

**Customary and Traditional Use Worksheet:  
Moose Unit 15C (portion)**

**Prepared by**

**Alaska Department of Fish and Game Division of Subsistence  
for the Southcentral Board of Game meeting, March 2019**

**March 2019**

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**Alaska Department of Fish and Game**

**Division of Subsistence**



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### Weights and measures (metric)

centimeter	cm
deciliter	dL
gram	g
hectare	ha
kilogram	kg
kilometer	km
liter	L
meter	m
milliliter	mL
millimeter	mm

### Weights and measures (English)

cubic feet per second	ft <sup>3</sup> /s
foot	ft
gallon	gal
inch	in
mile	mi
nautical mile	nmi
ounce	oz
pound	lb
quart	qt
yard	yd

### Time and temperature

day	d
degrees Celsius	°C
degrees Fahrenheit	°F
degrees kelvin	K
hour	h
minute	min
second	s

### Physics and chemistry

*all atomic symbols*

alternating current	AC
ampere	A
calorie	cal
direct current	DC
hertz	Hz
horsepower	hp
hydrogen ion activity (negative log of)	pH
parts per million	ppm
parts per thousand	ppt, ‰
volts	V
watts	W

### General

*all commonly-accepted abbreviations*  
*e.g., Mr., Mrs., AM, PM, etc.*  
*all commonly-accepted professional titles e.g., Dr., Ph.D., R.N., etc.*

Alaska Administrative Code	AAC
at	@
compass directions:	
east	E
north	N
south	S
west	W
copyright	©
corporate suffixes:	
Company	Co.
Corporation	Corp.
Incorporated	Inc.
Limited	Ltd.
District of Columbia	D.C.
et alii (and others)	et al.
et cetera (and so forth)	etc.
exempli gratia (for example)	e.g.
Federal Information Code	FIC
id est (that is)	i.e.
latitude or longitude	lat. or long.
monetary symbols (U.S.)	\$, ¢
months (tables and figures):	first three letters (Jan.,...,Dec)
registered trademark	®
trademark	™
United States (adjective)	U.S.
United States of America (noun)	USA
U.S.C.	United States Code
U.S. state	use two-letter abbreviations (e.g., AK, WA)

### Measures (fisheries)

fork length	FL
mid-eye-to-fork	MEF
mid-eye-to-tail-fork	METF
standard length	SL
total length	TL

### Mathematics, statistics

*all standard mathematical signs, symbols and abbreviations*

alternate hypothesis	H <sub>A</sub>
base of natural logarithm	e
catch per unit effort	CPUE
coefficient of variation	CV
common test statistics (F, t, $\chi^2$ , etc.)	
confidence interval	CI
correlation coefficient (multiple)	R
correlation coefficient (simple)	r
covariance	cov
degree (angular)	°
degrees of freedom	df
expected value	E
greater than	>
greater than or equal to	≥
harvest per unit effort	HPUE
less than	<
less than or equal to	≤
logarithm (natural)	ln
logarithm (base 10)	log
logarithm (specify base)	log <sub>2</sub> , etc.
minute (angular)	'
not significant	NS
null hypothesis	H <sub>0</sub>
percent	%
probability	P
probability of a type I error (rejection of the null hypothesis when true)	$\alpha$
probability of a type II error (acceptance of the null hypothesis when false)	$\beta$
second (angular)	"
standard deviation	SD
standard error	SE
variance	
population	Var
sample	var

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**CUSTOMARY AND TRADITIONAL USE WORKSHEET:  
MOOSE UNIT 15C (PORTION)**

by

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## INTRODUCTION

Alaska Board of Game (board) proposals 63–66, 72–79, and 83 for the March 2019 Southcentral meeting address moose hunting regulations in Game Management Unit (GMU) 15C. A portion of GMU 15C is outside the Anchorage-Matsu-Kenai Nonsubsistence area [described at 5 AAC 99.015(3); Figure 1]. Alaska statute 16.05.258(a) *Subsistence use and allocation of fish and game* (state subsistence law) requires that the board identify game populations or portions of populations outside nonsubsistence areas that are customarily and traditionally taken or used for subsistence. The board applies the Joint Board of Fisheries and Game criteria at 5 AAC 99.010 *Boards of fisheries and game subsistence procedures* (generally known as “the eight criteria”) when making customary and traditional use (C&T) determinations. The board has made a C&T determination for only a portion of the moose population in GMU15C that is outside the nonsubsistence area: the remainder lacks a C&T finding. This worksheet has been prepared to assist the board in making a C&T determination that covers the entire area outside the nonsubsistence area. The information in the worksheet can be supplemented by other information provided for the board meeting.

In March 1987, the Board of Game made a positive C&T finding for uses of moose by the residents of Nanwalek and Port Graham and established a registration subsistence hunt in the portion of GMU 15C southwest of a line from Point Pogibshi to the point of land between Rocky Bay and Windy Bay (Figure 2). This became a Tier II subsistence hunt (now TM549) in 1990. Patterns of use of moose by Seldovia, a community about 10 miles to the northeast of Port Graham and Nanwalek, were not discussed at the March 1987 meeting because the Joint Board of Fisheries and Game had classified Seldovia as a non-rural place following the adoption of an amended state subsistence law in 1986. In March 1988, however, the Joint Board reclassified Seldovia as a rural place. In March 1989, in response to a proposal from the Seldovia Fish and Game Advisory Committee to establish a subsistence moose hunt near their community, the Board of Game made a negative finding for uses of moose by Seldovia residents, primarily because most of their moose hunting was taking place in other portions of GMU 15. When the Board of Game met in 1992 and 1993 to review C&T findings and subsistence regulations for compliance with the amended 1992 state subsistence law, it readopted the positive finding from the March 1987 meeting but did not re-examine uses of the moose in the remainder of GMU 15C outside the Anchorage-Matsu-Kenai Nonsubsistence Area under the provisions of the new law, and the previous negative finding was not adopted into regulations.

The Division of Subsistence first prepared a customary and traditional use worksheet for moose in this portion of GMU 15C for the board’s March 1988 meeting. The board took no action at that meeting, but the same worksheet was provided in March 1989, when the negative finding was made. Following the Alaska Supreme Court’s *McDowell* decision in December 1989 (which invalidated a rural subsistence preference in the state subsistence law), the Division of Subsistence updated C&T worksheets for GMU 15C moose in 1990, 1991, 1993 [as Worksheet II (31) in the set of worksheets prepared for the February 1993 Board of Game meeting], and 1994. No review of or action on this information occurred at these meetings. The current worksheet is an update of the one prepared in 1994, supplemented with information from a worksheet on the C&T uses of moose in the current Tier II hunt area, prepared as C&T Worksheet II (19) for the November 1992 meeting of the Board of Game, as well as updated harvest data.

Other C&T findings for fish stocks and game populations address the entire portion of GMU 15C outside the nonsubsistence area and include:

- Goats: positive finding
- Grouse: positive finding
- Ptarmigan: positive finding
- Furbearers and fur animals: positive finding
- Migratory game birds: positive finding
- Salmon: positive finding

Under the state subsistence law at AS 16.05.258(b), the board is also required to determine that amount of the harvestable portion of game populations with customary and traditional uses that is reasonably necessary for subsistence uses (an “ANS” finding). Appendix A provides options for an ANS finding should the board make a positive C&T determination for the entire portion of the moose population outside the nonsubsistence area. The ANS finding for the portion of this area included in the Tier II hunt and the current positive C&T finding, established by the board in 1992, is 5–6 moose [5 AAC 99.025(a)(8)].

In 2018/19, other than the Tier II hunt (which allowed a harvest of one bull during an August 25–September 30 season), regulations in the remainder of the portion of GMU 15C outside the nonsubsistence area allowed the harvest of one bull with a spike on at least one side or 50-inch antlers, or antlers with four or more brow tines on at least one side during a September 1–September 25 season. Additionally, a permit hunt for one moose could be announced by emergency order.

The area around present-day Seldovia was inhabited by Dena’ina Athabascans when Kachemak Bay was first explored by Europeans in the late 18th century. Nearby Nanwalek and Port Graham are Alutiiq communities. The town of Seldovia itself originated in the late 19th century as an Alaska Native village centered around a commercial trading post. Alaska Natives living in Seldovia hunted sea mammals and sold the furs at the post. In the late 19th century, Seldovia became a thriving commercial fishing town and the center for commerce for all of Kachemak Bay. The population grew with the arrival of many Scandinavian fishermen (in connection with the herring fishery) in the 1910s and 1920s (Reed 1985:143–146). The community’s population has been relatively stable since that time, reflecting the limited economic opportunities compared to Homer, Kenai, and the rest of Kenai Peninsula Borough on the road system. The herring fishery collapsed in the late 1920s. Until 1964 (when the Great Alaska Earthquake destroyed the waterfront), Seldovia was a major salmon processing center, with four or five canneries operating. In the 1970s, Seldovia residents became involved in the growing king crab commercial fisheries. The population dropped slightly in the 1980s, perhaps in part to the collapse of the king crab commercial fishery. Consequently, many Seldovia commercial fishermen have diversified into other fisheries (Tanner crab, halibut, black cod) or tendered for salmon and herring. In recent years, a small tourism industry has started in Seldovia. Seldovia’s population has remained relatively stable at slightly above 400 people over the last several decades (Jones and Kostick 2016:105).

Presently, there are three year-round communities in the portion of GMU 15C outside the nonsubsistence area: Seldovia [estimated population of 401 in July 2018 for Seldovia city and



Seldovia Village Census Designated Place (CDP)], Port Graham (estimated population 179), and Nanwalek (formerly English Bay; estimated population 291). According to data collected by the American Community Survey for the period 2012–2016, about 26% of Seldovia’s population is of Alaska Native heritage. In the early 1980s, Reed (1985:146–147) noted that Seldovia’s population contains a core of long-term resident households; in 1982, about a third of the sampled household heads had lived in Seldovia for more than 20 years. In 2014, the last year for which such data are available, the average length of residency of Seldovia household heads was 25.5 years (Jones and Kostick 2016:107).

Port Graham and Nanwalek are predominately Alaska Native communities, with populations of 91% and 92% Alaska Native, respectively, according to data from the American Community Survey. Most Nanwalek and Port Graham families have lived in the Kachemak Bay area for many generations. The average length of residency of household heads in 2014 was 31.1 years for Nanwalek and 31.5 years for Port Graham (Jones and Kostick 2016).

# THE EIGHT CRITERIA

## CRITERION 1: LENGTH AND CONSISTENCY OF USE

**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.**

Archaeological and ethnographic data show that moose have long been hunted in the Cook Inlet area, including the Kachemak Bay area (e.g., Osgood 1937:33–34). In an early overview of the prehistory and ethnography of the area, de Laguna (1934:13) noted that:

The moose is said to be a recent migrant to this [Cook Inlet] region, where the species is now well represented, but archaeological evidence shows that the moose was known here at an early time, also. It is possible that the moose, a very wandering animal, may have abandoned the region temporarily.

Remains of moose have been found on Yukon Island, to the northeast of Seldovia, in archaeological sites dating to 1,500 years ago and more (de Laguna 1934:31–32).

Table 1 summarizes information about harvests and uses of moose by residents of Seldovia, Nanwalek, and Port Graham based on systematic household surveys conducted by the Division of Subsistence. [These surveys are only conducted in selected study years based on funding availability and data needs.] Most of these harvests took place near the communities, in the portion of GMU 15C outside the nonsubsistence area. For five study years, Seldovia's harvests ranged from 5 moose (in 1982) to 14 moose (in 1993). In three of the four study years for which data are available, almost half or more of Seldovia's households used moose. The percentage of Seldovia's households hunting moose ranged from about 10% in 2014 to 22% in 1992. Nanwalek's moose harvest ranged from zero (several study years) to four (in 1989); Port Graham's ranged from zero (most study years) to three (in 2014). In most study years, over half the households in each community used moose, usually moose they had received from the few successful hunters in the communities.

Table 2 summarizes data from harvest ticket and permit records about the number of Seldovia residents hunting and harvesting moose from 1975 through 1987 from all locations.<sup>1</sup> During that period, an average of 24 Seldovia residents hunted moose. The average harvest was 6.3 animals. During the 1987–88 season, Seldovia residents harvested seven moose. Two of these were taken in GMU 15C (Seldovia River and Tutka Bay). For the period 1983–1987, Seldovia residents harvested an average of 2.2 moose in GMU 15, and an average of 1.4 moose in GMU 15C<sup>2</sup> (see also Criterion 4 and Table 5, below).

Table 3 summarizes harvest ticket data for the period 2008–2018 reporting the number of moose hunters and moose harvests in the portion of GMU 15C outside the nonsubsistence area and not included in the Tier II hunt (TM549) by uniform coding unit (UCU). During that 11-year period, there are reports for 52 hunters in this area (an average of about five per year if 2018, for which records may still be incomplete, is excluded). A total of five moose were reported harvested in

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1. Table 2 is based on Table 2 in the March 1989 customary and traditional use worksheet prepared for the Board of Game.

2. Dave Holdermann, 1989, "Memo on moose and goat harvests in the Kenai Peninsula," Alaska Department of Fish and Game Division of Wildlife Conservation, Homer.

this area, an average of 0.5 moose/year. Most hunters in this area lived in Seldovia (52%) or Port Graham (29%) (Figure 3). For all of GMU 15C for the period 2008–2018, harvest ticket records include a total of one Nanwalek resident (no harvest), 15 Port Graham residents (no harvests), and 53 Seldovia residents (harvest of six moose).

Households surveyed in Seldovia for the 2014 study year reported harvests of six moose; accounting for households that were not interviewed, this resulted in an estimate of eight moose (+/-39%) harvested by Seldovia residents in 2014 (Table 1). Four of the six reported moose were taken outside GMU 15C; the other two successful harvesters that were interviewed did not provide harvest locations (see also Criterion 4).

Table 4 summarizes data for the Tier II moose hunt in GMU 15C from 1990 through 2018. During that 29-year period, an annual average of 22.1 people applied for an average of 4.8 available permits (success rate of 21.7%); Port Graham residents received 55% of the permits, Nanwalek residents 40%, Seldovia residents 2%, and other Alaska residents 3% (Figure 4). The average annual harvest was 1.4 moose, with most taken by residents of Port Graham (36 of 41 moose, 88%). For the recent 10-year period, 93% of available Tier II permits were awarded to residents of Port Graham and the rest (7%) to residents of Nanwalek (Figure 5). Port Graham hunters took all of the harvest (22 moose; 2.2 moose/year; Table 4).

## **CRITERION 2: SEASONALITY**

### **A pattern of taking or use recurring in specific seasons of each year.**

When interviewed in the 1980s, elders in Port Graham and Nanwalek recalled hunting moose over longer periods of time during the year than allowed by regulations at the time, including later in the fall when moose were more accessible locally.

Recent moose hunting seasons in GMU 15C have occurred primarily in September. The present (2018/19) season in the portion of GMU 15C covered by the positive C&T finding is August 15–September 30 (Tier II); the season in the remainder is September 1–September 25.

## **CRITERION 3: MEANS AND METHODS OF HARVEST**

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

Seldovia residents access local hunting areas by highway vehicle on the local road system, by boat, or by ATV. More distant areas (within the nonsubsistence area) are accessed using commercial fishing boats, other boats, highway vehicles from Homer, or planes. Residents of Nanwalek and Port Graham mostly hunt moose near the communities, within distances hunters can travel with skiffs, ATVs, or on foot (Stanek 1985:175–177).

## **CRITERION 4: GEOGRAPHIC AREAS**

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

For the 1980s and 1990s, previously prepared C&T worksheets noted that

Moose numbers are (historically and presently) low in the Seldovia area, and consequently, Seldovia residents rarely take them locally. Nevertheless, a few Seldovia residents spend some time each year hunting moose near the community, but few are

successful.<sup>3</sup> Residents estimated that 3 or 4 moose were taken along the local road system in 1982 (Reed 1985:163). Two were taken in this area in 1983, none from 1984 to 1986, and two in 1987. About three Seldovia hunters per year since 1983 have hunted in the Rocky River drainage, without success.

In the 1980s, long time Seldovia residents reported that in the past they travelled by boat to the head of Kachemak Bay or across the bay to Eastland and Cottonwood creeks in the Homer area to hunt moose. Interviews in the 1980s found that few if any Seldovia residents were still doing this [a total of three in 1983 (no harvest) and none since], due to the growth of Homer and the subsequent increase in hunting pressure on moose populations (Georgette 1985:12). Residents of Nanwalek and Port Graham also hunted moose at the head of Kachemak Bay and in the hills north of Homer in the past, but this practice had become rare by the 1980s with the growth of human populations and changes in land ownership in these areas. Moose hunting became focused within the Port Graham River drainage, English Bay River drainage, and areas around Koyuktolik Bay (Figure 6).

In the 1980s and early 1990s, most successful Seldovia moose hunters were likely to be commercial fishermen or individuals with private aircraft who had access to nonlocal areas. Most commonly used were the west side of Cook Inlet, Kalgin Island, and Iniskin Bay. Some of this hunting took place in association with commercial fishing openings, although hunters reported making special trips in the commercial vessels for hunting only (Georgette 1985:13).

Table 5 provides information on the location of reported hunting effort and harvest by Seldovia residents from 1983 to 1987<sup>4</sup>. Most of the hunting effort during those years took place in GMU 15C near the community. Little effort or harvest occurred in GMUs 15B or 15A. A few Seldovia hunters reported effort and harvest in the western Cook Inlet GMUs of 9A and 16B (including the Kalgin Island registration permit hunt). There were three such hunters in the 1987/88 season.

Of the six moose reported harvested by interviewed Seldovia households for 2014, two reported harvest locations in GMU 13, one in GMU 20, one in GMU 16, and the other two did not report harvest locations.

Table 6 provides information on the location of reported hunting effort and harvest by Seldovia residents for 2008 to 2017. An annual average of 45 Seldovia residents hunted moose over this 10-year period. Most hunting occurred in GMUs 13, 15, and 20. An average of about three Seldovia residents per year hunted moose in the portion of GMU 15C outside the nonsubsistence areas and not in the Tier II hunt area, taking a total of two moose within the ten-year period.

Figure 6 shows areas used for moose hunting by residents of Port Graham and Nanwalek in the 1970s and 1980s. Figure 7 shows areas used for moose hunting by Seldovia and Port Graham residents in 2014 (see also Jones and Kostick 2016). In the 2014 study year, no Nanwalek residents hunted moose locally because no one from the community was awarded a Tier II permit.

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3. Susan Georgette. "Summary of Research Findings, 1985," unpublished report on file at ADF&G Division of Subsistence, Anchorage. Hereinafter cited as Georgette 1985.

4. Table 5 is based on Table 3 from the customary and traditional use worksheet prepared in 1989.

## **CRITERION 5: MEANS OF HANDLING, PREPARING, PRESERVING, AND STORING**

**A means of handling, preparing, preserving, and storing fish or game that has been traditionally used by past generations, but not excluding recent technological advances where appropriate.**

In the past, moose meat was cut into strips and dried into jerky, smoked, and hung in caches and preserved out-of-doors in cold weather at Nanwalek and Port Graham; by the 1980s, some moose meat was smoked and dried, but most was frozen (Stanek 1985:177). Although the pattern was likely similar, no specific information for moose is available for Seldovia from written reports. Reportedly, in the past some game was smoked. Today, moose meat is likely mostly frozen.

## **CRITERION 6: INTERGENERATIONAL TRANSMISSION OF KNOWLEDGE, SKILLS, VALUES, AND LORE**

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

As noted above, the Alaska Native population of the Seldovia Bay area consolidated at Seldovia in the late 19th century. According to U.S. Census figures, in 1980, 24.4% of Seldovia's population was Alaska Native in 1980 (117 people out of a total of 479). According to Division research pertaining to 1983, about 40% of Seldovia's households had at least one Alaska Native member (Reed 1985:21, 148).

In the mid-1980s, Seldovia was made up of a large core of long-term residents, many of whom had long histories of resource harvest and use. Harvest groups were often made up of family members or commercial fishing crews, but no specific information is available about moose.

The mean length of residence in 1982 for the heads of 35 interviewed Seldovia households was 16.3 years. For subsequent study years, the mean length of residency of Seldovia household heads was as follows: 1991, 17.8 years; 1992, 20.2 years; 1993, 19.7 years; and 2014, 25.5 years (Fall and Utermohle 1995:VII-26; Jones and Kostick 2016:107).

For Nanwalek and Port Graham, moose hunting parties are often multi-generational. People of all ages participate in processing successful moose harvests.

## **CRITERION 7: DISTRIBUTION AND EXCHANGE**

**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.**

Extensive sharing networks exist in Seldovia. Reed (1985:155) noted that in Seldovia, "sharing local resources with neighbors and kin served to satisfy social obligations."

The available data suggest that moose harvests are shared widely in Seldovia. Of the 35 households in the 1982 sample, only one (3%) harvested a moose, but 40% used moose meat that year (usually in small quantities). Thirteen households (37 percent) received gifts of moose meat ranging from 2 to 112 pounds (average of 5 pounds) (Reed 1985:162).

More recent data summarized in Table 1 shows that in four study years between 1991 and 2014, between 27% (in 1991) and 52% (in 2014) of Seldovia households received gifts of moose meat.

Similarly, large percentages of the households in Nanwalek and Port Graham reported receiving moose from successful hunters.

### **CRITERION 8: DIVERSITY OF RESOURCES IN AN AREA; ECONOMIC, CULTURAL, SOCIAL, AND NUTRITIONAL ELEMENTS**

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

Table 7 summarizes some characteristics of wild resource uses in Seldovia, Nanwalek, and Port Graham based on comprehensive household surveys. Virtually every household in these communities uses wild foods and participates in harvest activities. Resource uses in these communities are diverse, consisting of a wide range of salmon, other fish, shellfish, marine mammals, birds, land mammals, and wild plants (Jones and Kostick 2016; Reed 1985; Stanek 1985). Resource harvests for home use are also relatively large: in 2014, total harvests averaged 138 lb per person in Seldovia, 218 lb per person in Port Graham, and 253 lb per person in Nanwalek.

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## **TABLES AND FIGURES**



Table 1.—Harvests and uses of moose, Nanwalek, Port Graham, and Seldovia.

Community	Study Year	Percentage of Households					Estimated harvest (numbers)	Estimated usable pounds harvested	Average pounds harvested per household	Pounds Harvested per capita
		Use	Hunt	Harvest	Receive	Give away				
Nanwalek	1987	57.6%	15.2%	3.0%	54.5%	9.1%	1	654	16.4	4.3
Nanwalek	1989	60.6%	21.2%	9.1%	57.6%	15.2%	4	2,013	49.1	12.9
Nanwalek	1990	40.0%	11.4%	0.0%	40.0%	2.9%	0	0	0.0	0.0
Nanwalek	1991	72.4%	13.8%	0.0%	72.4%	3.4%	0	0	0.0	0.0
Nanwalek	1992	75.0%	9.4%	6.3%	71.9%	21.9%	3	1,384	33.8	8.1
Nanwalek	1993	66.7%	21.2%	3.0%	63.6%	21.2%	1	605	16.4	4.3
Nanwalek	1997	37.9%	10.3%	6.9%	34.5%	10.3%	3	1,415	37.2	8.4
Nanwalek	2003	27.3%	9.1%	0.0%	27.3%	9.1%	0	0	0.0	0.0
Nanwalek	2014	19.6%	3.6%	0.0%	19.6%	3.6%	0	0	0.0	0.0
Port Graham	1987	61.1%	9.3%	1.9%	59.3%	3.7%	1	630	10.0	3.5
Port Graham	1989	14.6%	6.3%	0.0%	14.6%	2.1%	0	0	0.0	0.0
Port Graham	1990	8.7%	15.2%	0.0%	8.7%	0.0%	0	0	0.0	0.0
Port Graham	1991	67.3%	16.3%	0.0%	67.3%	16.3%	0	0	0.0	0.0
Port Graham	1992	33.3%	10.4%	0.0%	33.3%	10.4%	0	0	0.0	0.0
Port Graham	1993	54.9%	3.9%	0.0%	54.9%	9.8%	0	0	0.0	0.0
Port Graham	1997	25.0%	0.0%	0.0%	25.0%	4.5%	0	0	0.0	0.0
Port Graham	2003	70.2%	10.6%	6.4%	68.1%	19.1%	2	1,080	16.6	6.9
Port Graham	2014	68.3%	19.5%	4.9%	63.4%	14.6%	3	1,528	26.3	10.3
Seldovia	1982			2.9%			5	2,212	12.9	3.7
Seldovia	1991	36.4%	18.2%	10.6%	27.3%	10.6%	12	6,644	57.3	19.5
Seldovia	1992	46.2%	21.5%	4.6%	41.5%	10.8%	6	3,414	24.9	9.1
Seldovia	1993	47.7%	18.5%	9.2%	41.5%	15.4%	14	7,626	49.8	17.7
Seldovia	2014	55.8%	9.5%	6.3%	51.6%	8.4%	8	4,331	34.1	15.6

Source Alaska Department of Fish and Game, Division of Subsistence Community Subsistence Information System

<http://www.adfg.alaska.gov/sb/CSIS/>

Note Blank cells = no data

Table 2.—Number of moose hunters and moose harvests by residents of Seldovia, 1975–1987.

Year	Number of hunters	Number of moose harvested
1975	9	2
1976		
1977	12	5
1978	12	6
1979	11	8
1980		
1981	27	7
1982	21	8
1983	31	8
1984	43	12
1985	40	2
1986	33	4
1987		7
Annual average	23.9	6.3

*Source* Alaska Department of Fish and Game.

General file statistics, combined harvest ticket

*Note* Blank cells = data unavailable

Table 3.—Number of moose hunters and number of moose harvested, portion of GMU 15C outside the nonsubsistence area.

	UCU <sup>a</sup> 801 <sup>b</sup>		UCU 1002 <sup>b</sup>		UCU 1003 <sup>c</sup>		UCU 902 <sup>d</sup>		UCU 1001 <sup>d</sup>		Total	
	Hunters	Harvest	Hunters	Harvest	Hunters	Harvest	Hunters	Harvest	Hunters	Harvest	Hunters	Harvest
2008	0	0	6	0	1	0	0	0	0	0	7	0
2009	0	0	6	0	0	0	1	1	0	0	7	1
2010	4	0	4	0	2	0	0	0	0	0	10	0
2011	1	0	2	1	2	0	0	0	0	0	5	1
2012	3	0	3	0	0	0	0	0	0	0	6	0
2013	4	0	0	0	1	0	0	0	0	0	5	0
2014	0	0	3	1	0	0	0	0	0	0	3	1
2015	2	0	1	1	0	0	0	0	0	0	3	1
2016	1	0	2	0	0	0	0	0	1	1	4	1
2017	1	0	0	0	0	0	0	0	0	0	1	0
2018	1	0	0	0	0	0	0	0	0	0	1	0
<b>Total</b>	<b>17</b>	<b>0</b>	<b>27</b>	<b>3</b>	<b>6</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>52</b>	<b>5</b>

Source Alaska Department of Fish and Game, Division of Wildlife Conservation, WINFONET harvest ticket records

a. UCU = uniform coding unit.

b. UCUs 801 and 1002 are outside the nonsubsistence area and not included in the Tier II hunt or current customary and traditional use finding.

c. The western border of UCU 1003 with UCU 1002 is Rocky River and Rocky Bay. Location detail named Rocky River and Rocky Bay as the location of harvests, leaving UCU assignment ambiguous. Therefore these records were included in this table. The records for two other UCUs, 802 and 803, which also border this area, were examined. Hunting effort and harvests were at Sadie Cove and Tutka Bay, respectively, which are within the nonsubsistence area. Therefore those records were not included in this table.

d. UCUs 902 and 1001 are within the Tier II hunt area, but one there is one harvest ticket record for each. Assuming a potential error regarding hunting location, both records are included in this table. The other UCU within the Tier II area, 901, had no harvest ticket records.

Table 4.—Number of Tier II hunt permits awarded, hunters, and harvest by area of residence, GMU 15C moose (940T, T940, TM549) 1990–2018.

Community of residence	Total applications	Permits awarded	Permits hunted	Permit resulted in harvest
<i>Total for all years (29 years)</i>				
Port Graham		77	72	36
Nanwalek		56	48	5
Seldovia		2	1	0
Other		4	1	0
<b>Total</b>	<b>640</b>	<b>139</b>	<b>122</b>	<b>41</b>
<i>Annual Average, all years</i>				
Port Graham		2.7	2.5	1.2
Nanwalek		1.9	1.7	0.2
Seldovia		0.1	0.0	0.0
Other		0.1	0.0	0.0
<b>Total</b>	<b>22.1</b>	<b>4.8</b>	<b>4.2</b>	<b>1.4</b>
<i>Total for recent 10-years (2009–2018)</i>				
Port Graham		38	37	22
Nanwalek		3	3	0
Seldovia		0	0	0
Other		0	0	0
<b>Total</b>	<b>154</b>	<b>41</b>	<b>40</b>	<b>22</b>
<i>Annual Average, recent 10-years (2009–2018)</i>				
Port Graham		3.8	3.7	2.2
Nanwalek		0.3	0.3	0
Seldovia		0	0	0
Other		0	0	0
<b>Total</b>	<b>15.4</b>	<b>4.1</b>	<b>4</b>	<b>2.2</b>

Source Alaska Department of Fish and Game, Division of Wildlife Conservation, WINFONET. Note Blank cells = data not available

Table 5.—Number of moose hunters and moose harvests by residents of Seldovia by Game Management Unit, 1983–1987.

GMU	1983		1984		1985		1986		1987		5-year average	
	Hunters	Harvest	Hunters	Harvest	Hunters	Harvest	Hunters	Harvest	Hunters	Harvest	Hunters	Harvest
9A	2	0	3	2	3	1	2	1	2	0	2.4	0.8
9B,C,D,E	0	0	3	1	1	0	0	0	2	0	1.2	0.2
13	3	2	2	2	0	0	6	1	5	1	3.2	1.2
14	1	0	2	0	1	0	3	0	4	2	2.2	0.4
15A	2	1	4	0	5	1	4	1	2	0	3.4	0.6
15B	0	0	0	0	0	0	0	0	1	1	0.2	0.2
15C	17	2	17	2	20	0	12	1	10	2	15.2	1.4
16A	0	0	2	1	0	0	1	0	0	0	0.6	0.2
16B	4	2	4	3	4	0	3	0	1	0	3.2	1.0
17	0	0	0	0	2	0	3	0	0	0	1.0	0.0
18	0	0	1	0	0	0	0	0	0	0	0.2	0.0
19	1	1	1	0	0	0	0	0	1	1	0.6	0.4
20	0	0	1	1	0	0	1	0	2	0	0.8	0.2
23	2	0	3	0	2	0	3	0	2	0	2.4	0.0
Unknown	0	0	0	0	1	0	1	0	0	0	0.4	0.0
<b>Total</b>	<b>32</b>	<b>8</b>	<b>43</b>	<b>12</b>	<b>39</b>	<b>2</b>	<b>39</b>	<b>4</b>	<b>32</b>	<b>7</b>	<b>37.0</b>	<b>6.6</b>

Source Alaska Department of Fish and Game, General File Statistics for moose, 1983–1987

Table 6.—Number of moose hunters and moose harvests by residents of Seldovia by Game Management Unit, 2008–2017.

	2008		2009		2010		2011		2012		2013	
	Hunters	Harvest	Hunters	Harvest	Hunters	Harvest	Hunters	Harvest	Hunters	Harvest	Hunters	Harvest
7	0	0	0	0	0	0	0	0	0	0	1	0
9	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	2	0	0	0
12	0	0	0	0	0	0	0	0	0	0	1	0
13	4	1	6	3	6	2	7	0	13	4	13	3
14	0	0	0	0	0	0	0	0	1	0	0	0
15AB	4	0	4	0	1	0	1	0	0	0	2	0
15C ONS <sup>a</sup>	2	0	3	0	4	0	2	0	3	0	4	0
15 C other	2	0	2	1	0	0	1	1	0	0	2	1
16	4	1	5	1	6	2	7	2	6	2	5	2
17	0	0	1	1	0	0	0	0	0	0	1	0
20	7	3	4	2	9	2	9	3	13	3	10	1
21	0	0	0	0	0	0	0	0	1	0	0	0
25	0	0	0	0	1	0	0	0	0	0	0	0
Unknown	6	0	18	0	11	0	7	0	5	0	5	0
<b>Total</b>	<b>29</b>	<b>5</b>	<b>43</b>	<b>8</b>	<b>38</b>	<b>6</b>	<b>34</b>	<b>6</b>	<b>44</b>	<b>9</b>	<b>44</b>	<b>7</b>

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Table 6.—Continued.

	2014		2015		2016		2017		10-year average	
	Hunters	Harvest	Hunters	Harvest	Hunters	Harvest	Hunters	Harvest	Hunters	Harvest
7	0	0	0	0	0	0	0	0	0.1	0
9	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0.2	0
12	0	0	0	0	0	0	0	0	0.1	0
13	19	2	9	4	8	3	8	4	9.3	2.6
14	3	0	2	1	4	1	2	0	1.2	0.2
15AB	0	0	3	3	3	3	4	1	2.2	0.7
15C ONS <sup>a</sup>	1	1	3	1	3	0	1	0	2.6	0.2
15 C other	7	1	6	0	6	2	6	0	3.2	0.6
16	7	2	1	1	3	2	1	0	4.5	1.5
17	1	0	0	0	1	0	1	0	0.5	0.1
20	10	3	10	2	8	2	9	3	8.9	2.4
21	0	0	0	0	1	0	0	0	0.2	0
25	0	0	0	0	0	0	0	0	0.1	0
Unknown	10	0	13	0	23	0	16	0	11.4	0
<b>Total</b>	<b>58</b>	<b>9</b>	<b>47</b>	<b>12</b>	<b>60</b>	<b>13</b>	<b>48</b>	<b>8</b>	<b>44.5</b>	<b>8.3</b>

Source Alaska Department of Fish and Game, Division of Wildlife Conservation, WINFONET

a. GMU 15C outside nonsubsistence area

Table 7.—Harvests and uses of wild resources, Nanwalek, Port Graham, and Seldovia.

Community	Study year	Percentage of Households					Estimated total pounds harvested	Mean pounds harvested per household	Per capita pounds harvested
		Use	Attempt to harvest	Harvest	Receive	Give			
Nanwalek	1987	97.0%	93.9%	93.9%	93.9%	93.9%	43,130	1,078.3	284.7
Nanwalek	1989	100.0%	100.0%	100.0%	100.0%	93.9%	22,059	538.0	140.9
Nanwalek	1990	100.0%	100.0%	100.0%	100.0%	97.1%	33,336	813.1	181.3
Nanwalek	1991	100.0%	100.0%	100.0%	100.0%	100.0%	41,716	1,017.5	258.8
Nanwalek	1992	100.0%	100.0%	100.0%	100.0%	93.8%	47,547	1,159.7	279.0
Nanwalek	1993	100.0%	100.0%	100.0%	100.0%	97.0%	43,068	1,164.0	304.9
Nanwalek	1997	100.0%	100.0%	100.0%	100.0%	89.7%	42,593	1,120.9	253.9
Nanwalek	2003	100.0%	100.0%	100.0%	100.0%	100.0%	91,155	1,787.3	393.2
Nanwalek	2014	89.3%	85.7%	83.9%	83.9%	71.4%	58,443	1,007.6	253.0
Port Graham	1987	100.0%	100.0%	100.0%	98.1%	81.5%	41,379	656.8	228.8
Port Graham	1989	95.8%	93.8%	93.8%	91.7%	64.6%	19,729	323.4	122.2
Port Graham	1990	100.0%	100.0%	100.0%	97.8%	89.1%	35,047	637.2	214.0
Port Graham	1991	100.0%	95.9%	95.9%	98.0%	87.8%	45,217	779.6	280.9
Port Graham	1992	100.0%	100.0%	100.0%	100.0%	97.9%	45,475	784.1	272.7
Port Graham	1993	100.0%	98.0%	98.0%	100.0%	90.2%	37,069	607.7	212.3
Port Graham	1997	100.0%	97.7%	97.7%	95.5%	86.4%	39,548	627.8	253.4
Port Graham	2003	97.9%	95.7%	95.7%	97.9%	93.6%	72,879	1,121.2	466.3
Port Graham	2014	100.0%	97.6%	97.6%	100.0%	90.2%	32,429	559.1	218.3
Seldovia	1982			94.3%			30,406	176.8	50.7
Seldovia	1991	98.5%	92.4%	92.4%	95.5%	84.8%	70,059	604.0	205.5
Seldovia	1992	98.5%	93.8%	93.8%	95.4%	84.6%	54,451	397.5	145.1
Seldovia	1993	95.4%	95.4%	95.4%	86.2%	78.5%	79,063	516.8	183.6
Seldovia	2014	98.9%	94.7%	93.7%	96.8%	75.8%	38,455	302.8	138.3

Source Alaska Department of Fish and Game, Division of Subsistence Community Subsistence Information System

<http://www.adfg.alaska.gov/sb/CSIS/>

Note Blank calls = no data

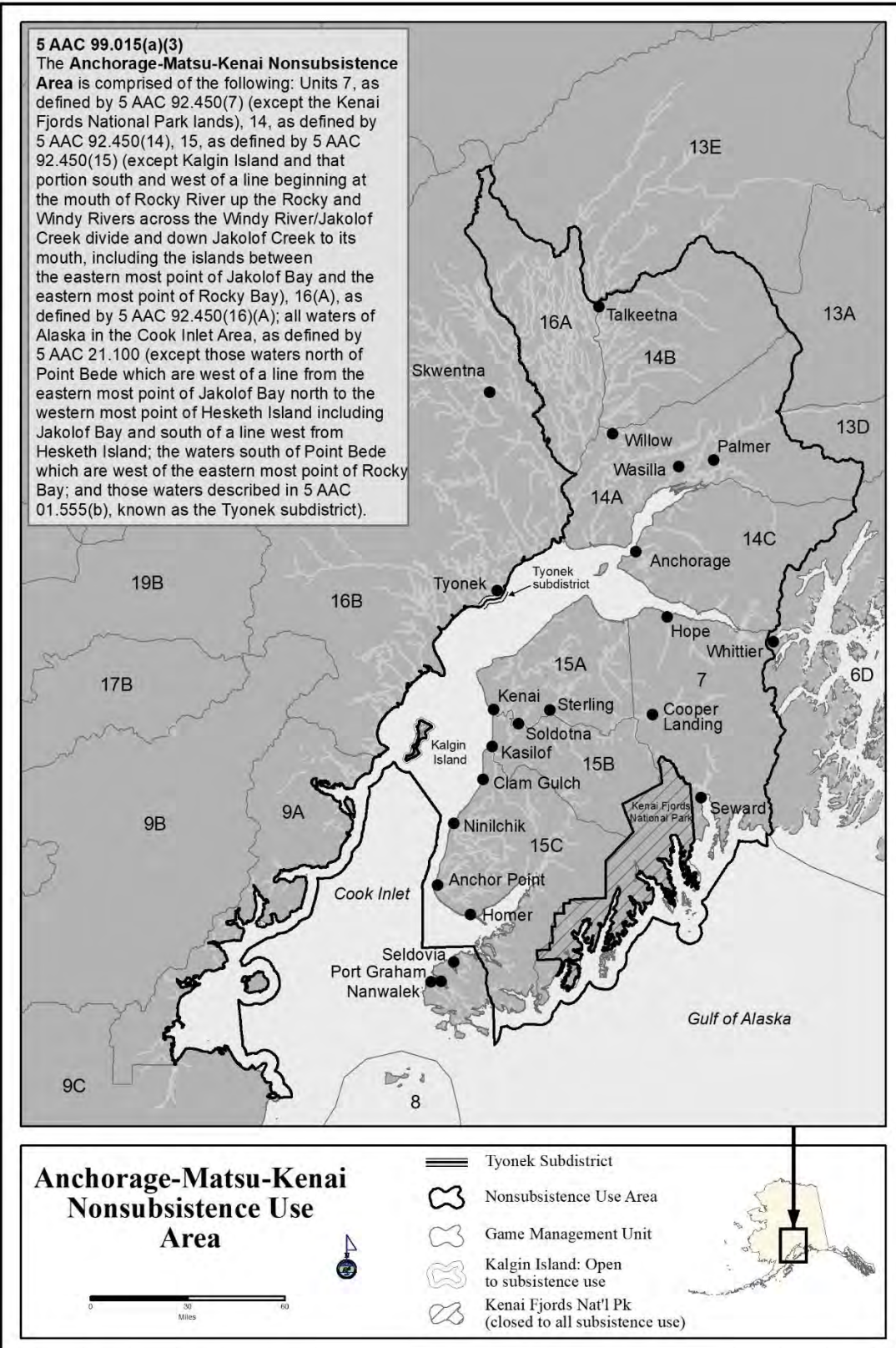


Figure 1.—Anchorage-Matsu-Kenai Nonsubsistence Area.



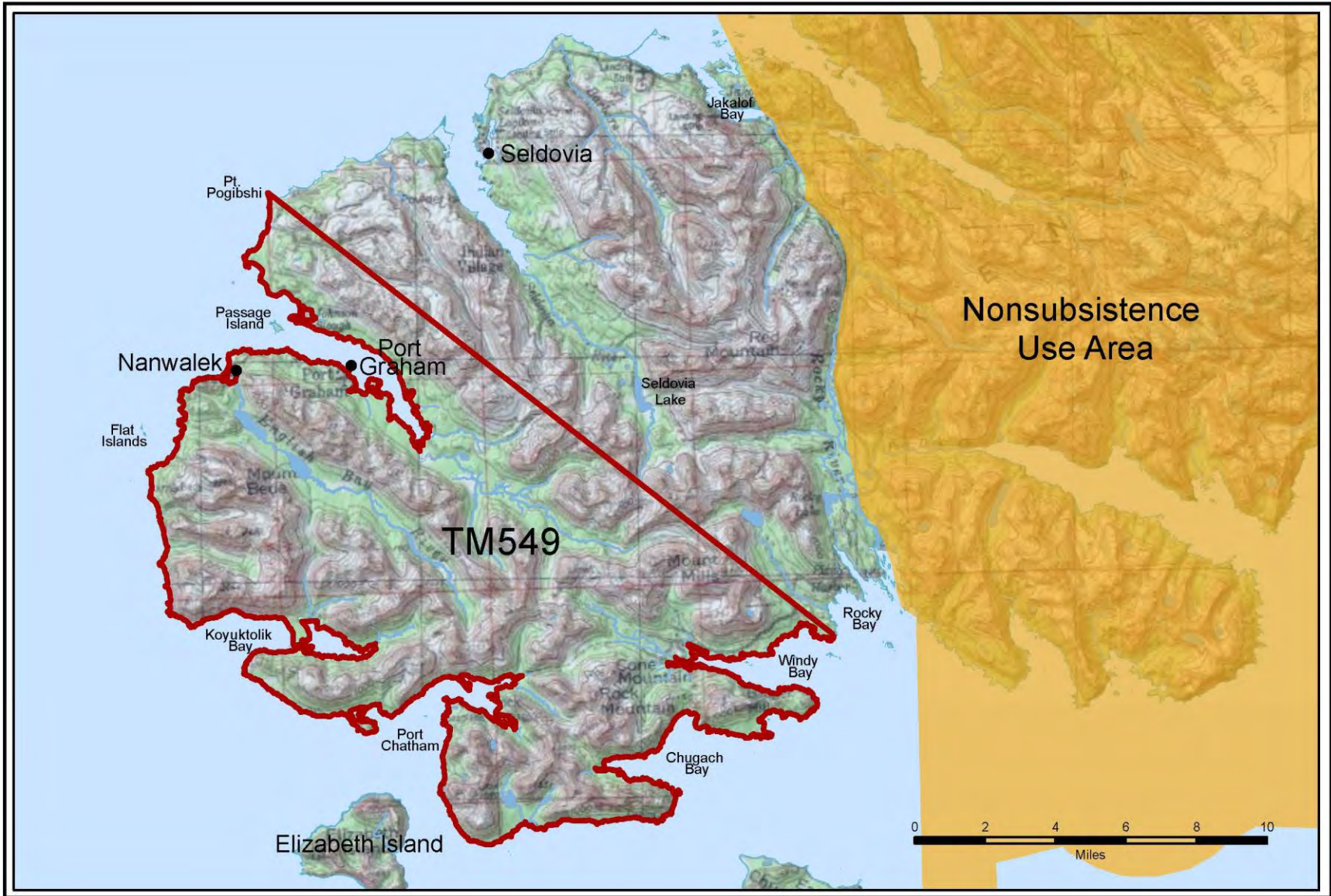


Figure 2.—Boundary for the Tier II, TM549 moose hunt.

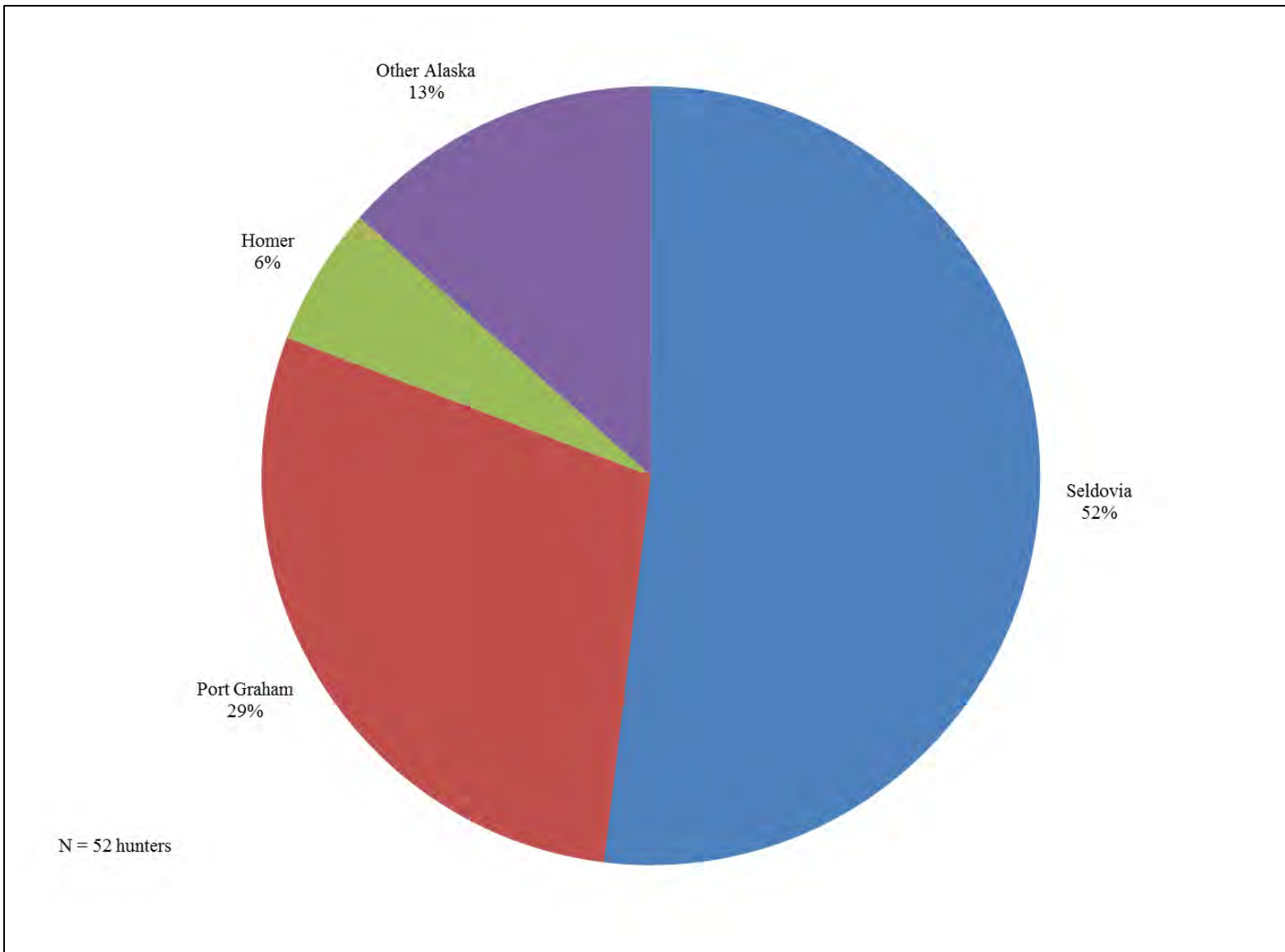


Figure 3.—Place of residence of moose hunters in that portion of GMU 15C outside the nonsubsistence area and not included in the Tier II hunt, 2008–2018.

Figure 4. Percentage of Tier II Permits Awarded by Place of Residence, GMU 15C (portion) Moose, 1990/91–2018/19

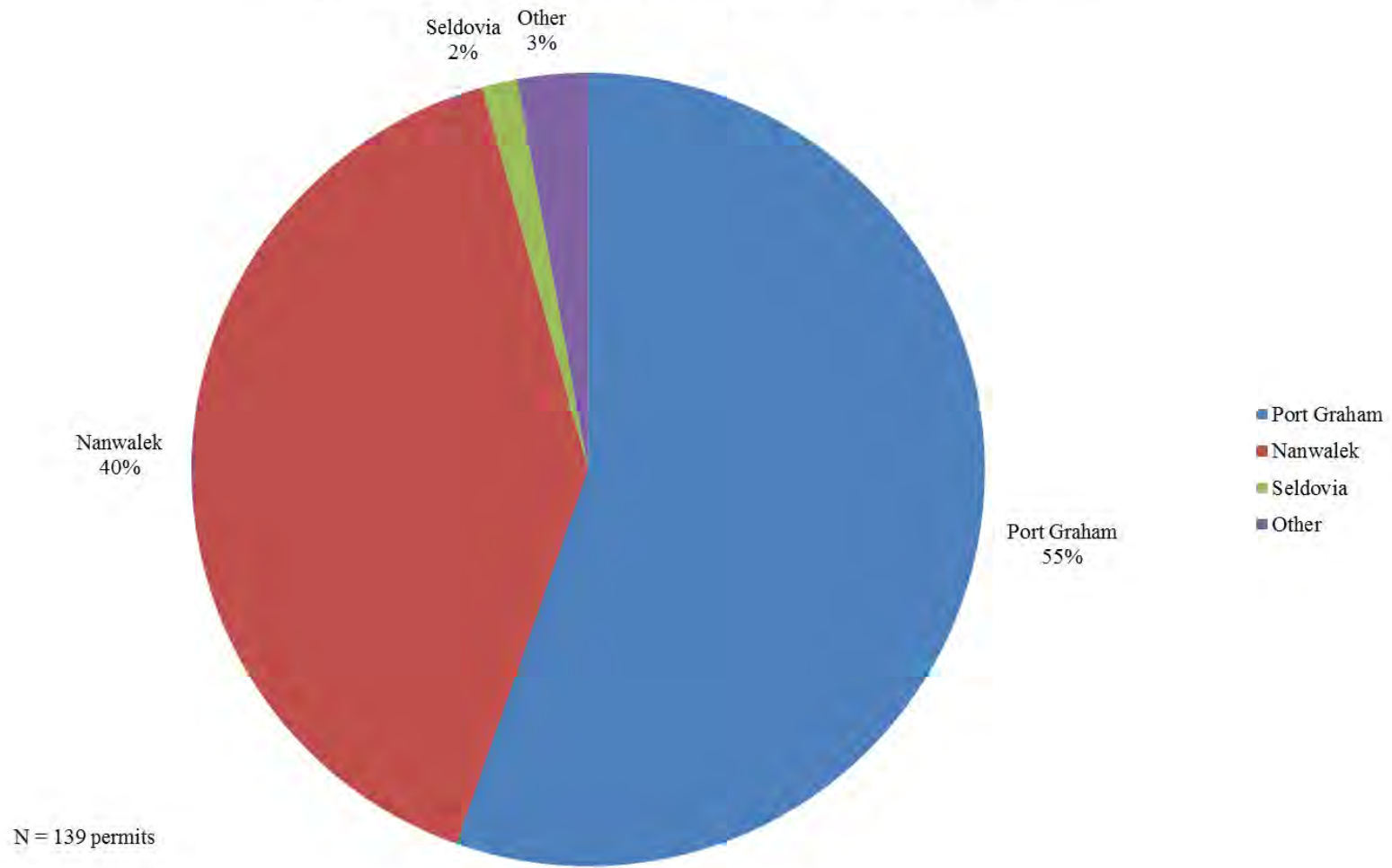
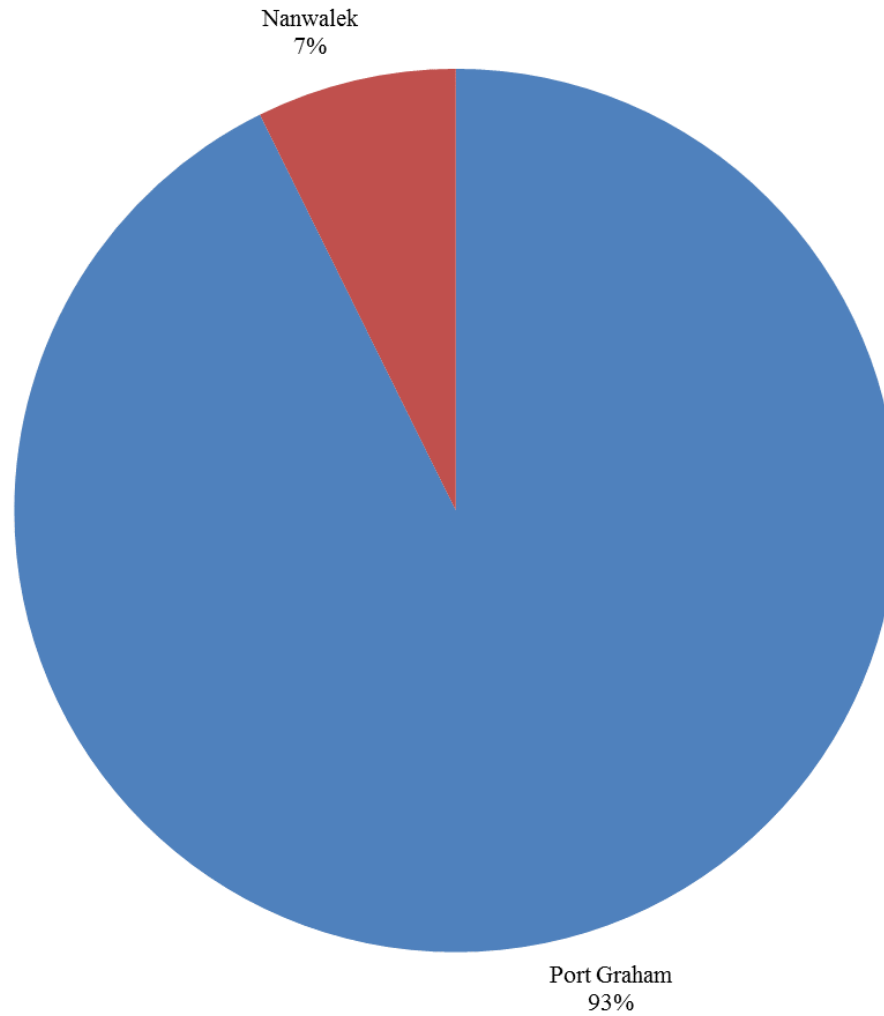


Figure 4.–Percentage of Tier II permits awarded by place of residence, GMU 15C (portion) moose, 1990/91–2018/19.

Figure 5. Percentage of Tier II Permits Awarded by Place of Residence, GMU 15C (portion) Moose, 2009/10–2018/19



N = 41 permits

Figure 5.—Percentage of Tier II permits awarded by place of residence, GMU 15C (portion) moose, 2009/10–2018/19.

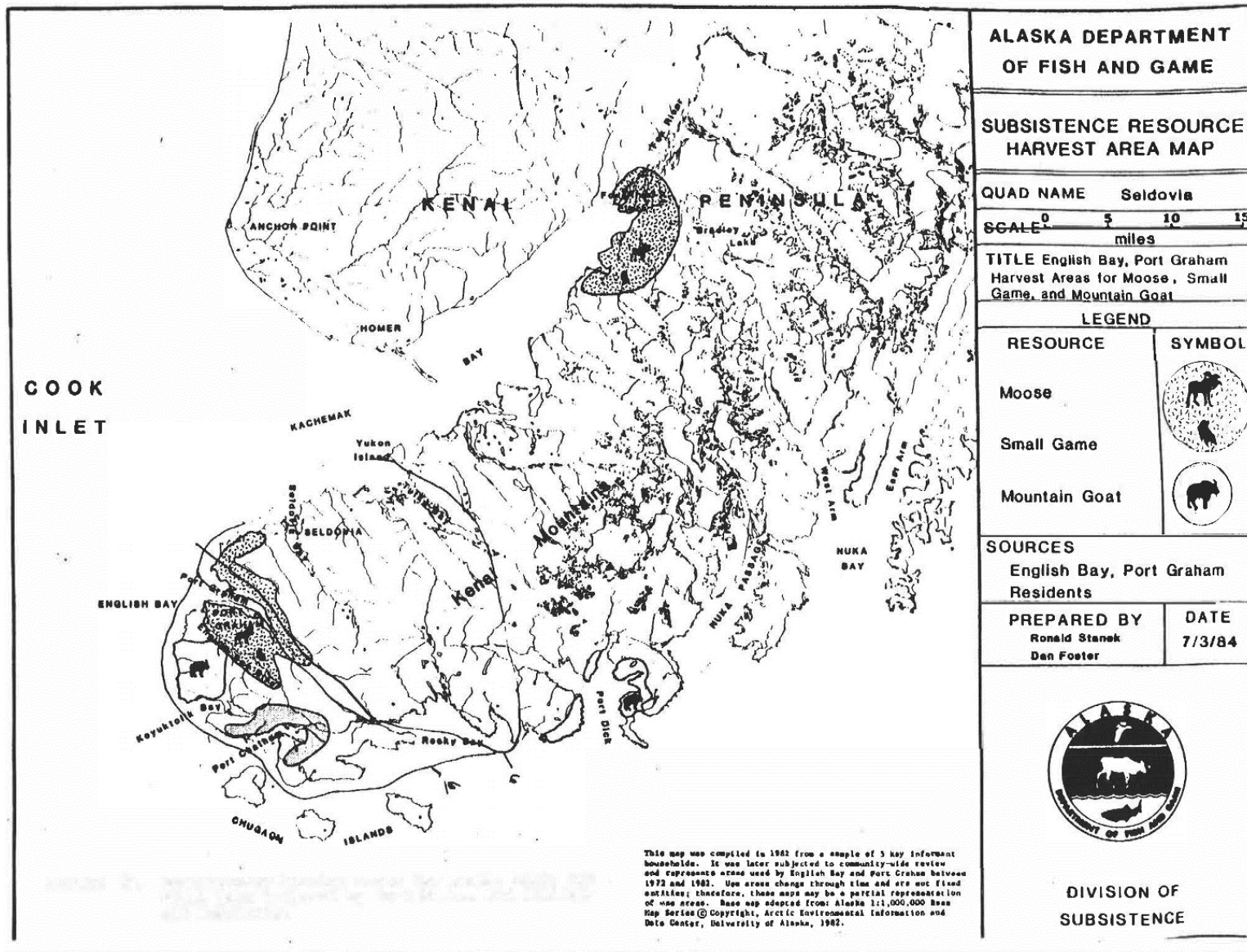


Figure 6.—Historical moose harvest and use areas, Port Graham and Nanwalek, Alaska.

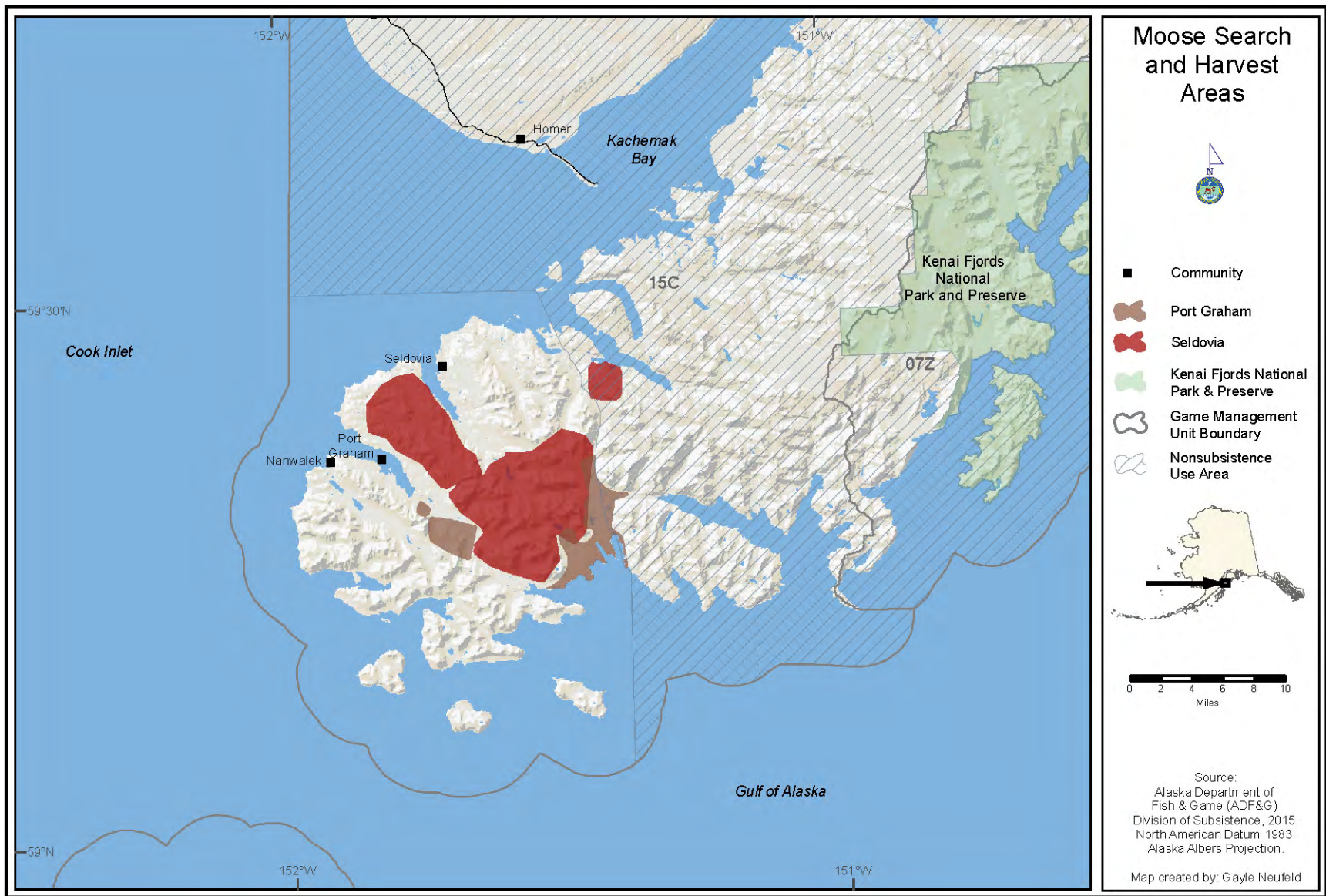


Figure 7.—Moose search and harvest areas for the communities of Seldovia and Port Graham, Alaska, 2014.

## **APPENDIX A: REGULATORY AND AMOUNT NECESSARY FOR SUSTAINANCE (ANS) OPTIONS**

### **Regulatory options:**

**Regulatory option A.** Negative customary and traditional use finding. Adopt regulations consistent with other portions of GMU 15C to provide hunting opportunities.

The remaining options assume a positive customary and traditional use finding. Other options or combinations of option might also be considered.

**Regulatory option B.** Adopt regulations consistent with other portions of GMU 15C to provide sustenance hunting opportunities.

**Regulatory option C.** Create a new (separate) Tier II hunt for this portion of GMU 15C. Establish separate ANS finding and number of Tier II permits available.

**Regulatory option D.** Add this area to the area included in Tier II hunt TM 549. Increase the ANS. Increase the number of Tier II permits available if appropriate.

**Regulatory option E.** If allowable harvest exceeds the ANS in this subarea, keep it separate from the existing Tier II hunt and issue registration permits locally for one bull.

**Regulatory option F.** If this subarea is combined with the existing ANS for the Tier II area and the harvestable portion exceeds the ANS, issue sustenance registration permits locally for one bull.

### **ANS options (does not include existing Tier II area).**

**ANS Option A.** Range of Alaska resident harvests based on harvest tickets over last 10 years: **ANS range of 1–2 moose.**

**ANS Option B.** Harvests by Seldovia residents:

Use most recent survey data, for 2014, based on a 75% sample of Seldovia households. Four of six reported moose were harvested outside GMU 15C; harvest locations were not recorded for the other two moose. The estimated total community harvest was eight moose, +/-39%, for a range of 6 to 11 moose. If the two moose without recorded harvest locations were harvested within GMU 15C and outside the nonsustenance area (=34% of total harvest), this gives an estimated harvest of three moose and a range of two to four moose (using the reported harvest for the lower bound of the range).

Estimated harvest = 3 moose, +/-39% = **ANS range of 2–4 moose.**