of the forest declined to 75 percent of the active hunters in the 1960s.

Use of forests increased to 88 percent in the 1970s but decreased back down to 56 percent in the first five years of the 1980s.

MUSKEG HUNTING

All the respondents of the random survey who hunted the Cube Cove area in the 1940s-1950s hunted the muskegs accessible from the Cove. Only half (50 percent) of the active hunters hunting the area claimed to have hunted the muskegs in the 1960s and 1970s. In the first five years of 1980 only 22 percent of the hunters reported hunting the muskegs at Cube Cove.

CLEARCUT AND ROAD HUNTING

Logging roads were just in the process of being built at the time the survey was being conducted. There was therefore only a limited history of use of roads, and no use of clearcuts. Eleven percent of the hunters who hunted the Cube Cove area claimed to have hunted the road system in Cube Cove in the 1980s.

Discussion

The factors that affected the subsistence resource use patterns of the Angoon residents in the Cube Cove area primarily include:

* Employment opportunities
* Transportation and access to the area
* Weather (snowfall)

Survey data verify that the small boat traffic that passes by Cube Cove on the route to and from Hawk Inlet and Juneau has been a major determinant of use of the Cube Cove area by hunters and fishers. Accordingly, employment patterns at Hawk Inlet and Funter Bay are reflected in use data for Cube Cove.

Increases in beach hunting at Cube Cove follows a pattern that has been described for other case study areas, and is probably attributable to a change since the early 1960s in the composition of the Angoon fishing fleet. This increase was also associated with heavy snowfalls at Cube Cove increased beach hunting success rates during the late 1960s and early 1970s.

Recent use of the Cube Cove area is not represented by the results of the survey. Much logging and associated habitat disruption has taken place since 1985 when the survey was conducted, but information is needed to document how uses may have changed since the start of intensive logging operations.

WHITE ROCK

The White Rock area is located along the southeast shore of Chichagof Island, eight miles across Chatham Strait, west of Angoon. The area takes its name from a prominent white rock that can be seen from Angoon.

History of Use of White Rock

The Deisheetan clan of Angoon are the traditional owners of the White Rock area. There is a productive salmon stream located at White Rock which has pink, chum, coho salmon and trout in it. According to available literature and local sources, there was not a village at the site, but there were at least two fish camps. One key respondent reported three of the older residents of Angoon were born at their parent's fish camp at White Rock. The closest historical Tlingit settlement, a Deisheetan fort, was located at nearby Point Hays (personal communication, Lydia George) (Olson 1967). The same fort was also reported belonging to the Wooshkeetan. (de Laguna 1960).

Habitat Change at White Rock

The first documented commercial timber harvest in the White Rock area took place from 1976 to 1977 by an independent logging company. Activities included road construction and timber harvest which encompassed a total of 783 acres. The timber harvest sites in this area are shown on Figure 45.

Patterns of Use of White Rock for Deer Hunting

Use of the White Rock area by Angoon residents has changed over the past thirty years, having been affected by such factors as local employment, transportation options, and habitat changes. Despite the availability of salmon at White Rock, the area's primary use has been for deer hunting.

Residents of Angoon have traditionally used the area while traveling to and from the cannery in Chatham, and also while commercial fishing along the Chichagof Island shore line. The area is known for its relatively protected anchorages and beaches that are known to provide good deer hunting. Muskegs in the White Rock area are extensive and have provided good hunting late in the fall. A few hunters have ventured up into the alpine, which is located back from the beach.

The percentage of households using the White Rock area over time is depicted in Figure 57B, which shows use of the entire area from White Rock to Sitkoh Bay. While this Figure reports use of the area for all subsistence activities, deer hunting is the predominant activity. Use of the area increased following the burning of Hood Bay cannery in 1961 as cannery workers from Angoon shifted to the Chatham cannery at Sitkoh Bay. Use increased from about 20 percent to 60 percent of active hunters between 1960 and 1967. The use of White Rock and Sitkoh Bay Area remained high from the 1960s thru the mid 1970s, with an average of over 50 percent of the active households using the area. There was a definite decrease in the use of the area from 1974 to 1976, which coincided with the closing of the Chatham cannery in 1974. With

the Whitewater Bay area, an increase in the price of gasoline in the mid 1970s appeared to have a negative effect in the use of the White Rock area. Use of the area was at a low in the mid 1970s, but increased to over 50 percent in 1980. There is an unexplained trend of decreasing use of the area in 1981 thru 1984.

BEACH HUNTING

Beach hunting in the White Rock area has increased in recent years. In the 1960s, 50 percent of the Angoon hunters who used the area hunted the beaches. This number increased slightly to about 58 percent in the 1970s. In the 1980s, use of beaches declined to about 35 percent of the active hunters, consistent with a general decline in recent use of the area as a whole (Fig. 56D).

FOREST HUNTING

Over the past few decades there has been a general decline in forest hunting of the area, with 83 percent of the hunters who used the area hunting the forest for deer in the 1960s, 58 percent using the forests in the 1970s and 36 percent using the forests in the 1980s.

MUSKEG HUNTING

Approximately one third of the hunters who hunted the White Rock area used the muskegs in the 1960s. This percentage increased to about 58 percent in the 1970s, and dropped to about 43 percent in the 1980s.

CLEARCUT/ROAD HUNTING

Hunting the clearcut areas at White Rock increased from the 1970s to the 1980s, from 15 to 25 percent of the active Angoon hunters who used the area. Use of the area in general also increased after 1977. Logging took place from 1976-77. It is possible

that, hunter use of this area increased due to improved visibility and resulting in increased availability of deer in the newly clearcut areas, which typically provide abundant deer browse. Greater abundance of deer browse is predicted by biological studies on forest-habitat relationships (eg. Schoen et al 1981). Despite variations in use of clearcuts, use of these areas was low compared to other habitats, during the 1970s and 1980s.

Discussion:

Survey data and interviews suggest that the primary factor affecting deer hunting in the White Rock area has been changes in employment opportunities, with a secondary factor being the timber harvest activities of the late 1970s. Increases in the price of gasoline, which substantially raised travel costs in the late 1970s, also resulted in reduced use of this distant area.

Changing use of habitat types in the White Rock area strongly suggests the influence of changing transportation technology. The generally high use of the beaches for deer hunting is probably correlated with the increased ownership of small outboard motor skiffs, which have been previously mentioned as facilitating shoreline hunting on day trips away from Angoon. Logging activity at White Rock was also described as influencing use of the area. For example, one key informant commented that "My father showed me how to hunt this area, and when I returned to hunt it [after logging] and found a road and some people hunting from motorcycles, I decided never to hunt there again".

In reference to the use of clearcut areas generally, several of the surveyed Angoon hunters indicated that they would stop hunting an area during a period of active logging, but they would start hunting an area again when the loggers left and regrowth of deer browse first begins. This use of clearcuts appears to last only as long as visibility and travel are unimpeded by regrowth. But some hunters also said that

when they are beach hunting for deer they will follow the shore line, looking for deer, regardless of whatever upland activity has taken place in the past. Based on these comments, and survey data illustrated by Figures 55, 56, and 57, it appears that patterns of use of forest habitats may be more sensitive to habitat changes than are uses of the beach. This finding is consistent with the fact that logging in these areas has generally avoided beach fringe timber, while concentrating on harvest of upland areas.

Because the cannery closure in 1974 influenced use of the area, we cannot say to what extent logging activity led to a decrease in use in 1976-1978, but the subsequent increase in use of the overall area in the late 1970s and early 1980s does appear to be due in part to increased use of the newly clearcut portion. Relatively heavy use of beaches and uplands other than clearcuts also suggests that the increased use of skiffs for access to White Rock also may have influenced use of the area. The decrease in use of the area beginning in 1981 was not explained by respondents.

Chapter 5

DISCUSSION AND CONCLUSIONS

Angoon is one of the most traditional Tlingit Indian villages in Southeast Alaska. Its population is small, averaging about 450 residents over the past 20 years, and over 80 percent of the residents of Angoon are Tlingit. While economic and cultural changes have affected Angoon, and will continue to do so, the community as a whole places a high value on Native cultural heritage and tradition, including subsistence hunting, fishing and gathering, and sharing harvest products.

This chapter summarizes information on subsistence activities of Angoon households. The information shows that the use of locally available wild foods makes important contributions to the local economy, providing a significant and reliable source of food to nearly all residents.

In addition, this chapter discusses changes in the hunting, fishing and gathering patterns of Angoon residents over the past forty years and some of the major factors influencing these changes. Changes have principally involved shifts in subsistence use areas and in the intensity of use of these areas. The study was not designed to identify any changes in quantities of foods harvested and exchanged over time.

Causal factors responsible for change in subsistence activities through time includes changes in habitat transportation technology, travel costs and traditions. The choices Angoon residents have made about preferred hunting, fishing, and gathering areas frequently depended on the modes of travel to harvest areas and the chance of harvest success. In addition, employment opportunities afforded by salmon canneries and the quality of the habitat that could be reached from these canneries greatly influenced harvest activities.

Angoon was selected for study, in part, due to its relative isolation from the commercial timber harvest effects that are being experienced by many other

communities in the region. However, researchers discovered that many residents, particularly long-time resident hunters, are well aware of certain historic logging-related changes that have affected portions of their harvest areas. In particular, researchers learned that many people had memories of their history of use of areas on and near Admiralty Island that were logged in the 1960s and early 1970s. This has provided opportunities to evaluate changes in hunting patterns in the context of mid to long-term habitat change.

ANGOON'S ECONOMIC BASE

The economy of Angoon clearly incorporates subsistence activities as a major component, and also a cash component which, while limited in scope, has provided some short term stability with some growth opportunities. Commercial fishing remains an important component of the Angoon economy, and has shifted from seining during the 1920s to 1950s to trolling in the 1970s-1980s. Federal, state, and local government jobs, all relatively recent developments, were major contributors to the Angoon economy during the study period.

The economy of Angoon in many ways fits the description of the "mixed economy" that is often used in reference to the Alaskan communities that integrate both the cash and subsistence economic sectors. In Angoon, cash incomes are low ($11,605 mean annual income in 1980, and nearly half of all households earned less than $5,000 in 1986) and most households are heavily dependent on government employment and transfer payments. Cash income is used by many households to Purchase equipment needed in subsistence hunting and fishing. Household participation in the harvest and use of subsistence resources is correspondingly high, with 90 percent of all households using deer, 87 percent using shellfish, 84 percent using marine fish, and 68 percent using salmon. The annual Angoon subsistence harvest of 215 pounds per capita is

comparable to many other rural communities in the region that depend on subsistence food production, such as Hoonah, Kake, Tenakee and Klawock (Table 7).

Table 7. Per Capita Harvest of Principal Food Categories, in Pounds, in Five Southeast Alaska Communities.

Resource Category	Angoon	Kake	Klawock	Hoonah	Tenakee
Salmon	73.3	68.5	62.7	38.3	71.0
Shellfish	12.9	52.0	9.7	28.8	61.0
Land Mammals	58.2	27.6	33.0	46.5	65.0
Marine Mammals	16.5	26.1	13.5	17.3	4.0
Other Fish	46.0	40.0	52.0	37.2	42.0
Plants	7.7	6.4	10.2	7.5	6.5
Birds/Eggs	0.8	1.0	.7	.5	.0
TOTAL	215.4	221.6	201.48	176.1	250.0

Sources: Kake: ADF&G, Division of Subsistence, unpublished data; Klawock: Ellanna and Sherrod 1987; Hoonah: ADF&G, Division of Subsistence, unpublished data; Tenakee: Leghorn and Kookesh 1987.

HUNTING AND FISHING AREAS

The traditional territory of the Angoon Tlingit is an area that encompasses historic village sites, seasonal camps, resource harvest areas, and other culturally important places, with use and occupancy dating to long before Euro-American contact. The fact that traditional territory boundaries have changed little over time is an indication of the significance of the "territory" concept, and continuity in the uses of subsistence resources.

Within Angoon's overall territory, certain places are more or less intensively used than others, and this intensity of use has changed over time. Charts that graph this

change in use intensity were presented in Chapters 3 and 4 in discussions of the Angoon harvest area. However, because of the reliance on recall, this historic information is necessarily general in comparison to information on recent subsistence activities. For this reason, it is not possible to associate all historic changes in use with specific outside influences. Only relatively dramatic influences are well illustrated, such as the closure of a cannery or shifts in land status.

While the overall extent of the Angoon use area has remained more or less intact through time, the patterns of resource uses within this area have been much more dynamic. In terms of the relative importance of portions of the use area, this study has shown that employment, transportation mode, habitat change, and weather are all important considerations.

There has also been change in the frequency with which portions of the overall area were visited, again largely dependent on employment, habitat, transportation and weather variables. Also, it was found that the means of travel around the overall use area, and in the time spent on harvest trips has been variable over time. But this dynamism in land use patterns is characteristic of subsistence harvesting systems in general, which must be flexible in accommodating environmental or socioeconomic events in order to endure. The endurance of Angoon subsistence traditions is due in large part to a land base that provides physiographic and biological diversity among the areas used for hunting, fishing and gathering, allowing harvesters to choose from among these areas as circumstances dictate.

HARVEST OF DEER

Harvest information for the past five years (Chapter 3) documents the importance of deer harvesting to Angoon residents. Deer hunting contributed an estimated 490 deer, or over 39,000 pounds of meat to the community in 1986 (71 lbs. per

person). Using the average cost of domesticated meat at the Angoon store ($3.00 per pound), the approximate replacement value of the 1986 deer harvest was about $117,600.

As shown in Chapter 3, household needs are met in many cases by sharing deer among households. The contribution of the households harvesting large numbers of deer is clearly apparent, since it is only with these high harvesters that the average household consumption level approaches what is described by respondents as the number of deer needed.

Competition for deer by non-residents of Angoon was not indicated as a major factor affecting harvest success despite the fact that residents of Sitka, Kake, Petersburg and Juneau all hunt within the areas used by Angoon hunters. This may be due to the relatively great distance of the core Angoon hunting area from these other communities. It is possible, however, that future development of the Angoon area as a recreational destination could bring in outside hunters in sufficient numbers that they could compete with local residents for deer.

FACTORS AFFECTING SUBSISTENCE PATTERNS

Previous mention has been made of the appropriate use of the survey data for drawing correlations between changes in use of areas through time, and the external influences that cause those changes. In this study, key respondent interviews are combined with survey data to identify important historical events, including timber management activities, that appear to be associated with changing patterns of hunting, fishing and gathering. Case studies of particular hunting and fishing areas were used to illustrate historic changes. The interview data and other historical information were analyzed for explanations for the changes.

From the case studies, three major themes emerge that concern changes in use areas through time. One theme relates change in use areas to changes in cannery employment opportunities. A second theme, related to the first, pertains to changes in the composition of the Angoon fishing fleet. A third theme relates changes in use areas to habitat change resulting from commercial logging activities.

Changes Related to Cannery Employment Opportunities

Throughout much of Angoon's history, there have been major shifts in the location of permanent and semi-permanent villages resulting from clan agreements, fire, bombardment, or economic conditions. The fortunes of the canned salmon industry have contributed much to shifts during the recent period. Seasonal migrations were made by Angoon workers to canneries at Hood Bay from the 1930s until 1961, and then shifted to Chatham and Hawk Inlet until 1974.

Shifts in people's residences during the summer months greatly determined the opportunities that were available for subsistence food gathering, much of which would take place en route to or from the canneries, or on short trips away from canneries before, during, and after the cannery work periods. Angoon residents changed their

emphasis between subsistence harvest areas, from the southwest Admiralty coast, to west Chatham Strait, and then to northwest Admiralty, in close correspondence with the years when the canneries were in operation. Greater hunting pressure occurred in each of these general sectors during the time the canneries were open. Angoon residents still maintain close ties to all these separate areas, though the relative use has shifted over time.

Changes Related to the Composition of the Fishing Fleet

Closure of the Hood Bay cannery in 1961 marked the beginning of the end of the Angoon seine fleet, and brought a change in boat ownership that has greatly influenced the ways that Angoon residents hunt and fish for subsistence. Beginning in the late 1960s, economic pressures, the limited entry system and the practical difficulties of operating a large vessel without cannery sponsorship all resulted in a decrease in seine boat ownership from what had been a healthy dozen or more boats in the 1930s (employing over 100 crew members) to four seine boats in 1986. A parallel increase in hand and power trolling, and the use of small boats for these commercial fishing activities, has led to change in deer hunting areas and methods of hunting.

The seine boats were used for a particular type of hunting method. Trips were extended over several days or weeks, and often were combined with commercial fishing activities. Relatively large groups of hunters worked together, the seine boat was moored in a protected bay and hunting was by skiff along shore or up into muskeg, forest, and alpine areas.

Angoon hunters, fishers and gatherers now can cover more area on day trips from Angoon than would have been possible in one day with the slower seine boats and seine skiffs. Now virtually all of the areas that had been frequented in the past from canneries are reached from Angoon in no more than a few hours. More single purpose hunts are made, and small hunting parties are the rule. Hunters have taken advantage

of the skiff's access to many miles of beaches. Hunting along beaches has increased dramatically relative to the use of other deer hunting habitats (alpine, forest, muskeg, and, most recently, roads and clearcuts). Many miles of beach may be scanned from a small boat on one hunting trip, and a skiff can often put a hunter ashore quickly and quietly near to deer. The use of small boats is a very efficient hunting method, and has had a strong influence on the Angoon hunter's choice of habitat types.

Changes Related to Timber Harvest Activities

An unexpected finding of this study is that logging has been a third important factor affecting many Angoon hunter's decisions about where to go for deer, as discussed in Chapters 3 and 4. Several relatively old and small clearcut areas, at Hood Bay and Whitewater Bay, were found within the intensively used portions of the Angoon hunting territory.

Responses to clear cutting were most apparent in Whitewater Bay, where hunters abruptly changed hunting patterns in response to changes in forest habitat and deer abundance. Unlike other areas south of Angoon, overall use of Whitewater Bay appears not to have been affected by the closure of the Hood Bay cannery. Angoon residents continued to hunt there after the cannery closure. This could be explained in part by hunting conditions. Key respondents report that logging in Whitewater Bay in the mid-1960s produced what were regarded as good hunting conditions until the mid-1970s. Use of the area dropped dramatically after 1975. At this time, the area was described as being too heavily overgrown to be good for hunting.

This effect was less apparent in Hood Bay, and use of the Bay has grown in recent years, possibly due to the more dispersed logging areas and the fact that only a small proportion of the bay was affected by logging. Good alpine, forest, and beach areas have been retained in the Bay which are highly productive for deer hunting with small skiffs, the preferred hunting method.

Changes in use that are related to logging are less clear in the cases of White Rock and Cube Cove. At White Rock, the influence of habitat change on hunting is somewhat blurred by the influence of the cannery closure, although increases in use of the area after logging are consistent with the probable increase in access, visibility and deer browse. The Cube Cove logging history is so recent that hunters had not responded to it at the time of the survey. It remains to be seen what the response by hunters will be to large scale habitat change at Cube Cove.

The activities of respondents in relation to the clearcut/regrowth cycle are consistent with biological studies of forest regeneration described by Alaback (1982), Wallmo and Schoen (1980), and Schoen et. al. (1985). These studies identify consistent patterns of regrowth following clear cutting, beginning with an early regrowth stage that provides good deer browse (1-12 years), followed by increasingly heavy understory growth and second-growth pole timber development. Responses by hunters to forest habitat changes such as these were reported by Leghorn and Kookesh (1987), who found evidence of a decrease in hunter use of clearcuts after ten years of regrowth.

Key respondents were quite clear in their statements about the use of these areas. They reported that the decade or so of good deer hunting was followed by years of very poor hunting conditions resulting from regrowth. Combined with the random survey data depicting community use area changes through time, this leads to the conclusion that past logging has had an influence on Angoon hunting patterns in certain areas. These effects continue to the present, nearly thirty years past the clear cutting events. In the case of Angoon, these influences have been localized and have apparently not affected overall production of subsistence foods.

Key respondents emphasized that communication regarding productive hunting areas is rapid and thorough in Angoon. As a result, hunters quickly respond to hunting opportunities that are gained or lost due to factors such as logging. General shifts in the community's use of an area can take place in a relatively short time.

Assessment of the cumulative impacts of logging activities, near Angoon or elsewhere, depends on understanding mid- and long-term effects, such as those discussed here. These effects have important implications for planning additional commercial timber harvesting, as is anticipated for portions of the Angoon subsistence use area.

Limitations of the Study

It is likely that numerous similarities exist between the conditions described here for the Angoon subsistence use area and those of other areas of Southeast Alaska and British Columbia. However, caution must be used in generalizing these observations and findings beyond the Angoon case study. A future summary report in this series of "Timber Management and Fish and Wildlife Utilization" research projects will evaluate the Angoon findings in the context of available data for all cases.

LITERATURE CITED

Alaska Consultants, Inc. 1976. City of Angoon, Comprehensive Development Plan

Alaska Geographic Society 1973. Admiralty, Island in Contention. Vol 1(3). Alaska Northwest Publishing Co., Anchorage.

Alaska Geographic Society 1978. Southeast, Alaska's Panhandle. 5(2). Alaska Northwest Publishing Co., Anchorage.

Beier, Lavern and Lori Cooper n.d. Admiralty Island and Chatham Area Logging and Burn History, Alaska Department of Fish and Game, Game Division. unpublished.

British Columbia Forest Service 1983. Reservation of Old Growth Timber for the Protection of Wildlife Habitat on Northern Vancouver Island. Ministry of Forests.

Brody, Hugh. 1981. Maps and Dreams: Indians and the British Columbia Frontier. Douglas and McIntyre: Vancouver, Canada 297 pp.

Bunnell, F.L. 1981. Wildlife and Land: The Vancouver Island Example. University of British Columbia, Vancouver, B.C.

Bunnell, Fred L.; McNay, Scott R. and Shank, Chris C. 1984. Trees and Snow: The Deposition of Snow on the Ground - A Review and Quantitative Synthesis. University of British Columbia.

CH2M Hill 1982. City of Angoon, Land Use Plan

de Laguna, Frederica 1949. An Anthropological Study of the Northern Tlingit. MS., 29 pp.

de Laguna, Frederica 1960. The Story of a Tlingit Community. Bureau of American Ethnology Bulletin 172. Washington, D.C. U.S. Government Printing Office.

Dimitrov, Peter 1984. A Northern Indian Band's Mode of Production and its Articulation with the Multinational Mode. M.Sc. Thesis, School of Community and Regional Planning, University of British Columbia, Vancouver.

Doyle, D. and McNay, R. S. 1984. Black-tailed Deer and Intensive Forestry Interaction: A three year data report. Ministries of Forests and Environment. Canada.

Ellanna, Linda and George Sherrod 1987. Timber Management and Fish and Wildlife Utilization in Selected Southeast Alaska Communities: Klawock, Prince of Wales Island, Alaska. Technical Paper No. 126. Division of Subsistence, Alaska Department of Fish and Game, Juneau.

Ellanna, Linda, George Sherrod and Steve Langdon 1985. (draft) Subsistence Mapping: An Evaluation and Methodological Guidelines. Technical Paper No. 125. Division of Subsistence, Alaska Department of Fish and Game, Juneau.

Environmental Services, Ltd. 1982. Community Profile for the Community of Angoon, prepared for the Alaska Department of Community and regional Affairs. Anchorage

Freeman, Milton 1976. Inuit Land Use and Occupancy Project. Ottawa: Indian and Northern Affairs Canada.

Freeman, Milton. (ed.) 1976. Inuit Land Use and Occupancy Project, Volume I. Land Use and Occupancy, Volume II. Supporting Studies, Volume III. Land Use Atlas. Indian and Northern Affairs Canada: Ottawa.

Garfield, V.E. 1950. Historical Aspects of the Tlingit Clans in Angoon, Alaska. American Anthro. 49:438-452.

Gates, Rodd Bryan 1962. Deer Food Production in Certain Serial Stages of the Coast Forest. Univ. of British Columbia.

George, Jimmie 1984-1986. Personal Communication. Angoon, Alaska.

George, Lydia 1986. Personal Communication. Angoon, Alaska.

George, G. and M. Kookesh 1982. Salt Lake Coho Subsistence Permit Fishery, Technical Paper No. 70 Juneau: Division of Subsistence, Alaska Department of Fish and Game. 29 pp.

George, G. and M. Kookesh 1983. Angoon Deer Hunting 1982. Technical Paper No. 71, Alaska Department of Fish and Game, Division of Subsistence, Juneau. 21 pp.

Goldschmidt, Walter and Theodore Haas 1946. Possessory Rights of the Natives of Southeastern Alaska. Unpublished report. Washington, D.C. Commissioner of Indian Affairs.

Harris, Arland S. and Wilbur A. Farr 1974. The Forest Ecosystem of Southeast Alaska. No. 7. Forest Ecology and Timber Management. Portland: USDA, USFS, Pacific Northwest Forest and Range Experiment Station. 109 pp.

Hall, J. E. 1981. The Angoon Subsistence Coho Fishery. Technical Paper No. 39, ADF&G Division of Subsistence, Juneau.

Herbert, D.M. N.D. Implications of Forest Tenure for Wildlife Management in Coastal Ecosystems. Fish and Wildlife Branch, Nanaimo, B.C.

Jones, William 1971. Aspects of the Winter Ecology of Black-tailed Deer (Odocoileus hemionus columtianus Richardson) on Northern Vancouver Island. University of British Columbia.

Kirchhoff, Matthew 1985. A Timber Harvest Atlas for Selected Areas in Southeast Alaska (unpublished). Division of Subsistence, Alaska Department of Fish and Game, Juneau.

Krause, Aurel 1885. The Tlingit Indians. Translated 1956. Seattle: University of Washington Press. 310 pp.

Krieger, Herbert W. 1927. Indian Villages of Southeast Alaska. In U.S. National Museum, Smithsonian Institution. Annual Report, pages 467-494.

Leghorn and Kookesh 1987. Timber Management and Fish and Wildlife Utilization in Selected Southeast Alaska Communities: Tenakee Springs, Alaska. Technical Paper No. 138, ADF&G, Division of Subsistence, Juneau

Leopold, A. 1972. Juneau Unit Timber Sale, Southeast Alaska.

Lipps, Oscar H. 1936. (fieldwork) The Indian Tribes of Southeast Alaska - Tlingit, Thimpshian, Haida Office of Indian Affairs.

Ministry of Forests, British Columbia 1983. Reservation of Old Growth Timber for the Protection of Wildlife Habitat on Northern Vancouver Island. 48 pages, plus appendices.

McNay, R.S. and Davies, R. 1984. Black-tailed Deer and Intensive Forestry Interactions - A Problem Analysis. Ministries of Forest and Environment Nanaimo, B.C., Canada.

Moss, Madonna and Richard Newton 1984. The Subsistence Lifeway of Tlingit People, Excerpts of Oral Interviews. Document No. 131, USDA Forest Service, Tongass National Forest, Juneau.

Niblack, Albert P. 1890. The Coast Indians of Southern Alaska and Northern British Columbia. In U.S. National Museum, Annual Report, 1888 pages 225-386. (Reprinted in 1970 by Johnson Reprint Corporation, New York.)

Oberg, Kalervo 1973. The Social Economy of the Tlingit Indians. Seattle: University of Washington Press. 146 pp.

Olson, R. L. 1967. Social Structure and Social Life of the Tlingit in Alaska. Berkeley: University of California Press. 123 pp.

Paul, Cindy 1986. City of Angoon, City Clerk.

Petroff, Ivan 1884. Alaska: Its Population, Industries and Resources. 10th Census of the U.S. Vol. 8. Washington, D. C.: U. S. Printing Office.

Planning Support Group 1975. Angoon: Its History, Population and Economy. USDI, BIA, Report No. 224, 169 pp.

Powers, Richard L. 1972. Public Involvement and Admiralty Island, Alaska: Effects of Interest Groups on Natural Resource Allocations. M. A. Thesis, University of Alaska, Juneau.

Rochelle, Arthur James 1980. Mature Forests, Litterfall and Patterns of Forage Quality as Factors in the Nutrition of Black-tailed Deer on Northern Vancouver Island. Washington State University.

Roderick, Barry 1982. A Preliminary History of Admiralty Island: 1794-1942. Prepared for the U.S. Forest Service, Juneau.

Sahlins, Marshall 1972. Stone age Economies. New York: Aldine Publishing Co. 348 pp.

Salisbury, O.M. 1962. The Customs and Legends of the Thlinget Indians of Alaska. New York: Bonanza Books 275

Schoen, John and Matthew Kirchhoff 1985. Seasonal Distribution and Home-range Patterns of Sitka Black-tailed Deer on Admiralty Island, Southeast Alaska. Journal of Wildlife Management 49(1):96-103.

Schoen, John, Matthew Kirchhoff and Michael Thomas 1985. Seasonal Distribution and Habitat Use by Sitka Black-tailed Deer in Southeastern Alaska. Division of Game, Alaska Department of Fish and Game, Juneau.

Schoen, John W.; Matthew D. Kirchhoff; and O.C. Wallmo 1981. Seasonal Distribution and Habitat Use by Sitka Black-tailed Deer in Southeastern Alaska. Division of Game, Alaska Dept. of Fish and Game, Juneau.

Sigman, Marilyn J. 1985. Impacts of clearcut logging on Fish and Wildlife Resources of Southeast Alaska. Juneau Division of Habitat, Alaska Department of Fish and Game Tech Report 85-3.

Stanley, Samuel 1965. Report to the Bureau of Indian Affairs on Changes in Tlingit Social Organization. Bureau of Indian Affairs, Juneau

Stevenson, Susan 1978. Distribution and Abundance of Arboreal Lichen and their use as Forage by Black-tailed Deer. University of British Columbia.

Swanton, John R. 1908. Social condition, beliefs, and linguistic relationship of Tlingit Indians. Ann. Rep. Bur. American Enthnol for 1904-1905 pages 391-485.

Territorial Sportsmen of Juneau, Alaska 1984. Logging in Southeast Alaska and Its Relationship to Wildlife, Fisheries, and Economics. Unpublished report. Juneau: Territorial Sportsmen of Juneau, Alaska. 56 pp.

Tlingit and Haida Central Council (THCC) 1986. Southeast Alaska Data Profile Program. Final Report to the Municipal and Regional Assistance Program, Alaska Department of Community and Regional Affairs, Juneau

Tlingit Haida Central Council (THCC) 1983. Traditional and Customary Natural Resources Used by the Southeast Alaska Natives. Prepared for the USDI BIA, (Rights Protection Branch), Juneau Alaska.

U.S. Forest Service 1977. Southeast Alaska Area Guide, Final Environmental Impact Statement. USDA Forest Service, Tongass National Forest, Juneau.

U.S. Forest Service 1986. 1986-90 Operating Period for the Alaska Pulp Corporation Long-term Sale Area, Supplemental Draft Environmental Impact Statement. USDA Forest Service, Juneau, Alaska.

Wallmo, O.C. and J. Schoen 1980. Response of Deer to Secondary Forest Succession in Southeast Alaska. For. Sci. 26:448-462 pp.

Weinstein, Martin 1976. What the Land Provides: An Evaluation of the Fort George Subsistence Economy and the Possible Consequences on it of the James Bay Hydroelectric Project. Grand Council of the Crees: Montreal, 255 pp.

Willms Walter David 1971. The Influence of Forest Edge, Elevation, Aspect, Site Index, and Roads on Deer Use of Logged and Mature Forest, Northern Vancouver Island. University of British Columbia.

Appendix I: Study Site Selection Criteria; Phase 1

TONGASS N.F. COMMUNITIES	long (>50 yr.) history	reasonable accessibility	relatively small size (<1000)	high intensity timber mgt.	med intensity timber mgt.	low intensity timber mgt.	road connection	local use of typical S.E. spp.	predominantly native	predominantly non-native	available timber mgt. history	RATING/COMMENTS
YAKUTAT	X	X	X		X				X			possible; in Yakutat study
KLUKWAN	X	X	X		X		X		X		X	no; little local use of deer
HAINES	X	X	X		X		X		X		X	no; little local use of deer
SKAGWAY	X	X	X			X	X			X	X	no; little local use of deer
JUNEAU	X	X				X		X		X	X	no; too large for phase 1
GUSTAVUS	X	X	X			X		X		X	X	possible
ELFIN COVE	X		X			X		X		X	X	possible; marginal access
PELICAN	X		X			X		X		X	X	possible; marginal access
HOONAH	X	X	X		X			X	X		X	possible
TENAKEE SPR.	X	X	X		X			X		X	X	possible
ANGOON	X	X	X			X		X	X		X	possible
SITKA	X	X		X				X		X	X	no; too large for phase 1
KAKE	X	X	X	X				X	X			possible
PT. BAKER	X		X		X			X		X		possible; marginal access
PORT ALEX.	X		X			X		X		X		no; marginal access
CAPE POLE			X	X				X		X		no; short history
EDNA BAY			X	X				X		X		no; short history
KLAWOCK	X	X	X	X			X	X	X			possible
HOLLIS		X	X	X			X	X		X		no; short history
CRAIG	X	X	X	X			X	X		X		no; too large for phase 1
HYDABURG	X	X	X	X			X	X	X			possible
KASAAN	X		X			X		X	X			possible
MEYERS CHUCK			X			X		X		X		no; short history
PETERSBURG	X	X			X			X		X		no; too large for phase 1
WRANGELL	X	X		X				X		X		no; too large for phase 1
KETCHIKAN	X	X			X		X	X		X		no; too large for phase 1
SAXMAN	X	X	X				X		X			no; not a defined community
METLAKATLA	X	X	X			?			X			no; unique reservation status
HYDER	X		X			X				X		no; poor access
THORNE BAY		X	X	X			X	X		X		no; short history

Appendix Ia: Study Site Selection Criteria and Timber Harvest History in Immediate Vicinity of Communities Rated as Possible

Low Volume/or Short History of Timber Harvest	Moderate Volume/ Moderate History of Timber Harvest	High Volume Long History of Timber Harvest
Hydaburg	Hoonah	Kake
Gustavus	Tenakee**	Klawock*
Elfin Cove	Pt. Baker/Port Protection	
Pelican		
Angoon***		
Kasaan		

Long History of Timber Harvesting Category
*Klawock - Additional criteria for selection:

1) Reasonable accessibility
2) History of being road connected to other communities;
3) Long History of extensive timber harvest in vicinity;
4) Predominantly Native community.

Moderate Involvement with Timber History
**Tenakee - Additional criteria for selection:

1) Reasonable accessibility (regular ferry schedule and mail flights make Tenakee a cost efficient choice);
2) Predominantly non-Native, provides a mixture of Native and non-Native communities;
3) Timber harvest history available.

Low Involvement with Timber Harvesting
***Angoon - Additional criteria for selection:

1) Reasonable accessibility, division staff living in the community, cost effective;
2) Timber harvest history available.

APPENDIX II

CONVERSION FACTORS FOR DETERMINING USABLE
WEIGHTS OF RESOURCES IN ANGOON DURING 1984

Common Name	(Local Name if Different from Common Name)	Scientific Name	Usable Weight	Source
SALMON				
Chinook	(King)	Oncorhynchus tshawytscha	16.5 lbs.	ADF&G Comm. Fish. Div.
Chum	(Dog)	Oncorhynchus keta	7.7 lbs.	ADF&G Comm. Fish. Div.
Pink	(Humpback)	Oncorhynchus gorbuscha	3.5 lbs.	ADF&G Comm. Fish. Div.
Red	(Sockeye)	Oncorhynchus nerka	5.6 lbs.	ADF&G Comm. Fish. Div.
Silver	(Coho)	Oncorhynchus kisutch	8.7 lbs.	ADF&G Comm. Fish. Div.
OTHER FISH				
Cutthroat Trout		Salmo clarki	1.5 lbs.	Researcher Estimate
Dolly Varden		Salvelinus malma	1.4 lbs.	Researcher Estimate
Steelhead		Salmo gairdneri	6.0 lbs.	Researcher Estimate
Eulachon	(Hooligan)	Thagichthys pacificus	Recorded in lbs.	-
Pacific Herring		Clupea pallasii	Recorded in lbs.	-
Herring Eggs on Kelp/Other Substrate		-	Recorded in lbs.	-
Halibut		Hippoglossus stenolepis	Recorded in lbs.	-
Pacific Cod		Gadus macrocephalus	4.0 lbs.	Researcher Estimate
Red Snapper		Sebastodes rub errimus	3.0 lbs.	Researcher Estimate
Basket Cockles		-	2.0 lbs. (per 5 gal bucket)	Tech. Paper No. 95
Butter Clams		Saxidomus giganteus	2.0 lbs. (per 5 gal bucket)	Tech. Paper No. 95
Razor Clams		Siliqua patula	2.0 lbs. (per 5 gal bucket)	Tech. Paper No. 95
Dungeness Crab		Cancer magister	2.5 lbs.	Koeneman, ADF&G, per. comm.
King Crab		Paralithodes camtschatica	7.0 lbs.	Koeneman, ADF&G, per. comm.
Tanner Crab		Chionoecetes bairdi	2.2 lbs.	Koeneman, ADF&G, per. comm.
Black Gumboots		-	20.0 lbs. (per 5 gal bucket)	Researcher Estimate
Sea Urchin	(Neets)	-	5.0 lbs. (per 5 gal bucket)	Researcher Estimate
Octopus	(Devil Fish)	-	10.0 lbs.	K.A.N.A. (1983)

APPENDIX II (continued)

CONVERSION FACTORS FOR DETERMINING USABLE
WEIGHTS OF RESOURCES IN ANGOON DURING 1984

Common Name	(Local Name if Different from Common Name)	Scientific Name	Usable Weight	Source
OTHER FISH				
Sea Scallops		Patinopeeten cauirnus	Recorded in lbs.	-
Shrimp		Panadalid	Recorded in lbs.	-
Black Seaweed		-	20.0 lbs. (per 5 gal. bucket)	Researcher Estimate
Bull Kelp		-	20.0 lbs. (per 5 gal. bucket)	Researcher Estimate
MARINE MAMMALS				
Harbor Seal		Phoca vitulina	180.0 lbs.	ADF&G, Subsistence Div.
LAND MAMMALS				
Deer		Odocoileus hemionus sitkensis	80 lbs.	L. Johnson, ADF&G pers. comm.
Moose		Alces alces	550.0 lbs.	Researcher Estimate
Black Bear		Ursus americanus	150.0 lbs.	Researcher Estimate
Brown Bear		Ursus arctos	50.0 lbs.	Researcher Estimate
BIRDS AND EGGS				
Canada Geese		Branta canadensis	5.0 lbs.	Tech. Paper No. 95
Ducks		-	1.5 lbs.	Tech. Paper No. 95
PLANTS AND BERRIES				
Berries		-	1.0 lb. per quart	Researcher Estimate
Plants		-	1.0 lb. per quart	Researcher Estimate

APPENDIX III

HOUSEHOLD SURVEY: TIMBER MANAGEMENT AND FISH AND WILDLIFE UTILIZATION IN SELECTED SOUTHEAST ALASKAN COMMUNITIES

Community _____ Household ID# _____

Interviewer _____

	Date	Time
1st visit		
2nd visit		
3rd visit		
replaced by household #		
length of interview		

1. HOUSEHOLD INFORMATION

A. Please complete the following information for each person in your household:

(* = respondent)

ID#	M/F	RELATION TO HOUSEHOLD HEAD	BIRTH DATE	RESIDENCE OF MOTHER WHEN YOU WERE BORN	# YRS RESIDED IN THIS COMMUNITY	PREVIOUS RESIDENCE (PLACE)	ETHNICITY
1		household head					
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							

B. Using Person ID#'s from the table above, please indicate which household members participated in harvesting activities during 1984:

hunting _____ fishing _____

C. Do you have parents or children in other Southeast Alaska communities? If so, please list communities below:

_____ _____

_____ _____

D. Did you own or use any of the following equipment in 1984?

TYPE OF EQUIPMENT	NUMBER OWNED OR USED	DO YOU USE FOR HUNTING/FISHING? YES	NO
Automobile			
Truck			
Skiff			
Purse Seiner/Cabin Cruiser/Troller			
Snowmachine			
ATV			
Airplane			

For each skiff owned, please indicate length, type, and motor size:

Skiff #1: _____

Skiff #2: _____

2. EMPLOYMENT INFORMATION

Please complete the following information for all jobs (cash employment) held by household members during 1984:

ID# FROM TABLE IN #1	JOB TITLE	# OF MONTHS WORKED PER YEAR	# OF HOURS WORKED PER WEEK

3. FISH

Did your household try to harvest or did you give or receive any type of fish, shellfish, or beach food in 1984? yes ____ no ____

If yes, please complete the following tables:

A. Use of Salmon From Commercial Catch

SPECIES	USED* yes	USED* no	TRIED TO HARVEST** yes	TRIED TO HARVEST** no	NUMBER REMOVED FROM COMMERCIAL CATCH FOR HOME USE: seine	power troll	hand troll	gill net
King (chinook)								
Chum (dog)								
Pink (humpies)								
Red (sockeye)								
Silver (coho)								
Other or Unknown								

* Used salmon from yesterday's commercial catch?
** Tried to harvest commercially?

B. Use of Salmon From Non-Commercial Catch

SPECIES	USED* yes	USED* no	TRIED TO HARVEST** yes	TRIED TO HARVEST** no	# HARVESTED NON-COMMERCIALLY BY GEAR TYPE: seine *** P	seine *** B	troll ****	rod & reel	gill net	spear/ gaff	other	RECVD yes	RECVD no	GAVE yes	GAVE no	# OF SALMON DSIRED
King (chinook)																
Chum (dog)																
Kokanee																
Pink (humpies)																
Red (sockeye)																
Silver (coho)																
Other or Unknown																

* Used salmon from a non-commercial catch?
** Tried to harvest non-commercially?
*** Specify purse seine or beach seine.
**** Dragging a line & hook from a moving boat, rod & reel means everything else.

"If there were no limitations set by regulation, about how many salmon would your household have harvested last year?" _____

C. **Fresh Water Fish**

	SPECIES	USED yes	USED no	TRIED TO HARVEST yes	TRIED TO HARVEST no	NUMBER HARVESTED	RECVD yes	RECVD no	GAVE yes	GAVE no
Trout	Cutthroat									
	Dolly Varden									
	Rainbow									
	Steelhead									
	Other or Unknown									
Other Freshwater Fish	Grayling									
	Northern Pike									
	Whitefish									
	Other or Unknown									

D. **Marine Fish**

	SPECIES	USED yes	USED no	TRIED TO HARVEST yes	TRIED TO HARVEST no	AMOUNT HARVESTED (units)	RECVD yes	RECVD no	GAVE yes	GAVE no
Smelt	Candle Fish (Capelin)					( )				
	Hooligan (Eulachon)					( )				
	Surf Smelt (Silver Smelt)					( )				
	Other or Unknown					( )				
Herring	Pacific Herring					( )				
	Herring Eggs					( )				
	Herring Eggs On Kelp*					( )				
	Other or Unknown					( )				

	SPECIES	USED yes	USED no	TRIED TO HARVEST yes	TRIED TO HARVEST no	NUMBER HARVESTED	RECVD yes	RECVD no	GAVE yes	GAVE no
Sturgeon	Green									
	White									
	Other or Unknown									
Eels	Blenny (Prickle Back)									
	Pacific Lamprey									
	Other or Unknown									

* or other substrate

4

Marine Fish Cont.

	SPECIES	USED yes	USED no	TRIED TO HARVEST yes	TRIED TO HARVEST no	NUMBER HARVESTED	RECVD yes	RECVD no	GAVE yes	GAVE no
Flounders	Flounder									
	Sole									
Halibut	Halibut					(#) (lbs)				
Cod	Ling Cod									
	Pacific Cod (Gray Cod)									
	Rock Greenling									
	Tom Cod									
	Whiting (SlmJm or WllEydPlck)									
	Sablefish (Black Cod)									
	Other or Unknown									
Rock Fish	Blue Rockfish									
	Red Snapper									
	Sea Bass (Black Bass)									
	Sea Perch									
	Other or Unknown									
Skates	Skate									
Sharks	Dog Fish									
	Salmon Shark									
	Other or Unknown									
Tuna and Mackerel	Blue Fin									
	Mackerel									
	Other or Unknown									
Sculpin (bullhead)	Buffalo Sculpin									
	Irish Lord									
	Other or Unknown									
Other Marine Fish										

5

E. Marine Invertebrates

	SPECIES	USED yes	USED no	TRIED TO HARVEST yes	TRIED TO HARVEST no	5 GALLON BUCKETS HARVESTED	RECVD yes	RECVD no	CAVE yes	CAVE no
Clams and Cockles	Basket Cockle									
	Heart Cockle									
	Butter Clam									
	Blue Mussel									
	Geoduck									
	Horse Clam									
	Razor Clam									
	Other or Unknown									
						NUMBER HARVESTED				
Crab	Box Crab									
	Dungeness Crab									
	King Crab									
	Tanner Crab									
	Other or Unknown									
						5 GALLON BUCKETS HARVESTED				
Other Shellfish	Abalone									
	Black Gumboot (Black Chiton)									
	Red Gumboot (Red Ldy Slpr)									
	Limpet									
	Neets (Sea Urchin)									
	Rock Oyster (Rock Scallop)									
	Whelks (snails)									
	Other or Unknown									

6

Marine Invertebrates Cont.

	SPECIES	USED yes	USED no	TRIED TO HARVEST yes	TRIED TO HARVEST no	AMOUNT HARVESTED (units)	RECVD yes	RECVD no	GAVE yes	GAVE no
Other Invertebrates	Octopus (Devil Fish)					(#)				
	Sea Cucumber (Yen)					(5 gal bckt)				
	Sea Scallops					( )				
	Shrimp					( )				
	Squid					(#)				
	Other or Unknown					( )				

F. Marine Plants

	SPECIES	USED yes	USED no	TRIED TO HARVEST yes	TRIED TO HARVEST no	AMOUNT HARVESTED (units)	RECVD yes	RECVD no	GAVE yes	GAVE no
Seaweed	Black Seaweed					( )				
	Sea Ribbons					( )				
	Other Seaweed					( )				
Kelp	Bull Kelp					( )				
	Other or Unknown					( )				

7

4. MAMMALS

Did your household try to harvest or did you give or receive any type of mammals in 1984? yes ____ no ____

If yes, please complete the following tables:

A. Deer

Did you use deer last year? yes ____ no ____

How many deer did all members of your household take (total) last year? _____

How many of these deer were taken on the ...

(indicate # harvested 0=tried without success blank=did not try)

SKIFF ACCESS

BEACH	MUSKEG	ALPINE	FOREST	CLEARCUT	ROAD

CABIN CRUISER / TROLLER / SEINER ACCESS

BEACH	MUSKEG	ALPINE	FOREST	CLEARCUT	ROAD

AUTO / TRUCK ACCESS

BEACH	MUSKEG	ALPINE	FOREST	CLEARCUT	ROAD

OTHER ACCESS (specify) _____

BEACH	MUSKEG	ALPINE	FOREST	CLEARCUT	ROAD

Did you receive any deer from another household? yes ____ no ____

Did you give any deer to another household? yes ____ no ____

Did you use deer parts for anything besides food? yes ____ no ____

Did you use or give deer for a potlatch, party, or other celebration? yes ____ no ____

If there were no limitations set by regulation, about how many deer would your household have harvested last year? _____(# of deer)

8

B. Marine Mammals

SPECIES	USED		TRIED TO HARVEST		NUMBER HARVESTED	NUMBER USED FOR		RECVD		GAVE	
	yes	no	yes	no		FURS	FOOD	yes	no	yes	no
Belukha											
Fur Seal											
Harbor Seal											
Sealion											
Sea Otter											
Other											

C. Land Mammals

SPECIES	USED		TRIED TO HARVEST		NUMBER HARVESTED	NUMBER USED FOR		RECVD		GAVE	
	yes	no	yes	no		FURS	FOOD	yes	no	yes	no
Moose											
Black Bear											
Brown Bear											
Mountain Goat											
Wolf											
Coyote											
Red Fox											
Lynx											
Wolverine											
Land Otter											
Beaver											
Porcupine											
Muskrat											
Marmot											
Weasel											
Mink											
Marten											
Hare (Rabbit)											
Squirrel											
Other											

9

5. **BIRDS/EGGS**

Did your household try to harvest or did you give or receive birds or bird eggs during 1984? yes ____ no ____

If yes, please complete the following table:

	SPECIES	USED yes	USED no	TRIED TO HARVEST yes	TRIED TO HARVEST no	NUMBER HARVESTED	RECVD yes	RECVD no	GAVE yes	GAVE no
Upland Birds	Ptarmigan									
	Grouse									
	Eggs									
	Other									
Geese	Black Brant									
	Canada									
	Emperor									
	Snow									
	White Fronted									
	Eggs									
	Other or Unknown									
Swans	Whistling Swan									
	Trumpeter Swan									
	Eggs									
	Other or Unknown									
Cranes/ Herons	Great Blue Heron									
	Sandhill Crane									
	Eggs									
	Other or Unknown									
Ducks/ Sea Ducks	Ducks									
	Eggs									

10

BIRDS/EGGS Cont.

	SPECIES	USED yes	USED no	TRIED TO HARVEST yes	TRIED TO HARVEST no	NUMBER HARVESTED	RECVD yes	RECVD no	GAVE yes	GAVE no
Seabirds	Gulls									
	Terns									
	Cormorants									
	Grebes									
	Loons									
	Puffins									
	Eggs									
	Other									

6. PLANTS

A. Did members of your household harvest or give or receive berries in 1984?

yes ____ no ____

If yes, how many quarts did you harvest? ____ give? ____ receive? ____

B. Did members of your household harvest or give or receive plants in 1984?

yes ____ no ____

If yes, how much did you harvest? ______ give? ______ receive? ______

C. Did members of your household gather wood during 1984?

yes ____ no ____

If yes, how much did you gather?

firewood ______ (cords)

house logs ______ (number of logs)

other (specify) _____ ______ (cords)

7. MISCELLANEOUS QUESTIONS

7 A. Please circle the range below which best represents your household's annual gross income:

a. $ 0	l. $ 50,000 - 54,999
b. $ 1 - 4,999	m. $ 55,000 - 59,999
c. $ 5,000 - 9,999	n. $ 60,000 - 64,999
d. $ 10,000 - 14,999	o. $ 65,000 - 69,999
e. $ 15,000 - 19,999	p. $ 70,000 - 74,999
f. $ 20,000 - 24,999	q. $ 75,000 - 79,999
g. $ 25,000 - 29,999	r. $ 80,000 - 84,999
h. $ 30,000 - 34,999	s. $ 85,000 - 89,999
i. $ 35,000 - 39,999	t. $ 90,000 - 94,999
j. $ 40,000 - 44,999	u. $ 95,000 - 99,999
k. $ 45,000 - 49,999	v. $100,000 or over

7 B. Approximately what percent of your total household income in 1984 came from each of the following categories: (should total 100%)

	%		%
commercial fishing	____	retail business	____
logging	____	construction	____
longshoring	____	transfer payments	____
government services	____	other	____

Supplement # 1 **AMCOON**

[Show respondent map, and ask questions.]

1. Which areas have you ever used? (For each area used...)
2. During what years have you used _____ for harvesting resources?
3. If you have stopped using _____, why?
4. What different ways have you accessed _____ during the years you used it?

	AREA	USED Y	N	10	20	30	40	50	60	70	80	REASON FOR NO LONGER USING
1	Kootznahoo Inlet											
2	Polson Water-Fishery Creek											
3	Fishery Creek-Pt. Marsden											
4	Freshwater Bay											
5	Tenakee Inlet											
6	Basket Bay											
7	Whiterock-Sitkoh Bay											
8	Todd-False Island											
9	Deadman's Reach											
10	Rodman Bay											
11	Rodman Bay-Banas Bay											
12	Banas Bay-Kelp Bay											
13	Hood Bay											
14	Distant Point											
15	Whitewater bay											
16	Wilson Cove											
17	Tyee-Tybee Bay											
18	Other											

1. **Hood Bay**

A. How did you hunt deer in the **Hood Bay** area during these time periods?

	BEACH	FOREST-WOOD	MUSKEG	ALPINE	ROAD	CLEAR CUT	DIDN'T HUNT
1930'S							
1940'S							
1950'S							
1960'S							
1970'S							
1980'S							

B. Has logging in the **Hood Bay** area changed your hunting practices? Please explain.

C. How would you describe the deer population in the **Hood Bay** area during these time periods?

	GOOD DEER POPULATION	FAIR DEER POPULATION	POOR DEER POPULATION	DON'T KNOW
1930'S				
1940'S				
1950'S				
1960'S				
1970'S				
1980'S				

2. **Whitewater Bay**

A. How did you hunt deer in the **Whitewater Bay** area during these time periods?

	BEACH	FOREST-WOOD	MUSKEG	ALPINE	ROAD	CLEAR CUT	DIDN'T HUNT
1930'S							
1940'S							
1950'S							
1960'S							
1970'S							
1980'S							

B. Has logging in the Whitewater Bay area changed your hunting practices? Please explain.

C. How would you describe the deer population in the Whitewater Bay area during these time periods?

	GOOD DEER POPULATION	FAIR DEER POPULATION	POOR DEER POPULATION	DON'T KNOW
1930'S				
1940'S				
1950'S				
1960'S				
1970'S				
1980'S				

3. Whiterock Bay

A. How did you hunt deer in the Whiterock Bay area during these time periods?

	BEACH	FOREST-WOOD	MUSKEG	ALPINE	ROAD	CLEAR CUT	DIDN'T HUNT
1930'S							
1940'S							
1950'S							
1960'S							
1970'S							
1980'S							

B. Has logging in the Whiterock Bay area changed your hunting practices? Please explain.

C. How would you describe the deer population in the **Whiterock Bay** area during these time periods?

	GOOD DEER POPULATION	FAIR DEER POPULATION	POOR DEER POPULATION	DON'T KNOW
1930'S				
1940'S				
1950'S				
1960'S				
1970'S				
1980'S				

4. **Cube Cove**

A. How did you hunt deer in the **Cube Cove** area during these time periods?

	BEACH	FOREST-WOOD	MUSKEG	ALPINE	ROAD	CLEAR CUT	DIDN'T HUNT
1930'S							
1940'S							
1950'S							
1960'S							
1970'S							
1980'S							

B. Has logging in the **Cube Cove** area changed your hunting practices? Please explain.

C. How would you describe the deer population in the **Cube Cove** area during these time periods?

	GOOD DEER POPULATION	FAIR DEER POPULATION	POOR DEER POPULATION	DON'T KNOW
1930'S				
1940'S				
1950'S				
1960'S				
1970'S				
1980'S				

1. Has logging in the Hood Bay area changed your salmon fishing practices? Please explain.

2. Has logging in the Whitewater Bay area changed your salmon fishing practices? Please explain.