SUBSISTENCE SHELLFISH USE IN THREE COOK INLET VILLAGES, 1981: A PRELIMINARY REPORT

by
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Division of Subsistence
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ABSTRACT

While of long duration, the non-commercial shellfish fisheries of Tyonek, Port Graham, and English Bay have been largely undocumented. Preliminary shellfish harvest data for these three Cook Inlet communities were collected during the spring, summer and fall of 1981. Catch calenders were used to collect gross harvest quantities in Port Graham and English Bay. Household interviews were used in Tyonek to collect harvest estimates and distribution information. Data indicate at least 17 species of shellfish being utilized by Port Graham and English Bay year round and 3 species being utilized during spring and summer in Tyonek. Preliminary data also reveal that activities have taken place in a traditional clamming area in Redoubt Bay that threaten both the continued utilization of the clams and the resource itself.

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Introduction

This preliminary report summarizes the currently available information on historical and contemporary non-commercial uses of shellfish by the residents of the communities of Tyonek, English Bay, and Port Graham (Figure 1). Tyonek, an Athabaskan Indian village of 239 residents, is located approximately 43 air miles southwest of Anchorage on the west shore of Cook Inlet. English Bay and Port Graham are neighboring villages located approximately eighteen and twenty-one miles, respectively, south of Homer on the east shore of Cook Inlet. Most of the residents of these two villages call themselves "Aleuts"; they speak a Yupik Eskimo language. English Bay contains 125 people, while Port Graham's population is 162.

It is important that the shellfish fisheries of Tyonek, English Bay, and Port Graham be documented fully. Growth of the human population of the Cook Inlet region may bring increasing competition for shellfish between user groups. In addition, commercial shellfish operation in Cook Inlet may expand (see Appendix A).

Most of the data contained in this report derive from on-going research projects which the Division of Subsistence, Alaska Department of Fish and Game, has been conducting on resource use in these three communities. Information was also gathered in response to a request by residents of Tyonek to investigate the damage which they reported had occurred in the

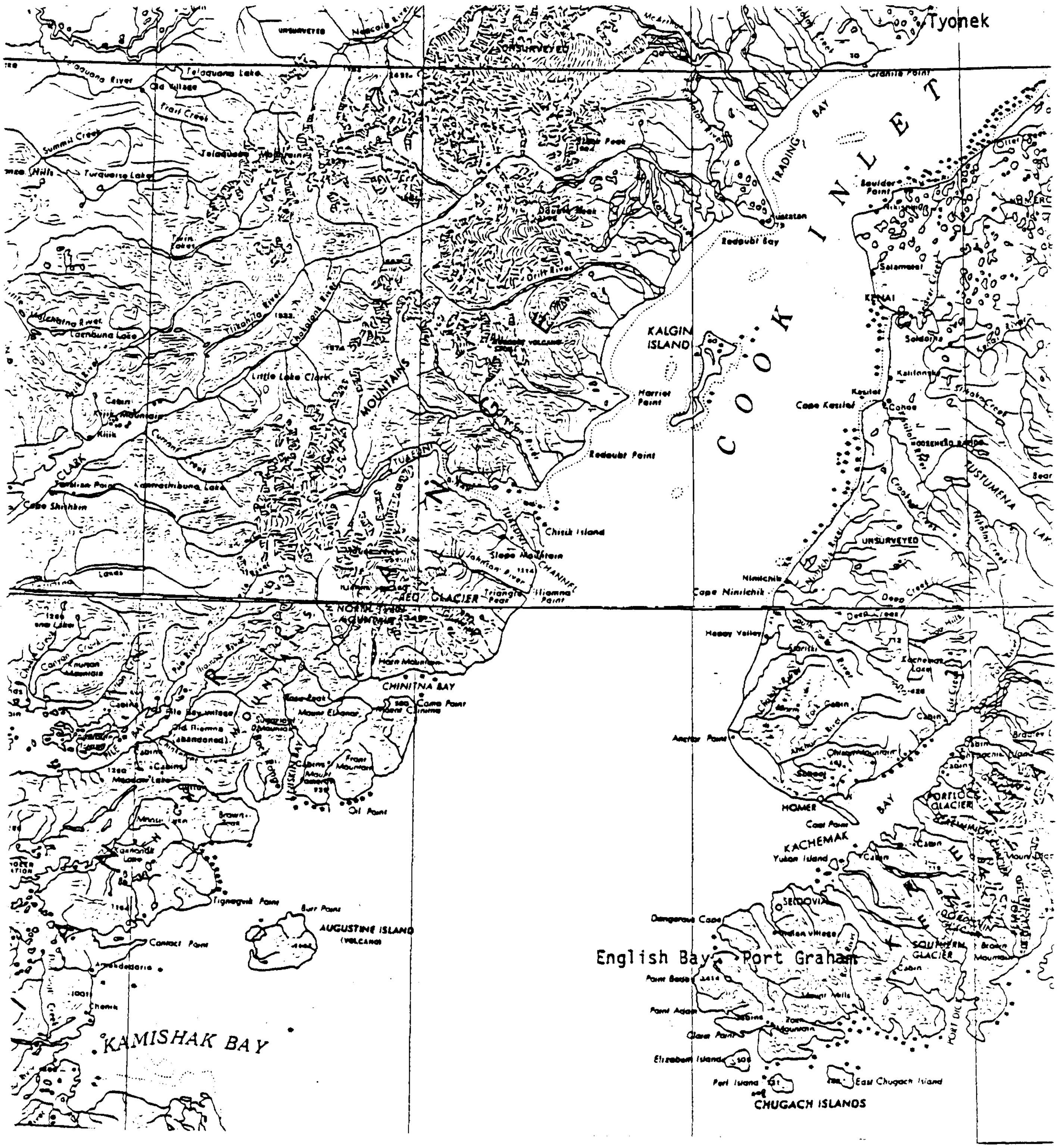


Figure 1. Cook Inlet communities and landmarks.

spring of 1981 to the clam beds near Little Jack Slough (Appendix B). These clam beds are located outside the generally acknowledged range of clams in Cook Inlet (e.g. Governor's Agency Committee on Leasing 1981: Appendix Five). A major result of this research was the initial documentation of this shellfish fishery.

Purpose

The purpose of this report is to provide a preliminary description of the procurement and utilization of shellfish by the residents of three Cook Inlet Communities--Tyonek, English Bay, and Port Graham.

The objectives to be accomplished differed between the three communities. The Tyonek study was limited to a single species, clams, and intended to accomplish the following objectives:

1. map historic and contemporary locations of the harvest of clams;
2. quantify the harvest for 1981;
3. estimate past harvest levels;
4. describe methods of harvest and preservation;
5. describe harvest distribution within the community; and
6. describe other historical and traditional uses of clams.

For Port Graham and English Bay, the objectives were:

1. determine the variety of shellfish species harvested for 1981; and
2. quantify the shellfish harvest by species.

Methodology

Two different methodologies were used to gather data on shellfish procurement and utilization. The communities of Port Graham and English Bay were studied under one design because of their close proximity and similarity in use patterns. Tyonek was studied under a second, more intensive project design and methodology.

At Port Graham and English Bay a monthly catch calendar (Appendix C) was the basic research tool and field observations supplemented this data. A calendar was distributed to each household in the two communities and collected by Subsistence Division researchers each month. For a detailed description of methods used in Port Graham and English Bay (see Stanek 1981).

The primary research methods in Tyonek were in-depth interview and systematic mapping. Tyonek key informants identified six residents who organized and led clamming parties for the village during 1981. Each clamming leader was interviewed using an interview guide and a standard questionnaire (Appendix D). The six also located clam harvest activities on 1:63,000 United States Geological Survey maps to identify geographic areas of historic and contemporary clamming by community residents.

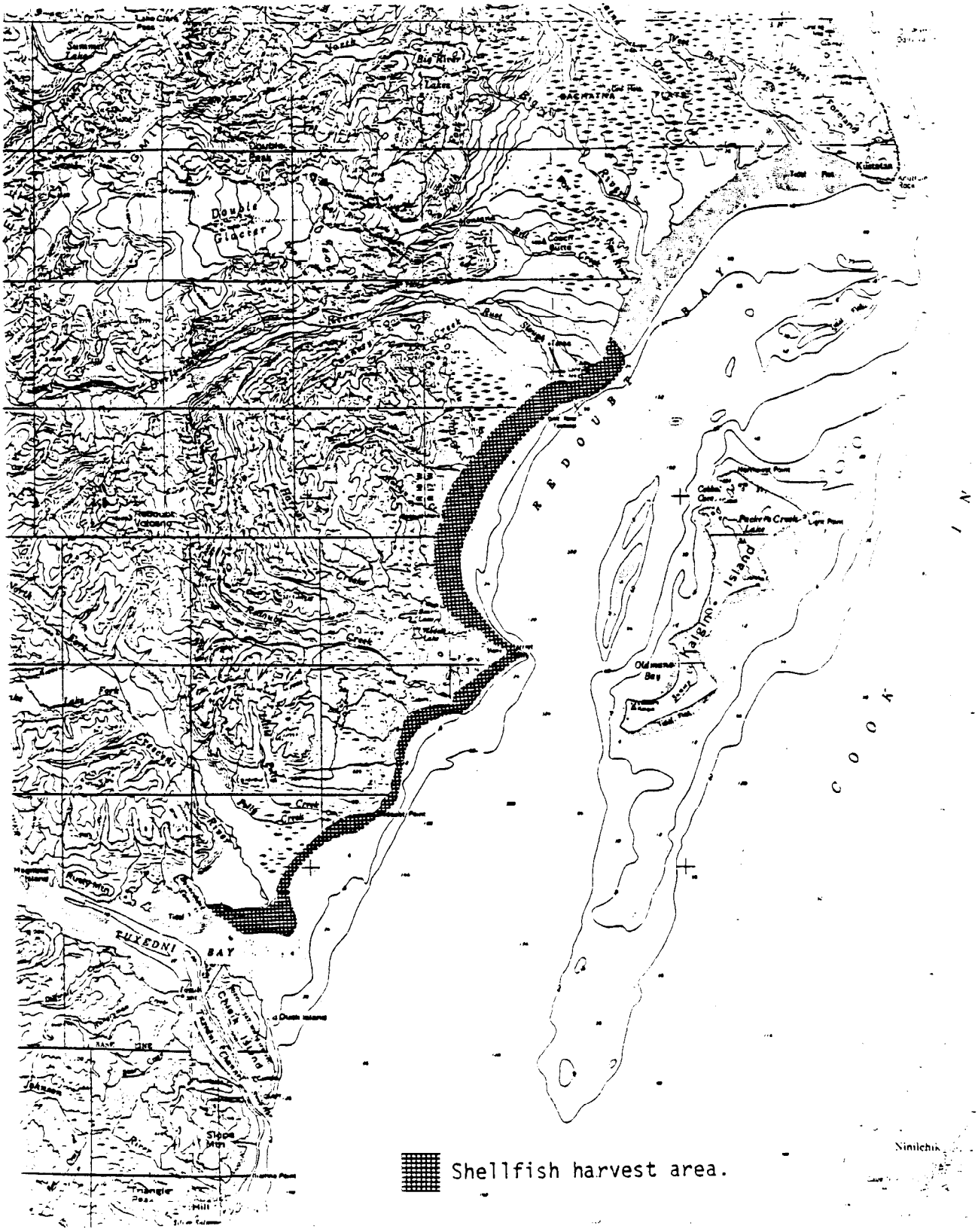


Figure 2. Past and present shellfish harvest areas used by Tyonek people.

Background

Archaeological evidence attests to the antiquity of the human utilization of shellfish in the Cook Inlet region. For example, ancient middens along Kachemak Bay contain numerous burned clam shells and rectangular shell beads (de Laguna 1934;17, 106). Sites on the west side of Cook Inlet, such as at Kustatan and at the mouth of the Cresent River near Polly Creek, have yielded razor clam and cockle shells (de Laguna 1934:138-139). Not surprisingly, such remains are rarely encountered in Upper Cook Inlet, where turbid brackish waters preclude the growth of these marine species.

The oral traditions of the Dena'ina, the Athabaskan inhabitants of most of the Cook Inlet Basin, describe the harvesting, preservation, and consumption of shellfish. In the 19th century, clams, mussels, and crabs, as well as octopus, were taken at Kachemak Bay (Osgood 1937:31). The following narrative by Peter Kalifornsky of Kenai (1977:22-23; cf. Osgood 1937:43) depicts the utilization of clams at Kustatan, a former Dena'ina village at West Foreland.

> Qesdaghnen hdults'ih hdghu qunshi ch'u qutsaghełi eła ch'u łuq'u tlegh qyeghuh. Yithdi qiz'in uhu htenish. Qiz'in ghin qyelish ch'u qunshi bis yi qeyelish ch'u tlegh qeyetułtl'et heyi niłtu. Beduki dghi'uyi qeyeduch'ik'eghdelqet qun ebayi n'at dnuqeyelih. Yadi ch'ułchi qiynizih, qiz'in betuqilyuyi qeyelish.
>
> (When they stayed at Kustatan, they made oil from beluga, seal, and other things. Then they went after clams. They cooked the clams. Then they put them in a beluga stomach and poured in oil, to preserve it for winter. When they opened it up, they washed them in hot water. They cooked whatever they wanted; they cooked clam soup.)

Clams and other kinds of shellfish were important items in the lively trade

between villages of the Upper and Lower Cook Inlet. In addition, Tyonek Indians journeyed as far south as Kamishak Bay for clams. These shellfish were prepared fresh by boiling or steaming, or preserved.

Findings: Tyonek

Currently the Tyonek people make one to two annual trips by dory approximately 100 to 150 miles round trip south to clam beds located near Little Jack Slough (Banqach'agh), Harriet Point (Ts'iqezdeght), Polly Creek (Taɬin Ch'iɬtant), and the Cresent River (Ch'it'entnu) (place name data derived from Chickalusion and Chickalusion 1979, Kalifornsky 1977, and Kari n.d.). Figure 2 depicts the zone within which clams are taken currently by Tyonek residents. These trips usually occur in April or early May depending upon the amount of ice in the Inlet and the timing of the minus tides. Occasionally another trip occurs in late summer or early fall.

A trip lasts one to two days depending upon the weather conditions and the abundance of clams. Two to five dories usually travel to a clamming area together in case outboard motor problems arise. Traditionally, clamming parties attempt to harvest seals while en-route to and from the clam beds. No seals were harvested during the 1981 clamming trips.

Clamming trips are organized by individuals in the community who possess exceptional knowledge and expertise in this activity. Persons consolidate around "clamming leaders" who direct the activities of the group on clamming trips. Clamming leaders are generally older, more experienced men who own dories and outboard motors. Through interviews, it was determined that

there were six clamming leaders who organized and led clamming expeditions during 1981. The six interviewed leaders have been participating in clamming activities in this area of Cook Inlet an average of 27.4 years. One man has harvested clams for over 60 years. Leaders decide among themselves when to leave for the clam beds and who will accompany them. Each dory carries five to seven people, usually relatives and friends of the clamming leader.

In the 1920s, many Alaskan Native people, including those of Cook Inlet, participated in a commercial clamming operation at Polly Creek in the spring. Kalifornsky (1977:2-6) describes clam harvests during the 1920s and concurrent subsistence activities such as sealing and hunting black bear and porcupine. During this same decade, most Dena'ina from the western shore of lower Cook Inlet moved north to the village of Tyonek. As this report documents, they, their children, and their grandchildren along with other Tyonek residents, continue to harvest razor clams (qiz'in), butter clams (chuq'ush), and cockles (esdghuga) at traditional places along the southwestern shore of Cook Inlet (see also Chickalusion and Chickalusion 1979:11, 23; Kari 1977). Also, the present day inhabitants of Kachemak Bay, many of whom reside at English Bay and Port Graham, continue to harvest various species of marine invertebrates (North Pacific Rim 1981).

Species of shellfish harvested by Tyonek people include razor clams, butter clams, and cockles. Ninety percent or more of the harvest usually consists of razor clams. Everyone in the clamming party digs clams with shovels and

deposits them alive in containers of salt water for transport to the village. If kept in the shade, clams will remain alive three to five days by using this method. After the clamming parties return to the village, the leaders distribute clams throughout the village. Some leaders send their children to other households to deliver the clams; other leaders wait at home for people to visit them to request a portion of the harvest. Everyone who wants clams receives some, but the amount they receive depends on the size of the harvest and a person's relationship to the leader. Research has not yet fully elucidated the nature of these relationships, however. The households of the clamming leaders usually retain a large portion of the harvest.

Most village residents eat the clams fresh. Some prefer them raw; most like them cook in chowders or fried. Those households with a large supply of clams preserve them by canning and freezing. Clams and salmon are eating during portions of the six weeks of Lent, when abstention from eating red meat and animal fat, to which village residents adhere, is directed by the doctrines of the Russian Orthodox Church.

Survey results and field observations indicate that prior to 1981 the estimated quantity of unshucked razor clams harvested each year by Tyonek residents was 2,800 to 3,300. However, in 1981 an unusually low harvest of 1,056 clams occurred. Tyonek residents attribute this low harvest to the destruction of the clam beds at their most commonly used site near

Little Jack Slough. Some Tyonek residents believe this was due to an illegal commercial clamming operation which dredged the mud flats in early 1981. However, the management biologist considered this unlikely (Appendix B).

Findings: Port Graham/English Bay

Information was gathered on a household basis using catch calendars distributed to 47 households in Port Graham and 29 households in English Bay. Results for the two communities are based on an average calendar return of 80 percent per month. The remaining 20 percent of the calendars were from households where residents were away from the village for a major part of the year and therefore had not harvested resources extensively. The calendars were originally designed for the collection of salmon harvest data and field observations of shellfish harvest indicate that the existing figures may be low.

Preliminary results from the catch calendars indicated 13 species of shellfish were harvested in varying quantities from May through December of 1981 (Tables 1 and 2). In addition to the 13 species, scallops, sea urchins, sea cucumbers and red-neck clams are reportedly utilized (North Pacific Rim, 1981; Appendix E).

Catch calendars indicated the most commonly and abundantly harvested species of shellfish harvested in the two communities were chiton, dungeness crab, butter clams and razor clams. Field observations in these two communities

	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	SUB.TOT.
KING CRAB				4					4
DUNGENESS CRAB	8	22	40	22	5				97
TANNER CRAB						5			5
RAZOR CALM		105		10					115
HORSE CLAM									
STREAMER CLAM									
BUTTER CLAM	61	25							86
COCKEL	150								150
MUSSEL	24#								24#
SHRIMP									
CHITON (Bidarky)	2.5#	12.5#	30#	30#		17.5#	10#		102.5#
SNAIL	21#	6#							27#
OCTUPUS				1					1

Note: # = pounds after shucking.

Table 1. Preliminary subsistence shellfish harvest data for English Bay 1981.

	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	SUB-TOT.
KING CRAB									
DUNGENESS CRAB	17	54	49	43	103	20			286
TANNER CRAB							33		33
RAZOR CLAM		28		45					73
HORSE CLAM	25								25
STEAMER CLAM					45	64			109
BUTTER CLAM	218					40			258
COCKEL	61					70			131
MUSSEL	5#								5#
SHRIMP	75#								75#
CHITON (Bidarky)	55#	11.5#			2#	55#	30#	30#	183.5#
SNAIL	31#	5#							36#
OCTUPUS	1	1	2			3			7

Note: # = pounds after shucking.

Table 2. Preliminary subsistence shellfish harvest data for Port Graham 1981.

during the past eight months have found chiton and clams occurring as food items in over half the households following suitable low tides. The harvest of these resources is often talked about by residents in social settings and is particularly of interest to the older people. The resources are highly valued food products in these communities. Searching for chiton during night-time low tidal periods of late fall and winter is a common practice among the experienced elder villagers. Summer months find nearly all available residents searching areas with abundant chiton populations.

General locations of shellfish harvests in the vicinity of Port Graham and English Bay are depicted in Figure 3 (taken from "Final Environmental Impact Statement, Lower Cook Inlet-Shelikof Straight, Proposed Oil and Gas Lease Sale 60" 1981, Graphic Number 14).

Source: North Pacific Rim. 1981. Chugach Region Community Subsistence Profiles.

Figure 2. Present shellfish harvest areas used by Port Graham and English Bay residents.

Discussion

The information presented in this report provides an initial assessment of shellfish utilization in three Cook Inlet communities, Tyonek, Port Graham, and English Bay. These shellfish fisheries are of long duration, and have been largely undocumented.

The Tyonek clam fishery has been heretofore unreported in the biological literature. The harvest and utilization of shellfish by the Tyonek people follow complex community-based patterns. Clams, especially, are a socially and culturally important resource in the annual round of subsistence activities.

An important factor stimulating research for this study was the concern expressed by Tyonek residents for the protection of important clamming areas near Little Jack Slough. On their arrival at this traditional harvest site in the spring of 1981, Tyonek clamming parties found few large clams; this is very unusual. The remaining clams were either crushed, cut in half, or quite small. This evidence suggested to the experienced clammers that an illegal dredge had been operating in the beds or that an oil spill cleanup had occurred. On site investigations in the spring of 1982 will attempt to document the reported damage to this important resource, which threatens the viability of the Tyonek shellfish fishery.

In the two lower Inlet communities of Port Graham and English Bay, a large

variety of shellfish and other intertidal resources is harvested year round. The economic, social, and cultural significance of these resources is not fully understood and requires further study. The frequent consumption of chiton and clams in village households indicates that these resources are important fresh foods. They are harvested by most households in both communities, and there is evidence that the harvest activity may have important social value. Documentation of shellfish harvest areas for Port Graham and English Bay is being planned. Because of the large variety of resources harvested and the lack of specific information on harvest locations, future information should be of great utility to management.

In conclusion, this report has begun to demonstrate that shellfish utilization in the three Cook Inlet communities of Tyonek, English Bay, and Port Graham is part of a highly complex system of resource use which is important economically, socially, and culturally. The full significance of shellfish use cannot be fully understood without more detailed information gathered over a longer time frame. Future research to assess the importance of shellfish and related resources is part of the Subsistence Division's continuing program in the Cook Inlet area.

LITERATURE CITED

Chickalusion, Max and Nellie Chickalusion
1979 Tubughna Etnena: The Tyonek Peoples' Country. Fairbanks: Alaska Native Language Center.

de Laguna, Frederica
1934 The Archeology of Cook Inlet, Alaska. Philadelphia: University of Pennsylvania Press.

Governor's Agency Committee on Leasing
1981 A Social, Economic, and Environmental Analysis of a Proposed Oil and Gas Lease Sale in Lower Cook Inlet. Division of Policy Development and Planning. October 1981.

Kalifornsky, Peter
1977 Kahtnuht'ana Qenaga: The Kenai Peoples' Language. Fairbanks: Alaska Native Language Center.

Kari, James
1977 Dena"ina Noun Dictionary. Fairbanks: Alaska Native Language Center.

_____
n.d. Dena'ina Place Names. Unplublished manuscript.

North Pacific Rim
1981 Chugach Region Community Subsistence Profiles.

Osgood, Cornelius
1937 The Ethnography of the Tanaina. Yale University Publications in Anthropology 16.

Stanek, Ronald
1981 Preliminary Harvest Data: Subsistence Fishery, English Bay-Port Graham 1981. Alaksa Department of Fish and Game, Division of Subsistence.

MEMORANDUM State of Alaska

TO: Kim Sundberg, Habitat Biologist
Habitat Division
Anchorage

DATE: January 13, 1982

FILE NO:

TELEPHONE NO:

FROM: Ron Stanek, Resource Specialist
Subsistence Division
Anchorage

SUBJECT: Reported Destruction of Clam Beds at Little Jack Slough

In the Spring of 1981 during our regular monitoring the subsistence salmon fishery in Tyonek, local residents expressed concern about the "destruction" of one area in which they had been digging clams. Until recently, time did not permit us to do any formal work on the use of shellfish by Tyonek residents. During the last month we have been conducting a study of clam utilization as part of a comprehensive resource use study in Tyonek. Some of the information we have gathered follows:

1. The area where damage to clams occured is the beach located one mile due south of Little Jack Slough;

2. Some old Tyonek residents have been clamming in this area annually for 60 years.

3. Upon returning to the area in April and early-May of 1981 they found:
   (a) large clams had been crushed and appeared to be cut in half,
   (b) there were no large clams left,
   (c) cement blocks were found around the clamming area,
   (d) small clams, very few of legal size, were the only clams remaining alive.

4. Normal estimated annual harvest from this area for Tyonek is 235-270 gallons, (Dan Foster and I observed this during Spring of 1980) the 1981 harvest was 87.5 gallons.

5. Most people had no idea of what had happened. Some people thought someone tried digging clams with a blade (tractor) or some big machine like a clam dredger had come in and left only the small clams. One person thought there might have been an oil spill which someone cleaned up.

Perhaps next spring, if that isn't too late, someone from ADF & G could accompany a Tyonek resident to the area for an on-site observation.

mrt
cc: D. Nelson
J. Browning
A. Kingsbury
D. Haanpaa
K. Florey
R. Redick
J. Fall
L. Ellanna
K. Webster

02-001 (Rev.10/79)

MEMORANDUM

State of Alaska

DEPARTMENT OF FISH AND GAME

TO: Ron Stanek
Resource Specialist
Subsistence Division
Anchorage

DATE: January 18, 1982

FILE NO:

TELEPHONE NO: 262-9368

FROM: Paul Ruesch Paul
Area Management Biologist
Commercial Fishery
Soldotna

SUBJECT: Little Jack Slough
Clam Bed Damage

After reviewing a copy of your January 13 memo on the above topic, I thought a few comments from our office might be in order. The likelihood of the reported damage occuring as the result of a clam dredge operation should be considered quite remote. As I am sure you are already aware, this area is not open to dredging and the possibility of an illicit operation with a highly visible piece of equipment such as a clam dredge is unlikely.

The fact that Little Jack Slough is in close proximity to Drift River Terminal and associated oil-related activites would support the theory that the damage occurred as the result of an oil cleanup operation. DEC has no record of a spill occurring in this area during the time in question and stated that Drift River personnel have been very cooperative in reporting even very minor spills.

On a slightly different subject, you might be interested in knowing that recently some interest has been expressed by commercial operators in exploring the area north of Harriet Point to assess the razor clam potential there. I would urge you, in your study, to be as specific as possible in regards to the areas and amounts of clams utilized by Tyonek residents. It might also be useful to attempt to translate the units of measure to those commonly used in other clam fisheries, in this case translate gallons to pounds, and specify whether this represents shucked or unshucked weight.

As regards on-site observation, the local Commercial Fish staff would be interested in viewing this fishery and given a little prior notice I'm sure we can make personnel available.

cc: K. Sundberg
J. Browning
A. Kingsbury
D. Haanpass
K. Florey

MAY 1981

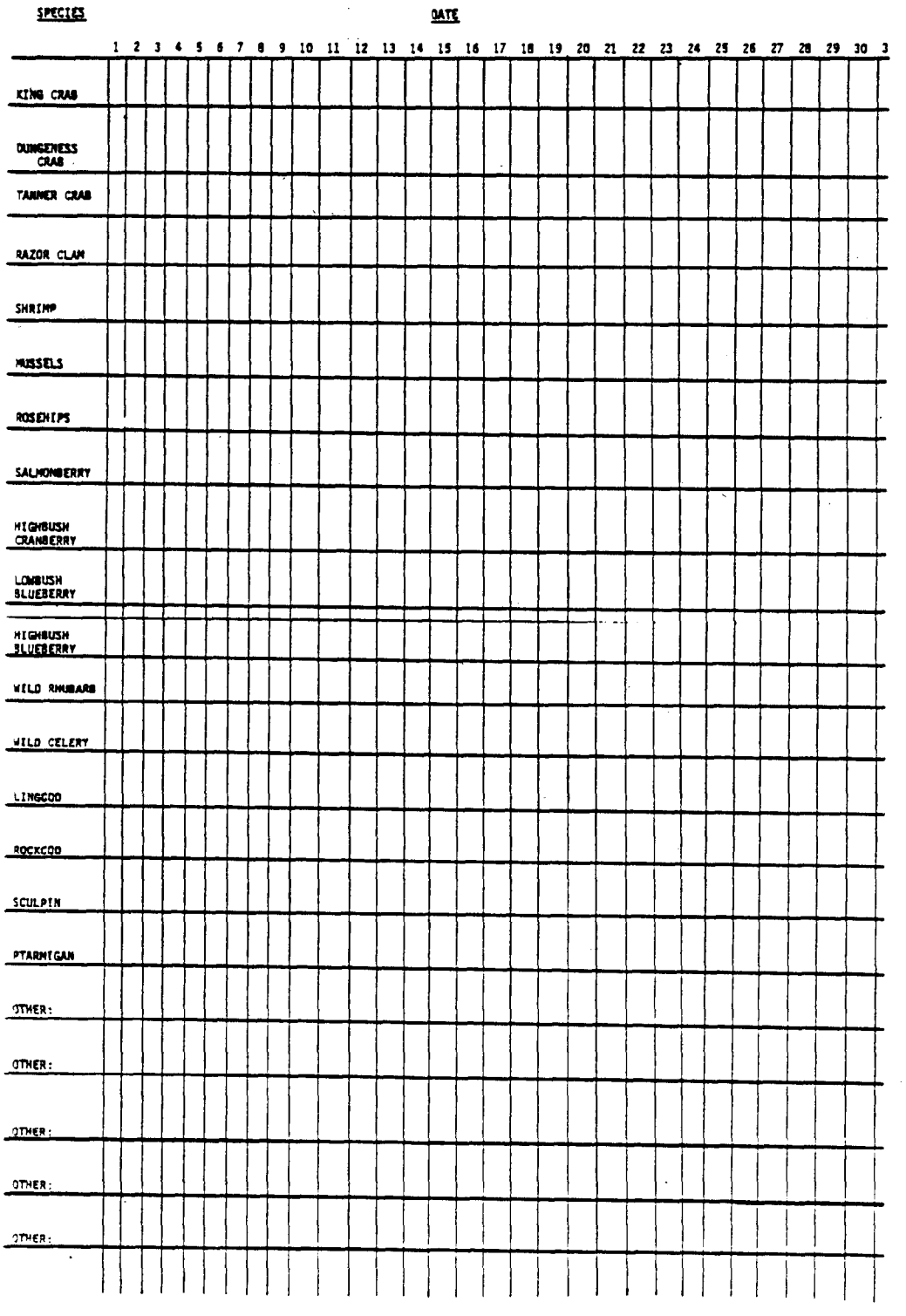
SUBSISTENCE CATCH CALENDAR

ENTER ONLY THE THINGS YOU CATCH.

DO NOT ENTER COMMERCIAL FISH THAT ARE SOLD.

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
					1 KING SALMON___ RED SALMON___ HERRING___ HALIBUT___ DOLLY VARDEN___ DUNGENESS CRAB___ FISH EGGS___ SNAILS___	2 KING SALMON___ RED SALMON___ HERRING___ HALIBUT___ DOLLY VARDEN___ DUNGENESS CRAB___ FISH EGGS___ SNAILS___
3 KING SALMON___ RED SALMON___ HERRING___ HALIBUT___ DOLLY VARDEN___ DUNGENESS CRAB___ FISH EGGS___ SNAILS	4 KING SALMON___ RED SALMON___ HERRING___ HALIBUT___ DOLLY VARDEN___ DUNGENESS CRAB___ FISH EGGS___ SNAILS	5 KING SALMON___ RED SALMON___ HERRING___ HALIBUT___ DOLLY VARDEN___ DUNGENESS CRAB___ FISH EGGS___ SNAILS	6 KING SALMON___ RED SALMON___ HERRING___ HALIBUT___ DOLLY VARDEN___ DUNGENESS CRAB___ FISH EGGS___ SNAILS	7 KING SALMON___ RED SALMON___ HERRING___ HALIBUT___ DOLLY VARDEN___ DUNGENESS CRAB___ FISH EGGS___ SNAILS	8 KING SALMON___ RED SALMON___ HERRING___ HALIBUT___ DOLLY VARDEN___ DUNGENESS CRAB___ FISH EGGS___ SNAILS	9 KING SALMON___ RED SALMON___ HERRING___ HALIBUT___ DOLLY VARDEN___ DUNGENESS CRAB___ FISH EGGS___ SNAILS
10 KING SALMON___ RED SALMON___ HERRING___ HALIBUT___ DOLLY VARDEN___ DUNGENESS CRAB___ FISH EGGS___ SNAILS	11 KING SALMON___ RED SALMON___ HERRING___ HALIBUT___ DOLLY VARDEN___ DUNGENESS CRAB___ FISH EGGS___ SNAILS	12 KING SALMON___ RED SALMON___ HERRING___ HALIBUT___ DOLLY VARDEN___ DUNGENESS CRAB___ FISH EGGS___ SNAILS	13 KING SALMON___ RED SALMON___ HERRING___ HALIBUT___ DOLLY VARDEN___ DUNGENESS CRAB___ FISH EGGS___ SNAILS	14 KING SALMON___ RED SALMON___ HERRING___ HALIBUT___ DOLLY VARDEN___ DUNGENESS CRAB___ FISH EGGS___ SNAILS	15 KING SALMON___ RED SALMON___ HERRING___ HALIBUT___ DOLLY VARDEN___ DUNGENESS CRAB___ FISH EGGS___ SNAILS	16 KING SALMON___ RED SALMON___ HERRING___ HALIBUT___ DOLLY VARDEN___ DUNGENESS CRAB___ FISH EGGS___ SNAILS
17 KING SALMON___ RED SALMON___ HERRING___ HALIBUT___ DOLLY VARDEN___ DUNGENESS CRAB___ FISH EGGS___ SNAILS	18 KING SALMON___ RED SALMON___ HERRING___ HALIBUT___ DOLLY VARDEN___ DUNGENESS CRAB___ FISH EGGS___ SNAILS	19 KING SALMON___ RED SALMON___ HERRING___ HALIBUT___ DOLLY VARDEN___ DUNGENESS CRAB___ FISH EGGS___ SNAILS	20 KING SALMON___ RED SALMON___ HERRING___ HALIBUT___ DOLLY VARDEN___ DUNGENESS CRAB___ FISH EGGS___ SNAILS	21 KING SALMON___ RED SALMON___ HERRING___ HALIBUT___ DOLLY VARDEN___ DUNGENESS CRAB___ FISH EGGS___ SNAILS	22 KING SALMON___ RED SALMON___ HERRING___ HALIBUT___ DOLLY VARDEN___ DUNGENESS CRAB___ FISH EGGS___ SNAILS	23 KING SALMON___ RED SALMON___ HERRING___ HALIBUT___ DOLLY VARDEN___ DUNGENESS CRAB___ FISH EGGS___ SNAILS
24 KING SALMON___ RED SALMON___ HERRING___ HALIBUT___ DOLLY VARDEN___ DUNGENESS CRAB___ FISH EGGS___ SNAILS	25 KING SALMON___ RED SALMON___ HERRING___ HALIBUT___ DOLLY VARDEN___ DUNGENESS CRAB___ FISH EGGS___ SNAILS	26 KING SALMON___ RED SALMON___ HERRING___ HALIBUT___ DOLLY VARDEN___ DUNGENESS CRAB___ FISH EGGS___ SNAILS	27 KING SALMON___ RED SALMON___ HERRING___ HALIBUT___ DOLLY VARDEN___ DUNGENESS CRAB___ FISH EGGS___ SNAILS	28 KING SALMON___ RED SALMON___ HERRING___ HALIBUT___ DOLLY VARDEN___ DUNGENESS CRAB___ FISH EGGS___ SNAILS	29 KING SALMON___ RED SALMON___ HERRING___ HALIBUT___ DOLLY VARDEN___ DUNGENESS CRAB___ FISH EGGS___ SNAILS	30 KING SALMON___ RED SALMON___ HERRING___ HALIBUT___ DOLLY VARDEN___ DUNGENESS CRAB___ FISH EGGS___ SNAILS
31 KING SALMON___ RED SALMON___ HERRING___ HALIBUT___ DOLLY VARDEN___ DUNGENESS CRAB___ FISH EGGS___ SNAILS						

PLEASE ENTER NUMBER OR AMOUNT OF ADDITIONAL PLANTS AND ANIMALS COLLECTED.



Number _____

TYONEK CLAM SURVEY
1981

I. CLAM HARVEST

a. Do you harvest clams? (Name)_____

b. What types?_____

c. Why did you decide to go clamming in 1981?_____

d. How many clams did you harvest in 1981?_____

e. What was the average number of clams harvested prior to 1981?_____

f. Who in your household goes along when you harvest clams?_____

_____

g. Who outside your household goes along when you harvest clams?_____

_____

h. Who else from the village usually goes to the clamming area?_____

_____

i. When do you go clamming? (months, time of month) _____

_____

j. How many times per year do you usually go to dig clams?_____

k. What other resource(s) do you harvest while clamming?_____

_____

II. CLAMMING LOCATION

a. In what areas do you dig clams? (Plot on Map) _____

_____

b. Where did you dig clams in 1981? (Plot on Map)_____

_____

c. How much time was spent clamming in each area in 1981? (1 hr. → 24 hr. = 1 day) _____

d. How many years have you harvested clams in each area?_____

_____

Number_____

III. CLAMMING METHODS

a. What form of transportation did you use to get to the clamming area? (Boats, Airplane, etc.)_____

b. What equipment do you use in clamming?_____

_____

IV. DISTRIBUTION (use chart)

a. Do you usually share your clams with other village residents?_____

b. Do you usually share your clams with others outside the village?_____

_____

c. Who was the leader of the clamming harvest?_____

_____

d. Who were the distributors?_____

e. Who were the clam diggers?_____

_____

f. Who are the primary recipients?_____

g. What is their relationship to the leader?_____

h. What is the number of household members for each primary recipient?

_____

i. What percentage of the total harvest did each primary recipient receive?

_____

V. PRESERVATION

a. How do you keep the clams while bringing them back to the village?_____

_____

b. How do you store your clams? (Eat Fresh, Freeze, Can Brine, etc.)_____

_____

_____

_____

_____

(2)

Number _____

VI. OBSERVATIONS

a. Did you observe any other clamming activity in the area?_____

Where?_____

_____

When?_____

_____

b. Did you notice any change in the availability of clams this year as compared to other years?_____

_____

c. Was 1981 a good year for clamming?_____

_____

d. Has the number of clams that you found from one year to the next changed?

_____

_____

e. What are your concerns about the availability of clams?_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

VII. GENERAL QUESTIONS

a. What other types of shellfish do you harvest?_____

_____

(3)

Number_____

VII. OBSERVATIONS (cont.)

b. What quantity of each type per year?_____

_____

c. What do you know about the historical use of shellfish by other members or former members of Tyonek? _____

(1) How many years have they been using this area?_____

_____

(2) Has preservation method changed?_____

_____

(3) How many clams?_____

_____

(4) Number of people going to harvest?_____

_____

_____

Clamming Leader (Name, Age)					
Distributor(s) (Name, Age)					
Clam Digger(s) (Name, Age)					
Relationship to Clamming Leader					
Leader's Household Members					
Primary Recipients (Name, Age)					
Relationship to Clamming Leader (Name, Age)					
No. of Recipients Household Members					
% of total Harvest Received					

(5)

	ENGLISH BAY	% households HARVEST subsistence resource			% households USE subsistence resource		
	Resource	25-49%	50-74%	75% or more	25-49%	50-74%	75% or more
FISH	King Salmon		X				X
	Silver Salmon			X			X
	Red Salmon			X			X
	Chum Salmon	X				X	
	Pink Salmon			X			X
	Black Bass	X				X	
	Dolly Varden			X			X
	Fish Eggs	No information					X
	Gray Cod	X				X	
	Halibut			X			X
	Herring				X		
	Kelp Greenling		X			X	
	Flounder/Sole			X			X
	Lake Trout		X			X	
	Pollock		X			X	
	Sculpin	X			X		
	Steelhead Trout				X		
	Tomcod			X			X
CRAB	Dungeness Crab	X					X
	King Crab					X	
BIRDS	Bufflehead	X			X		
	Common Merganser	X			X		
	Common Scoter	X			X		
	Goldeneye	X			X		
	Mallard	X				X	
	Pintail				X		
	Scaup	X			X		
	Spruce Hens	X				X	
MARINE MAMMALS	Harbor Seal	X					X
	Sea Lion						X
GAME	Black Bear					X	
	Goat					X	
	Moose					X	
	Porcupine				X		
VEGETATION	Lowbush Blueberry				X		
	Highbush Blueberry			X			X
	Cloudberry	X			X		
	Lowbush Cranberry	X			X		
	Highbush Cranberry			X			X
	Black Currant			X			X
	Goosetongue		X				X
	Nagoonberry	X			X		
	Rosehips	X			X		
	Salmonberry			X			X
	Strawberry				X		
	Watermelon Berry	X					X
	Wild Celery		X			X	
	Wild Onion		X				X
	Wild Rhubarb		X			X	
INTERTIDAL RESOURCES	Bird Eggs		X				X
	Black Seaweed		X				X
	Butter Clams			X			X
	Chiton			X			X
	Cockles	X				X	
	Mussels		X			X	
	Octopus		X				X
	Shrimp					X	
	Snails		X			X	

Source: North Pacific Rim. 1981. Chugach Region Community Subsistence Profiles.

Other resources utilized by at least 10% of the households in English Bay:

Cutthroat Trout
Landlocked Salmon
Black Cod
Eel
Smelt
Tanner Crab
Canvas Back Duck
Surf Scoter
Black Scoter
Common Eider
Old Squaw
Canada Goose
Brant
Puffin
Ptarmigan
Loon
Snowshoe Hare
Raspberry
Red Currants
Ferns (Fiddleheads)
Blackberry
Razor Clams
Horse Clams
Sea Urchins
Scallops

Species used by less than 10% of the households, or used in previous years, trapping included:

Lingcod
Tiger Rockfish
Blue Rockfish
Red-breasted Merganser
Harlequin
Snow Goose
White-fronted Goose
Cormorant
Dall Sheep
Seagull
Sea Cucumber
Kelp
Black Lily (Indian Rice)
Bog Cranberry
Elderberry
Fireweed
Mushrooms
Weasel
Mink
Land Otter
Coyote
Red Squirrel

Source: North Pacific Rim. 1981. Chugach Region Community Subsistence Profiles.