THE NON-COMMERCIAL HARVEST OF CRAB IN SOUTHEAST ALASKA: A SUMMARY OF AVAILABLE INFORMATION

by

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ABSTRACT

This report summarizes available information about the non-commercial harvest of dungeness and king crab in southeast Alaska. It provides background data useful to the Board of Fisheries in considering proposals to close areas used for non-commercial crab harvests to commercial crabbing. Participation in the commercial dungeness crab fishery in southeast increased 300 percent from the 1980-81 season to the 1983-84 season. As evidenced by proposals to the Board of Fisheries, concern has been expressed in several communities over the possible effects of this growth on local non-commercial crab harvests.

Data on non-commercial crab harvests in southeast Alaska are very limited. Nevertheless, a region-wide survey conducted by the Institute of Social and Economic Research in 1979 found crabbing to be one of the most common resource harvesting activities in the region. About 55 percent of the respondents in predominately Native communities harvested crab and clams; 71 percent of the people in small, non-Native communities engaged in these activities.

The report presents data on crab harvests, general resource use, and other socioeconomic data for 12 communities: Hydaburg, Craig, Klawock, Port Protection, Point Baker, Wrangell, Sitka, Angoon, Pelican, Elfin Cove, Hoonah, and Juneau. Major sources of information include coastal management programs and ongoing Division of Subsistence research projects. Field visits were made to three communities in February 1984 -- Port Protection, Point Baker, and Hoonah -- but time constraints prevented additional data collection in other places. The report includes several

maps which show areas used for non-commercial crab harvests, by species, by those case communities for which data are available.

Although all findings must be regarded as tentative at this time, a few patterns may be discerned from the available information. Dungeness crab appear to be the most commonly harvested species, followed by king crab. Sharing of harvests within communities is very frequent, as is the sharing of gear such as crab pots. While harvesting appears to be a year-round activity in some communities, most harvesting occurs during months with relatively mild weather, from May through October.

The report concludes that data on non-commercial crab harvest, especially size of harvests and levels of participation, are very scarce. Non-commercial crabbing appears to be a common resource harvest activity in most southeast Alaska communities. Mapped information suggests that non-commercial crabbing mostly occurs relatively close to communities, especially in sheltered bays and coves that can be reached in small boats and are protected from severe weather. High levels of participation and frequent sharing of harvests indicate that non-commercial crabbing plays an important role in local resource use patterns in southeast Alaska communities. Further evidence of this importance is the concern many of these communities have expressed about the future of the crab resource.

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INTRODUCTION

The purpose of this report is to briefly summarize the available information about non-commercial harvest and use of crab in southeast Alaska communities. Recently, concern has been expressed by residents of several communities about the possible effects of the growing commercial crab fishery in southeast Alaska and the increasing commercial harvest of crab on the harvesting of crab for local use. Evidence of this concern includes the submission of several regulatory proposals to the Board of Fisheries in 1983 by local fish and game advisory committees and members of the public. In 1984, proposals have been submitted by residents of Wrangell, Port Protection, Point Baker, and Juneau. If adopted, these proposals would close areas used for non-commercial harvesting of crab to commercial crab fishing. This report contains information that the Board of Fisheries may find useful in the consideration of these proposals.

Information about non-commercial crab harvests in southeast Alaska is incomplete. Participants in this fishery are not required to obtain permits from the Department of Fish and Game or to report their harvests to the Department. For the preparation of this report, the Division of Subsistence has drawn from three major sources of information on crab use. First, coastal management plans prepared for communities under the Alaska's Coastal Management Program often contain mapped data concerning local resource harvest areas. These documents have been reviewed, and the pertinent information summarized in the community descriptions which follow. It should be noted that information in these plans was collected from a sample of community residents; therefore these maps may not depict all the

important local crab harvest areas. Second, the Division of Subsistence has conducted field work in several southeast communities including Hydaburg, Craig, Klawock, Angoon, and Sitka. Although these projects were not focused on the harvesting of crab, some information about the use of this resource was obtained during the research. Also, in early 1984, Division staff visited three additional southeast communities -- Hoonah, Port Protection, and Point Baker -- to gather data about crab harvest and use. These communities were selected because of their relatively small size and their expressed concern about the crab resource. Staff commitments to other projects prevented them from visiting additional communities. Finally, based on reviews by advisory committee members, some additional data were added in March 1985.

This report contains three sections. The first is a summary of the issue and a regional overview of non-commercial crab harvesting in southeast Alaska. The second section contains summaries of harvesting and use of crab in 12 southeast communities. Two criteria were used to select case communities: the extent of available information and expressed concern about the crab resource demonstrated by the submission of regulatory proposals by residents of these communities. In these summaries, emphasis has been placed on describing areas used for non-commercial harvest of crab. When available, data on harvest quantities, levels of community participation, and methods and means are included. In addition, each summary contains a brief sketch of each community's history and current economy. The third and final section of the report contains a summary of the available data and an assessment of our current knowledge about non-commercial crabbing in southeast Alaska.

As a supplement to this written report, the Division of Subsistence has prepared maps depicting all areas documented as used for non-commer-

cial crab harvests in southeast Alaska, by case community and by species. These maps will be available to the Board of Fisheries during its deliberations on crab regulations.

REGIONAL OVERVIEW

Three species of crab have traditionally been harvested by local residents in southeast Alaska for non-commercial purposes. Dungeness crab (Cancer magister) has been the most commonly harvested species, with king crab (Paralithodes camtschatica) and tanner crab (Chionoecetes bairdi) being harvested in smaller quantities, largely due to their more limited availability. During the Alaska Public Survey conducted by the University of Alaska's Institute of Social and Economic Research in 1979, interviews were conducted with 1,255 households throughout southeast Alaska (Alves 1981). Results indicated a high level of participation in non-commercial crabbing by southeast Alaska residents. For purposes of data analysis, crabbing and clamming were combined into one category. Results indicated that about 41 percent of the sampled households participated in these activities during the study period of one year, with an average of 4.5 days spent crabbing and/or clamming within that time. Participation rates were higher for predominately Native communities (55 percent) and small non-Native communities (71 percent) than for large communities in Southeast (38 percent). Residents of predominately Native communities reported that a mean of 2.9 percent of their households' annual yearly meat supply was provided by crabbing and clamming. The corresponding mean for small non-Native communities was 5.1 percent (Alves 1981:V-8).

Limited fieldwork by Division staff with residents region-wide suggests that two patterns of non-commercial crabbing exist within the region. Most active harvesters reported that they fished areas located near their homes. The site was usually one that was close as well as safe to visit in a variety of weather conditions. These sites were usually in relatively shallow, well-protected coves that could be reached by a small boat and where a pot could be retrieved by hand. The second reported pattern included harvests in areas more distant from the user's place of residence and required trips of at least two days. This pattern was most common during summer months, when people traveled from their residences and often spent the night out on their vessels. It was often, but not always, associated with commercial fishing. For some individuals, this meant spending the summer on their boats and crabbing all over southeast; for others it meant one night out and dropping a crab pot near their anchorage. Again, sheltered coves and relatively shallow water areas were generally desired for the non-commercial harvests. Often, households reported both patterns of use, each occurring in separate seasons.

Prior to 1980, the commercial crab fishery in southeast Alaska was relatively small. According to limited fieldwork conducted by Division of Subsistence staff on this topic, many of the fishermen were residents of local communities and were familiar with local crabbing areas. Informal agreements were made regarding areas that were not to be fished commercially and were therefore left for local non-commercial use. Competition within the commercial fishery was not as great as presently, so many alternate areas were available. The following summary by the Division of Commercial Fisheries describes the recent history of the commercial dungeness fishery; other crab fisheries have a similar pattern.

> Demand for Alaskan dungeness crab has been inversely related to the availability of crab from Washington, Oregon, and California. Low catches to the south prompted greater efforts in Alaska to fill the demand for the product. Conversely, as long as cheaper crab were available Alaskan crab was not competitive. As a result, during the late 60's and 70's a period of high catches to the south, Alaska dungeness crabs were not fully exploited.
>
> The earlier dungeness crab fishery was nearly self-policing. Numbers of fishermen were low enough so informal possession of personal fishing areas was recognized. Enough unfished grounds existed so a fisherman encountering soft crab of low catches in one location could easily move to alternate fishing areas. While demand for crab remained low, policies, management plans, and restrictive regulations were largely unnecessary.
>
> During the past few years, the apparent decline of the dungeness fisheries of other Pacific Coast states has increased demand for Alaskan product. In turn, increased demand has increased the number of vessels entering the fishery. Informal arrangements between fishermen to minimize competition and conflicts have ceased to exist. Competition has increased. Available grounds are fully utilized. The option of moving from areas of soft shell to another area is no loner viable. The intense competition is necessitating consideration of policies, goals, management plans and regulations with which to control resource use and provide for continued harvest (Alaska Department of Fish and Game, Division of Commercial Fisheries 1984:4.1).

Participation in the commercial dungeness fishery in southeast Alaska grew from 32 vessels in the 1980-81 season to 139 vessels in the 1983-84 season, an increase of over 300 percent. Total pounds harvested increased from 719,277 lbs in 1980-81 to 2,927,916 lbs in 1982-83. The commercial catch decreased to 1,492,813 lbs in 1983-84 season (Alaska Department of Fish and Game 1984). King crab and tanner crab harvests have followed similar patterns of growth in participation rates: both fisheries increased in participation nearly three-fold between the 1980-81 and 1983-84 seasons.

This increased pressure on the crab stocks and reported decreased success by non-commercial fishers harvesting crab have concerned residents of communities who take crab for local use. They have submitted proposals

to the Board of Fisheries for changes in commercial crab fishing regulation. These proposals range from closing areas near communities to the commercial harvest of crab, delaying the commercial season until September, to prohibiting commercial crabbing above various water depths. Presently, regulation restricting the commercial crab fishery near a community has been limited to the Juneau area. Dungeness, king, and tanner crab commercial fishing is prohibited in specific areas near Juneau (5 AAC 32.150, 5 AAC 34.150, 5 AAC 35.150) in order to provide areas available to local non-commercial harvesting.

CASE COMMUNITIES

Hydaburg

Hydaburg is a community of approximtely 400 people located on the southwestern shore of Prince of Wales Island (Fig. 1). About 85 percent of the popultion is Alaska Native, predominately Haida Indians.

During the 17th century, groups of Haida migrated northward from Queen Charlotte Island to the southern portion of Prince of Wales Island, establishing numerous villages. In order to centralize institutional and social services, in 1911 the three largest villages were moved and combined to form the present community of Hydaburg.

Today, access from other parts of Alaska to Hydaburg is limited to float planes, private boats, or automobile from the Hollis ferry terminal on the west coast of Prince of Wales Island. In 1981, 90 percent of the residents of Hydaburg were commercial fishers. In 1984, the primary employment continued to be commercial fishing; however, a few jobs were also available in the timber harvesting industry in the area.

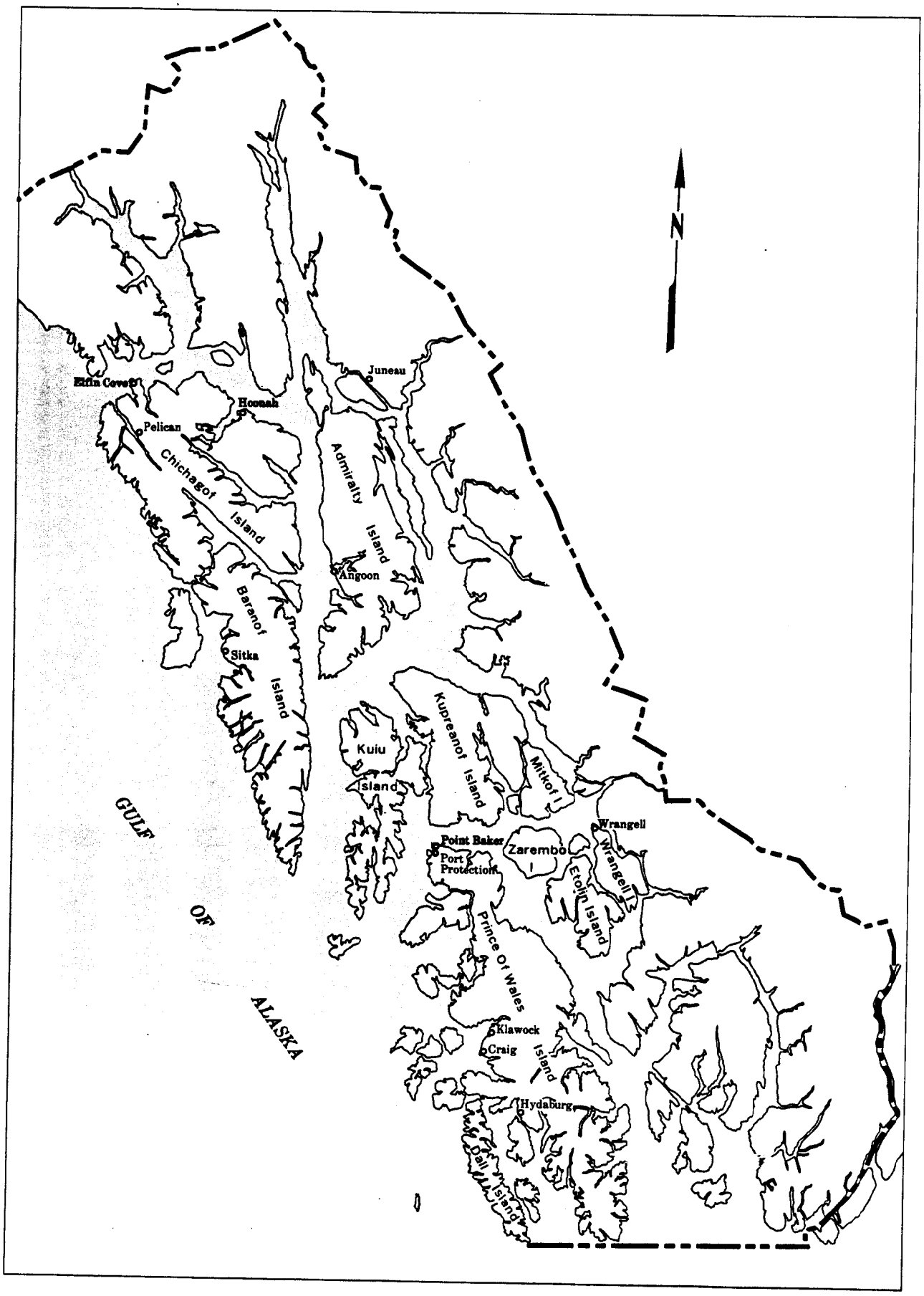

Fig. 1 Southeast Alaska area map including communities referenced in report.

Mapped information on areas used for the non-commercial harvest of crab by residents of Hydaburg was obtained from Hydaburg Coastal Management Program (1983), and from Sealaska Resource Atlas Volume 1 (1982). Other information is available from published and unpublished data collected during Division of Subsistence research conducted in the community in 1981-83.

Contemporary non-commercial harvesting of crab by residents of Hydaburg is primarily for dungeness crab, although king crab are also occasionally taken. Information on areas used is available for dungeness crab only (Fig. 2). Natzuhini Bay just north of Hydaburg and Crab Trap Cove just south of Hydaburg are important harvest areas for local residents. Other dungeness crabbing areas include Hetta Inlet, Sukkwan Strait, Klakas Inlet, Barrier Islands, and Bob's Bay.

Dungeness crab are harvested in the shallow waters of these inlets by means of pots in subtidal areas and rakes and shovels in intertidal areas. Crab are most commonly harvested during the summer and fall months. Data on quantities harvested are not available.

An extemely wide variety of invertebrate and plant resources are harvested from the sea by Hydaburg residents. The more common invertebrate resources include abalone, clams, sea urchins, rock scallops, gumboots, geoducks, octopus, and shrimp. Fishing for salmon and bottom fish are also important activities. Over 30 different plants have been reported as important edible resources. Deer, black bear, and harbor seals are hunted; mink, otter, wolf, and marten are trapped (Mills 1982).

Craig

Craig is located 30 miles north of Hydaburg on the west coast of Prince of Wales Island (Fig. 1). Prior to 1900, this site was used by

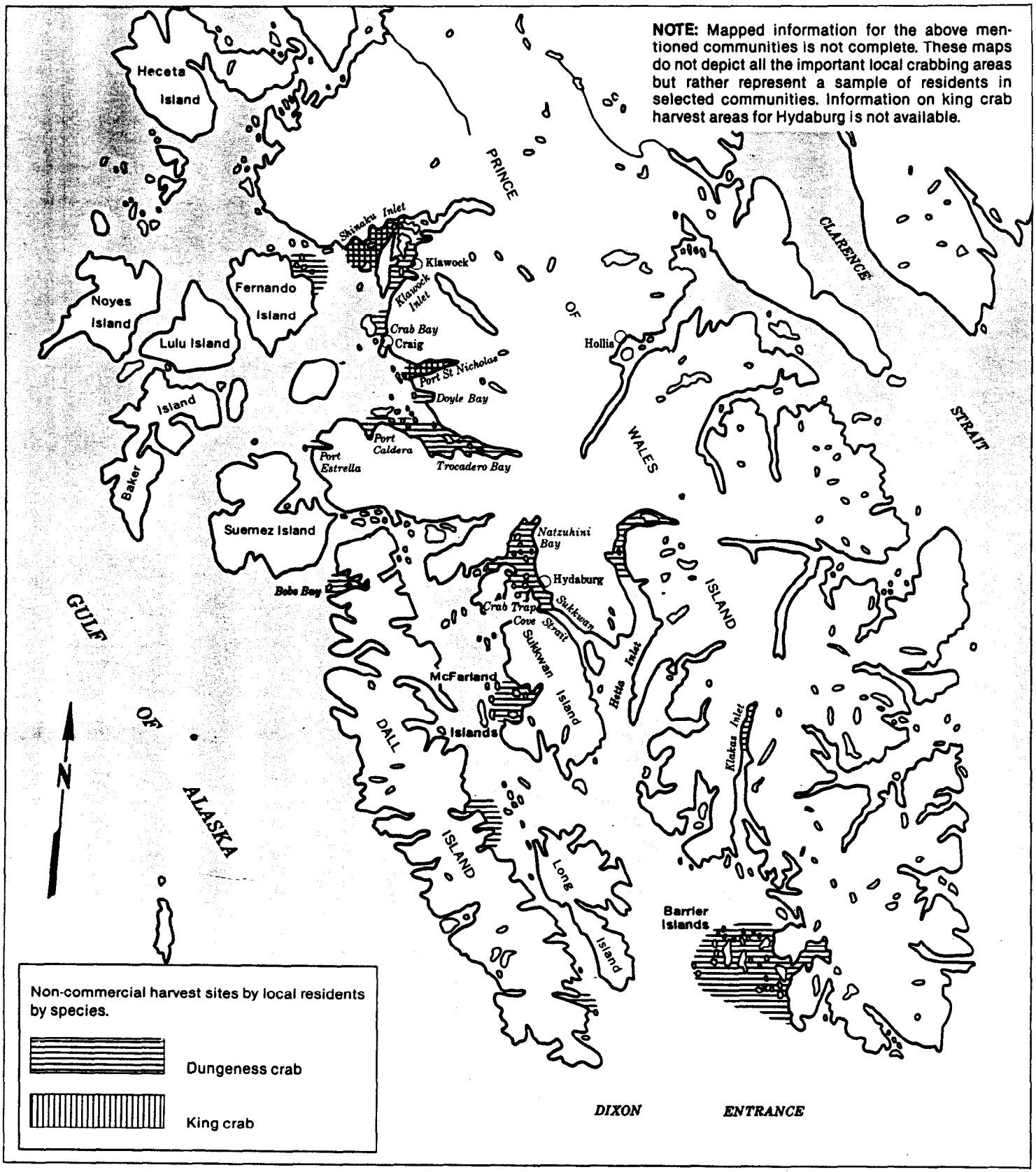

Fig. 2. Non-commercial harvest sites of local residents of Hydaburg, Craig, and Klawock.

both Tlingit and Haida Indians for temporary fishing camps. In 1912 a salmon packing company constructed a permanent facility at the site. Craig's population has increased synchronously with the fishing industry, attracting Native people from both Hydaburg and Klawock as well as non-Native people from Ketchikan and outside the state (Mills 1982).

In 1981 Craig's population was over 600 and has continued to grow. Today, Craig derives 40 percent of its employment from commercial fishing. In recent years employment with the timber industry has increased and brought new residents to the area from the Pacific Northwest states (Alaska Department of Community and Regional Affairs 1981).

Mapped information on areas used for the non-commercial harvest of crab by residents of Craig was obtained from the Draft Coastal Management Program (1983) and Sealaska Resource Atlas (1982). Contemporary non-commercial harvesting of crab by residents of Craig is primarily for dungeness crab, although king crab are also harvested in a few areas (Fig. 2). The dungeness harvest in the vicinity of Craig takes place in Crab Bay just north of town and in the inlets south of Craig, including Port St. Nicholas, Doyle Bay, Trocadero Bay, Port Caldera, and Port Estrella. King crab harvesting by Craig residents occurs in Port St. Nicholas. The smaller islands west the community of Craig are also used for harvesting crab; however, mapped information on those areas is not available.

Dungeness crab are usually harvested in the shallow waters of inlets by means of crab pots in subtidal areas and rakes and shovels in intertidal areas. Crab are most commonly harvested during summer and fall months. King crab are harvested by means of various types of pots or by use of a web of monofilament fishing line which is baited and entangles the crab.

Klawock

The village of Klawock is located on the west coast of Prince of Wales Island, 45 air miles west of Ketchakan, and 7 miles by paved highway from Craig (Fig. 1). It is connected by road to Hollis, a terminal for the Alaska Marine Highway. The population of Klawock in 1981 was approximately 450, 66 percent of whom were Tlingit Indians (Mills 1982).

In 1868 a trading post was established in Klawock and ten years later the first salmon cannery in Alaska was constructed there. The economy of the area has centered around subsistence fishing and hunting as well as the commercial fishing industry. In recent years, the construction of a sawmill and port has provided some residents with seasonal employment with the timber industry (Mills 1982).

Mapped information on areas used for non-commercial harvest of crab by residents of Klawock was obtained from the Draft Klawock Coastal Management Plan (1984) and the Sealaska Resource Atlas Volume I (1982). Contemporary non-commercial harvesting of crab by residents of Klawock is primarily for dungeness crab, although king crab are also harvested in a few locations (Fig. 2). Information on harvest sites for crab is only available for the waters near Klawock. Dungeness crab are harvested in the shallow bays of Klawock Inlet, Shinaku Inlet, and San Fernando Island. King crab are harvested in Shinaku Inlet (Fig. 2).

Dungeness crab are harvested in shallow waters of these inlets by means of pots in subtidal areas and rakes and shovels in intertidal areas. King crab are harvested by baited pots and baited fishing lines in which they become entangled. Data on quantities of crab harvested are not presently available. A wide variety of other local resources are harvested from the sea and land, similar to those mentioned in the Hydaburg case.

Point Baker and Port Protection

Point Baker and Port Protection are located on the northern tip of Prince of Wales Island (Fig. 1). About 2.2 miles of water separates the two communities, but they are tied together by a common post office, store, fish and game advisory committee, and similar economies and ways of life. The community of Point Baker was founded approximately 50 years ago; Port Protection was founded at least 30 years ago. Both communities had similar beginnings and attracted settlers because of the presence of safe anchorages for commercial fishing boats. In the 1930s the United State Forest Service opened some of the area, then part of the Tongass National Forest, for homesites. In 1950, residents petitioned for homesites along the shore of Port Protection. In 1955, the townsite of Point Baker was removed from the Tongass National Forest. Today, the residents of the two communities fish commercially and report dependence upon the renewable resources of the region for community use.

The two communities contain approximately 80 households. Most residents are young to middle-aged adults; eighteen school-age children reside in the commmunities. There are also a few households composed of retired people. Many of the households raise gardens, and all have at least one skiff. The only means of transportation between households is by water. There is a board walk currently under construction in Port Protection, which will provide access to the water for the few homes which do not have a beach front.

The following information was gathered by Division of Subsistence staff during a field visit to Port Protection and Point Baker in February 1984. Five members of the local fish and game advisory committee were interviewed, which included the area's only commercial crab fisherman.

Also, the researcher visited five additional households which were identified by committee members as knowledgeable about local resource harvests. Included was one household with members who have resided in Point Baker 41 years. Two adult children raised in this household still reside in the community.

The following areas were identified by the residents of the two communities as important for non-commercial crab harvesting. First is a bay located at the head of Port Protection, known locally as the "Back Bay" (Fig. 3). In the 1950s, this area helped to support a small local commercial dungeness crab fishery and cannery. The local stocks were depleted after about three years and this operation ceased. The "Back Bay" crab stocks are harvested by most of the residents of Port Protection; also, approximately 50 percent of the residents from Port Baker are reported to harvesting dungeness crab in the "Back Bay". In 1976, a logging camp was established in Labouchere Bay, located immediately south of Port Protection. Residents of the camp also harvest dungeness crab from the "Back Bay." Generally, they use six to nine crab pots in the bay at any one time. The crab pots are individually owned, but residents of the area who do not own pots share the catch by pulling the pots whenever they visit the bay. Most of the individuals who fish the pots distribute any excess crab to neighbors and friends. Nearly all respondents commented about the annual "crab feeds" held in the communities.

Respondents estimated that between 500 to 1,000 crab were harvested from the "Back Bay" by residents of Point Baker and Port Protection in 1983, which was a typical year. The local fish and game advisory committee estimated that about ten families canned crab for their own use in 1983. One household harvested and canned 80 crab last year, but did not

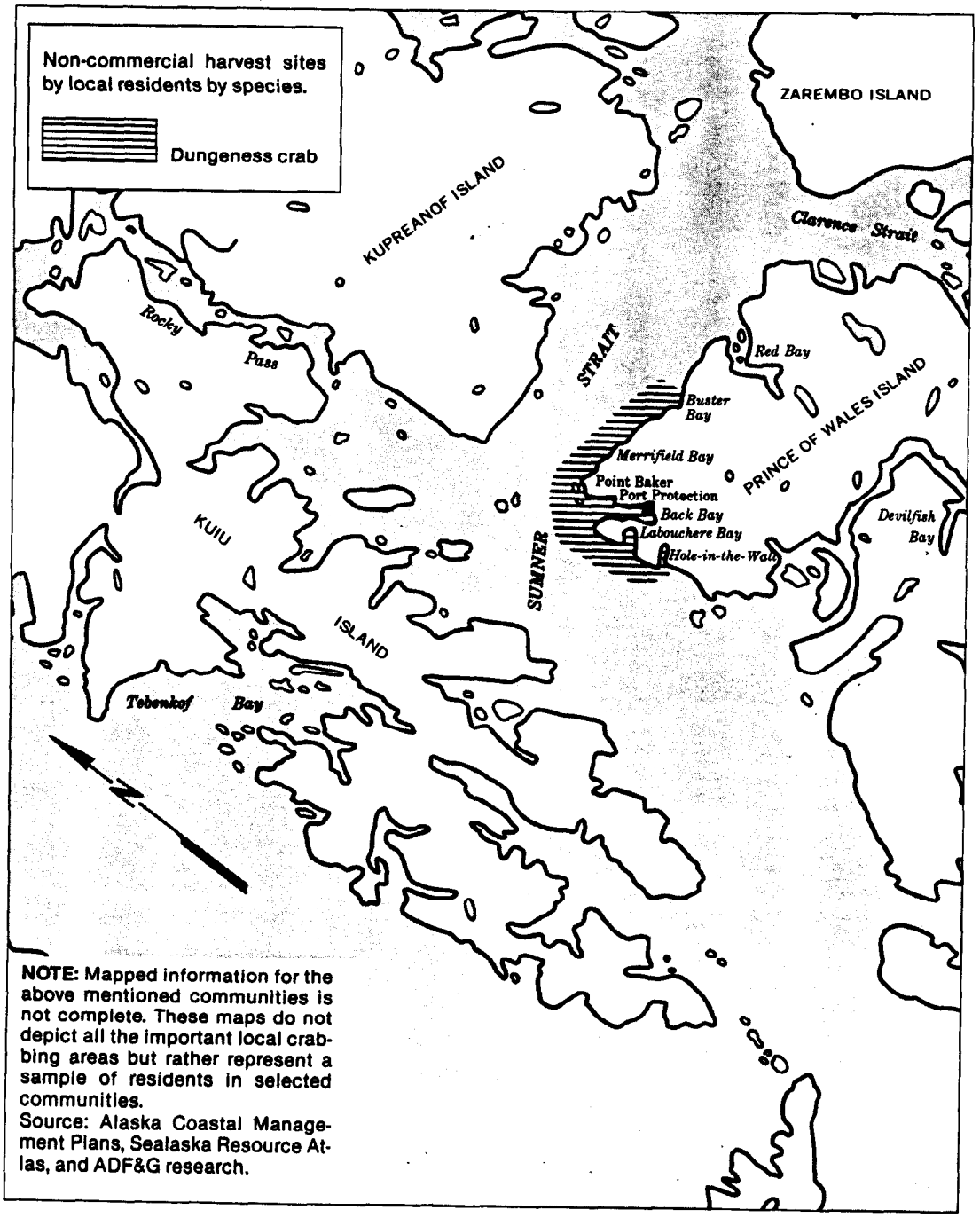

Fig. 3. Non-commercial harvest sites of local residents of Point Baker and Port Protection.

mention how many additional crab they ate fresh. Another individual said that he traded deer he had harvested for crab.

The "Back Bay" is also an important area for local harvesters of clams and cockles; waterfowl hunting also occurs here. The bay is easily accessible to small boats and by large vessels if the operator is knowledgeable about the area. A few of the respondents reported that commercial crabbers have entered the "Back Bay" and set their pots. They feared that because the bay is small, it would not take many commercial crab pots to again completely fish out the bay.

King crab is harvested from Port Protection during a brief period of the year in December by the residents of both communities. Labouchere Bay, according to respondents, has few if any, crab. The next bay south of Labouchere Bay is named "Hole in the Wall." The local trollers of the two communities and numerous other trollers harvest dungeness and king crab in this bay.

The residents of Point Baker and some of the residents of Port Protection travel along the northern coast of Prince of Wales Island and harvest dungeness crab on stream deltas as far as Merrifield and Buster bays (Fig. 3). The main method of harvest is by rake and by hand dip net during low tides.

Other bays mentioned as sources of non-commercial crab include Red Bay, Rocky Pass, Devil Fish Bay, Tebenkof Bay, and as far north as Kalinin Bay on the northern tip of Kruzof Island. The respondent in the latter case was a handtroller, who traveled throughout southeast Alaska fishing for salmon. In addition to crab, residents of Port Protection and Point Baker harvest salmon, halibut, shrimp, clams, and deer for local use. Information on the size of these harvests is not presently available.

Wrangell

Wrangell is a community of 2,376 people located on the northern tip of Wrangell Island near the mouth of the Stikine River (Fig. 1). Wrangell was founded in 1834 as a Russian fort and was along a route used during the gold rush. Wrangell is accessible from other Alaskan communities by scheduled jet service and the Alaska Marine Highway. The principal industries are fishing, lumber, and tourism. Today, government and private enterprises are the primary employers, mainly because the Wrangell cold storage facility has not operated in two years and the local lumber mill is closed for an indefinite period of time.

Written and mapped information on areas used for the non-commercial harvest of crab by residents of Wrangell is not available at this time. Also, there are no data presently available on the patterns of use of other resources.

Sitka

Sitka is located on the western coast of Baranof Island and is adjacent to the Gulf of Alaska (Fig. 1). It is the third largest city in southeast Alaska, with a population of 7,803 in 1980.

Sitka's economy includes a mixture of manufacturing (Alaska Lumber and Pulp), government, services, and commercial fishing. The community has a home fleet of over 100 seiners, power trollers, and hand trollers. It also serves as a port for numerous other fishing vessels throughout the year. The median household income for the community in 1980 was $32,732 (Gmelch and Gmelch 1984).

Sitka began as a Tlingit village, became the site of the first Russian settlement in southeast Alaska, and then became the capital of Russian America. In 1867 it became the territorial capital of Alaska. In 1903 Sitka opened its first cold storage plant and became a commercial fishing community, which it remains today. The following information has been drawn from two Division of Subsistence reports on research conducted in Sitka in 1982 (Schroeder and Nelson 1983) and 1983 (Gmelch and Gmelch 1984), supplemented by unpublished field notes of Division staff.

Areas used to harvest dungeness crab in the Sitka area include: Katlian Bay, Starrigavin Bay, Krestoff Sound, Hayward Strait, Nakwasina Passage, Kalinin Bay, St. John Baptist Bay, Fish Bay, and the bays in the western portion of Peril Straits (Fig. 4). King crab harvesting occurs in Peril Straits, with some also taken in Deadman's Reach and Nakwasina Passage.

Of the households surveyed in 1983, 33 households (24 percent of a random sample) went crabbing in 1982 (Table 1). The mean harvest by participating households averaged 35 crab during that year (Table 2). Dungeness crab was the primary species reported, followed by king crab and then tanner crab (Gmelch and Gmelch 1984).

Most harvesters used crab pots, usually one or two pots per boat. Rakes were second in importance as a method of harvest. Another method of harvesting crab was by snorkeling or scuba diving; there are an estimated 60 divers in the Sitka area.

Many Sitka residents reported that they now must travel further to harvest crab in quantities equal to those taken near their homes in the past. The length of these additional distances is not known at this time.

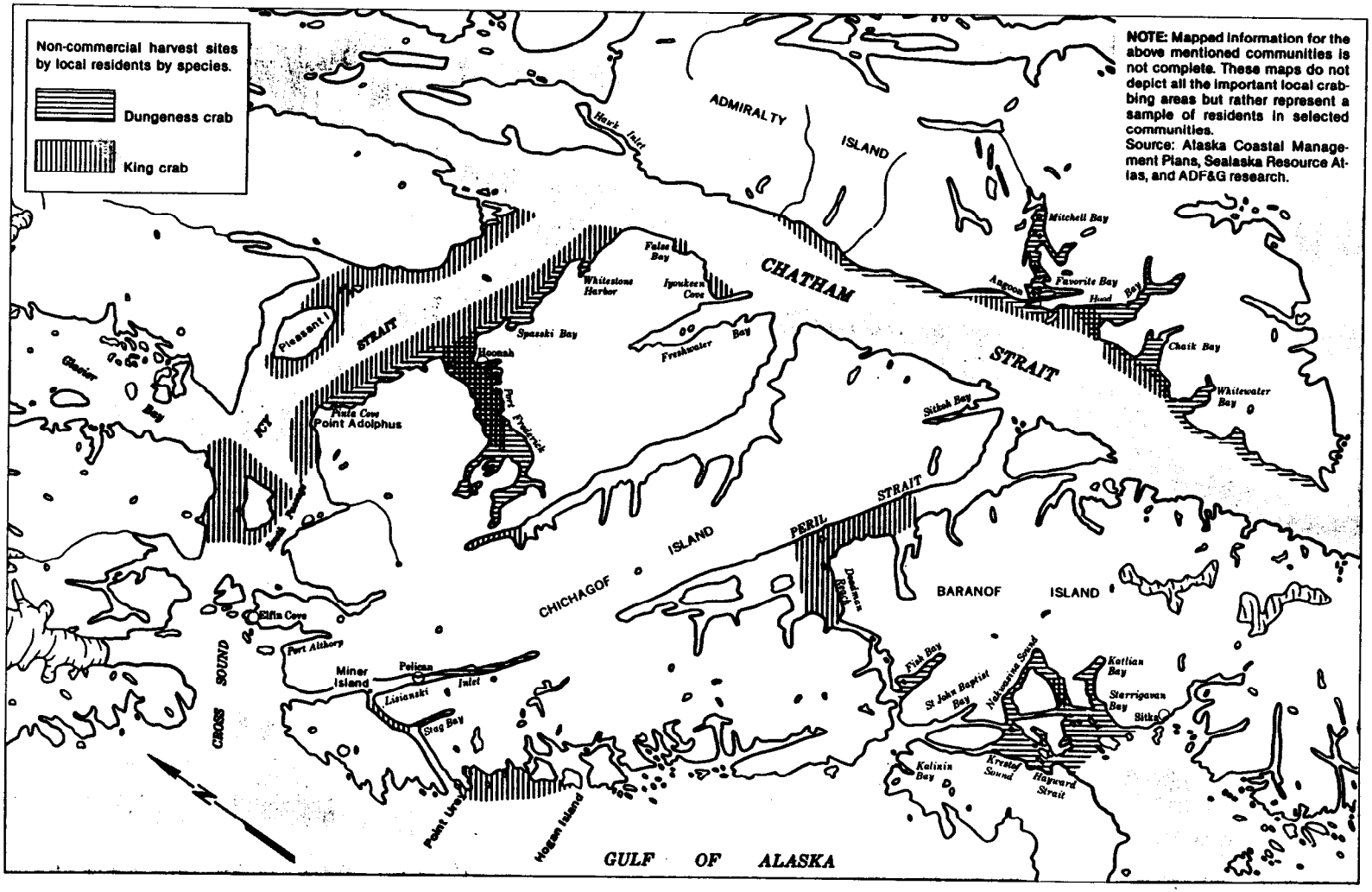

Fig. 4. Non-commercial harvest sites of local residents of Sitka, Angoon, Hoonah, and Pelican.

TABLE 1. TARGET SPECIES OF FISH RESOURCES CAUGHT BY SITKA HOUSEHOLDS

Species	Percentage of all Households*	Percentage of Fishing Households†
Salmon	65	80
Halibut	55	67
Dolly Varden	28	34
Crab	24	30
Trout	23	28
Rockfish	21	25
Ling Cod	19	23
Herring	16	19
Smelt	9	11
Shrimp	6	7

* n=139
† n=114
Source: Gmelch and Gmelch (1984)

TABLE 2. MEAN AND MEDIAN HOUSEHOLD HARVESTS OF FISH, SITKA 1982

Species	Mean of All Sample Households*	Median of All Sample Households†	Mean of Households That Fish§
Salmon (all)	16.1	3.5	19.5
Sockeye	5.3		6.4
Pink	4.8		5.7
Coho	2.7		3.3
King	2.0		2.5
Chum	1.3		1.5
Halibut	4.3	.45	5.2
Rockfish	4.3	.17	16.8
Dolly Varden	3.9	.18	15.2
Trout	3.9	.15	16.9
Ling Cod	1.0	.16	4.2
Crab	7.7	.28	35.0
Smelt	.9	.03	17.9
Shrimp	.49	.15	7.6

* n=139
† n=139
§ n=115
Source: Gmelch and Gmelch (1984)

Angoon

Angoon is located on the west coast of Admiralty Island, approximately 65 air miles south of Juneau, and 41 air miles northwest of Sitka (Fig. 1). The community had a population of 566 in 1982; a majority of the community's residents are Alaska Natives. Angoon was occupied by the Tlingit Indians for many years before the arrival of the first Europeans in Alaska. The community was a winter camp for the Tlingits before it became a permanent village.

Currently, Angoon residents rely on the resources of the land, supplemented with incomes from commercial fishing, local government and village corporation employment, and transfer payments.

Commercial fishing plays an important role in the income of many households. Angoon residents hold 69 hand troll, 5 power troll, and 4 seine permits. At least 70 residents also commercial fish for halibut. Thus, the economy is mixed, based on a combination of cash and the harvest of local resources.

The following information on Angoon residents' harvest and use of crab is derived from the results of fieldwork conducted by the Division of Subsistence in the community from 1981 to 1984. The residents of Angoon have historically harvested crab from Favorite Bay, Mitchell Bay, Hood Bay, Chaik Bay, Whitewater Bay, and Sitkoh Bay (Fig. 4). Most traditional crab harvests were probably composed of dungeness crab taken either by hand or by spear.

Currently residents of Angoon harvest dungeness crab in Favorite Bay, with six to ten dungeness crab pots used in the area continuously (Fig. 4). The crab pots are privately owned, but it is recognized that nearly all who travel to Favorite Bay for deer hunting, bird hunting, seal hunting,

and fishing for salmon or herring will most likely pick up a pot or two. Sitkoh Bay, Hood Bay, Chaik Bay, Whitewater Bay, and as far south as Point Garner are areas where the Angoon troll fleet harvests crab and hunts deer during the late summer and fall.

The main methods of harvest are pots, rakes and dip nets. The seasons for harvest are late July through the winter. The amount of harvest has not been documented. Sharing the catch is common in the community, with the elders and widows receiving much of the crab since they are not able to harvest the crab themselves.

Peril Straits, Sitkoh Bay, Chaik Bay, Hood Bay, Favorite Bay and along the northwest coast to Hawk Inlet are areas in Chatham Straits where king crab are harvested (Fig. 4). Tanner crab are incidentally harvested with king crab pots. Angoon residents also harvest shrimp, clams, cockles, black chitons, octopus, sea cucumbers, seaweed, and herring spawn on kelp.

Pelican

Pelican is a commercial fishing community. It was founded in 1938 and is situated on the northwestern tip of Chichagof Island (Fig. 1). In March 1983, the population was 210, 25 percent of whom were Alaska Natives.

Pelican Cold Storage is the major employer, which hires up to 75 people during the peak commercial fishing months, May through September. Other major employers in Pelican include the city, the schools, and other private enterprises.

Mapped information on areas used for the non-commercial harvest of crab by residents of Pelican was obtained from Environmental Science and Engineering, Inc. (1983). Contemporary non-commercial harvesting of crab

by residents of Pelican is primarily for king crab, although other crab species are occasionally taken. Crab are harvested in Lisianski Inlet and Stag Bay in substantial quantities. King crab are present and harvested from the southern portion of Miner Island to north of Stag Bay. King crab are also taken from Hogan Island to Point Urey. Dungeness are found in both Stag Bay and Lisianski Inlet (Fig. 4).

A wide variety of invertebrates and plant resources are harvested by Pelican residents. The more common invertebrates include: abalone, little neck clams, butter clams, horse clams, and geoducks. Berry gathering is extensive. The most popular plants utilized are the nagoonberry, blueberry, and salmonberry. Also, wood is important to the residents of Pelican. Approximately 50 percent of the community burn wood to supplement their home heating. Other resources important to Pelican are deer, bear, small furbearers, waterfowl, salmon, and bottomfish.

Hoonah

Hoonah is located on the northwestern tip of Chichagof Island on the western shore of Port Frederick (Fig. 1). The local economy is mixed, with the fishing and timber industries providing most of the local income. The population of Hoonah is growing. The 1980 U.S. census reported a total of 680 residents in Hoonah. Today, residents report that between 1,000 and 1,200 people reside in the community.

Hoonah was founded approximately 200 years ago by Tlingit Indians originally from Glacier Bay. The early contact with Europeans centered around the fur trade. Later, commercial salmon fishing became the major industry of the community and continues to be of major importance today.

Crab was canned at Hoonah by the Alaska Glacier Seafoods Company of Petersburg as early as 1936. Crab processing in Hoonah has continued and Hoonah Seafoods is a prominent part of the waterfront (Alaska Geographic 1978).

The Hoonah Coastal Management Program (CH2M Hill 1984) was used to identify non-commercial harvesting areas of crab by residents of Hoonah. Also, members of the Hoonah Fish and Game Advisory Committee were interviewed by Division of Subsistence personnel in February 1984. These community residents reported that the local stocks of dungeness crab are healthy and have been for the past three years. However, they also stated that these stocks have been overfished at least three times during their lifetimes. They also reported that almost everyone in the community owns one or two crab pots and actively fishes for crab in Port Frederick and into Icy Straits. Respondents noted that there were 20 crab pots currently being fished inside the boat harbor.

Dungeness crab are harvested in Port Frederick and along the northern shoreline of Chichagof Island to Whitestone Harbor on the northeastern shore and to the west, out to Pinta Cove near Point Adolphus (Fig. 4).

The main method of harvest appears to be by crab pot, although crab rings, dip nets, and rakes are also reported to be used in harvesting crab. Three residents said that when they were young, the only method of harvesting dungeness crab was by hand or spear.

King crab is harvested in the following places by the residents of Hoonah: Spasski Bay, Pleasant Island, South Passage, False Bay, Port Frederick, Iyoukeen Bay, Freshwater Bay and Glacier Bay. The main method of harvest is by crab pot with few using crab rings or variations of crab rings to harvest king crab.

Members of the Hoonah Fish and Game Advisory Committee estimated an average catch of 35 crab per household in Hoonah in 1983. They stated that crabbing is a year-round activity, with a majority of the effort occurring from May to October.

The residents of Hoonah harvest salmon, trout, bottomfish, nearly all types of shellfish, deer, seal and waterfowl for home use.

Elfin Cove

Elfin Cove is located on the northwestern end of Chicagof Island in a small, sheltered bay just south of Cross Sound, which opens into the Gulf of Alaska (Fig. 1). The first recorded settlement in the cove began in 1927, when a fish buyer built a small store and restaurant to serve fishermen (Alaska Geographic 1978). Since that time, Elfin Cove's economy has been centered around small-scale commercial fishing. Today Elfin Cove has a year-round population of about 35 people. During summer months, fishing vessels from all over the Pacific northwest use the cove as a base of operation. Access to Elfin Cove is by private boat or float plane only. There are no roads and boardwalks connect the homes built above the water on or near the shoreline.

Mapped information on areas used for the non-commercial harvest of crab by residents of Elfin Cove is presently not available. The community of Elfin Cove uses the clam beaches of Port Althrop year-round to obtain food. Port Althrop is a large bay just west of Elfin Cove extending six miles to the south (Fig. 4). Presently there is no commercial harvest of clams, mussels, or cockles in this area.

Juneau

Juneau, the capital of Alaska, is located on the mainland below the coastal mountains of southeast Alaska, just north of the Taku River and south of Lynn Canal (Fig. 1). Two different groups of Tlingit Indians historically inhabited the area. The Taku Tlingits had a village ten miles south of Juneau in Taku Inlet and the Auke Tlingits were located 15 miles north of Juneau near Auke Bay (Fig. 5). Physically these original villages no longer exist; however, many Native residents still live in the Juneau area. Gold mining in the 1880s brought Euro-Americans to the present location of Juneau. Since the gold mines closed in the 1940s, Juneau's economy has been based primarily on government, commercial fishing, and tourism. Juneau's present population is about 27,000, a 20 percent increase since 1982. Mapped information on areas used for the non-commercial harvest of crab by residents of Juneau has not been documented.

Harvesting of crab by local residents who have access to the waters near Juneau is very common in Gastineau Channel and Auke Bay. Conflicts between non-commercial and commercial fishing for crab in the 1970s resulted in the closing of Gastineau Channel to commercial tanner crab fishing and Gastineau Channel and Auke Bay area to commercial dungeness and king crab fishing (Fig. 5).

CONCLUSIONS

Documented information about the non-commercial harvest and use of crab in southeast Alaska communities is extremely limited. Region-wide survey data (Alves 1981) and fieldwork in specific communities (e.g.

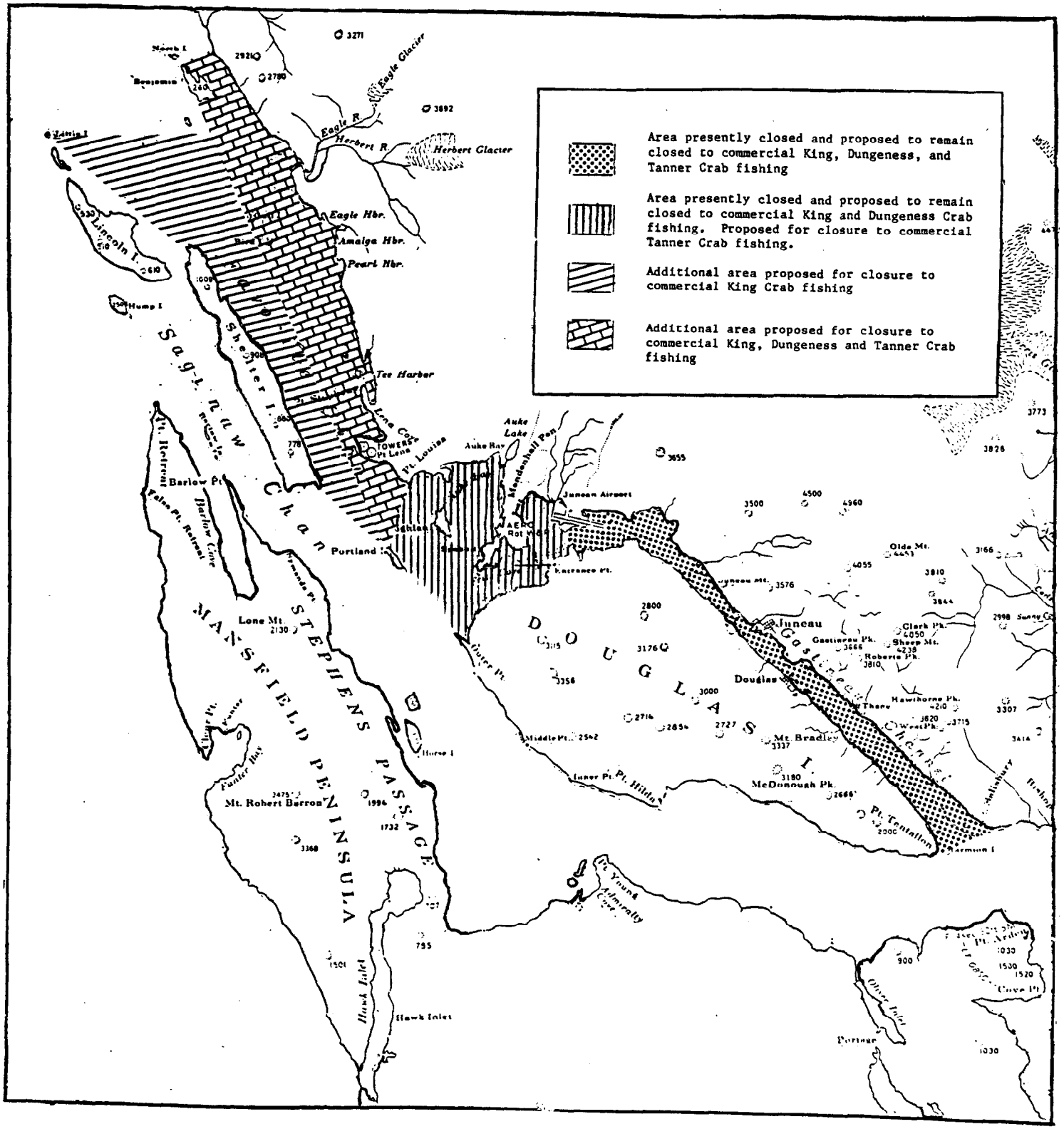

Fig. 5. Areas presently closed to commercial crabbing and additional proposed commercial closures in the Juneau area (See proposal booklet for written descriptions).

Schroeder and Nelson 1983) suggest that the harvesting of crab for local use is a very common activity throughout southeast Alaska, with residents of small communities perhaps obtaining up to five percent of their annual meat supply from crab. Results of research in Angoon, Port Protection, Point Baker, and other communities also revealed that crab harvests, as well as crabbing gear, are commonly shared within these communities. Information also suggests that dungeness crab is the most commonly harvested species. Reliable data on harvest quantities are almost nonexistent, however.

As a result of Alaska's Coastal Management Program and Division of Subsistence research, it has been possible to prepare maps of areas used for non-commercial harvesting of crab for several southeast communities. These data reveal that much of these harvests occurs relatively close to communities and frequently in sheltered bays and coves that can be reached in small boats and are protected from severe weather. In the past, informal agreements between local users and commercial crab fishers allocated these areas to non-commercial uses. As a consequence of the rapid growth of the commercial crab fishery in southeast Alaska in the last few years, concern has been expressed in several communities that crab from areas used predominately for non-commercial purposes in the past is being commercially harvested, with a consequent reduction in the non-commercial take.

In summary, the available data suggest that non-commercial harvesting and use of crab play an important role in the patterns of resource use in many southeast communities. Many households, especially in small communities, participate in this activity. While the size of harvests is unknown, sharing of these harvests is reported to be extensive. The

importance of non-commercial crabbing is evidenced not only by these high levels of participation and sharing, but also by the concern local communities have expressed about the future viability of the crab resource of southeast Alaska.

REFERENCES CITED

Alaska Consultants, Inc.
1976 Angoon Comprehensive Development Plan. Anchorage.

Alaska Department of Community and Regional Affairs
1981 Craig. In Prince of Wales Island Community of Profiles. Juneau.

Alaska Department of Fish and Game
1984 Shellfish Staff Reports to the Board of Fisheries. Division of Commercial Fisheries, Juneau.

Alaska Geographic
1978 Southeast, Alaska's Panhandle. Northwest Publishing Company.

Alves, William
1981 Residents and Resources: Findings of the Alaska Public Survey on the Importance of Natural Resources to the Quality of Life in Southeast Alaska. University of Alaska, Institute of Social and Economic Research.

Central Council of Tlingit and Haida Tribes of Alaska
1983 Traditional and Customary Natural Resources Used by the Southeast Alaska Natives. Juneau.

CH2M Hill
1983a Hydaburg Coastal Management Program.

1983b Public Hearing Draft Craig Coastal Management Program.

1984 Concept Approved Hoonah Coastal Management Program.

Environmental Science and Engineering, Inc.
1983 Pelican Coastal Management Program Public Hearing Draft. Pelican, Alaska.

Environmental Services Limited
1983 Pelican Community Profile. Alaska Department of Community and Regional Affairs, Juneau.

Gmelch, George and Sharon Gmelch
1984 Resource Use in a Small Alaskan City - Sitka. Division of Subsistence, Alaska Department of Fish and Game, Juneau. Draft.

Mills, Dave
1982 The Procurement and Use of Abalone in Southeast Alaska. Division of Subsistence, Alaska Department of Fish and Game, Juneau, Technical Paper No. 40.

Sealaska Corporation
1982 Sealaska Resource Atlas Volume I. Juneau.

Schroeder, Robert and Richard K. Nelson
1983 Sitka: Resource Uses in a Large, Non-Road Connected Community in Southeast Alaska. In Resource Use and Socioeconomic Systems. Robert J. Wolfe and Linda J. Ellanna, comp. pp. 219-247. Division of Subsistence, Alaska Department of Fish and Game, Juneau, Technical Paper No. 61.

Walsh, Murray
1984 Draft Klawock Coastal Management Plan. Murray Walsh Planning Consultants.