

Special Report BOF 2007-01

**Customary and Traditional Use Worksheet
Proposal 392 (formerly ACR 12)
Marine Invertebrates, Cook Inlet Area outside the
Nonsubsistence Area**

**Prepared by
Alaska Department of Fish and Game, Division of Subsistence**

**Alaska Board of Fisheries
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BACKGROUND

Proposal 392 (formerly Agenda Change Request 12) requests that the Alaska Board of Fisheries reexamine customary and traditional use findings for shellfish in those portions of the Cook Inlet Management Area outside the Anchorage-Matsu-Kenai Nonsubsistence Area (Figure 1) and adopt regulations providing a reasonable opportunity to harvest shellfish stocks that support subsistence uses. The Board follows “Joint Boards of Fisheries and Game Subsistence Procedures” (5 AAC 99.010) (“the eight criteria”) to identify fish stocks that are customarily and traditionally taken or used by Alaska residents for subsistence uses.

In 1982, the Board of Fisheries adopted regulations allowing the subsistence harvesting of clams in the Port Graham Subdistrict. At the same time, the Board repealed all other subsistence shellfish regulations pertaining to the Lower Cook Inlet Area. Written findings explaining this decision were not made. This worksheet is based on an original prepared in November 1992, with additions in January 1993, as part of the Board’s consistency review following passage of revisions to the state subsistence statute in 1992. The worksheet has been updated with more recent harvest and use data.

There are three communities on the lower Kenai Peninsula outside the Anchorage-Matsu-Kenai Nonsubsistence Area (Figure 1), Nanwalek (formerly English Bay), Port Graham, and Seldovia. Nanwalek had an estimated population of 228 people in 2006; in 2000, 93% of the population was Alaska Native. Port Graham had an estimated population of 136 people in 2006; in 2000, 88% of the population was Alaska Native. The estimated population of Seldovia was 379 people; in 2000, 23% of the population was Alaska Native (U. S. Bureau of the Census 1981; Alaska Department of Labor and Workforce Development 2007).

THE EIGHT CRITERIA

Criterion 1. A long-term consistent pattern of noncommercial taking, use, and reliance on the fish stock or game population that has been established over a reasonable period of time of not less than one generation, excluding interruption by circumstances beyond the user's control, such as unavailability of the fish or game caused by migratory patterns.

Evidence of human utilization of marine invertebrates throughout the Cook Inlet area exists in both the archaeological and oral history records as summarized in Stanek et al. 1982. For example, there are numerous shell middens along the shores of Kachemak Bay and the west side of Cook Inlet which contain the remains of numerous shellfish, including butter clams, razor clams, cockles, and snails. Stanek (1985:70) noted:

Historically, Kachemak Bay groups harvested shellfish in the spring. This may be related to the lack of other resources during that season, the exhaustion of stored resources like salmon, and harsh weather conditions which prevented hunters and fishers from venturing far from their homes.

Since the early 1980s, periodic household surveys conducted by the Division of Subsistence, ADF&G, have documented shellfish harvests in the Cook Inlet communities Port Graham, Nanwalek, and Seldovia. Table 1 lists the marine invertebrates known to be used by residents of these communities from the 1980s to the present. Uses of species not listed in this table may occur. Table 2 presents household survey data for all species of marine invertebrates combined for all study years for each community. In all years, a large majority of households in the communities used marine invertebrates for food.¹ As illustrated in Figure 2, most households in the three communities participate in marine invertebrate harvests. For all marine invertebrates combined, harvest levels have ranged between 9 pounds per person (usable weight) in Port Graham during 1989 (the year of the *Exxon Valdez* oil spill) and 34 pounds per capita in Seldovia during 1991/92 (Table 2, Figure 3). These resources are a major source of food for these communities, providing about 5-10 percent or more of the annual subsistence harvest in Seldovia, Port Graham, and Nanwalek (Fall 1992:47-56).

Tables 3 through 20 provide harvest and use information for those marine invertebrates harvested in the largest amounts or used by the largest number of households, based on household surveys.

Elders from Port Graham and Nanwalek reported that crabs are part of a large group of bottom-dwelling animals called *uyangtaaq* (Stanek 1985:157-158). These resources are usually found in shallow waters of bays and intertidal areas. Crab harvests have been documented for lower Cook Inlet communities (Tables 2, 10-13). When interviewed in the 1980s, Port Graham and Nanwalek residents reported that crab numbers, particularly Dungeness, in the area had declined greatly since the time commercial fishing for crab began in the 1960s. Stanek (1985:7) reported the following:

Several informants [in Nanwalek and Port Graham] recalled spearing crab in their childhood and recounted spearfishing for Dungeness and king crab in the 1950s in Port Graham Bay. Spears made of sapling spruce about 10 to 12 feet long were armed with points. During historic times, points were made of soft metal available from traders, canneries, and sawmills. In the 1960s, commercial crabbers moved into the Port Graham area depleting the crab population. Subsequently, harvesting crab in shallow waters with spears became unproductive. At about the same time, people acquired pots and began crabbing in deeper water.

By the 1980s, population declines led to closures of all Cook Inlet commercial crab fisheries. Crab were harvested at relatively low levels for home use in the early 1980s, but an even more severe decline in harvest has since taken place. Subsistence fishing for crab has not been authorized since 1982. Personal use and sport fishing for king crab has been closed since 1985, Dungeness crab since 1998, Tanner crab since 2003, and shrimp since 1997.

¹ The *Exxon Valdez* Oil Spill of March 1989 severely disrupted subsistence harvests of many resources, and especially shellfish, in Nanwalek, Port Graham, and Seldovia (and other communities). Levels of harvests and uses of these resources in 1989 and several years afterward are not typical of pre-spill levels of harvest and use.

Criterion 2. A pattern of taking or use recurring in specific seasons of each year.

The harvest of shellfish in Nanwalek, Port Graham, and Seldovia is characterized by annual and monthly cycles (Reed 1985:161-162; Stanek 1985:159-162). In lower Cook Inlet, harvesters take advantage of the monthly spring tides to access intertidal habitats of mussels, littleneck clams, limpets, chitons, and snails. Each spring, several series of extreme low tides in April, May, June, and July expose the best sand and mud habitats of butter clams, cockles, razor clams, and octopus.

In the past, crab were usually taken whenever they were present in accessible areas. With the use of pots, harvest capability probably increased. Like some other shellfish, extreme low tides make crab more accessible for hand picking or other means of harvest. Seldovia residents typically fish for crab between May and August.

Criterion 3. A pattern of taking or use consisting of methods and means of harvest that are characterized by efficiency and economy of effort and cost.

In almost all cases, the patterns of accessing and gathering shellfish are typified by methods readily available and within the economic means of local community residents. Access to shellfish harvest areas is typically by foot and small skiffs. A road connects Seldovia with harvest areas at Kasitsna and Jacolof bays. In the harvest of shellfish resources, the primary method of removal is by hand with the use of small handheld tools such as knives, sticks, hooks, and shovels. Quantities of resources are collected in buckets, pots, plastics bags, gunny sacks, or tubs (Reed 1985:159-162; Stanek 1985:159; Fall et al. 1982:129-138).

Stanek (1985:159) described shellfish harvest methods in Nanwalek and Port Graham in the 1980s as follows:

Harvest strategies similar to traditional practices were followed for snails, chiton, crab, mussels, and octopus during the study period. Intertidal areas were searched at low tides and a variety of species collected by hand or with the aid of sticks, knives, or shovels. Occasionally pots were set for crab and shrimp. Usually harvesting was done daily in local intertidal areas. Individual daily household harvests were relatively small. An example of one day's harvest might include a half-gallon of snails, 2 to 3 dungeness crab, 10 to 20 chitons, and an octopus.

Clams and cockles were sometimes collected in the same manner as chitons and snails, but normally were sought on special clamming trips made during minus tidal periods. Clams were collected in five-gallon buckets, brought back to the villages, and part of the harvest distributed to those households unable to make the trip. Sea cucumbers were sometimes taken incidentally when they were found.

In lower Cook Inlet communities, up to the 1950s, crab were harvested with spears and by hand in shallow water (Stanek 1985:70, 158). A sketch of a traditional spear, called a *panaq*, appears in Stanek 1985:63. In deeper water, crab may have been taken incidentally on hooks set for

bottomfish (see sketch in Stanek 1985:68). In more recent times several pots were placed in favorite harvest locations. (See also discussion in Criterion 1.) The pots were attended by their owners, or permission was given to others to remove crab from the pots. Quantities of crab were often distributed around the community to whoever wanted some. Occasionally, commercial fishermen removed crab from their catches for their personal use and to distribute to others in the communities (Stanek field notes).

Criterion 4. The area in which the noncommercial, long-term, and consistent pattern of taking, use, and reliance upon the fish stock or game population has been established.

Maps which appear in division technical papers (Stanek 1985) depict the harvest areas of Nanwalek and Port Graham into the mid-1980s (Figure 4). Most harvest areas were within easy access of the users' homes. More distant areas were accessed by small skiffs or larger boats owned by the users. In lower Cook Inlet, Port Graham and Nanwalek residents frequently traveled to Kasitsna Bay for clams and cockles. They occasionally traveled to areas which were previously occupied by current residents of Nanwalek or Port Graham or their families. These areas included Koyuktolik Bay, Port Chatham, Chugach Bay, Windy Bay, Rocky Bay, and Port Dick. Seldovia residents used Kasitsna Bay and other local beaches for marine invertebrate harvests.

Port Graham and Nanwalek residents' crab harvests, for the most part, took place within the areas described for the taking of other shellfish (see Figure 4 and Stanek 1985). Occasionally, as with other shellfish, other areas were used, including Tutka Bay, Sadie Cove, Port Chatham, Chugach, Rocky Bay, Windy Bay, and Port Dick. Harvest areas for Seldovia have not been recorded on maps by the Division of Subsistence. Seldovia residents commonly used Seldovia Bay as their source of Dungeness crab.

Criterion 5. The means of handling, preparing, preserving, and storing fish or game which has been traditionally used by past generations, but not excluding recent technological advances where appropriate.

Historically, various marine invertebrate resources were harvested and stored for later use in seal oil (Stanek et al. 1982:6). Currently, the majority of the shellfish harvest is consumed within a relatively short period after harvest. Resources that can be gathered in large quantities at one time, such as clams and chitons, may be canned or frozen for later use. They may then be prepared into chowders, sauces, deep fried, or mixed with rice and made into various other dishes (Stanek 1985:162).

Most commonly, crab are boiled in water for eating, but on occasion they may be roasted on open fires. Most crab are eaten shortly after harvest, unless very large numbers are taken, in which case they may be frozen.

Criterion 6. A pattern of taking or use which includes the handing down of knowledge of fishing or hunting skills, values, and lore from generation to generation.

Descriptions of the social importance and organization of shellfish harvest and use in Port Graham and Nanwalek has been described in Stanek (1985:162) and Stanek et al. (1982:7-8). Shellfish harvesting is a highly social activity in these communities and involves individuals of both sexes and all age groups. Owing to the sedentary and accessible nature of many of these resources, most people are able to access harvest areas and gather the resources. This creates a social context in which young people are taught harvest methods, as well as ideas, philosophies, and traditions about utilizing wild resources.

Crab harvesting, as with other shellfish species, provides the opportunity for experienced harvesters to teach children and young adults the skills of obtaining food from the ocean. They also learn to provide for themselves and share with others.

Stanek (1985:162) noted:

The harvest of intertidal species was important not only for the food produced but also as a social activity, especially for older people unable to participate in more strenuous and dangerous harvest activities. It was an opportunity to be outdoors, and it also allowed older people to teach their children and grandchildren how to use local resources. Field observations in both communities [Nanwalek and Port Graham] found chiton and clams occurring as food items in over half the households following suitable low tides. The harvest of these resources was often discussed by residents in social settings and was of particular interest to the older people. Most intertidal resources were highly valued food products in both communities. Searching for chiton with the aide of a lantern during nighttime low tidal periods in late fall and winter was a common practice among experienced people. Summer months found many residents searching areas abundant with chiton and other intertidal species during the long daylight periods.

Criterion 7. A pattern of taking, use, and reliance where the harvest effort or products of that harvest are distributed or shared, including customary trade, barter, and gift-giving.

Marine invertebrates are widely shared within and between Cook Inlet communities. Household survey data from Nanwalek, Port Graham, and Seldovia communities indicated high levels of sharing with over 80% of households receiving some shellfish resources in some years (Tables 2 through 22).

Crab were typically harvested by a few individuals in the communities and then widely shared. Table 10 illustrates the extensive sharing in Nanwalek in 1987: while no surveyed household harvested crab, 52% used crab that they received from successful harvesters (likely either a Nanwalek household that was not interviewed or a household from neighboring Port Graham). Similar patterns occurred in Port Graham in 1987: 9% of households harvested crab, but 57% received crab and 63% used crab (Table 10). In Seldovia for the early 1980s (Reed (1985:160-161),

3 crab species were used by 91% of the households, but harvested by 20%. A similar pattern was found in the early 1990s, when Division of Subsistence researchers interviewed commercial crabbers who removed quantities of crab from their harvests and distributed them throughout Seldovia (Table 10) (Fall and Utermohle 1995).

Criterion 8. A pattern that includes taking, use, and reliance for subsistence purposes upon a wide variety of the fish and game resources and that provides substantial economic, cultural, social, and nutritional elements of the subsistence way of life.

Overall subsistence harvests in Nanwalek, Port Graham, and Seldovia are relatively high, ranging from about 200 to 400 pounds per person per year in the late 1980s, 1990s, and early 2000s (Table 23). Marine invertebrates are one of several groups of resources taken by communities in the Cook Inlet area. In Nanwalek, an average of 25 different resources were used in 2003, while in Port Graham an average of 18 different resources were recorded (Fall 2006:18). These are some of the highest levels recorded in the state (Fall 1992:51-62). Seldovia households surveyed in 1984 used 32 different species or groups of resources (Reed 1985:153). The average household in Seldovia used 13 kinds of wild foods in 1993-94 (Fall and Utermohle 1995:VII-41).

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TABLES AND FIGURES

Table 1. Marine invertebrates known to be used by residents of Nanwalek, Port Graham, or Seldovia

	<u>Common English Name</u>	<u>Scientific name</u>	<u>Alutiig name</u>
Chiton		Polyplacophora	
	Chitons, black ("bidarkies")	<i>Katharina tunicata</i>	urriitarpak
	Chitons, red ("gumboot")	<i>Cryptochiton stelleri</i>	urriitaq
Clams		Bivalvia	salaq
	Clams, butter	<i>Saxidomus giganteus</i>	salaq
	Clams, littleneck	<i>Protothaca staminea</i>	salaq
	Clams, razor	<i>Siliqua patula</i>	cingtaataq
	Horse clams	<i>Tresus capax</i>	salaq
Cockles		<i>Clinocardim nuttallii</i>	taugtaa
Crab		Decapoda/Brachyura	yual'ayak
	Crab, Dungeness	<i>Cancer magister</i>	canipgaq
	Crab, king	<i>Paralithodes camtschaticus</i>	yual'ayakcak
	Crab, Tanner	<i>Chionoecetes bairdi</i>	pupsuleryu'alq
Limpets		Acmaeidae	melungqucak
Mussels		<i>Mytilus edulis/trossulus</i>	amyak
Octopus		<i>Octopus vulgaris</i>	amikuq
Sea cucumber		Holothuroidea	kingupak
Sea urchin		Echinoidea	uutuk
Shrimp		Decapoda	taugtaa
	Shrimp, pink	<i>Pandalus borealis</i>	
	Shrimp, humpy	<i>Pandalus goniurus</i>	
	Shrimp, sidestripe	<i>Pandalopsis dispar</i>	
	Shrimp, pot	<i>Pandalopsis platyceros</i>	
Snail		Megogastropa/Neogastropoda	ipuk
	Snail, moon	<i>Polinices lewisii</i>	
	Snail, turban	<i>Tegula funebris</i>	
Whelk	Whelk, dog	<i>Thais lamellosus</i>	ipuk, kauk
Scallops	Scallops, weathervane	<i>Patinopecten caurinus</i>	salaq

Source: Stanek 1985; Preikshot and Leer, n.d.

Table 2. Harvest and uses of marine invertebrates in Nanwalek, Port Graham, and Seldovia

Community	Study year	Percentage of Households					Total pounds	Average pounds per HH	Per capita pounds	95% CI (± %)
		used	trying	harvesting	receiving	giving				
Nanwalek	1987	97.0	90.9	90.9	81.8	75.8	2,811	70.3	18.6	14
Nanwalek	1989	90.9	87.9	87.9	66.7	75.8	2,507	61.2	16.0	15
Nanwalek	1990	97.1	91.4	91.4	80.0	68.6	3,074	75.0	16.7	14
Nanwalek	1991	100.0	89.7	89.7	79.3	69.0	3,929	95.8	24.4	37
Nanwalek	1992	100.0	90.6	90.6	87.5	87.5	4,232	103.2	24.8	17
Nanwalek	1993	100.0	97.0	97.0	90.9	90.9	3,296	89.1	23.3	17
Nanwalek	1997	82.8	79.3	79.3	55.2	72.4	1,512	39.8	9.0	23
Nanwalek	2003	100.0	100.0	100.0	95.5	90.9	3,579	70.2	15.4	68
Port Graham	1987	98.1	87.0	87.0	79.6	42.6	3,010	47.8	16.7	13
Port Graham	1989	70.8	66.7	64.6	45.8	47.9	1,385	22.7	8.6	16
Port Graham	1990	97.8	87.0	87.0	82.6	65.2	2,380	43.3	14.5	11
Port Graham	1991	95.9	79.6	79.6	89.8	69.4	3,475	59.9	21.6	16
Port Graham	1992	100.0	89.6	89.6	95.8	79.2	3,986	68.7	23.9	13
Port Graham	1993	100.0	82.4	80.4	92.2	72.5	2,786	45.7	16.0	17
Port Graham	1997	86.4	75.0	75.0	61.4	56.8	1,994	31.7	12.8	22
Port Graham	2003	89.4	74.5	74.5	78.7	72.3	1,875	28.8	12.0	21
Seldovia	1991	86.4	68.2	68.2	74.2	43.9	10,371	89.4	30.4	35
Seldovia	1992	89.2	73.8	73.8	70.8	50.8	6,673	48.7	17.8	33
Seldovia	1993	90.8	78.5	78.5	70.8	63.1	14,627	95.6	34.0	33

Source: Alaska Department of Fish and Game 2007; Fall et al. 2006

Table 3. Harvests and Uses of Chitons, Nanwalek, Port Graham, and Seldovia

Community	study year	Percentage of Households					Total gallons	Total pounds	Average pounds per HH	Per capita pounds	95% CI (+/-%)
		using	trying	harvesting	receiving	giving					
Nanwalek	1987	93.9	87.9	87.9	57.6	63.6	353	1,411	35.3	9.3	15
Nanwalek	1989	90.9	87.9	87.9	39.4	63.6	246	984	24.0	6.3	17
Nanwalek	1990	97.1	88.6	88.6	37.1	60.0	306	1,224	29.9	6.7	16
Nanwalek	1991	96.6	86.2	86.2	44.8	55.2	455	1,791	43.7	11.1	36
Nanwalek	1992	96.9	84.4	84.4	43.8	65.6	478	1,893	46.2	11.1	26
Nanwalek	1993	97.0	87.9	87.9	48.5	69.7	261	1,037	28.0	7.3	16
Nanwalek	1997	75.9	58.6	58.6	48.3	58.6	221	874	23.0	5.2	27
Nanwalek	2003	100.0	100.0	100.0	68.2	90.9	373	1,414	27.7	6.1	28
Port Graham	1987	96.3	83.3	83.3	46.3	27.8	230	919	14.6	5.1	12
Port Graham	1989	60.4	58.3	58.3	22.9	39.6	145	580	9.5	3.6	21
Port Graham	1990	97.8	80.4	80.4	60.9	52.2	251	1,002	18.2	6.1	13
Port Graham	1991	91.8	75.5	73.5	65.3	49.0	263	1,020	17.6	6.3	16
Port Graham	1992	95.8	83.3	83.3	72.9	62.5	342	1,363	23.5	8.2	15
Port Graham	1993	96.1	68.6	68.6	72.5	60.8	250	1,000	16.4	5.7	14
Port Graham	1997	84.1	68.2	68.2	52.3	50.0	312	1,240	19.7	8.0	24
Port Graham	2003	78.7	63.8	63.8	51.1	51.1	203	805	12.4	5.0	23
Seldovia	1991	18.2	13.6	13.6	9.1	4.5	180	720	6.2	2.1	80
Seldovia	1992	16.9	15.4	15.4	4.6	9.2	46	183	1.3	0.5	69
Seldovia	1993	26.2	24.6	24.6	9.2	15.4	185	741	4.8	1.7	55

Source: Alaska Department of Fish and Game 2007; Fall 2006

Table 4. Harvest and uses of clams in Nanwalek, Port Graham, and Seldovia

Community	Study year	Percentage of Households					Total gallons	Total pounds	Average pounds per HH	Per capita pounds	95% CI (± %)
		used	trying	harvesting	receiving	giving					
Nanwalek	1987	66.7	45.5	45.5	54.5	42.4	207	753	18.8	5.0	29
Nanwalek	1989	66.7	51.5	51.5	51.5	48.5	303	1129	27.5	7.2	21
Nanwalek	1990	97.1	62.9	62.9	77.1	51.4	338	1189	29.0	6.5	19
Nanwalek	1991	79.3	48.3	48.3	65.5	48.3	331	1404	34.2	8.7	41
Nanwalek	1992	90.6	75.0	75.0	68.8	71.9	441	1696	41.4	10.0	26
Nanwalek	1993	90.9	54.5	54.5	81.8	57.6	500	1681	45.4	11.9	22
Nanwalek	1997	34.5	17.2	17.2	20.7	20.7	45	177	4.7	1.1	51
Nanwalek	2003	81.8	50.0	50.0	77.3	50.0	420	1259	24.7	5.4	84
Port Graham	1987	72.2	40.7	40.7	46.3	24.1	289	1012	16.1	5.6	28
Port Graham	1989	35.4	31.3	27.1	27.1	22.9	111	423	6.9	2.6	33
Port Graham	1990	89.1	52.2	52.2	73.9	34.8	222	797	14.5	4.9	19
Port Graham	1991	85.7	42.9	42.9	75.5	44.9	418	1483	25.6	9.2	24
Port Graham	1992	95.8	50.0	50.0	87.5	54.2	484	1755	30.3	10.5	19
Port Graham	1993	96.1	45.1	41.2	88.2	51.0	329	1180	19.3	6.8	27
Port Graham	1997	25.0	9.1	9.1	20.5	13.6	28	118	1.9	0.8	65
Port Graham	2003	61.7	23.4	21.3	51.1	19.1	95	286	4.4	1.8	43
Seldovia	1991	75.8	60.6	60.6	43.9	31.8	978	5157	44.5	15.1	29
Seldovia	1992	80.0	70.8	70.8	44.6	36.9	737	4662	34.0	12.4	28
Seldovia	1993	83.1	76.9	76.9	43.1	49.2	1565	11049	72.2	25.7	34

Source: Alaska Department of Fish and Game 2007; Fall et al. 2006

Table 5. Harvest and uses of butter clams in Nanwalek, Port Graham, and Seldovia

Community	Study year	Percentage of Households					Total gallons	Total pounds	Average pounds per HH	Per capita pounds	95% CI (± %)
		used	trying	harvesting	receiving	giving					
Nanwalek	1987	63.6	39.4	39.4	54.5	39.4	172	516	15.6	4.1	35
Nanwalek	1989	63.6	48.5	48.5	39.4	45.5	257	771	23.4	6.1	23
Nanwalek	1990	80.0	45.7	45.7	62.9	40.0	208	625	17.9	4.0	23
Nanwalek	1991	62.1	34.5	34.5	55.2	37.9	249	747	25.8	6.6	46
Nanwalek	1992	84.4	59.4	59.4	65.6	65.6	363	1089	34.0	8.2	31
Nanwalek	1993	84.8	48.5	48.5	75.8	54.5	457	1371	41.5	10.9	24
Nanwalek	1997	10.3	10.3	10.3	3.4	10.3	35	105	3.6	0.8	64
Nanwalek	2003	72.7	40.9	40.9	59.1	40.9	325	974	19.1	4.2	108
Port Graham	1987	68.5	37.0	37.0	42.6	18.5	240	720	13.3	4.7	33
Port Graham	1989	33.3	27.1	22.9	27.1	18.8	90	270	5.6	2.1	39
Port Graham	1990	76.1	41.3	41.3	63.0	32.6	202	605	13.1	4.4	20
Port Graham	1991	83.7	40.8	40.8	69.4	44.9	266	797	16.3	5.9	25
Port Graham	1992	89.6	43.8	43.8	81.3	50.0	401	1204	25.1	8.7	20
Port Graham	1993	84.3	39.2	37.3	78.4	41.2	254	762	14.9	5.2	32
Port Graham	1997	6.8	6.8	6.8	2.3	4.5	18	53	1.2	0.5	82
Port Graham	2003	59.6	23.4	21.3	46.8	19.1	87	261	4.0	1.7	47
Seldovia	1991	63.6	51.5	51.5	27.3	28.8	544	1632	24.7	8.4	31
Seldovia	1992	70.8	64.6	64.6	35.4	32.3	481	1443	22.2	8.1	32
Seldovia	1993	78.5	72.3	72.3	30.8	47.7	1105	3314	51.0	18.1	37

Source: Alaska Department of Fish and Game 2007; Fall et al. 2006

Table 6. Harvest and uses of horse clams in Nanwalek, Port Graham, and Seldovia

Community	Study year	Percentage of Households					Total gallons	Total pounds	Average pounds per HH	Per capita pounds	95% CI (± %)
		used	trying	harvesting	receiving	giving					
Nanwalek	1991	3.4	0.0	0.0	3.4	0.0	0	0	0.0	0.0	
Nanwalek	1992	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	
Nanwalek	1993	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	
Nanwalek	1997	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	
Nanwalek	2003	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	
Port Graham	1991	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	
Port Graham	1992	4.2	4.2	4.2	0.0	4.2	1	4	0.1	0.1	50
Port Graham	1993	3.9	3.9	2.0	2.0	0.0	1	2	0.0	0.0	81
Port Graham	1997	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	
Port Graham	2003	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	
Seldovia	1992	3.1	1.5	1.5	1.5	0.0	<1	0	0.0	0.0	145
Seldovia	1993	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	

Source: Alaska Department of Fish and Game 2007; Fall et al. 2006

Table 7. Harvest and uses of Pacific littleneck clams in Nanwalek, Port Graham, and Seldovia

Community	Study year	Percentage of Households					Total gallons	Total pounds	Average pounds per HH	Per capita pounds	95% CI (± %)
		used	trying	harvesting	receiving	giving					
Nanwalek	1987	36.4	24.2	24.2	27.3	15.2	34	102	3.1	0.8	48
Nanwalek	1989	6.1	6.1	6.1	6.1	6.1	5	15	0.5	0.1	66
Nanwalek	1990	62.9	48.6	48.6	34.3	25.7	67	201	5.8	1.3	24
Nanwalek	1991	41.4	31.0	31.0	24.1	31.0	68	204	7.0	1.8	43
Nanwalek	1992	28.1	28.1	28.1	18.8	21.9	52	157	4.9	1.2	38
Nanwalek	1993	9.1	3.0	3.0	6.1	3.0	10	30	0.9	0.2	63
Nanwalek	1997	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0
Nanwalek	2003	40.9	22.7	18.2	22.7	9.1	30	90	1.8	0.4	117
Port Graham	1987	20.4	13.0	13.0	13.0	5.6	26	78	1.4	0.5	36
Port Graham	1989	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	
Port Graham	1990	26.1	15.2	15.2	17.4	4.3	20	60	1.3	0.4	35
Port Graham	1991	44.9	24.5	24.5	28.6	16.3	131	392	8.0	2.9	45
Port Graham	1992	43.8	22.9	22.9	33.3	18.8	71	214	4.5	1.6	26
Port Graham	1993	33.3	17.6	17.6	21.6	19.6	58	175	3.4	1.2	34
Port Graham	1997	11.4	0.0	0.0	11.4	6.8	0	0	0.0	0.0	0
Port Graham	2003	12.8	4.3	4.3	8.5	2.1	8	25	0.4	0.2	88
Seldovia	1991	63.6	51.5	50.0	25.8	24.2	339	1017	15.4	5.2	40
Seldovia	1992	36.9	30.8	30.8	15.4	10.8	162	487	7.5	2.7	39
Seldovia	1993	66.2	61.5	61.5	24.6	30.8	412	1235	19.0	6.8	39

Source: Alaska Department of Fish and Game 2007; Fall et al. 2006

Table 8. Harvest and uses of razor clams in Nanwalek, Port Graham, and Seldovia

Community	Study year	Percentage of Households					Total gallons	Total pounds	Average pounds per HH	Per capita pounds	95% CI (± %)
		used	trying	harvesting	receiving	giving					
Nanwalek	1987	6.1	3.0	3.0	3.0	0.0	1	3	0.1	0.0	100
Nanwalek	1989	21.2	12.1	12.1	12.1	9.1	41	123	3.7	1.0	49
Nanwalek	1990	20.0	11.4	11.4	14.3	8.6	63	189	5.4	1.2	59
Nanwalek	1991	34.5	10.3	10.3	24.1	10.3	14	42	1.4	0.4	60
Nanwalek	1992	21.9	15.6	15.6	9.4	15.6	26	78	2.4	0.6	45
Nanwalek	1993	21.2	18.2	18.2	12.1	15.2	33	98	3.0	0.8	32
Nanwalek	1997	27.6	6.9	6.9	20.7	10.3	10	30	1.0	0.2	69
Nanwalek	2003	45.5	13.6	13.6	40.9	13.6	65	195	3.8	0.8	110
Port Graham	1987	9.3	5.6	5.6	5.6	5.6	23	69	1.3	0.5	44
Port Graham	1989	12.5	12.5	10.4	10.4	8.3	21	63	1.3	0.5	40
Port Graham	1990	17.4	2.2	2.2	17.4	0.0	1	2	0.0	0.0	100
Port Graham	1991	32.7	8.2	8.2	28.6	8.2	21	63	1.3	0.5	43
Port Graham	1992	29.2	4.2	4.2	27.1	6.3	10	30	0.6	0.2	58
Port Graham	1993	25.5	5.9	5.9	23.5	13.7	15	45	0.9	0.3	44
Port Graham	1997	11.4	2.3	2.3	9.1	2.3	10	30	0.7	0.3	111
Port Graham	2003	10.6	0.0	0.0	10.6	0.0	0	0	0.0	0	
Seldovia	1991	25.8	7.6	7.6	19.7	6.1	95	285	4.3	1.5	79
Seldovia	1992	24.6	15.4	15.4	13.8	3.1	91	272	4.2	1.5	52
Seldovia	1993	18.5	10.8	9.2	15.4	4.6	49	146	2.2	0.8	66

Source: Alaska Department of Fish and Game 2007; Fall et al. 2006

Table 9. Harvest and uses of cockles in Nanwalek, Port Graham, and Seldovia

Community	Study year	Percentage of Households					Total gallons	Total pounds	Average pounds per HH	Per capita pounds	95% CI (± %)
		used	trying	harvesting	receiving	giving					
Nanwalek	1987	30.3	15.2	15.2	21.2	12.1	22	66	2.0	0.5	40
Nanwalek	1989	12.1	12.1	12.1	3.0	3.0	27	81	2.5	0.7	64
Nanwalek	1990	40.0	25.7	25.7	20.0	11.4	52	157	4.5	1.0	34
Nanwalek	1991	27.6	17.2	17.2	13.8	10.3	37	110	3.8	1.0	71
Nanwalek	1992	18.8	15.6	15.6	12.5	12.5	21	63	2.0	0.5	48
Nanwalek	1993	12.1	9.1	9.1	9.1	6.1	8	24	0.7	0.2	44
Nanwalek	1997	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	
Nanwalek	2003	4.5	0.0	0.0	4.5	0.0	0	0	0.0	0.0	
Port Graham	1987	29.6	20.4	18.5	14.8	7.4	72	216	4.0	0.5	25
Port Graham	1989	10.4	10.4	10.4	6.3	4.2	19	57	1.2	1.3	41
Port Graham	1990	39.1	23.9	21.7	23.9	6.5	61	184	4.0	0.8	41
Port Graham	1991	34.7	18.4	18.4	22.4	14.3	38	113	2.3	0.7	28
Port Graham	1992	43.8	22.9	20.8	29.2	14.6	33	98	2.0	0.2	28
Port Graham	1993	7.8	3.9	3.9	3.9	3.9	10	30	0.6	0.0	58
Port Graham	1997	6.8	4.5	4.5	2.3	0.0	2	5	0.1	0.0	82
Port Graham	2003	6.4	4.3	4.3	2.1	4.3	6	12	0.3	0.1	82
Seldovia	1991	12.1	10.6	10.6	3.0	1.5	43	128	1.9	0.7	76
Seldovia	1992	10.8	7.7	7.7	3.1	3.1	4	13	0.2	0.1	77
Seldovia	1993	9.2	9.2	9.2	0.0	4.6	26	78	1.2	0.4	114

Source: Alaska Department of Fish and Game 2007; Fall et al. 2006

Table 10. Harvest and uses of crab in Nanwalek, Port Graham, and Seldovia

Community	Study year	Percentage of Households					Total number crab	Total pounds	Average pounds per HH	Per capita pounds	95% CI (± %)
		used	trying	harvesting	receiving	giving					
Nanwalek	1987	51.5	0.0	0.0	51.5	3.0	0	0	0.0	0.0	
Nanwalek	1989	6.1	3.0	3.0	3.0	3.0	20	14	0.4	0.1	87
Nanwalek	1990	14.3	2.9	2.9	14.3	0.0	5	4	0.1	0.0	66
Nanwalek	1991	6.9	0.0	0.0	6.9	0.0	0	0	0.0	0.0	
Nanwalek	1992	31.3	3.1	3.1	31.3	6.3	25	18	0.5	0.1	90
Nanwalek	1993	18.2	6.1	6.1	18.2	6.1	22	15	0.5	0.1	43
Nanwalek	1997	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0
Nanwalek	2003	22.7	13.6	13.6	9.1	13.6	21	8	0.3	0.1	67
Port Graham	1987	63.0	11.1	9.3	57.4	9.3	81	87	1.6	0.6	45
Port Graham	1989	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	
Port Graham	1990	2.2	0.0	0.0	2.2	0.0	0	0	0.0	0.0	
Port Graham	1991	28.6	16.3	16.3	16.3	14.3	102	74	1.5	0.6	33
Port Graham	1992	18.8	2.1	2.1	16.7	6.3	12	8	0.2	0.1	80
Port Graham	1993	21.6	2.0	2.0	21.6	9.8	4	3	0.1	0.0	80
Port Graham	1997	13.6	4.5	2.3	13.6	0.0	4	3	0.1	0.0	111
Port Graham	2003	17.0	0.0	0.0	17.0	0.0	0	0	0.0	0.0	
Seldovia	1991	66.7	19.7	18.2	54.5	21.2	910	1453	22.0	7.5	63
Seldovia	1992	69.2	12.3	12.3	61.5	20.0	318	508	7.8	2.9	66
Seldovia	1993	61.5	16.9	15.4	53.8	27.7	508	772	11.9	4.2	68

Source: Alaska Department of Fish and Game 2007; Fall et al. 2006

Table 11. Harvest and uses of Dungeness crab in Nanwalek, Port Graham, and Seldovia

Community	Study year	Percentage of Households					Total crab	Total pounds	Average pounds per HH	Per capita pounds	95% CI (± %)
		used	trying	harvesting	receiving	giving					
Nanwalek	1987	51.5	0.0	0.0	51.5	3.0	0	0	0.0	0.0	
Nanwalek	1989	6.1	3.0	3.0	3.0	0.0	20	14	0.4	0.0	87
Nanwalek	1990	11.4	2.9	2.9	11.4	0.0	5	4	0.1	0.0	66
Nanwalek	1991	6.9	0.0	0.0	6.9	0.0	0	0	0.0	0.0	
Nanwalek	1992	25.0	3.1	3.1	25.0	6.3	25	18	0.5	0.0	90
Nanwalek	1993	18.2	6.1	6.1	18.2	6.1	22	15	0.5	0.0	43
Nanwalek	1997	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	
Nanwalek	2003	18.2	13.6	13.6	4.5	13.6	19	13	0.3	0.1	82
Port Graham	1987	50.0	7.4	5.6	46.3	7.4	47	33	0.6	0.0	63
Port Graham	1989	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	
Port Graham	1990	2.2	0.0	0.0	2.2	0.0	0	0	0.0	0.0	
Port Graham	1991	20.4	16.3	16.3	4.1	14.3	99	69	1.4	0.0	35
Port Graham	1992	16.7	2.1	2.1	14.6	6.3	12	8	0.2	0.0	80
Port Graham	1993	9.8	2.0	2.0	9.8	5.9	4	3	0.1	0.0	80
Port Graham	1997	9.1	4.5	2.3	9.1	0.0	4	3	0.1	0.0	111
Port Graham	2003	12.8	0.0	0.0	12.8	0.0	0	0	0.0	0.0	
Seldovia	1991	21.2	4.5	4.5	19.7	4.5	23	16	0.2	0.0	87
Seldovia	1992	12.3	0.0	0.0	12.3	0.0	0	0	0.0	0.0	
Seldovia	1993	21.5	6.2	4.6	20.0	1.5	56	39	0.6	0.0	132

Source: Alaska Department of Fish and Game 2007; Fall et al. 2006

Table 12. Harvest and uses of king crab in Nanwalek, Port Graham, and Seldovia

Community	Study year	Percentage of Households					Total Number Crab	Total pounds	Average pounds per HH	Per capita pounds	95% CI (± %)
		used	trying	harvesting	receiving	giving					
Nanwalek	1987	3.0	0.0	0.0	3.0	0.0	0	0	0.0	0.0	
Nanwalek	1989	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	
Nanwalek	1990	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	
Nanwalek	1991	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	
Nanwalek	1992	9.4	0.0	0.0	9.4	3.1	0	0	0.0	0.0	
Nanwalek	1993	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	
Nanwalek	1997	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	
Nanwalek	2003	13.6	4.5	4.5	9.1	4.5	1	2	0.1	0.0	153
Port Graham	1987	5.6	0.0	0.0	5.6	0.0	0	0	0.0	0.0	
Port Graham	1989	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	
Port Graham	1990	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	
Port Graham	1991	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	
Port Graham	1992	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	
Port Graham	1993	5.9	0.0	0.0	5.9	2.0	0	0	0.0	0.0	
Port Graham	1997	6.8	0.0	0.0	6.8	0.0	0	0	0.0	0.0	
Port Graham	2003	4.3	0.0	0.0	4.3	2.1	0	0	0.0	0.0	
Seldovia	1991	13.6	4.5	3.0	12.1	6.1	25	58	0.9	0.3	122
Seldovia	1992	4.6	0.0	0.0	4.6	1.5	0	0	0.0	0.0	
Seldovia	1993	12.3	3.1	3.1	10.8	4.6	13	30	0.5	0.2	106

Source: Alaska Department of Fish and Game 2007; Fall et al. 2006

Table 13. Harvest and uses of Tanner crab in Nanwalek, Port Graham, and Seldovia

Community	Study year	Percentage of Households					Total number crab	Total pounds	Average pounds per HH	Per capita pounds	95% CI (± %)
		used	trying	harvesting	receiving	giving					
Nanwalek	1987	12.1	0	0	12.1	0	0	0	0.0	0.0	
Nanwalek	1989	3.0	0	0	3.0	3.0	0	0	0.0	0.0	
Nanwalek	1990	5.7	0	0	5.7	0	0	0	0.0	0.0	
Nanwalek	1991	0	0	0	0	0	0	0	0.0	0.0	
Nanwalek	1992	18.8	0	0	18.8	3.1	0	0	0.0	0.0	
Nanwalek	1993	0	0	0	0	0	0	0	0.0	0.0	
Nanwalek	1997	0	0	0	0	0	0	0	0.0	0.0	
Nanwalek	2003	0	0	0	0	0	0	0	0.0	0.0	
Port Graham	1987	35.2	3.7	3.7	33.3	7.4	34	54	1.0	0.4	64
Port Graham	1989	0	0	0	0	0	0	0	0.0	0.0	
Port Graham	1990	0	0	0	0	0	0	0	0.0	0.0	
Port Graham	1991	14.3	2.0	2.0	12.2	2.0	3	5	0.1	0.0	75
Port Graham	1992	8.3	0	0	8.3	2.1	0	0	0.0	0.0	
Port Graham	1993	15.7	0	0	15.7	5.9	0	0	0.0	0.0	
Port Graham	1997	4.5	0	0	4.5	0	0	0	0.0	0.0	
Port Graham	2003	8.5	0	0	8.5	4.3	0	0	0.0	0.0	
Seldovia	1991	62.1	16.7	15.2	51.5	18.2	862	1380	20.9	7.1	62
Seldovia	1992	61.5	12.3	12.3	53.8	20.0	318	508	7.8	2.9	66
Seldovia	1993	52.3	15.4	15.4	43.1	26.2	439	702	10.8	3.8	73

Source: Alaska Department of Fish and Game 2007; Fall et al. 2006

Table 14. Harvest and uses of limpets in Nanwalek, Port Graham, and Seldovia

Community	Study year	Percentage of Households					Total gallons	Total pounds	Average pounds per HH	Per capita pounds	95% CI (± %)
		used	trying	harvesting	receiving	giving					
Nanwalek	1989	6.1	6.1	6.1	3.0	6.1	2	3	0.1	0.0	50
Nanwalek	1990	8.6	8.6	8.6	0.0	0.0	2	2	0.1	0.0	50
Nanwalek	1991	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	
Nanwalek	1992	9.4	6.3	6.3	3.1	0.0	1	2	0.0	0.0	100
Nanwalek	1993	12.1	12.1	12.1	0.0	3.0	2	3	0.1	0.0	50
Nanwalek	1997	10.3	10.3	10.3	0.0	3.4	3	5	0.2	0.0	72
Nanwalek	2003	27.3	27.3	27.3	4.5	9.1	10	15	0.3	0.1	60
Port Graham	1989	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	
Port Graham	1990	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	
Port Graham	1991	4.1	4.1	4.1	0.0	2.0	1	2	0.0	0.0	100
Port Graham	1992	6.3	6.3	6.3	2.1	2.1	14	20	0.4	0.1	75
Port Graham	1993	2.0	2.0	2.0	0.0	2.0	5	8	0.1	0.1	83
Port Graham	1997	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0
Port Graham	2003	6.4	4.3	4.3	2.1	2.1	3	4	0.1	0.0	72
Seldovia	1991	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	
Seldovia	1992	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	
Seldovia	1993	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	

Source: Alaska Department of Fish and Game 2007; Fall et al. 2006

Table 15. Harvest and uses of mussels in Nanwalek, Port Graham, and Seldovia

Community	Study year	Percentage of Households					Total gallons	Total pounds	Average pounds per HH	Per capita pounds	95% CI (± %)
		used	trying	harvesting	receiving	giving					
Nanwalek	1987	51.5	48.5	48.5	21.2	24.2	114	171	5.2	1.4	31
Nanwalek	1989	24.2	21.2	21.2	12.1	12.1	12	18	0.5	0.1	39
Nanwalek	1990	40.0	31.4	31.4	11.4	5.7	33	50	1.4	0.3	35
Nanwalek	1991	27.6	27.6	27.6	3.4	10.3	41	61	2.1	0.5	48
Nanwalek	1992	25.0	25.0	25.0	9.4	15.6	26	39	1.2	0.3	42
Nanwalek	1993	30.3	27.3	27.3	3.0	12.1	22	33	1.0	0.3	24
Nanwalek	1997	37.9	34.5	34.5	6.9	13.8	26	39	1.3	0.3	43
Nanwalek	2003	40.9	36.4	36.4	9.1	4.5	72	108	2.1	0.5	54
Port Graham	1987	24.1	22.2	22.2	7.4	5.6	27	41	0.8	0.3	31
Port Graham	1989	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	
Port Graham	1990	10.9	10.9	10.9	0.0	4.3	9	13	0.3	0.1	39
Port Graham	1991	26.5	18.4	18.4	8.2	12.2	44	65	1.3	0.5	37
Port Graham	1992	16.7	14.6	14.6	4.2	8.3	11	17	0.4	0.1	35
Port Graham	1993	13.7	11.8	11.8	3.9	5.9	8	12	0.2	0.1	33
Port Graham	1997	4.5	2.3	2.3	4.5	4.5	2	3	0.1	0.0	111
Port Graham	2003	23.4	23.4	23.4	2.1	10.6	39	58	0.9	0.4	42
Seldovia	1991	22.7	21.2	21.2	10.6	7.6	75	112	1.7	0.6	46
Seldovia	1992	20.0	12.3	12.3	10.8	4.6	25	38	0.6	0.2	67
Seldovia	1993	18.5	16.9	16.9	3.1	6.2	45	68	1.0	0.4	58

Source: Alaska Department of Fish and Game 2007; Fall et al. 2006

Table 16. Harvest and uses of octopus in Nanwalek, Port Graham, and Seldovia

Community	Study year	Percentage of Households					Total octopus	Total pounds	Average pounds per HH	Per capita pounds	95% CI (± %)
		used	trying	harvesting	receiving	giving					
Nanwalek	1987	48.5	36.4	33.3	27.3	21.2	48	192	5.8	1.5	27
Nanwalek	1989	48.5	39.4	36.4	15.2	18.2	38	152	4.6	1.2	25
Nanwalek	1990	57.1	48.6	37.1	25.7	20.0	74	294	8.4	1.9	25
Nanwalek	1991	58.6	20.7	20.7	41.4	13.8	75	300	10.3	2.6	50
Nanwalek	1992	78.1	40.6	40.6	53.1	31.3	75	300	9.4	2.3	30
Nanwalek	1993	69.7	45.5	45.5	39.4	48.5	97	388	11.8	3.1	18
Nanwalek	1997	75.9	62.1	58.6	44.8	51.7	64	256	8.8	2.0	28
Nanwalek	2003	90.9	63.6	63.6	68.2	63.6	148	593	11.6	2.6	38
Port Graham	1987	81.5	59.3	55.6	42.6	16.7	133	532	9.9	3.4	14
Port Graham	1989	41.7	31.3	31.3	22.9	16.7	56	224	4.7	1.8	22
Port Graham	1990	60.9	41.3	37.0	37.0	26.1	63	252	5.5	1.8	28
Port Graham	1991	75.5	51.0	49.0	46.9	34.7	117	468	9.6	3.4	20
Port Graham	1992	79.2	54.2	50.0	50.0	43.8	125	500	10.4	3.6	16
Port Graham	1993	72.5	47.1	41.2	54.9	41.2	101	402	7.9	2.8	20
Port Graham	1997	68.2	43.2	38.6	47.7	38.6	102	408	9.3	3.7	30
Port Graham	2003	74.5	40.4	38.3	55.3	34.0	129	514	7.9	3.3	37
Seldovia	1991	15.2	9.1	9.1	7.6	3.0	215	860	13.0	4.4	119
Seldovia	1992	13.8	9.2	9.2	9.2	6.2	44	175	2.7	1.0	88
Seldovia	1993	29.2	16.9	13.8	20.0	9.2	55	218	3.4	1.2	103

Source: Alaska Department of Fish and Game 2007; Fall et al. 2006

Table 17. Harvest and uses of scallops in Nanwalek, Port Graham, and Seldovia

Community	Study year	Percentage of Households					Total gallons	Total pounds	Average pounds per HH	Per capita pounds	95% CI (± %)
		used	trying	harvesting	receiving	giving					
Nanwalek	1990	2.9	0.0	0.0	2.9	0.0	0.0	0	0.0	0.0	
Nanwalek	1991	3.4	0.0	0.0	3.4	0.0	0.0	0	0.0	0.0	
Nanwalek	1992	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	
Nanwalek	1993	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	
Nanwalek	1997	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	
Nanwalek	2003	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	
Port Graham	1991	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	
Port Graham	1992	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	
Port Graham	1993	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	
Port Graham	1997	2.3	0.0	0.0	2.3	0.0	0.0	0	0.0	0.0	
Port Graham	2003	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	
Seldovia	1991	1.5	0.0	0.0	1.5	0.0	0.0	0	0.0	0.0	
Seldovia	1992	1.5	1.5	1.5	0.0	0.0	<1.0	<1.0	<1.0	<1.0	150
Seldovia	1993	3.1	0.0	0.0	3.1	0.0	0.0	0	0.0	0.0	

Source: Alaska Department of Fish and Game 2007; Fall et al. 2006

Table 18. Harvest and uses of sea cucumber in Nanwalek, Port Graham, and Seldovia

Community ^a	Study year	Percentage of Households					Total gallons	Total pounds	Average pounds per HH	Per capita pounds	95% CI (± %)
		used	trying	harvesting	receiving	giving					
Nanwalek	1990	0	0	0	0	0	0.0	0.0	0	0	
Nanwalek	1997	3.4	3.4	3.4	0	3.4	0.3	0.7	<0.1	<0.1	100
Nanwalek	2003	0	0	0	0	0	0.0	0.0	0	0	
Port Graham	1990	0	0	0	0	0	0.0	0.0	0	0	
Port Graham	1997	0	0	0	0	0	0.0	0.0	0	0	
Port Graham	2003	0	0	0	0	0	0.0	0.0	0	0	

Source: Alaska Department of Fish and Game 2007; Fall et al. 2006

^a The survey instrument administered for 1987, 1989, 1991, 1992, and 1993 did not systematically collect data for sea cucumbers.

Table 19. Harvest and uses of sea urchin in Nanwalek, Port Graham, and Seldovia

Community	Study year	Percentage of Households					Total gallons	Total pounds	Average pounds per HH	Per capita pounds	95% CI (± %)
		used	trying	harvesting	receiving	giving					
Nanwalek	1989	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	
Nanwalek	1990	8.6	8.6	8.6	2.9	2.9	3	1	0.0	0.0	33
Nanwalek	1991	10.3	6.9	6.9	3.4	0.0	1	1	0.0	0.0	100
Nanwalek	1992	3.1	3.1	3.1	3.1	3.1	1	0	0.0	0.0	100
Nanwalek	1993	9.1	9.1	9.1	0.0	3.0	3	2	0.0	0.0	33
Nanwalek	1997	10.3	6.9	6.9	6.9	3.4	4	2	0.1	<0.1	86
Nanwalek	2003	13.6	13.6	13.6	4.5	9.1	12	6	0.1	<0.1	96
Port Graham	1989	4.2	2.1	2.1	4.2	2.1	<1.0	<1.0	<0.1	<0.1	NA
Port Graham	1990	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	
Port Graham	1991	4.1	10.2	4.1	0.0	0.0	1	1	0.0	0.0	100
Port Graham	1992	8.3	8.3	8.3	2.1	0.0	4	2	0.0	0.0	60
Port Graham	1993	2.0	0.0	0.0	2.0	2.0	0	0	0.0	0.0	
Port Graham	1997	4.5	2.3	2.3	2.3	2.3	1	0	0.0	0.0	111
Port Graham	2003	2.1	2.1	2.1	0.0	0.0	4	2	0.0	0.0	105
Seldovia	1991	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	
Seldovia	1992	1.5	1.5	1.5	0.0	0.0	1	1	0.0	0.0	150
Seldovia	1993	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	

Source: Alaska Department of Fish and Game 2007; Fall et al. 2006

Table 20. Harvest and uses of shrimp in Nanwalek, Port Graham, and Seldovia

Community	Study year	Percentage of Households					Total number	units	Total pounds	Average pounds per HH	Per capita pounds	95% CI (± %)
		used	trying	harvesting	receiving	giving						
Nanwalek	1989	3.0	3.0	3.0	0.0	3.0	10	pounds	10	0.3	0.0	91
Nanwalek	1990	8.6	0.0	0.0	8.6	0.0	0		0	0.0	0.0	
Nanwalek	1991	0.0	0.0	0.0	0.0	0.0	0		0	0.0	0.0	
Nanwalek	1992	3.1	0.0	0.0	3.1	0.0	0		0	0.0	0.0	
Nanwalek	1993	3.0	0.0	0.0	3.0	0.0	0		0	0.0	0.0	
Nanwalek	1997	0.0	0.0	0.0	0.0	0.0	0		0	0.0	0.0	
Nanwalek	2003	4.5	4.5	4.5	0.0	0.0	35	pounds	35	0.7	0.2	153
Port Graham	1989	0.0	0.0	0.0	0.0	0.0	0		0	0.0	0.0	
Port Graham	1990	0.0	0.0	0.0	0.0	0.0	0		0	0.0	0.0	
Port Graham	1991	0.0	0.0	0.0	0.0	0.0	0		0	0.0	0.0	
Port Graham	1992	0.0	0.0	0.0	0.0	0.0	0		0	0.0	0.0	
Port Graham	1993	0.0	0.0	0.0	0.0	0.0	0		0	0.0	0.0	
Port Graham	1997	0.0	0.0	0.0	0.0	0.0	0		0	0.0	0.0	
Port Graham	2003	8.5	6.4	6.4	4.3	4.3	8	pounds	8	0.1	0.0	73
Seldovia	1991	4.5	0.0	0.0	4.5	0.0	0		0	0.0	0.0	
Seldovia	1992	6.2	4.6	4.6	3.1	1.5	58	gallons	116	1.8	0.7	122
Seldovia	1993	9.2	6.2	6.2	6.2	1.5	14	gallons	28	0.4	0.2	78

Source: Alaska Department of Fish and Game 2007; Fall et al. 2006

Table 21. Harvest and uses of snails in Nanwalek, Port Graham, and Seldovia

Community	Study year	Percentage of Households					Total gallons	Total pounds	Average pounds per HH	Per capita pounds	95% CI (± %)
		used	trying	harvesting	receiving	giving					
Nanwalek	1987	66.7	60.6	60.6	33.3	27.3	70	105	3.2	0.8	24
Nanwalek	1989	42.4	42.4	42.4	6.1	15.2	26	39	1.2	0.3	25
Nanwalek	1990	60.0	51.4	51.4	11.4	11.4	34	51	1.5	0.3	19
Nanwalek	1991	34.5	34.5	34.5	10.3	13.8	33	49	1.7	0.4	39
Nanwalek	1992	68.8	62.5	62.5	28.1	31.3	53	80	2.5	0.6	30
Nanwalek	1993	57.6	48.5	48.5	15.2	33.3	33	49	1.5	0.4	19
Nanwalek	1997	58.6	48.3	48.3	31.0	34.5	33	50	1.7	0.4	24
Nanwalek	2003	68.2	68.2	63.6	27.3	36.4	83	125	2.5	0.5	62
Port Graham	1987	51.9	48.1	48.1	13.0	13.0	33	50	0.9	0.3	12
Port Graham	1989	20.8	20.8	20.8	8.3	10.4	13	20	0.4	0.2	29
Port Graham	1990	37.0	34.8	34.8	4.3	15.2	22	32	0.7	0.2	23
Port Graham	1991	61.2	51.0	51.0	24.5	30.6	44	65	1.3	0.5	15
Port Graham	1992	64.6	54.2	54.2	31.3	39.6	47	70	1.5	0.5	17
Port Graham	1993	47.1	35.3	33.3	25.5	19.6	36	53	1.0	0.4	21
Port Graham	1997	29.5	22.7	22.7	9.1	15.9	16	24	0.5	0.2	42
Port Graham	2003	57.4	48.9	46.8	19.1	31.9	73	109	1.7	0.7	19
Seldovia	1991	6.1	4.5	4.5	1.5	0.0	3	4	0.1	0.0	75
Seldovia	1992	6.2	6.2	6.2	1.5	4.6	10	15	0.2	0.1	85
Seldovia	1993	4.6	3.1	3.1	1.5	1.5	2	3	0.0	0.0	100

Source: Alaska Department of Fish and Game 2007; Fall et al. 2006

Table 22. Harvest and uses of whelk in Nanwalek, Port Graham, and Seldovia

Community	Study year	Percentage of Households					Total gallons	Total pounds	Average pounds per HH	Per capita pounds	95% CI (± %)
		used	trying	harvesting	receiving	giving					
Nanwalek	1990	8.6	8.6	8.6	0.0	2.9	3	5	0.1	0.0	50
Nanwalek	1991	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	
Nanwalek	1992	3.1	3.1	3.1	0.0	0.0	1	1	0.0	0.0	100
Nanwalek	1993	6.1	6.1	6.1	0.0	3.0	1	2	0.0	0.0	0
Nanwalek	1997	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0
Nanwalek	2003	9.1	9.1	9.1	0.0	0.0	5	7	0.1	0.0	103
Port Graham	1990	6.5	6.5	6.5	0.0	0.0	2	3	0.1	0.0	50
Port Graham	1991	4.1	4.1	4.1	0.0	0.0	12	2	0.0	0.0	64
Port Graham	1992	4.2	4.2	4.2	2.1	4.2	2	2	0.0	0.0	50
Port Graham	1993	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	
Port Graham	1997	4.5	2.3	2.3	2.3	2.3	1	2	0.0	0.0	111
Port Graham	2003	4.3	4.3	4.3	0.0	4.3	3	4	0.1	0.0	72
Seldovia	1991	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	
Seldovia	1992	1.5	1.5	1.5	0.0	0.0	1	1	0.0	0.0	100
Seldovia	1993	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	

Source: Alaska Department of Fish and Game 2007; Fall et al. 2006

Table 23. Uses and Harvests of Wild Resources, Nanwalek, Port Graham, and Seldovia

Community	Year	Percentage of Households					Usable Lbs Harvested	
		using	trying	harvesting	receiving	giving	Per Household	Per Capita
Nanwalek	1987	97	94	94	94	94	1,078	285
Nanwalek	1989	100	100	100	100	94	538	141
Nanwalek	1990	100	100	100	100	97	813	181
Nanwalek	1991	100	100	100	100	100	1,017	259
Nanwalek	1992	100	100	100	100	94	1,160	279
Nanwalek	1993	100	100	100	100	97	1,164	305
Nanwalek	1997	100	100	100	100	90	1,121	254
Nanwalek	2003	100	100	100	100	100	1,787	393
Port Graham	1987	100	100	100	98	82	657	229
Port Graham	1989	96	94	94	92	65	323	122
Port Graham	1990	100	100	100	98	89	637	214
Port Graham	1991	100	96	96	98	88	780	281
Port Graham	1992	100	100	100	100	98	784	273
Port Graham	1993	100	98	98	100	90	608	212
Port Graham	1997	100	98	98	96	86	628	253
Port Graham	2003	98	96	96	98	94	1,121	466
Seldovia	1991	99	92	92	96	85	604	205
Seldovia	1992	99	94	94	95	85	397	145
Seldovia	1993	95	95	95	86	79	517	184

Source: Alaska Department of Fish and Game 2007; Fall et al. 2006

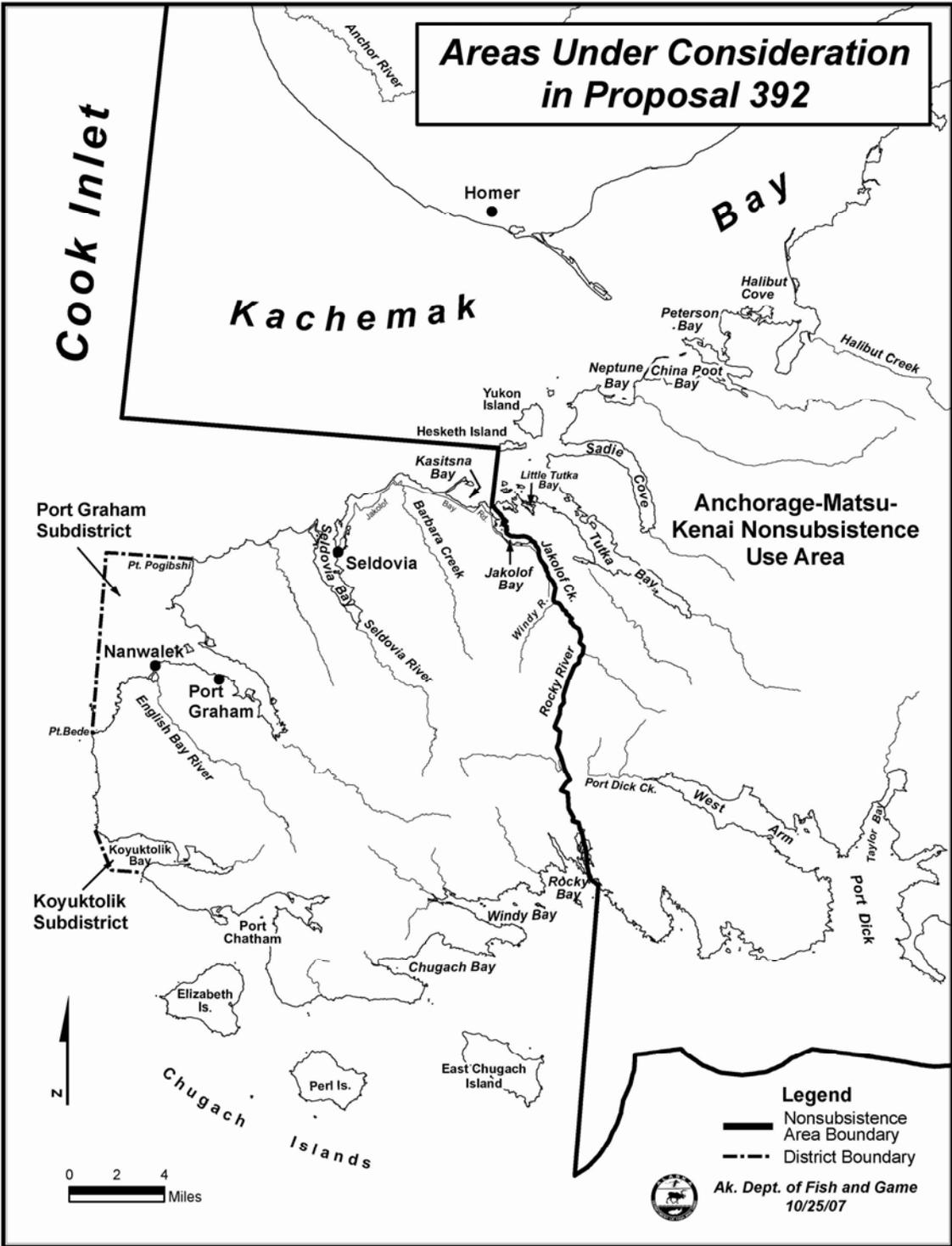


Figure 1. Areas under consideration in proposal 392

Figure 2. Percentage of Households Participating in Shellfish Harvesting, Nanwalek, Port Graham, and Seldovia

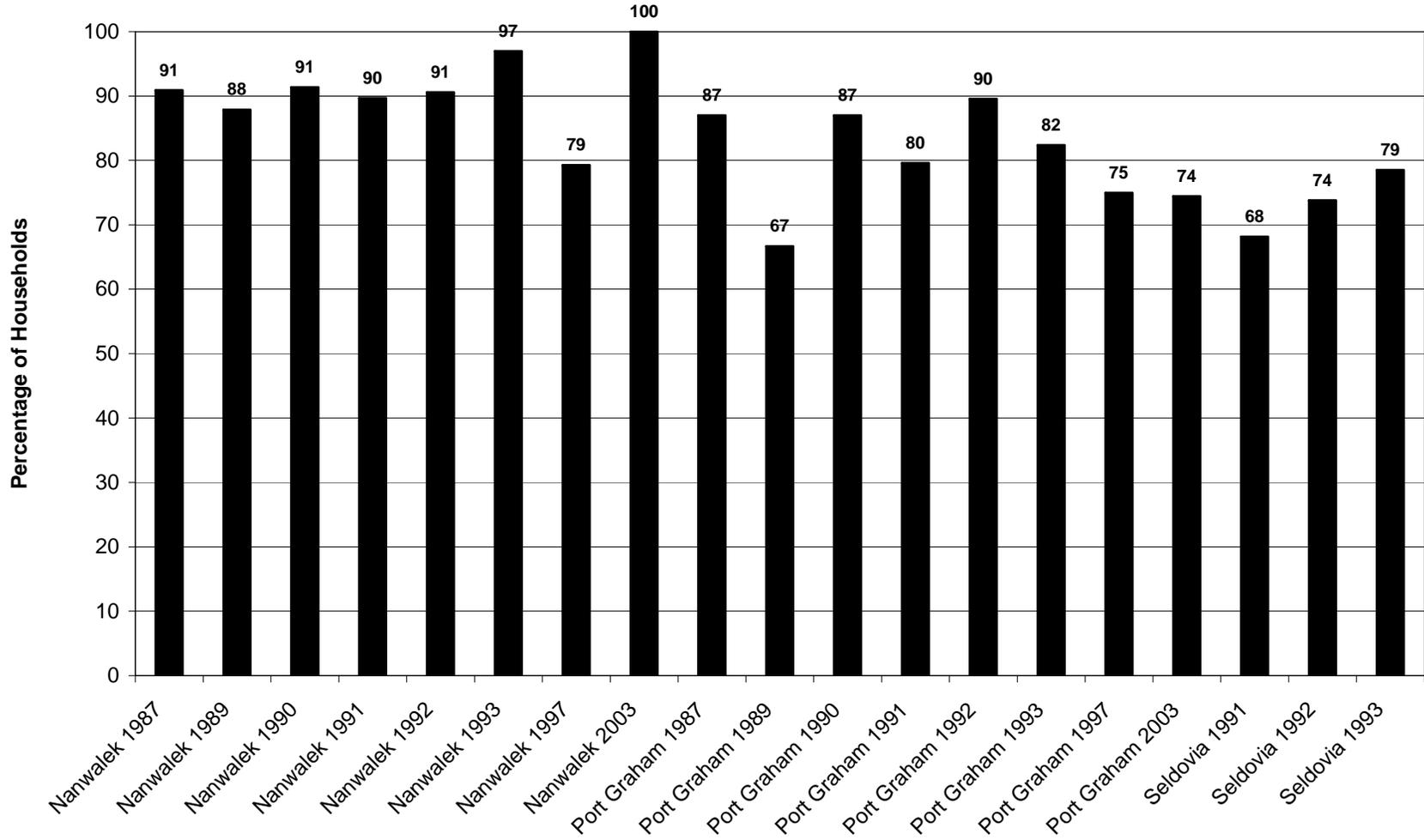
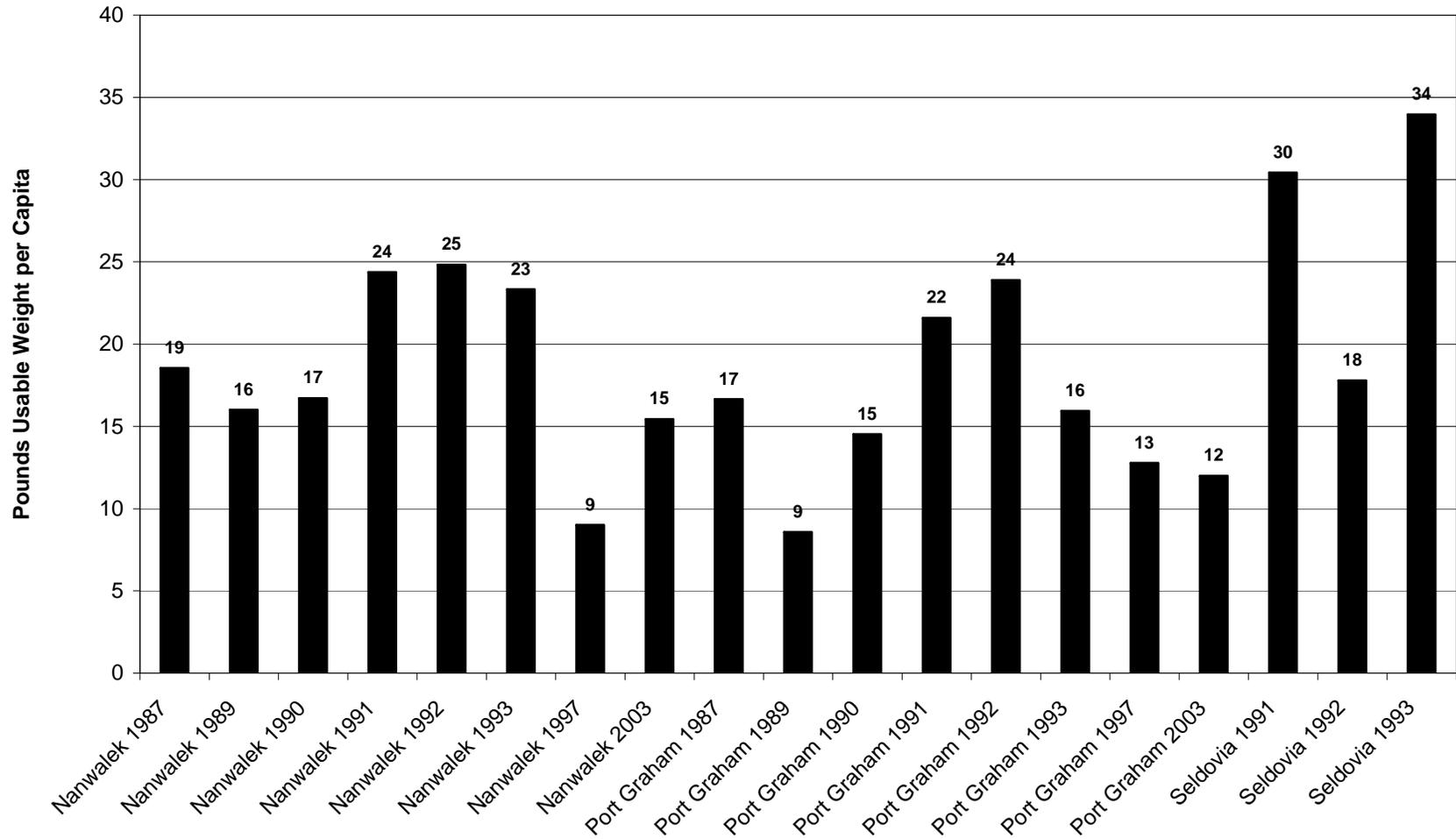


Figure 3. Estimated Harvests of Shellfish in Pounds Usable Weight per Capita, Nanwalek, Port Graham, and Seldovia



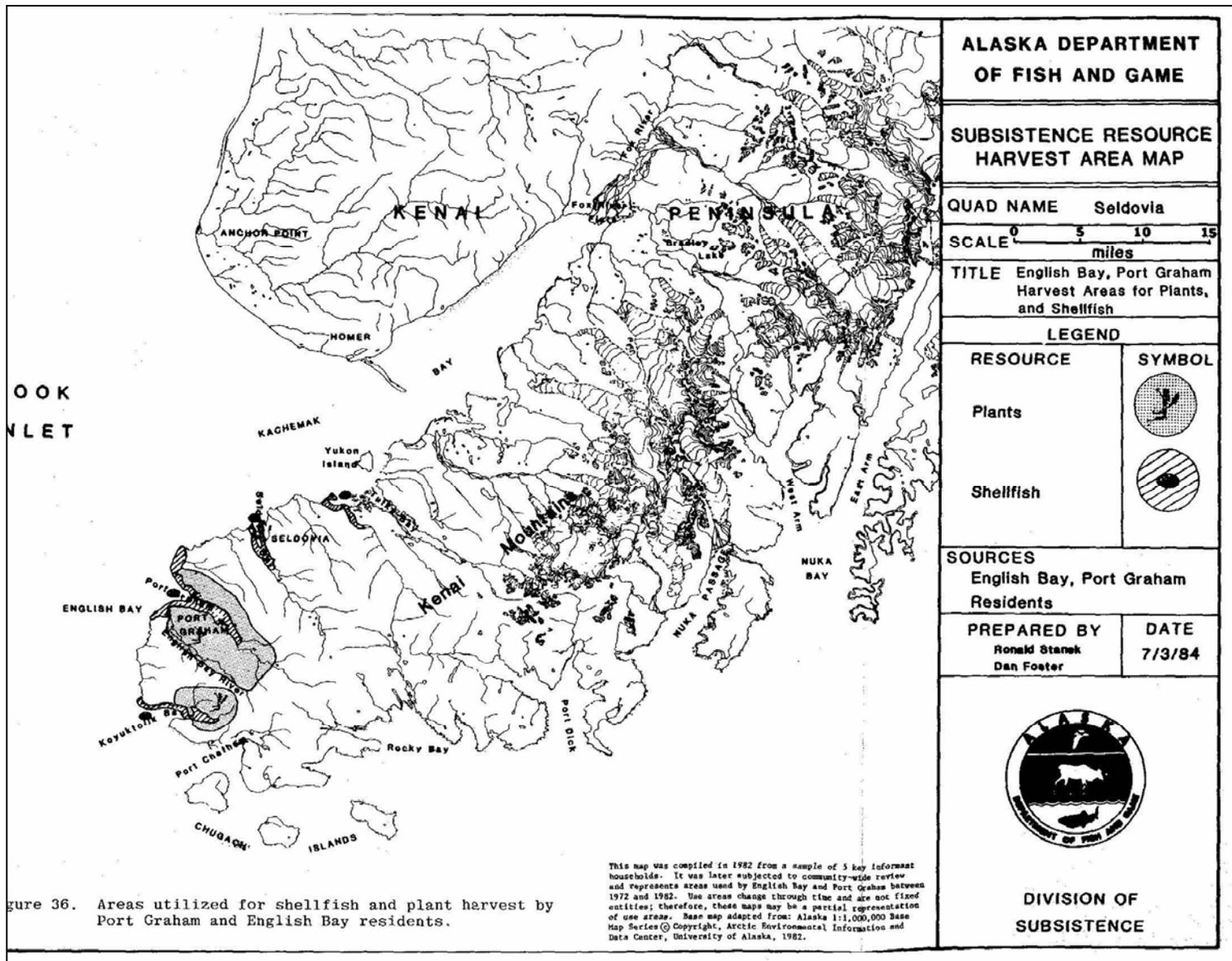


Figure 36. Areas utilized for shellfish and plant harvest by Port Graham and English Bay residents.

Figure 4. Areas utilized for shellfish harvesting, Port Graham and Nanwalek, 1972 – 1982.