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The Harvest and Use of Wild Resources in Nikiski, Seldovia, Nanwalek, and Port Graham, Alaska, 2014

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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^3/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	
Alaska Administrative Code	AAC
all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.
all commonly accepted professional titles	e.g., Dr., Ph.D., R.N., etc.
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
mideye-to-fork	MEF
mideye-to-tail-fork	METF
standard length	SL
total length	TL
Mathematics, statistics	
all standard mathematical signs, symbols and abbreviations	
alternate hypothesis	H_A
base of natural logarithm	e
catch per unit effort	CPUE
coefficient of variation	CV
common test statistics	(F, t, χ^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_2, etc.
minute (angular)	'
not significant	NS
null hypothesis	H_O
percent	%
probability	P
probability of a type I error (rejection of the null hypothesis when true)	α
probability of a type II error (acceptance of the null hypothesis when false)	β
second (angular)	"
standard deviation	SD
standard error	SE
variance	
population	Var
sample	var

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THE HARVEST AND USE OF WILD RESOURCES IN NIKISKI, SELDOVIA, NANWALEK, AND PORT GRAHAM, ALASKA, 2014

edited by

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ABSTRACT

This report provides updated information about the harvests of fish, wildlife, and wild plant resources by 4 communities located on the Kenai Peninsula: Nikiski, Seldovia, Nanwalek, and Port Graham. This report details the results of a household survey administered in the study communities between January and March 2015 to collect information about harvests and uses of wild resources by community households during the 2014 calendar year. The study communities are located on the Kenai Peninsula of Southcentral Alaska, and many residents of each study community relied on local hunting, fishing, and wild food gathering for nutrition and to support their way of life. They used a variety of resources, including salmon and nonsalmon fish, large land mammals, small land mammals, migratory waterfowl and upland game birds, marine mammals, marine invertebrates and wild plants and berries. This study is part of the effort to collect data about the full range of subsistence harvests and uses, areas of harvest, as well as demographic and economic information to understand the subsistence way of life in all its complexity. The project was funded by Alaska LNG through a reimbursable services agreement with the State Pipeline Coordinator's Office. This study was conducted as part of the effort by the State of Alaska to assess the feasibility of constructing a liquefied natural gas pipeline. This information was collected by research staff of the Division of Subsistence, Alaska Department of Fish and Game.

Key words: Subsistence, Cook Inlet, Alaska LNG, Nikiski, Seldovia, Nanwalek, Port Graham

1. INTRODUCTION

Sarah M. Hazell, Bronwyn Jones, and James M. Van Lanen

This report provides updated information about the harvests of fish, wildlife, and wild plant resources by 4 communities located on the Kenai Peninsula: Nikiski (pop. 4,264), Seldovia (pop. 278), Nanwalek (pop. 231), and Port Graham (pop. 149). This information comes from the results of a household survey administered in these communities between January and March 2015 for the 2014 study year. Population estimates shown above are estimates for the 2014 study year. Table 1-1 shows the population estimates of the study year compared to estimates from the 2010 U.S. Census Bureau survey and 2014 estimates from the Alaska Department of Labor and Workforce Development (ADLWD). U.S. census boundaries were followed in this 2014 survey to define study community boundaries.

The study communities are located in the Cook Inlet region of Southcentral Alaska (Figure 1-1). Cook Inlet stretches approximately 180 miles from Kachemak Bay to Anchorage. This area supports important salmon and nonsalmon fish stocks that are harvested in subsistence, personal use, sport, and commercial fisheries. The Cook Inlet region also harbors abundant wildlife, including marine mammals and migratory waterfowl. In the 2014 study year, many residents of the study communities participated in hunting, fishing, and gathering for nutrition and to support their way of life. They utilized a variety of resources, including salmon, Pacific halibut, Pacific cod, and other marine and freshwater fish, as well as large land mammals (caribou, moose, black bears), small land mammals (small game and furbearers), marine mammals, marine invertebrates, migratory waterfowl and upland game birds, and wild plants and berries. Table 1-2 presents a list, including the Linnaean taxonomic names, of resources used by the study communities in 2014.

This study was conducted as part of the effort by the State of Alaska to assess the feasibility of constructing a liquefied natural gas pipeline. Harvest information was collected by research staff of the Alaska Department of Fish and Game (ADF&G) Division of Subsistence. The division scientifically quantifies harvests of wild resources by Alaska residents to assist the Alaska Board of Fisheries and Alaska Board of Game in finding the amount reasonably necessary for subsistence for each population or stock having a positive customary and traditional use finding. Since its inception, during the past 35 years the Division of Subsistence has conducted comprehensive harvest assessment surveys in 246 communities in Alaska. The information

Table 1-1.–Population estimates, study communities, 2014.

	U.S. Census (2010)	5-year American Community Survey estimate (2010–2014)	This study estimate (2014)
Nikiski population	4,493	4,536.0	4,263.7
Seldovia population	420	444.0	278.1
Nanwalek population	254	212.0	231.0
Port Graham population	177	166.0	148.5

Sources U.S. Census Bureau (2011) for 2010 estimate; U.S. Census Bureau for American Community Survey (ACS) 2014 estimate (5-year average); and ADF&G Division of Subsistence household surveys, 2015, for 2014 estimate.

Note Seldovia includes Seldovia city and Seldovia Village CDP.

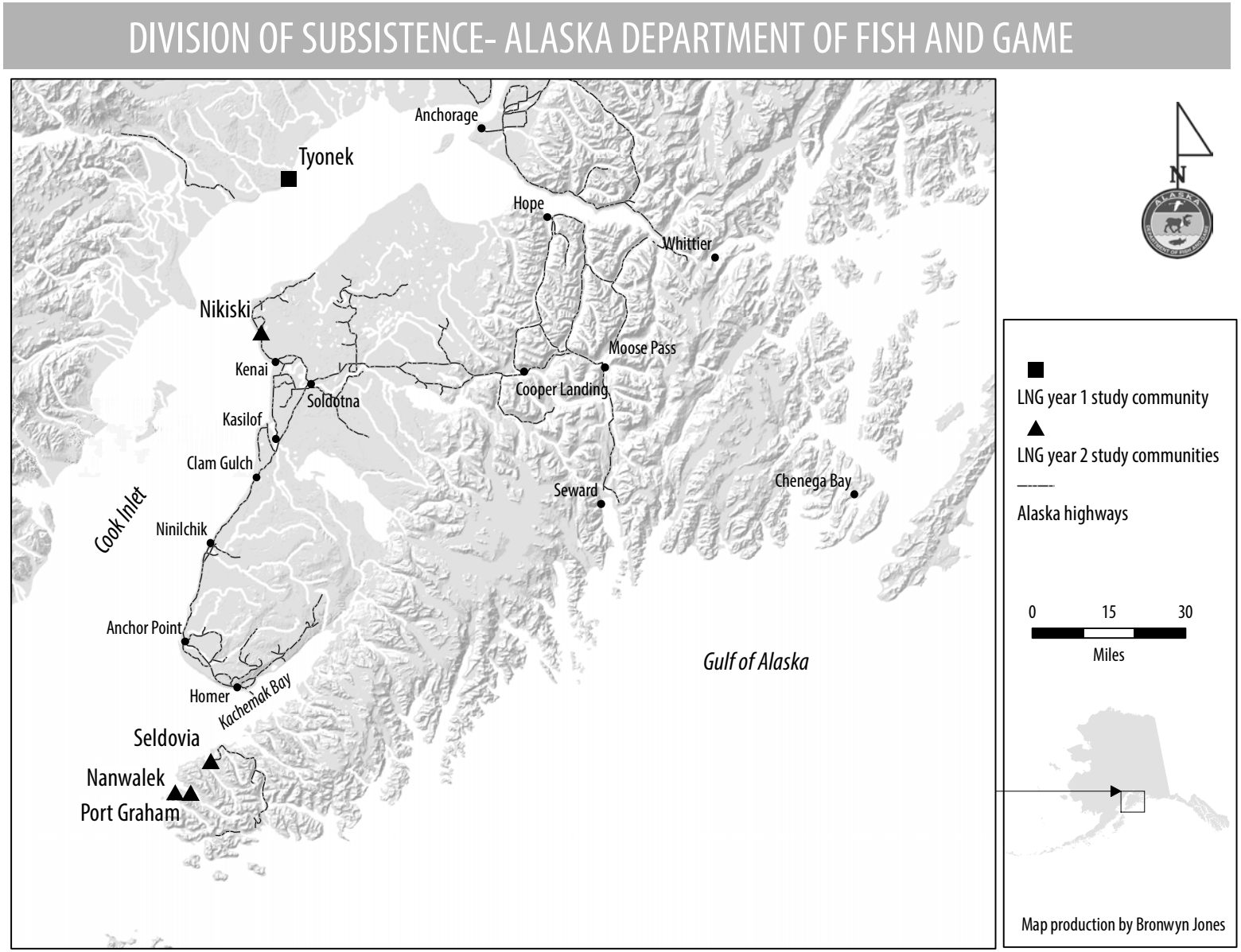

Figure 1-1.–Map of study communities, 2014.

Table 1-2.–Species used by study communities, 2014.

Resource	Scientific name
Chum salmon	*Oncorhynchus keta*
Coho salmon	*Oncorhynchus kisutch*
Chinook salmon	*Oncorhynchus tshawytscha*
Pink salmon	*Oncorhynchus gorbuscha*
Sockeye salmon	*Oncorhynchus nerka*
Landlocked salmon	*Oncorhynchus spp.*
Unknown salmon	*Oncorhynchus spp.*
Pacific herring	*Clupea pallasi*
Pacific herring roe	*Clupea pallasi*
Pacific herring sac roe	*Clupea pallasi*
Pacific herring spawn on kelp	*Clupea pallasi*
Eulachon (hooligan, candlefish)	*Thaleichthys pacificus*
Unknown smelt	
Sea bass	
Pacific (gray) cod	*Gadus macrocephalus*
Pacific tomcod	*Microgadus proximus*
Walleye pollock (whiting)	*Theragra chalcogramma*
Eel	
Arrowtooth flounder (turbot)	*Atheresthes stomias*
Starry flounder	*Platichthys stellatus*
Unknown flounder	
Kelp greenling	*Hexagrammos decagrammus*
Lingcod	*Ophiodon elongatus*
Unknown greenling	
Pacific halibut	*Hippoglossus stenolepis*
Black rockfish	*Sebastes melanops*
Red rockfish	
Yelloweye rockfish	*Sebastes ruberrimus*
China rockfish	*Sebastes nebulosus*
Unknown rockfish	
Sablefish (black cod)	*Anoplopoma fimbria*
Unknown Irish lord	
Unknown sculpin	
Unknown shark	
Skates	
Unknown sole	
Wolffish	*Anarhichas spp.*
Char	*Salvelinus spp.*
Arctic char	*Salvelinus alpinus*
Dolly Varden	*Salvelinus malma*
Lake trout	*Salvelinus namaycush*
Arctic grayling	*Thymallus arcticus*
Northern pike	*Esox lucius*
Unknown sturgeon	*Acipenser spp.*
Cutthroat trout	*Oncorhynchus clarkii*
Rainbow trout	*Oncorhynchus mykiss*
Steelhead	
Unknown whitefishes	

-continued-

Table 1-2.–Page 2 of 5.

Resource	Scientific name
Unknown nonsalmon fish	
Black bear	*Ursus americanus*
Caribou	*Rangifer tarandus*
Deer	*Odocoileus hemionus*
Mountain goat	*Oreamnos americanus*
Moose	*Alces alces*
Dall sheep	*Ovis dalli*
Beaver	*Castor canadensis*
Coyote	*Canis latrans*
Red fox	*Vulpes vulpes*
Snowshoe hare	*Lepus americanus*
North American river (land) otter	*Lontra canadensis*
Lynx	*Lynx canadensis*
Marten	*Martes spp.*
Mink	*Neovison vison*
Muskrat	*Ondatra zibethicus*
Porcupine	*Erethizon dorsatum*
Arctic ground (parka) squirrel	*Spermophilus parryii*
Red (tree) squirrel	*Tamiasciurus hudsonicus*
Unknown squirrel	
Weasel	*Mustela*
Gray wolf	*Canis lupus*
Wolverine	*Gulo gulo*
Harbor seal	*Phoca vitulina*
Unknown seal	
Sea otter	*Enhydra lutris*
Steller sea lion	*Eumetopias jubatus*
Bowhead whale	*Balaena mysticetus*
Bufflehead	*Bucephala albeola*
Unknown eider	
Goldeneye	*Bucephala spp.*
Harlequin duck	*Histrionicus histrionticus*
Mallard	*Anas platyrhynchos*
Unknown merganser	*Mergus spp.*
Long-tailed duck	*Clangula hyemalis*
Northern pintail	*Anas acuta*
Unknown scaup	*Aythya spp.*
Black scoter	*Melanitta nigra*
Surf scoter	*Melanitta perspicillata*
White-winged scoter	*Melanitta fusca*
Northern shoveler	*Anas clypeata*
Unknown teal	*Anas spp.*
Unknown wigeon	*Anas spp.*
Unknown ducks	
Unknown Canada/cackling geese	*Branta spp.*
White-fronted goose	*Anser albifrons*
Unknown geese	

-continued-

Table 1-2.–Page 3 of 5.

Resource	Scientific name
Unknown swan	*Cygnus spp.*
Crane	*Grus spp.*
Sandhill crane	*Grus canadensis*
Unknown cormorant	*Phalacrocorax spp.*
Black-legged kittiwake	*Rissa tridactyla*
Unknown gull	
Pacific/Arctic loon	*Gavia pacifica/arctica*
Unknown murre	*Uria spp.*
Unknown puffin	*Fractercula spp.*
Spruce grouse	*Falcipennis canadensis*
Sharp-tailed grouse	*Tympanuchus phasianellus*
Ruffed grouse	*Bonasa umbellus*
Unknown grouse	
Unknown ptarmigan	*Lagopus spp.*
Unknown other birds	
Unknown duck eggs	
Unknown goose eggs	
Black oystercatcher eggs	*Haematopus bachmani*
Unknown gull eggs	
Unknown tern eggs	
Unknown eggs	
Red (large) chitons	
Black (small) chitons	
Butter clams	*Saxidomus gigantea*
Horse clams	*Simomactra planulata*
Pacific littleneck clams (steamers)	*Protothaca staminea*
Pinkneck clams	*Mactromeris polynyma*
Razor clams	*Siliqua spp.*
Softshell clams	*Mya arenaria*
Unknown clams	
Unknown cockles	
Dungeness crab	*Cancer magister*
Unknown king crab	
Unknown Tanner crab	*Chionoecetes spp.*
Unknown crab	
Limpets	*Patella vulgata*
Unknown mussels	*Mytilus spp.*
Octopus	*Octopus vulgaris*
Unknown oyster	
Weathervane scallops	*Patinopecten caurinus*
Rock scallops	*Crassadoma gigantea*
Unknown sea cucumber	
Unknown sea urchin	
Shrimp	
Snails	
Whelk	*Buccinum undatum*
Blueberry	*Vaccinium uliginosum alpinum*

-continued-

Table 1-2.–Page 4 of 5.

Resource	Scientific name
Lowbush cranberry	*Vaccinum vitis-idaea minus*
Highbush cranberry	*Viburnum edule*
Crowberry	*Empetrum nigrum*
Gooseberry	*Ribes oxyacanthoides*
Currants	*Ribes spp.*
Cloudberry	*Rubus chamaemorus*
Nagoonberry	*Rubus arcticus spp.*
Raspberry	*Rubus idaeus*
Salmonberry	*Rubus spectabilis*
Strawberry	*Fragaria virginiana*
Twisted stalk berry (watermelon berry)	*Streptopus amplexifolius*
Other wild berry	
Beach asparagus	*Salicornia virginica*
Goose tongue	*Plantago maritima*
Wild rhubarb	*Polygonum alaskanum*
Devil's club	*Echinopanax horridum*
Fiddlehead ferns	
Nettle	*Urtica spp.*
Hudson's Bay (Labrador) tea	*Ledum palustre*
Dandelion greens	*Taraxacum L.*
Sourdock	*Rumex fenestratus*
Spruce tips	*Picea spp.*
Willow leaves	*Salix spp.*
Wild celery	*Angelica lucida*
Wild parsley	*Pastinaca sativa*
Wild rose hips	*Rosa acicularis*
Yarrow	*Achillea spp.*
Other wild greens	
Unknown mushrooms	
Fireweed	*Epilobium angustifolium*
Plantain	*Plantago major*
Stinkweed	*Artemisia tilesii*
Puffballs	
Chaga	*Inonotus I. obliquus*
Sea chickweed	*Stellaria spp.*
Beach greens	*Honckenya peploides*
Wild chives	*Allium schoenoprasum*
Black seaweed	*Porphyra abbottae*
Bull kelp	*Nereocystis luetkeana*
Red seaweed	
Sea ribbons	*Palmaria mollis*
Giant kelp (macrocystis)	*Macrocystis pyrifera*
Alaria	
Red laver (dulse)	
Bladder wrack	*Fucus Vesiculosus*
Unknown seaweed	

-continued-

Table 1-2.–Page 5 of 5.

Resource	Scientific name
Wood	
Roots	
Spruce pitch	*Picea spp.*
Alder	*Alnus spp.*
Birch sap	*Betula spp.*

Source ADF&G Division of Subsistence household surveys, 2015.

collected by the Division of Subsistence is also used in resource planning to understand the harvest of wild resources by communities throughout Alaska—especially the locations and timing of resource hunting, fishing, and gathering activities—to understand the potential effects of development on local harvesting patterns.

Project Background

For study year 2011, the ADF&G Division of Subsistence conducted comprehensive subsistence baseline harvest surveys in 12 Alaska communities located along the proposed corridor of a natural gas pipeline. This project was known as the Alaska Pipeline Project (or APP). These communities extend from the Brooks Range, through eastern Interior Alaska to Delta Junction, and along the Alaska Highway to the border with Canada. The survey was conducted in response to a set of "general requirements" developed by the Federal Energy Regulatory Commission (FERC) for the analysis of information concerning subsistence uses of fish, wildlife, and plant resources by communities located within 30 miles of the proposed pipeline route; the requirements also stipulated that information collected and analyzed be "no more than 3 years old."[1] The State Pipeline Coordinator's Office (SPCO) at the Alaska Department of Natural Resources (DNR), which was the liaison for the ADF&G subsistence component of the APP study, requested that the Division of Subsistence prepare a data gap analysis and a detailed study design to comply with the general requirements issued by FERC. The gap analysis identified communities within a 50-mile radius of the proposed pipeline route that were lacking recent fish and wildlife harvest survey data. The 50-mile radius reflects the distance residents of road-connected communities generally travel for hunting, fishing, and gathering activities. A total of 12 communities were surveyed for APP. This project was discontinued in June 2012, and a planned second phase of data collection in additional communities did not occur.

In 2013, the natural gas project was modified in response to global economic forces to bring natural gas to new markets and also became the Alaska Liquid Natural Gas Project (Alaska LNG), which proposed a new terminus and route for the pipeline. The proposed route now originates on the North Slope of Alaska, proceeds south to Fairbanks, and then follows the Parks Highway south to Cook Inlet with a terminus at Nikiski on the Kenai Peninsula. Figure 1-2 shows the proposed study communities along the new planned route, as well as the location of 2014 study communities, and other communities near the latest proposed pipeline route that have been recently surveyed.

Like the APP, the proposed development of Alaska LNG requires updated comprehensive baseline data concerning fish and wildlife harvests and uses and areas of harvest, as well as demographic and economic information to understand the role of wild resource uses in the ways of life in the study communities located nearby the proposed pipeline route. Table 1-3 shows the communities in southern Alaska that have been identified as being along the proposed pipeline route and near the proposed liquefaction plant in Nikiski. The table also identifies recent studies conducted in communities along the proposed route and the data gaps in relation to FERC's requirement that data submitted may not be more than 3 years old.

1. Michael J. Boyle, Deputy Director, FERC, Office of Energy Projects, Division of Gas–Environment and Engineering, letter to TransCanada Alaska Company LLC, February 17, 2011.

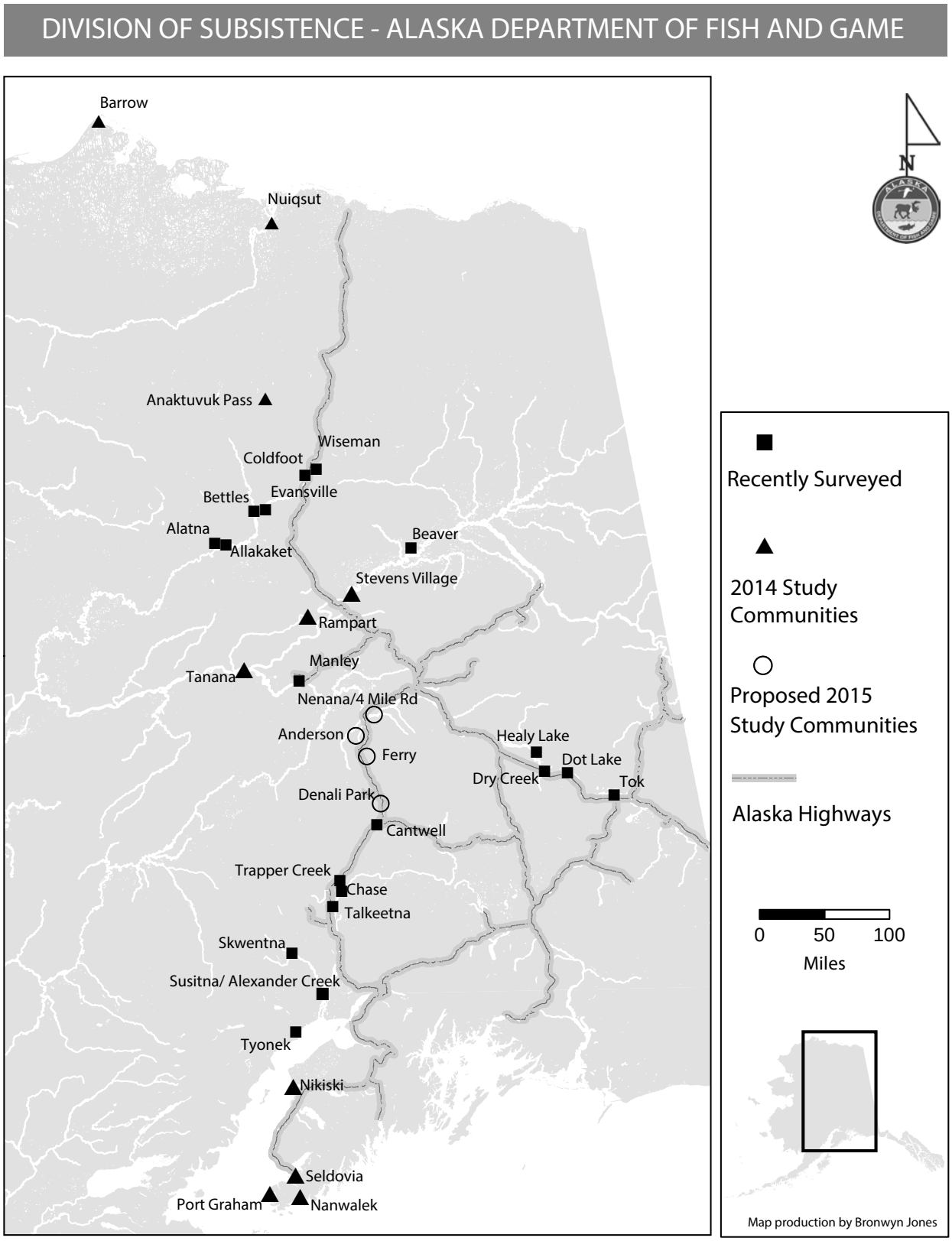

Figure 1-2.–Proposed Alaska Liquid Natural Gas Project pipeline route and nearby communities.

Table 1-3.–History of Cook Inlet and Susitna River drainage communities studied.

	Communities to update						
	Susitna River Basin–Cook Inlet		*Cook Inlet–Outside nonsubsistence area*			*Cook Inlet–Nonsubsistence area*	
	Beluga[b]	Tyonek	Nanwalek	Port Graham	Seldovia	Homer[c]	Nikiski
Estimated number of households 2010[a]	10	70	55	79	121	2,235	1,689
Survey history							
1982					All	All	
1983		All					
1984				All			
1985							
1986							
1987			All	All			
1988							
1989			All	All			
1990			All	All			
1991			All	All	All		
1992			All	All	All		
1993			All	All	All		
1994			MM	MM			
1995			MM	MM	MM	MM	
1996		MM	MM	MM	MM	MM	
1997		MM	ALL	ALL	MM	MM	
1998		MM	MM	MM	MM	MM	
1999							
2000		MM/MWB	MM/MWB	MM/MWB	MM/MWB	MM	
2001		MM	MM	MM	MM	MM	
2002		MM	MM	MM	MM	MM	
2003		MM	All	All	MM	MM	
2004		MM	MM	MM	MM	MM	
2005		MM	MM	MM		MM	
2006	All	All	MM	MM	MM	MM	
2007		MM	MM	MM	MM	MM	
2008		MM	MM	MM	MM	MM	
2009							
2010							
2012							
2013		All					
2014			All	All	All		All

-continued-

Table 1-3.–Page 2 of 2.

	Updated communities					
	Susitna River Basin					
	Chase	Cantwell	Skwentna	Susitna/ Alexander Creek	Talkeetna	Trapper Creek
Estimated number of households 2010[a]	18	83	35	13	374	148
Survey history						
1982		All				
1983						
1984						
1985					All	All
1986	All		All	All		
1987						
1988						
1989						
1990						
1991						
1992						
1993						
1994						
1995						
1996						
1997						
1998						
1999		All				
2000		MWB				
2001						
2002						
2003						
2004						
2005						
2006						
2007						
2008						
2009						
2010						
2012	All	All	All	All	All	All
2013						
2014						

Note The key for this table is:
All = "comprehensive" baseline survey of all resources used for subsistence purposes.
MWB = migratory waterfowl and other birds.
MM = marine mammals.
a. *Source* U.S. Census Bureau (2011).
b. Beluga declined to participate in the comprehensive baseline survey effort for study year 2013.
c. Funding to conduct a comprehensive baseline survey effort in Homer not available.

This project work was divided between the northern and southern regions of the Division of Subsistence. For the southern region, the community of Tyonek was surveyed in 2014 regarding the harvests and uses of resources that occurred in 2013 (see Jones et al. 2015). In the second project year, the communities of Nikiski, Seldovia, Port Graham, and Nanwalek were surveyed for resources harvested and used in 2014. This report describes study year 2 results in the southern region.[2]

Regional History

While the Kachemak Bay region was likely occupied around 10,000 years ago by the Ocean Bay II Tradition maritime culture, people of the Sugpiaq-Alutiiq Eskimo language group and maritime culture have occupied the coastal regions of Prince William Sound, the lower Kenai Peninsula, and the Kodiak Archipelago for approximately 1,000 years (Csoba DeHass 2012; Stanek 2000). Around that time, Yup'ik Eskimo peoples appeared in Cook Inlet and the Sugpiat became a distinct people. Later, the Sugpiat were confronted by Dena'ina Athabascan people migrating south down the shores of Cook Inlet. The Dena'ina pushed the Sugpiaq people inhabiting upper Cook Inlet and the upper Kenai Peninsula south to their current locations, thus establishing an Eskimo/Athabascan cultural boundary delineated approximately by modern-day Seldovia. Living semi-nomadic lives by traveling to seasonal camps from more permanent settlements to pursue specific resource harvest, social, and spiritual activities, the direct ancestors of today's Kenai Peninsula residents have occupied the Gulf of Alaska and lower Cook Inlet for approximately 1,000 years (Csoba DeHass 2012; Stanek 2000).

Three general groups of Sugpiaq-Alutiiq people can be distinguished—the Qikertarmiut of Kodiak Island, the Chugachmiut of Prince William Sound, and the Unegkuhmiut of lower Kenai Peninsula. Unegkuhmiut translates to "a people out of the way," which likely refers to the isolated location of the Kenai Peninsula villages (Csoba DeHass 2012). The Unegkuhmiut are also considered *imam suga*—"people from the sea" (Salomon et al. 2011). The Chugachmiut and the Unegkuhmiut are thought to be closely related and their languages are subdialects of Chugach Sugt'stun (Csoba DeHass 2012). Aleut, Alutiiq, Sugpiaq, Pacific Eskimo, Chugach Eskimo, and Unegkuhmiut are all names that have been used to characterize the Alaska Native people of the southern Kenai Peninsula. Today, most Prince William Sound and Kenai Peninsula Alaska Native residents prefer to be called Sugpiat (Csoba DeHass 2007, 2012; Stanek 2000).

A brief clarification of the various terminologies surrounding the Sugpiaq-Alutiiq identity will be useful here. The term "Aleut" comes from an indigenous Siberian language and means "coastal dweller." In 1741, when Russian frontiersmen first arrived in Alaska at the Aleutian Islands, they referred to Alaska Native people in general as Aleut, although these indigenous people referred to themselves as Unangan. Through time, with the mixing of Russian and Alaska Native blood and cultural identities, the people of the Aleutian Islands began to identify with the word Aleut. Hence, the inhabitants of the Aleutian Islands chain have generally maintained an identity as Aleuts since shortly after Russian arrival and into contemporary times.[3] However, the Sugpiat-Alutiit, in an effort to make a cultural distinction between themselves and the Aleuts living on the Aleutian Islands, changed the pronunciation of the term "Aleut" for the Sugt'sun-speaking peoples indigenous to the Kodiak Archipelago, Prince William Sound, and the lower Kenai Peninsula to become "Alutiit" in Sugt'sun (Csoba DeHass 2007, 2012).

Today, while the Kodiak Alaska Native people continue to refer to themselves as Alutiiq, Nanwalek and Port Graham Alaska Native residents exclusively refer to themselves as Sugpiaq, in an effort to maintain their own identity and a desire to be acknowledged as an independent Alaska Native group (Csoba DeHass 2007, 2009, 2012).

2. Communities in the northern region surveyed for study year 2014 include: Tanana, Rampart, Stevens Village, Healy, Barrow, Nuiqsut, and Anaktuvuk Pass; results for those surveys are forthcoming and will be published as part of the Division of Subsistence Technical Paper series: http://www.adfg.alaska.gov/sf/publications/index.cfm. Additionally, for the project's third study year (2015), surveys of Anderson, Ferry, Denali Park, and Nenana are forthcoming.

3. The Aleut language is significantly different from Sugt'sun, but they are linguistic relatives (Csoba DeHass 2007).

Regulatory Context

The study communities and their surrounding areas on the Kenai Peninsula include land owned by the state and federal governments, and also private entities. This combination of a diverse array of land owners contributes to a complex regulatory framework. There was a multifaceted regulatory context involving fish, wildlife, and marine mammal resources during the 2014 study year. This overview focuses on identifying local harvest opportunities available to the surveyed communities' residents in 2014, including: state-regulated salmon fisheries; federal subsistence Pacific halibut fishing; state-regulated hunting and trapping in Game Management Unit (GMU) 15; state-regulated upland game bird hunting; federal migratory bird hunting; and federal subsistence marine mammal hunting. This information is an overview, not a comprehensive account, of regulations that apply to harvest activities for some of the key resources harvested locally by residents in the study communities.

The State of Alaska provided for both personal use and subsistence salmon fishing opportunities by permit for all Alaska residents in the Cook Inlet Area waters, the boundaries of which are defined by regulation (5 AAC 77.500 and 5 AAC 01.550) (State of Alaska 2013).

The Upper Cook Inlet Personal Use Salmon Fishery Management Plan provided for dipnetting at Fish Creek on Knik Arm, set gillnet fishing on the Kenai Peninsula at the Kasilof River outlet, and dip net opportunities in the Kasilof and Kenai rivers (5 AAC 77.540). All these fisheries take place in a nonsubsistence area of the Kenai Peninsula and Knik Arm. For these personal use fisheries, a household permit was required (1 permit allowed per household) and only Alaska residents could participate. The total annual limit for each personal use permit was 25 salmon and 10 flounders for the permit holder and 10 salmon for each additional household member (5 AAC 77.525; 5 AAC 77.540(f)). Chinook salmon obtained by set gillnet from the Kasilof River could be retained. Only 1 Chinook salmon could be retained from the Kenai River dip net fishery, unless an alternate bag limit had been indicated by emergency order. No Chinook salmon could be retained from the Kasilof River or Fish Creek dip net fisheries (5 AAC 77.540).

The Fish Creek personal use dip net fishery opens by emergency order only when escapement is predicted to exceed 50,000 sockeye salmon. In 2014, this fishery was open Friday, July 25–31 at 6:00 a.m. until 11:00 p.m. daily.[4]

The Kenai River dip net fishery allowed for the harvest of salmon from shore or a boat (some limitations existed concerning engine size). The fishery was open July 10–31 between 6:00 a.m. and 11:00 p.m. daily.[5]

The personal use set gillnet fishery occurred at the mouth of the Kasilof River and was open June 15–24 between 6:00 a.m. and 11:00 p.m. daily. The permit holder was to be physically present at all times the gear was in use and fishing was limited to 1 set gillnet per household and opportunity to place the set gillnet was based on a "first come, first served" basis. The Kasilof River dip net fishery opened June 25–August 7 and was open 24 hours a day for fish to be harvested from the riverbank or from a boat.

A separate Kachemak Bay sockeye salmon personal use dip net fishery was open in China Poot Creek (5 AAC 77.545). The fishery was open July 1–August 7, with a bag and possession limit of 6 fish. No permit was required, but residents needed to purchase a sport fishing license. In addition, there was a personal use coho salmon setnet fishery in Kachemak Bay (5 AAC 77.549). This fishery only opens in a year in which a subsistence fishery is not conducted in the same area. For this fishery, salmon may be taken for personal use from August 16 through September 15, from 6:00 a.m. Monday until 6:00 a.m. Wednesday and from 6:00 a.m. Thursday until 6:00 a.m. Saturday. A free permit is required.

Outside the Kenai Peninsula portion of the Anchorage–Matsu–Kenai Nonsubsistence Area, in designated portions of Seldovia Bay waters, another separate subsistence fishing permit was required to harvest salmon.

4. Alaska Department of Fish and Game, July 23, 2014. "Personal Use Fishing Emergency Order No. 2-RS-2-41-14," https://www.adfg.alaska.gov/Static-sf/EONR/PDFs/2014/R2/EO%202-RS-2-41-14%20Fish%20Creek%20Sockeye_%20final.pdf (accessed April 2016).

5. For more information, please consult the "Personal Use Finfish Fisheries" section of the current ADF&G "Southcentral Alaska Sport Fishing Regulations Summary": http://www.adfg.alaska.gov/index.cfm?adfg=fishregulations.sc_sportfish (accessed August 2015).

Legal gear was set gillnets, and the open season was April 1–May 30 during regulated daily fishing periods, as well as during weekends in early August (5 AAC 01.560). The allowable annual total household harvest was not to exceed 20 Chinook salmon. Under this permit, there was no limit on the harvest of other salmon (5 AAC 01.595).

Another separate single permit was issued for subsistence salmon fishing in the Port Graham, Koyuktolik, Port Chatham, and Windy Bay subdistricts of the Cook Inlet Area. Outside the nonsubsistence area, fishing was permitted in the Port Graham and Koyuktolik subdistricts during April 1–September 30; in the Port Chatham and Windy Bay subdistricts, the fishing season was open April 1–August 1 (5 AAC 01.560(b)(3)). In all of these subdistricts, fishing periods were from 10:00 p.m. Thursday until 10:00 a.m. Wednesday, unless modified by emergency order. Subsistence gear specifications were published in 5 AAC 01.570.

In addition to these state-regulated subsistence and personal use salmon fisheries, study community residents could harvest salmon under state sport and commercial fishing regulations; commercial salmon harvests can be retained for home use.

In April 2003, the National Marine Fisheries Service (NMFS), Alaska Region, published federal regulations implementing a subsistence Pacific halibut fishery for qualified individuals[6] in the waters in and off Alaska (68 FR 18145, April 15, 2003; see http://www.fakr.noaa.gov/frules/fr18145.pdf). Subsistence Pacific halibut fishers are required to obtain a Subsistence Halibut Registration Certificate (SHARC) from the Restricted Access Management (RAM) Program office of NMFS prior to fishing.[7] Legal subsistence fishing gear included setline (stationary) gear (i.e., longlines, or "skates," sometimes set with a power winch attached to a vessel), and hand-operated gear (i.e., handlines or lines attached to a rod or pole).

According to State of Alaska (SOA) hunting regulations, the study communities are all located in GMU 15, which is subdivided into 3 subunits.[8] This summary of state hunting regulations highlights harvest opportunities locally available to Alaska residents during study year 2014 (Alaska Department of Fish and Game Division of Wildlife Conservation 2014).[9] In GMU 15, there was no closed season for resident black bear hunts, and the bag limit was 3 black bears; hunters needed a free harvest ticket issued by ADF&G prior to hunting. Residents could also hunt 1 brown/grizzly bear under a registration permit; open season was September 1–May 31. Regarding caribou, residents hunted under a drawing permit; the bag limits were 1 bull in GMU 15B (within Kenai National Wildlife Refuge Wilderness Area) or 1 caribou of either sex in GMU 15C (north of the Fox River and east of the Windy Lake areas); open season was August 10–September 20.

A limited number of Alaska resident mountain goat registration permits were available in Seldovia, Nanwalek, and Port Graham; the bag limit was 1 legal[10] mountain goat in specific areas of GMU 15C; open season was August 10–October 15. Also, Alaska resident registration permits for hunting in subareas of GMU 15C for 1 mountain goat could be obtained in Anchorage, Palmer, Homer, and Soldotna for an open season of November 1–30. In other selected areas of GMU 15, drawing permits could be obtained for hunting 1 mountain goat during an open season of August 10–October 15, and registration permits available in Anchorage, Palmer, Homer, and Soldotna allowed Alaska resident hunting during November 1–30.

Concerning moose, for Alaska residents, 1 legal bull could be hunted with a harvest ticket in GMU 15A (except the Skilak Loop Wildlife Management Area) by bow and arrow during an August 10–17 season, and by other methods August 20–September 20. In specified areas of GMU 15B, 1 bull could be hunted

6. Qualified individuals include residents of the rural places of Seldovia, Nanwalek, and Port Graham, and members of Nanwalek, Port Graham, Seldovia, Ninilchik, Kenaitze, and Salamatof tribes.
7. The subsistence rules were amended in 2005 by regulations published in the Federal Register at 70 FR 16742, April 1, 2005. Among other things, this amendment provides for obtaining Community Harvest Permits, Ceremonial Permits, and Educational Permits.
8. For more detailed information concerning SOA regulations, please consult: http:/hunt.alaska.gov (accessed August 2015).
9. Note that regulations are subject to updates determined by the Alaska Board of Game, which are reflected in Title 5, Alaska Administrative Code, Chapter 85, Hunting Seasons and Bag Limits (5 AAC 85). The summary is an interpretation of Alaska hunting regulations and does not quote verbatim from state law.
10. For details about legal wildlife specifications, see regulations in 5 AAC 85.

with a drawing permit during September 1–20; in the remainder of GMU 15B, 1 legal bull could be hunted with a harvest ticket by bow and arrow August 10–17 or by other means August 20–September 20. In GMU 15C, residents could apply for a Tier II[11] subsistence permit to hunt a bull in specific areas outside the nonsubsistence area (i.e., southwest of a line from Point Pogibshi to the point of land between Rocky and Windy bays); open season was August 25–September 30. In other specific areas of GMU 15C, 1 legal bull could be harvested by harvest ticket, or 1 antlerless moose could be hunted by drawing permit in an open season of August 20–September 20. In the remainder of Unit 15C, 1 legal bull could be hunted with a harvest ticket during August 20–September 20.

For Alaska residents, in specific areas of GMU 15A, 1 Dall sheep ram with full-curl horn or larger could be hunted by drawing permit in an open season of August 10–September 20. In the remainder of GMU 15, 1 ram with full-curl horn or larger could be hunted under a harvest ticket during August 10–September 20.

One wolverine could be harvested in GMU 15 during September 1–March 31, and harvested animals were required to be sealed by ADF&G or a representative within 30 days of the kill. Five wolves could be harvested during August 10–April 30 as part of an open general hunt and harvests needed to be sealed within 30 days of the kill. Additionally, GMU 15A is included in a wolf predator control area having special regulations for pursuing wolf control activities.[12]

In Alaska, federal regulations for subsistence harvests of wildlife pertain only to federal public lands and only federally qualified rural residents are eligible to participate.[13] Under federal regulations, the Kenai Peninsula is also managed as Unit 15 and is also subdivided into 3 subunits. A summary of federal subsistence hunting regulations highlights harvest opportunities available to Alaska residents during study year 2014 (Federal Subsistence Management Program n.d.).[14] For residents of Nanwalek, Ninilchik, and Port Graham, 3 black bears could be harvested in Unit 15C during July 1–June 30. No federal open season was available to subsistence hunt for caribou, mountain goats, or Dall sheep in 2014 in Unit 15.

There was no moose hunting allowed under federal regulations in the Skilak Loop Wildlife Management Area, which is located within a portion of Unit 15A. In the remainder of Unit 15A and in Unit 15B, residents of Cooper Landing, Nanwalek, Ninilchik, Port Graham, and Seldovia could harvest 1 legal[15] bull moose under a federal registration permit in an August 10–September 20 season; in Unit 15C, the same hunt was available to the residents of the same communities except Cooper Landing. Another hunting opportunity was available in units 15B and 15C for 1 legal bull moose by federal registration permit during an October 20–November 10 season. This opportunity was available to residents of Cooper Landing, Nanwalek, Ninilchik, Port Graham, and Seldovia. In Unit 15C, 1 cow could be hunted by federal registration permit during August 10–September 20 by residents of Ninilchik, Seldovia, Nanwalek, and Port Graham.

Rural residents could harvest an unlimited number of coyotes (September 1–April 30), and unlimited hares could be harvested (July 1–June 30). Rural residents could harvest 2 lynx (November 10–January 31). In the portion of Unit 15 that occurs within the Kenai National Wildlife Refuge, 2 wolves could be harvested by rural residents, and in the remainder of the unit, 5 wolves could be harvested by rural residents (August 10–April 30). For rural residents, 1 wolverine could be harvested during a September 1–March 31 season.

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11. State Tier II hunts are held when there is not enough of a game population with a positive customary and traditional use finding to provide a reasonable opportunity for subsistence uses by all potential users. Hunters must answer questions on an application concerning their dependence on the game for their livelihood and availability of alternative resources. Applications are scored based on responses to the questionnaire and permits are issued to those with the highest scores.

12. See predator control supplement for special regulations: http:/hunt.alaska.gov (accessed August 2015).

13. The study communities Seldovia, Nanwalek, and Port Graham are classified as rural by the Federal Subsistence Board, but Nikiski is considered nonrural.

14. Note that regulations are subject to updates determined by the Federal Subsistence Board, which are reflected in the Code of Federal Regulations (36 CFR Part 242 and 50 CFR Part 100) and the Federal Register. The summary is an interpretation of federal hunting regulations and does not quote verbatim from the regulations.

15. For details about legal wildlife specifications, see Federal Subsistence Management Program (n.d.:72), which can be accessed online: https://www.doi.gov/sites/doi.opengov.ibmcloud.com/files/uploads/2014-2016%20Wildlife%20Reg%20Book%20low%20Resolution_0.pdf.

Federally qualified residents of Unit 15 could harvest 15 spruce grouse per day (30 in possession) during an open season of August 10–March 31. Residents of Unit 15 could also harvest 20 ptarmigan per day (40 in possession) in units 15A and 15B (August 10–March 31), and 20 ptarmigan per day (40 in possession) in Unit 15C (August 10–December 31). Also, federally qualified residents of Unit 15 could harvest 5 ptarmigan per day (10 in possession) in Unit 15C (January 1–March 31).

Subsistence spring and summer migratory bird harvests are regulated by the U.S. Fish and Wildlife Service, Alaska Migratory Bird Co-Management Council.[16] For 2014, Port Graham and Nanwalek were the only Alaska LNG year 2 study communities eligible to participate in subsistence spring and summer migratory bird harvests.[17] The harvest area is Unit 15[C]—south of a line connecting the tip of Homer Spit to the mouth of Fox River—and is in the Kachemak Bay Area of the Gulf of Alaska Region. The season in 2014 was April 2–May 31 and July 1–August 31.

Under federal law, Alaska Natives residing on coastal areas of the North Pacific Ocean and the Arctic Ocean are allowed to harvest marine mammals for subsistence purposes at any time of year, including Alaska Natives residing in all of the study communities (50 CFR Part 216, §216.23 Native exceptions). Harbor seals, sea lions, and sea otters are the most commonly harvested marine mammal species by the study communities; there are no harvest limits imposed for these species provided the harvest is not wasteful.[18] Limits to harvests and special permit requirements may be enacted for marine mammal species that are listed as threatened or endangered under the Endangered Species Act or the Marine Mammal Protection Act.[19]

Study Goals and Objectives

The purpose of the project was to collect, analyze, and report information about subsistence uses of fish and wildlife in 2014 in communities near the proposed pipeline route and terminus for Alaska LNG. Additionally, for those study communities in proximity to the *Exxon Valdez* oil spill (EVOS) area, surveys included questions to evaluate the status of subsistence uses and focused on 3 questions for the EVOS Trustee Council's recovery objective:

1. Are resources used for subsistence purposes healthy, and are their populations at pre-spill levels?
2. Are people confident that resources are safe to eat?
3. Have the cultural values associated with subsistence uses been reintegrated into community life?

Overall, the project had the following objectives:

A. Design a survey instrument to produce updated comprehensive baseline information about subsistence hunting, fishing, gathering, and other topics that address subsistence needs, and that is compatible with information collected in past household interviews. (See section "Systematic Households Surveys" for more information about survey questions for EVOS-affected communities.)

B. Conduct community scoping meetings prior to beginning research.

C. Train local research assistants (LRAs) to assist in administering the systematic household survey.

16. Note that regulations are subject to updates, which are reflected in the Code of Federal Regulations (50 CFR Part 92) and the Federal Register. For details about the species open for hunting, see: http://www.fws.gov/alaska/ambcc/Regulations.htm (accessed March 2016).
17. Federal Register 79, no. 67 (April 8, 2014): 19454–19460.
18. Alaska Native Harbor Seal Commission and National Marine Fisheries Service. n.d. "[Educational Fact Sheet]," http://www.harborsealcommission.org/files/Harbor_Seal_Fact_Sheet_PDF.pdf (accessed April 2016).
19. Marine mammal protected resources are co-managed by the National Marine Fisheries Service, U.S. Fish and Wildlife service, and Alaska Native organizations under cooperative agreements: for details about Alaska Native co-management organizations, see: https://alaskafisheries.noaa.gov/pr/comanagement (accessed March 2016).

D. Conduct household surveys to record the following information:

   1. Demographic information;
   2. Involvement in the harvest, use, and sharing of fish, wildlife, and wild plants in the study year;
   3. Estimated amounts of resources harvested in the study year;
   4. Information about employment and cash income;
   5. Assessments of changes in wild resource harvest and use patterns in the past 5 years;
   6. Locations of fishing, hunting, and gathering activities in the study year.

E. Collaboratively review and interpret study findings.

F. Communicate study findings to the communities.

G. Produce a final report.

Research Methods

Ethical Principles for the Conduct of Research

The project was guided by the research principles outlined in the *Alaska Federation of Natives Guidelines for Research*[20] and by the National Science Foundation, Office of Polar Programs in its *Principles for the Conduct of Research in the Arctic*[21], as well as the Alaska confidentiality statute (AS 16.05.815). These principles stress community approval of research designs, informed consent, anonymity of study participants, community review of draft study findings, and the provision of study findings to each study community upon completion of the research.

Project Planning and Approval

As noted, the SPCO provided the funding for this project from Alaska LNG to ADF&G. This study was a partnership between ADF&G, the Alaska Department of Health and Social Services (DHSS), and HDR Alaska, Inc. (HDR) (Table 1-4). HDR provided geographic information system (GIS) support by providing a new version of a custom Apple iPad[22] application used to map search and harvest areas as well as managing all associated map data on an HDR server. ADF&G provided funding directly to HDR. DHSS partnered with ADF&G so that health impact assessment questions could be added to the survey form to avoid duplication of survey efforts by ADF&G and DHSS. The results of this component of the survey will be reported in a publication by DHSS, and are not summarized in this report. The ADF&G Subsistence Program Manager for Southern Alaska, Davin Holen, attended several meetings sponsored by the SPCO in fall 2013 and spring 2014 to describe the survey to the planning team. These meetings were open to agencies, contractors, Alaska Native tribal organizations, and community representatives. Holen and the Subsistence Program Manager for Northern Alaska, James Simon, prepared a study design with assistance from Assistant Director Monica Wellard for the SPCO and the project was funded prior to the start of fieldwork in January 2014 and then revised for the second study year.

20. Alaska Federation of Natives. 2013. "Alaska Federation of Natives Guidelines for Research." Alaska Native Knowledge Network. http://www.ankn.uaf.edu/IKS/afnguide.html (accessed February 2016).
21. National Science Foundation Interagency Social Science Task Force. 2012. "Principles for the Conduct of Research in the Arctic." http://www.nsf.gov/od/opp/arctic/conduct.jsp (Accessed February 2016).
22. Product names are given because they are established standards for the State of Alaska or for scientific completeness; they do not constitute product endorsement.

Table 1-4.–Project staff.

Task	Name	Organization
Project design and management	Davin Holen	ADF&G Division of Subsistence
	Brian Davis	ADF&G Division of Subsistence
Gap analysis	Davin Holen	ADF&G Division of Subsistence
Project lead	Sarah M. Hazell	ADF&G Division of Subsistence
	Bronwyn Jones	ADF&G Division of Subsistence
SRB&A lead	Stephen R. Braund	Stephen R. Braund & Associates
HDR Alaska, Inc., lead	Michael Davis	HDR Alaska, Inc.
Data management lead	Garrett Zimpelman	ADF&G Division of Subsistence
	Marylynne L. Kostick	ADF&G Division of Subsistence
Nanwalek research lead	James M. Van Lanen	ADF&G Division of Subsistence
Nikiski research lead	Sarah M. Hazell	ADF&G Division of Subsistence
Port Graham research lead	Malla Kukkonen	ADF&G Division of Subsistence
Seldovia research lead	Bronwyn Jones	ADF&G Division of Subsistence
Administrative support	Maegan Smith	ADF&G Division of Subsistence
Programmer	Garrett Zimpelman	ADF&G Division of Subsistence
	Marylynne L. Kostick	ADF&G Division of Subsistence
Data entry	Margaret Cunningham	ADF&G Division of Subsistence
	Theresa M. Quiner	ADF&G Division of Subsistence
	Zayleen Kalalo	ADF&G Division of Subsistence
	Nicholas Jackson	ADF&G Division of Subsistence
Data cleaning/validation	Garrett Zimpelman	ADF&G Division of Subsistence
Data analysis	David S. Koster	ADF&G Division of Subsistence
	Garrett Zimpelman	ADF&G Division of Subsistence
	Marylynne L. Kostick	ADF&G Division of Subsistence
Data analysis support	Erica Mitchell	ADF&G Division of Subsistence
Cartography	Terri Lemons	ADF&G Division of Subsistence
	Bronwyn Jones	ADF&G Division of Subsistence
	Joshua T. Ream	ADF&G Division of Subsistence
Mapping application development	Bridget Brown	HDR Alaska, Inc.
	Mathew Cooper	HDR Alaska, Inc.
	Michael Davis	HDR Alaska, Inc.
Editorial review lead	Mary Lamb	ADF&G Division of Subsistence
Field research staff	Sarah M. Hazell	ADF&G Division of Subsistence
	Bronwyn Jones	ADF&G Division of Subsistence
	Malla Kukkonen	ADF&G Division of Subsistence
	Jessie Merriam	ADF&G Division of Subsistence
	Erica Mitchell	ADF&G Division of Subsistence
	Dustin Murray	ADF&G Division of Subsistence
	Joshua T. Ream	ADF&G Division of Subsistence
	Eric Schacht	ADF&G Division of Subsistence
	James M. Van Lanen	ADF&G Division of Subsistence
	Cameron Welch	ADF&G Division of Subsistence
	Susan Lukowski	Stephen R. Braund & Associates
	Caleb Billmeier	Stephen R. Braund & Associates
	Theresa Dutchuk	Stephen R. Braund & Associates
	Caitlin Kennedy	Stephen R. Braund & Associates
	Travis Shinabarger	Stephen R. Braund & Associates
Local research assistants	Pauline Berestoff	Nanwalek
	Vladimir Moonin	Nanwalek
	Barbara Swenning	Nanwalek
	Quanah Brewster	Nanwalek
	Pauline Allen	Port Graham
	Jennifer Fomin	Port Graham

-continued-

Table 1-4.–Page 2 of 2.

Task	Name	Organization
Local research assistants, continued	Christalina Jager	Port Graham
	Susan Tauriainen	Nikiski
	Wilma Hampson	Nikiski
	Michelle Hartline	Nikiski
	Wenda Kennedy	Nikiski
	Karen Burris	Nikiski
	Harmony Barrus	Seldovia
	Megan Frey	Seldovia
	Cindy Mom	Seldovia
	Stephen Payton	Seldovia
	Alisha Silvers	Seldovia

Table 1-5.–Community scoping meetings, study communities, 2014.

		Attendance	
Community	Date	Community residents	Staff
Port Graham	11/25/2014	4	2[a]
Nanwalek	11/24/2014	9	2[a]
Nikiski	1/26/2015	42	2[b]
Seldovia	11/13/2014	8	2[c]

a. James M. Van Lanen and Malla Kukkonen from ADF&G.

b. Sarah M. Hazell and Cameron Welch from ADF&G.

c. Bronwyn Jones and Sarah Hazell from ADF&G.

Scoping Meetings

All of the communities were contacted in advance of survey administration to plan and establish public meetings to introduce the project. Table 1-5 shows the scoping meeting dates for each of the Alaska LNG year 2 study communities.

Division of Subsistence staff Sarah M. Hazell and Bronwyn Jones traveled to Seldovia on November 13, 2014, and gave a presentation to community members about the proposed study. The presentation was given at the Seldovia Conference Center building, and a total of 8 people attended the meeting. In January 2015, the Division of Subsistence received approval from the Seldovia Village Tribe to conduct the study.

Hazell traveled with volunteer Cameron Welch on December 1, 2014, to give a presentation to Nikiski residents but had to cancel because of inclement weather. The presentation was rescheduled for January 26, 2015, at the Island Lake Senior Center; the meeting was very well attended with a total of 42 Nikiski residents attending.

Division of Subsistence staff Malla Kukkonen and James M. Van Lanen traveled to Nanwalek and Port Graham on November 24 and 25, 2014, to give presentations about the proposed research for community members. The community meeting in Nanwalek took place on November 24 at the Native Village of Nanwalek's council office and was attended by 9 community residents. The following day, in Port Graham, a similar meeting took place at the Port Graham community center, with 4 community residents attending. Nanwalek approved administration of the harvest survey in February 2015. Port Graham Village Council had expressed their support for the project prior to the community meeting.

Table 1-6.–Estimated households and sample achievement, study communities, 2014.

	Community			
Sample information	Nanwalek	Port Graham	Seldovia	Nikiski
Number of dwelling units	58	59	130	1,925
Interview goal	58	58	127	200
Households interviewed	56	41	95	203
Households failed to be contacted	1	7	26	217
Households declined to be interviewed	1	10	6	55
Households moved or occupied by nonresident	0	1	3	15
Total households attempted to be interviewed	58	58	127	475
Refusal rate	1.8%	19.6%	5.9%	21.3%
Final estimate of permanent households	58	58	127	1,568
Percentage of total households interviewed	96.6%	70.7%	74.8%	12.9%
Interview weighting factor	1.04	1.41	1.34	7.72
Sampled population	223	105	208	552
Estimated population	231.0	148.5	278.1	4,263.7

Source ADF&G Division of Subsistence household surveys, 2015.

Systematic Household Surveys and Sample Achievement

The primary method for collecting subsistence harvest and use information in this project was a systematic household survey. Appendix A is an example of the survey instrument used in this project. A key goal was to structure the survey instrument to collect demographic, resource harvest and use, and other economic data that are comparable with information collected in other household surveys in the study communities across Alaska and with data in the Community Subsistence Information System (CSIS[23]). In addition to the core data collected, there were questions on the survey about the effects of EVOS; these additional questions were administered in the EVOS-affected communities of Nanwalek, Port Graham, and Seldovia. The questions were included to inform the EVOS Trustee Council's evaluation of the status of subsistence resources in these communities, which complements work the trustee council commissioned by the Division of Subsistence for 3 other EVOS-affected communities for the same study year: Chenega Bay, Tatitlek, and Cordova (Fall and Zimpelman 2016).

For the smaller communities of Nanwalek, Port Graham, and Seldovia, researchers attempted a census survey of households in each community. To attempt the census surveys, Division of Subsistence researchers worked with a combination of LRAs, knowledgeable community members, and tribal administrators to develop each community's household list. These efforts established estimates of 58 eligible households to be surveyed in Nanwalek, 58 in Port Graham, and 127 in Seldovia (Table 1-6). For the community of Seldovia, the sample consisted of residents from both Seldovia city proper and Seldovia Village census designated place (CDP); this sampling strategy has been used for previous studies conducted by the Division of Subsistence.

In contrast, the sampling strategy employed in the larger community of Nikiski was to execute a random sample survey, which required additional planning. In Nikiski, a different approach was employed to determine the sampling universe (i.e., number of eligible households). First, a parcel layer (ArcGIS feature class) containing ownership and usage data (e.g., "residential," "commercial," "public facility," etc.) was downloaded from the Kenai Peninsula Borough (KPB) Geographic Information Systems (GIS) website[24] on November 25, 2014. According to the metadata file on the website and previous communications with the KPB GIS staff, ownership information for the parcels is regularly updated on Monday mornings. The last update therefore occurred on November 24, 2014.

23. ADF&G Community Subsistence Information System (CSIS): http://www.adfg.alaska.gov/sb/CSIS/.
24. Available at: http://www.kpb.us/gis-dept.

Table 1-7.–Survey duration, study communities, 2014.

	Interview length (in minutes)		
Community	Average	Minimum	Maximum
Nanwalek	45	10	120
Port Graham	89	30	195
Seldovia	62	10	144
Nikiski	34	6	145

Source ADF&G Division of Subsistence household surveys, 2015.

The KPB parcel layer was then clipped using ArcGIS to align with the Nikiski 2010 CDP boundaries. Latitude and longitude fields for the parcel centroids were added to the attribute table and calculated using the "calculate geometry" function. A spatial join was then used to add data from a KPB "physical addresses" feature class, which linked addresses for easier sorting in the field.

The resulting attribute table was then exported to a Microsoft Excel spreadsheet and sorted by the "usage" column. Usage categories and their affiliated parcels were placed into separate tabs. Parcels with occupied residential structures were included in the sampling frame and all others were excluded.

According to the usage category, some residential parcels were listed as having multiple units. These parcels were flagged and ground-truthed to determine the number of occupied units on those parcels. Occupied units were then added to the sampling frame. This process resulted in the identification of a total of 1,925 potential households (Table 1-6). Based on this sample size, it was determined that 200 households would be a representative sample size for Nikiski. Following the initial determination for the sampling frame and random sample survey goal, residential parcels listed as "vacant" were spot-checked prior to sample selection and the sample size was updated. Additionally, during the survey effort, identified unoccupied structures were removed from the sampling frame, resulting in a final estimate of 1,568 households in Nikiski. The initial sample survey goal was achieved (203 households surveyed), resulting in a 13% sample achievement of the final estimate of Nikiski households.

During the survey effort for all communities (i.e., including sampled and census surveyed communities), a disposition was applied to each residence that researchers attempted to contact. The disposition categories included:

- Contains residents that are eligible to participate in the survey based on length of residency (survey attempted).
- Household occupants are nonresident based on minimum length of residency (3 months).
- Vacant (no survey attempted).
- Not a dwelling (commercial building or no dwelling exists) (no survey attempted).

If researchers were initially unsuccessful at making contact with an eligible household, 2 more attempts to survey the household were made. When a reasonable effort was made to survey the household and no contact could be made, this household was assigned a "no contact" disposition. For households that were surveyed, on average, surveys lasted around an hour, which included the standard survey form and a mapping component that will be discussed next. Table 1-7 shows the length of interviews. On average, surveys in Port Graham were the longest-lasting with an average survey length of 89 minutes; the average length of Seldovia surveys was 62 minutes, the average survey length in Nanwalek was 45 minutes, and the shortest average survey length was in Nikiski, averaging 34 minutes.

Mapping Locations of Subsistence Hunting, Fishing, and Gathering Activities

During household interviews, the researchers asked respondents to indicate the locations of their hunting, fishing, and gathering activities during the 2014 study year. Division researchers were guided by a standard mapping protocol. Features included points, polygons (shapes), and lines. Points were used for harvest locations that were specific to a small area; polygons were used for search areas, such as when hunting moose, and harvest areas, such as for migratory waterfowl or small game where respondents might indicate a larger area where there were multiple harvests; and lines were used occasionally to depict traplines and fishing activities. Overall, the protocol for documenting harvests is a guide and researchers were trained to use the feature that best captured the activity that was related by the respondent.

Harvest locations and fishing, hunting, and gathering areas were documented using an application designed on the ArcGIS Runtime SDK for iOS platform. As mentioned previously, the application was developed by HDR, an environmental research firm located in Anchorage. The device used to collect the data was an Apple iPad. The point, polygon, or line was drawn on a U.S. Geological Survey topographic relief map displayed on the iPad. The areas depicted on the maps should be understood to represent an approximation of the actual search area. The iPad allowed the user to zoom in and out to the appropriate scale and the ability to document search and harvest activities wherever they occurred in the state of Alaska. Once a feature was accepted, an attribute box was filled out by the researcher that noted the species harvested, amount, method of access to the resource, and month(s) of harvest. Data uploads to a server were undertaken once daily in the field when cellular networks or Wi-Fi connections were available. This provided a back-up of the spatial harvest data. During the check-in process, the number of successful point, line, and polygon uploads was displayed on the device. Upload failures were also displayed on the device and recorded by the researchers. Data that failed to upload were later downloaded directly from the device. Researchers periodically conducted quality control checks on uploaded data with a website developed by HDR as a means of validating successful uploads. Once data collection was complete, all data in the server were downloaded into an ArcGIS file database. Paper maps were also available to be used as a reference for respondents as well as by an LRA when an ADF&G researcher was not available for the interview to provide an iPad. These maps were 11x17 inches at a scale of 1:250,000 and 1:500:000 and only documented areas within the Cook Inlet region. In several instances when the iPad was not available, harvest and search areas were recorded on paper maps and research staff digitized markings on paper maps using the iPad application.

Key Respondent Interviews

While researchers were in the study communities they consulted with tribal governments, community councils, and LRAs to identify key respondents to interview. The purpose of the key respondent interviews was to provide additional context for the quantitative data and also to provide information for the community background section at the beginning of each chapter, the seasonal round sections, harvest over time analysis, and the community comments and concerns section at the end of each chapter. The number of key respondent interviews varied among communities (4 interviews in Nikiski, 3 in Port Graham, 2 in Nanwalek, and 2 in Seldovia). In addition to gathering qualitative data through the key respondent interview protocol, ADF&G staff took notes during interviews to provide additional context for this report. Researchers analyzed key respondent interviews and interview notes in preparation for this report. Key respondents were informed that, to maintain anonymity, their names would not be included in this report.

Household Survey Implementation

Hazell was the research lead for the community of Nikiski. Field research in 2015, including administering household surveys, occurred January 25–February 6. Division of Subsistence staff included researchers Joshua Ream and Jones and intern Eric Schacht, as well as volunteers Welch and Jessie Merriam. The Division of Subsistence was assisted by Stephen Braund & Associates staff Caleb Billmeier, Theresa Dutchuk, Travis Shinabarger, and Caitlin Kennedy, and by LRAs Susan Tauriainen, Wilma Hampson,

Michelle Hartline, Wenda Kennedy and Karen Burris. Stephen Braund & Associates provided additional researchers to aid in the large survey effort.

Jones was the research lead for the community of Seldovia. Surveys were administered January 16–23, 2015. Division of Subsistence staff included Jones and Ream, as well as volunteers Welch and Merriam. The Division of Subsistence was assisted by Stephen Braund & Associates staff Susan Lukowski and Travis Shinabarger, and by LRAs Harmony Barrus, Megan Frey, Cindy Mom, Stephen Payton, and Alisha Silvers.

Division of Subsistence staff Kukkonen and Van Lanen, with interns Erica Mitchell and Dustin Murray, conducted fieldwork in Port Graham during January 25–30, 2015. With LRAs Pauline Allen, Jennifer Fomin, and Christalina Jager, researchers were able to complete most of the surveys during this time. A small number of additional surveys were completed the following week by LRAs and received by Kukkonen in early February 2015.

Between March 3–8, 2015, researchers Kukkonen and Van Lanen and intern Murray conducted households surveys in Nanwalek. They were assisted by LRAs Pauline Berestoff, Vladimir Moonin, Barbara Swenning, and Quanah Brewster. After the initial survey effort, 2 LRAs completed a small number of remaining surveys, which were received by Van Lanen via mail in late March 2015.

Data Analysis and Review

Survey Data Entry and Analysis

Nikiski data were coded by several project staff but supervised by Hazell and Information Management staff Margaret Cunningham and Theresa Quiner. In Seldovia, all data were coded by Cunningham and all data for Port Graham and Nanwalek were coded by community research leads Kukkonen and Van Lanen. Responses were coded following standardized conventions used by the division to facilitate data entry. Information Management staff within the division set up database structures within Microsoft SQL Server at ADF&G in Anchorage to hold the survey data. The database structures included rules, constraints, and referential integrity to ensure that data were entered completely and accurately. Data entry screens were available on a secured internet site. Daily incremental backups of the database occurred, and transaction logs were backed up hourly. Full backups of the database occurred twice weekly. This ensured that no more than 1 hour of data entry would be lost in the unlikely event of a catastrophic failure. All survey data were entered twice and each set compared in order to minimize data entry errors.

Once data were entered and confirmed, information was processed with the use of Statistical Package for the Social Sciences (SPSS) software, version 21. Initial processing included the performance of standardized logic checks of the data. Logic checks are often needed in complex data sets where rules, constraints, and referential integrity do not capture all of the possible inconsistencies that may appear. Harvest data collected as numbers of animals, or in gallons or buckets, were converted to pounds usable weight using standard factors (see Appendix B for conversion factors). Harvest data included resources harvested by any member of the surveyed household during the study year. Use data included resources taken, given away, or used by a household, and resources acquired from other harvesters, either as gifts, by barter or trade, through hunting partnerships, or as meat given by hunting guides and non-local hunters. Purchased foods are not included, but resources such as wood (used for home heating or crafts, etc.) are included because they are an important part of the subsistence way of life.

Division analysts also used SPSS for analyzing the survey information. Analysis included review of raw data frequencies, cross tabulations, table generation, estimation of population parameters, and calculation of confidence intervals for the estimates. Missing information was dealt with on a case-by-case basis according to standardized practices, such as minimal value substitution or using an averaged response for similarly-characterized households. Typically, missing data are an uncommon, randomly-occurring phenomenon in household surveys conducted by the division. In unusual cases where a substantial amount

of survey information was missing, the household survey was treated as a "non-response" and not included in community estimates. Division researchers documented all adjustments.

Harvest estimates and responses to all questions were calculated based upon the application of weighted means (Cochran 1977). These calculations are standard methods for extrapolating sampled data. As an example, the formula for harvest expansion is

$$H_i = \bar{h}_i S_i \tag{1}$$

where:

$\bar{h}_i = \frac{h_i}{n_i} =$ (mean harvest per returned survey)

$H_i =$ the total harvest (numbers of resource or pounds) for the community *I*,

$h_i =$ the total harvest reported in returned surveys,

$n_i =$ the number of returned surveys, and

$S_i =$ the number of households in a community.

As an interim step, the standard deviation (SD), or variance (V; which is the SD squared), was also calculated with the raw, unexpanded data. The standard error (SE), or SD, of the mean was also calculated for each community. This was used to estimate the relative precision of the mean, or the likelihood that an unknown value would fall within a certain distance from the mean. In this study, the relative precision of the mean is shown in the tables as a confidence limit (CL), expressed as a percentage. Once the standard error was calculated, the CL was determined by multiplying the SE by a constant that reflected the level of significance desired, based on a normal distribution. The constant for 95% confidence limits is 1.96. Though there are numerous ways to express the formula below, it contains the components of an SD, V, and SE.

Relative precision of the mean (CL%):

$$CL\%(\pm) = \frac{t_{\alpha/2} \times \frac{s}{\sqrt{n}} \times \sqrt{\frac{N-n}{N-1}}}{\bar{x}} \tag{2}$$

where:

$s =$ sample standard deviation,

$n =$ sample size,

$N =$ population size,

$t_{\alpha/2} =$ student's *t* statistic for alpha level (α=.95) with n–1 degrees of freedom, and

$\bar{x} =$ sample mean.

Small CL percentages indicate that an estimate is likely to be very close to the actual mean of the sample. Larger percentages mean that estimates could be further from the mean of the sample.

The corrected final data from the household survey will be added to the ADF&G Division of Subsistence CSIS. This publicly-accessible database includes community-level study findings.

Population Estimates and Other Demographic Information

As noted above, a goal of the research was to collect demographic information for all interviewed year-round households in each study community. For this study, "year-round" was defined as being domiciled in the

community when the surveys took place and for at least 3 consecutive months during the calendar (January 1–December 31) study year 2014. Because not all households were interviewed, population estimates for the community were calculated by multiplying the average household size of interviewed households by the total number of year-round households, as identified by division researchers in consultation with community officials and other knowledgeable respondents. There may be several reasons for the differences among the population estimates and other demographic data that are generated from the division's household survey (as of December 31, 2014), estimates developed by the 2010 federal census (U.S. Census Bureau 2011), and estimates by the Alaska Department of Labor and Workforce Development (Alaska Department of Labor and Workforce Development 2015). Possible reasons for differences include differing survey methods, and seasonal differences in populations.

Map Data Entry and Analysis

As discussed above, maps were generated based on data collected using an iPad or on paper maps sized 11x17 inches. All data were eventually entered on the iPad, whether in the field during interviews, during transfer of hand-drawn data from paper maps, or by ADF&G or project research staff while coding survey data. Map features were matched to the survey form to ensure that all harvest data were recorded accurately. Once all data were entered, an ArcGIS file geodatabase was downloaded by ADF&G researcher Jones from the server and maps showing harvest locations for each species were created using ArcGIS 10.2 using a standard template for reports. Maps show harvest locations for fish species, harvest areas for plants, berries, wood, and birds, and hunting areas for large and small land mammals. To ensure confidentiality, harvest locations for large and small land mammals are not produced for the report. Maps were reviewed at a community review meeting to ensure accuracy.

Food Security Analysis

Survey respondents were asked a set of questions intended to assess their household's food security, defined as, "access by all people at all times to enough food for an active, healthy life" (Coleman-Jensen et al. 2012). A "food security" section of the survey used a standard national questionnaire to assess whether or not the household had enough food to eat, whether from subsistence sources or from market sources. The protocol used in this survey was a modified version of the 12-month food security scale questionnaire developed by the U.S. Department of Agriculture (USDA). This questionnaire is administered nationwide each year as part of the annual Current Population Survey (CPS). In 2007, approximately 125,000 U.S. households were interviewed, including 1,653 in Alaska (Nord et al. 2008). From CPS data, the USDA prepares an annual report on food security in the United States.

Food security protocols have been extensively reviewed (Coates 2004; Webb et al. 2006; Wunderlich and Norwood 2006) and have been used around the world, including in northern Burkina Faso (Frongillo and Nanama 2006), Bangladesh (Coates et al. 2006), Bolivia and the Philippines (Melgar-Quinonez et al. 2006), and Brazil (Pérez-Escamilla et al. 2004). Although there have been efforts to develop a universal food security measurement protocol (Swindale and Bilinsky 2006), researchers often modify the protocol slightly to respond to community social, cultural, and economic circumstances, as was done here.

For this study, the food security protocol was modified by the addition of several questions designed to determine whether food insecurities, if any, were related to subsistence foods or store-bought foods. Additionally, the wording of some questions was changed slightly. As in Brazil (Pérez-Escamilla et al. 2004), the USDA term "balanced meals" was difficult to interpret for indigenous Alaska populations, and was replaced with the term "healthy meals" to reflect unique dietary and cultural circumstances in rural Alaska.

The food security status of households is based on the aggregated number of affirmative responses to questions about experiencing food insecure conditions. Food security status is characterized by 4 ranges:

1. High food security;

2. Marginal food security;
3. Low food security; and
4. Very low food security.

For reporting purposes, households with high or marginal food security were broadly categorized as being food secure, and households with low or very low food security were broadly categorized as being food insecure following a USDA protocol (Bickel et al. 2000).[25]

Households with a high or marginal level of food security reported 1 or 2 instances of food access problems or limitations—typically anxiety over food sufficiency or a shortage of particular foods in the house—but gave little or no indication of changes in diets or food intake. Households with low food security reported reduced quality, variety, or desirability of their diet, but they, too, gave little indication of reduced food intake. Households classified as having very low food security were those that reported multiple instances of disrupted eating patterns and reduced food intake (Coleman-Jensen et al. 2012).

Community Review Meetings

For each study community, research staff returned to present preliminary survey findings and associated search area and harvest maps. The purpose of the community review meetings is to provide an opportunity for community members to comment on the findings of the study, for researchers to capture concerns that were not documented during the survey but community members felt were important, and to clarify any issues that researchers encountered during analysis. Table 1-8 shows when a community review meeting was held in each study community and how many community residents attended.

The Seldovia community review meeting was held in Seldovia on September 22, 2015. The meeting was led by Jones and all LRAs and tribal administrators were contacted prior to the review meeting. These community members hung fliers and informed residents of the meeting. A total of 9 residents attended the review meeting at the Seldovia Conference Center.

The Nikiski community review meeting was held in Nikiski on November 2, 2015, during a regularly scheduled meeting of the Nikiski Community Council. The meeting was led by Ream, and Jones also attended this meeting. Local research assistants and some local government employees were informed about the review meeting. These community members hung fliers and informed residents of the meeting. A total of 29 community members attended the review meeting at the Nikiski Senior Center.

Division of Subsistence staff Kukkonen and Van Lanen traveled to Port Graham on November 4, 2015, to host a community review meeting the following day. Prior to the meeting, fliers informing community members about the meeting were posted in the Port Graham Village Council office, where the meeting was also held and attended by 5 community members who provided valuable feedback on the draft data.

The Nanwalek community review meeting was held in Nanwalek on November 5, 2015, also. The meeting was led by Van Lanen with assistance from Kukkonen. All LRAs and tribal administrators were contacted prior to the review meeting. Tribal administrators posted fliers and informed residents of the meeting. A total of 17 residents attended the review meeting at the Nanwalek IRA (Indian Reorganization Act) Council building.

Final Report Organization

This report summarizes the results of systematic household surveys and mapping interviews conducted by researchers from the division, as well as staff from Stephen Braund & Associates and LRAs, and the report also summarizes resident feedback provided at the community review meetings. The findings are organized by study community. Each chapter includes tables and figures that report findings on demographic

25. U.S. Department of Agriculture, Economic Research Service. 2015."Food Security in the U.S.: Measurement," http://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/measurement.aspx (accessed May 2016).

Table 1-8.–Community review meetings, study communities, 2014.

Community	Date	Attendance: Community residents	Attendance: Staff
Port Graham	11/5/2015	5	2[a]
Nanwalek	11/5/2015	17	2[a]
Nikiski	11/2/2015	29	2[b]
Seldovia	9/22/2015	9	1[c]

a. James Van Lanen and Malla Kukkonen from ADF&G.

b. Joshua Ream and Bronwyn Jones from ADF&G.

c. Bronwyn Jones from ADF&G.

characteristics, employment characteristics, and individual participation in harvesting and processing of wild resources, and also characteristics of resource harvests and uses, the sharing of wild foods, food security, and harvest and use trends over time. For the 3 EVOS-affected communities, additional questions for evaluating the status of subsistence resources following EVOS were included, and the tables from that analysis report findings on respondent evaluations of food safety, resource status and recovery, whether youth are learning subsistence skills, the role of elders, and the recovery of the subsistence way of life. Respondents were able to provide more than one reason as part of their evaluations of these topics, and as such percentages in the tables could add to more than 100%. Table 1-9 shows selected study findings for all the study communities and will be referenced in later discussions of survey results in the community results chapters and final chapter of this report. Table 1-10 reports use of wood for home heating and will also be referenced in later discussions. Each community results chapter incorporates comparisons to previous study results to identify changes to harvest and use patterns of species that are key to the subsistence way of life for the study communities. Maps of hunting, fishing, and gathering areas used by each community in 2014 are included in individual chapters.

The final chapter of the report provides a short, general overview of the harvests and uses of wild resources in the study communities and historical harvest comparisons over time.

ADF&G provided a draft report to the SPCO and Alaska LNG for review. After the review period the report was finalized. ADF&G mailed a short (2-page) summary of the study findings (Appendix C) to the Seldovia Village Tribe's office, the Native Village of Nanwalek tribal council, the Port Graham Village Council, and the Nikiski town hall so that they could make copies available for residents to pick up at public locations.

Table 1-9.–Selected community study findings for comparison, study communities, 2014.

Category	Community			
	Nanwalek	Port Graham	Seldovia	Nikiski
Demography				
Population	231.0	148.5	278.1	4,263.7
Percentage of population that is Alaska Native	91.9%	89.5%	23.1%	12.0%
Percentage of household heads born in Alaska	83.7%	80.6%	33.1%	18.7%
Average length of residency of household heads (year)	31.1	31.5	25.5	23.9
Cash economy				
Average number of months employed	3.9	4.6	7.3	6.7
Percentage of employed adults working year-round	46.5%	53.3%	69.6%	74.7%
Percentage of income from sources other than employment	40.8%	32.3%	17.6%	28.8%
Average household income[a]	$27,078	$32,975	$55,747	$61,970
Per capita income[a]	$6,800	$12,876	$25,461	$22,790
Resource harvest and use				
Per capita harvest, pounds usable weight	253.0	218.3	138.3	68.6
Average household harvest, pounds usable weight	1,007.6	559.1	302.8	186.5
Number of resources used by 50% or more households	17.0	14.0	14.0	6.0
Average number of resources used per household	16.5	16.0	14.5	6.2
Average number of resources attempted to be harvested per household	12.4	10.7	10.7	5.5
Average number of resources harvested per household	11.5	9.5	9.6	4.5
Average number of resources received per household	9.3	9.6	6.5	1.6
Average number of resources given away per household	7.6	7.3	4.1	1.3
Percentage of total harvest taken by top 25% ranked households	69.8%	75.8%	64.9%	80.5%
Percentage of households that harvested 70% of harvest	25.0%	22.0%	28.4%	17.8%
Per capita harvest by lowest ranked 50% of households	24.0	11.8	15.8	1.7
Percentage of total harvest taken by lowest ranked 50% of harvesting households	9.5%	5.4%	11.4%	2.4%
Average number of resources used by lowest ranked 50% of households	10	14	11	3
Average number of resources used by top 25% ranked households	25.9	21.9	20.2	11.5

Source ADF&G Division of Subsistence household surveys, 2015.

a. Includes income from sources other than employment.

Table 1-10.–Use of firewood for home heating in sampled households, study communities, 2014.

Percentage of home heating from wood	Households using wood for home heating							
	Nanwalek		Port Graham		Seldovia		Nikiski	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
0%	20	36.4%	19	47.5%	44.0	49.4%	117	58.5%
1–25%	2	3.6%	5	12.5%	5.0	5.6%	19	9.5%
26–50%	6	10.9%	2	5.0%	8.0	9.0%	20	10.0%
51–75%	2	3.6%	1	2.5%	7.0	7.9%	15	7.5%
76–99%	8	14.5%	6	15.0%	10.0	11.2%	13	6.5%
100%	17	30.9%	7	17.5%	15.0	16.9%	16	8.0%

Source ADF&G Division of Subsistence household surveys, 2015.

2. NIKISKI

Joshua T. Ream

Community Background

Nikiski is a small unincorporated community located on the northwestern end of the Kenai Peninsula. It is approximately 14 road miles northwest of the city of Kenai and 171 road miles (circa 60 air miles) to the southwest of Anchorage. The community is accessed via the Kenai Spur Highway and lies within the Kenai Peninsula Borough. It is represented by the North Peninsula Community Council, which does business as the "Nikiski Community Council." The body was formed in 1999 by residents of the Salamatof and Nikiski voting districts. While there is currently a Salamatof census designated place (CDP), this study was limited to mirror the U.S. Census Bureau's Nikiski CDP.

The Nikiski area was formerly known as "North Kenai" and "The North Road" (Valencia 2014:606–607). It was not until the 1970s that a formal community began to develop, as is evidenced by the lack of census data for Nikiski prior to 1980. In 1975, the Kenai Community Council announced a plan to formally annex a large portion of this area (Pederson and Pederson 1983:81).This was met with fierce opposition by North Kenai residents and a circular was distributed asking for preferences on a new name as either the old spelling "Nikishka" or the new spelling "Nikiski" (Pederson and Pederson 1983:82). Residents chose Nikiski as the new name in 1976.

The area now known as Nikiski was the traditional homeland of the Dena'ina (Tanaina) Indians and at least 3 villages were historically present in the area (de Laguna 1934:134; Orth 1971rep.:688). These villages were thought to have been named after 3 Dena'ina brothers of the name Nikishka (*var.* Nikita or Nikiska) (Mobley 2004). Two villages were listed in Ivan Petroff's 1880 census as Titukilsk (*var.* Kultuk, Treja'lux, Treya'luqt) and Nikishka, and the combined population was reported as 57 individuals (Orth 1971rep.:688). Nikishka may correspond to de Laguna's "Nikishka III" site, which she originally mislabeled as "Nikishka I" (Mobley 2004:9). Titukilsk corresponds to de Laguna's "Nikishka II" site (Mobley 2004:9). A third village site known as Tuqyankda (*var.* Tukyenktat or Turantat) was identified by de Laguna near the outlet of Bernice Lake (Kalifornsky et al. 1991; de Laguna 1934:134; Mobley 2004:6). This site is the same as Nikishka I (originally mislabeled on de Laguna's sketch as Nikishka III) (Mobley 2004:9).

Nikiski was homesteaded by a small number of families in the early 20th century (Valencia 2014:606–607). Among the first homesteaders was John "Moosemeat" Hedberg who homesteaded near the Nikishka I (Tuqyankda) village site, and who was present during de Laguna's 1930 exploration (Mobley 2004:9). Hedberg was born in Sweden in 1865 and his cabin became a stopping place for anyone traveling through the area (Pederson and Pederson 1983:75). In 1950, Hedberg disappeared while traveling alone in a dory from Anchorage to his homestead. His property was acquired by Standard Oil and the cabin was donated to Kenai, moved to its current location, and is now used as an information center (Pederson and Pederson 1983:75). There were few other residents of the area during Hedberg's early years in Nikiski—just a few trappers, fishermen, and fur farmers. Homesteading in the area boomed following World War II (Pederson and Pederson 1983:75).

The construction of Wildwood Airforce Base (originally called Seward Station) in 1950 was a boost to the local economy of Kenai and surrounding areas (Pederson and Pederson 1983:77). The first road inched north of Kenai in 1941 and the Kenai Spur Highway that connects Kenai to Nikiski was completed in 1951. The mid-1950s exhibited an economic decline in the area; Wildwood construction was complete, other construction slow, and commercial fishing poor, all of which caused some Nikiski families to move out of the area (Pederson and Pederson 1983:79). Discovery of oil at Swanson River in 1957 drastically changed this trajectory and caused a great influx of new residents to support the industry (Pederson and Pederson 1983:79). The economic boom continued throughout the 1960s when "North Kenai" was considered the

center of Alaska's oil activity, with all of Swanson River's pipeline flow, plants, refineries, and shipping facilities located there (Pederson and Pederson 1983:80). By 1964, there were 4 oil-related companies present, including Unocal Chemical, Phillips LNG, Chevron, and Tesoro. Until 1974, this area produced nearly all of Alaska's crude oil (Lins 1979).

Currently, there are many government and public services available in the community of Nikiski and the nearby community of Kenai. Nikiski has its own post office, a school, landing strip, fire department, 2 gas stations, a grocery store, and several restaurants. A multitude of medical services are available in Kenai and the Central Peninsula Hospital is accessible in Soldotna. Nikiski is still home to several industrial facilities that support the extraction, refinery, and shipment of fossil fuels. The Kenai LNG (Liquefied Natural Gas) Plant located in Nikiski and operated by ConocoPhillips Alaska was the world's largest plant when built and the first to serve the Asia-Pacific market.[1] An oil refinery was operated by Chevron/Texaco between 1963 and 1991, and produced petroleum products from the Swanson River oil and gas fields (Mobley 2004:i).

The Port of Nikiski includes several privately owned docks used primarily for commercial purposes.[2] Kenai LNG Corporation owns the Kenai LNG Dock for handling liquefied natural gas, distillates, fuel oils, and lube and grease. The Port Nikiski Terminal Wharf is owned by the Kenai Pipe Line Company and the Tesoro Alaska Company. The latter owns a pipeline that connects the terminal to tanks that can hold 2 million barrels of oil. Agrium U.S. Inc. (formerly Unocal Corp.) owns and operates Port Nikiski Wharf, which is used to ship dry bulk urea and anhydrous ammonia. In addition, Pacific Star Seafoods owns and operates the Kenai Wharf at the Port of Nikiski and this is where they receive and process seafood. Finally, APC Natchiq owns and operates the Nikiski Rig Tenders Dock for handling equipment and supplies for offshore oil wells. This dock also supports the adjacent Nikiski Fabrication Facility owned by Arctic Slope Regional Corporation Energy Services; it has the capacity to produce 250 tons of structural steel fabrication and 125 tons of pipe fabrication per month.[3]

Nikiski's location places it in proximity to many marine and terrestrial resources. The Nikiski landscape is dominated by mixed forest land interspersed with numerous tracts of non-forested wetland and dozens of small lakes (Lins 1979). To the west is Cook Inlet, to the south is the mouth of the Kenai River, to the east are the forests and wetlands of the northern Kenai Peninsula, and to the north is the Captain Cook State Recreation Area (SRA). The SRA was established in 1969 and covers 3,620 acres (DNR 1994). The region is part of the Kenai Lowland, a portion of the larger Cook Inlet Lowland that exhibits elevations that are usually less than 300 meters (Lins 1979). There are 4 primary vegetation types in the area, including bottomland spruce-poplar forest, upland spruce-hardwood forest, lowland spruce-hardwood forest, and low brush bogs/muskegs (Lins 1979).

Population Estimates and Demographic Information

This study estimated the population for Nikiski in 2014 as 4,264 individuals representing 1,568 households (Table 2-1). This is similar, though slightly lower, than the estimates provided by the 2010 federal census and the 2010–2014 American Community Survey (ACS) (Figure 2-1). This study estimated that approximately 12% of the population of Nikiski identifies as Alaska Native, the same percentage that was estimated by the 2010 census but a slightly higher percentage than estimated for the 5-year ACS survey (11%). Approximately 12% of the households in Nikiski had at least 1 household head that identified as Alaska Native (Table 2-2).

The first year that the U.S. Census Bureau recorded Nikiski as a CDP was 1980. Prior to this, Nikiski was included in the remainder of the Kenai Peninsula Borough. The study year for this project (2014) was the first population estimate made for Nikiski by the Division of Subsistence at the Alaska Department of

1. ConocoPhillips Alaska. n.d. "Kenai LNG Exports," http://alaska.conocophillips.com/what-we-do/natural-gas/lng/Pages/kenai-lng-exports.aspx (accessed Nov. 20, 2015).
2. World Port Source. n.d. "Port of Nikiski, Port Commerce," http://www.worldportsource.com/ports/commerce/USA_AK_Port_of_Nikiski_4141.php (accessed Nov. 20, 2015).
3. Arctic Slope Regional Corporation Energy Services. n.d. "Nikiski Fabrication Facility and Rig Tenders Marine Terminal," http://www.asrcenergy.com/wp-content/uploads/2013/01/NIKISKI-SOQ-Spreads10-23a-12.pdf (accessed Nov. 20, 2015).

Table 2-1.–Population estimates, Nikiski, 2010 and 2014.

	U.S. Census (2010)	5-year American Community Survey (2010–2014)		This study (2014)	
		Estimate	Range[a]	Estimate	Range[b]
Total population					
Households	1,689	1,705	1,589 – 1,821	1,568.0	
Population	4,493	4,536	4,057 – 5,015	4,263.7	3,909 – 4,619
Alaska Native					
Population	522	481	277 – 685	511.6	230 – 793
Percentage	11.6%	10.6%		12.0%	

Sources U.S. Census Bureau (2011) for 2010 estimate; U.S. Census Bureau for American Community Survey (ACS) 2014 estimate (5-year average); and ADF&G Division of Subsistence household surveys, 2015, for 2014 estimate.

Note Division of Subsistence household survey elegiblity requirements differ from those used by (ACS).

a. ACS data range is the reported margin of error.

b. No range of households is estimated for division surveys.

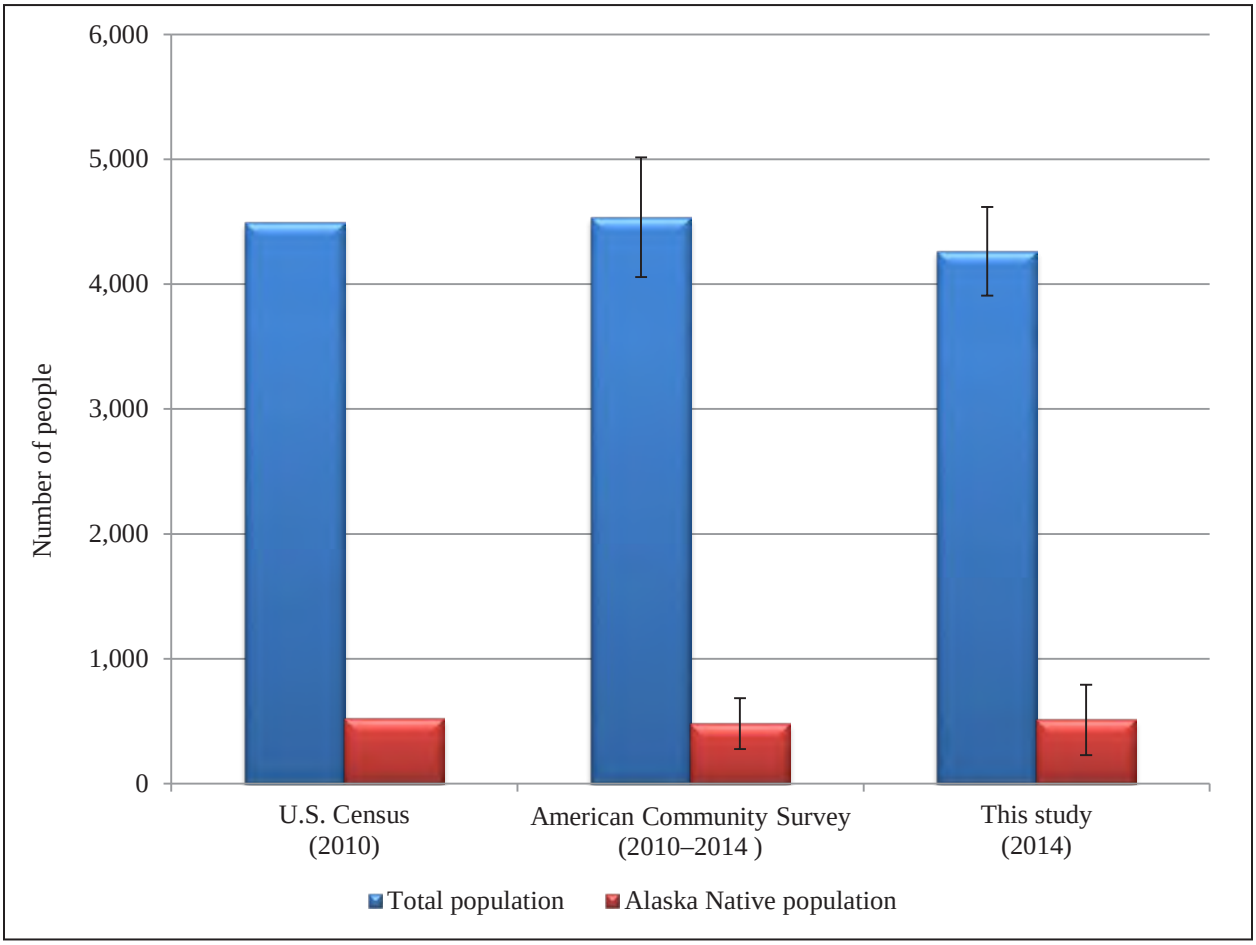


Figure 2-1.–Alaska Native and overall population estimates, Nikiski, 2010 and 2014.

Table 2-2.–Sample and demographic characteristics, Nikiski, 2014.

Characteristics	Community Nikiski
Sampled households	203
Eligible households	1,568
Percentage sampled	12.9%
Sampled population	552
Estimated community population	4,263.7
Household size	
Mean	2.7
Minimum	1
Maximum	11
Age	
Mean	39.7
Minimum[a]	0
Maximum	95
Median	44
Length of residency	
Total population	
Mean	18.4
Minimum[a]	0
Maximum	72
Heads of household	
Mean	23.9
Minimum[a]	0
Maximum	72
Alaska Native	
Estimated households[b]	
Number	194.1
Percentage	12.4%
Estimated population	
Number	511.6
Percentage	12.0%

Source ADF&G Division of Subsistence household surveys, 2015.

a. A minimum age of 0 (zero) is used for infants who are less than 1 year of age.

b. The estimated number of households in which at least 1 head of household is Alaska Native.

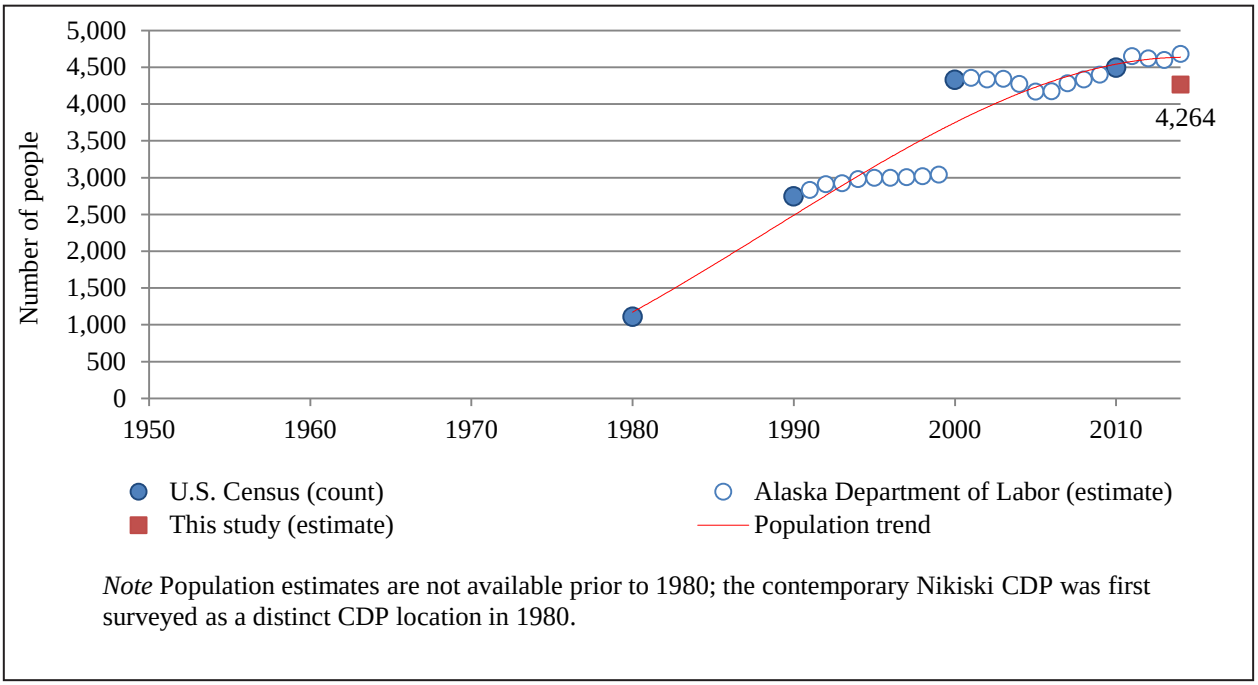


Figure 2-2.–Historical population estimates, Nikiski, 1950–2014.

Fish and Game (ADF&G). Since 1980, the population of Nikiski has been gradually increasing and has approximately quadrupled in this 34-year period (Figure 2-2).

The population profile of Nikiski is relatively evenly distributed between genders (Table 2-3; Figure 2-3). There are 2 distinct age classes with a large number of individuals, including those within the 5–19-year-old groups and the 55–64-year-old age groups. There is a much smaller group of residents in their 20s and 30s; the smaller proportion of residents representing those ages may be due to a lack of entry-level job opportunities near the community.

This study also examined the birthplaces of household heads and of the general population in Nikiski. Approximately 78% of household heads reported that their parents were living in a U.S. state outside of Alaska when they were born (Table 2-4). Another 2% of household heads had parents living outside of the United States when they were born. Only 5% of household heads had parents living in Nikiski at the time they were born, followed by 3% in both Anchorage and Kenai, 2% in Soldotna, 1% in Fairbanks, and a smaller percentage in a variety of other Alaska communities. The estimates were proportionally similar to those for the general population (Table 2-5).

Of the final estimated 1,568 households in Nikiski, this study surveyed 203 households, representing 13% of eligible households (Table 2-2). The mean household size was 2.7 individuals with a minimum of 1 individual and a maximum of 11 individuals. The mean age was 40 years with the youngest resident being under a year old and the oldest being 95 years old. The mean length of residency was 18 years for the general population and 24 years for household heads. The longest duration of residency was 72 years.

Table 2-3.–Population profile, Nikiski, 2014.

	Male			Female			Total		
Age	Number	Percentage	Cumulative percentage	Number	Percentage	Cumulative percentage	Number	Percentage	Cumulative percentage
0–4	77.2	3.5%	3.5%	162.2	7.9%	7.9%	239.4	5.6%	5.6%
5–9	231.7	10.5%	14.0%	131.3	6.4%	14.3%	363.0	8.5%	14.2%
10–14	200.8	9.1%	23.1%	139.0	6.8%	21.1%	339.9	8.0%	22.1%
15–19	185.4	8.4%	31.5%	139.0	6.8%	27.9%	324.4	7.6%	29.8%
20–24	69.5	3.1%	34.6%	69.5	3.4%	31.3%	139.0	3.3%	33.0%
25–29	61.8	2.8%	37.4%	115.9	5.7%	37.0%	177.7	4.2%	37.2%
30–34	115.9	5.2%	42.7%	69.5	3.4%	40.4%	185.4	4.4%	41.6%
35–39	61.8	2.8%	45.5%	123.6	6.0%	46.4%	185.4	4.4%	45.9%
40–44	100.4	4.5%	50.0%	61.8	3.0%	49.4%	162.2	3.8%	49.7%
45–49	108.1	4.9%	54.9%	108.1	5.3%	54.7%	216.3	5.1%	54.8%
50–54	154.5	7.0%	61.9%	139.0	6.8%	61.5%	293.5	6.9%	61.7%
55–59	254.9	11.5%	73.4%	216.3	10.6%	72.1%	471.2	11.1%	72.8%
60–64	216.3	9.8%	83.2%	154.5	7.5%	79.6%	370.8	8.7%	81.5%
65–69	123.6	5.6%	88.8%	162.2	7.9%	87.5%	285.8	6.7%	88.2%
70–74	108.1	4.9%	93.7%	115.9	5.7%	93.2%	224.0	5.3%	93.5%
75–79	54.1	2.4%	96.2%	38.6	1.9%	95.1%	92.7	2.2%	95.6%
80–84	23.2	1.0%	97.2%	15.4	0.8%	95.8%	38.6	0.9%	96.6%
85–89	15.4	0.7%	97.9%	30.9	1.5%	97.4%	46.3	1.1%	97.6%
90–94	23.2	1.0%	99.0%	15.4	0.8%	98.1%	38.6	0.9%	98.5%
95–99	0.0	0.0%	99.0%	7.7	0.4%	98.5%	7.7	0.2%	98.7%
100–104	0.0	0.0%	99.0%	0.0	0.0%	98.5%	0.0	0.0%	98.7%
Missing	23.2	1.0%	100.0%	30.9	1.5%	100.0%	54.1	1.3%	100.0%
Total	**2,209.1**	**100.0%**	**100.0%**	**2,046.9**	**100.0%**	**100.0%**	**4,256.0**	**100.0%**	**100.0%**

Source ADF&G Division of Subsistence household surveys, 2015.

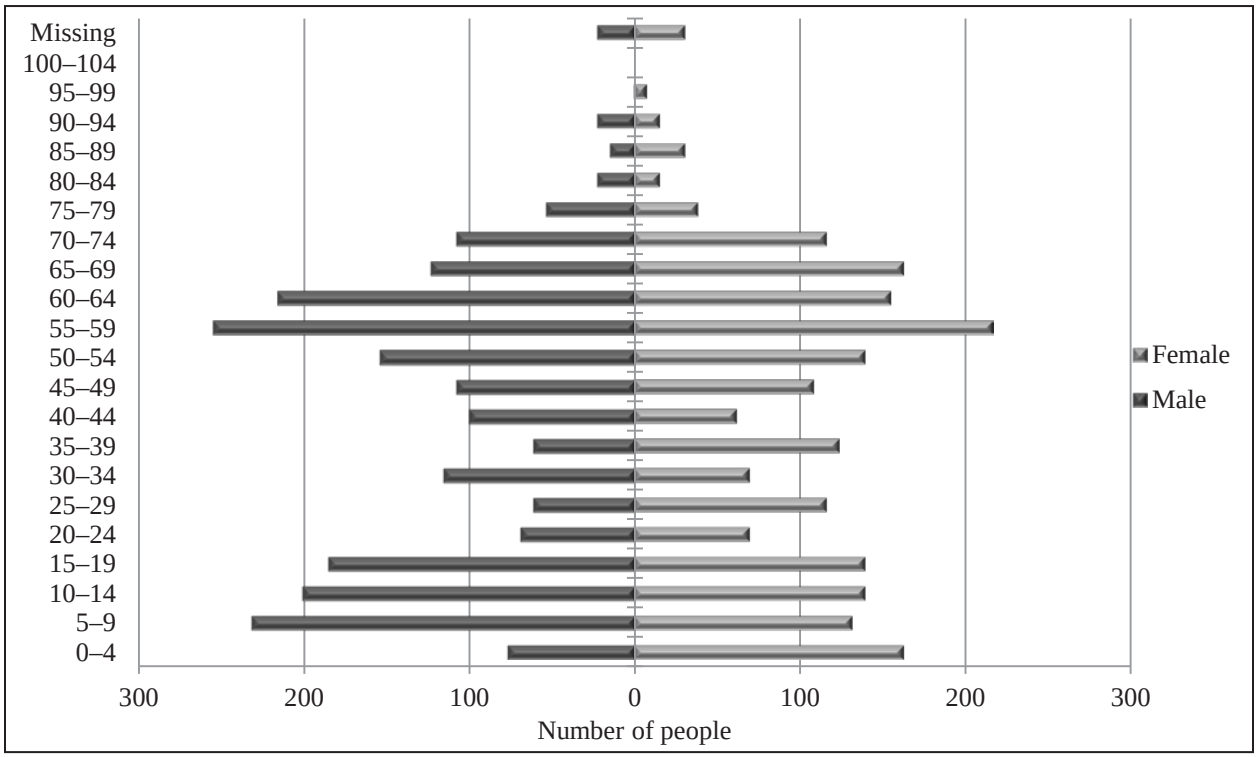


Figure 2-3.–Population profile, Nikiski, 2014.

Table 2-4.–Birthplaces of household heads, Nikiski, 2014.

Birthplace	Percentage
Anchorage	3.4%
Bethel	0.3%
Chignik	0.3%
Copper Center	0.3%
Cordova	0.3%
Egegik	0.3%
Fairbanks	1.1%
Fort Yukon	0.3%
Homer	0.3%
Iliamna	0.3%
Kenai	3.1%
Knik	0.3%
Kotzebue	0.3%
Nikiski	4.6%
Palmer	0.3%
Seward	0.6%
Sitka	0.3%
Soldotna	1.7%
Unalakleet	0.3%
Southeastern Alaska	0.3%
Other Alaska	0.3%
Other U.S.	78.3%
Foreign	2.3%
Missing	0.6%

Source ADF&G Division of Subsistence household surveys, 2015.
Note "Birthplace" means the place of residence of the parents of the individual when the individual was born.

Table 2-5.–Birthplaces of population, Nikiski, 2014.

Birthplace	Percentage
Anchorage	4.3%
Bethel	0.2%
Chignik	0.4%
Copper Center	1.1%
Cordova	0.2%
Egegik	0.2%
Fairbanks	1.1%
Fort Yukon	0.2%
Homer	0.2%
Iliamna	0.2%
Kenai	4.0%
Ketchikan	0.2%
Knik	0.2%
Kotzebue	0.5%
Nikiski	17.4%
Nikolaevsk	0.2%
Palmer	0.4%
Port Alsworth	0.2%
Seldovia	0.4%
Seward	0.4%
Sitka	0.2%
Soldotna	4.0%
Sterling	0.4%
Unalakleet	0.2%
Southeastern Alaska	0.2%
Other Alaska	0.2%
Other U.S.	60.9%
Foreign	1.4%
Missing	0.9%

Source ADF&G Division of Subsistence household surveys, 2015.
Note "Birthplace" means the place of residence of the parents of the individual when the individual was born.

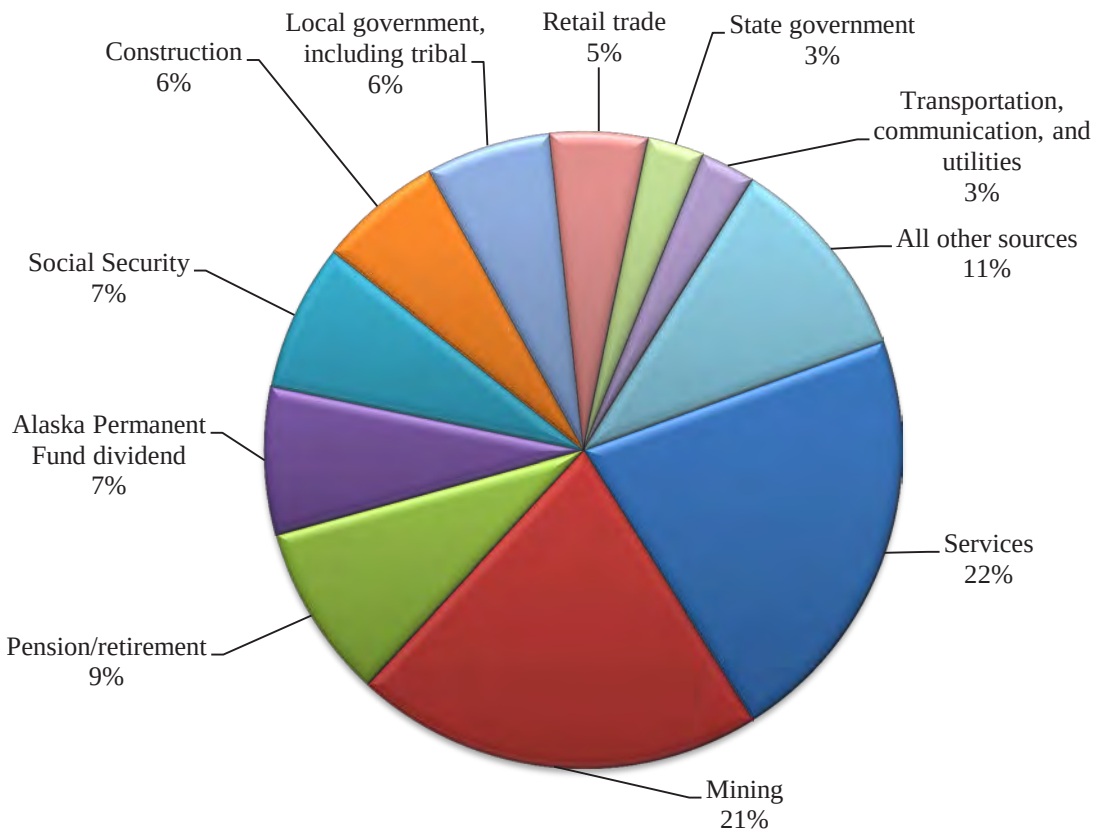
Cash Employment and Monetary Income

The mean household earned income for the 2014 study year for Nikiski was approximately $44,139 (Table 2-6). Earned income represented about 71% of the overall community income, with other income sources representing the remaining 29%. Other income includes sources such as retirement, pensions, child support, disability, and Alaska Permanent Fund dividends, among others. The top 3 other income sources (pension/retirement, Alaska Permanent Fund dividends, and Social Security payments) combined contributed approximately 24% to the total community income, which is about the same amount that the top income source (services industry income) contributed (Table 2-6; Figure 2-4).

Table 2-6.–Estimated earned and other income, Nikiski, 2014.

Income source	Number of employed adults	Number of households	Total for community	-/+ 95% CI	Mean per household	Percentage of total community income
Earned income						
Services	695.1	560.9	$21,011,008	$10,484,409 – $28,172,648	$13,400	21.6%
Mining	305.2	292.7	$20,189,202	$11,537,761 – $29,981,494	$12,876	20.8%
Construction	178.0	162.6	$6,139,658	$1,334,475 – $10,245,390	$3,916	6.3%
Local government, including tribal	262.8	227.6	$6,124,968	$2,246,850 – $10,472,354	$3,906	6.3%
Retail trade	271.3	211.4	$4,820,780	$1,572,711 – $9,409,418	$3,074	5.0%
State government	84.8	65.0	$2,780,118	$670,864 – $5,568,944	$1,773	2.9%
Transportation, communication, and utilities	161.1	121.9	$2,697,541	$382,549 – $7,806,553	$1,720	2.8%
Agriculture, forestry, and fishing	296.7	243.9	$2,127,506	$793,590 – $4,125,073	$1,357	2.2%
Finance, insurance, and real estate	50.9	48.8	$1,070,758	$144,019 – $2,727,104	$683	1.1%
Wholesale trade	25.4	16.3	$1,045,985	$246,710 – $3,366,742	$667	1.1%
Other employment	25.4	24.4	$853,304	$165,851 – $2,288,789	$544	0.9%
Federal government	33.9	32.5	$264,249	$62,637 – $598,288	$169	0.3%
Manufacturing	50.9	48.8	$84,945	$3,139 – $557,095	$54	0.1%
Earned income subtotal	**2,085.3**	**1,284.5**	**$69,210,022**	**$42,159,787 – $90,523,776**	**$44,139**	**71.2%**
Other income						
Pension/retirement		324.4	$8,609,256	$4,922,579 – $13,870,622	$5,491	8.9%
Alaska Permanent Fund dividend		1513.9	$7,290,806	$6,723,460 – $7,945,852	$4,650	7.5%
Social Security		556.1	$7,249,307	$5,508,794 – $9,451,323	$4,623	7.5%
Rental income		54.1	$1,835,847	$450,218 – $4,391,172	$1,171	1.9%
Veterans assistance		38.6	$482,759	$88,828 – $1,293,793	$308	0.5%
Disability		77.2	$476,043	$76,410 – $1,157,410	$304	0.5%
Investments/stocks/bonds		15.4	$448,000	$0 – $1,544,828	$286	0.5%
Child support		30.9	$336,772	$46,345 – $767,779	$215	0.3%
Sales (property/garage sales, etc.)		15.4	$301,241	$0 – $903,724	$192	0.3%
Native corp. dividend		139.0	$263,153	$98,643 – $533,249	$168	0.3%
Unemployment		46.3	$197,169	$46,345 – $410,924	$126	0.2%
Other		38.6	$101,069	$14,904 – $250,104	$64	0.1%
Foster care		7.7	$74,152	$0 – $148,303	$47	0.1%
Longevity bonus		30.9	$62,566	$11,586 – $136,717	$40	0.1%
Food stamps		30.9	$58,996	$989 – $183,834	$38	0.1%
TANF (Temporary cash assistance for needy families)		7.7	$50,052	$0 – $100,105	$32	0.1%
Supplemental Security income		15.4	$41,142	$0 – $204,690	$26	0.0%
Heating assistance		54.1	$39,007	$14,676 – $72,607	$25	0.0%
Adult public assistance (OAA, APD)		15.4	$33,721	$0 – $169,438	$22	0.0%
CITGO fuel voucher		7.7	$6,566	$0 – $13,131	$4	0.0%
Dividend/interest		7.7	$1,665	$0 – $7,578	$1	0.0%
Workers' compensation/insurance		0.0	$0	$0 – $0	$0	0.0%
Meeting honoraria		0.0	$0	$0 – $0	$0	0.0%
Other income subtotal		**1,529.4**	**$27,959,288**	**$22,743,236 – $33,999,695**	**$17,831**	**28.8%**
Community income total			**$97,169,310**	**$0 – $0**	**$61,970**	**100.0%**

Source ADF&G Division of Subsistence household surveys, 2015.

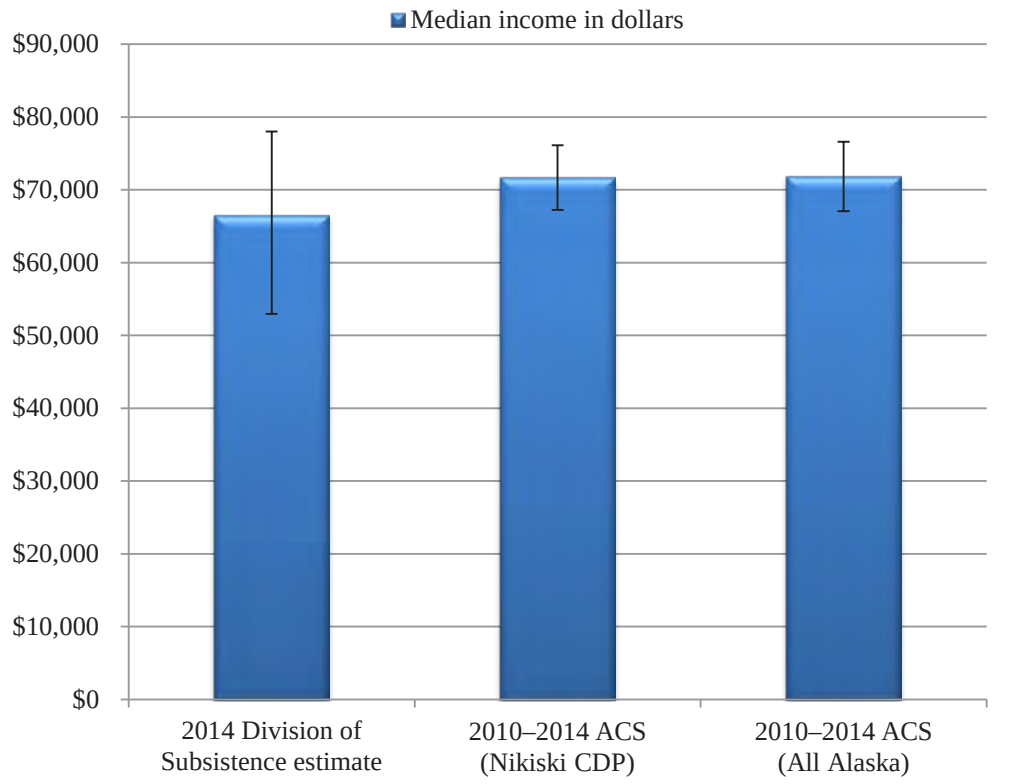


Note The "all other sources" category includes sources providing less than 2.5% each to the overall income.

Figure 2-4.–Top income sources, Nikiski, 2014.

Approximately 1,529 households received other income, with the mean household other income being $17,831. The estimated total mean household income, combining both earned and other income, was $61,970. This is higher than the average household income in any of the other communities in this study, which are Seldovia, Port Graham, and Nanwalek (Table 1-9). In contrast, the per capita income for Nikiski ($22,790) was the second highest compared to the other 3 study communities; per capita income for Seldovia was slightly more at approximately $25,000. The median income for Nikiski households was $66,536 (Figure 2-5). This is slightly less than the 2010–2014 ACS median income estimate for Nikiski ($71,683) and the estimate for the state of Alaska as a whole ($71,829).

Within the earned income category, services made up the greatest percentage of the total community income (22%), followed by mining (21%), construction (6%), local government (including tribal) (6%), retail trade (5%), and smaller percentages for other categories (Table 2-6). Services represented 30% of overall wage earnings and employed 44% of households in 2014 (Table 2-7). Executive, administrative, and managerial service jobs composed the greatest percentage of wage earnings within the services sector (16% of overall earned income), followed by general service occupations (6%), and registered nurses, pharmacists, dietitians, therapists, and physician assistants (3%). Executive, administrative, and managerial jobs also made up both the highest percentage of wage earnings (8% of overall earned income) and percentage of jobs (2%) within the mining category, which represented 29% of overall wage earnings.



Note For 2014, Division of Subsistence estimate does not include categories of income excluded by the 2010–2014 ACS median estimate, including food stamps, housing assistance, and one-time payments.

Figure 2-5.–Comparison of median income estimates, Nikiski, 2014.

An estimated 58% of jobs in Nikiski were reported as full time (Table 2-8). A majority of employed persons (66%) and of households (77%) held at least 1 full-time job. Approximately 25% of the estimated jobs were part time and smaller percentages of jobs were for shift, on-call, and part-time shift employment. Approximately 26% of employed persons and 37% of households held at least 1 part-time job.

Within the other income category, pension/retirement made up the greatest percentage of the total community income (9%), followed by Alaska Permanent Fund dividends (8%), Social Security (8%), rental income (2%), and smaller percentages for other sources of this type of income (Table 2-6).

In 2014, there were approximately 2,085 employed adults (working-age 16 or older) in Nikiski, representing 64% of all adults and approximately 1,285 households (Table 2-9). There were also approximately 2,569 jobs. Employed adults in Nikiski worked an average of 11 months and 75% were employed year-round. The mean number of jobs held by employed adults was 1.2 and the maximum number of jobs held by an individual was 6. Considering households with employed adults, the mean number of jobs was 2.

Table 2-7.–Employment by industry, Nikiski, 2014.

Industry	Jobs	Households	Individuals	Percentage of wage earnings
Estimated total number	**2,568.5**	**1,284.5**	**2,085.3**	
Federal government	**1.3%**	**2.5%**	**1.6%**	**0.4%**
Administrative support occupations, including clerical	0.7%	1.3%	0.8%	0.2%
Service occupations	0.7%	1.3%	0.8%	0.2%
State government	**3.3%**	**5.1%**	**4.1%**	**4.0%**
Executive, administrative, and managerial	0.7%	1.3%	0.8%	0.8%
Teachers, librarians, and counselors	0.3%	0.6%	0.4%	0.5%
Technologists and technicians, except health	0.3%	0.6%	0.4%	0.5%
Administrative support occupations, including clerical	0.3%	0.6%	0.4%	0.4%
Service occupations	1.0%	1.9%	1.2%	1.6%
Mechanics and repairers	0.7%	0.6%	0.8%	0.4%
Local government, including tribal	**10.9%**	**17.7%**	**12.6%**	**8.8%**
Executive, administrative, and managerial	0.7%	1.3%	0.8%	0.7%
Social scientists, social workers, religious workers, and lawyers	0.7%	1.3%	0.8%	0.7%
Teachers, librarians, and counselors	3.6%	5.7%	4.5%	3.2%
Writers, artists, entertainers, and athletes	0.3%	0.6%	0.4%	0.0%
Health technologists and technicians	0.3%	0.6%	0.4%	0.0%
Technologists and technicians, except health	0.3%	0.6%	0.4%	0.0%
Administrative support occupations, including clerical	2.0%	3.8%	2.4%	1.6%
Service occupations	2.0%	3.8%	2.4%	1.9%
Mechanics and repairers	0.3%	0.6%	0.4%	0.5%
Handlers, equipment cleaners, helpers, and laborers	0.7%	1.3%	0.8%	0.1%
Agriculture, forestry, and fishing	**11.9%**	**19.0%**	**14.2%**	**3.1%**
Administrative support occupations, including clerical	0.3%	0.6%	0.4%	0.4%
Agricultural, forestry, and fishing occupations	11.2%	17.7%	13.4%	2.7%
Handlers, equipment cleaners, helpers, and laborers	0.3%	0.6%	0.4%	0.0%
Mining	**12.2%**	**22.8%**	**14.6%**	**29.2%**
Executive, administrative, and managerial	2.3%	4.4%	2.8%	8.3%
Engineers, surveyors, and architects	0.7%	1.3%	0.8%	1.5%
Natural scientists and mathematicians	0.3%	0.6%	0.4%	1.2%
Teachers, librarians, and counselors	0.3%	0.6%	0.4%	1.0%
Technologists and technicians, except health	1.3%	1.9%	1.2%	3.0%
Administrative support occupations, including clerical	1.0%	1.9%	1.2%	0.9%
Service occupations	0.7%	1.3%	0.8%	1.5%
Mechanics and repairers	1.3%	2.5%	1.6%	2.8%
Construction and extractive occupations	1.3%	2.5%	1.6%	1.3%
Precision production occupations	0.3%	0.6%	0.4%	1.3%
Transportation and material moving occupations	0.7%	1.3%	0.8%	1.8%
Handlers, equipment cleaners, helpers, and laborers	1.0%	1.9%	1.2%	1.1%
Occupation not indicated	1.0%	1.9%	1.2%	3.5%
Construction	**6.9%**	**12.7%**	**8.5%**	**8.9%**
Administrative support occupations, including clerical	0.3%	0.6%	0.4%	0.3%
Construction and extractive occupations	4.0%	7.6%	4.9%	5.5%
Precision production occupations	1.0%	1.9%	1.2%	1.0%
Transportation and material moving occupations	1.3%	2.5%	1.6%	2.1%
Handlers, equipment cleaners, helpers, and laborers	0.3%	0.6%	0.4%	0.1%

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Table 2-7.–Page 2 of 3.

Industry	Jobs	Households	Individuals	Percentage of wage earnings
Manufacturing	**2.0%**	**3.8%**	**2.4%**	**0.1%**
Writers, artists, entertainers, and athletes	1.7%	3.2%	2.0%	0.1%
Production working occupations	0.3%	0.6%	0.4%	0.0%
Transportation, communication, and utilities	**6.6%**	**9.5%**	**7.7%**	**3.9%**
Executive, administrative, and managerial	1.3%	1.9%	1.2%	0.8%
Writers, artists, entertainers, and athletes	1.0%	1.3%	1.2%	0.1%
Technologists and technicians, except health	0.3%	0.6%	0.4%	0.2%
Administrative support occupations, including clerical	0.3%	0.6%	0.4%	0.6%
Service occupations	0.3%	0.6%	0.4%	0.1%
Mechanics and repairers	0.3%	0.6%	0.4%	0.2%
Construction and extractive occupations	0.3%	0.6%	0.4%	0.2%
Precision production occupations	0.7%	1.3%	0.8%	0.3%
Transportation and material moving occupations	2.0%	3.2%	2.4%	1.5%
Wholesale trade	**1.0%**	**1.3%**	**1.2%**	**1.5%**
Executive, administrative, and managerial	0.7%	0.6%	0.8%	1.1%
Transportation and material moving occupations	0.3%	0.6%	0.4%	0.4%
Retail trade	**11.2%**	**16.5%**	**13.0%**	**7.0%**
Executive, administrative, and managerial	3.6%	4.4%	4.5%	1.8%
Marketing and sales occupations	3.3%	5.1%	3.7%	1.8%
Administrative support occupations, including clerical	0.7%	1.3%	0.8%	0.4%
Service occupations	1.3%	2.5%	1.6%	0.4%
Transportation and material moving occupations	1.0%	1.9%	1.2%	1.5%
Handlers, equipment cleaners, helpers, and laborers	1.3%	2.5%	1.6%	1.1%
Finance, insurance and real estate	**2.0%**	**3.8%**	**2.4%**	**1.5%**
Executive, administrative, and managerial	0.3%	0.6%	0.4%	0.5%
Marketing and sales occupations	0.3%	0.6%	0.4%	0.7%
Administrative support occupations, including clerical	1.3%	2.5%	1.6%	0.4%
Services	**29.7%**	**43.7%**	**33.3%**	**30.4%**
Executive, administrative, and managerial	7.3%	12.7%	8.1%	15.8%
Social scientists, social workers, religious workers, and lawyers	0.3%	0.6%	0.4%	0.4%
Teachers, librarians, and counselors	0.7%	1.3%	0.8%	0.2%
Health diagnosing and treating practitioners	0.3%	0.6%	0.4%	0.2%
Registered nurses, pharmacists, dietitians, therapists, and physician assistants	1.3%	2.5%	1.6%	2.6%
Writers, artists, entertainers, and athletes	0.7%	1.3%	0.8%	0.6%
Health technologists and technicians	1.0%	1.9%	1.2%	1.8%
Technologists and technicians, except health	0.3%	0.6%	0.4%	0.0%
Marketing and sales occupations	0.7%	1.3%	0.8%	0.2%
Administrative support occupations, including clerical	1.7%	3.2%	2.0%	0.8%
Service occupations	10.2%	15.2%	12.2%	5.7%
Mechanics and repairers	1.3%	1.9%	1.2%	0.1%
Construction and extractive occupations	0.3%	0.6%	0.4%	0.5%
Precision production occupations	0.7%	1.3%	0.8%	0.7%
Transportation and material moving occupations	1.0%	1.9%	1.2%	0.2%
Handlers, equipment cleaners, helpers, and laborers	1.7%	3.2%	2.0%	0.2%
Occupation not indicated	0.3%	0.6%	0.4%	0.3%

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Table 2-7.–Page 3 of 3.

Industry	Jobs	Households	Individuals	Percentage of wage earnings
Industry not indicated	**1.0%**	**1.9%**	**1.2%**	**1.2%**
Executive, administrative, and managerial	0.3%	0.6%	0.4%	0.4%
Administrative support occupations, including clerical	0.3%	0.6%	0.4%	0.6%
Mechanics and repairers	0.3%	0.6%	0.4%	0.2%

Source ADF&G Division of Subsistence household surveys, 2015.

Table 2-8.–Reported job schedules, Nikiski, 2014.

	Jobs		Employed persons		Employed households	
Schedule	Number	Percentage	Number	Percentage	Number	Percentage
Full time	1,483.5	57.8%	1,381.8	66.3%	991.8	77.2%
Part time	652.7	25.4%	542.5	26.0%	471.5	36.7%
Shift	93.2	3.6%	84.8	4.1%	81.3	6.3%
On-call (occasional)	220.4	8.6%	211.9	10.2%	195.1	15.2%
Part-time shift	25.4	1.0%	25.4	1.2%	24.4	1.9%
Schedule not reported	93.2	3.6%	93.2	4.5%	65.0	5.1%

Source ADF&G Division of Subsistence household surveys, 2015.

Note Respondents who had more than 1 job in the study year could provide multiple responses, so the percentages may sum to more than 100%.

Table 2-9.–Employment characteristics, Nikiski, 2014.

Characteristic	Community Nikiski
All adults	
Number	3,262.3
Mean weeks employed	29.2
Employed adults	
Number	2,085.3
Percentage	63.9%
Jobs	
Number	2,568.5
Mean	1.2
Minimum	1
Maximum	6
Months employed	
Mean	10.5
Minimum	1
Maximum	12
Percentage employed year-round	74.7%
Mean weeks employed	45.7
Households	
Number	1,568.0
Employed	
Number	1,284.5
Percentage	81.9%
Jobs per employed household	
Mean	2.0
Minimum	1
Maximum	7
Employed adults	
Mean	
Employed households	1.6
Total households	1.3
Minimum	1
Maximum	3
Mean person-weeks of employment	60.7

Source ADF&G Division of Subsistence household surveys, 2015.

Food Security

Survey respondents were asked a set of questions intended to assess their household's food security, defined as, "access by all people at all times to enough food for an active, healthy life" (Coleman-Jensen et al. 2012). The food security questions were modeled after those developed by the U.S. Department of Agriculture (USDA) but modified by ADF&G to account for differences in access to subsistence and store-bought foods. The food security status of households is based on the aggregated number of affirmative responses to questions about experiencing food insecure conditions. Food security status is characterized by 4 ranges:

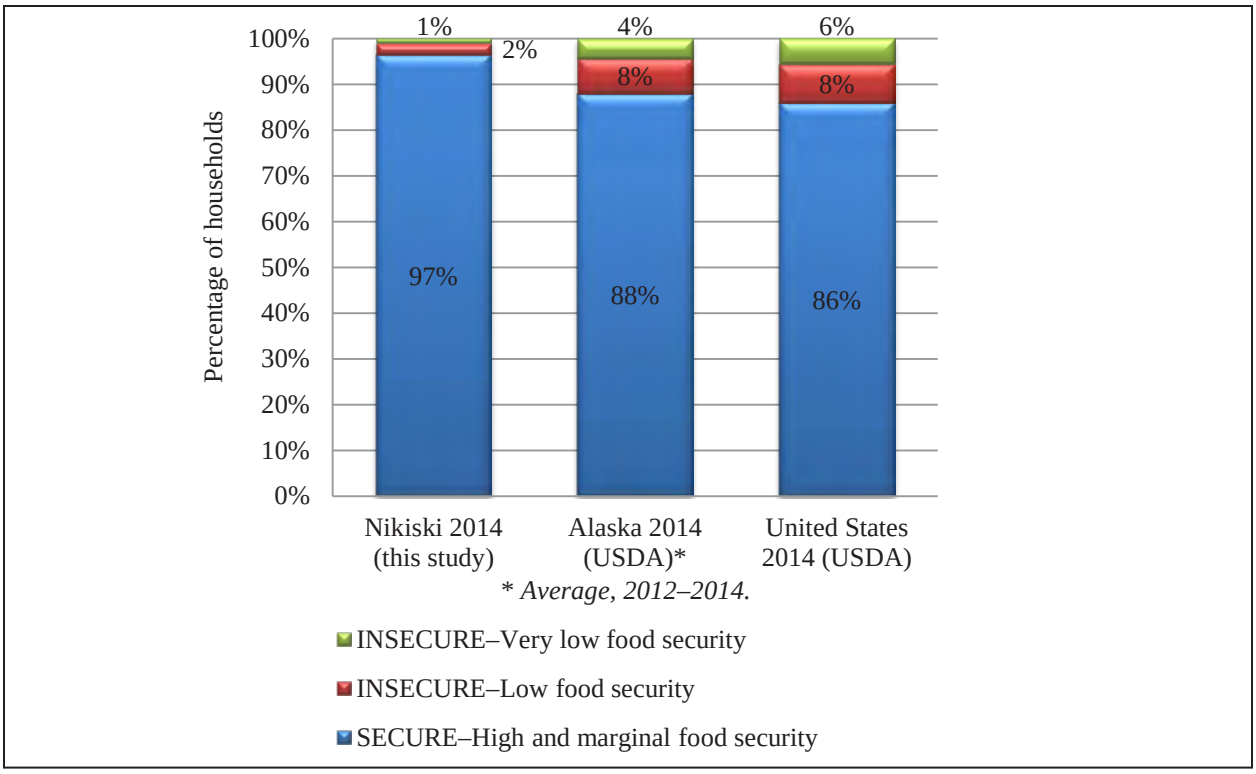


Figure 2-6.–Comparison of food security categories, Nikiski, Alaska, and United States, 2014.

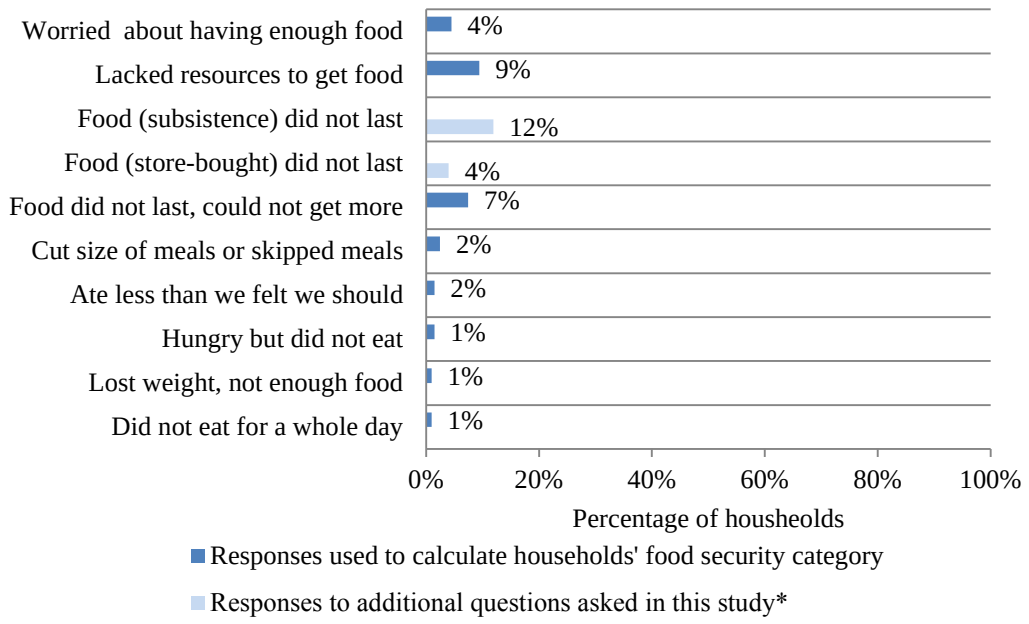
1. High food security;
2. Marginal food security;
3. Low food security; and
4. Very low food security.

For reporting purposes, households with high or marginal food security were broadly categorized as being food secure, and households with low or very low food security were broadly categorized as being food insecure following a USDA protocol (Bickel et al. 2000).[4]

Households with a high or marginal level of food security reported 1 or 2 instances of food access problems or limitations—typically anxiety over food sufficiency or a shortage of particular foods in the house—but gave little or no indication of changes in diets or food intake. Households with low food security reported reduced quality, variety, or desirability of their diet, but they, too, gave little indication of reduced food intake. Households classified as having very low food security were those that reported multiple instances of disrupted eating patterns and reduced food intake (Coleman-Jensen et al. 2012).

Food security results for surveys for Nikiski, the state of Alaska, and the United States are summarized in Figure 2-6. In 2014, Nikiski residents were classified as having high food security, with 97% of households falling within the high or marginal food security category. Only 2% of households experienced low food security and only 1% experienced very low food security. The percentage of households classified as having high or marginal food security was higher than the 2014 Alaska average (88%) and the 2014 national average (86%).

4. U.S. Department of Agriculture, Economic Research Service. 2015."Food Security in the U.S.: Measurement," http://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/measurement.aspx (accessed May 2016).



* Due to interview procedure error, not all respondents were asked the additional questions. Regarding respondents who did not experience the food insecure condition "food did not last, could not get more," some were asked the additional questions about whether subsistence and store-bought foods did not last, but some were not asked the additional questions.

Figure 2-7.–Responses to questions about food insecure conditions, Nikiski, 2014.

The high and marginal food security designations do not mean that the household had no food insecure conditions, only that these conditions did not result in low or very low food security when considered alongside all conditions. Core questions and responses from Nikiski residents are summarized in Figure 2-7. Approximately 9% of households lacked resources to get food and 7% indicated that their food did not last and that they could not get more. Smaller percentages of households had members who worried about having enough food (4%), cut the size of meals or skipped meals (2%), ate less than they felt they should (2%), were hungry but did not eat (1%), lost weight due to not having enough food (1%), and did not eat for a whole day (1%).

For this study, additional questions asked were designed to determine whether food insecurities, if any, were related to subsistence foods or store-bought foods. In Nikiski, 12% of households indicated that subsistence food did not last and 4% indicated that store-bought food did not last (Figure 2-7). Note that during survey administration, due to interviewer error, not all respondents were asked these additional questions and the responses in Figure 2-7 are not a full representation of these conditions experienced by surveyed Nikiski households.

Figure 2-8 portrays the mean number of food insecure conditions per household by food security category by month. The number of food insecure conditions representing households categorized as having low and very low food security was high in the winter, especially between January and March. These conditions improved in the spring, and reached their lowest point in June. Figure 2-9 shows which months households reported foods not lasting. A greater percentage of households reported food not lasting in the fall and winter than in the spring and summer. More households reported subsistence foods not lasting than store-bought foods not lasting, year-round.

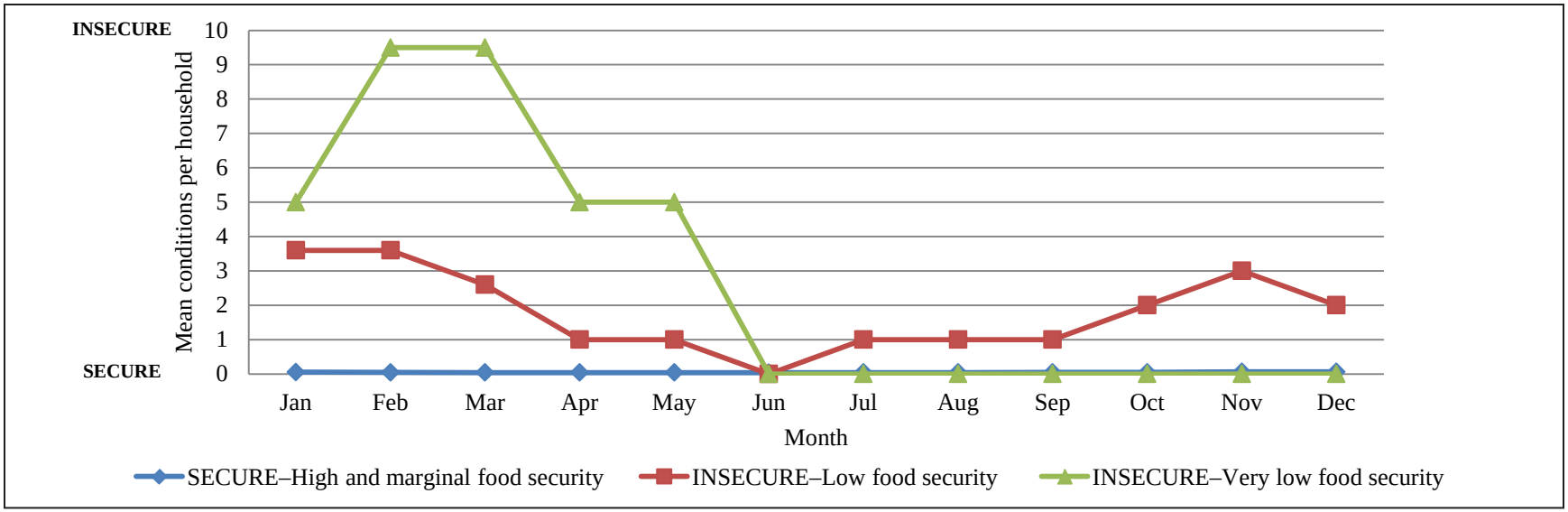


Figure 2-8.–Mean number of food insecure conditions by month and by household food security category, Nikiski, 2014.

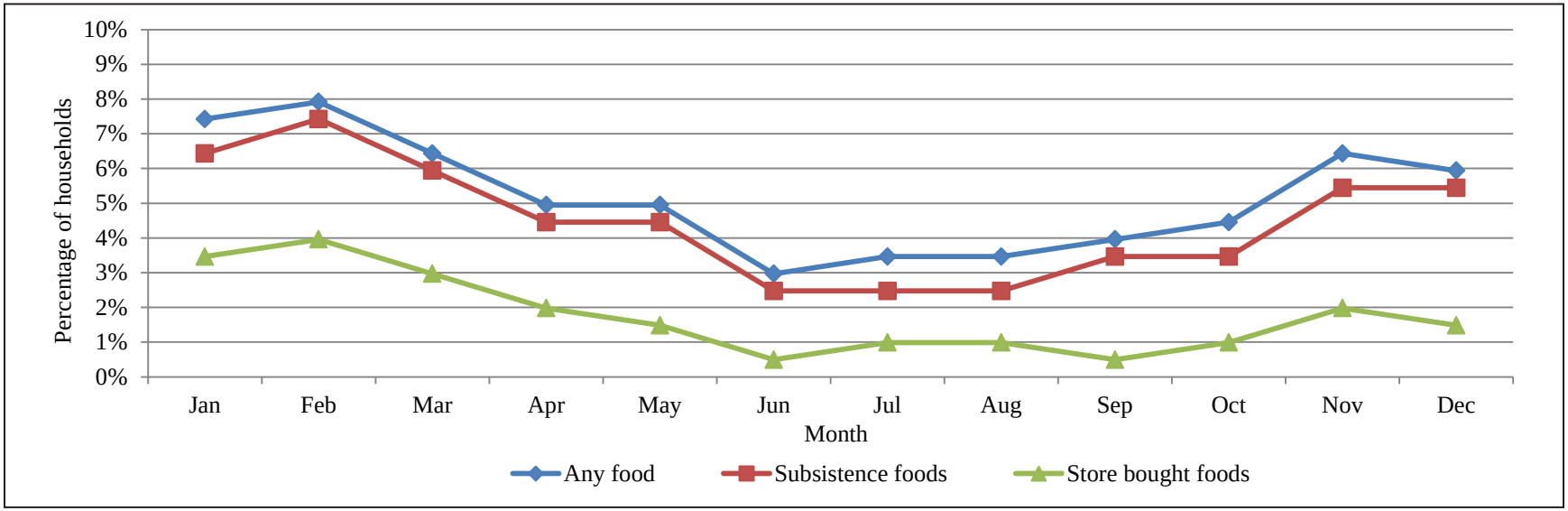


Figure 2-9.–Comparison of months when food did not last, Nikiski, 2014.

Individual Participation in the Harvesting and Processing of Wild Resources

Table 2-10 reports the expanded levels of individual participation in the harvesting and processing of wild resources by all Nikiski residents in 2014. Approximately 77% of individuals harvested at least 1 resource in 2014 and 73% of individuals processed at least 1 resource. Individuals participated most in the harvesting and processing of vegetation, 61% and 59% of individuals, respectively. Participation in harvesting and processing of fish was second highest: 56% and 52% of individuals, respectively. This was followed by hunting and processing of large land mammals (19% and 18%), birds and eggs (12% and 13%), small land mammals (9% and 8%), and finally marine mammals (less than 1%). For many categories, fewer individuals processed resources than participated in the harvest activity. This may be due to unsuccessful harvest attempts, or fewer members of a household processing resources brought home by a greater number of household members.

Table 2-10.–Individual participation in subsistence harvesting and processing activities, Nikiski, 2014.

Total number of people	**4,263.7**
Fish	
Fish	
Number	2,402.2
Percentage	56.3%
Process	
Number	2,224.6
Percentage	52.2%
Large land mammals	
Hunt	
Number	803.3
Percentage	18.8%
Process	
Number	764.7
Percentage	17.9%
Small land mammals	
Hunt or trap	
Number	363.0
Percentage	8.5%
Process	
Number	332.1
Percentage	7.8%
Marine mammals	
Hunt	
Number	15.4
Percentage	0.4%
Process	
Number	30.9
Percentage	0.7%
Birds and eggs	
Hunt/gather	
Number	502.1
Percentage	11.8%
Process	
Number	540.7
Percentage	12.7%
Vegetation	
Gather	
Number	2,610.8
Percentage	61.2%
Process	
Number	2,533.5
Percentage	59.4%
Any resource	
Attempt harvest	
Number	3,275.0
Percentage	76.8%
Process	
Number	3,128.3
Percentage	73.4%

Source ADF&G Division of Subsistence household surveys, 2015.

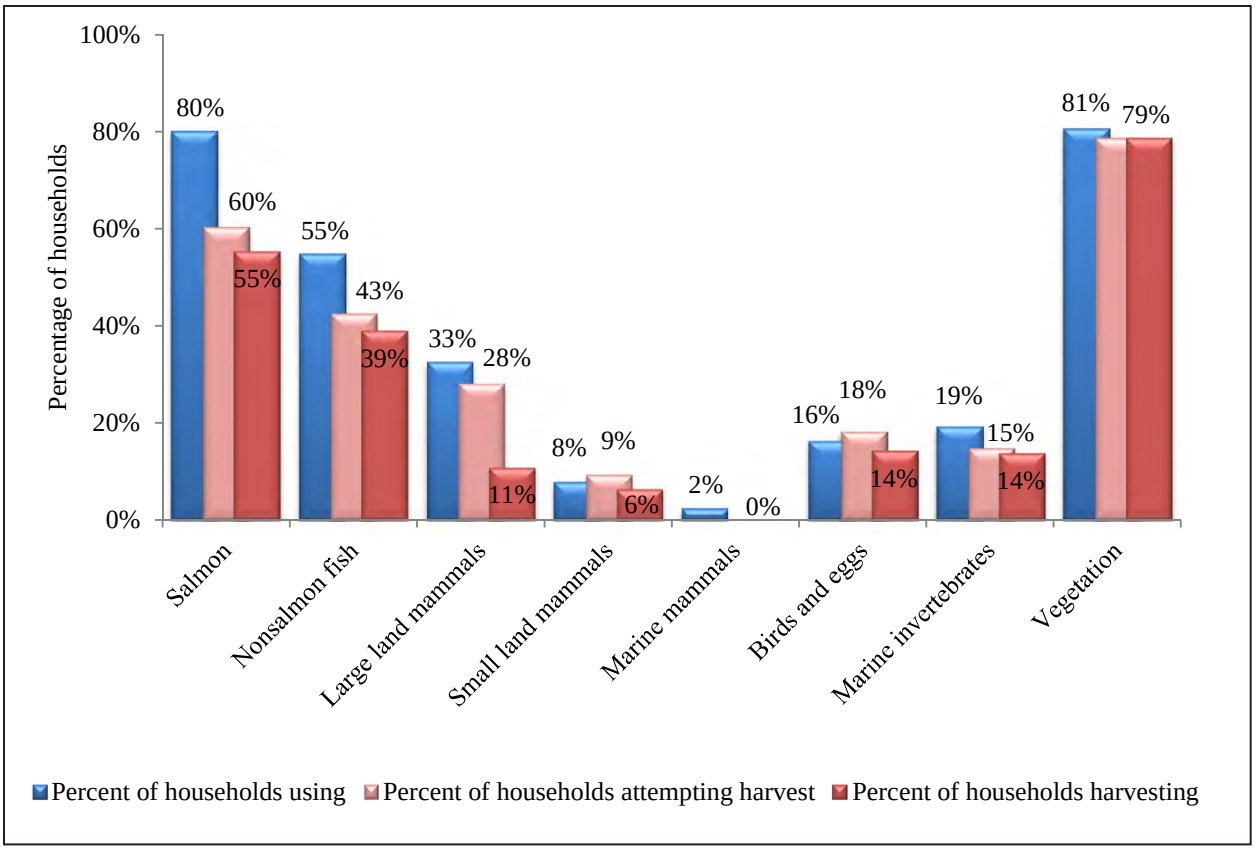


Figure 2-10.–Percentages of households using, attempting to harvest, and harvesting wild resources, by resource category, Nikiski, 2014.

Harvest and Use of Wild Resources at the Household Level

Figure 2-10 shows by resource category the percentages of households that used wild resources, and also attempted to harvest and harvested wild foods. Salmon and vegetation were used by the greatest percentage of households (80% for both categories), followed by nonsalmon fish (55%), large land mammals (33%), marine invertebrates (19%), birds and eggs (16%), small land mammals (8%), and marine mammals (2%). The percentage of households attempting to harvest resources was lower than those using resources for most resource categories; this may indicate that households received resources from another household or that they used resources harvested in a prior year. For all resource categories, except vegetation, the percentage of households harvesting was lower than the percentage of households attempting to harvest resources; this suggests that some households tried but were unsuccessful at harvesting 1 or more resources. The greatest difference between households attempting to harvest and actually harvesting resources occurred with salmon and large land mammals.

Table 2-11 summarizes resource harvest and use characteristics for Nikiski in 2014 at the household level. The average harvest was 187 lb usable weight per household. During the study year, community households harvested an average of 5 kinds of resources and used an average of 6 kinds of resources. The maximum number of resources used by any household was 44. In addition, households gave away an average of 1 kind of resource and received approximately 2 resources. This level of sharing was the lowest among project study communities (Table 1-9). This limited sharing may be due to the size of the community, its lack of distinct boundaries, its access to the road system, and lower per capita harvest. Overall, as many as 171 species were available for households to harvest in the study area; this included species that survey respondents identified but were not asked about in the survey instrument.

Table 2-11.–Resource harvest and use characteristics, Nikiski, 2014.

Characteristic	
Mean number of resources used per household	**6.2**
Minimum	0
Maximum	44
95% confidence limit (±)	11.6%
Median	5
Mean number of resources attempted to harvest per household	**5.6**
Minimum	0
Maximum	47
95% confidence limit (±)	13.2%
Median	4
Mean number of resources harvested per household	**5.0**
Minimum	0
Maximum	44
95% confidence limit (±)	13.9%
Median	4
Mean number of resources received per household	**1.6**
Minimum	0
Maximum	9
95% confidence limit (±)	15.0%
Median	1
Mean number of resources given away per household	**1.3**
Minimum	0
Maximum	17
95% confidence limit (±)	21.7%
Median	1
Household harvest (pounds)	
Minimum	0
Maximum	2,291
Mean	186.5
Median	57
Total harvest weight (lb)	292,421.1
Community per capita harvest (lb)	68.6
Percentage using any resource	95.0%
Percentage attempting to harvest any resource	88.1%
Percentage harvesting any resource	78.7%
Percentage receiving any resource	64.4%
Percentage giving away any resource	51.0%
Number of households in sample	203
Number of resources asked about and identified voluntarily by respondents	171

Source ADF&G Division of Subsistence household surveys, 2015.

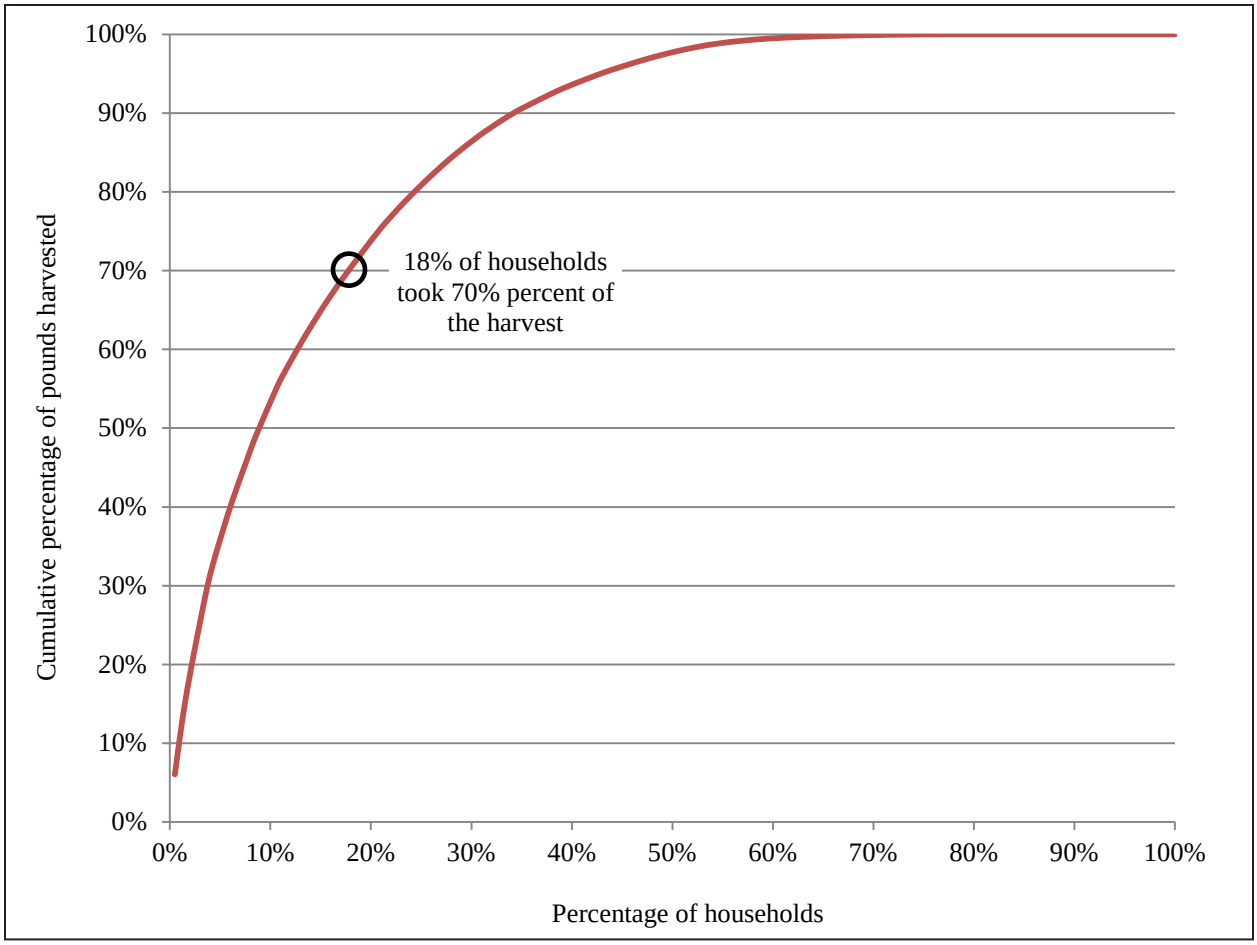


Figure 2-11.–Household specialization, Nikiski, 2014.

Sharing of Wild Resources

Household Specialization in Resource Harvesting

Previous studies by the Division of Subsistence (Wolfe 1987; Wolfe et al. 2010) have shown that in most rural Alaska communities, a relatively small portion of households produces most of the community's fish and wildlife harvests, which they share with other households. A recent study of 3,265 households in 66 rural Alaska communities found that about 33% of the households accounted for 76% of subsistence harvests (Wolfe et al. 2010). Although overall the set of very productive households was diverse, factors that were associated with higher levels of subsistence harvests included larger households with a pool of adult male labor, higher wage income, involvement in commercial fishing, and community location.

As shown in Figure 2-11, in the 2014 study year in Nikiski, about 70% of the harvests of wild resources as estimated in pounds usable weight were harvested by 18% of the community's households. Further analysis of the study findings, beyond the scope of this report, might identify characteristics of the highly productive households in Nikiski and the other study communities.

Harvest Quantities and Composition

Table 2-12 reports estimated wild resource harvests and uses by Nikiski residents in 2014 and is organized first by general category and then by species. All edible resources are reported in pounds usable weight (see

Table 2-12.–Estimated uses and harvests of fish, game, and vegetation resources, Nikiski, 2014.

	Percentage of households					Harvest weight (lb)			Harvest amount			95% confidence limit (±) harvest
Resource	Use %	Attempt %	Harvest %	Receive %	Give %	Total	Mean per household	Per capita	Total	Unit	Mean per household	
All resources	**95.0**	**88.1**	**78.7**	**64.4**	**51.0**	**292,421.1**	**186.5**	**68.6**	**292,421.1**	**lb**	**186.5**	**22.9**
Salmon	**80.2**	**60.4**	**55.4**	**40.1**	**27.7**	**135,314.5**	**86.3**	**31.7**	**135,314.5**	**lb**	**86.3**	**21.1**
Chum salmon	4.5	4.5	4.5	0.5	2.0	2,241.8	1.4	0.5	409.4	ind	0.3	67.7
Coho salmon	34.2	31.2	27.2	7.9	8.4	29,348.6	18.7	6.9	6,373.2	ind	4.1	37.2
Chinook salmon	10.9	10.4	7.4	4.5	1.0	5,639.3	3.6	1.3	510.3	ind	0.3	83.7
Pink salmon	12.4	11.4	10.9	1.5	2.5	5,419.8	3.5	1.3	2,062.3	ind	1.3	49.6
Sockeye salmon	72.8	52.5	49.5	32.7	24.3	91,901.9	58.6	21.6	20,493.7	ind	13.1	20.8
Landlocked salmon	1.0	1.0	1.0	0.0	0.5	486.6	0.3	0.1	324.4	ind	0.2	167.7
Unknown salmon	4.0	1.5	1.0	2.5	1.0	276.5	0.2	0.1	61.8	ind	0.0	161.4
Nonsalmon fish	**55.0**	**42.6**	**39.1**	**24.3**	**16.3**	**53,278.3**	**34.0**	**12.5**	**53,278.3**	**lb**	**34.0**	**31.7**
Pacific herring	1.0	1.0	1.0	0.0	0.5	1,183.3	0.8	0.3	197.2	gal	0.1	180.6
Pacific herring roe (unspecified)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Pacific herring sac roe	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Pacific herring spawn on kelp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Eulachon (hooligan, candlefish)	4.5	4.0	4.0	1.0	2.5	2,133.8	1.4	0.5	656.6	gal	0.4	83.9
Unknown smelt	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Sea bass	1.5	1.5	1.5	0.0	0.0	92.7	0.1	0.0	92.7	ind	0.1	112.5
Pacific (gray) cod	3.0	3.0	3.0	0.0	0.0	939.3	0.6	0.2	293.5	ind	0.2	103.3
Pacific tomcod	0.5	0.5	0.5	0.0	0.0	11.6	0.0	0.0	23.2	ind	0.0	184.4
Walleye pollock (whiting)	1.0	1.0	1.0	0.0	0.0	216.3	0.1	0.1	154.5	ind	0.1	145.6
Eel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Starry flounder	1.5	1.0	1.0	0.5	0.0	185.4	0.1	0.0	61.8	ind	0.0	145.6
Unknown flounder	0.5	0.5	0.5	0.0	0.0	46.3	0.0	0.0	15.4	ind	0.0	184.4
Lingcod	3.5	4.5	3.0	1.0	0.0	741.5	0.5	0.2	185.4	ind	0.1	94.7
Unknown greenling	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Pacific halibut	43.1	30.2	26.7	21.8	11.4	37,278.2	23.8	8.7	37,278.2	lb	23.8	36.2
Black rockfish	2.0	2.0	1.5	0.5	0.0	301.2	0.2	0.1	200.8	ind	0.1	113.9
Red rockfish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Yelloweye rockfish	1.0	1.0	1.0	0.0	0.0	69.5	0.0	0.0	23.2	ind	0.0	137.2

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Table 2-12.–Page 2 of 7.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount			95% confidence limit (±) harvest
	Use %	Attempt %	Harvest %	Receive %	Give %	Total	Mean per household	Per capita	Total	Unit	Mean per household	
Nonsalmon fish, continued												
China rockfish	0.5	0.5	0.5	0.0	0.0	46.3	0.0	0.0	15.4	ind	0.0	184.4
Unknown rockfish	1.5	1.5	1.5	0.0	0.5	347.6	0.2	0.1	115.9	ind	0.1	130.4
Sablefish (black cod)	1.5	1.5	1.5	0.0	0.5	455.0	0.3	0.1	146.8	ind	0.1	125.8
Unknown Irish lord	0.5	0.5	0.5	0.0	0.5	46.3	0.0	0.0	92.7	ind	0.1	184.4
Unknown sculpin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown shark	1.0	1.0	1.0	0.0	1.0	625.7	0.4	0.1	69.5	ind	0.0	137.2
Skates	1.0	1.0	1.0	0.0	0.0	193.1	0.1	0.0	38.6	ind	0.0	151.9
Unknown sole	1.0	1.0	1.0	0.0	0.0	231.7	0.1	0.1	231.7	ind	0.1	151.9
Wolffish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Arctic char	0.5	0.5	0.5	0.0	0.0	7.0	0.0	0.0	7.7	ind	0.0	184.4
Dolly Varden	6.9	6.4	5.9	1.0	2.0	1,881.6	1.2	0.4	1,344.0	ind	0.9	86.5
Lake trout	4.5	5.0	4.5	0.5	0.0	832.7	0.5	0.2	594.8	ind	0.4	86.8
Unknown char	0.5	0.5	0.5	0.0	0.0	21.6	0.0	0.0	15.4	ind	0.0	184.4
Arctic grayling	2.5	2.0	2.0	0.5	0.5	119.0	0.1	0.0	169.9	ind	0.1	118.7
Northern pike	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown sturgeon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Cutthroat trout	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Rainbow trout	18.8	18.3	17.3	2.0	3.5	5,244.7	3.3	1.2	3,746.2	ind	2.4	44.0
Steelhead	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown whitefishes	1.0	0.5	0.5	0.5	0.0	27.0	0.0	0.0	15.4	ind	0.0	184.4
Large land mammals	**32.7**	**28.2**	**10.9**	**21.8**	**9.9**	**72,854.1**	**46.5**	**17.1**	**72,854.1**	**lb**	**46.5**	**43.9**
Black bear	4.5	7.9	3.5	1.5	1.5	4,032.0	2.6	0.9	69.5	ind	0.0	72.9
Caribou	5.9	5.0	4.0	2.5	2.0	10,427.6	6.7	2.4	69.5	ind	0.0	66.9
Deer	1.0	0.5	0.0	1.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Mountain goat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Moose	28.7	24.8	6.4	19.8	7.4	58,394.5	37.2	13.7	108.1	ind	0.1	51.2
Dall sheep	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Small land mammals	**7.9**	**9.4**	**6.4**	**2.0**	**2.0**	**2,705.4**	**1.7**	**0.6**	**2,705.4**	**lb**	**1.7**	**74.8**
Beaver	2.0	1.5	1.0	1.0	0.5	1,149.0	0.7	0.3	139.0	ind	0.1	130.3
Coyote	1.0	2.5	1.0	0.0	0.0	0.0	0.0	0.0	23.2	ind	0.0	137.2
Red fox	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0

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Table 2-12.–Page 3 of 7.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount			95% confidence limit (±) harvest
	Use %	Attempt %	Harvest %	Receive %	Give %	Total	Mean per household	Per capita	Total	Unit	Mean per household	
Small land mammals, continued												
Snowshoe hare	5.0	5.4	4.5	0.5	1.0	1,004.1	0.6	0.2	502.1	ind	0.3	92.2
North American river (land) otter	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	38.6	ind	0.0	184.4
Lynx	1.0	1.0	1.0	0.0	0.0	92.7	0.1	0.0	46.3	ind	0.0	184.4
Marten	1.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	139.0	ind	0.1	156.6
Mink	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Muskrat	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	77.2	ind	0.0	184.4
Porcupine	0.5	1.0	0.5	0.5	0.5	432.6	0.3	0.1	54.1	ind	0.0	184.4
Arctic ground (parka) squirrel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Red (tree) squirrel	0.5	0.5	0.5	0.0	0.0	19.3	0.0	0.0	38.6	ind	0.0	184.4
Unknown squirrel	0.5	0.5	0.5	0.0	0.0	7.7	0.0	0.0	15.4	ind	0.0	184.4
Weasel	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	7.7	ind	0.0	184.4
Gray wolf	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Wolverine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Marine mammals	**2.5**	**0.0**	**0.0**	**2.5**	**0.5**	**0.0**	**0.0**	**0.0**	**0.0**	**lb**	**0.0**	**0.0**
Harbor seal	2.0	0.0	0.0	2.0	0.5	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown seal	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Sea otter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Steller sea lion	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Bowhead whale	1.0	0.0	0.0	1.0	0.5	0.0	0.0	0.0	0.0	ind	0.0	0.0
Birds and eggs	**16.3**	**18.3**	**14.4**	**2.0**	**1.5**	**1,782.0**	**1.1**	**0.4**	**1,782.0**	**lb**	**1.1**	**59.7**
Bufflehead	0.5	0.5	0.5	0.0	0.0	15.4	0.0	0.0	38.6	ind	0.0	184.4
Unknown eider	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Goldeneye	1.0	1.0	1.0	0.0	0.0	43.3	0.0	0.0	54.1	ind	0.0	160.1
Harlequin duck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Mallard	2.0	3.0	2.0	0.0	0.0	152.9	0.1	0.0	169.9	ind	0.1	115.1
Unknown merganser	0.5	0.5	0.5	0.0	0.0	13.9	0.0	0.0	15.4	ind	0.0	184.4
Long-tailed duck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Northern pintail	0.5	0.5	0.5	0.0	0.0	37.1	0.0	0.0	46.3	ind	0.0	184.4
Unknown scaup	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0

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Table 2-12.–Page 4 of 7.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount			95% confidence limit (±) harvest
	Use %	Attempt %	Harvest %	Receive %	Give %	Total	Mean per household	Per capita	Total	Unit	Mean per household	
Birds and eggs, continued												
Black scoter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Surf scoter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
White-winged scoter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Northern shoveler	0.5	0.5	0.5	0.0	0.0	23.2	0.0	0.0	38.6	ind	0.0	184.4
Unknown teal	1.0	1.5	1.0	0.0	0.0	46.3	0.0	0.0	154.5	ind	0.1	132.7
Unknown wigeon	1.0	1.0	1.0	0.0	0.0	18.5	0.0	0.0	61.8	ind	0.0	145.6
Unknown ducks	1.5	0.5	0.5	1.0	0.0	13.2	0.0	0.0	15.4	ind	0.0	184.4
Unknown Canada/ cackling geese	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
White-fronted goose	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown geese	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Sandhill crane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown cormorant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown gull	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Black-legged kittiwake	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown murre	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown puffin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Spruce grouse	5.4	5.9	5.4	0.0	0.5	600.2	0.4	0.1	857.4	ind	0.5	92.5
Ruffed grouse	1.5	1.5	1.5	0.0	0.0	37.8	0.0	0.0	54.1	ind	0.0	114.4
Unknown grouse	7.4	8.9	6.4	1.0	0.0	373.1	0.2	0.1	533.0	ind	0.3	89.2
Unknown ptarmigan	2.5	3.0	2.5	0.0	1.0	351.4	0.2	0.1	502.1	ind	0.3	113.2
Unknown duck eggs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown goose eggs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Black oystercatcher eggs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown gull eggs	1.0	0.5	0.5	0.5	0.0	55.6	0.0	0.0	185.4	ind	0.1	184.4
Unknown tern eggs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown eggs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0

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Table 2-12.–Page 5 of 7.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount			95% confidence limit (±) harvest
	Use %	Attempt %	Harvest %	Receive %	Give %	Total	Mean per household	Per capita	Total	Unit	Mean per household	
Marine invertebrates	**19.3**	**14.9**	**13.9**	**5.9**	**3.5**	**7,258.2**	**4.6**	**1.7**	**7,258.2**	**lb**	**4.6**	**59.8**
Red (large) chitons	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Black (small) chitons	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Butter clams	6.4	5.4	5.4	1.0	0.0	945.0	0.6	0.2	315.0	gal	0.2	80.1
Horse clams	0.5	0.5	0.5	0.0	0.0	69.5	0.0	0.0	23.2	gal	0.0	184.4
Pacific littleneck clams (steamers)	2.0	2.0	2.0	0.0	0.0	208.6	0.1	0.0	69.5	gal	0.0	113.6
Pinkneck clams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Razor clams	10.9	8.4	7.4	3.0	2.5	3,470.1	2.2	0.8	1,156.7	gal	0.7	79.5
Unknown clams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Unknown cockles	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Dungeness crab	0.5	0.5	0.5	0.0	0.0	135.2	0.1	0.0	193.1	ind	0.1	184.4
Unknown king crab	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown Tanner crab	1.5	1.0	1.0	0.5	0.0	667.4	0.4	0.2	417.1	ind	0.3	135.7
Unknown crab	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Limpets	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Unknown mussels	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Octopus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Weathervane scallops	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Unknown sea cucumber	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Unknown sea urchin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Shrimp	4.5	2.5	2.5	2.0	1.0	1,762.5	1.1	0.4	881.3	lb	0.6	151.8
Snails	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Whelk	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Vegetation	**80.7**	**78.7**	**78.7**	**24.3**	**27.2**	**19,228.6**	**12.3**	**4.5**	**19,228.6**	**lb**	**12.3**	**34.2**
Blueberry	44.6	43.6	42.1	8.4	7.4	5,849.1	3.7	1.4	1,462.3	gal	0.9	45.8
Lowbush cranberry	20.3	18.8	18.3	2.5	3.5	2,386.8	1.5	0.6	596.7	gal	0.4	72.5
Highbush cranberry	15.8	15.8	15.8	1.0	1.5	1,736.5	1.1	0.4	434.1	gal	0.3	63.6
Crowberry	6.9	5.9	5.9	1.0	1.5	297.9	0.2	0.1	74.5	gal	0.0	70.7
Gooseberry	2.0	2.0	2.0	0.0	0.5	115.9	0.1	0.0	29.0	gal	0.0	112.9
Currants	6.4	6.4	6.4	0.0	1.0	390.6	0.2	0.1	97.7	gal	0.1	96.0
Cloudberry	0.5	0.5	0.5	0.0	0.0	3.9	0.0	0.0	1.0	gal	0.0	184.4

-continued-

Table 2-12.–Page 6 of 7.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount			95% confidence limit (±) harvest
	Use %	Attempt %	Harvest %	Receive %	Give %	Total	Mean per household	Per capita	Total	Unit	Mean per household	
Vegetation, continued												
Nagoonberry	1.0	0.5	0.5	0.5	0.5	3.9	0.0	0.0	1.0	gal	0.0	184.4
Raspberry	23.3	20.8	20.8	4.0	2.5	1,919.4	1.2	0.5	479.9	gal	0.3	47.1
Salmonberry	10.9	9.4	9.4	2.0	1.0	1,260.0	0.8	0.3	315.0	gal	0.2	95.9
Strawberry	13.4	12.9	12.9	2.0	2.5	1,110.0	0.7	0.3	277.5	gal	0.2	63.0
Twisted stalk berry (watermelon berry)	5.9	5.9	5.9	0.5	1.5	764.7	0.5	0.2	191.2	gal	0.1	88.5
Other wild berry	0.5	0.5	0.5	0.0	0.0	23.2	0.0	0.0	5.8	gal	0.0	184.4
Beach asparagus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Wild rhubarb	0.5	0.0	0.0	0.5	0.5	0.0	0.0	0.0	0.0	gal	0.0	0.0
Devil's club	1.5	1.0	1.0	0.5	0.5	38.6	0.0	0.0	38.6	gal	0.0	132.7
Fiddlehead ferns	8.4	7.9	7.9	1.5	1.5	415.8	0.3	0.1	415.8	gal	0.3	73.5
Nettle	1.5	1.5	1.5	0.0	0.5	34.8	0.0	0.0	34.8	gal	0.0	117.3
Hudson's Bay (Labrador) tea	1.0	1.0	1.0	0.0	1.0	77.2	0.0	0.0	77.2	gal	0.0	151.9
Dandelion greens	2.5	2.5	2.5	0.0	0.0	50.2	0.0	0.0	50.2	gal	0.0	111.7
Sourdock	0.5	0.5	0.5	0.0	0.5	30.9	0.0	0.0	30.9	gal	0.0	184.4
Spruce tips	2.0	2.0	2.0	0.0	0.5	115.9	0.1	0.0	115.9	gal	0.1	128.0
Wild celery	1.0	1.0	1.0	0.0	0.0	13.5	0.0	0.0	54.1	gal	0.0	131.4
Wild parsley	0.5	0.5	0.5	0.0	0.5	7.7	0.0	0.0	7.7	gal	0.0	184.4
Wild rose hips	11.4	11.4	11.4	0.0	3.0	1,004.7	0.6	0.2	251.2	gal	0.2	61.7
Yarrow	1.0	1.0	1.0	0.0	0.0	23.2	0.0	0.0	23.2	gal	0.0	137.2
Other wild greens	3.5	3.5	3.5	0.0	0.5	378.0	0.2	0.1	378.0	gal	0.2	152.0
Unknown mushrooms	10.9	10.9	10.4	1.5	0.5	739.2	0.5	0.2	739.2	gal	0.5	94.1
Fireweed	4.0	2.5	2.5	1.5	0.5	85.1	0.1	0.0	85.1	gal	0.1	108.6
Plantain	1.0	1.0	1.0	0.0	0.0	31.4	0.0	0.0	31.4	gal	0.0	181.6
Stinkweed	1.0	1.0	1.0	0.0	0.0	23.2	0.0	0.0	23.2	gal	0.0	137.2
Puffballs	1.0	1.0	1.0	0.0	0.0	15.4	0.0	0.0	15.4	gal	0.0	130.1
Chaga	0.5	0.5	0.5	0.0	0.5	7.7	0.0	0.0	7.7	gal	0.0	0.0
Sea chickweed	0.5	0.5	0.5	0.0	0.0	23.2	0.0	0.0	23.2	gal	0.0	184.4
Bull kelp	0.5	0.5	0.5	0.0	0.0	61.8	0.0	0.0	15.4	gal	0.0	184.4
Unknown seaweed	0.5	0.5	0.5	0.0	0.5	146.8	0.1	0.0	36.7	gal	0.0	184.4

-continued-

Table 2-12.–Page 7 of 7.

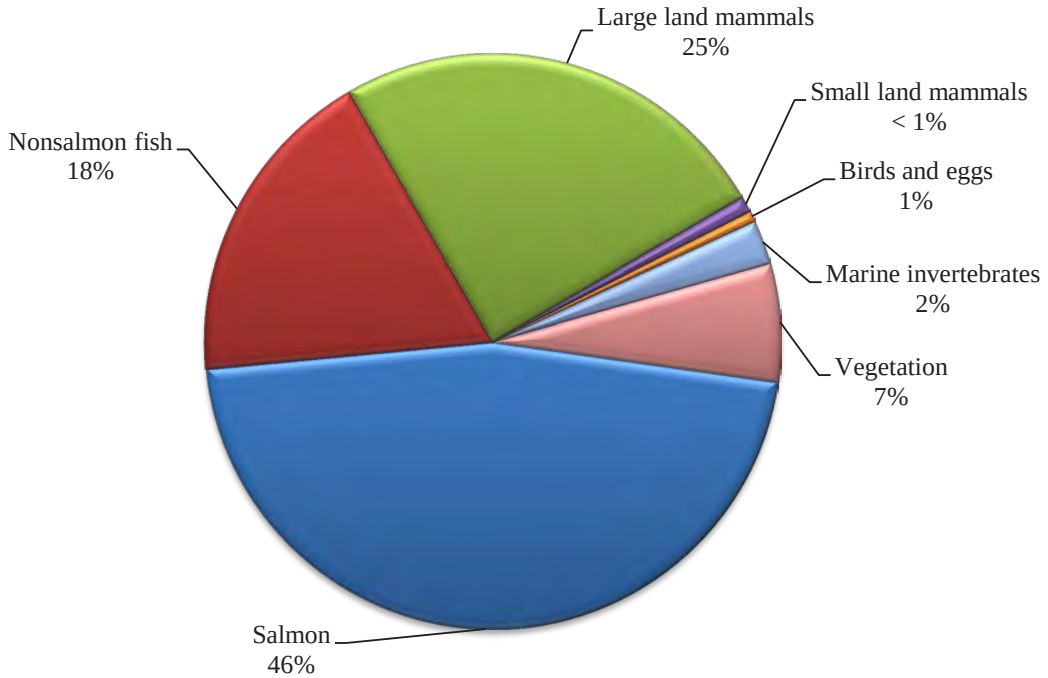
	Percentage of households					Harvest weight (lb)			Harvest amount			95% confidence limit (±) harvest
Resource	Use %	Attempt %	Harvest %	Receive %	Give %	Total	Mean per household	Per capita	Total	Unit	Mean per household	
Wood	54.5	52.5	52.0	8.4	14.9	–	–	–	–		–	–
Roots	0.5	0.5	0.5	0.0	0.0	–	–	–	–		–	–
Spruce pitch	0.5	0.5	0.5	0.0	0.0	–	–	–	–		–	–
Alder	0.5	0.5	0.5	0.0	0.0	–	–	–	–		–	–
Birch sap	1.5	1.5	1.5	0.0	0.0	42.5	0.0	0.0	347.6	gal	0.2	130.9

Source ADF&G Division of Subsistence household surveys, 2015.

Note Resources where the percentage using is greater than the combined received and harvest indicate use from resources obtained during a previous year.

Note For small land mammals, species that are not typically eaten show a non-zero harvest amount with a zero harvest wight. Harvest weight is not calculated for species harvested but not eaten.

Note "–" indicates the harvest amount for the resource was not collected during the survey.



Note Categories having 0 lb of usable weight are not included.

Figure 2-12.–Composition of harvest by resource category in pounds usable weight, Nikiski, 2014.

Appendix B for conversion factors[5]).

In 2014, Nikiski residents harvested approximately 69 lb of wild foods per capita, or 187 lb per household (Table 2-12). The community as a whole harvested approximately 292,421 lb of wild foods. Salmon made up the greatest percentage of this harvest (46%), followed by large land mammals (25%), nonsalmon fish (18%), vegetation (7%), marine invertebrates (2%), birds and eggs (1%), and small land mammals (less than 1%) (Figure 2-12). The per capita harvest for these categories was 32 lb for salmon, 17 lb for large land mammals, 13 lb for nonsalmon fish, 5 lb for vegetation, 2 lb for marine invertebrates, and less than 1 lb for birds and eggs as well as small land mammals (Table 2-12).

Seasonal Round

Nikiski residents harvest wild food resources throughout the year. Like many Alaska communities, certain species are targeted in different seasons and this leads to a cyclical harvest pattern. These patterns are defined by seasonal resource availability, laws, regulations, and land access. In Nikiski, most residents harvested wild foods primarily in proximity to the community or in other parts of Southcentral Alaska (Figure 2-13), except some households traveled occasionally to harvest resources in the Copper River Basin. Highway vehicles, all-terrain vehicles (ATVs), and boats are common modes of transportation used for harvesting wild food resources. Residents also commonly accessed wild food resources by foot, especially resources available near their homes.

According to a key informant in the community, harvest activities typically start in the winter months and in early spring when ice fishing in local lakes can be undertaken. Sometimes small mammals are hunted or trapped during this season, too. Once much of the snow has melted and ice break-up has occurred on local

5. Resources that are not eaten, such as firewood and some furbearers, are included in the table but are given a conversion factor of zero.

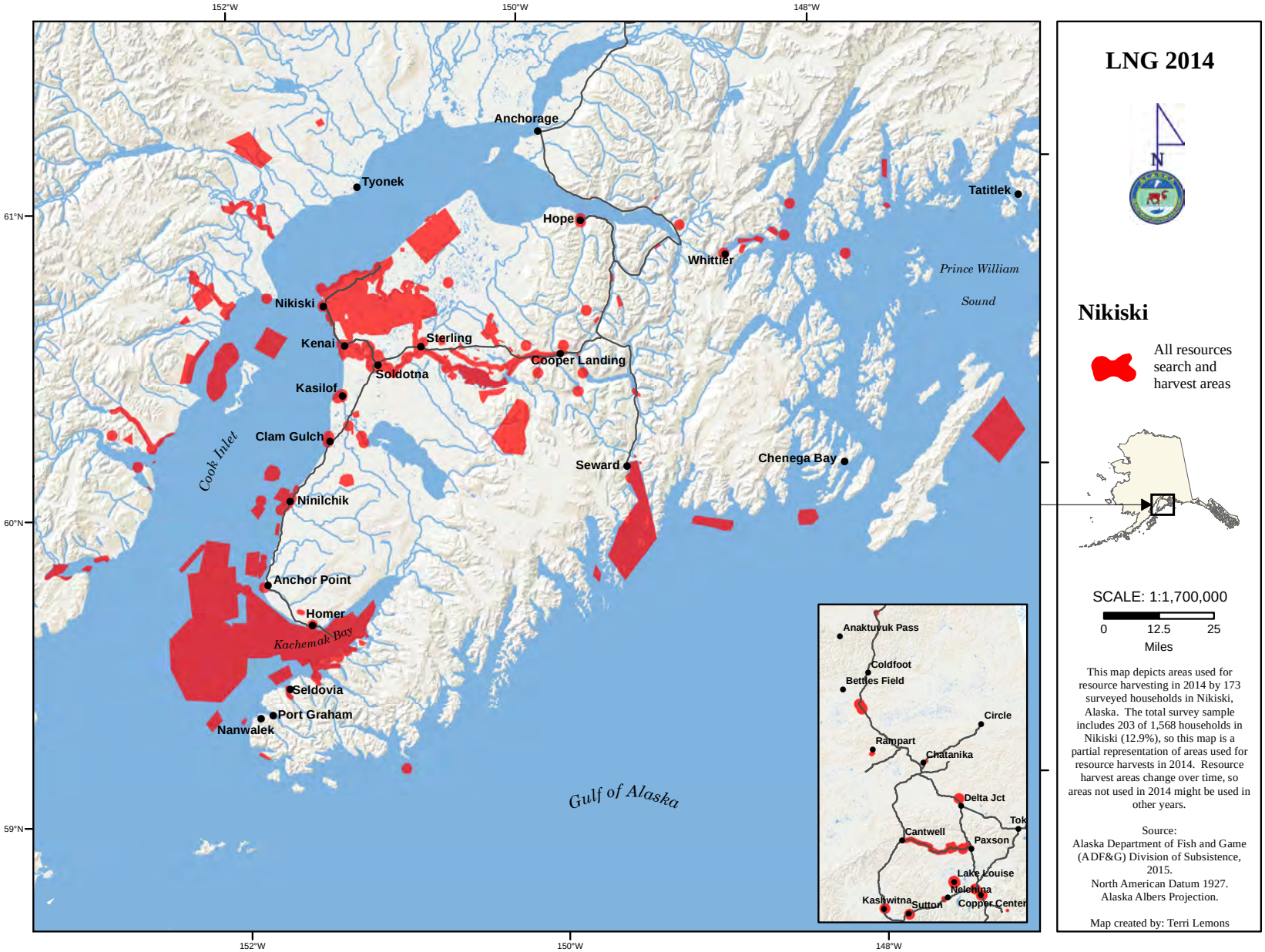


Figure 2-13.–Wild resource search and harvest areas, Nikiski, 2014.

lakes, rod and reel fishing takes place from shore or from a boat. Some households will also harvest fresh vegetation and mushrooms at this time.

For the households that participate in the harvest of salmon, preparations begin in March and April. Many residents harvest salmon on the Kenai Peninsula, though some travel across Cook Inlet or to Prince William Sound. The harvest of both salmon and nonsalmon fish often continues throughout the summer months as regulations permit. Some households harvest Pacific halibut from shore on the beaches near Nikiski.

As berries begin to ripen later in the summer, many Nikiski residents make an effort to harvest these. Many individuals who do not harvest berries in bulk do take advantage of picking and eating berries while engaging in other activities. Moose hunting begins in August and extends through late September when the regulatory season closes. Many households contend that recent changes in legal bull moose size have dramatically decreased their ability to hunt this species in the Nikiski area. In 2010, a legally harvestable bull moose in GMU 15A was required to have spike-fork antlers, or 50-inch antlers, or antlers with 3 or more brow tines on at least 1 side. By 2014, the legally harvestable bull moose description had changed to require a spike on at least 1 side, or 50-inch antlers, or antlers with 4 brow tines on at least 1 side. This increase in brow tine requirements can substantially limit the number of harvestable moose within an area.

With the arrival of winter and the freeze-up of ponds and lakes, some residents resume their ice fishing activities. Snowshoe hares may be harvested throughout the year but are often harvested in the winter months. Upland game birds are harvested from August through March. Winter is also a popular time for harvesting firewood.

Use and Harvest Characteristics by Resource Category

Table 2-12 provides information on the use, harvest, and sharing of resources. Considering all resources combined, approximately 95% of households used 1 or more, 88% attempted to harvest a wild resource, and 79% were successful in harvesting a wild resource. Sharing of wild foods was also an important aspect of resource acquisition in Nikiski. Approximately 64% of households received a wild resource from another household and approximately 51% gave away a wild resource.

Salmon and vegetation were used by the greatest percentage of Nikiski households as compared to other resource categories: 80% of households for both. This is interesting because while salmon made up 46% of the of the per capita usable harvest weight, vegetation made up only 7%. Use of vegetation is high because it is relatively easy to harvest small quantities without special gear near one's home. An estimated 79% of households attempted to harvest vegetation, and all of those households were successful. For salmon, 60% of households attempted to harvest salmon and 55% of all households were successful. Salmon were received by more households than vegetation resources: 40% and 24%, respectively. Salmon and vegetation were given away by the same percentage of households (27%). Salmon was received by more households than any other resource category.

Nonsalmon fish was the third most frequently used resource category (55% of households), followed by large land mammals (33% of households). This is despite the fact that the per capita harvest of large land mammals exceeded that of nonsalmon fish by more than 4 lb. Approximately 43% of households attempted to harvest nonsalmon fish and 39% of Nikiski households were successful. Fewer households (28%) attempted to harvest large land mammals and only 11% of Nikiski households were successful. Sharing was similar for both of these resource categories. For nonsalmon fish, approximately 24% of households received resources and 16% gave them away. For large land mammals, 22% received resources and only 10% gave them away.

Approximately 19% of Nikiski households used marine invertebrates. While 15% of households attempted to harvest marine invertebrates, nearly all (14%) were successful. Only 6% of households received marine invertebrates and 4% gave away these types of resources. For small land mammals, use was even lower: only 8% of households used these species. Approximately 9% of households attempted to harvest small land

Table 2-13.–Top ranked resources used by households, Nikiski, 2014.

Rank[a]	Resource	Percentage of households using
1.	Sockeye salmon	72.8%
2.	Blueberry	44.6%
3.	Pacific halibut	43.1%
4.	Coho salmon	34.2%
5.	Moose	28.7%
6.	Raspberry	23.3%
7.	Lowbush cranberry	20.3%
8.	Rainbow trout	18.8%
9.	Highbush cranberry	15.8%
10.	Strawberry	13.4%

Source ADF&G Division of Subsistence household surveys, 2015.
a. Resources used by the same percentage of households share the lowest rank value instead of having sequential rank values.

mammals and 6% of Nikiski households were successful. Sharing of this resource category was minimal with only 2% of households receiving and 2% giving away small land mammals.

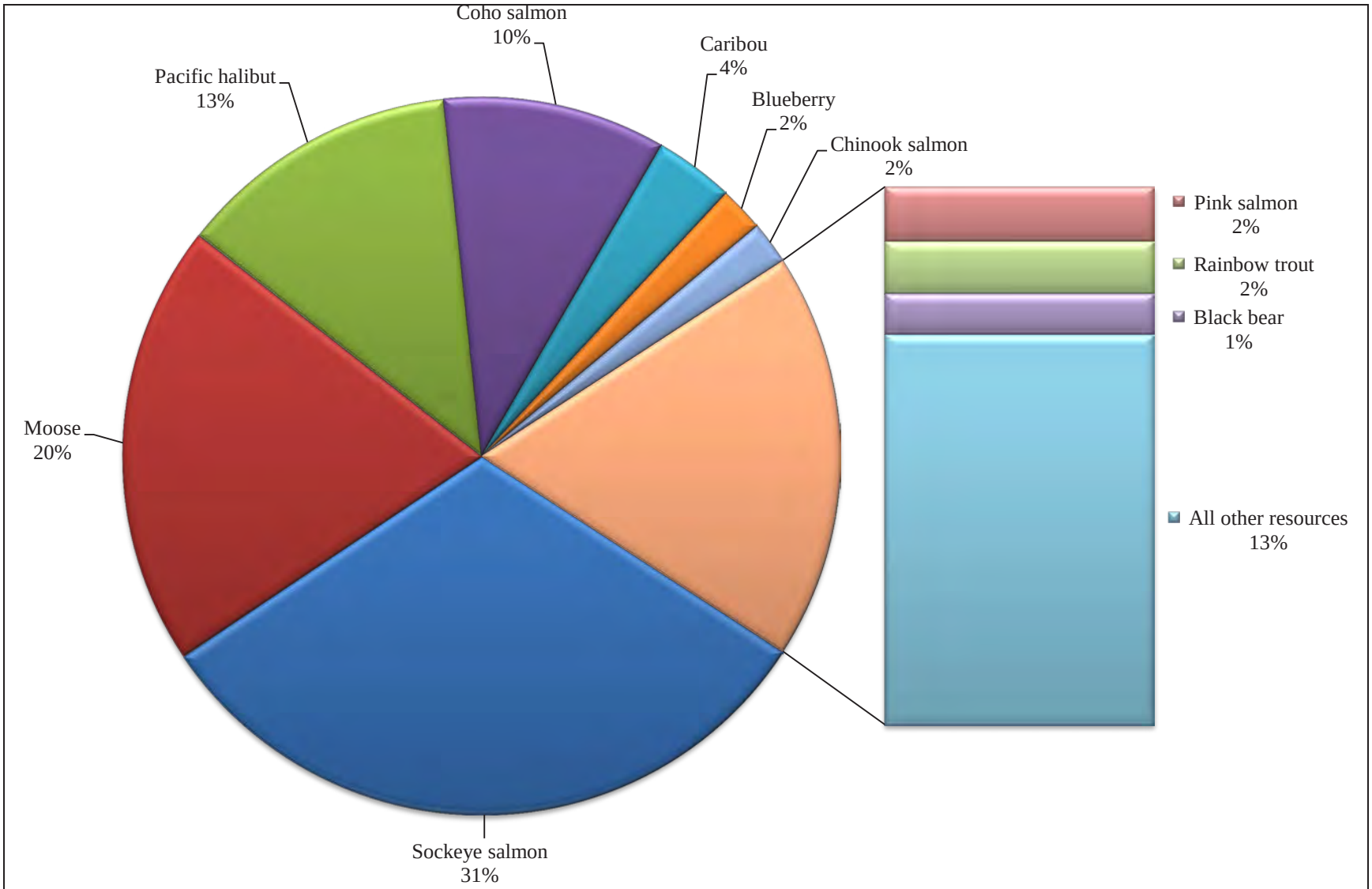
Marine mammals were used the least by Nikiski households with only 3% of households using marine mammals. No surveyed households in Nikiski attempted to harvest marine mammals. Approximately 3% of households did receive marine mammals and 1% gave away resources. Importantly, only Alaska Natives are allowed to hunt marine mammals per the Marine Mammal Protection Act of 1972, which likely contributes to the low level of use of marine mammals by Nikiski households where few residents are Alaska Native.

Table 2-13 lists the top ranked resources used by households and Figure 2-14 shows the species with the highest usable harvest weights during the 2014 study year. Sockeye salmon was the species with the highest percentage of households using the resource (73%) (Table 2-13). One other salmon species, coho salmon, made the top used resources list, and 2 species of nonsalmon fish, Pacific halibut and rainbow trout, did as well. Five species of berries made the list, including: blueberries (used by 45% of households), raspberries (23%), lowbush cranberries (20%), highbush cranberries (16%), and strawberries (13%).

By percentage of usable weight, a couple of other species were included in the top ranked harvested resources: caribou and Chinook salmon. Sockeye salmon again placed at the top of the list, composing approximately 31% of the harvest (Figure 2-14). Harvests of sockeye salmon were followed by harvests of moose (20%), Pacific halibut (13%), coho salmon (10%), caribou (4%), blueberries (2%), and Chinook salmon (2%). All remaining resources together made up 18% of the overall usable harvest weight.

Salmon

The community of Nikiski harvested approximately 135,315 lb of salmon in 2014, equating to 32 lb per capita, or 86 lb per household (Table 2-12). Sockeye salmon made up the majority of the harvest of salmon (68%), followed by coho salmon (22%), Chinook salmon (4%), pink salmon (4%), chum salmon (4%), and unknown salmon (including landlocked salmon and harvests not specified by species) composed less than 1% of the salmon harvest (Figure 2-15). The total harvest of sockeye salmon was approximately 91,902 lb, or 22 lb per capita (Table 2-12). A majority of households used sockeye salmon (73%) and more than one-half (53%) attempted to harvest this species. One-half of Nikiski households were successful at harvesting sockeye salmon and many gave some away (24%) and received some (33%).



Note The "all other resources" category represents all species that contributed less than 1% to the total harvest.

Figure 2-14.–Top species harvested by percentage of total harvest in pounds usable weight, Nikiski, 2014.

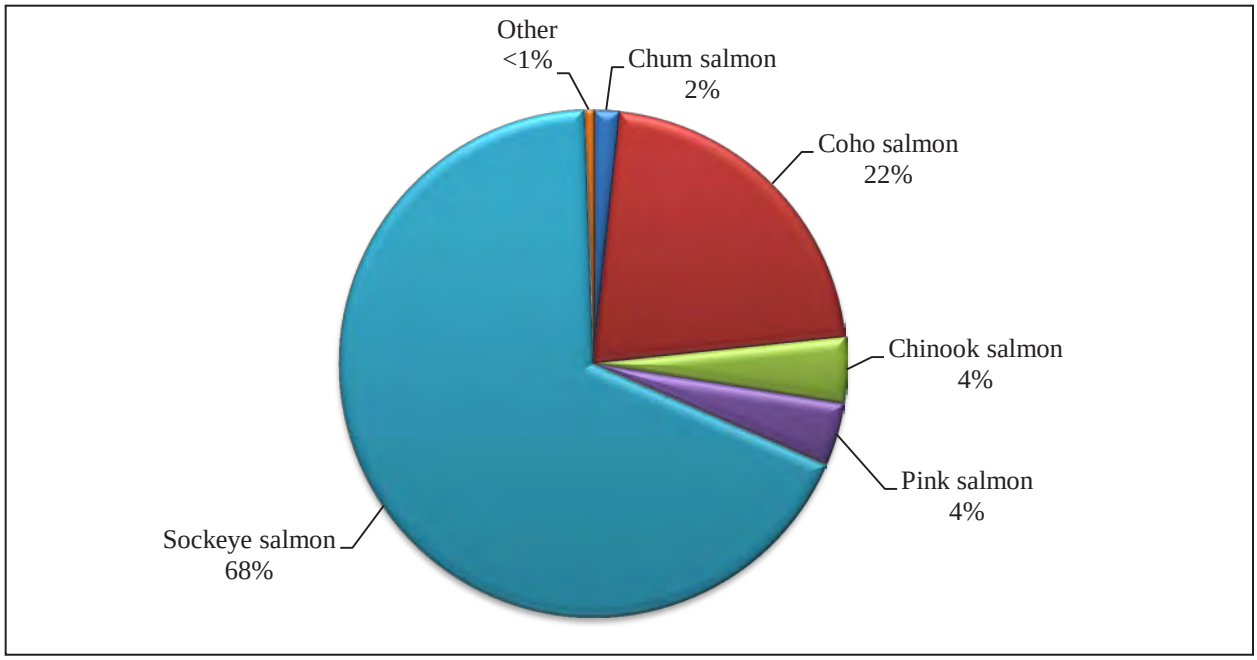


Figure 2-15.–Composition of salmon harvest in pounds usable weight, Nikiski, 2014.

Coho salmon was the second most frequently used salmon species (34% of households), followed by pink salmon (12%), Chinook salmon (11%), chum salmon (5%), unknown salmon (4%), and landlocked salmon (1%) (Table 2-12). While the per capita harvest weight of coho salmon was approximately 7 lb, the per capita harvest was approximately 1 lb or less for all other species besides sockeye salmon. In comparison to sockeye salmon, sharing of other salmon species was also minimal.

A total of 30,235 salmon (135,315 lb) were harvested using a variety of gear types, including 7,375 salmon (33,652 lb) that were removed from commercial harvests for home use (Table 2-14). Figure 2-16 is a visual representation of the salmon harvest weight harvested by gear type. An estimated 42% of the salmon harvest weight was caught using subsistence or personal use fishing gear (Table 2-15). For sockeye salmon, subsistence/personal use gear was the most commonly used harvest method (53% of the harvest), consisting of dip net (46%), fish wheel (4%), setnet (2%), seine (1%), and other gear (less than 1%). In addition, 25% of the sockeye salmon harvest was caught with rod and reel and 22% of the harvest weight was removed from commercial catches.

Coho salmon were primarily harvested using rod and reel (56% of the harvest weight), followed by removal from commercial catches (33%), and use of subsistence/personal use gear (11%) (Table 2-15). For Chinook salmon, 38% of the harvest weight was caught with a fish wheel, 36% with rod and reel and another 3% by trolling, and 23% as removal from a commercial catch. Pink salmon were harvested primarily with rod and reel (50% of harvest weight), followed by subsistence/personal use gear (30%), and removal from commercial catches (20%). Most chum salmon (79% of harvest weight) were removed from commercial catches, but some were harvested using subsistence/personal use gear (19%), and by rod and reel (2%). The vast majority of landlocked salmon (91% of harvest weight) were harvested with rod and reel gear with the remainder harvested by jigging.

Nikiski residents primarily fished for salmon along the western coast of the Kenai Peninsula as well as in several river drainages emptying into Cook Inlet; these include the Kenai, Russian, Kasilof, Anchor, and Swanson river systems (Figure 2-17). Some households fished for salmon in saltwater near Nikiski, in Kachemak Bay, and in offshore waters in lower Cook Inlet. Some households also fished for salmon in the Crescent and Drift rivers in the western side of Cook Inlet. In addition, some households fished for salmon near Seward, near Hope, and in the Copper River just south of Glennallen.

Table 2-14.–Estimated harvest of salmon by gear type and resource, Nikiski, 2014.

			Subsistence/personal use methods																			
	Removed from commercial catch		Setnet		Seine		Fish wheel		Jigging		Dip net		Other method		Subsistence/personal use gear, any method		Trolling		Rod and reel		Any method	
Resource	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Salmon	**7,374.7**	**33,651.9**	**625.7**	**2,681.2**	**463.4**	**1,648.1**	**965.5**	**5,598.0**	**30.9**	**46.3**	**10,389.0**	**46,141.9**	**77.2**	**346.4**	**12,551.7**	**56,461.9**	**15.4**	**170.7**	**10,293.2**	**45,029.9**	**30,235.1**	**135,314.5**
Chum salmon	324.4	1,776.5	38.6	211.5	0.0	0.0	0.0	0.0	0.0	0.0	38.6	211.5	0.0	0.0	77.2	423.0	0.0	0.0	7.7	42.3	409.4	2,241.8
Coho salmon	2,116.1	9,744.7	77.2	355.7	0.0	0.0	0.0	0.0	0.0	0.0	617.9	2,845.6	0.0	0.0	695.2	3,201.3	0.0	0.0	3,561.9	16,402.6	6,373.2	29,348.6
Chinook salmon	116.3	1,285.6	0.0	0.0	0.0	0.0	193.1	2,134.2	0.0	0.0	0.0	0.0	0.0	0.0	193.1	2,134.2	15.4	170.7	185.4	2,048.8	510.3	5,639.3
Pink salmon	409.4	1,075.8	92.7	243.6	231.7	609.0	0.0	0.0	0.0	0.0	301.2	791.7	0.0	0.0	625.7	1,644.2	0.0	0.0	1,027.3	2,699.8	2,062.3	5,419.8
Sockeye salmon	4,400.8	19,734.8	417.1	1,870.5	231.7	1,039.1	772.4	3,463.8	0.0	0.0	9,431.2	42,293.1	77.2	346.4	10,929.7	49,012.9	0.0	0.0	5,163.3	23,154.2	20,493.7	91,901.9
Landlocked salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.9	46.3	0.0	0.0	0.0	0.0	30.9	46.3	0.0	0.0	293.5	440.3	324.4	486.6
Unknown salmon	7.7	34.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	54.1	241.9	61.8	276.5

Source ADF&G Division of Subsistence household surveys, 2015.

Note The harvested number of salmon is represented as individual fish harvested.

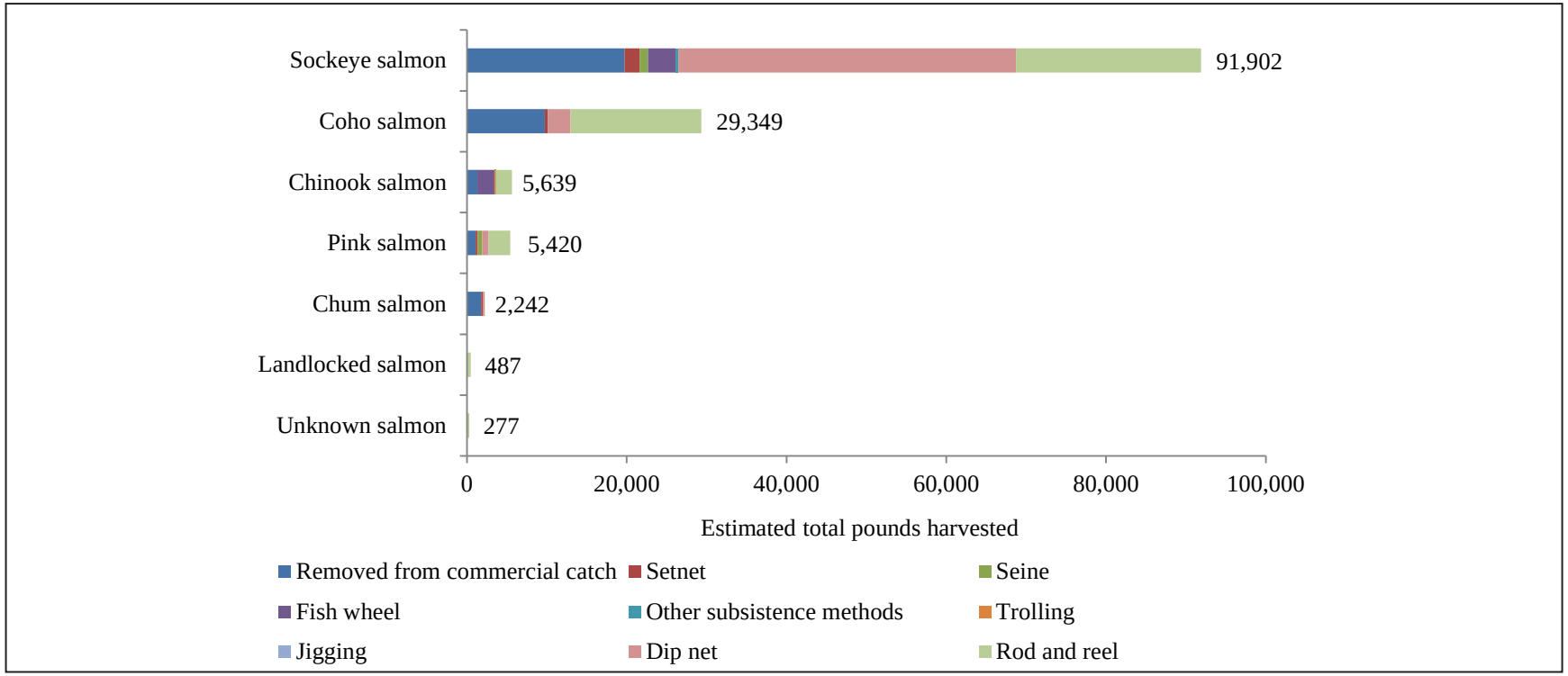


Figure 2-16.–Salmon harvest by gear type, Nikiski, 2014.

Table 2-15.–Estimated percentages of salmon harvested by gear type, resource, and total salmon harvest, Nikiski, 2014.

			Subsistence/personal use methods									
Resource	Percentage base	Removed from commercial catch	Setnet	Seine	Fish wheel	Jigging	Dip net	Other	Subsistence/ personal use gear, any method	Trolling	Rod and reel	Any method
Salmon	**Gear type**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
	Resource	**24.9%**	**2.0%**	**1.2%**	**4.1%**	**0.0%**	**34.1%**	**0.3%**	**41.7%**	**0.1%**	**33.3%**	**100.0%**
	Total	**24.9%**	**2.0%**	**1.2%**	**4.1%**	**0.0%**	**34.1%**	**0.3%**	**41.7%**	**0.1%**	**33.3%**	**100.0%**
Chum salmon	Gear type	5.3%	7.9%	0.0%	0.0%	0.0%	0.5%	0.0%	0.7%	0.0%	0.1%	1.7%
	Resource	79.2%	9.4%	0.0%	0.0%	0.0%	9.4%	0.0%	18.9%	0.0%	1.9%	100.0%
	Total	1.3%	0.2%	0.0%	0.0%	0.0%	0.2%	0.0%	0.3%	0.0%	0.0%	1.7%
Coho salmon	Gear type	29.0%	13.3%	0.0%	0.0%	0.0%	6.2%	0.0%	5.7%	0.0%	36.4%	21.7%
	Resource	33.2%	1.2%	0.0%	0.0%	0.0%	9.7%	0.0%	10.9%	0.0%	55.9%	100.0%
	Total	7.2%	0.3%	0.0%	0.0%	0.0%	2.1%	0.0%	2.4%	0.0%	12.1%	21.7%
Chinook salmon	Gear type	3.8%	0.0%	0.0%	38.1%	0.0%	0.0%	0.0%	3.8%	100.0%	4.5%	4.2%
	Resource	22.8%	0.0%	0.0%	37.8%	0.0%	0.0%	0.0%	37.8%	3.0%	36.3%	100.0%
	Total	1.0%	0.0%	0.0%	1.6%	0.0%	0.0%	0.0%	1.6%	0.1%	1.5%	4.2%
Pink salmon	Gear type	3.2%	9.1%	36.9%	0.0%	0.0%	1.7%	0.0%	2.9%	0.0%	6.0%	4.0%
	Resource	19.9%	4.5%	11.2%	0.0%	0.0%	14.6%	0.0%	30.3%	0.0%	49.8%	100.0%
	Total	0.8%	0.2%	0.5%	0.0%	0.0%	0.6%	0.0%	1.2%	0.0%	2.0%	4.0%
Sockeye salmon	Gear type	58.6%	69.8%	63.1%	61.9%	0.0%	91.7%	100.0%	86.8%	0.0%	51.4%	67.9%
	Resource	21.5%	2.0%	1.1%	3.8%	0.0%	46.0%	0.4%	53.3%	0.0%	25.2%	100.0%
	Total	14.6%	1.4%	0.8%	2.6%	0.0%	31.3%	0.3%	36.2%	0.0%	17.1%	67.9%
Landlocked salmon	Gear type	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.1%	0.0%	1.0%	0.4%
	Resource	0.0%	0.0%	0.0%	0.0%	9.5%	0.0%	0.0%	9.5%	0.0%	90.5%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.4%
Unknown salmon	Gear type	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.2%
	Resource	12.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	87.5%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.2%

Source ADF&G Division of Subsistence household surveys, 2015.

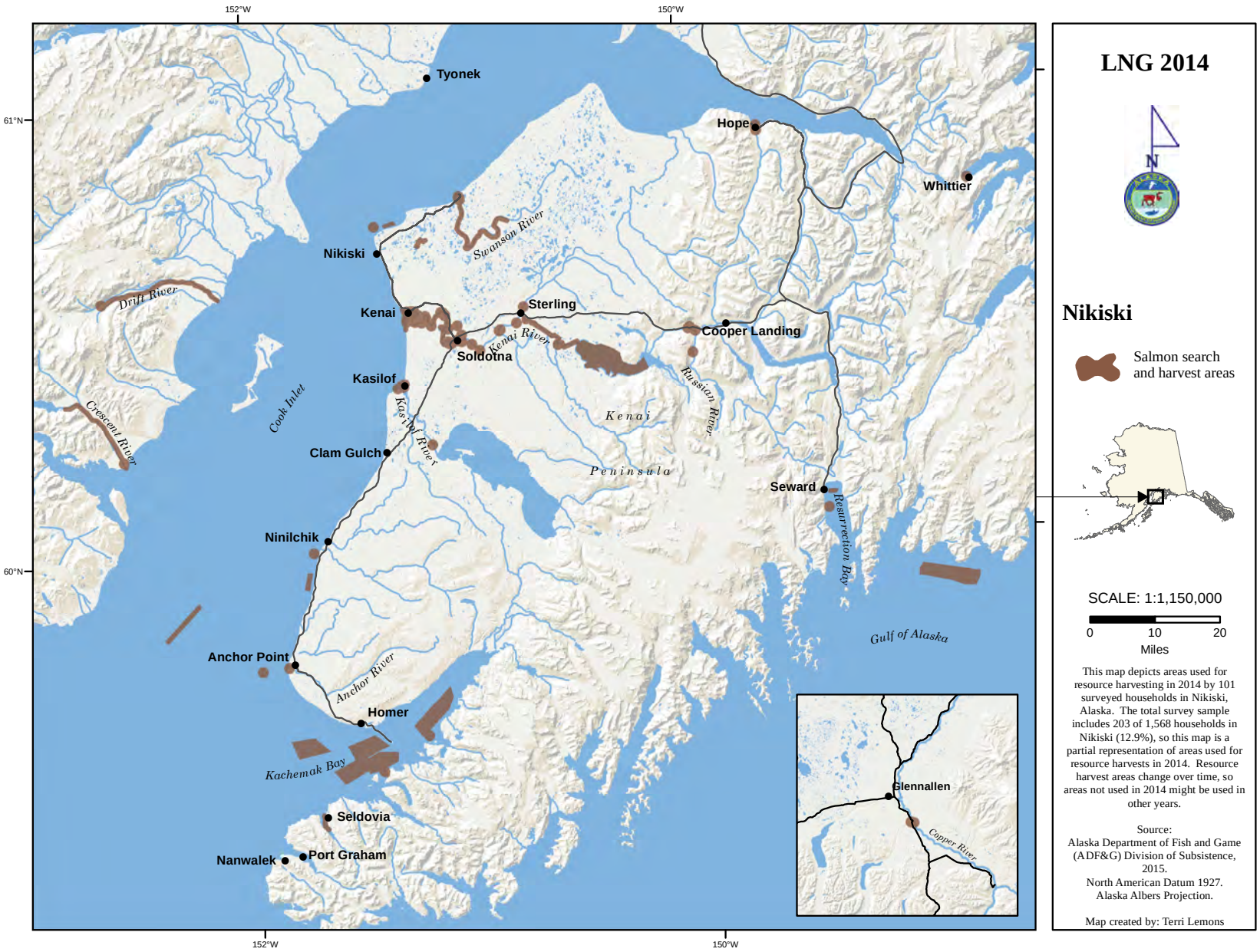
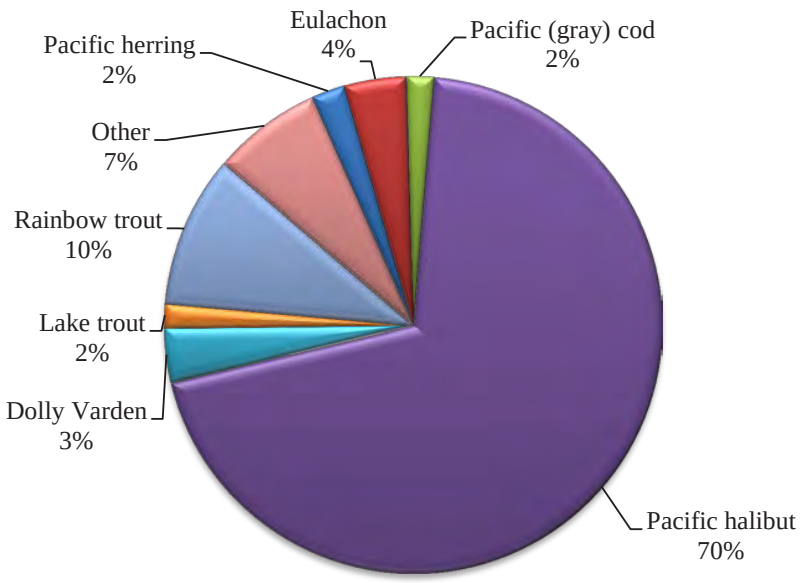


Figure 2-17.–Fishing and harvest locations of chum, coho, Chinook, pink, and sockeye salmon, Nikiski, 2014.



Note The "other" category includes species each providing less than 1.5% to the total nonsalmon fish harvest.

Figure 2-18.–Composition of nonsalmon fish harvest in pounds usable weight, Nikiski, 2014.

Nonsalmon Fish

The total harvest of nonsalmon fish in Nikiski in 2014 was approximately 53,278 lb, equating to 13 lb per capita, or 34 lb per household (Table 2-12). A large majority of the harvest was composed of Pacific halibut (70%), followed by rainbow trout (10%), eulachon (4%), Dolly Varden (3%), and smaller percentages of many other species (Figure 2-18). Approximately 9 lb of Pacific halibut were harvested per capita (24 lb per household) (Table 2-12). Pacific halibut was the most frequently used nonsalmon fish species (43% of households), followed by rainbow trout (19%), Dolly Varden (7%), and eulachon and lake trout (5% each). Smaller percentages of household use were estimated for all other species. Pacific halibut was also the most frequently shared nonsalmon fish species with 22% of households receiving this species and 11% giving it away. Less than 4% of households received or gave away any other species of nonsalmon fish.

Though rainbow trout were the second most frequently used nonsalmon fish (19% of households), the harvest was only about 1 lb per capita in 2014 (Table 2-12). For all other harvested species, the per capita harvest was less than 1 lb. The percentage of households attempting to harvest and successfully harvesting nonsalmon fish is largely correlated to the percentage of households using these species, with the greatest percentage of harvest occurring for Pacific halibut (27% of households), rainbow trout (17%), and char species such as Dolly Varden (6%) and lake trout (5%). The percentage of households attempting to harvest the highly harvested species was slightly higher (by a difference of 1% to 3%) than the percentage of successfully harvesting households. There were no species for which there was use but no successful harvest.

A total of 618 lb of nonsalmon fish were removed from commercial harvests for home use (Table 2-16). Figure 2-19 is a visual representation of the nonsalmon fish harvest weight harvested by gear type. An estimated 89% of the nonsalmon fish harvest by weight was caught using rod and reel (Table 2-17). For Pacific halibut, 95% of the harvest weight was caught with rod and reel and 5% was harvested with subsistence/personal use gear.[6] For rainbow trout and Dolly Varden, rod and reel accounted for 100% and 86% of the harvests, respectively; small proportions of the rod and reel harvests of these species were by

6. Nikiski residents are not eligible to participate in the federal subsistence fishery for Pacific halibut unless they are a member of a federally recognized Alaska Native tribe with customary and traditional uses of Pacific halibut. In 2014, there were 7 Subsistence Halibut Registration Certificates (SHARCs) issued to Nikiski residents and no SHARCs were returned to indicate participation in the federal subsistence Pacific halibut fishery (Fall and Lemons 2016:100).

Table 2-16.–Estimated harvest of nonsalmon fish by gear type and resource, Nikiski, 2014.

		Removed from commercial catch		Subsistence/personal use methods													
				Setnet		Seine		Fish wheel		Other method		Subsistence/personal use gear, any method		Rod and reel		Any method	
Resource	Unit[a]	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds
Nonsalmon fish			**617.9**		**2,288.3**		**0.0**		**0.0**		**2,885.0**		**5,173.3**		**47,487.1**		**53,278.3**
Pacific herring	gal	0.0	0.0	193.1	1,158.6	0.0	0.0	0.0	0.0	4.1	24.7	197.2	1,183.3	0.0	0.0	197.2	1,183.3
Pacific herring roe unspecified	gal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pacific herring sac roe	gal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pacific herring spawn on kelp	gal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Eulachon (hooligan, candlefish)	gal	0.0	0.0	347.6	1,129.7	0.0	0.0	0.0	0.0	309.0	1,004.1	656.6	2,133.8	0.0	0.0	656.6	2,133.8
Unknown smelt	gal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sea bass	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	92.7	92.7	92.7	92.7
Pacific (gray) cod	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.7	24.7	7.7	24.7	285.8	914.5	293.5	939.3
Pacific tomcod	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23.2	11.6	23.2	11.6
Walleye pollock (whiting)	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	154.5	216.3	154.5	216.3
Eel	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Starry flounder	ind	46.3	139.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.4	46.3	61.8	185.4
Unknown flounder	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.4	46.3	15.4	46.3	0.0	0.0	15.4	46.3
Lingcod	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	185.4	741.5	185.4	741.5
Unknown greenling	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pacific halibut	lb	139.0	139.0	0.0	0.0	0.0	0.0	0.0	0.0	1,785.1	1,785.1	1,785.1	1,785.1	35,354.0	35,354.0	37,278.2	37,278.2
Black rockfish	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	200.8	301.2	200.8	301.2
Red rockfish	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yelloweye rockfish	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23.2	69.5	23.2	69.5
China rockfish	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.4	46.3	15.4	46.3
Unknown rockfish	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	115.9	347.6	115.9	347.6
Sablefish (black cod)	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	146.8	455.0	146.8	455.0
Unknown Irish lord	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	92.7	46.3	92.7	46.3
Unknown sculpin	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown shark	ind	7.7	69.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	61.8	556.1	69.5	625.7
Skates	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	38.6	193.1	38.6	193.1
Unknown sole	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	231.7	231.7	231.7	231.7
Wolffish	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Arctic char	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.7	7.0	7.7	7.0
Dolly Varden	ind	193.1	270.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,150.9	1,611.3	1,344.0	1,881.6
Lake trout	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	594.8	832.7	594.8	832.7
Unknown char	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.4	21.6	15.4	21.6
Arctic grayling	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	169.9	119.0	169.9	119.0
Northern pike	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown sturgeon	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cutthroat trout	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rainbow trout	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3,746.2	5,244.7	3,746.2	5,244.7
Steelhead	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown whitefishes	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.4	27.0	15.4	27.0

Source ADF&G Division of Subsistence household surveys, 2015.

Note The summary row that includes incompatible units of measure for harvest number has been left blank.

a. The harvested number of each resource is measured by the unit in which the resource harvest information was collected; the unit of measurement is provided for each resource.

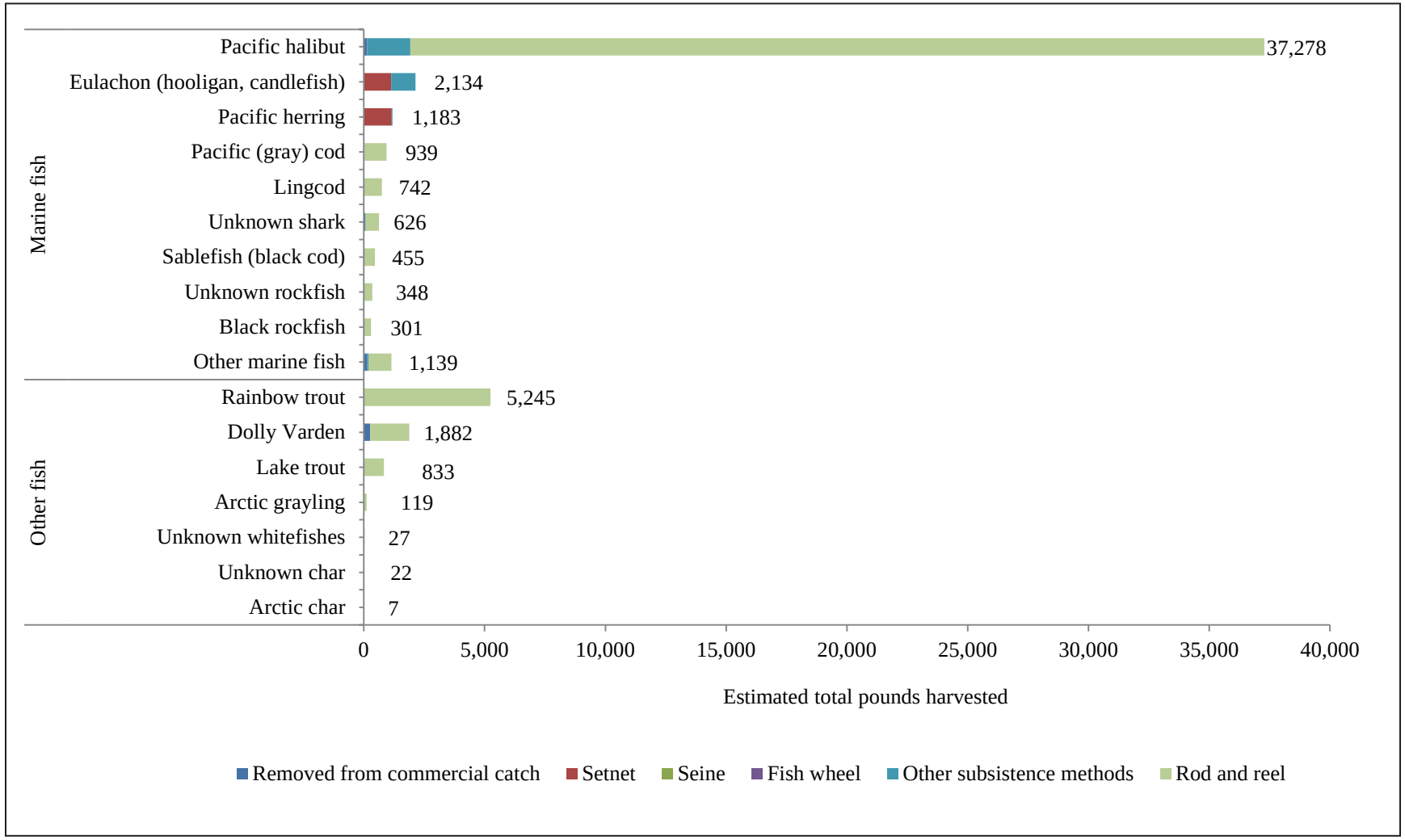


Figure 2-19.–Nonsalmon fish harvest by gear type, Nikiski, 2014.

Table 2-17.–Estimated percentages of nonsalmon fish harvested by gear type, resource, and total nonsalmon fish harvest, Nikiski, 2014.

			Subsistence/personal use methods						
Resource	Percentage base	Removed from commercial catch	Setnet	Seine	Fish wheel	Other	Subsistence/ personal use gear, any method	Rod and reel	Any method
Nonsalmon fish	**Gear type**	**100.0%**	**100.0%**	**0.0%**	**0.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
	Resource	**1.2%**	**4.3%**	**0.0%**	**0.0%**	**5.4%**	**9.7%**	**89.1%**	**100.0%**
	Total	**1.2%**	**4.3%**	**0.0%**	**0.0%**	**5.4%**	**9.7%**	**89.1%**	**100.0%**
Pacific herring	Gear type	0.0%	50.6%	0.0%	0.0%	0.9%	22.9%	0.0%	2.2%
	Resource	0.0%	97.9%	0.0%	0.0%	2.1%	100.0%	0.0%	100.0%
	Total	0.0%	2.2%	0.0%	0.0%	0.0%	2.2%	0.0%	2.2%
Pacific herring roe/unspecified	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Pacific herring sac roe	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Pacific herring spawn on kelp	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Eulachon (hooligan, candlefish)	Gear type	0.0%	49.4%	0.0%	0.0%	34.8%	41.2%	0.0%	4.0%
	Resource	0.0%	52.9%	0.0%	0.0%	47.1%	100.0%	0.0%	100.0%
	Total	0.0%	2.1%	0.0%	0.0%	1.9%	4.0%	0.0%	4.0%
Unknown smelt	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Sea bass	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.2%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.2%
Pacific (gray) cod	Gear type	0.0%	0.0%	0.0%	0.0%	0.9%	0.5%	1.9%	1.8%
	Resource	0.0%	0.0%	0.0%	0.0%	2.6%	2.6%	97.4%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.7%	1.8%
Pacific tomcod	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

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Table 2-17.–Page 2 of 4.

Resource	Percentage base	Removed from commercial catch	Subsistence/personal use methods: Setnet	Seine	Fish wheel	Other	Subsistence/ personal use gear, any method	Rod and reel	Any method
Walleye pollock (whiting)	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.4%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	0.4%
Eel	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Starry flounder	Gear type	22.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.3%
	Resource	75.0%	0.0%	0.0%	0.0%	0.0%	0.0%	25.0%	100.0%
	Total	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.3%
Unknown flounder	Gear type	0.0%	0.0%	0.0%	0.0%	1.6%	0.9%	0.0%	0.1%
	Resource	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%	0.1%
Lingcod	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.6%	1.4%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.4%	1.4%
Unknown greenling	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Pacific halibut	Gear type	22.5%	0.0%	0.0%	0.0%	61.9%	34.5%	74.4%	70.0%
	Resource	0.4%	0.0%	0.0%	0.0%	4.8%	4.8%	94.8%	100.0%
	Total	0.3%	0.0%	0.0%	0.0%	3.4%	3.4%	66.4%	70.0%
Black rockfish	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.6%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.6%
Red rockfish	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Yelloweye rockfish	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%

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Table 2-17.–Page 3 of 4.

Resource	Percentage base	Removed from commercial catch	Subsistence/personal use methods: Setnet	Seine	Fish wheel	Other	Subsistence/ personal use gear, any method	Rod and reel	Any method
China rockfish	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%
Unknown rockfish	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	0.7%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	0.7%
Sablefish (black cod)	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	0.9%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.9%
Unknown Irish lord	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%
Unknown sculpin	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown shark	Gear type	11.3%	0.0%	0.0%	0.0%	0.0%	0.0%	1.2%	1.2%
	Resource	11.1%	0.0%	0.0%	0.0%	0.0%	0.0%	88.9%	100.0%
	Total	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	1.2%
Skates	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	0.4%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	0.4%
Unknown sole	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.4%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	0.4%
Wolffish	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Arctic char	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

–continued–

Table 2-17.–Page 4 of 4.

Resource	Percentage base	Removed from commercial catch	Subsistence/personal use methods: Setnet	Seine	Fish wheel	Other	Subsistence/ personal use gear, any method	Rod and reel	Any method
Dolly Varden	Gear type	43.8%	0.0%	0.0%	0.0%	0.0%	0.0%	3.4%	3.5%
	Resource	14.4%	0.0%	0.0%	0.0%	0.0%	0.0%	85.6%	100.0%
	Total	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	3.0%	3.5%
Lake trout	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.8%	1.6%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.6%	1.6%
Unknown char	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Arctic grayling	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.2%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.2%
Northern pike	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown sturgeon	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Cutthroat trout	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rainbow trout	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	11.0%	9.8%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	9.8%	9.8%
Steelhead	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown whitefishes	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%

Source ADF&G Division of Subsistence household surveys, 2015.

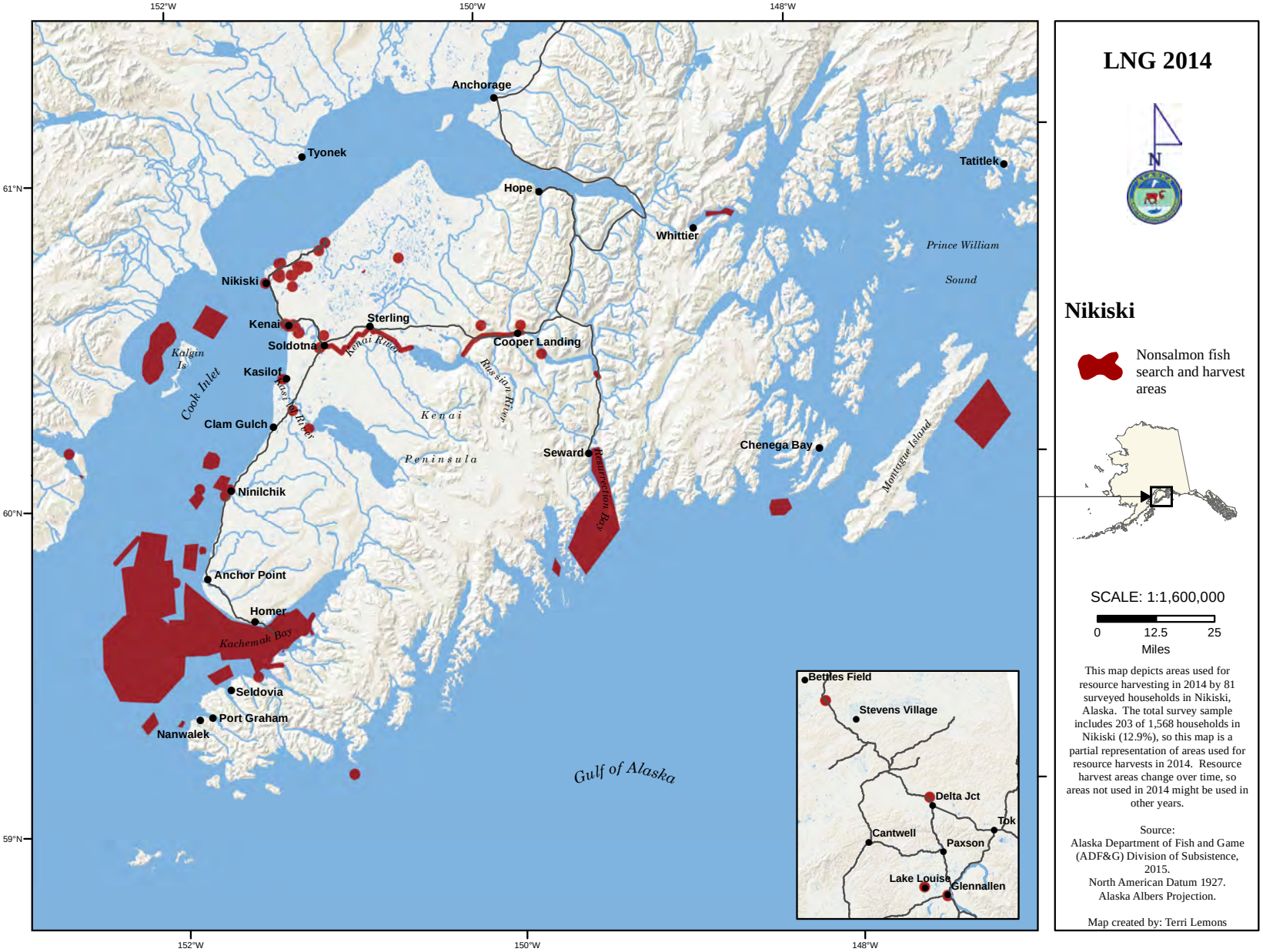


Figure 2-20.–Fishing and harvest locations of all nonsalmon fish resources, Nikiski, 2014.

ice fishing. A small percentage of Dolly Varden (14%) was harvested as removal from commercial gear. The char harvest was made up primarily of Dolly Varden and lake trout (Table 2-16). All lake trout were harvested using rod and reel. All Pacific herring and eulachon were harvested using subsistence/personal use gear.

Fishing for nonsalmon fish primarily occurred in the same locations that were used to harvest salmon (Figure 2-20). This includes the Kenai River, Russian River, Kasilof River, Kachemak Bay, lower Cook Inlet, and Resurrection Bay near Seward. Fishing also occurred to the west and north of Kalgin Island in Cook Inlet, east of Whittier in Prince William Sound and south of Montague Island in the Gulf of Alaska, as well as several other locations to the east of the Kenai Peninsula. Freshwater fishing also occurred in many lakes in proximity to the community of Nikiski. In addition, nonsalmon fishing also occurred in the Copper River Basin and further north in Interior Alaska, along the road system.

Large Land Mammals

The community of Nikiski harvested approximately 72,854 lb of large land mammals in 2014, equating to approximately 17 lb per capita, or 47 lb per household (Table 2-12). Only about 33% of households used large land mammals. Approximately 28% of households attempted to harvest 1 or more of these species and only 11% of Nikiski households experienced a successful harvest. Sharing occurred among Nikiski households using these species with an estimated 22% of households receiving these resources and 10% giving them away.

The vast majority of the harvest weight of large land mammals was moose (80%), followed by caribou (14%) and black bears (6%) (Figure 2-21). Moose were used by 29% of households, caribou by 6%, and black bears by 5% (Table 2-12). Deer were used by 1% of households but there was no successful harvest, only receipt. Approximately 108 (+/-51%) individual moose were harvested, equaling approximately 14 lb per capita. While 25% of households attempted to harvest moose, only 6% of Nikiski households harvested this species. Moose was the most frequently shared resource among the large land mammals with 20% of households receiving moose resources and 7% giving them away. Approximately 70 individual black bears and 70 caribou were harvested in 2014. These harvests contributed approximately 2 lb per capita of caribou and 1 lb per capita of black bears. These species were shared minimally between just a few households in the community.

All large land mammals were harvested between May and September (Table 2-18). Moose and caribou were harvested in August and September during the regulatory season. Black bears were harvested throughout the spring and summer. Most of the caribou were male (44%) though some were female (22%) and some were of unknown sex (33%). Most of the moose harvested were bulls (93%) and several (7%) were cows.

Search and harvest areas for large land mammals were primarily in proximity to the community of Nikiski in the northwestern quadrant of the Kenai Peninsula (Figure 2-22). Moose were sought near the community, including within the Captain Cook SRA. Some households sought moose along river corridors on the western side of Cook Inlet. Moose were also sought in proximity to the Glenn Highway near Sutton, north of the Glenn Highway near Lake Louise, and along the entire length of the Denali Highway between Paxson and Cantwell. Caribou were sought south of Skilak Lake, including near the headwaters of the Killey River, as well as along the Denali Highway, particularly near Paxson. Black bears were sought near Nikiski, along the northern shore of the Kasilof River, south of Tustumena Lake, as well as south of Nanwalek.

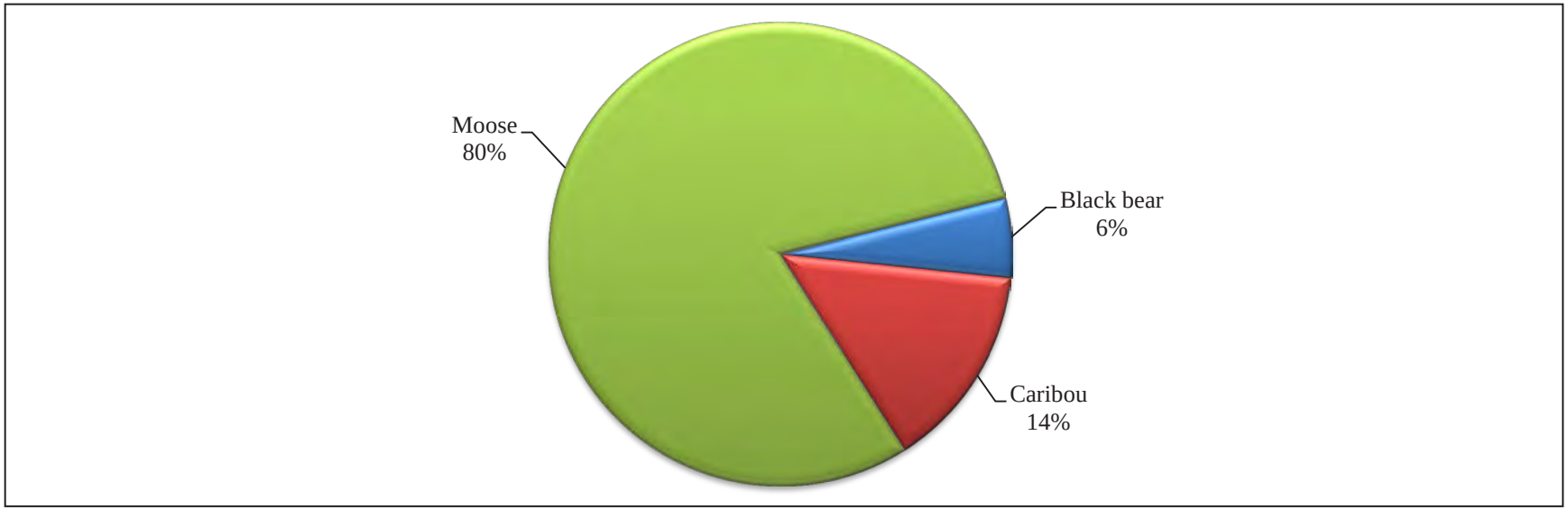


Figure 2-21.–Composition of large land mammal harvest in pounds usable weight, Nikiski, 2014.

Table 2-18.–Estimated large land mammal harvests by month and sex, Nikiski, 2014.

	Estimated harvest by month													
Resource	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk	**Total**
All large land mammals	**0.0**	**0.0**	**0.0**	**0.0**	**30.9**	**15.4**	**7.7**	**131.3**	**54.1**	**0.0**	**0.0**	**0.0**	**7.7**	**247.2**
Black bear	0.0	0.0	0.0	0.0	30.9	15.4	7.7	15.4	0.0	0.0	0.0	0.0	0.0	**69.5**
Caribou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	54.1	7.7	0.0	0.0	0.0	7.7	**69.5**
Caribou, male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23.2	7.7	0.0	0.0	0.0	0.0	**30.9**
Caribou, female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.4	0.0	0.0	0.0	0.0	0.0	**15.4**
Caribou, unknown sex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.4	0.0	0.0	0.0	0.0	7.7	**23.2**
Deer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Mountain goat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Moose	0.0	0.0	0.0	0.0	0.0	0.0	0.0	61.8	46.3	0.0	0.0	0.0	0.0	**108.1**
Moose, bull	0.0	0.0	0.0	0.0	0.0	0.0	0.0	61.8	38.6	0.0	0.0	0.0	0.0	**100.4**
Moose, cow	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.7	0.0	0.0	0.0	0.0	**7.7**
Moose, unknown sex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Dall sheep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**

Source ADF&G Division of Subsistence household surveys, 2015.

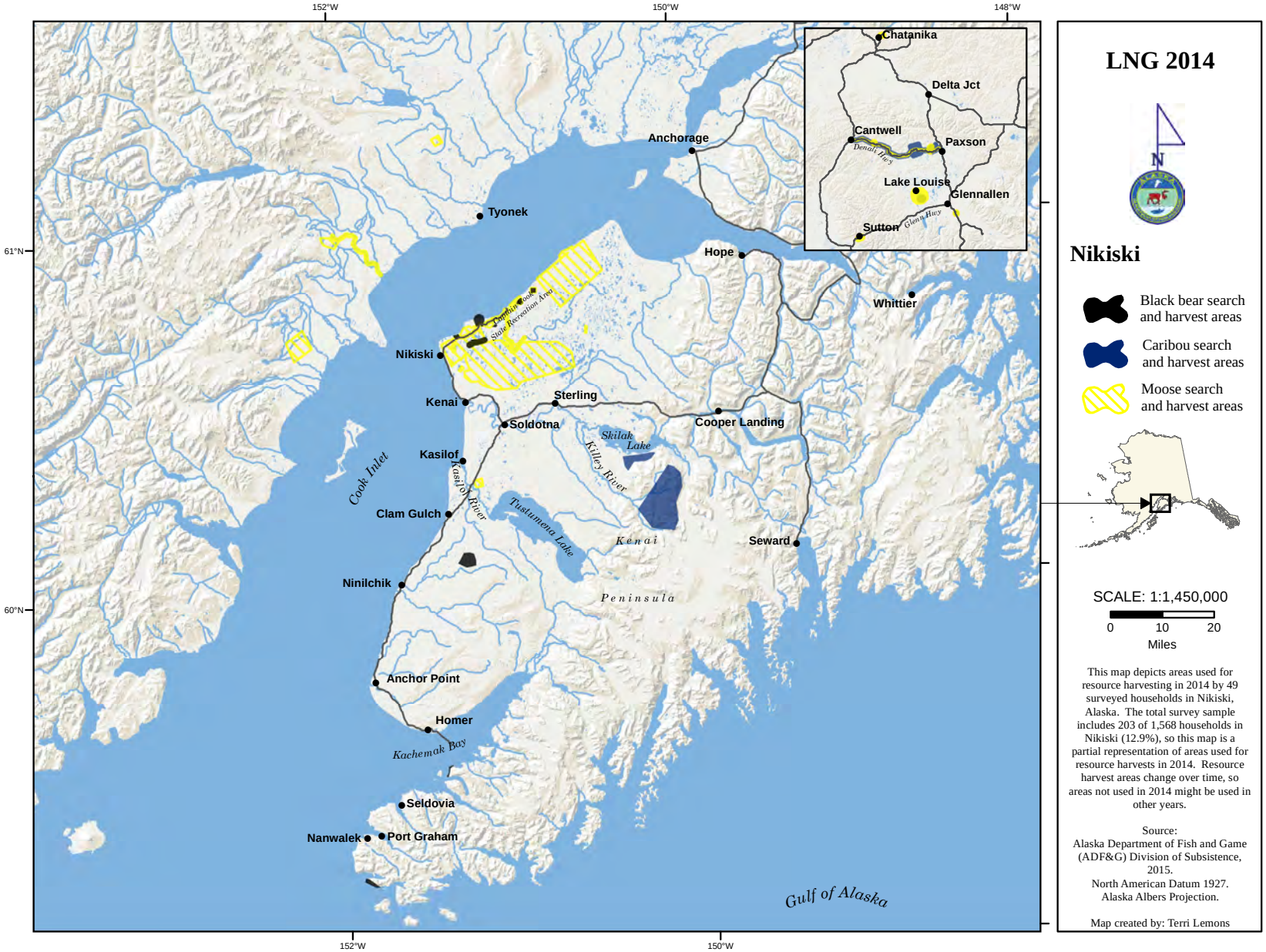


Figure 2-22.–Hunting locations of black bear, caribou, and moose, Nikiski, 2014.

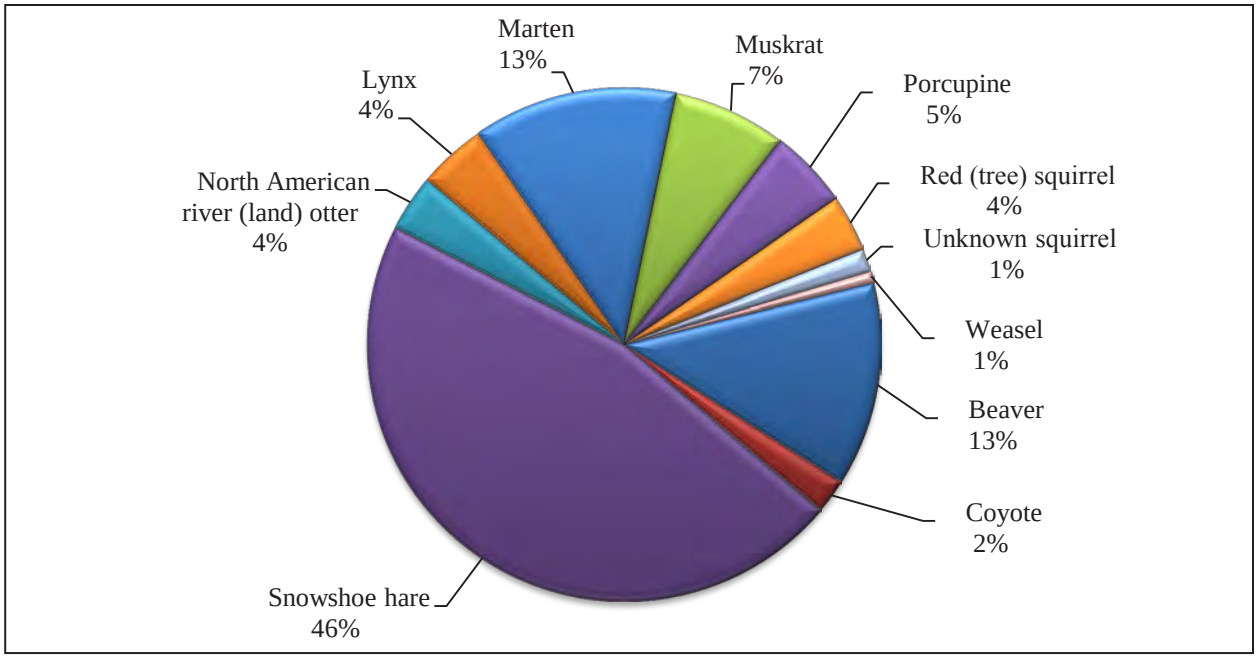


Figure 2-23.–Composition of small land mammal/furbearer harvest by individual animals harvested, Nikiski, 2014.

Small Land Mammals/Furbearers

Small land mammals were used by only 8% of Nikiski households in 2014 (Table 2-12). This resource is largely reported in individuals harvested since many of the species are used for fur rather than for food. In total, however, there was approximately 2,705 lb usable weight of small land mammals harvested, which represents the harvests used for consumption. The overall harvest of animals was primarily of snowshoe hares (46%), followed by beavers (13%), martens (13%), muskrats (7%), porcupines (5%), lynx (4%), North American river (land) otters (4%), red (tree) squirrels (4%), and smaller harvest percentages for several other species (Figure 2-23). For the most harvested species by individual animals, there were approximately 502 individual snowshoe hares harvested, 139 individual beavers, and 139 individual martens (Table 2-12).

Approximately 9% of Nikiski households attempted to harvest small land mammals in 2014 and 6% successfully harvested these resources (Table 2-12). Sharing of small land mammals was minimal with only 2% of Nikiski households receiving this resource and 2% giving it away. Snowshoe hare was the most frequently used species in this category (5% of households), followed by beaver (2%), and smaller percentages for all other species. Only beavers, red foxes, snowshoe hares, and porcupines were shared.

Small land mammals were harvested throughout the year with most being harvested in the winter months (Table 2-19). Harvests in December, January, and February accounted for 60% of the small land mammal harvest. The only month for which there was no harvest was May. Snowshoe hares were harvested primarily in late winter, but some harvests occurred in August and October. Porcupines and red squirrels were harvested primarily in the summer. All river otters and muskrats were harvested in November and December.

Nikiski residents sought small land mammals primarily in proximity to their community on the Kenai Peninsula (Figure 2-24). This includes areas within approximately 10 miles of the Kenai Spur Highway from Kenai to Captain Cook SRA. Some households also sought small land mammals along the Skilak Loop Road, in the vicinity of McArthur River on the west side of Cook Inlet, as well as along the Glenn Highway to the west of Nelchina.

Table 2-19.–Estimated small land mammal/furbearer harvests by month, Nikiski, 2014.

	Estimated harvest by month													
Resource	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk	**Total**
All small land mammals	**432.6**	**115.9**	**15.4**	**7.7**	**0.0**	**38.6**	**30.9**	**77.2**	**15.4**	**154.5**	**92.7**	**100.4**	**0.0**	**1,081.4**
Beaver	69.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.9	38.6	0.0	**139.0**
Coyote	23.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**23.2**
Red fox	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Snowshoe hare	154.5	108.1	15.4	7.7	0.0	0.0	0.0	61.8	0.0	154.5	0.0	0.0	0.0	**502.1**
North American river (land) otter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.4	23.2	0.0	**38.6**
Lynx	46.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**46.3**
Marten	139.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**139.0**
Mink	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Muskrat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	38.6	38.6	0.0	**77.2**
Porcupine	0.0	7.7	0.0	0.0	0.0	15.4	15.4	15.4	0.0	0.0	0.0	0.0	0.0	**54.1**
Arctic ground (parka) squirrel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Red (tree) squirrel	0.0	0.0	0.0	0.0	0.0	23.2	15.4	0.0	0.0	0.0	0.0	0.0	0.0	**38.6**
Unknown squirrel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.4	0.0	0.0	0.0	0.0	**15.4**
Weasel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.7	0.0	0.0	**7.7**
Gray wolf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Wolverine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**

Source ADF&G Division of Subsistence household surveys, 2015.

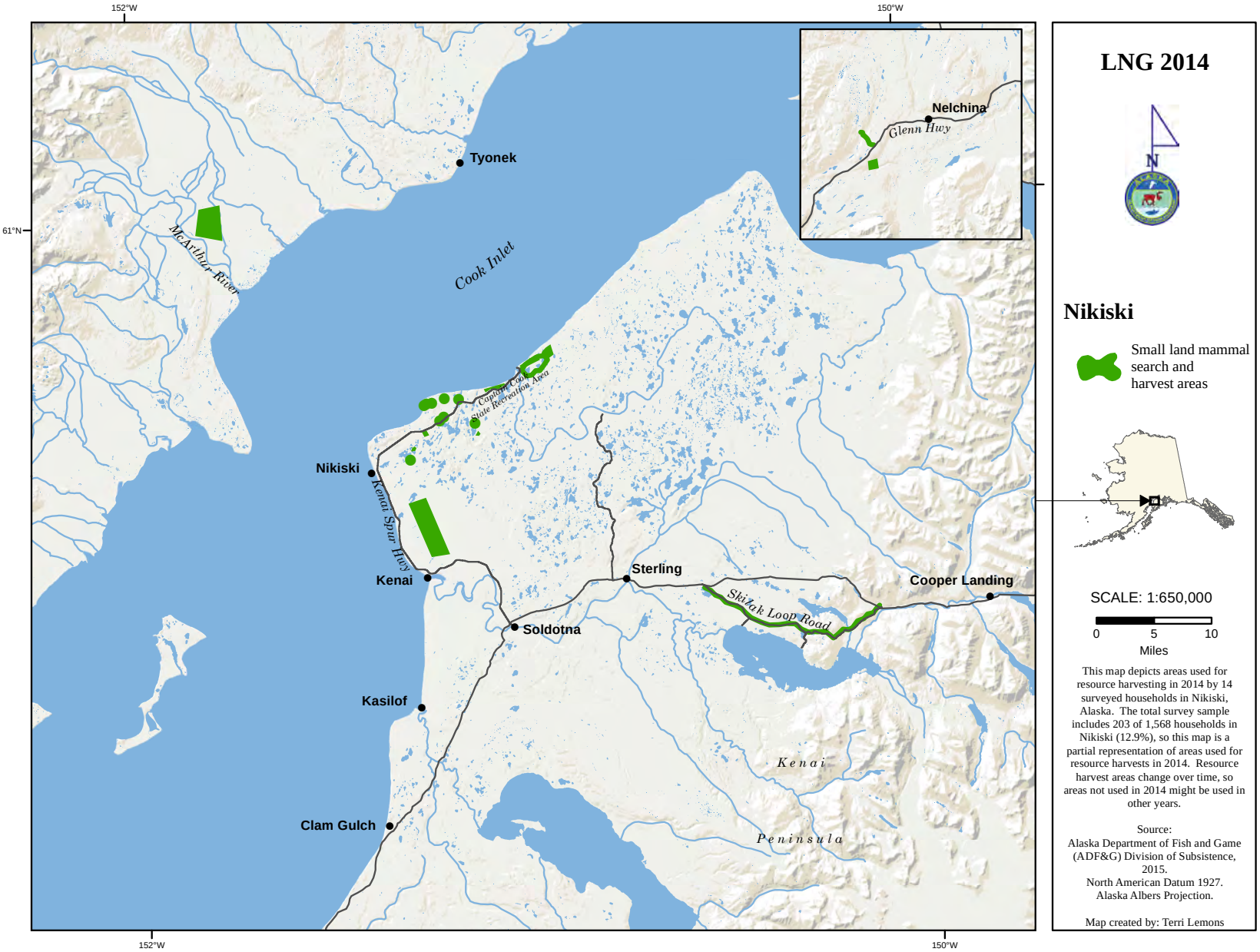


Figure 2-24.–Hunting and trapping locations of small land mammals/furbearers, Nikiski, 2014.

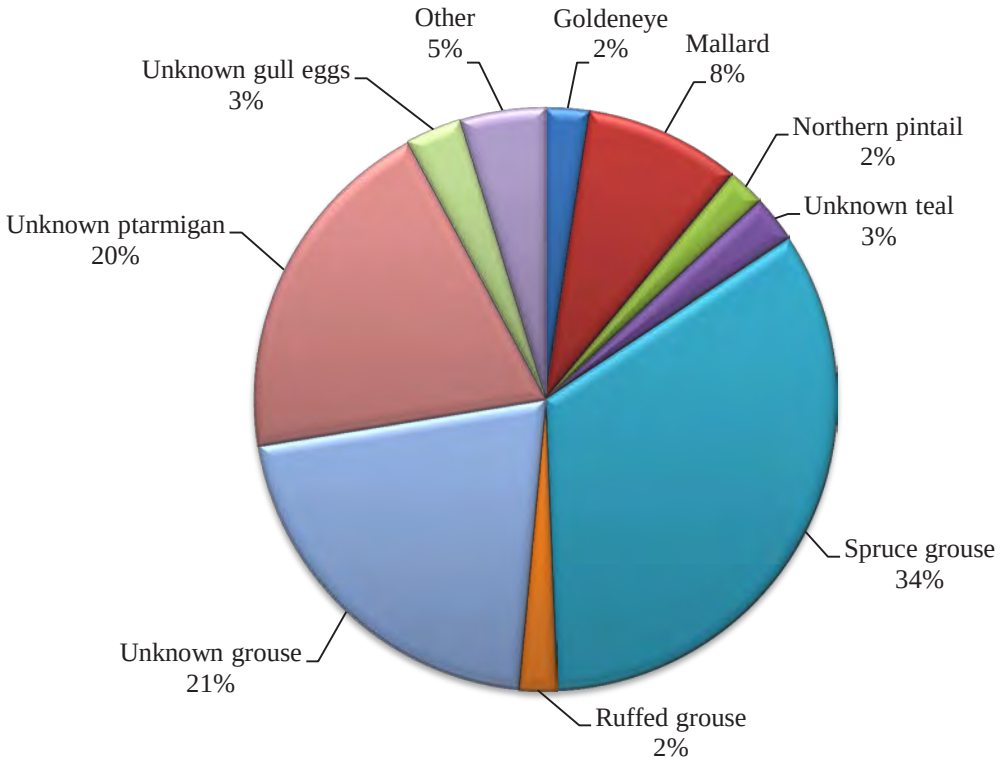
Marine Mammals

Marine mammals were used by a very small percentage of households in Nikiski (3%) (Table 2-12). No household attempted to harvest these species in the community, although 3% of households were given marine mammals and 1% gave away these kinds of resources. The only marine mammal species used in the community were bowhead whale (used by 1% of households) and also seals, with 2% of households using harbor seals and 1% of households using unknown seal species. The limited use of marine mammals may be due to the relatively small number of Alaska Natives living in the community and hunting restrictions that allow only Alaska Natives to hunt marine mammals per the Marine Mammal Protection Act.

Birds and Eggs

Birds and eggs were used by approximately 16% of Nikiski households in 2014 (Table 2-12). An estimated 1,782 lb of these resources were harvested by the community, equating to less than 1 lb per capita, or 1 lb per household. About 18% of households attempted to harvest birds and eggs and an estimated 14% of Nikiski households were successful harvesters. Birds and eggs were shared minimally within the community with 2% of households receiving these resources and 2% giving them away. Grouses (including ruffed grouse, spruce grouse, and unknown grouse) and ptarmigan made up 77% of the bird and egg harvest (Figure 2-25).

Considering the per capita harvest composition by species for this resource category, spruce grouse composed the greatest percentage (34%), followed by unknown grouses (21%), unknown ptarmigan (20%), mallards (8%), and smaller percentages for all other species harvested (Figure 2-25). Unknown grouses were used by the greatest percentage of households (7%), followed by spruce grouse (5%), unknown ptarmigan (3%), and mallards (2%) (Table 2-12). The only species for which there was attempted harvest but no reported



Note The "other" category includes species each providing less than 1.5% to the total birds and eggs harvest.

Figure 2-25.–Composition of bird and bird egg harvest in pounds usable weight, Nikiski, 2014.

Table 2-20.–Estimated bird harvests by season, Nikiski, 2014.

	Estimated harvest by season					
Resource	Spring	Summer	Fall	Winter	Season unknown	**Total**
All birds	**224.0**	**664.3**	**1,444.4**	**208.6**	**0.0**	**2,541.2**
Bufflehead	0.0	0.0	38.6	0.0	0.0	**38.6**
Unknown eider	0.0	0.0	0.0	0.0	0.0	**0.0**
Goldeneye	0.0	7.7	46.3	0.0	0.0	**54.1**
Harlequin duck	0.0	0.0	0.0	0.0	0.0	**0.0**
Mallard	0.0	7.7	162.2	0.0	0.0	**169.9**
Unknown merganser	0.0	0.0	15.4	0.0	0.0	**15.4**
Long-tailed duck	0.0	0.0	0.0	0.0	0.0	**0.0**
Northern pintail	0.0	0.0	46.3	0.0	0.0	**46.3**
Unknown scaup	0.0	0.0	0.0	0.0	0.0	**0.0**
Black scoter	0.0	0.0	0.0	0.0	0.0	**0.0**
Surf scoter	0.0	0.0	0.0	0.0	0.0	**0.0**
White-winged scoter	0.0	0.0	0.0	0.0	0.0	**0.0**
Northern shoveler	0.0	0.0	38.6	0.0	0.0	**38.6**
Unknown teal	0.0	0.0	154.5	0.0	0.0	**154.5**
Unknown wigeon	0.0	15.4	46.3	0.0	0.0	**61.8**
Unknown ducks	0.0	0.0	15.4	0.0	0.0	**15.4**
Unknown Canada/cackling geese	0.0	0.0	0.0	0.0	0.0	**0.0**
White-fronted goose	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown geese	0.0	0.0	0.0	0.0	0.0	**0.0**
Sandhill crane	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown cormorant	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown gull	0.0	0.0	0.0	0.0	0.0	**0.0**
Black-legged kittiwake	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown murre	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown puffin	0.0	0.0	0.0	0.0	0.0	**0.0**
Spruce grouse	100.4	169.9	494.3	92.7	0.0	**857.4**
Ruffed grouse	23.2	0.0	30.9	0.0	0.0	**54.1**
Unknown grouse	38.6	185.4	278.1	30.9	0.0	**533.0**
Unknown ptarmigan	61.8	278.1	77.2	85.0	0.0	**502.1**

Source ADF&G Division of Subsistence household surveys, 2015.

success was unknown types of scaup. Gull eggs were used by only 1% of households and less than 1% of Nikiski households harvested these. Despite the minimal participation in harvesting eggs, approximately 56 lb of unknown gull eggs were harvested.

Birds were harvested throughout the year in Nikiski, though about 57% of the harvests were during the fall (Table 2-20). All waterfowl were harvested during the summer and fall. Grouses and ptarmigan were harvested throughout the year.

The search and harvest areas for birds and eggs were quite diverse for Nikiski in 2014 (Figure 2-26). Many households sought birds in the immediate vicinity of the community. Ducks and geese were also sought near the Kenai River, downstream of Skilak Lake, and near the mouths of Drift River and Harriet Creek along Redoubt Bay on the west side of Cook Inlet. Grouses and ptarmigan were sought in the Kenai Mountains near the Skilak Glacier, within 10 miles of the Seward Highway north of the Sterling Highway, and along the entire length of the Swanson River Road near Sterling. They were also sought near the Glenn Highway in proximity to Sutton, along the Dalton Highway north of Fairbanks, and to the west of the community of Tyonek near the Neacola Mountains.

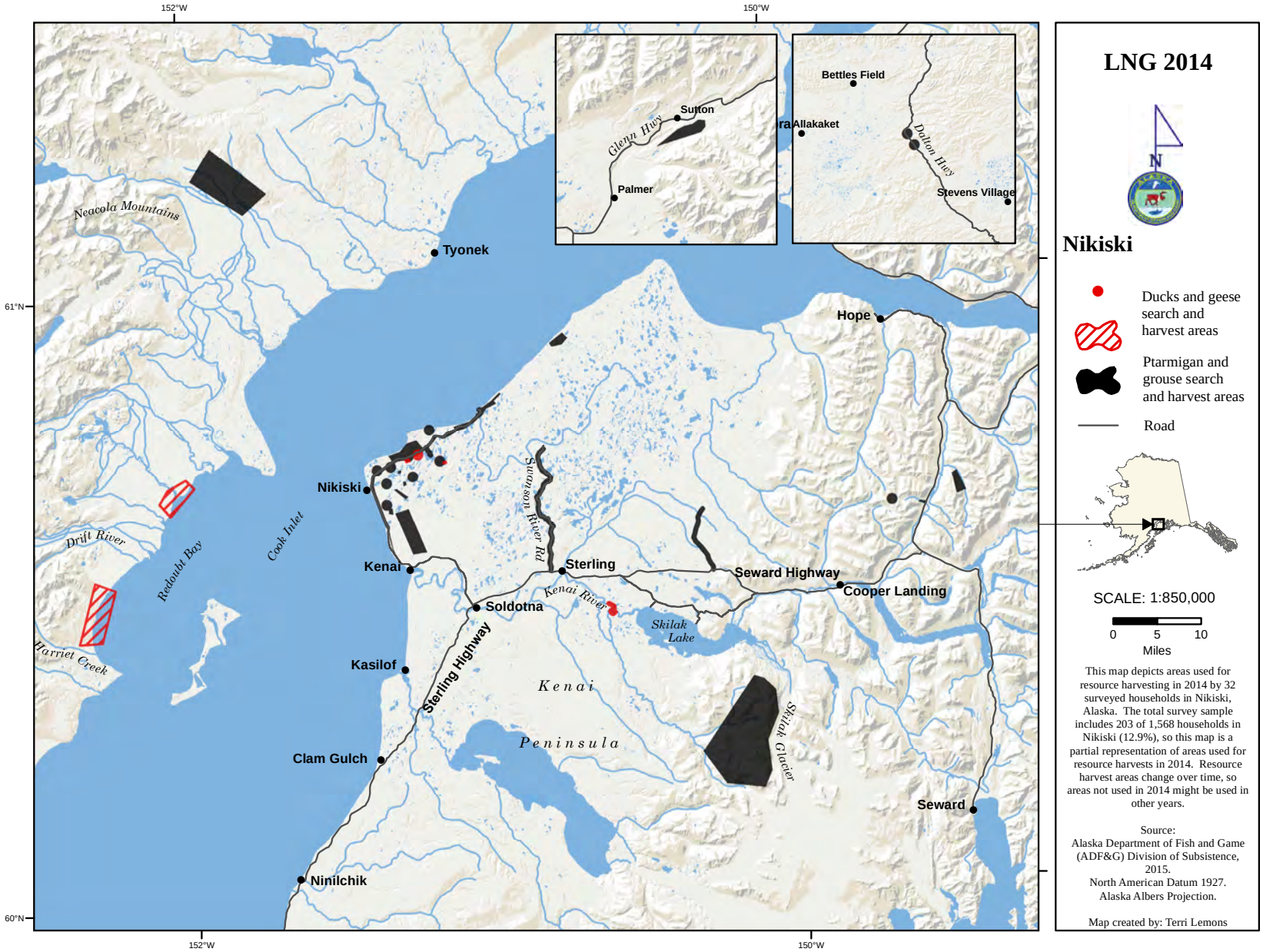


Figure 2-26.–Hunting and harvest locations of migratory waterfowl and upland game birds, Nikiski, 2014.

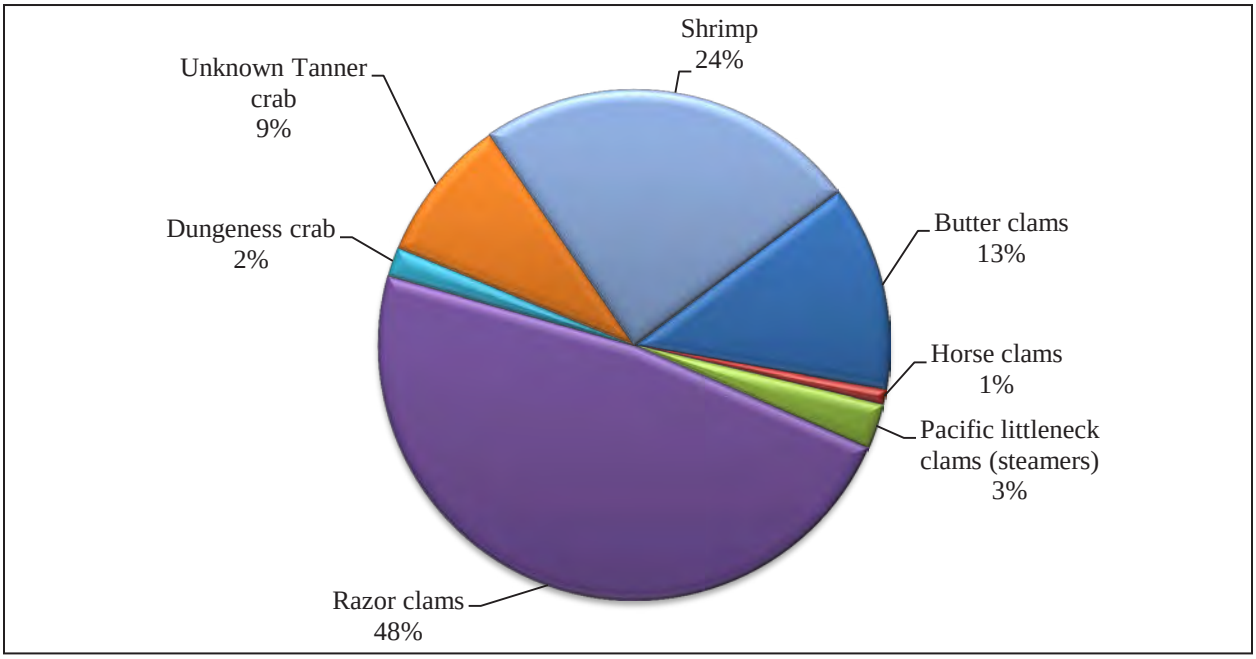


Figure 2-27.–Composition of marine invertebrates harvest in pounds usable weight, Nikiski, 2014.

Marine Invertebrates

Nikiski residents harvested a total of 7,258 lb of marine invertebrates in 2014, equating to approximately 2 lb per capita, or 5 lb per household (Table 2-12). These resources were used by approximately 19% of the community. Razor clams composed the greatest percentage of the marine invertebrate harvest (48%), followed by shrimp (24%), butter clams (13%), unknown Tanner crabs (9%), Pacific littleneck clams (steamers) (3%), Dungeness crabs (2%), and horse clams (1%) (Figure 2-27). Razor clams, butter clams, and shrimp were used by the greatest percentage of households: 11%, 6%, and 5%, respectively (Table 2-12). The per capita harvest of razor clams was approximately 1 lb, and there were smaller per capita harvest amounts for all other marine invertebrates.

Approximately 15% of Nikiski households attempted to harvest at least 1 marine invertebrate species (Table 2-12). Approximately 14% of households were successful at harvesting marine invertebrates. The only marine invertebrates that were sought but not harvested were limpets and unknown mussels, which were sought by less than 1% of households. All households that sought other species of marine invertebrates were successful, except for some households seeking razor clams; an estimated 8% of households attempted to harvest razor clams but 7% of Nikiski households successfully harvested.

Sharing of marine invertebrates was minimal; approximately 6% of households received marine invertebrates and approximately 4% gave them away (Table 2-12). Razor clams were shared most frequently with 3% of households receiving and 3% giving them away. The only other resource that was given away was shrimp, and that was only by 1% of households. Butter clams, unknown cockles, unknown king crabs, and unknown Tanner crabs were received by approximately 1% of households.

Marine invertebrates were sought and harvested from a variety of locations in Cook Inlet and Prince William Sound (Figure 2-28). On the western side of Cook Inlet they were sought primarily in Redoubt, Tuxedni, and Chinitna bays. On the east side of Cook Inlet along the Kenai Peninsula, they were sought near Clam Gulch, Ninilchik, and in Kachemak Bay. In Prince William Sound households harvested marine invertebrates primarily outside of Whittier along Port Wells, near Perry Island, and along Unakwik Inlet. Popular areas for harvesting razor clams along the Kenai Peninsula were closed or experienced reduced bag limits in 2014 under emergency orders issued on March 11 of that year.[7]

7. Alaska Department of Fish and Game Division of Sport Fish. “Ninilchik Beaches Closed for Clams; Bag and Possession

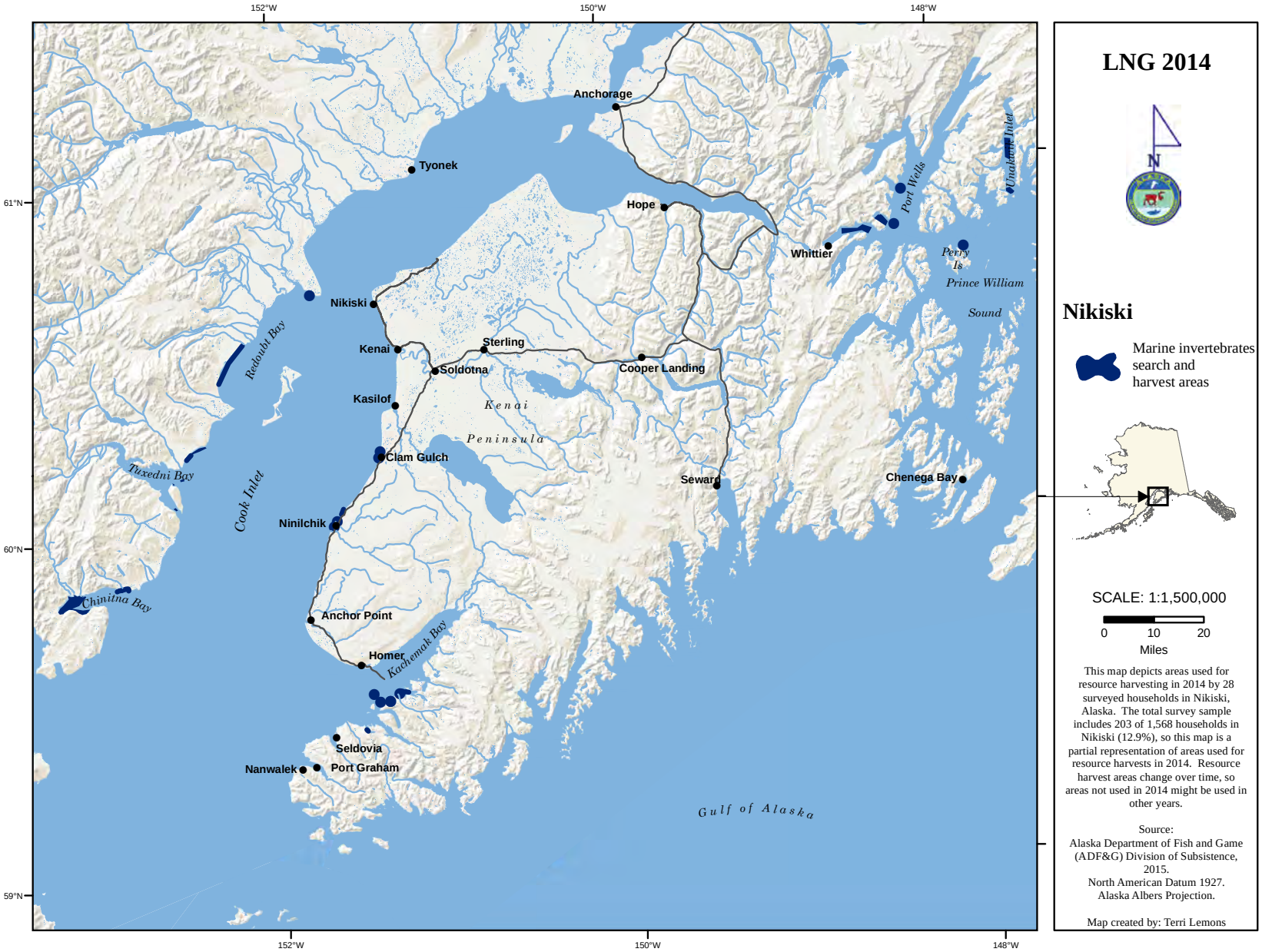
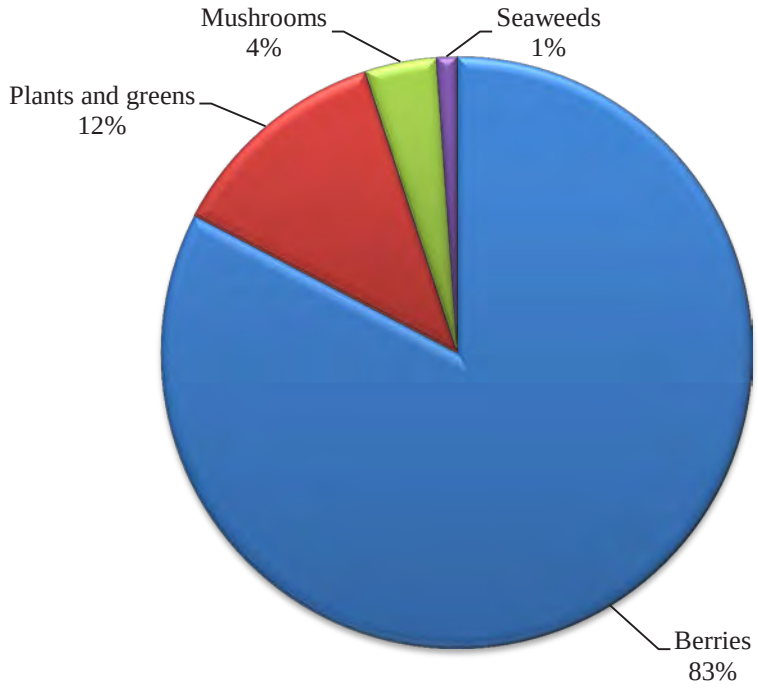


Figure 2-28.–Fishing and harvest locations of marine invertebrates, Nikiski, 2014.



Note Seaweed totals do not include amounts used for fertelizer.

Figure 2-29.–Composition of vegetation harvest by type and pounds usable weight, Nikiski, 2014.

Vegetation

Vegetation was used by a greater percentage of Nikiski households (81%) than any other resource category (Table 2-12). A total of approximately 19,229 lb were harvested by Nikiski residents in 2014, equating to approximately 5 lb per capita, or 12 lb per household. Almost 79% of households attempted to harvest at least 1 type of vegetation and an equal percentage of Nikiski households were successful at doing so. Vegetation was also frequently shared, with 24% of households receiving these resources and 27% giving them away.

The vast majority (83%) of the harvest of vegetation was composed of berries (Figure 2-29). Plants and greens made up 12% of the vegetation harvest, mushrooms 4%, and seaweeds 1%. Excluding wood (used primarily for home heating or crafts), blueberry was the most frequently used resource in this category (45% of households), the most frequently sought (44% of households), the highest successfully harvested (42% of households), and the most frequently shared (8% of households receiving, 7% of households giving away) (Table 2-12). A total of approximately 1,462 gallons of blueberries were harvested (1 lb per capita, or 4 lb per household). After blueberries, the next most frequently used berry resources were raspberries (23% of households), lowbush cranberries (20%), highbush cranberries (16%), strawberries (13%), salmonberries (11%), and smaller percentages of households using several others.

Mushrooms were also harvested by Nikiski households in 2014 and these resources are included in the survey results discussion under vegetation (Table 2-12). Approximately 11% of households harvested unknown mushrooms, 1% harvested puffballs, and 1% harvested chaga. The resource designation "unknown mushrooms" indicates that the household did not report the species, not that harvesters were unable to identify the mushrooms during harvest activities. In total, approximately 739 gallons of mushrooms were harvested.

Limit Decreased on Remaining Eastside Beaches," news release, March 11, 2014. https://www.adfg.alaska.gov/sf/EONR/index.cfm?ADFG=region.NR&Year=2014&NRID=1914 (accessed May 2016).

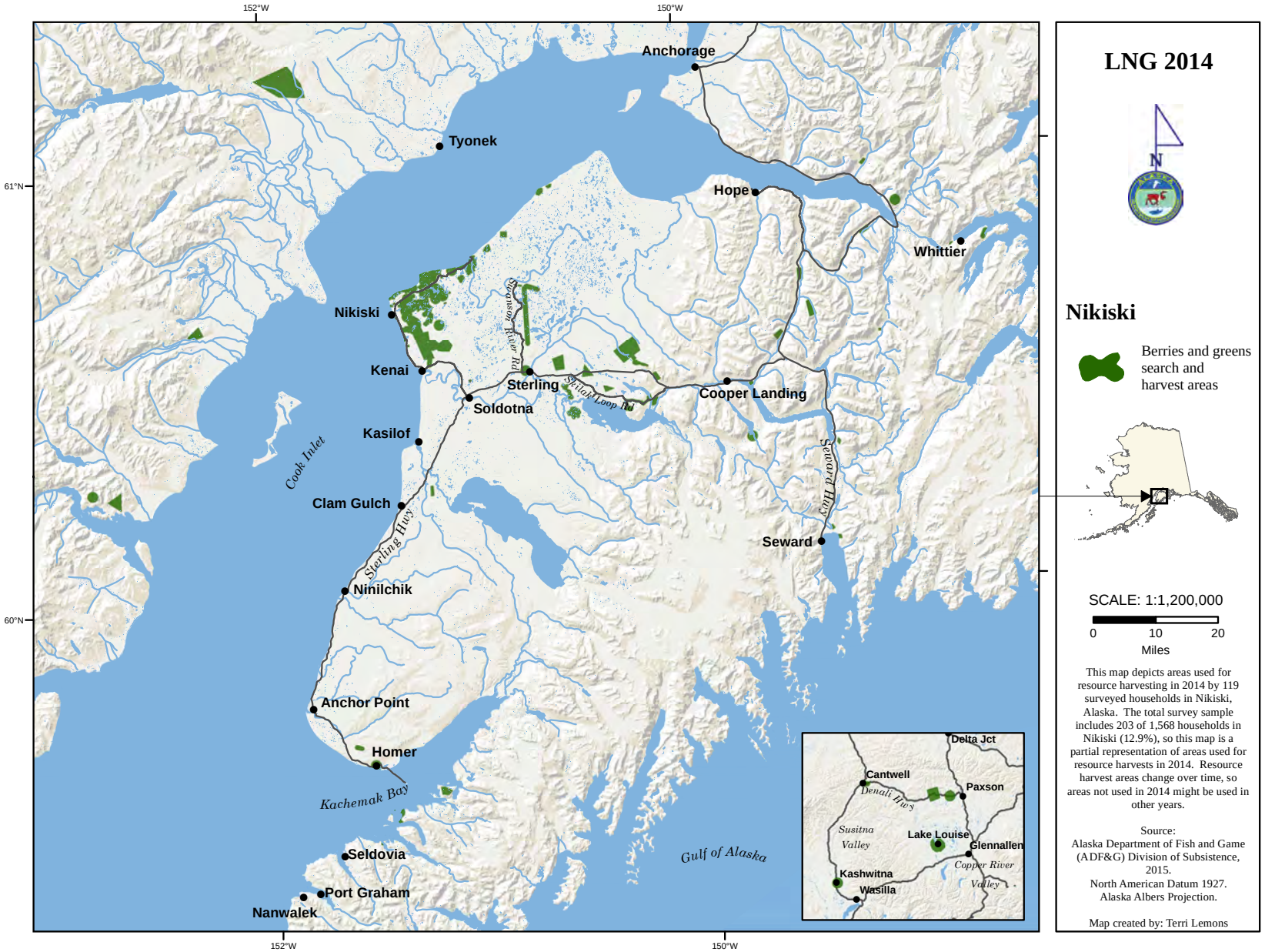


Figure 2-30.–Gathering and harvest locations of berries and plants, greens, and mushrooms, Nikiski, 2014.

Though wood is not consumed, the harvest survey also documents the harvest and use of this resource (Table 2-12). Approximately 55% of Nikiski households used wood in 2014. Wood was also shared: 8% of households received wood and 15% gave wood away. Most households (59%) did not use wood for home heating (Table 1-10). Harvested wood may also have been used for other purposes, including construction, smoking fish and game, campfires, and handicrafts, to name a few.

A variety of other vegetative resources—considered plants or greens, as well as consumed wood products—were also used by Nikiski households (Table 2-12). Among these resources, the most used were wild rose hips (11% of households), fiddlehead ferns (8%), fireweed (4%), other wild greens (a catchall category) (4%), dandelion greens (3%), spruce tips (2%), devil's club (2%), nettles (2%), and birch sap (2%); other resources were used by fewer households. The combined harvests of all these types of vegetative resources (including mushrooms) in 2014 totaled approximately 2,402 gallons. Additionally, there was a small harvest of seaweeds (bull kelp and unknown types of seaweed) equating to 52 gallons harvested (209 lb).

Berries and greens were harvested primarily in proximity to the road system on the Kenai Peninsula, with the majority of harvests occurring near the community of Nikiski (Figure 2-30). Some harvests occurred along the Swanson River Road, the Sterling Highway, Skilak Loop Road, and the Seward Highway. There were also some harvests along the southern edge of Kachemak Bay and near Whittier. Search and harvest areas also included small areas on the west side of Cook Inlet. In addition, some households sought vegetation in the Susitna River Valley near Kashwitna and in the Copper River Valley near Lake Louise and along the Denali Highway west of Paxson.

Comparing Harvests and Uses in 2014 with Previous Years

Harvest Assessments

Researchers asked respondents to assess their own harvests in 2 ways: whether they got more, less, or about the same amount of 9 resource categories in 2014 as in the past 5 years, and whether they got "enough" of each of the 9 resource categories. Households also were asked to provide reasons if their use was different or if they were unable to get enough of a resource. If they did not get enough of a resource, they were asked to evaluate the severity of the impact to their household as a result of not getting enough. This section discusses responses to those questions.

Together, Table 2-21 and Figure 2-31 and Figure 2-32 provide a broad overview of households' assessments of their harvests in 2014. Because not everyone uses all resource categories, some households did not respond to the assessment questions. Additionally, some households that do typically use a resource category simply did not answer questions.

Salmon is the most harvested of all the subsistence resource categories used by Nikiski households. Regarding salmon use, 38% of responding households explained that they used the same amount of salmon in 2014 as they did in previous years, 35% reported that they used less, and 6% said they used more (Table 2-21; Figure 2-31). When asked why they used less, 26% of respondents reported that they did so due to working/no time to harvest (Table 2-22). Other top stated reasons for using less salmon included the resources were less available (25%), lack of effort (16%), unsuccessful harvest attempts (13%), family/personal reasons (12%), and less sharing (9%). For those households that used more salmon in the study year, 27% indicated that they needed more, 27% indicated that they had increased harvest effort, and 18% indicated store-bought food expenses caused them to use more salmon (Table 2-23). In Nikiski, 22% of sampled households stated that they did not get enough salmon (Figure 2-32). When asked to evaluate the impact of not getting enough salmon, 9% of the 44 households that indicated not getting enough salmon described it as not noticeable, 66% described the impact as minor, 18% explained that not getting enough salmon had a major effect on their household, and 5% stated that the impact was severe (Table 2-24).

For large land mammals, the second most harvested of all subsistence resource categories used by Nikiski households, 22% of responding households explained that they used the same amount of large land mammals

Table 2-21.–Changes in household uses of resources compared to recent years, Nikiski, 2014.

			Households reporting use									
	Sampled	Valid	Total households		Less		Same		More		Households not using	
Resource category	households	responses[a]	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	203	202	191	94.6%	131	64.9%	157	77.7%	63	31.2%	NA	NA
All resources	**203**	**198**	**188**	**94.9%**	**81**	**40.9%**	**92**	**46.5%**	**15**	**7.6%**	**10**	**5.1%**
Salmon	203	199	157	78.9%	70	35.2%	76	38.2%	11	5.5%	42	21.1%
Nonsalmon fish	203	190	121	63.7%	48	25.3%	59	31.1%	14	7.4%	69	36.3%
Large land mammals	203	192	95	49.5%	38	19.8%	42	21.9%	15	7.8%	97	50.5%
Small land mammals	203	199	28	14.1%	16	8.0%	8	4.0%	4	2.0%	171	85.9%
Marine mammals	203	200	5	2.5%	1	0.5%	4	2.0%	0	0.0%	195	97.5%
Birds	203	187	23	12.3%	9	4.8%	11	5.9%	3	1.6%	164	87.7%
Marine invertebrates	203	196	68	34.7%	39	19.9%	19	9.7%	10	5.1%	128	65.3%
Vegetation	203	197	162	82.2%	44	22.3%	92	46.7%	26	13.2%	35	17.8%

Source ADF&G Division of Subsistence household surveys, 2015.

Note "NA" indicates that there is not applicable data.

a. Valid responses do not include households that did not provide any response.

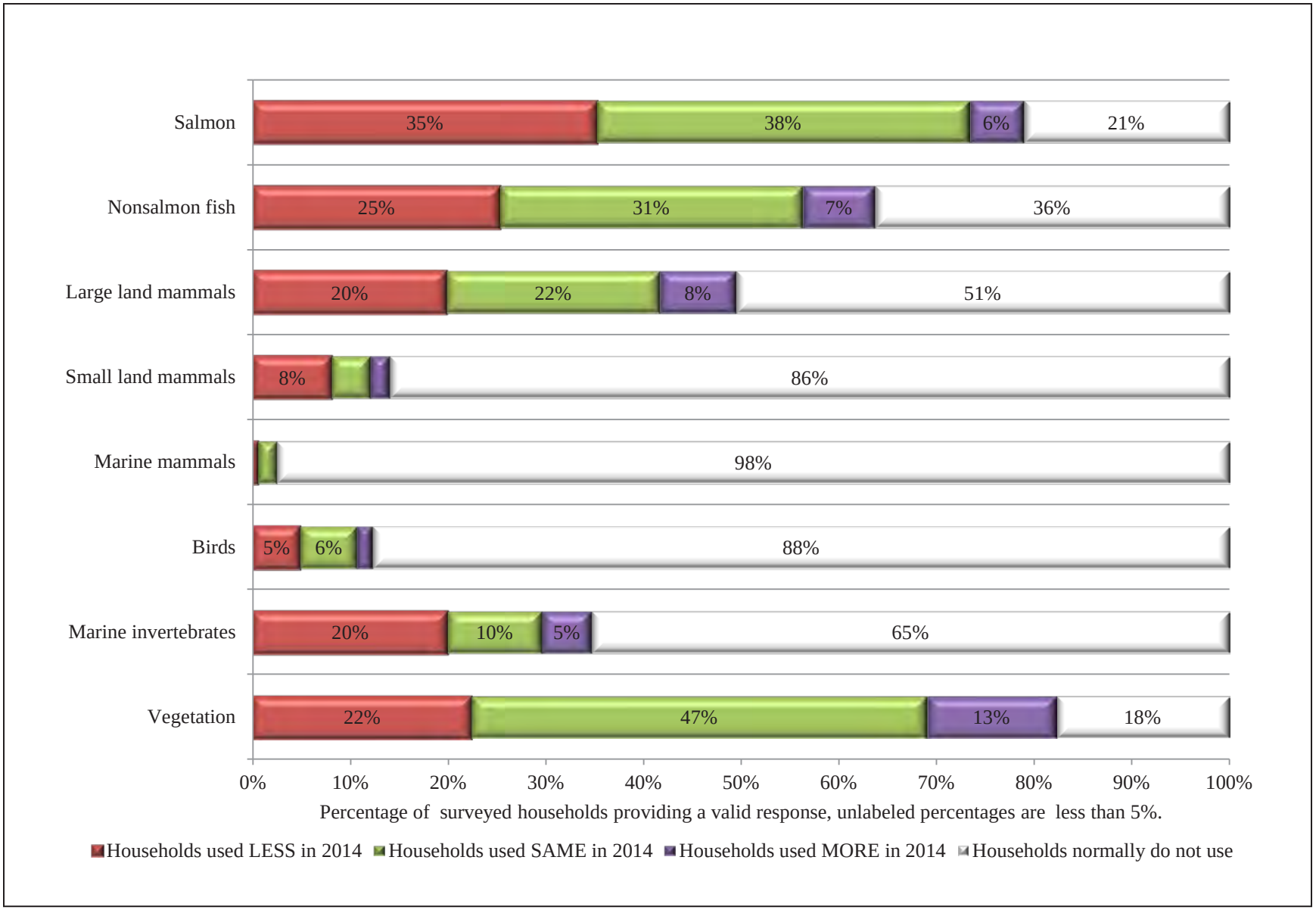


Figure 2-31.–Changes in household uses of resources compared to recent years, Nikiski, 2014.

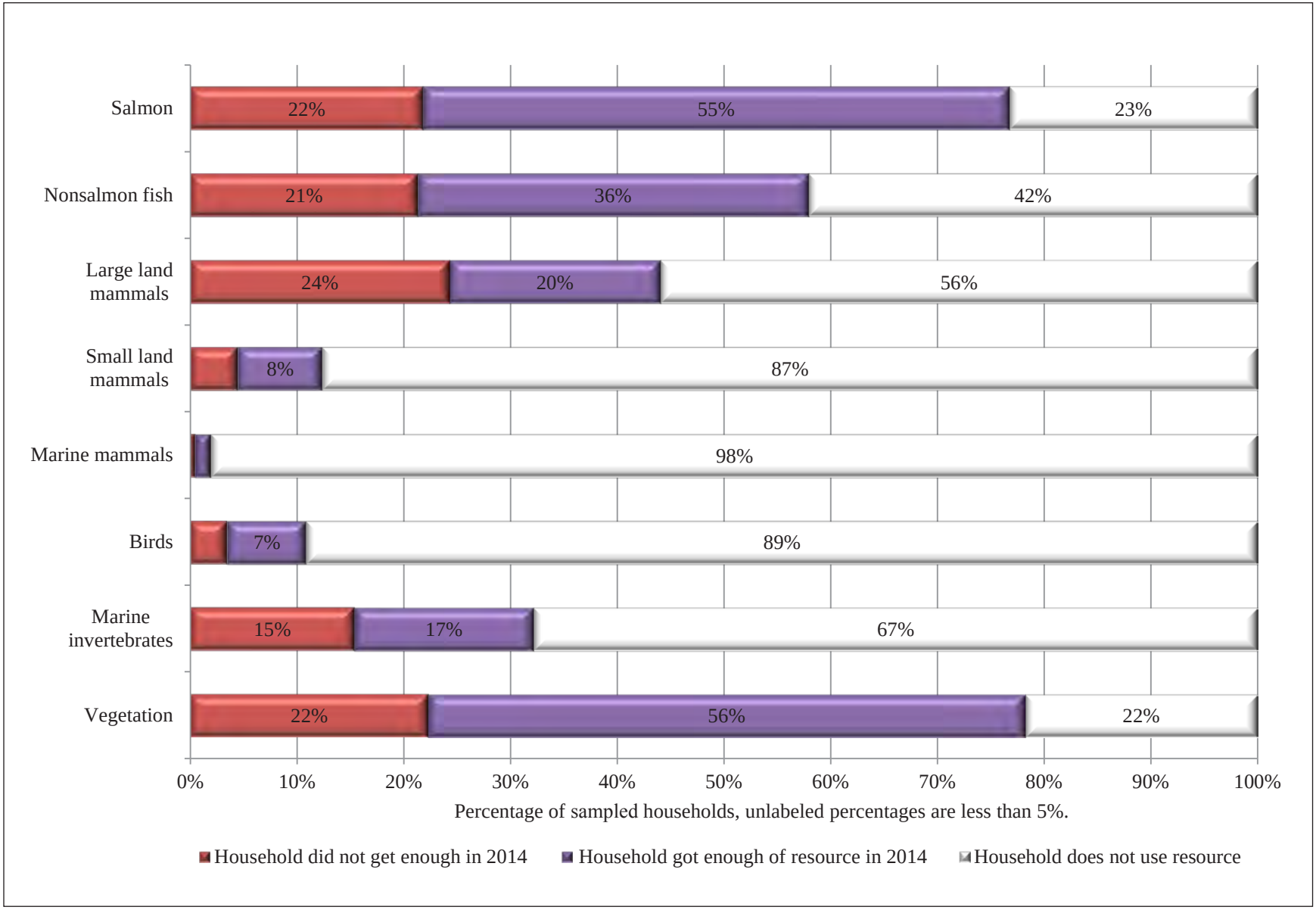


Figure 2-32.–Percentage of sampled households reporting whether they had enough resources, by resource category, Nikiski, 2014.

Table 2-22.–Reasons for less household uses of resources compared to recent years, Nikiski, 2014.

Resource category	Valid responses[a]	Households reporting reasons for less use	Family/ personal		Resources less available		Too far to travel		Lack of equipment		Less sharing		Lack of effort	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	202	129	25	19.4%	48	37.2%	2	1.6%	6	4.7%	17	13.2%	35	27.1%
All resources	**198**	**80**	**15**	**18.8%**	**21**	**26.3%**	**0**	**0.0%**	**3**	**3.8%**	**6**	**7.5%**	**6**	**7.5%**
Salmon	199	69	8	11.6%	17	24.6%	0	0.0%	0	0.0%	6	8.7%	11	15.9%
Nonsalmon fish	190	48	6	12.5%	7	14.6%	1	2.1%	2	4.2%	6	12.5%	13	27.1%
Large land mammals	192	36	5	13.9%	3	8.3%	1	2.8%	0	0.0%	5	13.9%	3	8.3%
Small land mammals	199	15	1	6.7%	8	53.3%	0	0.0%	0	0.0%	0	0.0%	4	26.7%
Marine mammals	200	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Birds	187	8	2	25.0%	2	25.0%	0	0.0%	0	0.0%	0	0.0%	2	25.0%
Marine invertebrates	196	39	5	12.8%	11	28.2%	0	0.0%	0	0.0%	1	2.6%	3	7.7%
Vegetation	197	40	7	17.5%	10	25.0%	0	0.0%	2	5.0%	1	2.5%	8	20.0%

-continued-

Table 2-22.–Continued.

Resource category	Valid responses[a]	Households reporting reasons for less use	Unsuccessful		Weather/ environment		Other reasons		Working/ no time		Regulations		Small/ diseased animals	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	202	129	23	17.8%	10	7.8%	4	3.1%	46	35.7%	15	11.6%	8	6.2%
All resources	**198**	**80**	**5**	**6.3%**	**2**	**2.5%**	**3**	**3.8%**	**25**	**31.3%**	**5**	**6.3%**	**1**	**1.3%**
Salmon	199	69	9	13.0%	3	4.3%	1	1.4%	18	26.1%	5	7.2%	0	0.0%
Nonsalmon fish	190	48	5	10.4%	2	4.2%	0	0.0%	13	27.1%	0	0.0%	1	2.1%
Large land mammals	192	36	13	36.1%	1	2.8%	1	2.8%	5	13.9%	5	13.9%	1	2.8%
Small land mammals	199	15	0	0.0%	0	0.0%	0	0.0%	2	13.3%	0	0.0%	0	0.0%
Marine mammals	200	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Birds	187	8	2	25.0%	0	0.0%	0	0.0%	1	12.5%	0	0.0%	0	0.0%
Marine invertebrates	196	39	0	0.0%	2	5.1%	0	0.0%	10	25.6%	7	17.9%	6	15.4%
Vegetation	197	40	1	2.5%	1	2.5%	1	2.5%	4	10.0%	0	0.0%	1	2.5%

-continued-

Table 2-22.–Page 2 of 2.

Resource category	Valid responses[a]	Households reporting reasons for less use	Did not get enough		Did not need		Competition		Equipment/ fuel expense		Used other resources	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	202	129	3	2.3%	22	17.1%	0	0.0%	3	2.3%	1	0.8%
All resources	**198**	**80**	**2**	**2.5%**	**9**	**11.3%**	0	0.0%	**1**	**1.3%**	**0**	**0.0%**
Salmon	199	69	1	1.4%	4	5.8%	0	0.0%	0	0.0%	1	1.4%
Nonsalmon fish	190	48	0	0.0%	3	6.3%	0	0.0%	2	4.2%	0	0.0%
Large land mammals	192	36	0	0.0%	1	2.8%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	199	15	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	200	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Birds	187	8	0	0.0%	1	12.5%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	196	39	0	0.0%	2	5.1%	0	0.0%	0	0.0%	0	0.0%
Vegetation	197	40	1	2.5%	8	20.0%	0	0.0%	0	0.0%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2015.

a. Valid responses do not include households that did not provide any response and households reporting never using the resource.

Table 2-23.–Reasons for more household uses of resources compared to recent years, Nikiski, 2014.

Resource category	Valid responses[a]	Households reporting reasons for more use	Increased availability		Used other resources		Favorable weather		Received more		Needed more		Increased effort		Had more help	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	202	61	9	14.8%	1	1.6%	5	8.2%	17	27.9%	9	14.8%	26	42.6%	3	4.9%
All resources	**198**	**15**	**3**	**20.0%**	**0**	**0.0%**	**1**	**6.7%**	**4**	**26.7%**	**2**	**13.3%**	**3**	**20.0%**	**0**	**0.0%**
Salmon	199	11	1	9.1%	0	0.0%	0	0.0%	0	0.0%	3	27.3%	3	27.3%	1	9.1%
Nonsalmon fish	190	14	4	28.6%	1	7.1%	0	0.0%	1	7.1%	2	14.3%	5	35.7%	0	0.0%
Large land mammals	192	15	1	6.7%	0	0.0%	0	0.0%	12	80.0%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	199	3	0	0.0%	0	0.0%	0	0.0%	2	66.7%	0	0.0%	1	33.3%	0	0.0%
Marine mammals	200	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Birds	187	3	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	2	66.7%	1	33.3%
Marine invertebrates	196	8	0	0.0%	0	0.0%	2	25.0%	1	12.5%	0	0.0%	4	50.0%	0	0.0%
Vegetation	197	26	2	7.7%	0	0.0%	2	7.7%	0	0.0%	4	15.4%	15	57.7%	1	3.8%

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Table 2-23.–Continued.

Resource category	Valid responses[a]	Households reporting reasons for more use	Other		Regulations		Traveled farther		More success		Needed less		Store-bought expense		Got/ fixed equipment	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	202	61	1	1.6%	1	1.6%	1	1.6%	9	14.8%	0	0.0%	2	3.3%	1	1.6%
All resources	**198**	**15**	**0**	**0.0%**	**0**	**0.0%**	**1**	**6.7%**	**4**	**26.7%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**
Salmon	199	11	0	0.0%	0	0.0%	0	0.0%	1	9.1%	0	0.0%	2	18.2%	0	0.0%
Nonsalmon fish	190	14	0	0.0%	1	7.1%	0	0.0%	2	14.3%	0	0.0%	0	0.0%	1	7.1%
Large land mammals	192	15	0	0.0%	0	0.0%	0	0.0%	2	13.3%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	199	3	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	200	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Birds	187	3	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	196	8	0	0.0%	0	0.0%	1	12.5%	1	12.5%	0	0.0%	0	0.0%	0	0.0%
Vegetation	197	26	1	3.8%	0	0.0%	0	0.0%	3	11.5%	0	0.0%	0	0.0%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2015.

a. Valid responses do not include households that did not provide any response and households reporting never using the resource.

Table 2-24.–Reported impact to households reporting that they did not get enough of a type of resource, Nikiski, 2014.

		Households not getting enough _____ .				Impact to those not getting enough _____ .									
	Sample	Valid responses[a]		Did not get enough		No response		Not noticeable		Minor		Major		Severe	
Resource category	households	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
All resources	**203**	**181**	**89.2%**	**65**	**35.9%**	**6**	**9.2%**	**1**	**1.5%**	**34**	**52.3%**	**21**	**32.3%**	**3**	**4.6%**
Salmon	203	155	76.4%	44	28.4%	1	2.3%	4	9.1%	29	65.9%	8	18.2%	2	4.5%
Nonsalmon fish	203	117	57.6%	43	36.8%	4	9.3%	2	4.7%	29	67.4%	8	18.6%	0	0.0%
Large land mammals	203	89	43.8%	49	55.1%	1	2.0%	3	6.1%	25	51.0%	19	38.8%	1	2.0%
Small land mammals	203	25	12.3%	9	36.0%	1	11.1%	1	11.1%	5	55.6%	2	22.2%	0	0.0%
Marine mammals	203	4	2.0%	1	25.0%	0	0.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%
Birds	203	22	10.8%	7	31.8%	0	0.0%	1	14.3%	5	71.4%	1	14.3%	0	0.0%
Marine invertebrates	203	65	32.0%	31	47.7%	0	0.0%	2	6.5%	25	80.6%	3	9.7%	1	3.2%
Vegetation	203	158	77.8%	45	28.5%	3	6.7%	4	8.9%	29	64.4%	6	13.3%	3	6.7%

Source ADF&G Division of Subsistence household surveys, 2015.

a. Includes households failing to respond to the question and those households that never used the resource.

in 2014 as they did in previous years, 20% reported that they used less, and 8% said they used more (Table 2-21; Figure 2-31). When asked why they used less, 36% of responding households indicated that they were unsuccessful at harvesting (Table 2-22). Trailing that reason, with less than one-half the number of responses, were less sharing (14%), family/personal reasons (14%), working/no time (14%), regulations (14%), lack of effort (8%), and that the resources were less available (8%). For those households that used more large land mammals in the study year, 3 reasons were provided: 80% indicated that they received more, 13% indicated that they had more harvest success, and 7% indicated increased availability (Table 2-23). In Nikiski, 24% of sampled households stated that they did not get enough large land mammals (Figure 2-32). When asked to evaluate the impact of not getting enough large land mammals, 6% of the 49 households that indicated not getting enough large land mammals described it as not noticeable, 51% described the impact as minor, 39% explained that not getting enough large land mammals had a major effect on their household, and 2% stated that the impact was severe (Table 2-24).

The third most harvested of all subsistence resource categories used by Nikiski households was nonsalmon fish. Regarding use of nonsalmon fish, 31% of responding households explained that they used the same amount of nonsalmon fish in 2014 as they did in previous years, 25% reported that they used less, and 7% said they used more (Table 2-21; Figure 2-31). When asked why they used less, 27% of respondents reported that they did so due to working/not having enough time and 27% indicated that this was because of a lack of effort (Table 2-22). Other top stated reasons for using less nonsalmon fish included the resources being less available (15%), less sharing (13%), family/personal reasons (13%), being unsuccessful at harvesting (10%), and not needing the resource (6%). For those households that used more nonsalmon fish in the study year, 36% indicated that they increased their effort and 29% indicated that there was increased availability (Table 2-23). In Nikiski, 21% of sampled households stated that they did not get enough nonsalmon fish (Figure 2-32). When asked to evaluate the impact of not getting enough nonsalmon fish, 5% of the 43 households that indicated not getting enough nonsalmon fish described it as not noticeable, 67% described the impact as minor, 19% explained that not getting enough salmon had a major effect on their household, and no household stated that the impact was severe (Table 2-24).

Vegetation was the next most harvested among the subsistence resource categories used by Nikiski households. For vegetation, 47% of responding households explained that they used the same amount of vegetation in 2014 as they did in previous years, 22% reported that they used less, and 13% said they used more (Table 2-21; Figure 2-31). When asked why they used less, 25% of respondents reported that this was due to the resource being less available, 20% of respondents reported that they did not need the resource, and 20% said that it was due to a lack of effort (Table 2-22). For those households that used more vegetation in the study year, 58% indicated that the reason was increased effort and 15% indicated that they needed more (Table 2-23). In Nikiski, 22% of sampled households stated that they did not get enough vegetation (Figure 2-32). When asked to evaluate the impact of not getting enough vegetation, 9% of the 45 households that indicated not getting enough vegetation described it as not noticeable, 64% described the impact as minor, 13% explained that not getting enough vegetation had a major effect on their household, and 7% stated that the impact was severe (Table 2-24).

For marine invertebrates, 10% of responding households explained that they used the same amount in 2014 as they did in previous years, 20% reported that they used less, and 5% said they used more (Table 2-21; Figure 2-31). When asked why they used less, 28% of respondents reported that this was due to the resources being less available, 26% of respondents reported that they did so because of work/no time, and 18% said that it was due to regulations (Table 2-22). For those households that used more marine invertebrates in the study year, 50% indicated that the reason was increased effort and 25% indicated that this was due to favorable weather (Table 2-23). In Nikiski, 15% of sampled households stated that they did not get enough marine invertebrates (Figure 2-32). When asked to evaluate the impact of not getting enough marine invertebrates, 7% of the 31 households that indicated not getting enough marine invertebrates described it as not noticeable, 81% described the impact as minor, 10% explained that not getting enough marine invertebrates had a major effect on their household, and 3% stated that the impact was severe (Table 2-24).

For small land mammals, 4% of responding households explained that they used the same amount of these resources in 2014 as they did in previous years, 8% reported that they used less, and 2% said they used more (Table 2-21; Figure 2-31). When asked why they used less, 53% of respondents reported that this was due to the resources being less available, 27% of respondents reported that they did so due to a lack of effort, 13% said that it was due to working/no time, and 7% said it was due to family/personal reasons (Table 2-22). For those households that used more small game in the study year, 67% indicated that the reason was that they received more and 33% indicated that this was due to increased harvest effort (Table 2-23). In Nikiski, 4% of sampled households stated that they did not get enough small land mammals (Figure 2-32). When asked to evaluate the impact of not getting enough small game, 11% of the 9 households that indicated not getting enough small game described it as not noticeable, 56% described the impact as minor, 22% explained that not getting enough small game had a major effect on their household, and no households stated that the impact was severe (Table 2-24).

For birds, 6% of responding households explained that they used the same amount in 2014 as they did in previous years, 5% reported that they used less, and 2% said they used more (Table 2-21; Figure 2-31). When asked why they used less, the following reasons were each cited by 25% of respondents: family/personal reasons, resources being less available, lack of effort, and unsuccessful harvest efforts (Table 2-22). Also, 13% of respondents indicated less use of birds was due to work/no time and that they did not need the resources. For those households that used more birds in the study year, 67% indicated that the reason was increased effort and 33% indicated that this was due to having more help (Table 2-23). In Nikiski, 3% of sampled households stated that they did not get enough birds (Figure 2-32). When asked to evaluate the impact of not getting enough birds, 14% of the 7 households that indicated not getting enough described it as not noticeable, 71% described the impact as minor, 14% explained that not getting enough birds had a major effect on their household, and no household stated that the impact was severe (Table 2-24).

Marine mammals were used minimally in Nikiski in 2014. Of those households that usually used marine mammals, only 2% of responding households explained that they used the same amount of marine mammals in 2014 as they did in previous years, less than 1% reported that they used less, and no household said they used more (Table 2-21; Figure 2-31). When asked why use was less or more, no reasons were given (Table 2-22; Table 2-23). In Nikiski, 1 household reported not getting enough marine mammal resources and described the lack of resources as having a major effect on the household (Table 2-24).

Considering all resources as a whole, 47% of responding households explained that they used the same amount of wild resources in 2014 as they did in previous years, 41% reported that they used less, and 8% said they used more (Table 2-21). When asked why they used less, 31% of respondents reported that this was due to working/no time, 26% of respondents reported that this was due to resources being less available, and 19% of respondents reported that this was due to family/personal reasons (Table 2-22). For those households that used more wild resources in the study year, 27% indicated that the reason was that they received more, 27% indicated that this was due to greater harvest success, and 27% attributed this to receiving more (Table 2-23). In Nikiski, 36% of valid responses indicated that respondents did not get enough wild resources (Table 2-24). When asked to evaluate the impact of not getting enough wild resources, 2% of the 65 households that indicated not getting enough resources overall described it as not noticeable, 52% described the impact as minor, 32% explained that not getting enough wild resources had a major effect on their household, and 5% stated that the impact was severe. Many households in Nikiski reported needing more of specific resources (Table 2-25). Among the resources with the highest percentage of households citing a need for more were moose (29%), Pacific halibut (20%), sockeye salmon (15%), and blueberries (11%).

Table 2-25.–Resources that households reported needing, Nikiski, 2014.

Resource	Households needing	Percentage of households
Fish	7	3.4%
Salmon	13	6.4%
Coho salmon	10	4.9%
Chinook salmon	5	2.5%
Pink salmon	1	0.5%
Sockeye salmon	31	15.3%
Spawning sockeye salmon	1	0.5%
Cod	5	2.5%
Flounder	2	1.0%
Pacific halibut	41	20.2%
Rockfish	5	2.5%
Dolly Varden	1	0.5%
Lake trout	1	0.5%
Trout	6	3.0%
Rainbow trout	1	0.5%
Whitefishes	1	0.5%
Large land mammals	2	1.0%
Black bear	8	3.9%
Brown bear	1	0.5%
Caribou	15	7.4%
Deer	2	1.0%
Mountain goat	2	1.0%
Moose	58	28.6%
Dall sheep	3	1.5%
Beaver	1	0.5%
Coyote	2	1.0%
Red fox	1	0.5%
Snowshoe hare	4	2.0%
Lynx	1	0.5%
Squirrel	1	0.5%
Gray wolf	1	0.5%
Seal	1	0.5%
Unknown seal oil	1	0.5%
Beluga whale	1	0.5%
Bowhead whale	1	0.5%
Ducks	2	1.0%
Grouse	5	2.5%
Spruce grouse	2	1.0%
Ptarmigan	2	1.0%
Marine invertebrates	1	0.5%
Clams	11	5.4%
Butter clams	4	2.0%

-continued-

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Resource	Households needing	Percentage of households
Pacific littleneck clams (steamers)	2	1.0%
Razor clams	8	3.9%
Crabs	6	3.0%
Scallops	2	1.0%
Shrimp	7	3.4%
Berries	17	8.4%
Blueberry	22	10.8%
Lowbush cranberry	5	2.5%
Highbush cranberry	1	0.5%
Crowberry	1	0.5%
Raspberry	6	3.0%
Salmonberry	3	1.5%
Strawberry	3	1.5%
Dandelion greens	2	1.0%
Yarrow	1	0.5%
Other wild greens	1	0.5%
Unknown mushrooms	1	0.5%
Wood	10	4.9%
Unknown seaweed	1	1.1%
Unspecified	25	12.3%

Source ADF&G Division of Subsistence household surveys, 2015.

Harvest Data

Comprehensive subsistence harvest surveys have not been previously conducted in Nikiski; therefore, there are no previous per capita harvest estimates or harvest composition data against which the study year results can be compared. Comprehensive household harvest surveys for the study years 1991, 1992, and 1993 were conducted in the nearby community of Kenai, however, and it is worth mentioning several broad comparisons (CSIS). In 1993, the population estimate for Kenai was 6,372 individuals compared to 4,264 individuals in the Nikiski CDP in 2014 (Fall and Utermohle 1995) (Table 2-1). The estimated per capita harvests of wild resources in Kenai were 75 lb (± 27.7%) in 1991, 74 lb (± 37.2%) for 1992, and 84 lb (± 29.4%) for 1993, for a 3-year average of 77 lb. These harvest levels are similar to the approximately 69 lb (± 22.9%) of wild resources harvested by Nikiski residents in 2014.

Current and Historical Harvest Areas

This study is the first to record comprehensive wild resource search and harvest areas for the community of Nikiski. Therefore, there are no historical harvest maps against which the study year results can be compared.

Local Comments and Concerns

Following is a summary of local observations of wild resource populations and trends that were recorded during the surveys in Nikiski. Some households did not offer any additional information during the survey interviews, so not all households are represented in the summary. In addition, respondents expressed their concerns about wild resources during the community review meeting of preliminary data. These concerns have been included in the summary. Importantly, these concerns and perceptions may not necessarily represent the opinions of the majority of Nikiski residents.

Fish

Nikiski residents were very concerned about local salmon stocks and their ability to harvest them, often referring to this resource as their lifeblood. Many survey respondents expressed frustration toward the personal use salmon fisheries on the Kenai and Kasilof rivers. Views expressed were that while these fisheries are heavily utilized by local residents to meet salmon harvest needs, they also prevent enough fish from returning to their spawning grounds, that there are far too many non-local residents competing for the same resource, that the fishery is dangerous given the number of people congregating in such a small area, and that the nature of this fishery has degraded the cultural experience of harvest activities for local youth. Some residents avoid utilizing the personal use fishery for these reasons. Several respondents believe that there is extreme abuse of the personal use fisheries, including the commercial sale of some of this harvest, in some cases to well-organized out-of-state or international groups. Some Nikiski residents also believe that there is substantial wanton waste, that many people overharvest and under-report, and that many users take more than they need. Several respondents suggested that there needs to be more oversight, that reported infractions need to be followed up on by law enforcement, and that there should be a lottery to limit the number of personal use permits annually.

Several respondents suggested that the Kenai Peninsula's designation as a nonsubsistence area was the worst possible scenario for its residents. They believe that this is a violation of the state constitution because the personal use fishery is the first to be restricted: it does not meet the standards of a subsistence priority.[8] Many residents wish to see the area regain access to local subsistence setnet fisheries that would allow them to harvest from the local beaches instead of within the rivers. They suggest that this would help them to meet their subsistence needs, that it would be safer given that people would be more widely distributed instead of all fishing in a very small area, and that it would help to restore the cultural integrity of salmon fishing if access to a subsistence fishery were restored.

Many Nikiski residents reported strong opposition to salmon sport fishing charter operations on the Kenai Peninsula because they believe that many of these are operated by out-of-state personnel, and also that most of their clients are from out-of-state as well.[9] Residents repeatedly expressed concern that legislative and regulatory actions seem to place priority on sport fishing activities and they believe that these should be the first to be limited when there are concerns for salmon stocks. Many respondents perceive charter operations as a major cause of Chinook salmon declines locally due to overharvest and destruction of spawning beds. One respondent suggested that charter boats should be required to "drift" and not be allowed to use powerful skiffs. Another respondent indicated that many guide operations are disrespectful and unethical.

Several respondents were deeply concerned about proposals made to the federal subsistence board that would allow net harvesting of salmon in the Kenai and Kasilof rivers. They do not believe that any group, Native or non-Native, should be allowed to further deplete salmon stocks, especially with what they believe to be extremely efficient gear, in or near salmon spawning grounds. They believe that the pressure is already too high on these stocks and that the additional pressure of gillnets would further deplete the stocks.

8. In 1995, the Alaska Supreme Court, in *State of Alaska v. Kenaitze Indian Tribe*, upheld the constitutionality of the nonsubsistence area provision of the 1992 Alaska subsistence law (Case and Voluck 2012:309). Current Alaska law does not set priorities among commercial, sport, and personal use fisheries in nonsubsistence areas; such allocation decisions are made by the Alaska Board of Fisheries through its public regulatory process.

9. No laws or regulations prohibit out-of-state residents from operating fishing businesses in Alaska or generally prohibit non-Alaska residents from engaging in sport fishing.

Few concerns were expressed regarding nonsalmon fish despite being described as an important resource for the community. Several respondents noted that Pacific halibut have been decreasing in both size and numbers. They dislike that the largest of the fish are targeted. They also say that halibut fishing is often an expensive endeavor and that they are very appreciative of the ability to harvest from local beaches. Some respondents indicated that they are concerned about chemical treatments to remove invasive *Elodea* from local ponds, particularly Stormy Lake in Captain Cook SRA. They are concerned about the health of the system but also about consuming fish following the treatment.

Large Land Mammals

The second most frequently expressed concern regarding wild resources in Nikiski was for moose. Many local residents are adamantly opposed to bull moose antler requirement changes implemented in 2011. The increase from 3 brow tines to 4 brow tines is thought to have substantially limited the number of legally harvestable bull moose in the area. They said that while there are moose in the area, it is nearly impossible to find one that is legal. Some households reported that legal moose are almost entirely harvested by non-local hunters. Some households recommended that this antler restriction be eliminated and that the Alaska Board of Game consider allowing cow harvests. They also recommended that a Tier II harvest[10] be implemented but with the caveat that there be more restrictions on the qualifications for this type of permit hunt, suggesting a perception that too many people qualify in other Tier II hunts. Residents support local priority for moose hunting and many say that the only way to successfully hunt for moose is to leave the Kenai Peninsula, but that the trip is too expensive and time-consuming for many residents.

A few households suggested controlled burns to improve local moose habitat. There were also conflicting comments regarding predator control programs that target wolves. During a key respondent roundtable discussion, several respondents expressed disapproval of these programs, claiming that wolves are not putting significant pressure on local moose, but rather that the non-local human pressure is far too great. Some survey respondents, however, did express support for wolf and bear control initiatives.

Some respondents were also concerned about “skinny” and “sickly” moose in the area. Several households expressed concerns about the number of moose that are killed on the Kenai Spur Highway and the way in which salvageable roadkill moose has been distributed in recent years.

Marine Invertebrates

The third most frequently mentioned concern for wild resources was in relation to shellfish. A multitude of respondents mentioned that they have long anticipated the recent closures of clam harvesting at Kenai beaches, especially those near Clam Gulch. They believe that clam populations have been overharvested for many years, particularly by non-local residents. Many survey respondents described observations of beaches filled with people and buckets, participating in an “obviously unsustainable” fishery. Not only have the shellfish populations been decimated, but the size of shellfish is said to have been declining for some time, too. Some households also described overharvest of local crabs.

Vegetation

Few comments regarding local vegetation concerns were made. Some households mentioned concern over *Elodea*, but most were more concerned about eradication efforts rather than the effect of the plants themselves on the environment. Some respondents indicated concerns about increases in other invasive plant species, too, including dandelions and “butter and eggs,” all of which are said to be choking out native plants.

10. State Tier II hunts are held when there is not enough of a game population with a positive customary and traditional use finding to provide a reasonable opportunity for subsistence uses by all potential users. Hunters must answer questions on an application concerning their dependence on the game for their livelihood and availability of alternative resources. Applications are scored based on responses to the questionnaire and permits are issued to those with the highest scores.

Some households expressed concern regarding the old Agrium plant's effects on local forests. They said that nearby forest stands were killed or diseased as a result of Agrium's pollution. This pollution was also said to have been harmful to human health for many years.

Development Projects and Other Concerns

A common concern mentioned by Nikiski residents was the water table and the use of groundwater for industrial products. Many residents observed a severe drop in water levels in local lakes as a result of the Agrium fertilizer plant. In recent years, water levels have rebounded following the closure of the Agrium facility. Island Lake and Cabin Lake were mentioned particularly often. While residents are glad that water levels are returning to historical levels, some are concerned that structures, gardens, and other property improvements were made during the low-water era and are now being flooded. There is concern about new development, particularly the prospect of the Alaska LNG project, and how this could again affect the water table.

The prospect of the LNG pipeline and related facilities being constructed in Nikiski was an important topic to Nikiski households. Many respondents appeared to be undecided in their support of this proposed development, recognizing the benefits and potential consequences. Among those expressing an opinion, the general attitude toward the prospect was positive, especially in relation to increasing job opportunities and stimulating the local economy. Concerns were primarily related to an expected influx of people to the community and the additional pressure that these people will have on local fish and wildlife resources. Several respondents reported gratitude for being able to sell property to Alaska LNG at a reasonable price.

There were some negative attitudes toward this survey effort. Some residents expressed concern about government intrusion and the amount of data that is collected by state and federal agencies. There was a general attitude of disgust toward gun control proposals and a strong push for emergency preparedness. There is strong support for local self-determination and home rule.

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3. SELDOVIA

Bronwyn Jones

Community Background

The community of Seldovia is situated on the south shore of Kachemak Bay, about 25 miles from Homer, within the Kenai Peninsula Borough. The community is not on the Alaska road system, and can only be accessed via small plane or boat, including the Alaska Marine Highway System. The Seldovia Harbor is located on the eastern shore of a north-south running fjord called Seldovia Bay. The landscape behind the community is composed of rolling foothills with dense spruce groves, leading to steep mountain peaks that reach to around 3,000 feet in elevation. The Jakolof Bay Road begins in downtown Seldovia, and runs north 10 miles through both privately owned and Seldovia Native Village lands along the coast to Jakolof Bay Dock.

It is commonly accepted that Seldovia and the surrounding area has been used throughout history by Sugpiaq-Alutiiq and Dena'ina Athabascan peoples.[1] However, there are no written records that make mention of the modern formation of Seldovia. The first published account of Seldovia came from the 1880 census conducted by Ivan Petroff for the U.S. Census Bureau. There is still much speculation about whether the community emerged from Russian settlement or as a Alaska Native village (Springer 1997).

Regardless of exactly when and how modern Seldovia was established, it is clear that many people who did settle in Seldovia were involved in either fur or fishing trades during the mid-1800s. At the turn of the century, Seldovia became an important shipping and trade center because of its natural deep-water port and location. Seldovia was located in a prime spot to be a point of supply for fox farms that were abundant in the region during the time. As commercial fishing increased in lower Cook Inlet, Seldovia also became an important location for the commercial fishing industry. In 1910, the Seldovia Salmon Company built a cannery that operated out of Seldovia, with more canneries to follow in the subsequent years (Braund and Behnke 1980).

As a result of commercial Pacific herring fishing in the area, by the 1920s the population of Seldovia rapidly grew and diversified. Along with Russians and Alaska Natives, Seldovia was also home to a large population of people with Scandinavian heritage (Fall and Utermohle 1995; Springer 1997). At this time Seldovia was a busy community with 4 canneries, hotels, schools, a Russian Orthodox Church, and restaurants. A boardwalk was built along the shore to connect the entire town. Waterfront property was developed and this boardwalk became the trademark of Seldovia (Reed 1985).

In 1945, Seldovia became an incorporated city. However, due to its location, by the 1950s other community centers on the Kenai Peninsula—which were road-connected—began to outgrow Seldovia (Reed 1985). In addition, the 1964 Good Friday earthquake significantly altered the landscape around Seldovia, destroying the waterfront boardwalk and buildings (Fall and Utermohle 1995:VII-1). For more information on the effects of the earthquake on Seldovia's history, see Reed (1985).

In spite of isolation from the Alaska road system and the damage caused by the 1964 earthquake, the population of Seldovia continued to rise until the 1980s when the commercial crab fisheries collapsed. In the mid-1990s the last seafood cannery in Seldovia closed, and the economy diversified to include other industries, such as tourism and logging (Fall and Utermohle 1995; Springer 1997).

Today, Seldovia's economy is most active in the summer months when a choice of restaurants, bars, bed-and-breakfasts, and hotels are in operation. Throughout the rest of the year, the community has a K–12 school, a public library, a small grocery store, a gas station, 3 churches, a bakery, a bar, restaurants, a

1. Alaska Department of Commerce, Community, and Economic Development (ADCCED) Division of Community and Regional Affairs, Juneau. n.d. "Alaska Community Database Online: Community Index," select results for "Seldovia." https://www.commerce.alaska.gov/dcra/DCRAExternal/community (accessed March 2016).

museum, and several hotels. Year-round federal, state, and local agencies present in Seldovia include the Seldovia Village Tribe, a medical clinic, the Alaska State Troopers, a post office, and a harbor master.

Today, Seldovia is still only accessible by boat or plane. From May through early September, a Homer-based wildlife tour company operates 2 boats on daily tours to Seldovia.[2] In addition, the Seldovia Bay Ferry is a summer-only passenger ferry that offers daily service between Seldovia and Homer[3], and several other Homer-based water taxi options are available. The Alaska Marine Highway System serves Seldovia as well. Year-round, the ferry *M/V Tustumena* stops in Seldovia weekly. Several air transportation options existed during the study year via a state-owned gravel airstrip and a seaplane base.[4] Seldovia is served by several Homer-based scheduled and chartered aircraft services, as well as a new charter service offered by a local pilot directly to and from Anchorage.

Population Estimates and Demographic Information

This study found an estimated population for Seldovia (which included Seldovia city and Seldovia Village census designated place) in 2014 of 278 individuals, represented by 126 households (Table 3-1). This estimate is much lower than the estimates provided by the 2010 federal census and the 2010–2014 American Community Survey (ACS) (Figure 3-1). The reasons for differing estimates may include differences in agency parameters for determining full-time residency. This study required at least 3 consecutive months of occupancy in the community for the study year (2014) and self-identification as a full-time resident. There are many recreational cabins in the Seldovia area, and it is possible that some of the owners and occupants of these reported Seldovia as their home during the other studies.

This study estimated that approximately 23% of the population of Seldovia identifies as Alaska Native; in comparison, 29% was the estimate by the 2010 census and 27% by the 5-year ACS (Figure 3-1). Approximately 24% of the households in Seldovia had at least 1 household head that identified as Alaska Native (Table 3-2).

The population estimates for Seldovia have varied depending on which agency is calculating the population. According to the U.S. Census Bureau, Seldovia's population has remained relatively stable since 1950. The Alaska Department of Labor produced higher estimates for 1986 (552) and 1987 (535). The U.S. Census Bureau estimated the 2010 population of Seldovia to be 430 people, while this study estimated 278 residents in 2014 (Figure 3-2).

In Seldovia, there is a slightly higher population of females (143) than males (135) (Table 3-3). An estimated 20% of the population is younger than 20 years of age. Approximately 50% of the population is 45 years old or older in Seldovia. The age cohorts with the highest percentage of people are 65–69, followed by 55–59 (Figure 3-3; Table 3-3).

This study also recorded the birthplaces of household heads and of the general population in Seldovia. Approximately 62% of household heads had parents who were living in a U.S. state outside of Alaska when they were born and approximately 5% of household heads had parents living outside of the United States when they were born (Table 3-4). During the study year, 13% of household heads had parents living in Seldovia when they were born, followed by 4% who had parents living in Homer, 3% in Anchorage, 2% in Chignik, 1% in Palmer or Ketchikan, and a smaller percentage in a variety of other Alaska communities. For the overall population, 50% of the population's parents were living in a U.S. state outside of Alaska when they were born, and approximately 4% of the population had parents living outside of the United States when they were born (Table 3-5). In regard to the entire population, 26% had parents living in Seldovia when they were born, demonstrating a large increase of residents' parents living in Seldovia when they were born compared to the community's older inhabitants who are a head of household.

2. Rainbow Tours, LLC. n.d. "Seldovia Wildlife Tour: Seldovia Tour, Overview." http://www.rainbowtours.net/seldovia-wildlife-tour.htm (accessed March 2016).
3. Seldovia Village Tribe. n.d. "Seldovia Bay Ferry." http://www.seldoviabayferry.com/index.html (accessed March 2016).
4. Seldovia.com n.d. "About Seldovia, Transportation to Seldovia, By Air to Seldovia City." http://www.seldovia.com/transportation-to-and-around-seldovia/by-air/ (accessed March 2016).

Table 3-1.–Population estimates, Seldovia, 2010 and 2014.

	U.S. Census (2010)	5-year American Community Survey (2010–2014)		This study (2014)	
		Estimate	Range[a]	Estimate	Range[b]
Total population					
Households	195	222	229 – 257	126.0	
Population	420	444	377 – 511	278.1	264 – 292
Alaska Native					
Population	121	120	83 – 157	64.2	51 – 77
Percentage	28.8%	27.0%		23.1%	

Sources U.S. Census Bureau (2011) for 2010 estimate; U.S. Census Bureau for American Community Survey (ACS) 2014 estimate (5-year average); and ADF&G Division of Subsistence household surveys, 2015, for 2014 estimate.

Note Division of Subsistence household survey eligiblity requirements differ from those used by ACS.

Note Seldovia includes Seldovia city and Seldovia Village CDP.

a. ACS data range is the reported margin of error.

b. No range of households is estimated for division surveys.

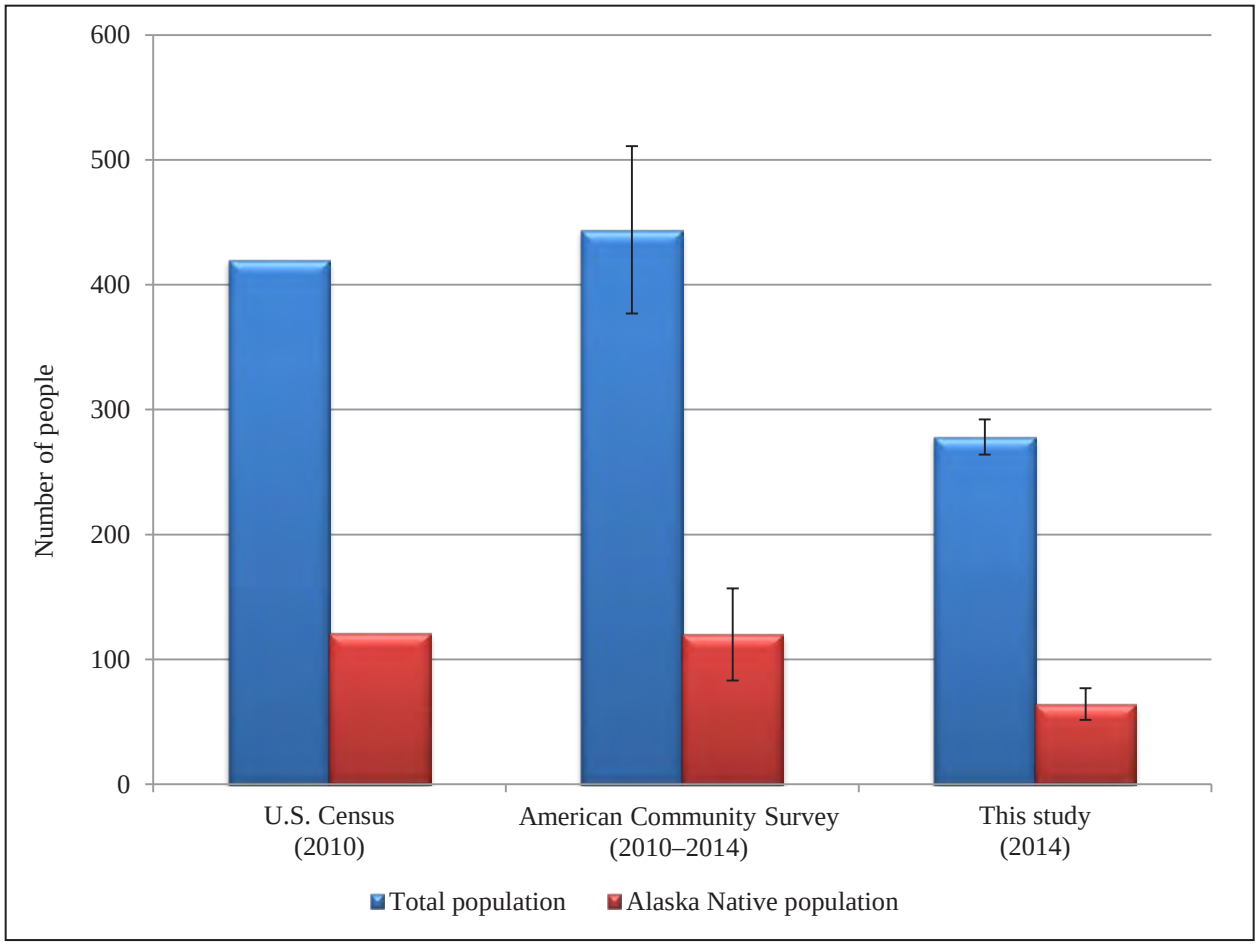


Figure 3-1.–Alaska Native and overall population estimates, Seldovia, 2010 and 2014.

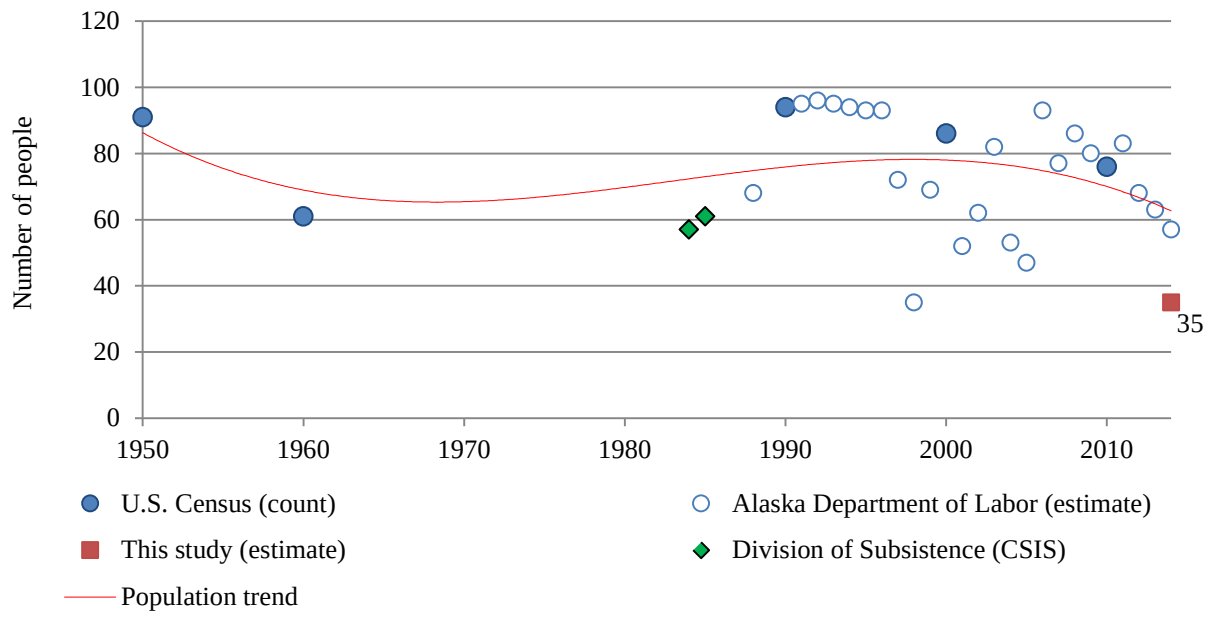
Table 3-2.–Sample and demographic characteristics, Seldovia, 2014.

Characteristics	Community Seldovia
Sampled households	95
Eligible households	126
Percentage sampled	75.4%
Sampled population	208
Estimated community population	278.1
Household size	
Mean	2.2
Minimum	1
Maximum	6
Age	
Mean	43.2
Minimum[a]	0
Maximum	87
Median	47
Length of residency	
Total population	
Mean	21.3
Minimum[a]	0
Maximum	74
Heads of household	
Mean	25.5
Minimum[a]	1
Maximum	74
Alaska Native	
Estimated households[b]	
Number	30.7
Percentage	24.2%
Estimated population	
Number	64.2
Percentage	23.1%

Source ADF&G Division of Subsistence household surveys, 2015.

a. A minimum age of 0 (zero) is used for infants who are less than 1 year of age.

b. The estimated number of households in which at least 1 head of household is Alaska Native.



Note Population estimates for 1950 and 1960 are for the old Chenega village, which was abandoned after the 1964 earthquake and tsunami.The community remained unoccupied during the 1970 and 1980 census surveys. Later estimates are for the contemporary Chenega Bay location, which was established in 1984.

Figure 3-2.–Historical population estimates, Seldovia, 1950–2014.

Of the 127 eligible households identified in Seldovia, this study surveyed 95 households, representing 75% of total households (Table 3-2). The mean household size was 2.2 individuals with a minimum of 1 individual and a maximum of 6 individuals. The mean resident age was 43 years with the youngest being under 1 year old and the oldest being 87 years old. The mean length of residency was 21 years for the general population and 26 years for household heads. The longest duration of residency was 74 years.

Cash Employment and Monetary Income

During the study year, the mean household earned income in Seldovia was $45,946 (Table 3-6). Earned income represented about 82% of the overall community income, and other sources of income represented the remaining 18%. Other income includes sources such as retirement, pensions, Social Security, child support, disability, unemployment, Alaska Permanent Fund dividends, etc. Approximately 122 households received a form of other income, with the mean household other income being $9,801. The estimated total mean household income, including both earned and other income, was $55,747.

Overall, local government (including tribal) made up the greatest percentage of the total community income (37%), followed by: agriculture, forestry, and fishing (15%); construction (8%); services (7%); Alaska Permanent Fund dividends (6%); transportation, communication, and utilities (5%); pension/retirement (5%); state government (4%); Social Security (4%); and mining (3%). Smaller percentages for earned and other income sources made up the remaining 6% of the total community income (Figure 3-4).

The estimated median income for Seldovia households was $40,168 based on household surveys (Figure 3-5). The ACS estimated Seldovia city and Seldovia Village CDP median income separately. The Division of Subsistence median household income for the 2 combined areas was lower than the ACS estimates for

Table 3-3.–Population profile, Seldovia, 2014.

	Male			Female			Total		
Age	Number	Percentage	Cumulative percentage	Number	Percentage	Cumulative percentage	Number	Percentage	Cumulative percentage
0–4	6.7	5.0%	5.0%	5.3	3.7%	3.7%	12.0	4.3%	4.3%
5–9	8.0	5.9%	10.9%	8.0	5.6%	9.3%	16.0	5.8%	10.1%
10–14	5.3	4.0%	14.9%	5.3	3.7%	13.1%	10.7	3.8%	13.9%
15–19	12.0	8.9%	23.8%	6.7	4.7%	17.8%	18.7	6.7%	20.7%
20–24	4.0	3.0%	26.7%	5.3	3.7%	21.5%	9.4	3.4%	24.0%
25–29	4.0	3.0%	29.7%	10.7	7.5%	29.0%	14.7	5.3%	29.3%
30–34	9.4	6.9%	36.6%	12.0	8.4%	37.4%	21.4	7.7%	37.0%
35–39	8.0	5.9%	42.6%	4.0	2.8%	40.2%	12.0	4.3%	41.3%
40–44	8.0	5.9%	48.5%	9.4	6.5%	46.7%	17.4	6.3%	47.6%
45–49	6.7	5.0%	53.5%	13.4	9.3%	56.1%	20.1	7.2%	54.8%
50–54	6.7	5.0%	58.4%	8.0	5.6%	61.7%	14.7	5.3%	60.1%
55–59	13.4	9.9%	68.3%	12.0	8.4%	70.1%	25.4	9.1%	69.2%
60–64	5.3	4.0%	72.3%	10.7	7.5%	77.6%	16.0	5.8%	75.0%
65–69	10.7	7.9%	80.2%	17.4	12.1%	89.7%	28.1	10.1%	85.1%
70–74	12.0	8.9%	89.1%	6.7	4.7%	94.4%	18.7	6.7%	91.8%
75–79	6.7	5.0%	94.1%	4.0	2.8%	97.2%	10.7	3.8%	95.7%
80–84	5.3	4.0%	98.0%	0.0	0.0%	97.2%	5.3	1.9%	97.6%
85–89	1.3	1.0%	99.0%	2.7	1.9%	99.1%	4.0	1.4%	99.0%
90–94	0.0	0.0%	99.0%	0.0	0.0%	99.1%	0.0	0.0%	99.0%
95–99	0.0	0.0%	99.0%	0.0	0.0%	99.1%	0.0	0.0%	99.0%
100–104	0.0	0.0%	99.0%	0.0	0.0%	99.1%	0.0	0.0%	99.0%
Missing	1.3	1.0%	100.0%	1.3	0.9%	100.0%	2.7	1.0%	100.0%
Total	**135.0**	**100.0%**	**100.0%**	**143.0**	**100.0%**	**100.0%**	**278.1**	**100.0%**	**100.0%**

Source ADF&G Division of Subsistence household surveys, 2015.

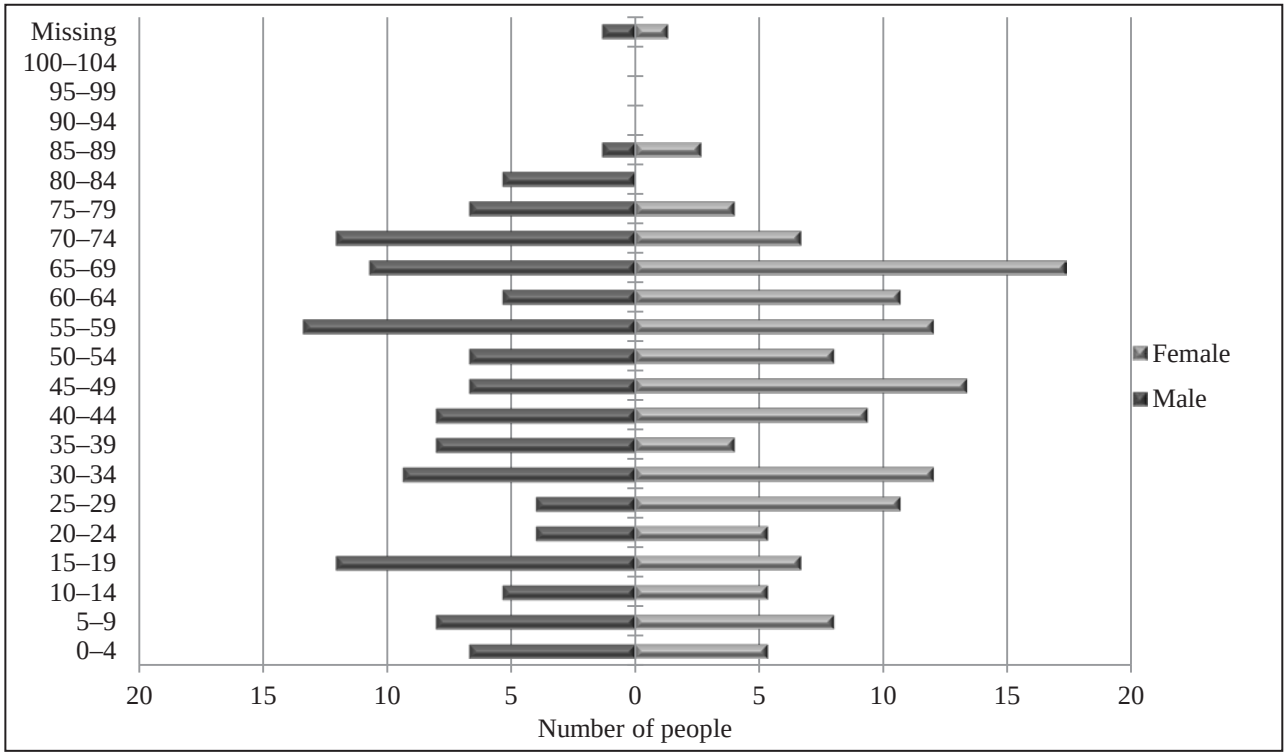


Figure 3-3.–Population profile, Seldovia, 2014.

Table 3-4.–Birthplaces of household heads, Seldovia, 2014.

Birthplace	Percentage
Anchorage	3.3%
Barrow	0.7%
Dutch Harbor	0.7%
Homer	4.0%
Kenai	0.7%
Kenny Lake	0.7%
Ketchikan	1.3%
Kodiak City	0.7%
Naknek	0.7%
Nome	0.7%
Ouzinkie	0.7%
Palmer	1.3%
Petersburg	0.7%
Seldovia	13.2%
Wasilla	0.7%
Port Chatham	0.7%
Chignik	2.0%
Pleasant Harbor	0.7%
Other U.S.	62.3%
Foreign	4.6%

Source ADF&G Division of Subsistence household surveys, 2015.
Note "Birthplace" means the place of residence of the parents of the individual when the individual was born.

Table 3-5.–Birthplaces of population, Seldovia, 2014.

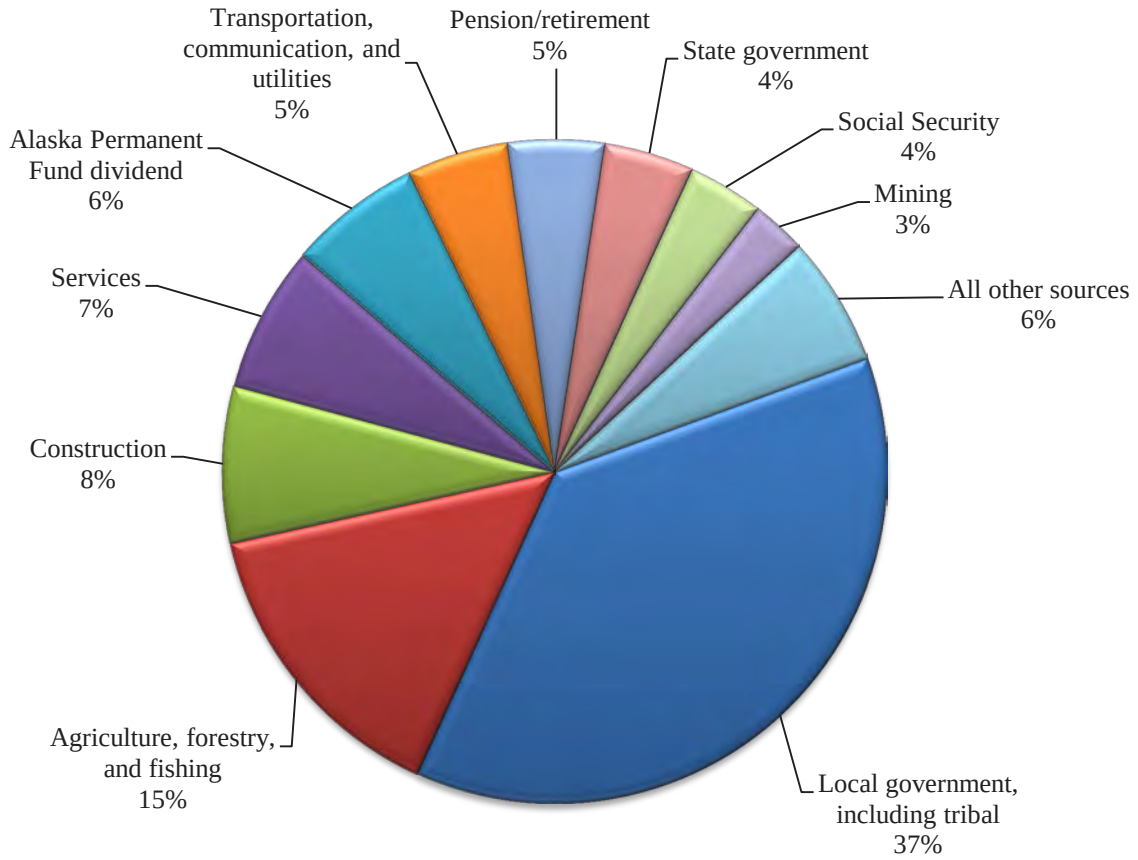
Birthplace	Percentage
Anchorage	3.8%
Barrow	0.5%
Dutch Harbor	0.5%
Fairbanks	1.0%
Homer	3.8%
Kenai	0.5%
Kenny Lake	0.5%
Ketchikan	1.0%
Kodiak City	1.0%
Moose Pass	0.5%
Naknek	0.5%
Nome	0.5%
Ouzinkie	0.5%
Palmer	1.0%
Petersburg	0.5%
Seldovia	26.4%
Wasilla	0.5%
Port Chatham	0.5%
Chignik	1.4%
Pleasant Harbor	0.5%
Missing	1.0%
Other U.S.	50.0%
Foreign	3.8%

Source ADF&G Division of Subsistence household surveys, 2015.
Note "Birthplace" means the place of residence of the parents of the individual when the individual was born.

Table 3-6.–Estimated earned and other income, Seldovia, 2014.

Income source	Number of employed adults	Number of households	Total for community	-/+ 95% CI	Mean per household	Percentage of total community income
Earned income						
Local government, including tribal	76.0	58.1	$2,645,313	$1,144,867 – $5,204,312	$20,829	37.4%
Agriculture, forestry, and fishing	27.8	23.2	$1,042,146	$301,584 – $2,281,150	$8,206	14.7%
Construction	26.3	23.2	$542,893	$237,694 – $962,812	$4,275	7.7%
Services	45.3	33.4	$502,016	$191,152 – $968,717	$3,953	7.1%
Transportation, communication, and utilities	10.2	7.3	$349,517	$35,955 – $1,625,220	$2,752	4.9%
State government	16.1	13.1	$308,260	$22,749 – $935,463	$2,427	4.4%
Mining	2.9	2.9	$189,772	$89,384 – $479,124	$1,494	2.7%
Federal government	4.4	4.4	$104,295	$19,935 – $242,682	$821	1.5%
Retail trade	4.4	4.4	$74,227	$6,072 – $246,804	$584	1.0%
Other employment	4.4	4.4	$41,888	$10,630 – $124,680	$330	0.6%
Finance, insurance, and real estate	1.5	1.5	$21,620	$10,772 – $34,513	$170	0.3%
Manufacturing	2.9	2.9	$13,212	$5,830 – $32,037	$104	0.2%
Earned income subtotal	**169.4**	**100.2**	**$5,835,157**	**$3,827,685 – $8,165,699**	**$45,946**	**82.4%**
Other income						
Alaska Permanent Fund dividend		117.6	$460,718	$409,071 – $517,547	$3,628	6.5%
Pension/retirement		21.4	$332,415	$77,932 – $688,763	$2,617	4.7%
Social Security		37.4	$261,300	$121,469 – $469,624	$2,057	3.7%
Native corp. dividend		26.7	$88,007	$42,558 – $170,829	$693	1.2%
Disability		5.3	$23,087	$1,681 – $60,311	$182	0.3%
Child support		4.0	$16,898	$0 – $42,298	$133	0.2%
Rental income		5.3	$13,804	$119 – $42,333	$109	0.2%
Unemployment		8.0	$12,160	$2,139 – $31,885	$96	0.2%
Heating assistance		8.0	$12,032	$2,139 – $30,213	$95	0.2%
Longevity bonus		2.7	$7,171	$0 – $16,042	$56	0.1%
Other		2.7	$6,684	$0 – $13,368	$53	0.1%
Investments/stocks/bonds		4.0	$5,735	$0 – $22,698	$45	0.1%
Adult public assistance (OAA, APD)		1.3	$2,759	$0 – $5,518	$22	0.0%
Food stamps		2.7	$892	$0 – $2,733	$7	0.0%
Workers' compensation/insurance		1.3	$543	$0 – $2,206	$4	0.0%
Per diem/public meeting		1.3	$334	$0 – $1,003	$3	0.0%
Dividend/interest		1.3	$136	$0 – $578	$1	0.0%
Supplemental Security income		1.3	$10	$0 – $1,380	$0	0.0%
TANF (Temporary cash assistance for needy families)		0.0	$0	$0 – $0	$0	0.0%
Veterans assistance		0.0	$0	$0 – $0	$0	0.0%
Foster care		0.0	$0	$0 – $0	$0	0.0%
CITGO fuel voucher		0.0	$0	$0 – $0	$0	0.0%
Meeting honoraria		0.0	$0	$0 – $0	$0	0.0%
Other income subtotal		**121.7**	**$1,244,685**	**$926,094 – $1,625,287**	**$9,801**	**17.6%**
Community income total			**$7,079,842**	**$5,187,154 – $9,343,688**	**$55,747**	**100.0%**

Source ADF&G Division of Subsistence household surveys, 2015.



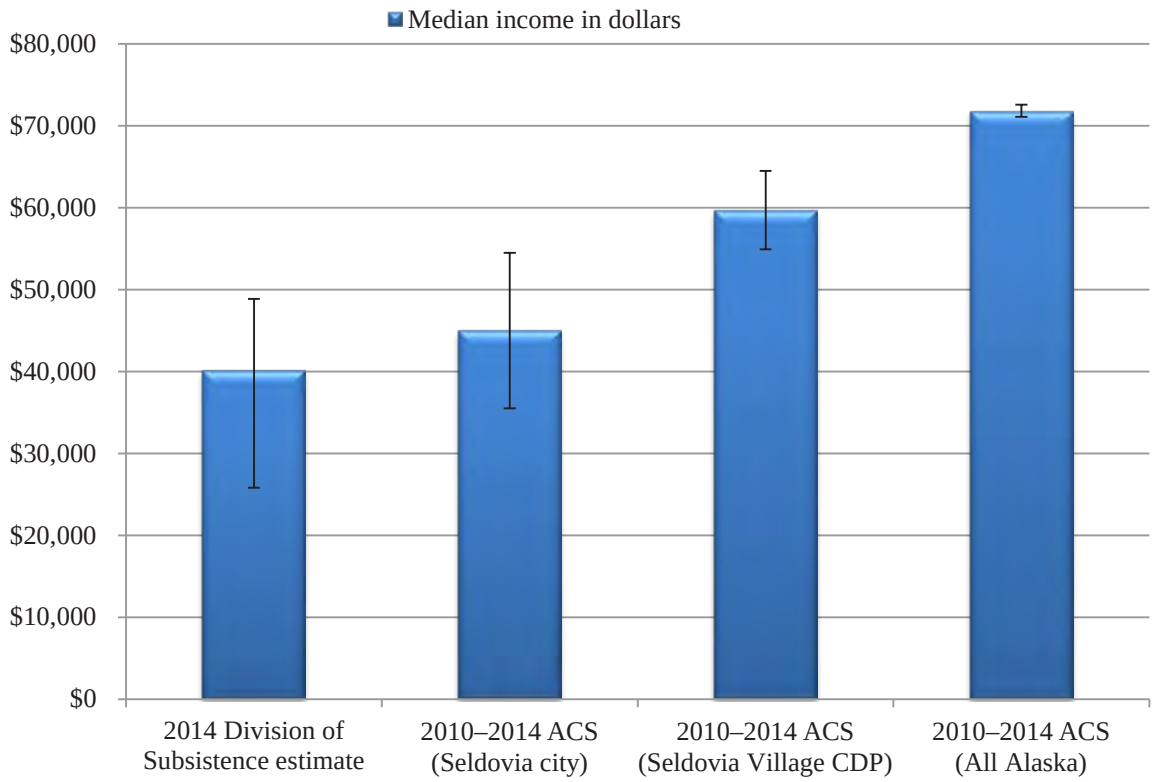
Note The "all other sources" category includes sources providing less than 2.5% each to the overall income.

Figure 3-4.–Top income sources, Seldovia, 2014.

both Seldovia city ($45,000) and Seldovia Village CDP ($59,688). The Division of Subsistence median household income finding for Seldovia is less than the 2010–2014 median household income for the state of Alaska as a whole ($71,829).

The per capita income in 2014 in Seldovia was $25,461 (Table 1-9). In comparison to the other study communities, the estimated per capita annual income was the highest in Seldovia, followed by Nikiski ($22,790), Port Graham ($12,876), and Nanwalek ($6,800). Comparing study community average income estimates at the household level, Seldovia ranked 2nd after Nikiski, which had an estimated annual mean household income of $55,747 (Table 1-9).

Overall, income from jobs with the local government (including tribal) contributed the most to earned income (45%) for the community of Seldovia and these jobs employed 58% of households in 2014 (Table 3-7). Executive, administrative, and managerial jobs composed the greatest percentage of wage earnings within this category (27% of overall earned income), followed by general service occupations (4%), and jobs for teachers, librarians, and counselors (3%). Agriculture, forestry, and fishing represented 18% of overall wage earnings and employed 23% of households in 2014. Agricultural, forestry, and fishing occupations made up both the highest percentage of wage earnings (16% of overall earned income) and percentage of



Note For 2014, Division of Subsistence estimate does not include categories of income excluded by the 2010–2014 ACS median estimate, including food stamps, housing assistance, and one-time payments.

Figure 3-5.–Comparison of median income estimates, Seldovia, 2014.

jobs (10% of community jobs) within this category. Overall, 53% of employed respondents had a full-time employment schedule (Table 3-8).

Within the other income category, Alaska Permanent Fund dividends made up the greatest percentage of the total community income (7%), followed by pension/retirement (5%), Social Security (4%), Native corporation dividends (1%), and smaller percentages for the remaining types of other income sources (Table 3-6).

In 2014, there were approximately 169 employed adults (working age 16 and older) in Seldovia, representing 72% of all adults and approximately 79% of households had at least 1 employed member (Table 3-9). There were approximately 254 jobs worked by Seldovia residents during the study year. Employed adults in Seldovia worked an average of 10 months and 70% were employed year-round. The mean number of jobs held by employed adults was 1.5 and the maximum number of jobs held by an individual was 6. Considering households with employed adults, the mean number of jobs per household was 2.5.

Table 3-7.–Employment by industry, Seldovia, 2014.

Industry	Jobs	Households	Individuals	Percentage of wage earnings
Estimated total number	**254.2**	**100.2**	**169.4**	
Federal government	**1.7%**	**4.3%**	**2.6%**	**1.8%**
Executive, administrative, and managerial	0.6%	1.4%	0.9%	0.8%
Teachers, librarians, and counselors	0.6%	1.4%	0.9%	0.5%
Marketing and sales occupations	0.6%	1.4%	0.9%	0.6%
State government	**7.5%**	**13.0%**	**9.5%**	**5.3%**
Executive, administrative, and managerial	1.7%	4.3%	2.6%	3.6%
Teachers, librarians, and counselors	2.9%	4.3%	3.4%	0.9%
Technologists and technicians, except health	0.6%	1.4%	0.9%	0.2%
Administrative support occupations, including clerical	1.1%	2.9%	1.7%	0.0%
Service occupations	0.6%	1.4%	0.9%	0.2%
Transportation and material moving occupations	0.6%	1.4%	0.9%	0.3%
Local government, including tribal	**35.6%**	**58.0%**	**44.8%**	**45.3%**
Executive, administrative, and managerial	5.2%	13.0%	7.8%	26.5%
Teachers, librarians, and counselors	6.3%	11.6%	8.6%	3.3%
Writers, artists, entertainers, and athletes	1.1%	2.9%	1.7%	0.2%
Health technologists and technicians	1.7%	4.3%	2.6%	2.2%
Technologists and technicians, except health	2.3%	5.8%	3.4%	2.7%
Marketing and sales occupations	1.7%	4.3%	2.6%	1.6%
Administrative support occupations, including clerical	2.3%	5.8%	3.4%	2.9%
Service occupations	8.0%	15.9%	11.2%	3.6%
Agricultural, forestry, and fishing occupations	2.3%	2.9%	2.6%	0.4%
Transportation and material moving occupations	1.7%	4.3%	2.6%	1.4%
Handlers, equipment cleaners, helpers, and laborers	0.6%	1.4%	0.9%	0.5%
Occupation not indicated	2.3%	5.8%	3.4%	0.2%
Agriculture, forestry, and fishing	**11.5%**	**23.2%**	**16.4%**	**17.9%**
Technologists and technicians, except health	1.1%	1.4%	1.7%	1.9%
Administrative support occupations, including clerical	0.6%	1.4%	0.9%	0.1%
Agricultural, forestry, and fishing occupations	9.8%	20.3%	13.8%	15.8%
Mining	**1.1%**	**2.9%**	**1.7%**	**3.3%**
Natural scientists and mathematicians	0.6%	1.4%	0.9%	1.6%
Occupation not indicated	0.6%	1.4%	0.9%	1.6%
Construction	**10.3%**	**23.2%**	**15.5%**	**9.3%**
Engineers, surveyors, and architects	0.6%	1.4%	0.9%	0.2%
Construction and extractive occupations	9.2%	20.3%	13.8%	8.9%
Handlers, equipment cleaners, helpers, and laborers	0.6%	1.4%	0.9%	0.2%
Manufacturing	**1.1%**	**2.9%**	**1.7%**	**0.2%**
Writers, artists, entertainers, and athletes	1.1%	2.9%	1.7%	0.2%
Transportation, communication, and utilities	**4.6%**	**7.2%**	**6.0%**	**6.0%**
Executive, administrative, and managerial	1.1%	2.9%	1.7%	0.4%
Precision production occupations	0.6%	1.4%	0.9%	4.1%
Transportation and material moving occupations	2.9%	2.9%	3.4%	1.5%
Retail trade	**1.7%**	**4.3%**	**2.6%**	**1.3%**
Marketing and sales occupations	1.1%	2.9%	1.7%	1.0%
Handlers, equipment cleaners, helpers, and laborers	0.6%	1.4%	0.9%	0.2%

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Table 3-7.–Page 2 of 2.

Industry	Jobs	Households	Individuals	Percentage of wage earnings
Finance, insurance and real estate	**0.6%**	**1.4%**	**0.9%**	**0.4%**
Marketing and sales occupations	0.6%	1.4%	0.9%	0.4%
Services	**22.4%**	**33.3%**	**26.7%**	**8.6%**
Executive, administrative, and managerial	0.6%	1.4%	0.9%	0.0%
Natural scientists and mathematicians	0.6%	1.4%	0.9%	0.1%
Social scientists, social workers, religious workers, and lawyers	0.6%	1.4%	0.9%	0.1%
Health diagnosing and treating practitioners	1.1%	1.4%	0.9%	0.2%
Writers, artists, entertainers, and athletes	1.7%	1.4%	0.9%	0.4%
Technologists and technicians, except health	2.3%	4.3%	2.6%	1.0%
Marketing and sales occupations	0.6%	1.4%	0.9%	0.4%
Administrative support occupations, including clerical	2.3%	5.8%	3.4%	0.7%
Service occupations	8.6%	15.9%	11.2%	4.8%
Agricultural, forestry, and fishing occupations	0.6%	1.4%	0.9%	0.4%
Mechanics and repairers	1.1%	2.9%	1.7%	0.3%
Construction and extractive occupations	0.6%	1.4%	0.9%	0.1%
Handlers, equipment cleaners, helpers, and laborers	1.7%	4.3%	2.6%	0.1%
Industry not indicated	**1.7%**	**4.3%**	**2.6%**	**0.7%**
Executive, administrative, and managerial	0.6%	1.4%	0.9%	0.3%
Teachers, librarians, and counselors	0.6%	1.4%	0.9%	0.2%
Administrative support occupations, including clerical	0.6%	1.4%	0.9%	0.3%

Source ADF&G Division of Subsistence household surveys, 2015.

Table 3-8.–Reported job schedules, Seldovia, 2014.

	Jobs		Employed persons		Employed households	
Schedule	Number	Percentage	Number	Percentage	Number	Percentage
Full time	94.9	37.4%	90.6	53.4%	63.9	63.8%
Part time	112.5	44.3%	71.6	42.2%	53.7	53.6%
Shift	2.9	1.1%	2.9	1.7%	2.9	2.9%
On-call (occasional)	33.6	13.2%	27.8	16.4%	23.2	23.2%
Part-time shift	1.5	0.6%	1.5	0.9%	1.5	1.4%
Schedule not reported	8.8	3.4%	8.8	5.2%	7.3	7.2%

Source ADF&G Division of Subsistence household surveys, 2015.

Note Respondents who had more than 1 job in the study year could provide multiple responses, so the percentages may sum to more than 100%.

Table 3-9.–Employment characteristics, Seldovia, 2014.

Characteristic	Community Seldovia
All adults	
Number	236.2
Mean weeks employed	31.7
Employed adults	
Number	169.4
Percentage	71.7%
Jobs	
Number	254.2
Mean	1.5
Minimum	1
Maximum	6
Months employed	
Mean	10.2
Minimum	3
Maximum	12
Percentage employed year-round	69.6%
Mean weeks employed	44.2
Households	
Number	127.0
Employed	
Number	100.2
Percentage	78.9%
Jobs per employed household	
Mean	2.5
Minimum	1
Maximum	8
Employed adults	
Mean	
Employed households	1.7
Total households	1.3
Minimum	1
Maximum	4
Mean person-weeks of employment	58.9

Source ADF&G Division of Subsistence household surveys, 2015.

Food Security

Survey respondents were asked a set of questions intended to assess their household's food security, defined as, "access by all people at all times to enough food for an active, healthy life" (Coleman-Jensen et al. 2012). The food security questions were modeled after those developed by the U.S. Department of Agriculture (USDA) but modified by ADF&G to account for differences in access to subsistence and store-bought foods. The food security status of households is based on the aggregated number of affirmative responses to questions about experiencing food insecure conditions. Food security status is characterized by 4 ranges:

1. High food security;
2. Marginal food security;
3. Low food security; and
4. Very low food security.

For reporting purposes, households with high or marginal food security were broadly categorized as being food secure, and households with low or very low food security were broadly categorized as being food insecure following a USDA protocol (Bickel et al. 2000).[5]

Households with a high or marginal level of food security reported 1 or 2 instances of food access problems or limitations—typically anxiety over food sufficiency or a shortage of particular foods in the house—but gave little or no indication of changes in diets or food intake. Households with low food security reported reduced quality, variety, or desirability of their diet, but they, too, gave little indication of reduced food intake. Households classified as having very low food security were those that reported multiple instances of disrupted eating patterns and reduced food intake (Coleman-Jensen et al. 2012).

Core questions and responses from Seldovia residents are summarized in Figure 3-6. For this study, additional questions asked were designed to determine whether food insecurities, if any, were related to subsistence foods or store-bought foods. Of the households interviewed, 12% reported that their store-bought food did not last while 15% of Seldovia households specifically said that their subsistence foods did not last. Note that during survey administration, due to interviewer error, not all respondents were asked these additional questions and the responses in Figure 3-6 are not a full representation of these conditions experienced by surveyed Seldovia households.

In 2014, a small percentage (6%) of Seldovia households indicated that they worried about having enough food and 14% of households said that they lacked resources to get food (Figure 3-6). Also, 5% of Seldovia households indicated that their food did not last and that they could not get more. Only a small percentage of Seldovia households experienced more serious food insecure conditions: 3% had cut the size of meals or skipped meals, 4% indicated that they ate less than they felt they should, 2% of households said members were hungry but did not eat, 1% lost weight due to a lack of food, and 1% indicated that members of the household did not eat for a whole day.

Food security results for Seldovia, the state of Alaska, and the United States are summarized in Figure 3-7. As described above, Seldovia households were overall very food secure with 95% of community households falling in the high or marginal food secure subcategories. This is well above the state average of 88% and the national average of 86%. Only 2% of Seldovia households experienced low food security and 3% of households experienced very low food security.

Figure 3-8 portrays the mean number of food insecure conditions per household by food security category by month. Figure 3-9 shows which months households reported foods not lasting. According to study results, food insecure conditions for Seldovia households with low food security remained constant throughout the year, while households with very low food security experienced food insecure conditions that started increasing in August and that peaked in December (Figure 3-8). The most food secure time of the year for

5. U.S. Department of Agriculture, Economic Research Service. 2015."Food Security in the U.S.: Measurement," http://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/measurement.aspx (accessed May 2016).

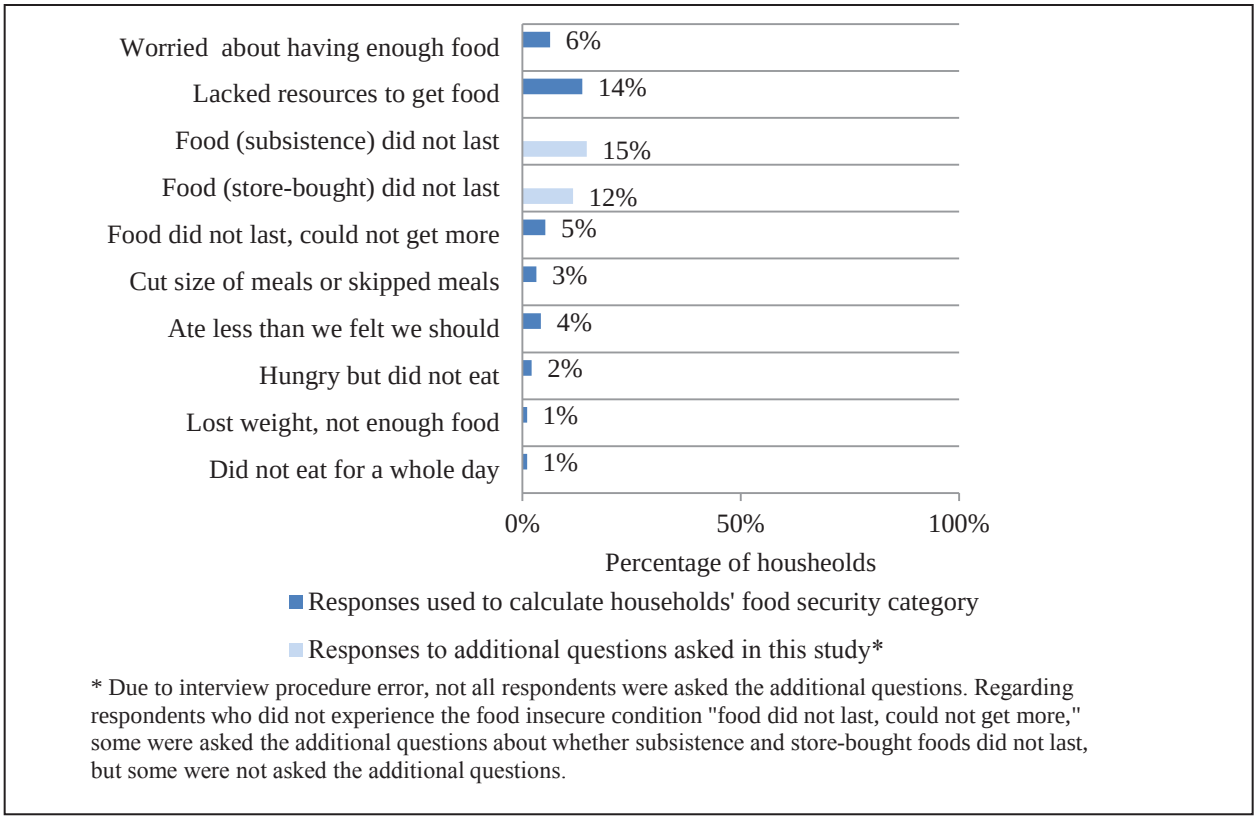

Figure 3-6.–Responses to questions about food insecure conditions, Seldovia, 2014.

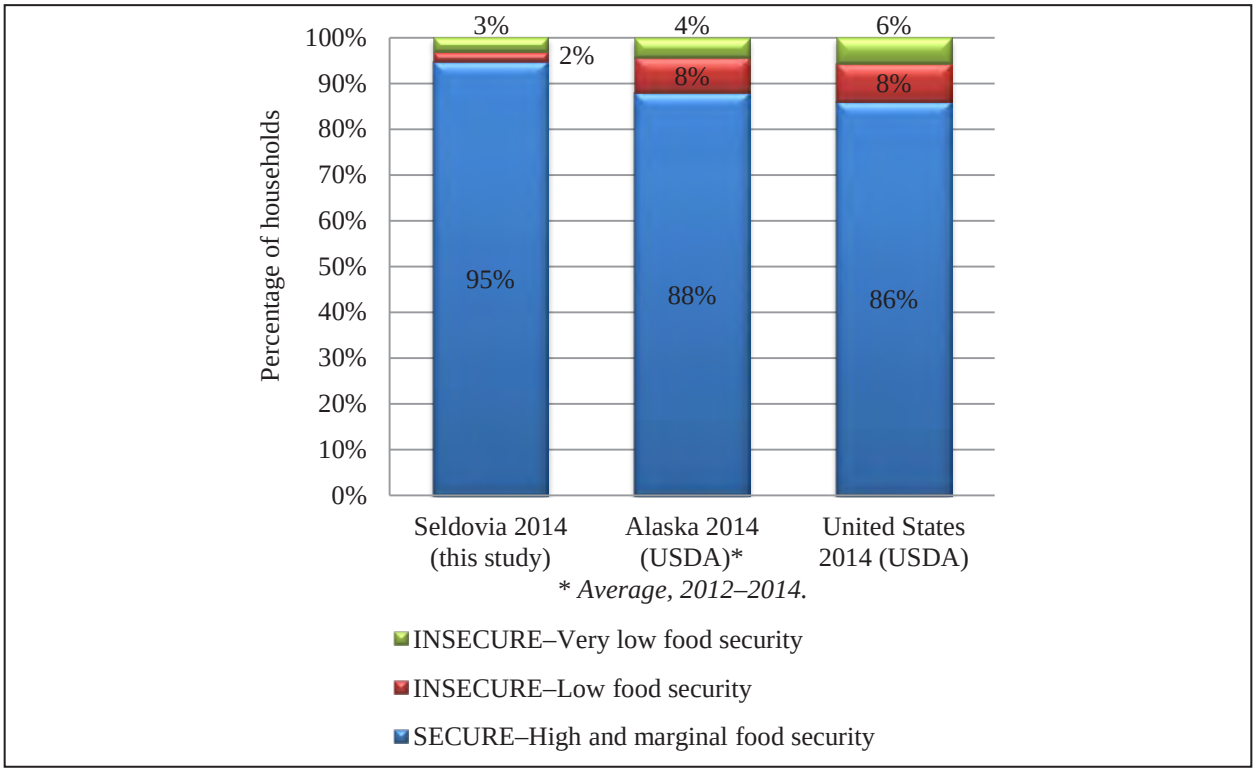

Figure 3-7.–Comparison of food security categories, Seldovia, Alaska, and United States, 2014.

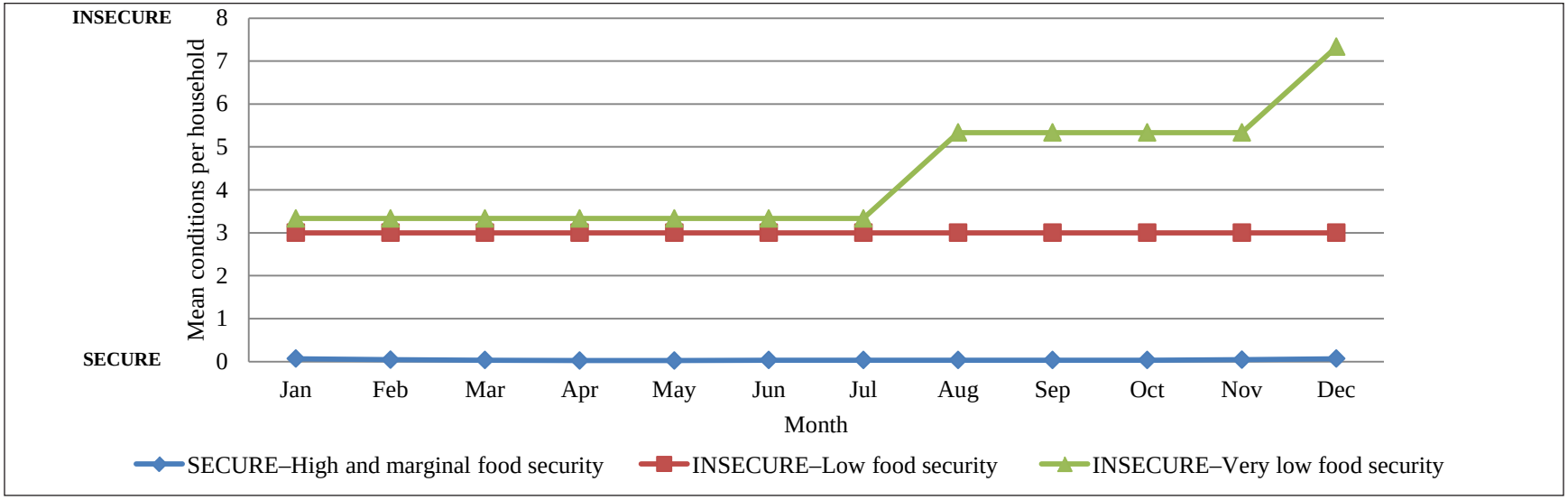

Figure 3-8.–Mean number of food insecure conditions by month and by household food security category, Seldovia, 2014.

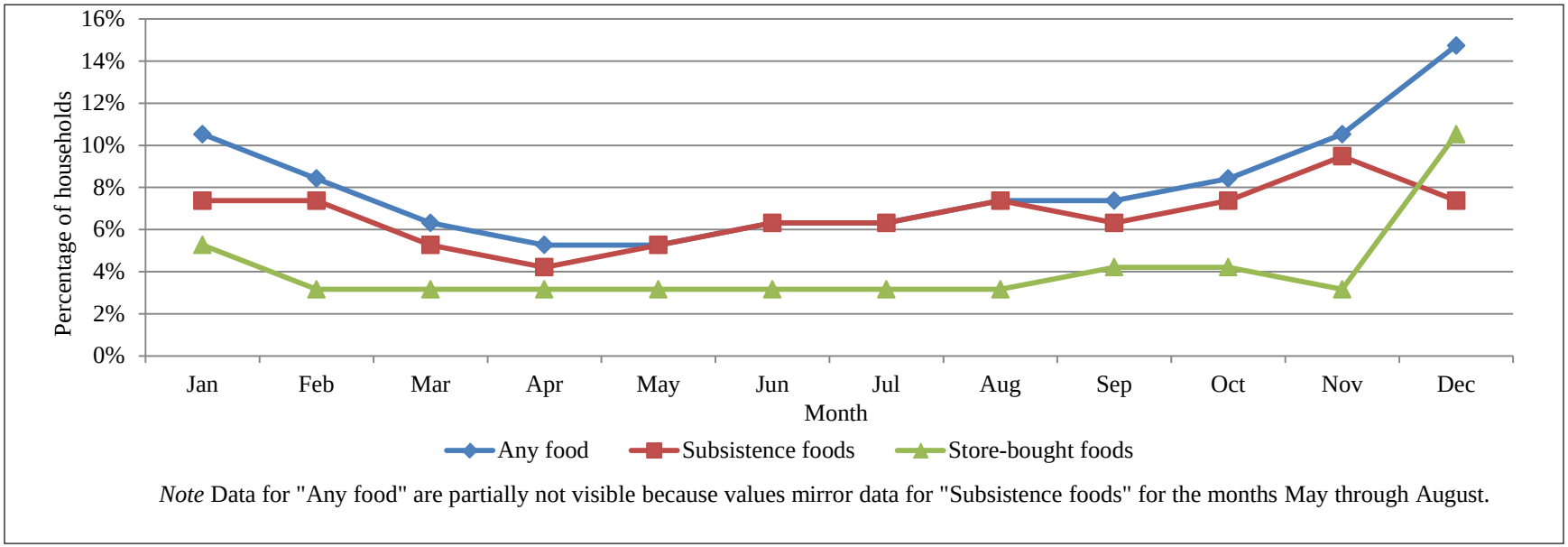

Figure 3-9.–Comparison of months when food did not last, Seldovia, 2014.

these households was January through July. Households with high food security did not show any changes in their food security conditions throughout the year.

Figure 3-9 shows that between the months of September to February, Seldovia households worried more about any food lasting than specifically either their subsistence or store-bought foods. The figure also shows that, overall, Seldovia households experienced subsistence foods not lasting more than their store-bought foods not lasting throughout the year. This could be because Seldovia households have access to small local grocery stores year-round and because there is also a bakery in the community. In addition, households with resources to travel outside the community can travel relatively easily to Homer and Anchorage via plane or the state-operated ferry to purchase groceries in larger quantities from stores and bring them back to the community to be consumed over a longer period of time. Looking at subsistence foods alone, the peak times Seldovia households experienced a shortage in their subsistence foods were in August and November.

Summary of Harvest and Use Patterns

Individual Participation in the Harvesting and Processing of Wild Resources

Table 3-10 reports the expanded levels of individual participation in the harvesting and processing of wild resources by all Seldovia residents in 2014. Approximately 84% of residents participated in the harvest of wild resources. With regard to specific resource categories, 77% of residents gathered vegetation, 61% fished, 11% hunted for large land mammals, 11% hunted birds, 2% hunted or trapped for small land mammals and furbearers, and 1% hunted marine mammals. A slightly larger number of residents (85%) participated in processing wild resources than harvesting some. Looking at the individual resource categories, 75% of residents processed vegetation, 70% of residents participated in processing salmon, 19% participated in processing large land mammals, and 12% participated in processing birds and eggs. Approximately

Table 3-10.–Individual participation in subsistence harvesting and processing activities, Seldovia, 2014.

Total number of people	**278.1**
Fish	
Fish	
Number	169.8
Percentage	61.1%
Process	
Number	193.8
Percentage	69.7%
Large land mammals	
Hunt	
Number	30.7
Percentage	11.1%
Process	
Number	52.1
Percentage	18.7%
Small land mammals	
Hunt or trap	
Number	6.7
Percentage	2.4%
Process	
Number	5.3
Percentage	1.9%
Marine mammals	
Hunt	
Number	2.7
Percentage	1%
Process	
Number	4.0
Percentage	1.4%
Birds and eggs	
Hunt/gather	
Number	30.7
Percentage	11.1%
Process	
Number	33.4
Percentage	12%
Vegetation	
Gather	
Number	213.9
Percentage	76.9%
Process	
Number	208.9
Percentage	75.1%
Any resource	
Attempt harvest	
Number	232.6
Percentage	83.7%
Process	
Number	235.3
Percentage	84.6%

Source ADF&G Division of Subsistence household surveys, 2015.

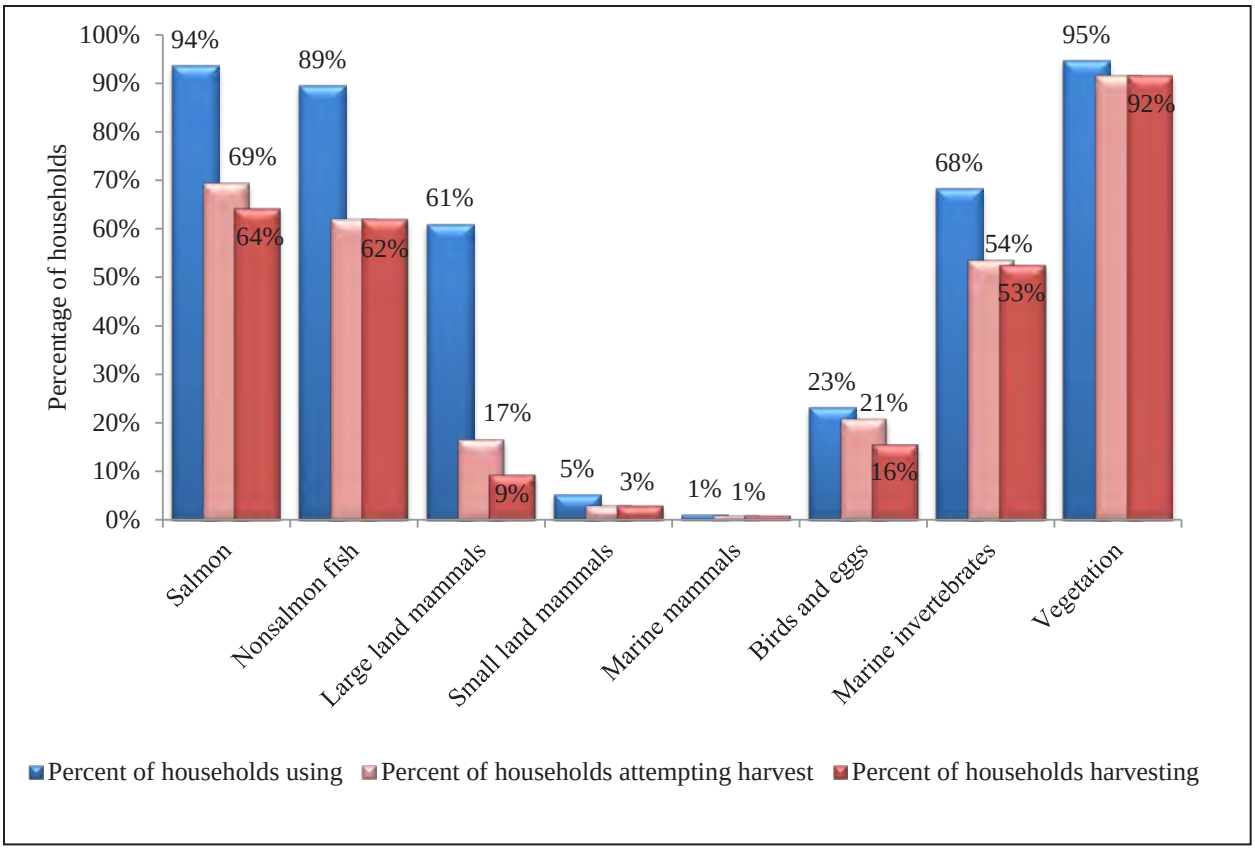

Figure 3-10.–Percentages of households using, attempting to harvest, and harvesting wild resources, by resource category, Seldovia, 2014.

the same number of individuals processed small land mammals/furbearers and marine mammals as went hunting.

Harvest and Use of Wild Resources at the Household Level

Figure 3-10 shows by resource category the percentages of Seldovia households that used wild resources, and also attempted to harvest and harvested wild foods. During the study year, 95% of households used vegetation, followed closely by use of salmon (94%) and nonsalmon fish (89%). The percentage of households using the remaining resource categories included: marine invertebrates (68%), large land mammals (61%), birds and eggs (23%), small land mammals (5%), and marine mammals (1%). For all resource categories except marine mammals, a higher percentage of households used resources than attempted to harvest or harvested resources.

The greatest percentage of households harvested vegetation (92%), followed by salmon (64%), nonsalmon fish (62%), marine invertebrates (53%), birds (16%), large land mammals (9%), small land mammals (3%), and marine mammals (1%). Vegetation, nonsalmon fish, small land mammals, and marine mammals were the only resource categories in which all harvest attempts were successful.

Table 3-11 summarizes resource harvest and use characteristics for Seldovia in 2014 at the household level. The average harvest was 303 lb usable weight per household, and the per capita harvest was 138 lb. During the study year, community households harvested an average of 10 kinds of resources and used an average of 15 kinds of resources. The maximum number of resources used by any household was 44. In addition, households gave away an average of 4 kinds of resources. Overall, as many as 171 species were available

Table 3-11.–Resource harvest and use characteristics, Seldovia, 2014.

Characteristic	
Mean number of resources used per household	**14.5**
Minimum	0
Maximum	44
95% confidence limit (±)	6.5%
Median	13
Mean number of resources attempted to harvest per household	**10.7**
Minimum	0
Maximum	41
95% confidence limit (±)	8.1%
Median	8
Mean number of resources harvested per household	**9.6**
Minimum	0
Maximum	37
95% confidence limit (±)	8.3%
Median	8
Mean number of resources received per household	**6.5**
Minimum	0
Maximum	23
95% confidence limit (±)	7.5%
Median	5
Mean number of resources given away per household	**4.1**
Minimum	0
Maximum	24
95% confidence limit (±)	11.2%
Median	3
Household harvest (pounds)	
Minimum	0
Maximum	2,107
Mean	302.8
Median	195
Total harvest weight (lb)	38,455.0
Community per capita harvest (lb)	138.3
Percentage using any resource	98.9%
Percentage attempting to harvest any resource	94.7%
Percentage harvesting any resource	93.7%
Percentage receiving any resource	96.8%
Percentage giving away any resource	75.8%
Number of households in sample	95
Number of resources asked about and identified voluntarily by respondents	171

Source ADF&G Division of Subsistence household surveys, 2015.

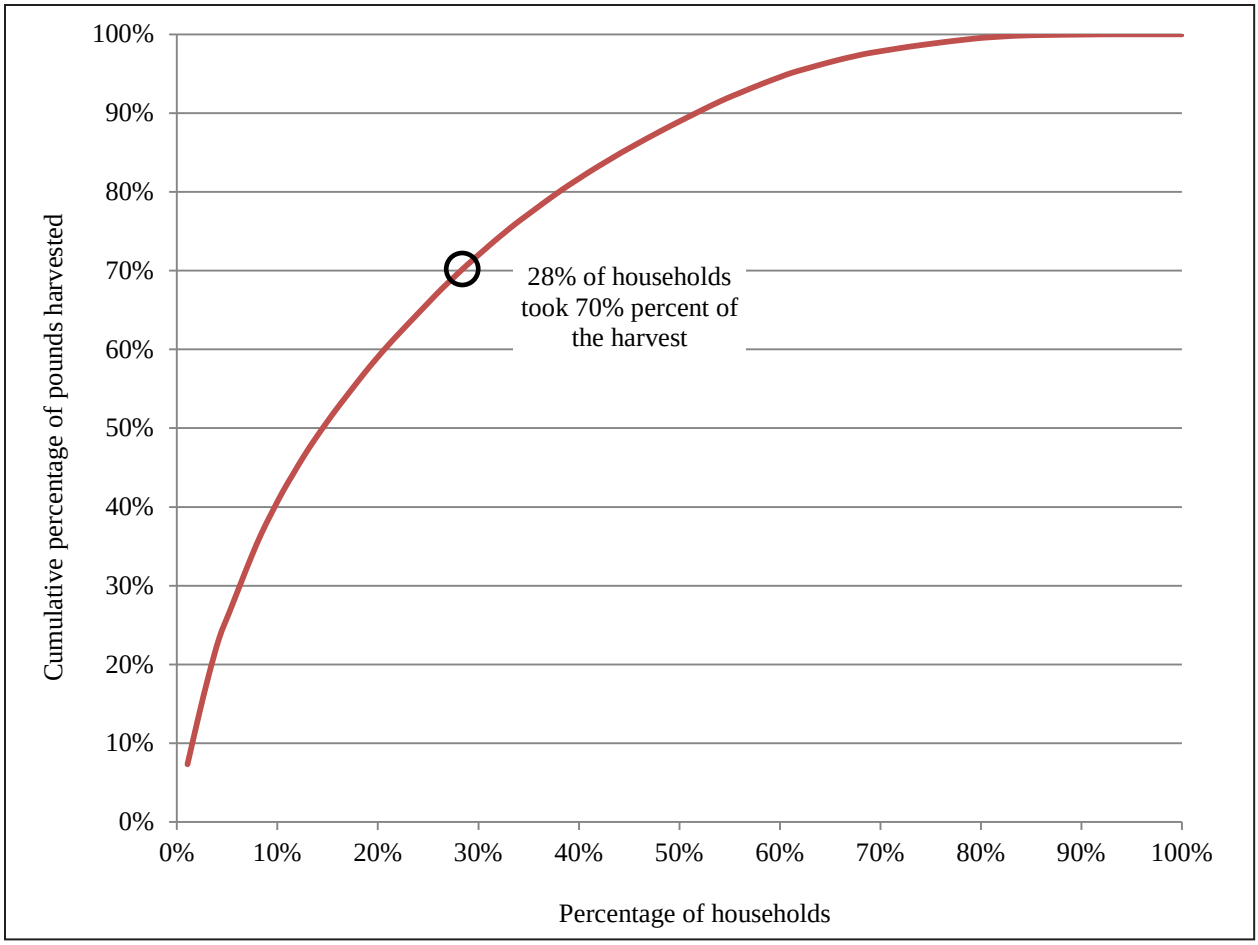

Figure 3-11.–Household specialization, Seldovia, 2014.

for households to harvest in the study area; this included species that survey respondents identified but were not asked about in the survey instrument.

Sharing of Wild Resources

Household Specialization in Resource Harvesting

Previous studies by the Division of Subsistence (Wolfe 1987; Wolfe et al. 2010) have shown that in most rural Alaska communities, a relatively small portion of households produces most of the community's fish and wildlife harvests, which they share with other households. A recent study of 3,265 households in 66 rural Alaska communities found that about 33% of the households accounted for 76% of subsistence harvests (Wolfe et al. 2010). Although overall the set of very productive households was diverse, factors that were associated with higher levels of subsistence harvests included larger households with a pool of adult male labor, higher wage income, involvement in commercial fishing, and community location.

As shown in Figure 3-11, in the 2014 study year in Seldovia, about 70% of the harvests of wild resources as estimated in pounds usable weight were harvested by 28% of the community's households. Further analysis of the study findings, beyond the scope of this report, might identify characteristics of the highly productive households in Seldovia and the other study communities.

Harvest Quantities and Composition

Table 3-12 reports estimated wild resource harvests and uses by Seldovia residents in 2014 and is organized first by general category and then by species. All edible resources are reported in pounds usable weight (see Appendix B for conversion factors[6]).

The total harvest by Seldovia residents was 38,455 lb in 2014 (Table 3-12). The composition of the harvest is represented by salmon (34% of the total harvest), followed by nonsalmon fish (26%), vegetation (22%), large land mammals (12%), and marine invertebrates (4%); additionally, contributing 1% or less of the total harvest weight each were birds, marine mammals, and small land mammals (Figure 3-12). The community harvest by wild resource category in order of most to least was salmon (13,204 lb total, or 48 lb per capita), nonsalmon fish (10,014 lb total, or 36 lb per capita), vegetation (8,353 lb total, or 30 lb per capita), large land mammals (4,784 lb total, or 17 lb per capita), and marine invertebrates (1,537 lb total, or 6 lb per capita) (Table 3-12). With a per capita harvest of less than 1 lb, the harvest of marine mammals was 300 lb total, followed by the harvest of birds, which weighed 251 lb total, and a very slight harvest of 13 lb usable weight for small land mammals.

Seasonal Round

Seldovia residents harvest wild food resources throughout the year. Like many rural Alaska communities, certain species are targeted in different seasons, and this creates a cyclical harvest pattern. These patterns are defined by seasonal resource availability, laws, regulations, other economic activities, and land access. The annual cycle of resource availability is relatively predictable and generally allows for the reliable and sustained provision of wild foods for the community.

As depicted in Figure 3-13, resource search and harvest areas documented during this study year were spread out across the state, though the majority of Seldovia residents harvested wild foods relatively close to the community. Starting from the north and moving toward the south, the search and harvest areas for all resources encompassed lands from Delta Junction to Seldovia, west toward the Cold Bay and King Cove area on the Alaska Peninsula, east to Cape Yakataga, and finally to the southeast near the community of Sitka.

The annual cycle of resource harvests at Seldovia begins in the early spring as daylight increases, and trapping for snowshoe hares and other small land mammals comes to an end as the snow melts and winter ice is cleared from local streams and lakes. Many households begin their annual vegetation harvest in the spring as fiddlehead ferns and mushrooms become available. Kelp is often gathered at this time to be used as fertilizer in home gardens.

During summer months, beginning in mid-June and extending through September, Seldovia residents are busy with salmon fishing in the marine waters and freshwater systems near the community. Commercial salmon fishing also commences in the summer. Throughout the summer, Seldovia residents use a rod and reel to harvest nonsalmon fish such as Pacific halibut and cod. Marine invertebrates such as clams and mussels are harvested throughout the summer. Berries begin to ripen in early July. Salmonberries are often the first of the summer berries to become abundant. Many Seldovia households pick salmonberries, blueberries, raspberries, currants, highbush cranberries, and several other varieties of berries and greens.

Moose hunting begins in August and extends through late September when the regulatory season closes. Upland game bird seasons for spruce grouse and ptarmigan also open in mid-August. Often, upland game birds such as grouse and ptarmigan are opportunistically harvested during moose hunting trips. Grouses are the main species taken in early fall, while ptarmigan are taken after freeze-up and throughout the winter months.

During the winter months, short days and colder temperatures limit the extent of resource harvest activities. Residents take advantage of occasional warm weather to harvest marine invertebrates and seaweeds.

6. Resources that are not eaten, such as firewood and some furbearers, are included in the table but are given a conversion factor of zero.

Table 3-12.–Estimated uses and harvests of fish, game, and vegetation resources, Seldovia, 2014.

	Percentage of households					Harvest weight (lb)			Harvest amount			95% confidence limit (±) harvest
Resource	Use %	Attempt %	Harvest %	Receive %	Give %	Total	Mean per household	Per capita	Total	Unit	Mean per household	
All resources	**98.9**	**94.7**	**93.7**	**96.8**	**75.8**	**38,455.0**	**302.8**	**138.3**	**38,455.0**	**lb**	**302.8**	**12.8**
Salmon	**93.7**	**69.5**	**64.2**	**71.6**	**48.4**	**13,203.9**	**104.0**	**47.5**	**13,203.9**	**lb**	**104.0**	**15.0**
Chum salmon	17.9	12.6	12.6	7.4	4.2	1,017.6	8.0	3.7	185.8	ind	1.5	37.2
Coho salmon	43.2	31.6	26.3	25.3	8.4	1,145.0	9.0	4.1	248.7	ind	2.0	30.3
Chinook salmon	61.1	42.1	28.4	47.4	20.0	2,245.8	17.7	8.1	203.2	ind	1.6	30.2
Pink salmon	44.2	38.9	38.9	12.6	14.7	2,129.1	16.8	7.7	810.2	ind	6.4	27.0
Sockeye salmon	77.9	47.4	44.2	49.5	37.9	6,654.4	52.4	23.9	1,483.9	ind	11.7	20.0
Landlocked salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown salmon	8.4	2.1	2.1	6.3	1.1	12.0	0.1	0.0	2.7	ind	0.0	70.1
Nonsalmon fish	**89.5**	**62.1**	**62.1**	**71.6**	**48.4**	**10,013.8**	**78.8**	**36.0**	**10,013.8**	**lb**	**78.8**	**21.7**
Pacific herring	7.4	3.2	3.2	4.2	1.1	204.3	1.6	0.7	34.0	gal	0.3	80.5
Pacific herring roe (unspecified)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Pacific herring sac roe	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Pacific herring spawn on kelp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Eulachon (hooligan, candlefish)	1.1	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Unknown smelt	1.1	0.0	0.0	1.1	1.1	0.0	0.0	0.0	0.0	gal	0.0	0.0
Sea bass	3.2	2.1	2.1	1.1	0.0	26.7	0.2	0.1	26.7	ind	0.2	70.1
Pacific (gray) cod	56.8	26.3	25.3	42.1	18.9	1,510.0	11.9	5.4	471.9	ind	3.7	31.8
Pacific tomcod	2.1	1.1	1.1	1.1	1.1	0.7	0.0	0.0	1.3	ind	0.0	0.0
Walleye pollock (whiting)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown cod	1.1	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Eel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Starry flounder	1.1	1.1	1.1	0.0	0.0	60.2	0.5	0.2	20.1	ind	0.2	99.7
Unknown flounder	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Lingcod	14.7	3.2	2.1	13.7	5.3	128.3	1.0	0.5	32.1	ind	0.3	71.1
Unknown greenling	1.1	1.1	1.1	0.0	0.0	5.3	0.0	0.0	5.3	ind	0.0	99.7
Pacific halibut	82.1	55.8	52.6	56.8	41.1	7,526.0	59.3	27.1	7,526.0	lb	59.3	25.8
Black rockfish	21.1	14.7	14.7	9.5	5.3	355.6	2.8	1.3	237.1	ind	1.9	38.9
Red rockfish	2.1	1.1	1.1	1.1	0.0	37.4	0.3	0.1	9.4	ind	0.1	99.7

-continued-

Table 3-12.–Page 2 of 7.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount			95% confidence limit (±) harvest
	Use %	Attempt %	Harvest %	Receive %	Give %	Total	Mean per household	Per capita	Total	Unit	Mean per household	
Nonsalmon fish, continued												
Unknown rockfish	9.5	2.1	2.1	7.4	0.0	6.4	0.1	0.0	4.0	ind	0.0	74.0
Sablefish (black cod)	27.4	3.2	2.1	26.3	6.3	4.2	0.0	0.0	1.4	ind	0.0	98.6
Unknown Irish lord	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown sculpin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown shark	1.1	1.1	1.1	0.0	0.0	12.0	0.1	0.0	1.3	ind	0.0	99.7
Skates	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown sole	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Wolffish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Dolly Varden	16.8	10.5	10.5	7.4	3.2	110.4	0.9	0.4	78.9	ind	0.6	35.4
Lake trout	1.1	1.1	1.1	0.0	0.0	9.4	0.1	0.0	6.7	ind	0.1	99.7
Arctic grayling	1.1	1.1	1.1	0.0	0.0	7.5	0.1	0.0	10.7	ind	0.1	99.7
Northern pike	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown sturgeon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Cutthroat trout	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Rainbow trout	2.1	2.1	1.1	1.1	0.0	9.4	0.1	0.0	6.7	ind	0.1	99.7
Steelhead	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown whitefishes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Large land mammals	**61.1**	**16.8**	**9.5**	**60.0**	**11.6**	**4,783.9**	**37.7**	**17.2**	**4,783.9**	**lb**	**37.7**	**37.7**
Black bear	21.1	7.4	2.1	18.9	1.1	155.1	1.2	0.6	2.7	ind	0.0	70.1
Caribou	17.9	3.2	1.1	17.9	4.2	200.5	1.6	0.7	1.3	ind	0.0	99.7
Deer	16.8	1.1	0.0	16.8	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Mountain goat	12.6	5.3	1.1	11.6	1.1	96.9	0.8	0.3	1.3	ind	0.0	99.7
Moose	55.8	9.5	6.3	51.6	8.4	4,331.4	34.1	15.6	8.0	ind	0.1	39.6
Dall sheep	1.1	1.1	0.0	1.1	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Small land mammals	**5.3**	**3.2**	**3.2**	**2.1**	**0.0**	**13.4**	**0.1**	**0.0**	**13.4**	**lb**	**0.1**	**19.9**
Beaver	1.1	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Coyote	1.1	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Red fox	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Snowshoe hare	1.1	2.1	1.1	0.0	0.0	2.7	0.0	0.0	1.3	ind	0.0	99.7
North American river (land) otter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0

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Table 3-12.–Page 3 of 7.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount			95% confidence limit (±) harvest
	Use %	Attempt %	Harvest %	Receive %	Give %	Total	Mean per household	Per capita	Total	Unit	Mean per household	
Small land mammals, continued												
Lynx	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Marten	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Mink	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Muskrat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Porcupine	1.1	1.1	1.1	0.0	0.0	10.7	0.1	0.0	1.3	ind	0.0	0.0
Arctic ground (parka) squirrel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Red (tree) squirrel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Weasel	1.1	1.1	1.1	0.0	0.0	0.0	0.0	0.0	2.7	ind	0.0	99.7
Gray wolf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Wolverine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Marine mammals	**1.1**	**1.1**	**1.1**	**1.1**	**0.0**	**299.5**	**2.4**	**1.1**	**299.5**	**lb**	**2.4**	**99.7**
Harbor seal	1.1	1.1	1.1	1.1	0.0	299.5	2.4	1.1	5.3	ind	0.0	99.7
Sea otter	1.1	1.1	1.1	0.0	0.0	0.0	0.0	0.0	2.7	ind	0.0	99.7
Steller sea lion	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Birds and eggs	**23.2**	**21.1**	**15.8**	**9.5**	**4.2**	**250.7**	**2.0**	**0.9**	**250.7**	**lb**	**2.0**	**45.9**
Bufflehead	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown eider	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Goldeneye	2.1	1.1	1.1	1.1	1.1	2.1	0.0	0.0	2.7	ind	0.0	99.7
Harlequin duck	1.1	2.1	1.1	0.0	1.1	1.3	0.0	0.0	2.7	ind	0.0	99.7
Mallard	9.5	9.5	4.2	5.3	2.1	16.8	0.1	0.1	18.7	ind	0.1	53.5
Unknown merganser	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Long-tailed duck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Northern pintail	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown scaup	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Black scoter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Surf scoter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
White-winged scoter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Northern shoveler	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown teal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown wigeon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0

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Table 3-12.–Page 4 of 7.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount			95% confidence limit (±) harvest
	Use %	Attempt %	Harvest %	Receive %	Give %	Total	Mean per household	Per capita	Total	Unit	Mean per household	
Birds and eggs, continued												
Unknown ducks	1.1	1.1	1.1	1.1	0.0	7.9	0.1	0.0	9.4	ind	0.1	99.7
Unknown Canada/ cackling geese	2.1	2.1	1.1	1.1	0.0	12.8	0.1	0.0	10.7	ind	0.1	99.7
White-fronted goose	2.1	2.1	2.1	0.0	0.0	22.5	0.2	0.1	9.4	ind	0.1	86.5
Sandhill crane	2.1	2.1	2.1	0.0	1.1	101.1	0.8	0.4	12.0	ind	0.1	74.0
Unknown cormorant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown gull	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Black-legged kittiwake	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown murre	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown puffin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Spruce grouse	2.1	3.2	2.1	0.0	0.0	6.6	0.1	0.0	9.4	ind	0.1	76.4
Sharp-tailed grouse	2.1	2.1	2.1	0.0	1.1	12.2	0.1	0.0	17.4	ind	0.1	92.2
Ruffed grouse	2.1	3.2	2.1	0.0	0.0	2.8	0.0	0.0	4.0	ind	0.0	74.0
Unknown grouse	6.3	7.4	5.3	1.1	2.1	39.3	0.3	0.1	56.1	ind	0.4	73.2
Unknown ptarmigan	4.2	6.3	4.2	0.0	0.0	25.3	0.2	0.1	36.1	ind	0.3	75.4
Unknown other birds	1.1	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown duck eggs	1.1	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown goose eggs	1.1	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Black oystercatcher eggs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown gull eggs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown tern eggs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown eggs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Marine invertebrates	**68.4**	**53.7**	**52.6**	**47.4**	**27.4**	**1,537.1**	**12.1**	**5.5**	**1,537.1**	**lb**	**12.1**	**32.5**
Red (large) chitons	2.1	1.1	1.1	1.1	0.0	6.0	0.0	0.0	2.0	gal	0.0	99.7
Black (small) chitons	17.9	15.8	15.8	4.2	7.4	132.3	1.0	0.5	33.1	gal	0.3	51.7
Butter clams	50.5	40.0	40.0	21.1	14.7	509.5	4.0	1.8	169.8	gal	1.3	19.5
Horse clams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Pacific littleneck clams (steamers)	25.3	20.0	18.9	6.3	4.2	135.9	1.1	0.5	45.3	gal	0.4	35.7
Pinkneck clams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0

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Table 3-12.–Page 5 of 7.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount			95% confidence limit (±) harvest
	Use %	Attempt %	Harvest %	Receive %	Give %	Total	Mean per household	Per capita	Total	Unit	Mean per household	
Marine invertebrates, continued												
Razor clams	12.6	5.3	4.2	8.4	2.1	84.2	0.7	0.3	28.1	gal	0.2	57.7
Softshell clams	1.1	1.1	1.1	0.0	0.0	2.0	0.0	0.0	0.7	gal	0.0	99.7
Unknown clams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Unknown cockles	1.1	1.1	1.1	0.0	1.1	20.1	0.2	0.1	6.7	gal	0.1	99.7
Dungeness crab	1.1	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown king crab	5.3	0.0	0.0	5.3	1.1	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown tanner crab	11.6	2.1	2.1	10.5	4.2	10.7	0.1	0.0	6.7	ind	0.1	71.5
Unknown crab	2.1	0.0	0.0	2.1	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Geoducks	1.1	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Limpets	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Unknown mussels	12.6	11.6	11.6	2.1	1.1	41.5	0.3	0.1	27.7	gal	0.2	51.5
Octopus	20.0	10.5	10.5	12.6	7.4	187.2	1.5	0.7	46.8	ind	0.4	42.1
Unknown oyster	2.1	1.1	1.1	1.1	1.1	4.0	0.0	0.0	1.3	gal	0.0	99.7
Weathervane scallops	1.1	0.0	0.0	1.1	1.1	0.0	0.0	0.0	0.0	gal	0.0	0.0
Unknown sea cucumber	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Unknown sea urchin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Shrimp	6.3	2.1	2.1	4.2	1.1	403.7	3.2	1.5	403.7	lb	3.2	99.0
Snails	1.1	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Whelk	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Vegetation	**94.7**	**91.6**	**91.6**	**45.3**	**55.8**	**8,352.8**	**65.8**	**30.0**	**8,352.8**	**lb**	**65.8**	**16.2**
Blueberry	85.3	82.1	81.1	24.2	41.1	3,303.0	26.0	11.9	825.8	gal	6.5	22.6
Lowbush cranberry	12.6	11.6	11.6	2.1	5.3	92.5	0.7	0.3	23.1	gal	0.2	39.7
Highbush cranberry	36.8	34.7	34.7	8.4	10.5	446.2	3.5	1.6	111.5	gal	0.9	23.6
Crowberry	3.2	3.2	3.2	0.0	1.1	27.4	0.2	0.1	6.9	gal	0.1	97.2
Gooseberry	2.1	2.1	2.1	0.0	0.0	1.3	0.0	0.0	0.3	gal	0.0	78.5
Currants	18.9	17.9	17.9	3.2	1.1	67.5	0.5	0.2	16.9	gal	0.1	31.5
Nagoonberry	3.2	3.2	3.2	0.0	0.0	0.4	0.0	0.0	0.1	gal	0.0	89.2
Raspberry	26.3	24.2	24.2	3.2	9.5	300.8	2.4	1.1	75.2	gal	0.6	27.5
Salmonberry	74.7	74.7	73.7	13.7	28.4	1,611.8	12.7	5.8	403.0	gal	3.2	14.7
Strawberry	14.7	14.7	14.7	1.1	3.2	71.3	0.6	0.3	17.8	gal	0.1	33.0

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Table 3-12.–Page 6 of 7.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount			95% confidence limit (±) harvest
	Use %	Attempt %	Harvest %	Receive %	Give %	Total	Mean per household	Per capita	Total	Unit	Mean per household	
Vegetation, continued												
Twisted stalk berry (watermelon berry)	11.6	11.6	11.6	0.0	0.0	40.1	0.3	0.1	10.0	gal	0.1	42.2
Other wild berry	3.2	3.2	3.2	0.0	0.0	2.3	0.0	0.0	0.6	gal	0.0	64.8
Beach asparagus	2.1	2.1	2.1	1.1	0.0	0.8	0.0	0.0	0.8	gal	0.0	89.2
Goose tongue	14.7	14.7	14.7	1.1	3.2	35.0	0.3	0.1	35.0	gal	0.3	40.6
Other beach greens	6.3	6.3	6.3	1.1	2.1	14.4	0.1	0.1	14.4	gal	0.1	59.7
Devil's club	11.6	11.6	11.6	1.1	4.2	16.5	0.1	0.1	16.5	gal	0.1	45.4
Fiddlehead ferns	23.2	24.2	23.2	2.1	5.3	46.3	0.4	0.2	46.3	gal	0.4	34.0
Nettle	17.9	17.9	17.9	3.2	4.2	63.7	0.5	0.2	63.7	gal	0.5	34.3
Hudson's Bay (Labrador) tea	2.1	2.1	2.1	0.0	0.0	1.4	0.0	0.0	1.4	gal	0.0	98.6
Indian rice	1.1	1.1	1.1	0.0	0.0	1.3	0.0	0.0	1.3	gal	0.0	0.0
Dandelion greens	4.2	4.2	4.2	0.0	0.0	7.4	0.1	0.0	7.4	gal	0.1	60.2
Sourdock	3.2	3.2	3.2	2.1	2.1	1.8	0.0	0.0	1.8	gal	0.0	77.6
Spruce tips	6.3	6.3	6.3	0.0	1.1	3.6	0.0	0.0	3.6	gal	0.0	75.8
Wild celery	8.4	8.4	8.4	1.1	1.1	9.8	0.1	0.0	34.9	gal	0.3	69.4
Wild parsley	11.6	11.6	11.6	0.0	3.2	17.6	0.1	0.1	17.6	gal	0.1	55.0
Wild rose hips	17.9	17.9	17.9	0.0	6.3	44.5	0.4	0.2	11.1	gal	0.1	28.1
Yarrow	2.1	2.1	2.1	0.0	0.0	3.3	0.0	0.0	3.3	gal	0.0	82.0
Other wild greens	8.4	8.4	8.4	0.0	1.1	13.7	0.1	0.0	13.7	gal	0.1	41.6
Unknown mushrooms	36.8	30.5	30.5	13.7	10.5	321.7	2.5	1.2	321.7	gal	2.5	35.7
Fireweed	4.2	4.2	3.2	0.0	2.1	4.7	0.0	0.0	4.7	gal	0.0	64.8
Plantain	4.2	4.2	4.2	0.0	1.1	2.9	0.0	0.0	2.9	gal	0.0	64.3
Stinkweed	3.2	3.2	1.1	0.0	0.0	0.2	0.0	0.0	0.2	gal	0.0	99.7
Black seaweed	9.5	6.3	6.3	4.2	1.1	40.8	0.3	0.1	10.2	gal	0.1	43.8
Bull kelp	21.1	20.0	20.0	2.1	1.1	330.9	2.6	1.2	2,612.0	gal	20.6	26.9
Red seaweed	6.3	5.3	5.3	1.1	1.1	23.4	0.2	0.1	5.8	gal	0.0	55.5
Sea ribbons	7.4	7.4	7.4	1.1	3.2	447.2	3.5	1.6	111.8	gal	0.9	75.1
Giant kelp (macrocystis)	1.1	1.1	1.1	0.0	1.1	106.9	0.8	0.4	26.7	gal	0.2	99.7
Alaria	3.2	3.2	3.2	0.0	2.1	133.7	1.1	0.5	33.4	gal	0.3	80.8
Red laver (dulse)	1.1	1.1	1.1	0.0	0.0	0.3	0.0	0.0	0.1	gal	0.0	99.7

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Table 3-12.–Page 7 of 7.

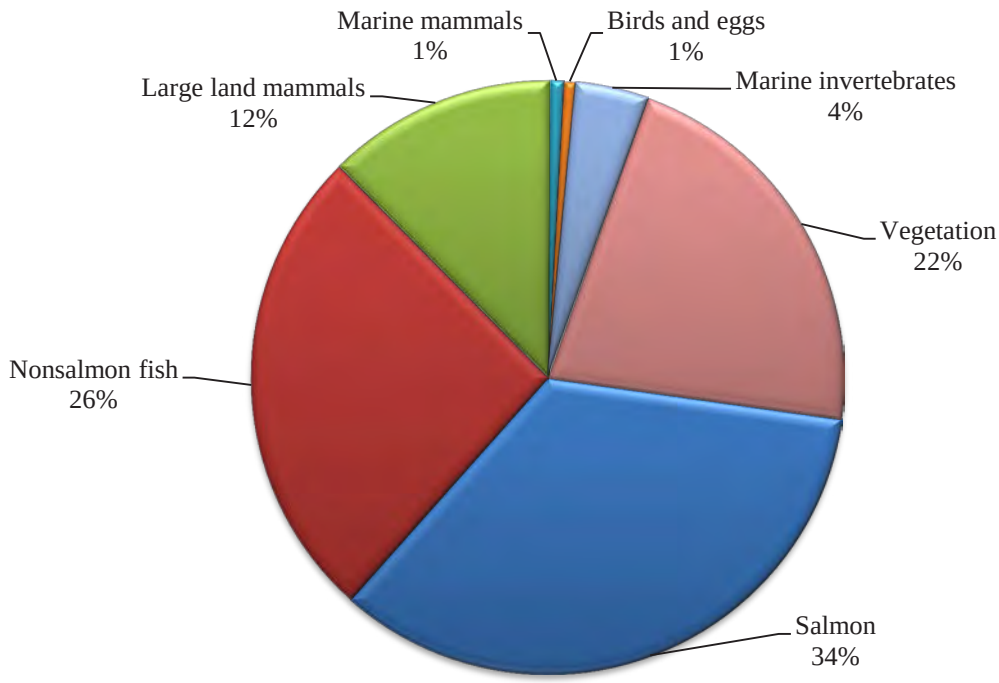
Resource	Percentage of households					Harvest weight (lb)			Harvest amount			95% confidence limit (±) harvest
	Use %	Attempt %	Harvest %	Receive %	Give %	Total	Mean per household	Per capita	Total	Unit	Mean per household	
Vegetation, continued												
Bladder wrack	4.2	4.2	4.2	0.0	0.0	21.4	0.2	0.1	5.3	gal	0.0	57.8
Unknown seaweed	20.0	16.8	16.8	4.2	4.2	673.1	5.3	2.4	168.3	gal	1.3	79.5
Wood	43.2	41.1	41.1	10.5	8.4	–	–	–	–		–	–

Source ADF&G Division of Subsistence household surveys, 2015.

Note Resources where the percentage using is greater than the combined received and harvest indicate use from resources obtained during a previous year.

Note For small land mammals, species that are not typically eaten show a non-zero harvest amount with a zero harvest wight. Harvest weight is not calculated for species harvested but not eaten.

Note "–" indicates the harvest amount for the resource was not collected during the survey.



Note Categories having nearly 0 lb of usable weight are not included.

Figure 3-12.–Composition of harvest by resource category in pounds usable weight, Seldovia, 2014.

Seldovia residents often make time in the winter to also harvest firewood and hunt small land mammals or ptarmigan. Throughout the winter, those who engage in commercial fishing fish for Pacific cod in the Gulf of Alaska. By the end of March, long days and warming weather conditions start a new annual cycle with the arrival of spring.

Use and Harvest Characteristics by Resource Category

Most Seldovia households used wild resources (99%), 95% of households attempted to harvest wild resources in 2014, and 94% of households were successful in harvesting at least 1 resource (Table 3-12). Table 3-12 also reports the sharing of each resource by percentage of households receiving each resource and the percentage of households giving away each resource. Considering all resources combined, sharing appears to have been an important activity for Seldovia residents: 97% of Seldovia households received at least 1 wild resource in 2014, and 76% of households gave away at least 1 resource.

Salmon and nonsalmon fish tied for the resource category that was most frequently received by Seldovia households in 2014 (Table 3-12). An estimated 72% of community households received harvests of these 2 kinds of resources in 2014; this was followed by receipt of large land mammals (60%), marine invertebrates (47%), and vegetation (45%). A smaller percentage of Seldovia household received birds and eggs (10%), small land mammals (2%), and marine mammals (1%).

An estimated 56% of households gave away vegetation, which is the type of resource most frequently given away (Table 3-12). Salmon and nonsalmon fish were the resource categories next most frequently given away by households (48%). A smaller percentage of households gave away marine invertebrates (27%), large land mammals (12%), and birds (4%).

Table 3-13 lists the top ranked resources used by households during the 2014 study year. Blueberries were used by 85% of households in the community, followed by Pacific halibut (82%), sockeye salmon (78%), salmonberries (75%), and Chinook salmon (61%). Following those 5 resources, Pacific cod were used by

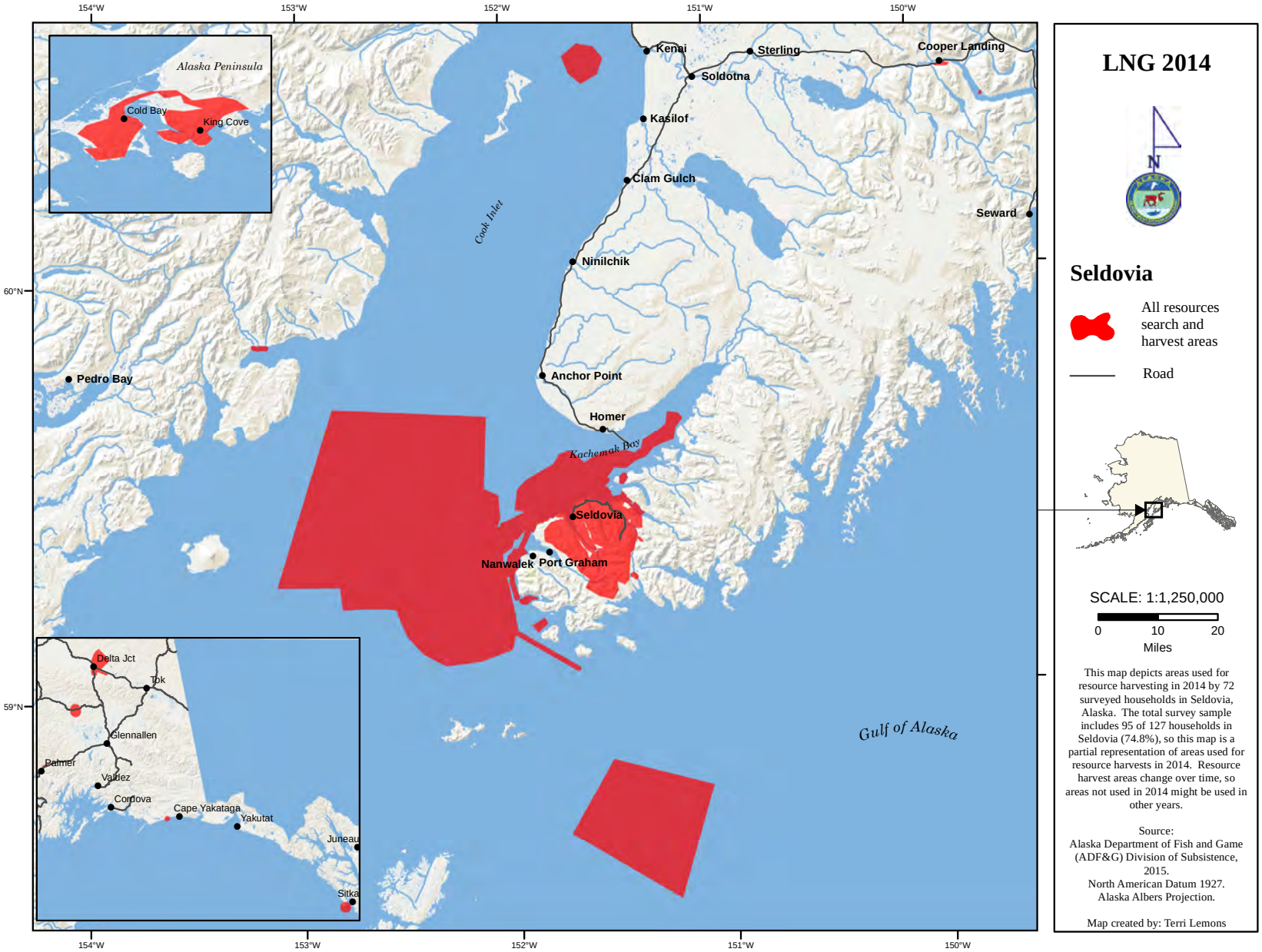


Figure 3-13.–Wild resource search and harvest areas, Seldovia, 2014.

Table 3-13.–Top ranked resources used by households, Seldovia, 2014.

Rank[a]	Resource	Percentage of households using
1.	Blueberry	85.3%
2.	Pacific halibut	82.1%
3.	Sockeye salmon	77.9%
4.	Salmonberry	74.7%
5.	Chinook salmon	61.1%
6.	Pacific (gray) cod	56.8%
7.	Moose	55.8%
8.	Butter clams	50.5%
9.	Pink salmon	44.2%
10.	Coho salmon	43.2%

Source ADF&G Division of Subsistence household surveys, 2015.
a. Resources used by the same percentage of households share the lowest rank value instead of having sequential rank values.

57% of Seldovia households; this was closely followed by the use of moose (56%), butter clams (51%), pink salmon (44%), and coho salmon (43%).

Figure 3-14 depicts the resources with the largest harvests in pounds usable weight. Importantly, the number of households using a resource is not always directly proportional to the top resources harvested by pounds usable weight. For instance, blueberries only contributed 9% to the overall harvest even though this species was used by 85% of households (Figure 3-14; Table 3-13). This suggests that certain resources are important to households despite being harvested in relatively small quantities. The species that made up the largest percentage of the harvest in pounds usable weight were Pacific halibut (20%), sockeye salmon (17%), moose (11%), blueberries (9%), Chinook salmon (6%), pink salmon (5%), salmonberries (4%), Pacific (gray) cod (4%), coho salmon (3%), and chum salmon (3%). All other harvested species contributed less than 2% to the total harvest.

Salmon

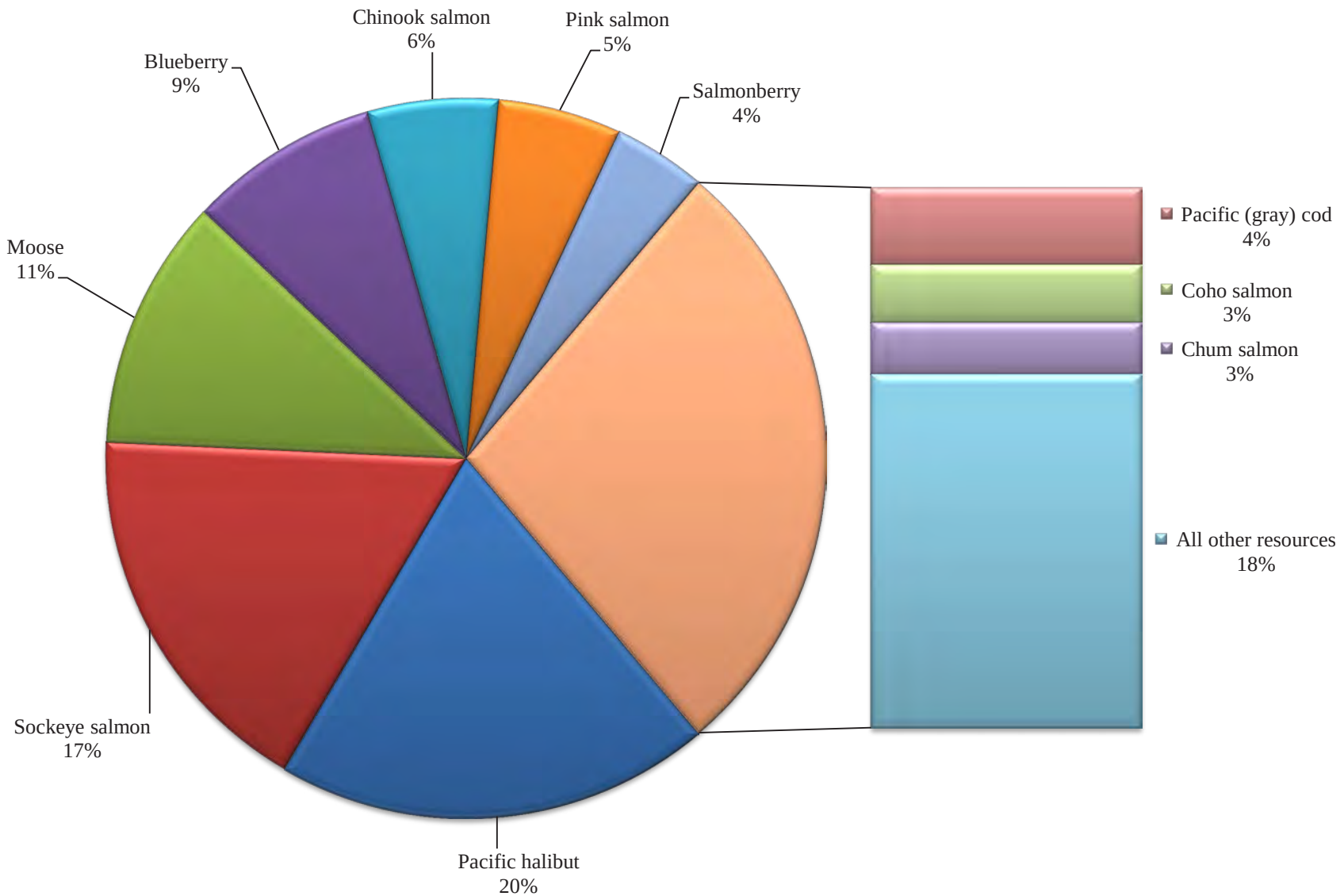
In 2014, the community of Seldovia harvested a total of 13,204 lb of salmon, or 48 lb per capita (Table 3-12). Of the total salmon harvest, 50% was sockeye salmon, followed by Chinook salmon (17%), pink salmon (16%), coho salmon (9%), and chum salmon (8%) (Figure 3-15).

In 2014, sockeye salmon was the most harvested species of salmon caught by Seldovia residents with 44% of households harvesting sockeye salmon, and 78% of households used sockeye salmon during the study year (Table 3-12). In 2014, Seldovia residents harvested 6,654 lb of sockeye salmon, or 24 lb per capita.

Chinook salmon were used by 61% of Seldovia households in 2014 (Table 3-12). Forty-two percent of households attempted to harvest Chinook salmon, with only 28% of all Seldovia households successfully harvesting this resource. The total Chinook salmon harvest in 2014 was 2,246 lb, or 8 lb per capita.

The total pink salmon harvest in 2014 was 2,129 lb, or 8 lb per capita. Pink salmon were used by 44% of Seldovia households in 2014, and approximately 40% of households attempted to and successfully harvested pink salmon during the study year (Table 3-12).

Coho salmon were used by 43% of Seldovia households in 2014 and 32% of households attempted to harvest this species; most fishing households were successful and, overall, 26% of Seldovia households harvested coho salmon. The total coho salmon harvest was 1,145 lb, or 4 lb per capita (Table 3-12).



Note The "all other resources" category represents all species that contributed less than 2% to the total harvest.

Figure 3-14.–Top species harvested by percentage of total harvest in pounds usable weight, Seldovia, 2014.

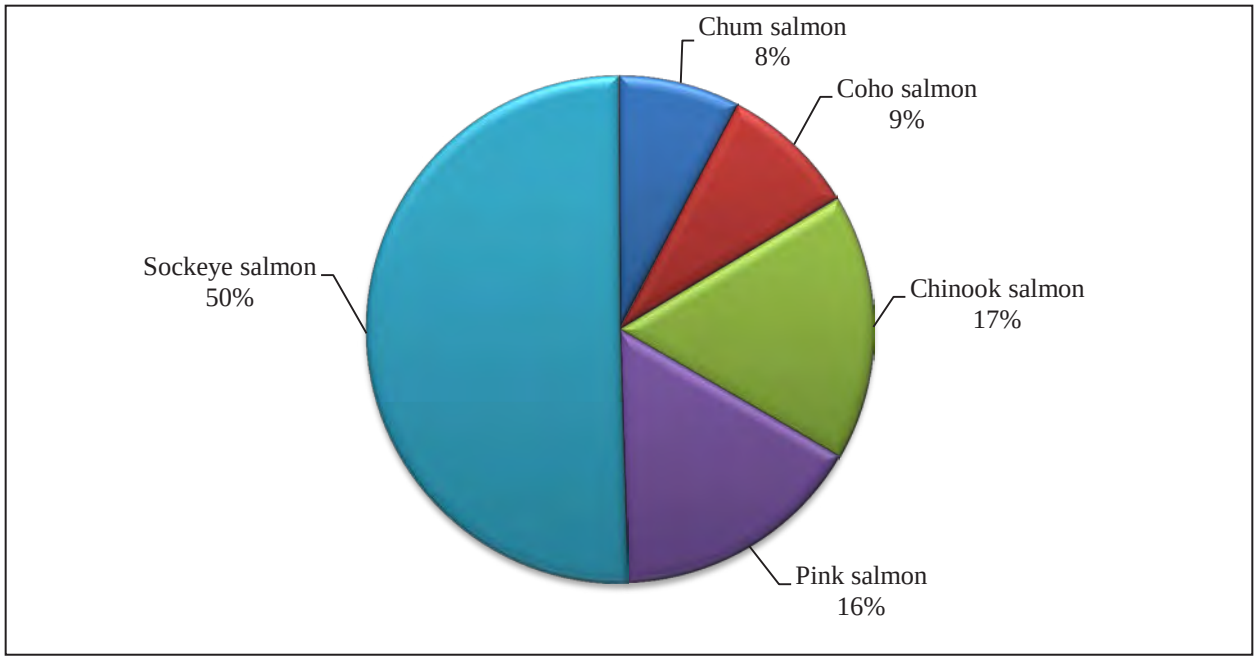


Figure 3-15.–Composition of salmon harvest in pounds usable weight, Seldovia, 2014.

Chum salmon were used by 18% of Seldovia households in 2014, and 13% of households attempted to and successfully harvested chum salmon during the study year. The total chum salmon harvest was 1,018 lb, or a little less than 4 lb per capita (Table 3-12).

Sharing of salmon was common in this community in 2014; all 5 species of Pacific salmon available in Alaska were received and given away by Seldovia households (Table 3-12). During the study year, 50% of households received sockeye salmon, and 38% gave this resource away. Chinook salmon were received by 47% of households and 20% gave Chinook salmon resources away. Coho salmon were given away by 8% of households and 25% of households received this resource.

In 2014 in Seldovia, approximately 1,873 salmon (9,005 lb) were harvested using rod and reel, 638 salmon (2,690 lb) were removed from commercial harvests for home use, 388 salmon (1,344 lb) were taken using subsistence/personal use setnets, and 35 salmon (162 lb) were taken using seines (Table 3-14). Figure 3-16 is a visual representation of the salmon harvest weight harvested by gear type. An estimated 68% of the salmon harvest was caught using rod and reel, 20% of the salmon harvest was removed from commercial harvests for home use, 10% of the salmon harvest was caught using noncommercial setnets, and the remaining 1% was taken using seines (Table 3-15). For sockeye salmon, rod and reel was the most commonly used harvest method (70% of harvest weight), followed by removal from commercial catches (23%), noncommercial setnet (6%), and seine (2%). For Chinook salmon, rod and reel was the most commonly used harvest method (90% of harvest weight), followed by removal from commercial catches (6%), noncommercial setnet (3%), and seine (1%). The majority of coho salmon were also harvested using rod and reel (70% of harvest weight), and the remaining 30% of the coho salmon harvest was removed from commercial catches (27%) or harvested using a noncommercial setnet (3%).

In the 2014 study year, salmon search and harvest areas included streams near the community, Seldovia Bay, Jakolof Bay and within the greater Kachemak Bay and Cook Inlet waters (Figure 3-17). Community members traveled up to 40 miles from Seldovia in search of salmon. Many residents reported placing an emphasis on searching for salmon in the marine waters to the west of Seldovia. The farthest south that Seldovia residents traveled to harvest salmon in 2014 was to Port Chatham Bay, located on the southern tip of the Kenai Peninsula.

Table 3-14.–Estimated harvest of salmon by gear type and resource, Seldovia, 2014.

			Subsistence/personal use methods																			
	Removed from commercial catch		Setnet		Seine		Fish wheel		Jigging		Dip net		Other method		Subsistence/personal use gear, any method		Trolling		Rod and reel		Any method	
Resource	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Salmon	**637.7**	**2,689.7**	**387.7**	**1,343.5**	**34.8**	**162.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**1.3**	**3.5**	**423.8**	**1,509.4**	**0.0**	**0.0**	**1,873.0**	**9,004.8**	**2,934.4**	**13,203.9**
Chum salmon	53.5	292.8	33.4	183.0	1.3	7.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	34.8	190.3	0.0	0.0	97.6	534.4	185.8	1,017.6
Coho salmon	68.2	314.0	6.7	30.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.7	30.8	0.0	0.0	173.8	800.3	248.7	1,145.0
Chinook salmon	12.0	133.0	5.3	59.1	2.7	29.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0	88.6	0.0	0.0	183.1	2,024.1	203.2	2,245.8
Pink salmon	167.1	439.2	250.0	657.0	6.7	17.6	0.0	0.0	0.0	0.0	0.0	0.0	1.3	3.5	258.0	678.1	0.0	0.0	385.1	1,011.9	810.2	2,129.1
Sockeye salmon	334.2	1,498.7	92.2	413.7	24.1	107.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	116.3	521.6	0.0	0.0	1,033.4	4,634.1	1,483.9	6,654.4
Landlocked salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown salmon	2.7	12.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	12.0

Source ADF&G Division of Subsistence household surveys, 2015.

Note The harvested number of salmon is represented as individual fish harvested.

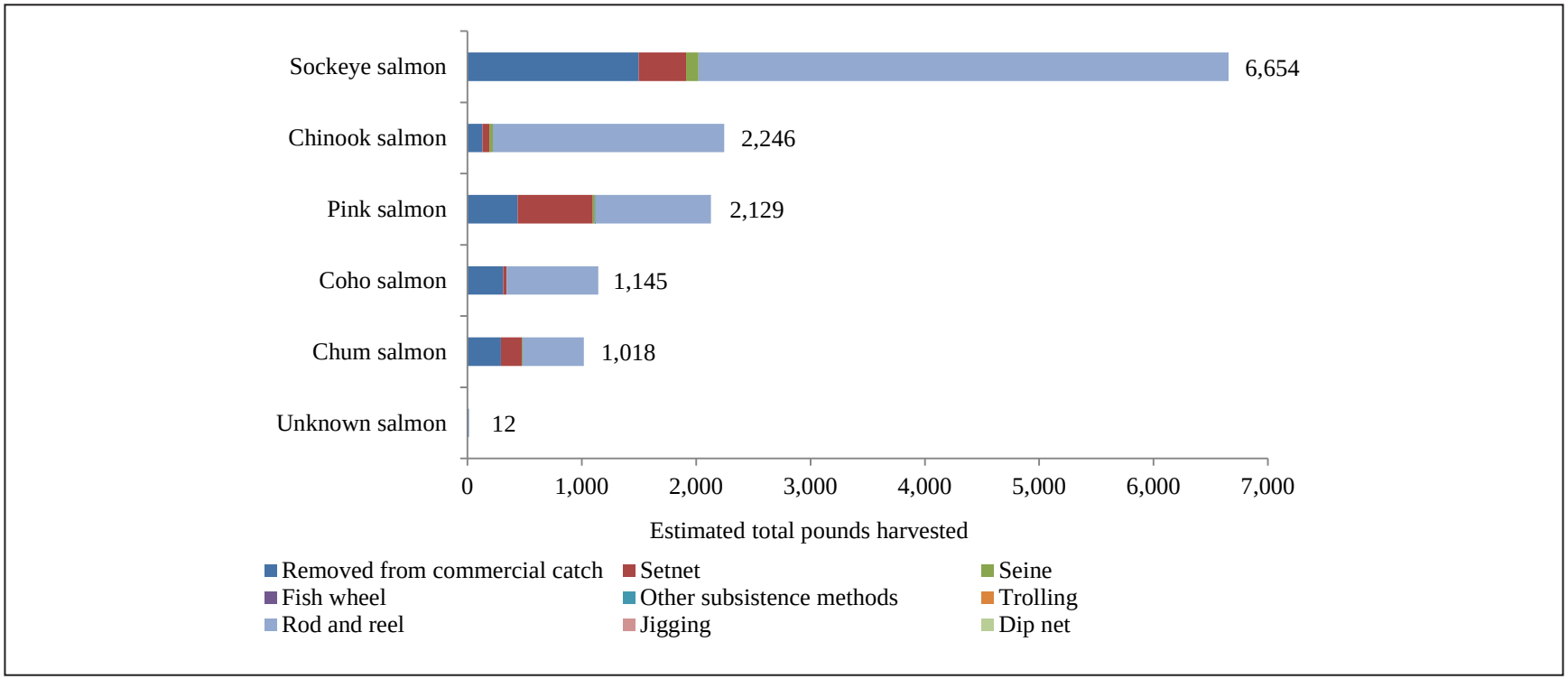


Figure 3-16.–Salmon harvest by gear type, Seldovia, 2014.

Table 3-15.–Estimated percentages of salmon harvested by gear type, resource, and total salmon harvest, Seldovia, 2014.

			Subsistence/personal use methods									
Resource	Percentage base	Removed from commercial catch	Setnet	Seine	Fish wheel	Jigging	Dip net	Other	Subsistence/ personal use gear, any method	Trolling	Rod and reel	Any method
Salmon	**Gear type**	**100.0%**	**100.0%**	**100.0%**	**0.0%**	**0.0%**	**0.0%**	**100.0%**	**100.0%**	**0.0%**	**100.0%**	**100.0%**
	Resource	**20.4%**	**10.2%**	**1.2%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**11.4%**	**0.0%**	**68.2%**	**100.0%**
	Total	**20.4%**	**10.2%**	**1.2%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**11.4%**	**0.0%**	**68.2%**	**100.0%**
Chum salmon	Gear type	10.9%	13.6%	4.5%	0.0%	0.0%	0.0%	0.0%	12.6%	0.0%	5.9%	7.7%
	Resource	28.8%	18.0%	0.7%	0.0%	0.0%	0.0%	0.0%	18.7%	0.0%	52.5%	100.0%
	Total	2.2%	1.4%	0.1%	0.0%	0.0%	0.0%	0.0%	1.4%	0.0%	4.0%	7.7%
Coho salmon	Gear type	11.7%	2.3%	0.0%	0.0%	0.0%	0.0%	0.0%	2.0%	0.0%	8.9%	8.7%
	Resource	27.4%	2.7%	0.0%	0.0%	0.0%	0.0%	0.0%	2.7%	0.0%	69.9%	100.0%
	Total	2.4%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	6.1%	8.7%
Chinook salmon	Gear type	4.9%	4.4%	18.2%	0.0%	0.0%	0.0%	0.0%	5.9%	0.0%	22.5%	17.0%
	Resource	5.9%	2.6%	1.3%	0.0%	0.0%	0.0%	0.0%	3.9%	0.0%	90.1%	100.0%
	Total	1.0%	0.4%	0.2%	0.0%	0.0%	0.0%	0.0%	0.7%	0.0%	15.3%	17.0%
Pink salmon	Gear type	16.3%	48.9%	10.8%	0.0%	0.0%	0.0%	100.0%	44.9%	0.0%	11.2%	16.1%
	Resource	20.6%	30.9%	0.8%	0.0%	0.0%	0.0%	0.2%	31.8%	0.0%	47.5%	100.0%
	Total	3.3%	5.0%	0.1%	0.0%	0.0%	0.0%	0.0%	5.1%	0.0%	7.7%	16.1%
Sockeye salmon	Gear type	55.7%	30.8%	66.5%	0.0%	0.0%	0.0%	0.0%	34.6%	0.0%	51.5%	50.4%
	Resource	22.5%	6.2%	1.6%	0.0%	0.0%	0.0%	0.0%	7.8%	0.0%	69.6%	100.0%
	Total	11.4%	3.1%	0.8%	0.0%	0.0%	0.0%	0.0%	4.0%	0.0%	35.1%	50.4%
Landlocked salmon	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown salmon	Gear type	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
	Resource	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
	Total	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%

Source ADF&G Division of Subsistence household surveys, 2015.

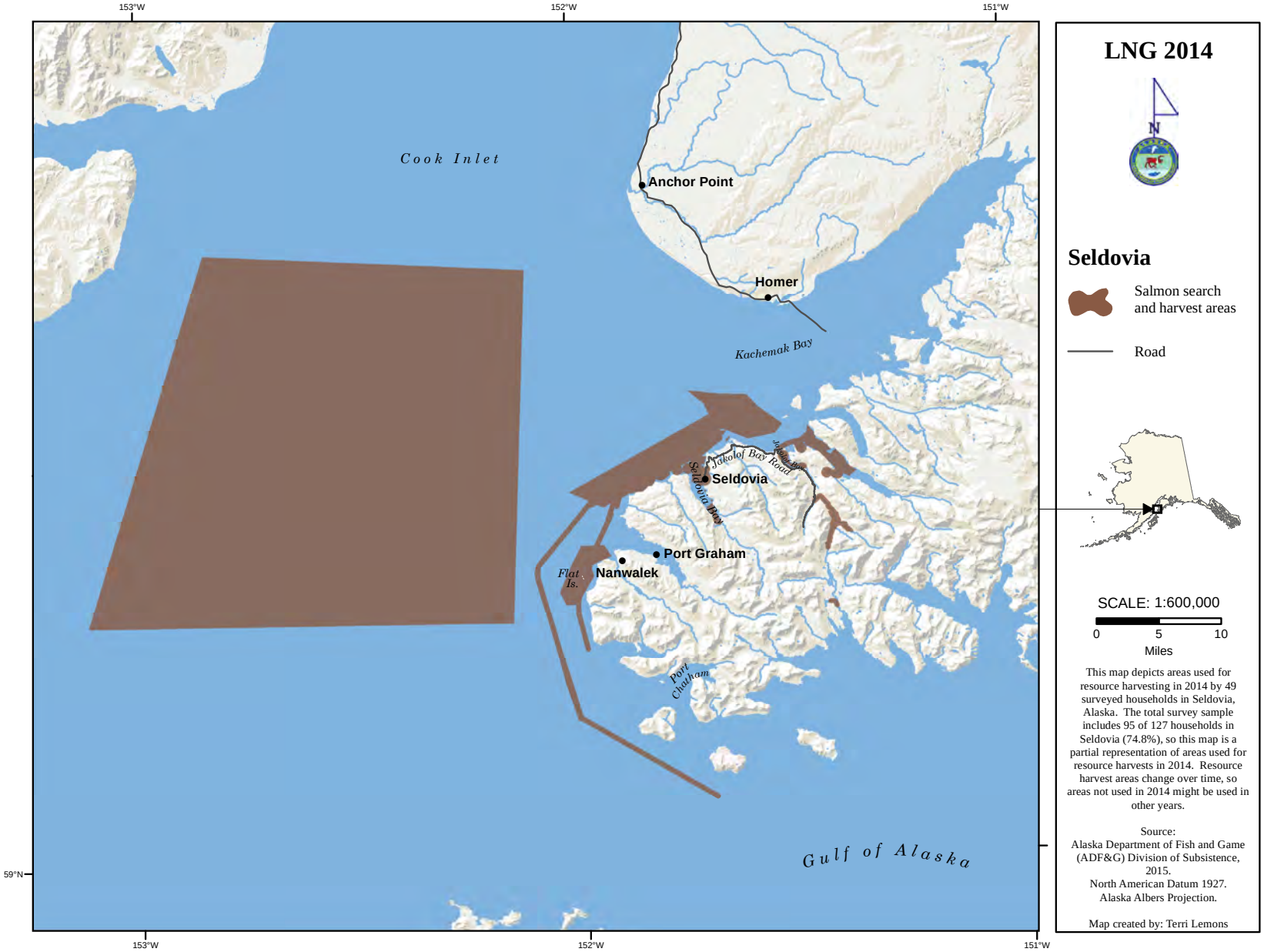


Figure 3-17.–Fishing and harvest locations of chum, coho, Chinook, pink, and sockeye salmon, Seldovia, 2014.

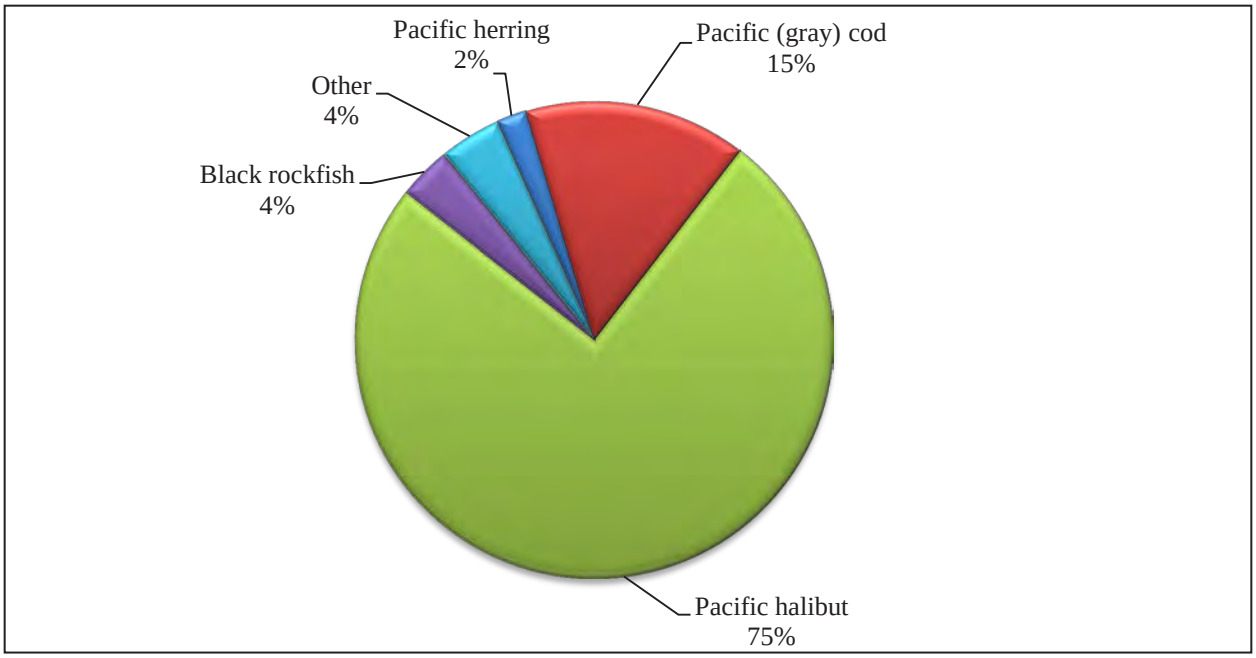


Figure 3-18.–Composition of nonsalmon fish harvest in pounds usable weight, Seldovia, 2014.

Nonsalmon Fish

Nonsalmon fish was the second most harvested resource category, making up 26% of the overall harvest of wild resources for the community of Seldovia in 2014 (Figure 3-12). A total of approximately 10,014 lb of nonsalmon fish were harvested in Seldovia during the study year, equating to a per capita harvest of 36 lb (Table 3-12). A large percentage (90%) of Seldovia households used at least 1 species of nonsalmon fish during the 2014 study year. The nonsalmon fish harvest included a variety of species, but Pacific halibut composed the majority (75%) of the nonsalmon fish harvest, followed by Pacific cod (15%), black rockfish (4%), Pacific herring (2%), and several other species of marine and freshwater nonsalmon fish (Figure 3-18).

The total Pacific halibut harvest in 2014 was 7,526 lb, or 27 lb per capita (Table 3-12). Pacific halibut were used by 82% of Seldovia households in 2014; 56% of households attempted to harvest Pacific halibut, and 53% of Seldovia households successfully harvested this resource.

Pacific cod were used by 57% of Seldovia households in 2014 (Table 3-12). This resource was only harvested by 25% of households, but 42% of households received Pacific cod, suggesting that this resource was distributed throughout the community by several key harvesters. The total Pacific cod harvest in 2014 was 1,510 lb, or 5 lb per capita.

The total black rockfish harvest in Seldovia was 356 lb, or a little more than 1 lb per capita (Table 3-12). Black rockfish were used by 21% of households and were harvested by 15% of households during the study year. In 2014, the total harvest of Pacific herring was 204 lb, or less than 1 lb per capita. Pacific herring were used by 7% of households and harvested by 3% of households. No freshwater species of nonsalmon fish contributed more than 1 lb per capita. However, small amounts of Dolly Varden, lake trout, Arctic grayling, and rainbow trout were harvested during the study year.

The nonsalmon fish harvest broken out by gear type is as follows: approximately 6,641 lb of the nonsalmon fish harvest was caught using rod and reel, 551 lb were removed from commercial harvests for home use, and 364 lb were taken using subsistence/personal use setnets (Table 3-16). Figure 3-19 is a visual representation of the nonsalmon fish harvest weight harvested by gear type. In 2014, approximately 66% of the nonsalmon fish harvest was harvested using rod and reel, 25% was harvested using subsistence/personal

use gear (longlines for the most part), approximately 6% was removed from commercial harvests for home use, and approximately 4% of the nonsalmon fish harvest was taken using noncommercial setnets (Figure Table 3-17). For Pacific halibut, rod and reel was the most commonly used harvest method (71% of harvest weight), followed by other subsistence gear (predominately longline) (29%), subsistence setnet (2%), and less than 1% of the Pacific halibut harvest was removed from commercial catches. For Pacific cod, rod and reel was also the most commonly used harvest method (43%), followed by removal from commercial catches (30%), subsistence longline (27%), and less than 1% of the harvest was caught using setnets. The majority of black rockfish were harvested using rod and reel (98% of harvest weight), and the remaining 2% of the harvest was removed from commercial catches. All Pacific herring were harvested using setnets in 2014 (Table 3-17).

Seldovia residents' search and harvest areas for nonsalmon fish occurred near the community, within the Kachemak Bay waters, inside the greater Cook Inlet region, and into the Gulf of Alaska. Some harvesting occurred near the southern end of Kruzof Island and close to the community of Sitka (Figure 3-20). The majority of nonsalmon fish harvests were relatively close to Seldovia. Community residents reported searching for and harvesting species from this resource category in Seldovia and Jakolof bays, as well as offshore from Nanwalek and Port Graham.

Table 3-16.–Estimated harvest of nonsalmon fish by gear type and resource, Seldovia, 2014.

		Removed from commercial catch		Subsistence/personal use methods													
				Setnet		Seine		Fish wheel		Other method		Subsistence/personal use gear, any method		Rod and reel		Any method	
Resource	Units[a]	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds
Nonsalmon fish			**550.6**		**363.9**		**0.0**		**0.0**		**2,458.5**		**2,822.3**		**6,640.8**		**10,013.8**
Pacific herring	gal	0.0	0.0	34.0	204.3	0.0	0.0	0.0	0.0	0.0	0.0	34.0	204.3	0.0	0.0	34.0	204.3
Pacific herring roe unspecified	gal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pacific herring sac roe	gal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pacific herring spawn on kelp	gal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Eulachon (hooligan, candlefish)	gal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown smelt	gal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sea bass	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	26.7	26.7	26.7	26.7
Pacific (gray) cod	ind	141.7	453.5	4.0	12.8	0.0	0.0	0.0	0.0	125.6	402.0	129.6	414.9	200.5	641.7	471.9	1,510.0
Pacific tomcod	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.7	1.3	0.7	0.0	0.0	1.3	0.7
Walleye pollock (whiting)	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown cod	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Eel	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Starry flounder	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.1	60.2	20.1	60.2
Unknown flounder	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lingcod	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	32.1	128.3	32.1	128.3
Unknown greenling	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.3	5.3	5.3	5.3
Pacific halibut	lb	48.1	48.1	134.8	134.8	0.0	0.0	0.0	0.0	2,032.9	2,032.9	2,167.6	2,167.6	5,310.3	5,310.3	7,526.0	7,526.0
Black rockfish	ind	4.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	233.1	349.6	237.1	355.6
Red rockfish	ind	9.4	37.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.4	37.4
Unknown rockfish	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	6.4	4.0	6.4
Sablefish (black cod)	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	4.2	1.4	4.2	0.0	0.0	1.4	4.2
Unknown Irish lord	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown sculpin	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown shark	ind	0.0	0.0	1.3	12.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	12.0	0.0	0.0	1.3	12.0
Skates	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown sole	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wolffish	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dolly Varden	ind	4.0	5.6	0.0	0.0	0.0	0.0	0.0	0.0	13.4	18.7	13.4	18.7	61.5	86.1	78.9	110.4
Lake trout	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.7	9.4	6.7	9.4
Arctic grayling	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.7	7.5	10.7	7.5
Northern pike	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown sturgeon	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cutthroat trout	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rainbow trout	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.7	9.4	6.7	9.4
Steelhead	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown whitefishes	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source ADF&G Division of Subsistence household surveys, 2015.

Note The summary row that includes incompatible units of measure for harvest number has been left blank.

a. The harvested number of each resource is measured by the unit in which the resource harvest information was collected; the unit of measurement is provided for each resource.

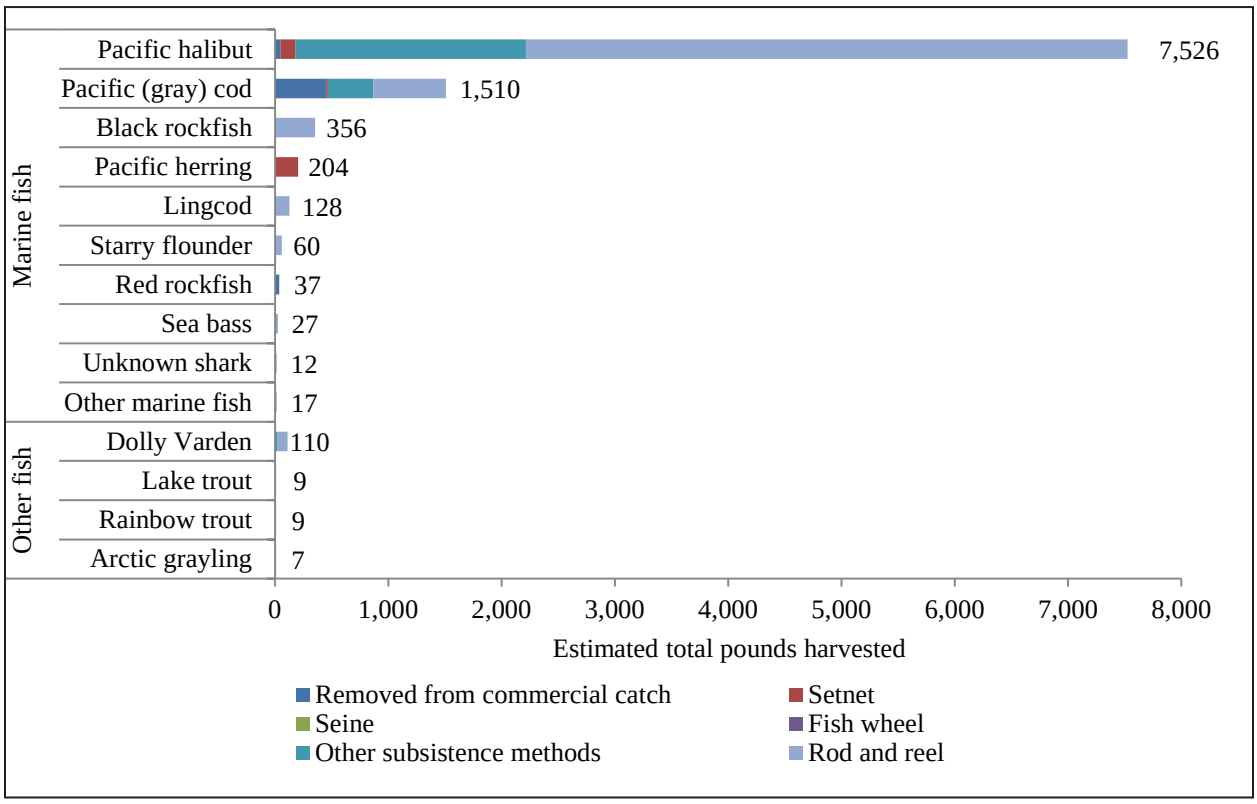


Figure 3-19.–Nonsalmon fish harvest by gear type, Seldovia, 2014.

Table 3-17.–Estimated percentages of nonsalmon fish harvested by gear type, resource, and total nonsalmon fish harvest, Seldovia, 2014.

			Subsistence/personal use methods						
Resource	Percentage base	Removed from commercial catch	Setnet	Seine	Fish wheel	Other	Subsistence/ personal use gear, any method	Rod and reel	Any method
Nonsalmon fish	**Gear type**	**100.0%**	**100.0%**	**0.0%**	**0.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
	Resource	**5.5%**	**3.6%**	**0.0%**	**0.0%**	**24.6%**	**28.2%**	**66.3%**	**100.0%**
	Total	**5.5%**	**3.6%**	**0.0%**	**0.0%**	**24.6%**	**28.2%**	**66.3%**	**100.0%**
Pacific herring	Gear type	0.0%	56.1%	0.0%	0.0%	0.0%	7.2%	0.0%	2.0%
	Resource	0.0%	100.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%
	Total	0.0%	2.0%	0.0%	0.0%	0.0%	2.0%	0.0%	2.0%
Pacific herring roe unspecified	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Pacific herring sac roe	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Pacific herring spawn on kelp	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Eulachon (hooligan, candlefish)	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown smelt	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Sea bass	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	0.3%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.3%
Pacific (gray) cod	Gear type	82.4%	3.5%	0.0%	0.0%	16.4%	14.7%	9.7%	15.1%
	Resource	30.0%	0.8%	0.0%	0.0%	26.6%	27.5%	42.5%	100.0%
	Total	4.5%	0.1%	0.0%	0.0%	4.0%	4.1%	6.4%	15.1%
Pacific tomcod	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

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Table 3-17.–Page 2 of 4.

Resource	Percentage base	Removed from commercial catch	Subsistence/personal use methods: Setnet	Seine	Fish wheel	Other	Subsistence/ personal use gear, any method	Rod and reel	Any method
Walleye pollock (whiting)	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown cod	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Eel	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Starry flounder	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.6%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.6%
Unknown flounder	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Lingcod	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.9%	1.3%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%	1.3%
Unknown greenling	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%
Pacific halibut	Gear type	8.7%	37.0%	0.0%	0.0%	82.7%	76.8%	80.0%	75.2%
	Resource	0.6%	1.8%	0.0%	0.0%	27.0%	28.8%	70.6%	100.0%
	Total	0.5%	1.3%	0.0%	0.0%	20.3%	21.6%	53.0%	75.2%
Black rockfish	Gear type	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%	5.3%	3.6%
	Resource	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	98.3%	100.0%
	Total	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	3.5%	3.6%

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Table 3-17.–Page 3 of 4.

Resource	Percentage base	Removed from commercial catch	Subsistence/personal use methods: Setnet	Seine	Fish wheel	Other	Subsistence/ personal use gear, any method	Rod and reel	Any method
Red rockfish	Gear type	6.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%
	Resource	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
	Total	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%
Unknown rockfish	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%
Sablefish (black cod)	Gear type	0.0%	0.0%	0.0%	0.0%	0.2%	0.1%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown Irish lord	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown sculpin	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown shark	Gear type	0.0%	3.3%	0.0%	0.0%	0.0%	0.4%	0.0%	0.1%
	Resource	0.0%	100.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%
	Total	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%
Skates	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown sole	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Wolffish	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

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Table 3-17.–Page 4 of 4.

Resource	Percentage base	Removed from commercial catch	Subsistence/personal use methods: Setnet	Seine	Fish wheel	Other	Subsistence/ personal use gear, any method	Rod and reel	Any method
Dolly Varden	Gear type	1.0%	0.0%	0.0%	0.0%	0.8%	0.7%	1.3%	1.1%
	Resource	5.1%	0.0%	0.0%	0.0%	16.9%	16.9%	78.0%	100.0%
	Total	0.1%	0.0%	0.0%	0.0%	0.2%	0.2%	0.9%	1.1%
Lake trout	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%
Arctic grayling	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%
Northern pike	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown sturgeon	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Cutthroat trout	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rainbow trout	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%
Steelhead	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown whitefishes	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Source ADF&G Division of Subsistence household surveys, 2015.

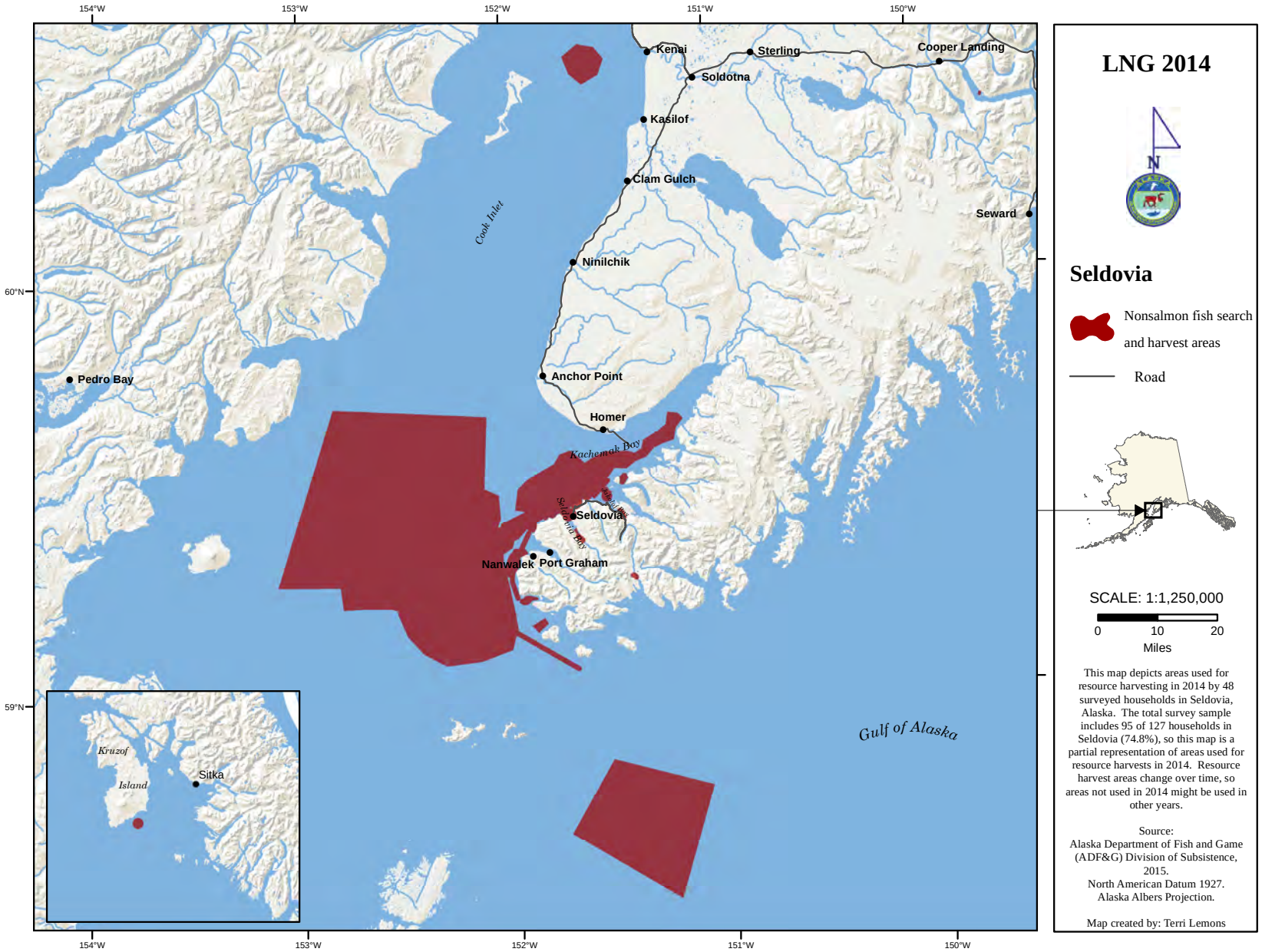


Figure 3-20.–Fishing and harvest locations of all nonsalmon fish resources, Seldovia, 2014.

Large Land Mammals

Large land mammals accounted for approximately 12% of the total harvest by weight in Seldovia during 2014 (Figure 3-12). A large percentage (61%) of Seldovia households used at least 1 species of large land mammal during the 2014 study year. The large land mammal harvest includes 4 species, but moose composed the majority (91%) of the large land mammal harvest, followed by caribou (4%), black bears (3%), and mountain goats (2%) (Figure 3-21).

The total moose harvest in 2014 was 4,331 lb, or 16 lb per capita (Table 3-12). Moose were used by 56% of Seldovia households, making it the most frequently used large land mammal species during the study year. Although it was widely used, only 10% of households hunted moose, and overall only 6% of Seldovia households were successful in their harvesting pursuits. Moose were given away by 8% of households, and received by 52%; this suggests sharing of moose is important to the community of Seldovia.

The other large land mammal species harvested each contributed less than 1 lb per capita to the 2014 wild resource harvest in Seldovia (Table 3-12). The total caribou harvest in 2014 was 201 lb. Caribou were used by 18% of Seldovia households, 3% of households attempted to harvest caribou, and 1% of Seldovia households successfully harvested this resource. During the study year, 155 lb of black bears were harvested. Black bears were used by 21% of Seldovia households and harvested by 2%. One percent of households gave away this resource, while 19% received some black bear resources in 2014. The total mountain goat harvest was 97 lb. In 2014, this resource was used by 13% of Seldovia households, 5% of households attempted to harvest mountain goats, and 1% of Seldovia households successfully harvested this resource.

Deer are not locally available and no deer were harvested by Seldovia households in 2014, but 17% of households received and used some deer during the study year (Table 3-12). This suggests deer were given to Seldovia households by a harvester from another community.

A total of approximately 3 large land mammals were harvested in August, 9 in September, and 1 was harvested in an unknown month (Table 3-18). Approximately 3 bull moose were harvested in August and 5 were harvested in September.

As depicted in Figure 3-22, in 2014 large land mammal search and harvest areas for Seldovia residents were spread out across the state. Starting from the north and moving toward the south, the large land mammal search and harvest areas encompassed lands from Delta Junction to Seldovia, and all the way to the Cold Bay and King Cove area on the Alaska Peninsula. Both moose and caribou were hunted in Delta Junction. Brown bears were hunted on the Alaska Peninsula.[7] Though the overall hunting area was extensive, the majority of large land mammal hunters concentrated their hunting efforts on the lands around Seldovia. Black bears were hunted in areas near Seldovia, such as around Red Mountain and off the Jakolof Bay Road, as well as on the south side of Seldovia Bay. The moose search and harvest area was largely south of Seldovia city—across Seldovia Bay, spreading almost as far east as the Gulf of Alaska. Access to mountain goats was via Jakolof Bay and the search areas were within the mountainous areas surrounding the community of Seldovia, as well as southeast of Seldovia Bay and extending east toward the Gulf of Alaska.

7. Brown bears *Ursus arctos* do not reside near the community of Seldovia, therefore this large land mammal species is not traditionally hunted by community members. The search area appearing on the map (Figure 3-22) is from a community member who attempted to harvest brown bears outside of Seldovia, though the hunt was unsuccessful.

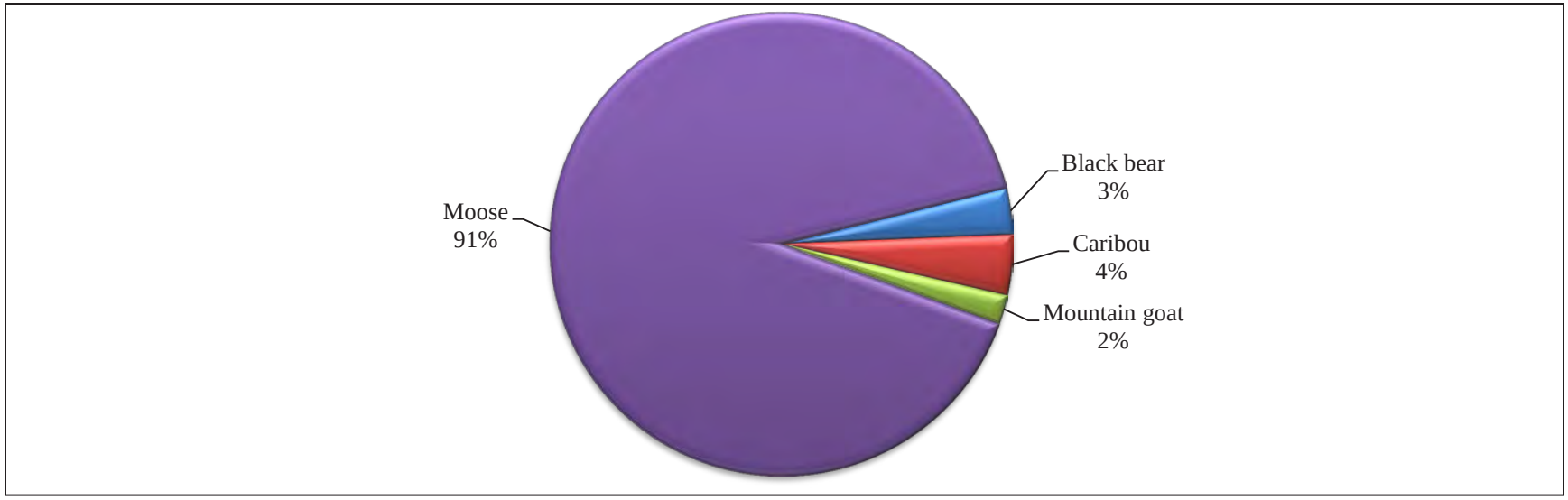


Figure 3-21.–Composition of large land mammal harvest in pounds usable weight, Seldovia, 2014.

Table 3-18.–Estimated large land mammal harvests by month and sex, Seldovia, 2014.

	Estimated harvest by month													
Resource	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk	**Total**
All large land mammals	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**2.7**	**9.4**	**0.0**	**0.0**	**0.0**	**1.3**	**13.4**
Black bear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	0.0	0.0	0.0	0.0	**2.7**
Caribou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	**1.3**
Caribou, male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Caribou, female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Caribou, unknown sex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	**1.3**
Deer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Mountain goat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	**1.3**
Moose	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	5.3	0.0	0.0	0.0	0.0	**8.0**
Moose, bull	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	5.3	0.0	0.0	0.0	0.0	**8.0**
Moose, cow	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Moose, unknown sex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Dall sheep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**

Source ADF&G Division of Subsistence household surveys, 2015.

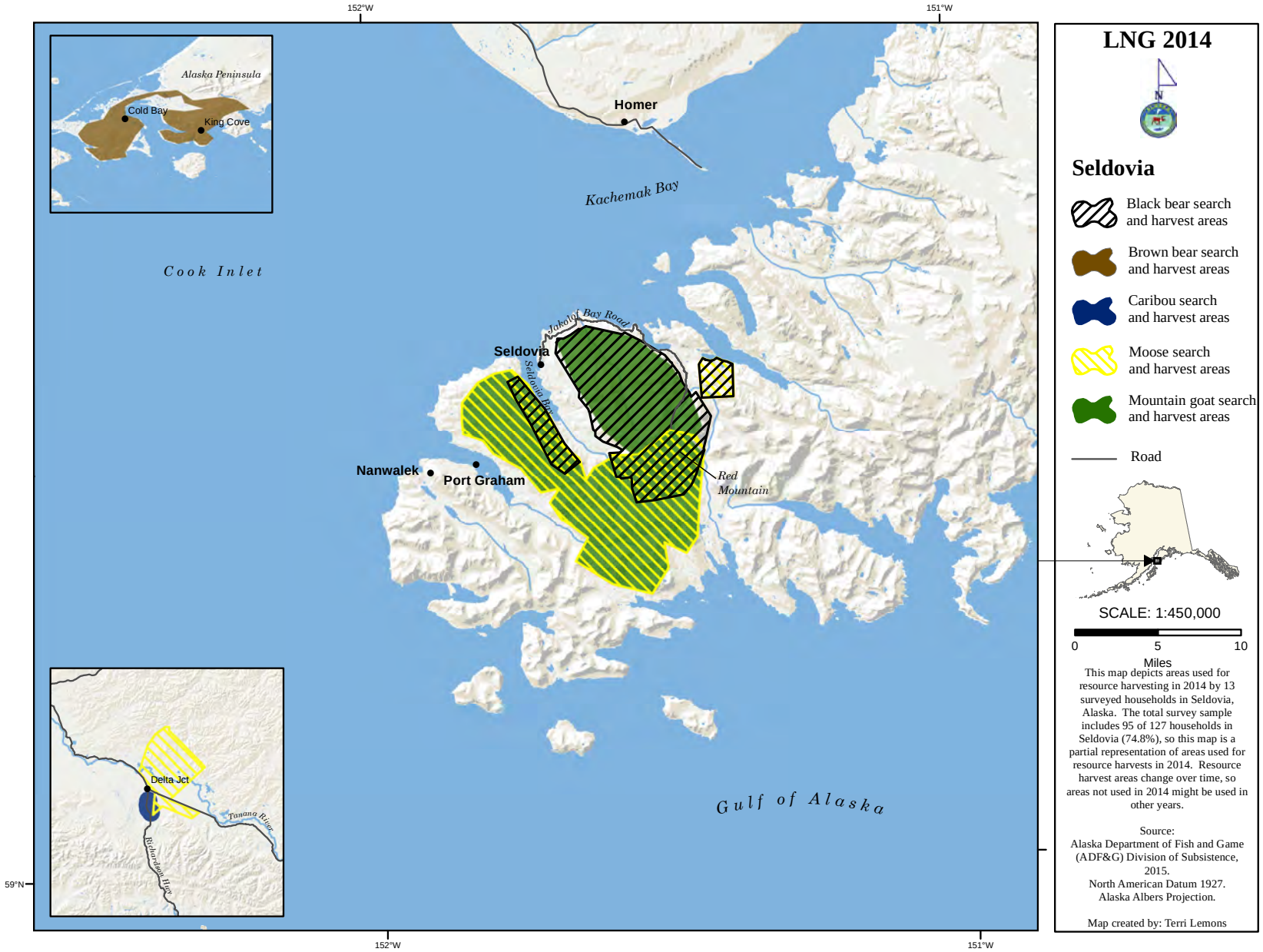


Figure 3-22.–Hunting locations of bears, caribou, moose, and mountain goat, Seldovia, 2014.

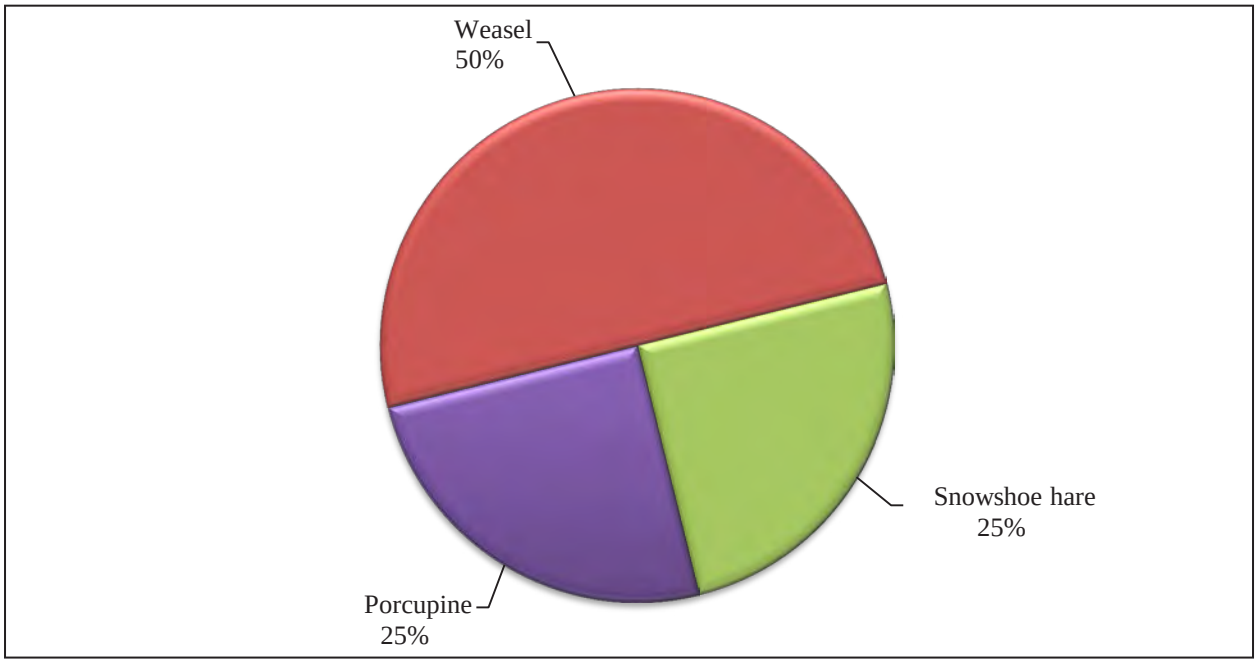


Figure 3-23.–Composition of small land mammal/furbearer harvest by individual animals harvested, Seldovia, 2014.

Small Land Mammals/Furbearers

Harvests of snowshoe hares and porcupines may or may not have been intended for consumption (13 lb usable weight), but respondents in Seldovia did not report that these harvests were not eaten (Table 3-12). A small percentage of households harvested small land mammal resources for fur or for making handicrafts. The species harvested, by individual animals harvested, included snowshoe hares (25%), porcupines (25%), and weasels (50%) (Figure 3-23). In addition, 1% of households received and used beavers and coyotes (Table 3-12). Approximately 1 snowshoe hare was harvested in March, 1 porcupine was harvested in an unknown month, and 3 weasel harvests took place in January (Table 3-19).

In 2014, all small land mammal hunting took place near the community of Seldovia. There were 2 general areas where hunting or trapping of small land mammals occurred during the study year. These 2 search areas include terrain located near town, adjacent to Seldovia Bay, and along the Jakolof Bay Road (Figure 3-24). Several survey respondents explained that fewer trappers lived in Seldovia in the study year than in the past.

Table 3-19.–Estimated small land mammal/furbearer harvests by month, Seldovia, 2014.

	Estimated harvest by month													
Resource	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk	**Total**
All small land mammals	**2.7**	**0.0**	**1.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**1.3**	**5.3**
Beaver	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Coyote	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Red fox	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Snowshoe hare	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**1.3**
North American river (land) otter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Lynx	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Marten	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Mink	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Muskrat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Porcupine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	**1.3**
Arctic ground (parka) squirrel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Red (tree) squirrel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Weasel	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**2.7**
Gray wolf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Wolverine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**

Source ADF&G Division of Subsistence household surveys, 2015.

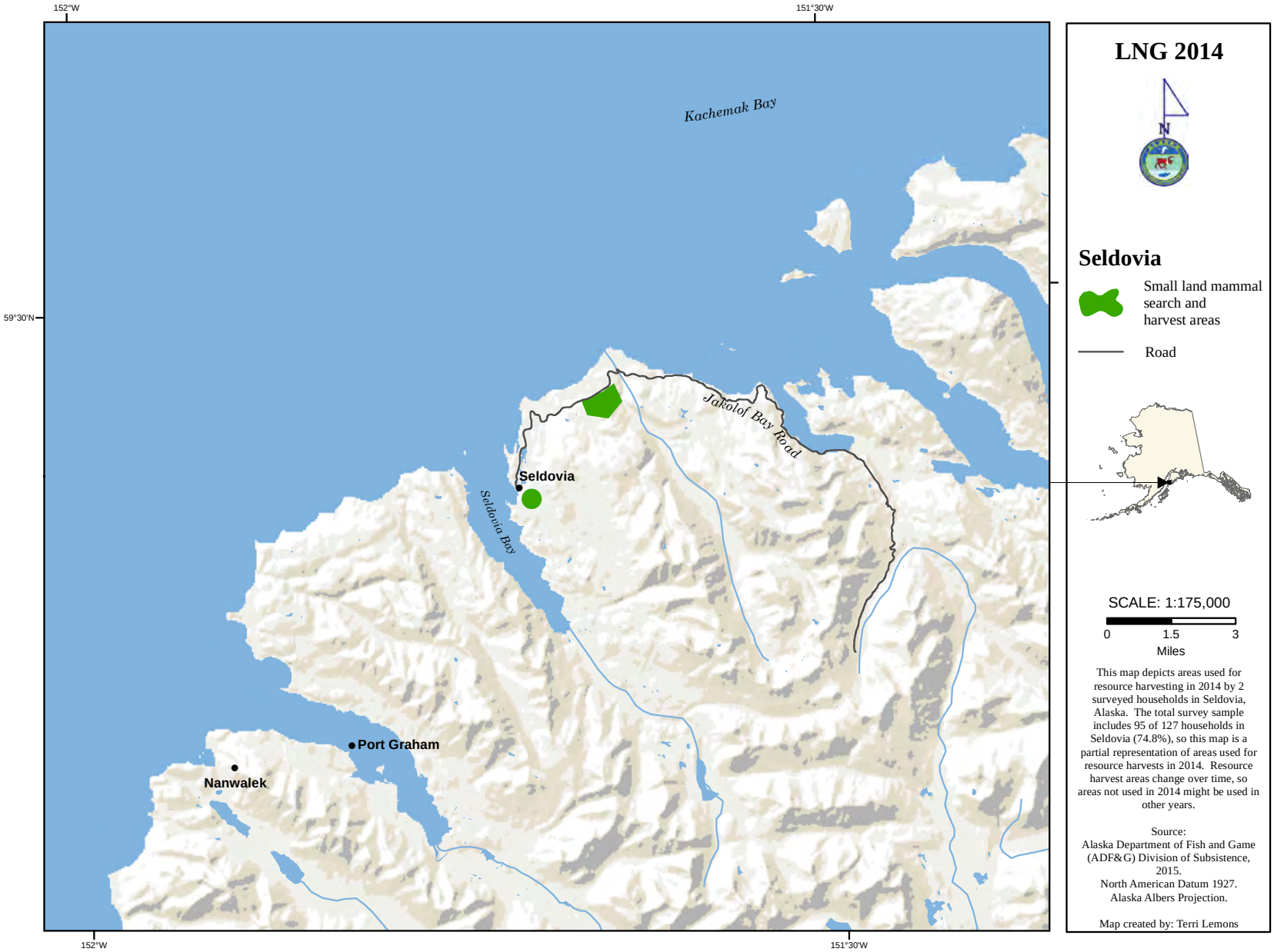


Figure 3-24.–Hunting and trapping locations of small land mammals/furbearers, Seldovia, 2014.

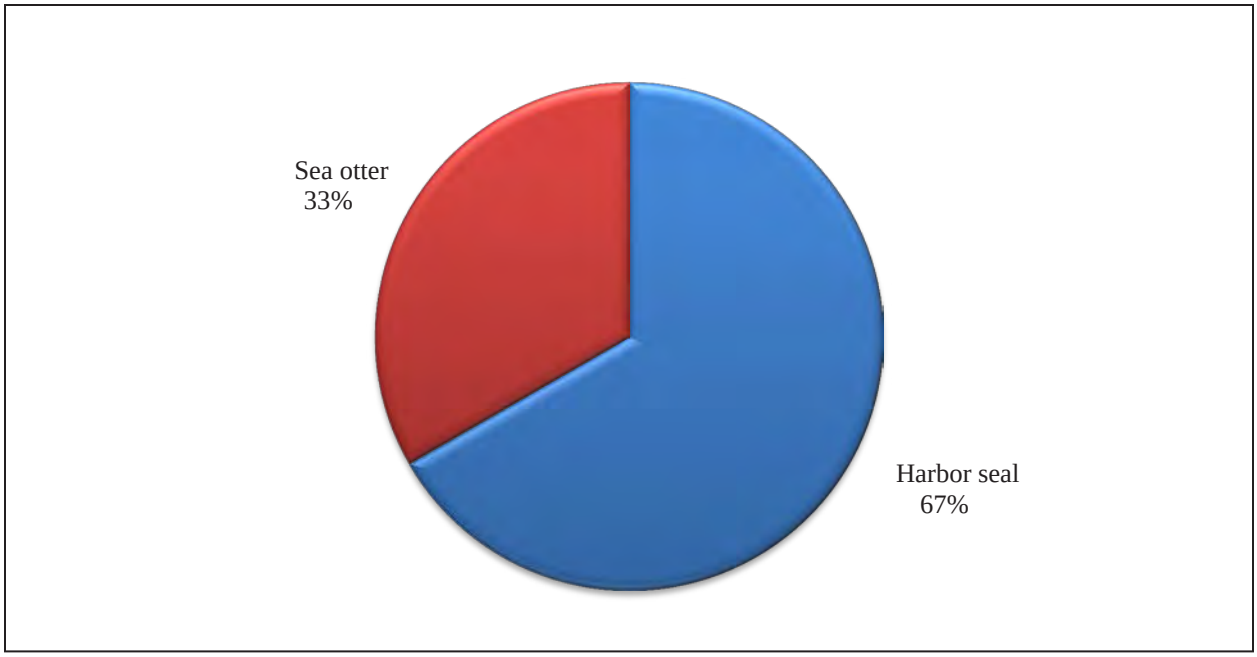


Figure 3-25.–Composition of marine mammal harvest by individual animals harvested, Seldovia, 2014.

Marine Mammals

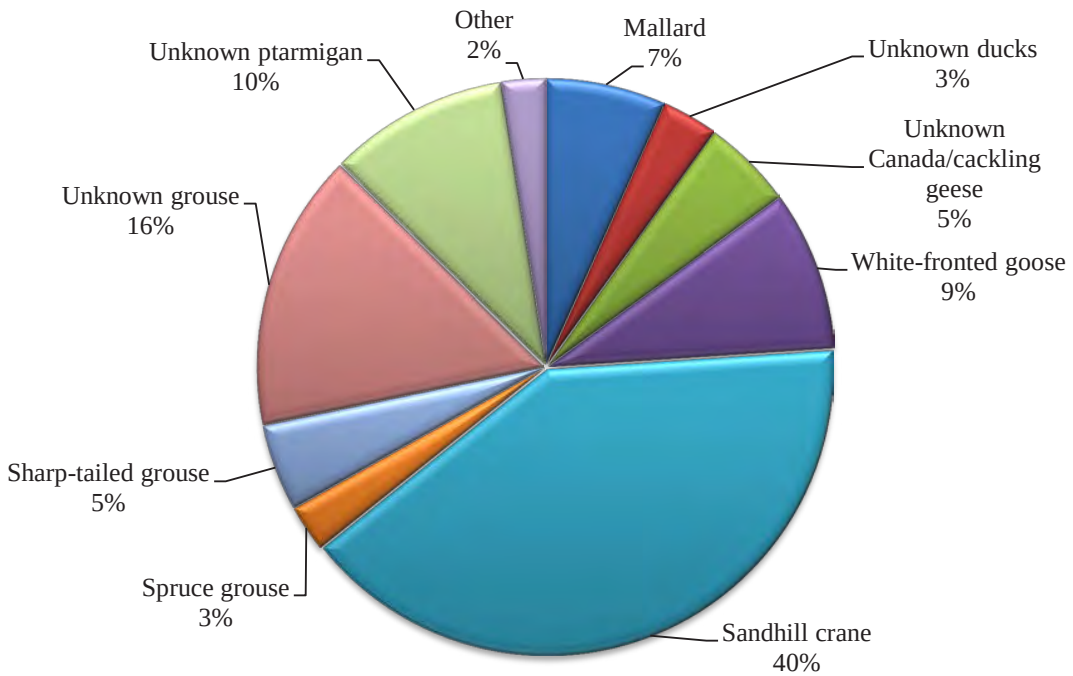
Marine mammals can only be harvested by Alaska Native residents. Marine mammals accounted for approximately 1% of the total harvest in Seldovia during 2014 (Figure 3-12). As estimated by individual animals harvested, 67% of marine mammals harvested were harbor seals and 33% were sea otters (Figure 3-25). Harbor seals made up the entirety of the marine mammal harvest in pounds usable weight, because sea otters are not eaten (Table 3-12). The total harbor seal harvest was approximately 300 lb, or 1 lb per capita. This resource was used and harvested by 1% of Seldovia households in 2014. The harvests of harbor seals occurred exclusively in December: during that month 5 seals were harvested (Table 3-20).

In addition to the use of harbor seals, a small percentage (1%) of Seldovia households harvested and used sea otters during the study year (Table 3-12). Sea otters are used for fur only and are not consumed. The harvests of sea otters occurred in January: during that month approximately 3 otters were harvested (Table 3-20).

Table 3-20.–Estimated marine mammal harvests by month and sex, Seldovia, 2014.

	Estimated harvest by month													
Resource	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk	**Total**
All marine mammals	**2.7**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**5.3**	**0.0**	**8.0**
Harbor seal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.3	0.0	**5.3**
Harbor seal, male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.3	0.0	**5.3**
Harbor seal, female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Harbor seal, unknown sex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Sea otter	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**2.7**
Steller sea lion	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Steller sea lion, male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Steller sea lion, female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Steller sea lion, unknown sex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**

Source ADF&G Division of Subsistence household surveys, 2015.



Note The "other" category includes species providing less than 1.5% each to the bird harvest; no bird eggs were harvested.

Figure 3-26.–Composition of bird and bird egg harvest in pounds usable weight, Seldovia, 2014.

Birds and Eggs

Birds accounted for approximately 1% of the total harvest in Seldovia during the study year (Figure 3-12). A total of approximately 251 lb of birds were harvested in Seldovia, equating to a per capita harvest of less than 1 lb. Approximately 23% of Seldovia households used at least 1 species of bird during the 2014 study year. The composition of the bird harvest included a variety of species, including: sandhill crane (40% of total bird harvest), unspecified types of grouse (16%), unspecified types of ptarmigan (10%), white-fronted goose (9%), mallard (7%), unspecified types of Canada geese (5%), sharp-tailed grouse (5%), spruce grouse (3%), unspecified types of ducks (3%) and several other species of birds (Figure 3-26).

The total sandhill crane harvest in 2014 was 101 lb (Table 3-12). This resource was used and harvested by 2% of Seldovia households in 2014. The unspecified types of grouse harvests totaled 39 lb and were used by 6% of households in 2014. Seven percent of households attempted to harvest unspecified types of grouse, 5% of Seldovia households were successful, and 2% gave some grouse resources away. The total harvest of unspecified types of ptarmigan was 25 lb, and this resource was used and harvested by 4% of Seldovia households. White-fronted goose harvests totaled 23 lb, followed by the harvests of mallards (17 lb), unspecified types of Canada geese (13 lb), sharp-tailed grouse (12 lb), unspecified types of ducks (8 lb), and spruce grouse (7 lb). Other bird species that were harvested and used include: goldeneye and harlequin ducks, and ruffed grouse (Table 3-12). No bird eggs were harvested during the 2014 study year, but 1% of households received and used duck and goose eggs.

An estimated total of 189 individual birds were harvested by Seldovia residents (Table 3-21). No bird harvests occurred in spring 2014. In the summer, 58 birds were harvested, 122 were harvested in the fall, and 9 were harvested in winter 2014. Of the 58 birds harvested in the summer, 17 sharp-tailed grouse were harvested, 12 sandhill cranes, 11 unknown types of Canada geese, 9 white-fronted geese, 4 ruffed grouse, and 4 unspecified kinds of grouse. In the fall, 52 unknown grouse were harvested, as were 29 unknown ptarmigan, 19 mallards, 9 ducks of unspecified species, 7 spruce grouse, and 3 goldeneye and 3 harlequin

Table 3-21.–Estimated bird harvests by season, Seldovia, 2014.

	Estimated harvest by season					
Resource	Spring	Summer	Fall	Winter	Season unknown	**Total**
All birds	**0.0**	**57.5**	**121.7**	**9.4**	**0.0**	**188.5**
Bufflehead	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown eider	0.0	0.0	0.0	0.0	0.0	**0.0**
Goldeneye	0.0	0.0	2.7	0.0	0.0	**2.7**
Harlequin duck	0.0	0.0	2.7	0.0	0.0	**2.7**
Mallard	0.0	0.0	18.7	0.0	0.0	**18.7**
Unknown merganser	0.0	0.0	0.0	0.0	0.0	**0.0**
Long-tailed duck	0.0	0.0	0.0	0.0	0.0	**0.0**
Northern pintail	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown scaup	0.0	0.0	0.0	0.0	0.0	**0.0**
Black scoter	0.0	0.0	0.0	0.0	0.0	**0.0**
Surf scoter	0.0	0.0	0.0	0.0	0.0	**0.0**
White-winged scoter	0.0	0.0	0.0	0.0	0.0	**0.0**
Northern shoveler	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown teal	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown wigeon	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown ducks	0.0	0.0	9.4	0.0	0.0	**9.4**
Unknown Canada/cackling geese	0.0	10.7	0.0	0.0	0.0	**10.7**
White-fronted goose	0.0	9.4	0.0	0.0	0.0	**9.4**
Sandhill crane	0.0	12.0	0.0	0.0	0.0	**12.0**
Unknown cormorant	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown gull	0.0	0.0	0.0	0.0	0.0	**0.0**
Black-legged kittiwake	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown murre	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown puffin	0.0	0.0	0.0	0.0	0.0	**0.0**
Spruce grouse	0.0	0.0	6.7	2.7	0.0	**9.4**
Sharp-tailed grouse	0.0	17.4	0.0	0.0	0.0	**17.4**
Ruffed grouse	0.0	4.0	0.0	0.0	0.0	**4.0**
Unknown grouse	0.0	4.0	52.1	0.0	0.0	**56.1**
Unknown ptarmigan	0.0	0.0	29.4	6.7	0.0	**36.1**
Unknown other birds	0.0	0.0	0.0	0.0	0.0	**0.0**

Source ADF&G Division of Subsistence household surveys, 2015.

ducks. Two species of birds were harvested in the winter, including unknown ptarmigan (7) and spruce grouse (3).

Birds were harvested from several areas near the community of Seldovia, as well as north of Seldovia near Delta Junction in Interior Alaska (Figure 3-27). Ducks and geese were hunted as far north as the Denali Highway. Upland game birds, such as ptarmigan and grouse, were hunted along the Richardson Highway, and north of the highway along the Tanana River. Closer to Seldovia, ptarmigan and grouse were hunted along the Jakolof Bay Road as well as in the mountainous area east of the community of Seldovia. Upland game birds were also hunted from Seldovia, Kasitsna, and Jakolof bays. Search and harvest areas for ducks and geese were more concentrated than upland game bird hunting areas. Migratory waterfowl were hunted in Seldovia Bay, as well as several small areas near Jakolof Bay.

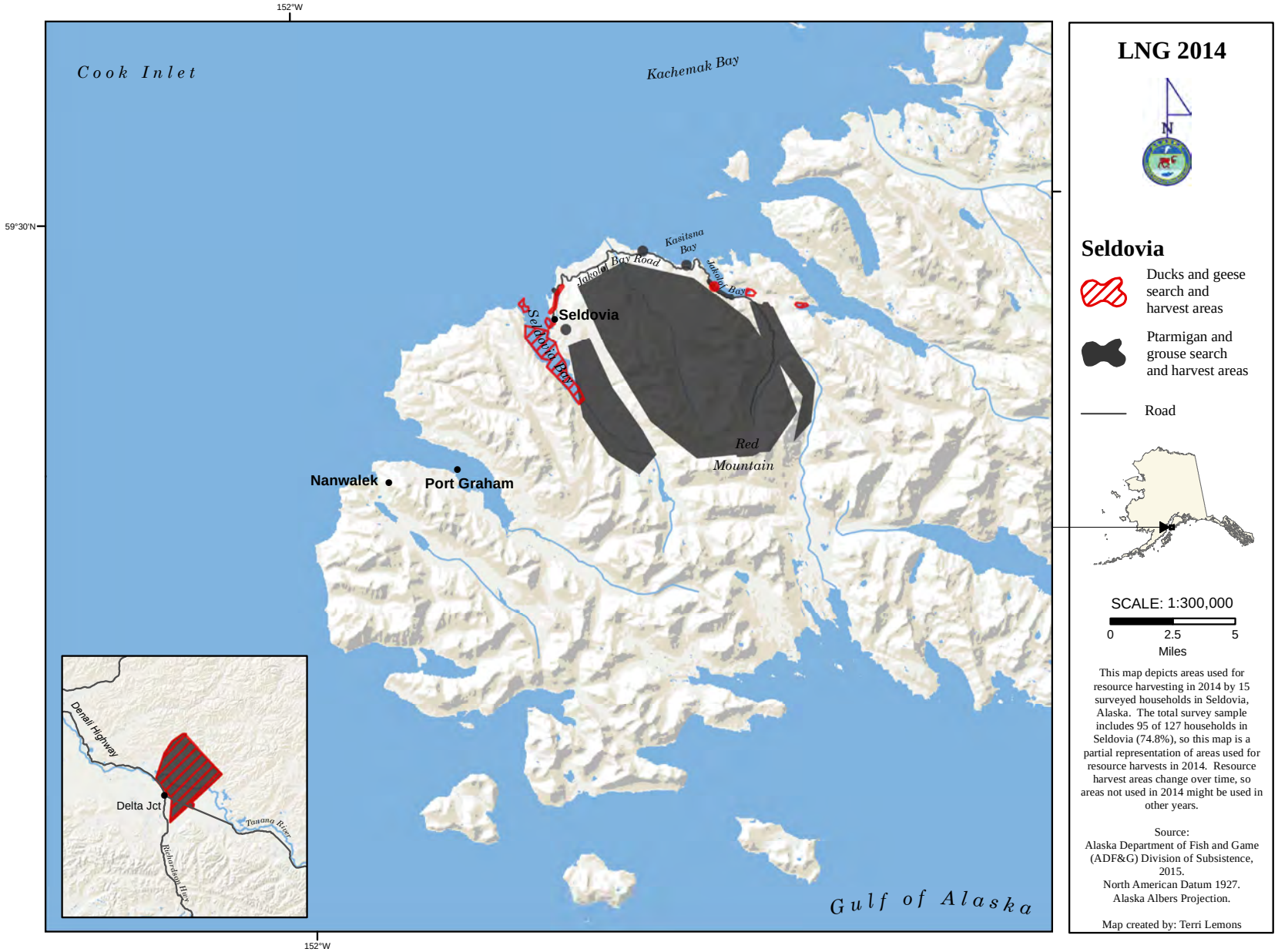


Figure 3-27.–Hunting and harvest locations of migratory waterfowl and upland game birds, Seldovia, 2014.

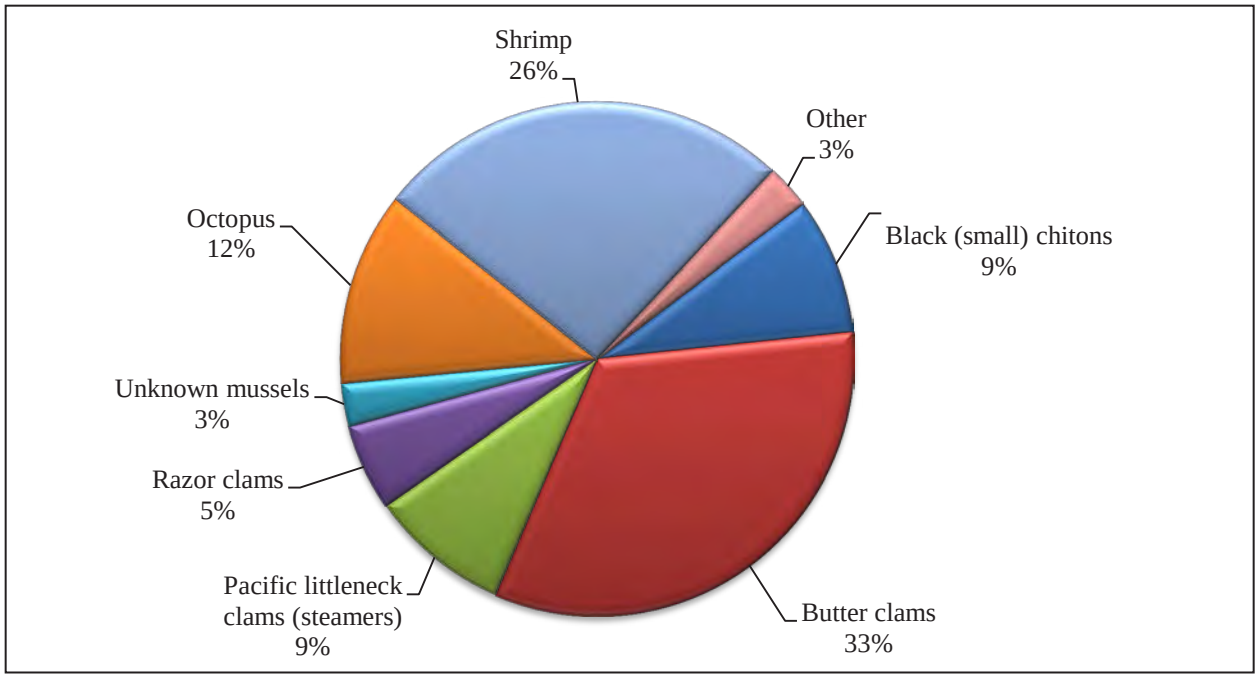


Figure 3-28.–Composition of marine invertebrates harvest in pounds usable weight, Seldovia, 2014.

Marine Invertebrates

Marine invertebrates accounted for approximately 4% of the total harvest in Seldovia during the study year (Figure 3-12). Marine invertebrates were used by 68% of Seldovia households in 2014 (Table 3-12). The total harvest of marine invertebrates was 1,537 lb, or 6 lb per capita. The composition of the marine invertebrate harvest included a variety of species: butter clams (33%), shrimp (26%), octopuses (12%), Pacific littleneck clams (9%), black chitons (9%), razor clams (5%), unknown mussels (3%), and several other species of marine invertebrates (Figure 3-28).

Butter clams were used by a little more than one-half (51%) of Seldovia households (Table 3-12). This type of clam was harvested by 40% of households and the total harvest weight was 510 lb, or 2 lb per capita. Butter clams were shared during the study year: 15% of households gave away some of this resource, and 21% of households received butter clams.

The total shrimp harvest in 2014 was 404 lb, or 2 lb per capita. Shrimp were used by 6% of Seldovia households and 2% of households harvested this resource. Shrimp was given away by 1% of households, and received by 4%.

Octopuses were used by 20% of Seldovia households and this resource was harvested by 11% of households. During the study year, 13% of households received octopuses, and 7% gave away some octopuses. The total octopus harvest was 188 lb, or less than 1 lb per capita.

Pacific littleneck clam harvests totaled 136 lb, and residents also harvested black chitons (132 lb), razor clams (84 lb), and unknown mussels (42 lb). Other marine invertebrate species that were used include: red (large) chitons, softshell clams, unknown cockles, Dungeness crab, unknown king crab, unknown Tanner crab, unknown crab, geoducks, unknown oysters, weathervane scallops, and snails.

During the 2014 study year, Seldovia residents searched for and harvested marine invertebrates along the beaches close to the community (Figure 3-29). Marine invertebrates were harvested in Seldovia Bay as well as Jakolof Bay. Additionally, Seldovia residents searched for and harvested marine invertebrates along the beaches close to the communities of Port Graham and Nanwalek, as well as on Flat Island.

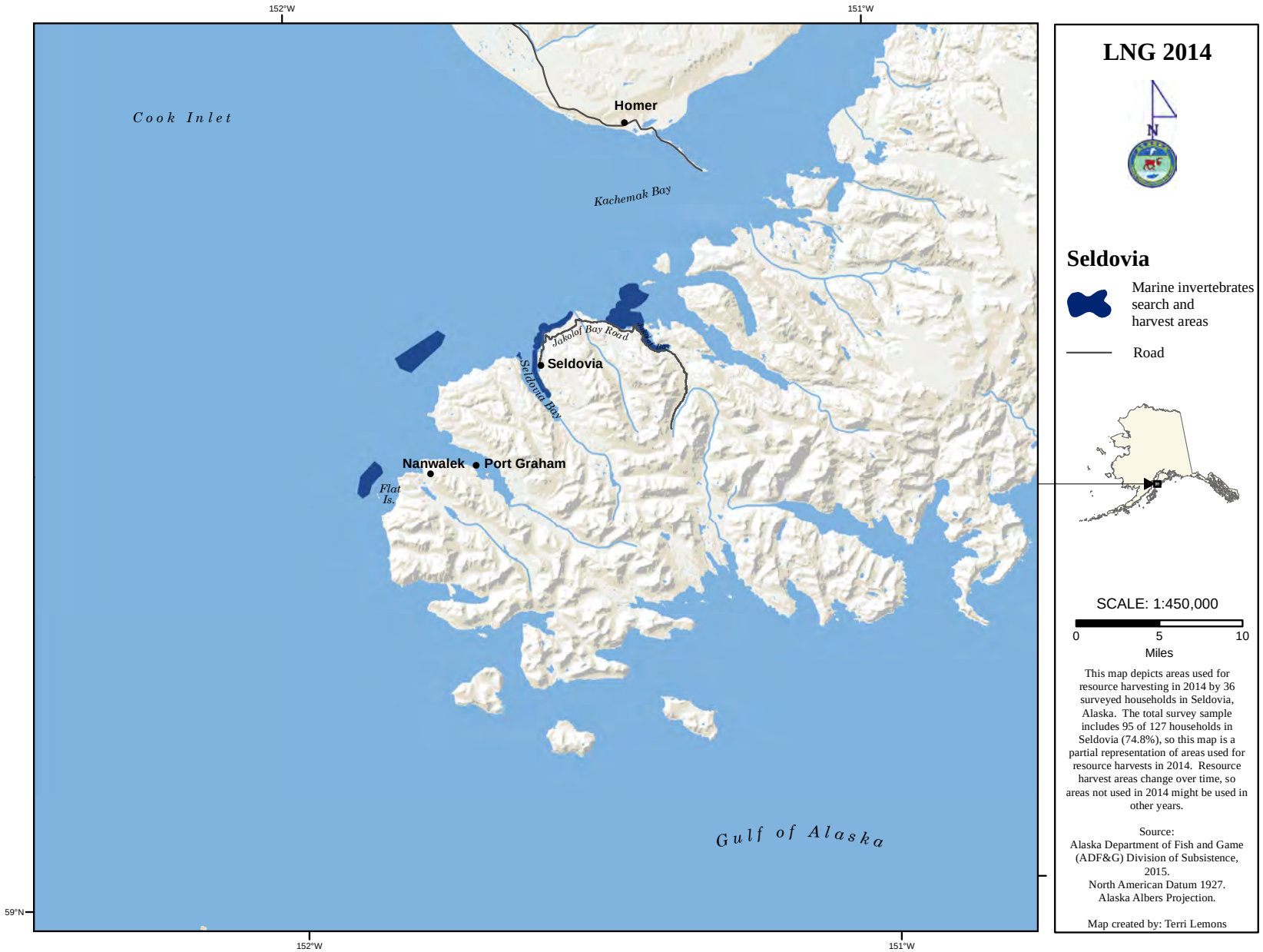
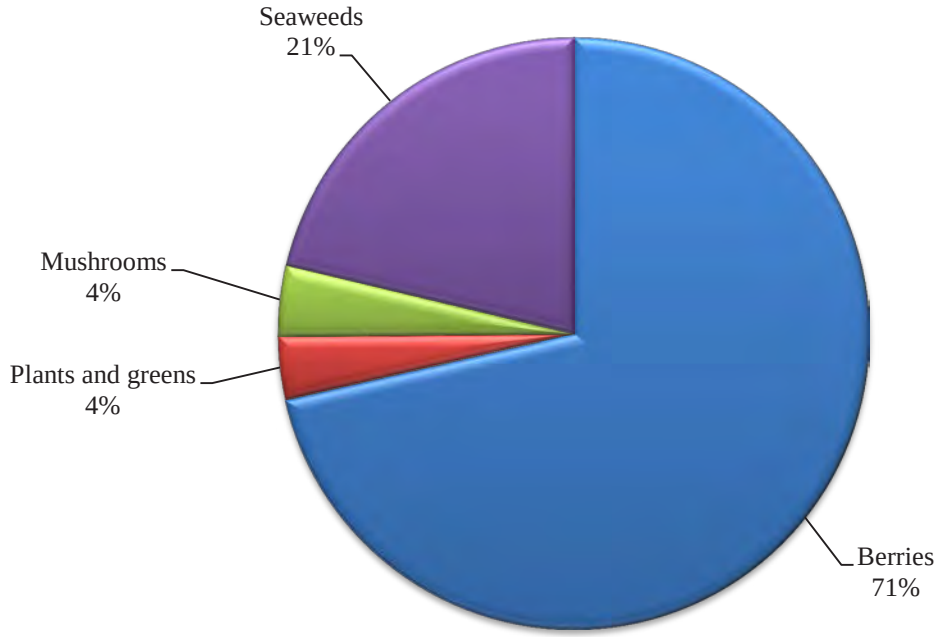


Figure 3-29.–Fishing and harvest locations of marine invertebrates, Seldovia, 2014.



Note Seaweed totals do not include amounts used for fertelizer.

Figure 3-30.–Composition of vegetation harvest by type and pounds usable weight, Seldovia, 2014.

Vegetation

Vegetation is a resource category that was highly utilized in Seldovia during the 2014 study year. Nearly 95% of households used at least 1 type of vegetation (Table 3-12). All households (92%) whose members attempted to harvest vegetation were successful. Households in Seldovia used more than 30 specifically identified species of vegetation and also wood, all of which were harvested by community members. Overall, vegetation made up 22% of the total community harvest, contributing 8,353 lb, averaging 30 lb per capita (Figure 3-12; Table 3-12). Divided by specific resource category, berries made up 71% of the total vegetation harvest, followed by seaweeds (21%), mushrooms (4%), and plants and greens (4%) (Figure 3-30).

Approximately 11 or more species of berries were used by Seldovia households in 2014 (Table 3-12). Blueberry was the most frequently harvested and used type of vegetation: 85% of households used blueberries. During the study year, 82% of households attempted to harvest blueberries and 81% of Seldovia households were successful. The total blueberry harvest weight was 3,303 lb, or 12 lb per capita. Forty-one percent of households gave away some blueberries, and 24% of households received blueberries in 2014. Salmonberry was the second most harvested and used berry in 2014. The total salmonberry harvest weight was 1,612 lb, or 6 lb per capita. Going by harvest weight, the third most harvested type of berry was highbush cranberry (446 lb). Following those harvest weights were the harvests of raspberries (301 lb), lowbush cranberries (93 lb), strawberries (71 lb), currants (68 lb), twisted stalk berries (commonly referred to as watermelon berries) (40 lb), and crowberries (27 lb). And, at a total harvest of 2 lb or less, residents also harvested gooseberries, nagoonberries, and other wild berries.

Plants were harvested, used, and shared less frequently than berries; however, the variety of plants harvested by Seldovia residents in 2014 was extensive. Approximately 37% of Seldovia households used a species of mushroom during the study year, and 31% of households harvested mushrooms (Table 3-12). The total mushroom harvest weight was 322 lb, or 1 lb per capita. According to survey results, 17 identified species of terrestrial plants (excluding various mushrooms) were harvested and used by Seldovia households in

2014. Fiddlehead ferns were the most harvested and used plants during the study year. In 2014, an estimated 23% of households harvested and used fiddlehead ferns, and the total harvest weight was 46 lb, or less than 1 lb per capita. The harvest of nettles was higher than for fiddlehead ferns (64 lb), but nettles were harvested and used by fewer households (18%). For the remaining terrestrial plants harvested by Seldovia households in 2014, harvests—in order of greatest to least—by weight included: wild rose hips, goose tongue, wild parsley, devil's club, unspecified beach greens, wild greens, wild celery, dandelion greens, fireweed, spruce tips, yarrow, plantains, sourdock, Hudson's Bay (Labrador) tea, Indian rice, beach asparagus, and stinkweed.

Approximately 8 specified species of seaweed were used by Seldovia households in 2014. The most commonly harvested and used species of seaweed in 2014 was bull kelp: 20% of Seldovia households harvested this type of seaweed and 21% used it. The total harvest weight of bull kelp was 331 lb, or 1 lb per capita. Though it was the most frequently used and harvested seaweed, bull kelp did not have the highest harvest weight. The seaweed with the highest harvest weight was sea ribbons (447 lb). Sea ribbons were harvested and used by 7% of Seldovia households. Other types of seaweeds used and harvested during the study year include: alaria, giant kelp, black seaweed, red seaweed, bladder wrack, and red laver. Seaweeds that could not be recalled or identified were lumped into a category called "unknown seaweed."

This study also collected information on the harvest of wood, but the harvest amount is not included in estimated usable harvest weight calculations. Using some firewood to help heat homes was a somewhat common practice for Seldovia households during the study year. Approximately one-half of Seldovia households used firewood during the study year (Table 1-10). In 2014, an estimated 49% of Seldovia households reported that 0% of their home heating came from firewood. A small portion of households (6%) reported 1–25% of home heating came from firewood, 9% of households reported 26–50% of home heating came from firewood, 8% reported 51–75% home heating came from firewood, 11% of households reported 76–99% home heating came from firewood, and 17% reported that 100% of their home heating came from firewood.

Vegetation was harvested from several areas close to Seldovia. Berries and greens were harvested within the immediate community area and some berries and greens were harvested north of Seldovia along the Jakolof Bay Road and into the Kasitsna Bay and Jakolof Bay areas. Some Seldovia residents traveled east of the community along old logging roads toward Red Mountain in search of berries and greens in 2014 (Figure 3-31).

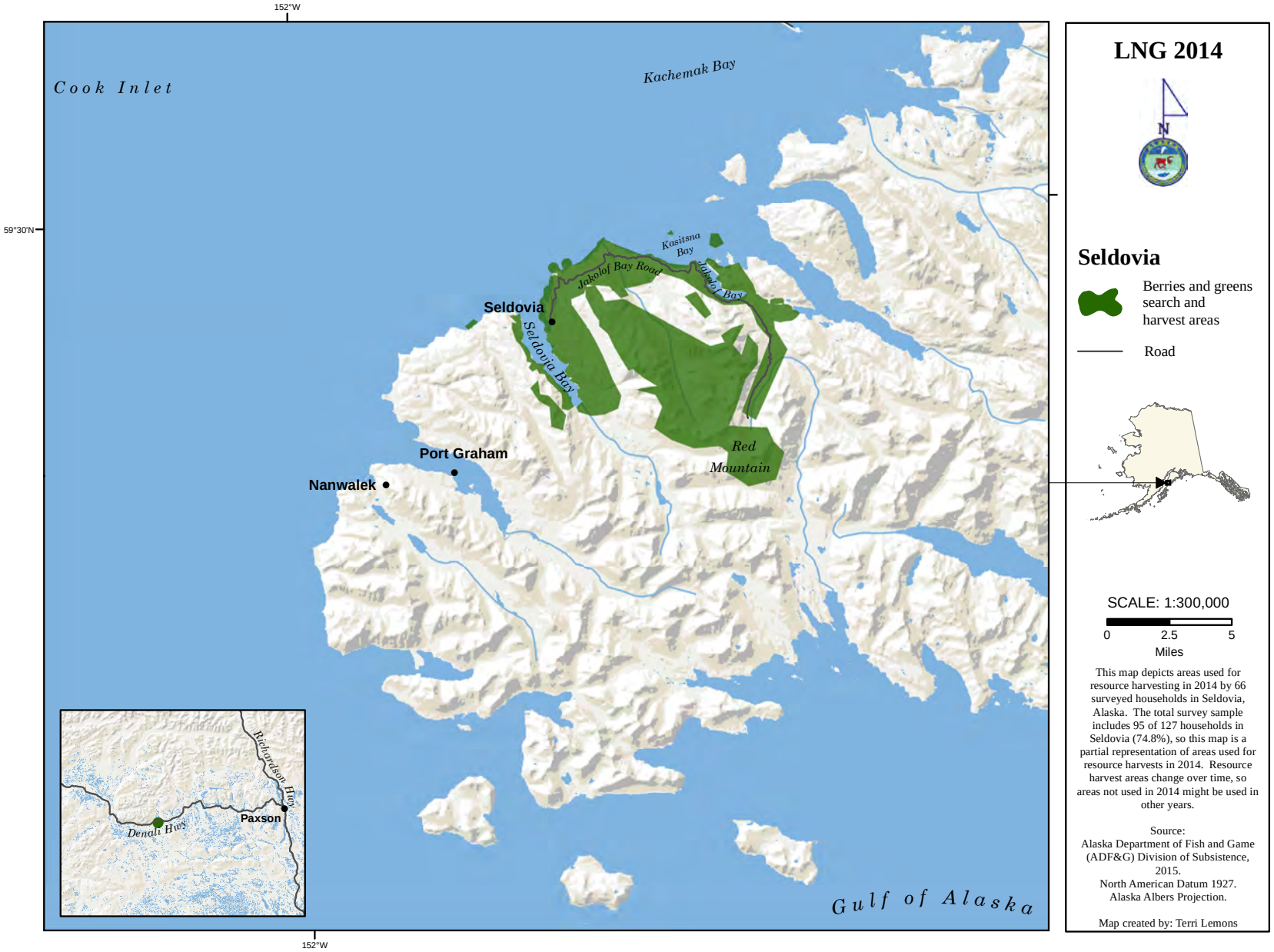


Figure 3-31.–Gathering and harvest locations of berries and plants, greens, and mushrooms, Seldovia, 2014.

Comparing Harvests and Uses in 2014 with Previous Years

Harvest Assessments

Researchers asked respondents to assess their own harvests in 2 ways: whether they got more, less, or about the same amount of 9 resource categories in 2014 as in the past 5 years, and whether they got "enough" of each of the 9 resource categories. Households also were asked to provide reasons if their use was different or if they were unable to get enough of a resource. If they did not get enough of a resource, they were asked to evaluate the severity of the impact to their household as a result of not getting enough. This section discusses responses to those questions.

Together, Table 3-22 and Figure 3-32 and Figure 3-33 provide a broad overview of Seldovia households' assessments of their harvests in 2014. Because not everyone uses all resource categories, some households did not respond to the assessment questions. Additionally, some households that do typically use a resource category simply did not answer questions.

For salmon, the most harvested of all subsistence resource categories used by Seldovia households, 37% of responding households explained that they used the same amount of salmon in 2014 as they did in previous years, 38% reported that they used less, and 16% said they used more (Table 3-22; Figure 3-32). When asked why they used less, 29% of respondents reported that they did so because they were working or had no time, and 24% stated less use was due to family/personal reasons (Table 3-23). Other stated reasons for using less salmon included: did not need (15%), fewer resources available (12%), lack of effort (12%), less sharing (9%), unsuccessful harvest effort (9%), lack of equipment (3%), weather and environment (3%), competition (3%), used other resources (3%), and other unspecified reasons (3%). For those households that used more salmon in the study year, approximately 36% of respondents who gave a reason reported that using more salmon was a result of increased effort, 29% of respondents cited that they received more salmon, 21% reported having more help, and 14% reported increased availability of the resources (Table 3-24). Additionally, other stated reasons for using more salmon included: needed more (7%), needed less (7%), and store-bought expense (7%). In Seldovia, 31% of sampled households stated that they did not get enough salmon (Figure 3-33). When asked to evaluate the impact of not getting enough salmon, 14% of respondents who did not get enough described it as not noticeable, 59% described the impact as minor, 24% explained that not getting enough salmon had a major effect on their household; no households stated that the impact was severe (Table 3-25).

Nonsalmon fish were the second most harvested resource in Seldovia during 2014 (Figure 3-12). Of the households that were surveyed, approximately 48% reported using the same amount during the study year as they had in previous years, 32% reported using less, and nearly 14% reported using more (Figure 3-32). Approximately 21% of respondents who provided a reason for using less nonsalmon fish reported doing so because they were working or had no time. Other reasons included: lack of effort (18%), less sharing (18%), family/personal reasons (14%), lack of equipment (14%), less resources available (11%), did not need (11%), small/diseased animals (11%), unsuccessful harvest effort (7%), or some other reason (4%) (Table 3-23). Reasons for using more nonsalmon fish included increased effort (39% of responding households), received more (23%), and needed more (23%). Other reasons included for increased use—all cited by 7% of responding households—included: had more help, increased availability, store-bought expense, got/fixed equipment, and more success (Table 3-24). Of the households answering the question, 30% reported not getting enough, and 8% of those households reported that it did not have a noticeable impact; 50% of those households reported that not getting enough had a minor impact on their household; and 31% reported that it had a major impact (Table 3-25). No respondents reported that not getting enough nonsalmon fish had a severe impact.

Vegetation was harvested by 92% of households in Seldovia and this resource category was used by 95% of households during 2014 (Table 3-12). Of the households that answered the question, 37% reported using the same amount of vegetation as they had in previous years, 25% reported using less, and 33% reported using more (Figure 3-32). Of those households that reported using less vegetation in 2014 compared to recent

Table 3-22.–Changes in household uses of resources compared to recent years, Seldovia, 2014.

			Households reporting use									
	Sampled	Valid	Total households		Less		Same		More		Households not using	
Resource category	households	responses[a]	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	95	95	95	100.0%	75	78.9%	74	77.9%	50	52.6%	NA	NA
All resources	**95**	**95**	**95**	**100.0%**	**36**	**37.9%**	**37**	**38.9%**	**22**	**23.2%**	**0**	**0.0%**
Salmon	95	91	84	92.3%	35	38.5%	34	37.4%	15	16.5%	7	7.7%
Nonsalmon fish	95	95	89	93.7%	30	31.6%	46	48.4%	13	13.7%	6	6.3%
Large land mammals	95	93	62	66.7%	20	21.5%	30	32.3%	12	12.9%	31	33.3%
Small land mammals	95	94	9	9.6%	2	2.1%	4	4.3%	3	3.2%	85	90.4%
Marine mammals	95	95	4	4.2%	3	3.2%	1	1.1%	0	0.0%	91	95.8%
Birds	95	92	10	10.9%	4	4.3%	5	5.4%	1	1.1%	82	89.1%
Marine invertebrates	95	94	72	76.6%	40	42.6%	24	25.5%	8	8.5%	22	23.4%
Vegetation	95	93	88	94.6%	23	24.7%	34	36.6%	31	33.3%	5	5.4%
Seaweed	95	93	41	44.1%	14	15.1%	15	16.1%	12	12.9%	52	55.9%

Source ADF&G Division of Subsistence household surveys, 2015.

Note "NA" indicates that there is not applicable data.

a. Valid responses do not include households that did not provide any response.

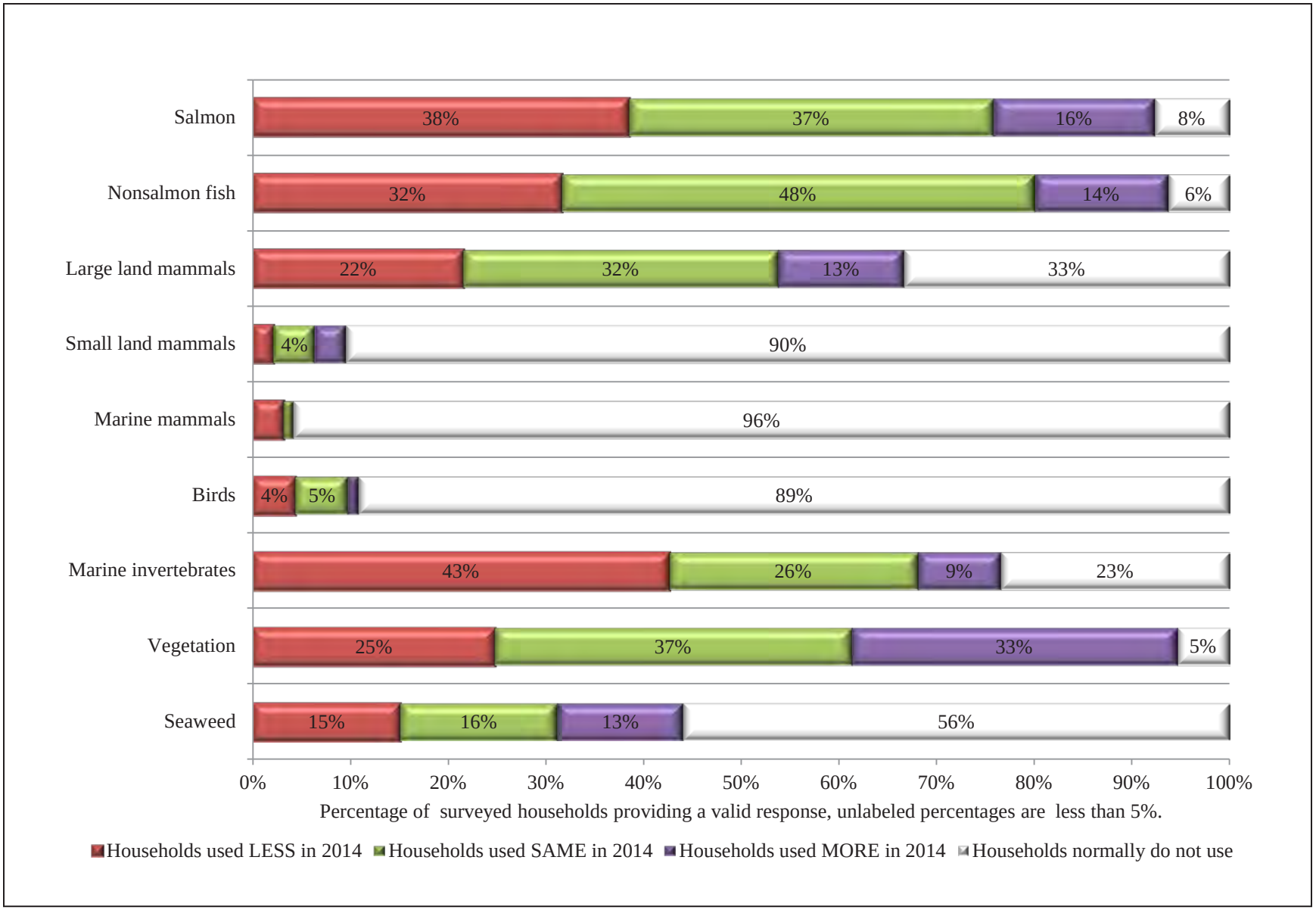


Figure 3-32.–Changes in household uses of resources compared to recent years, Seldovia, 2014.

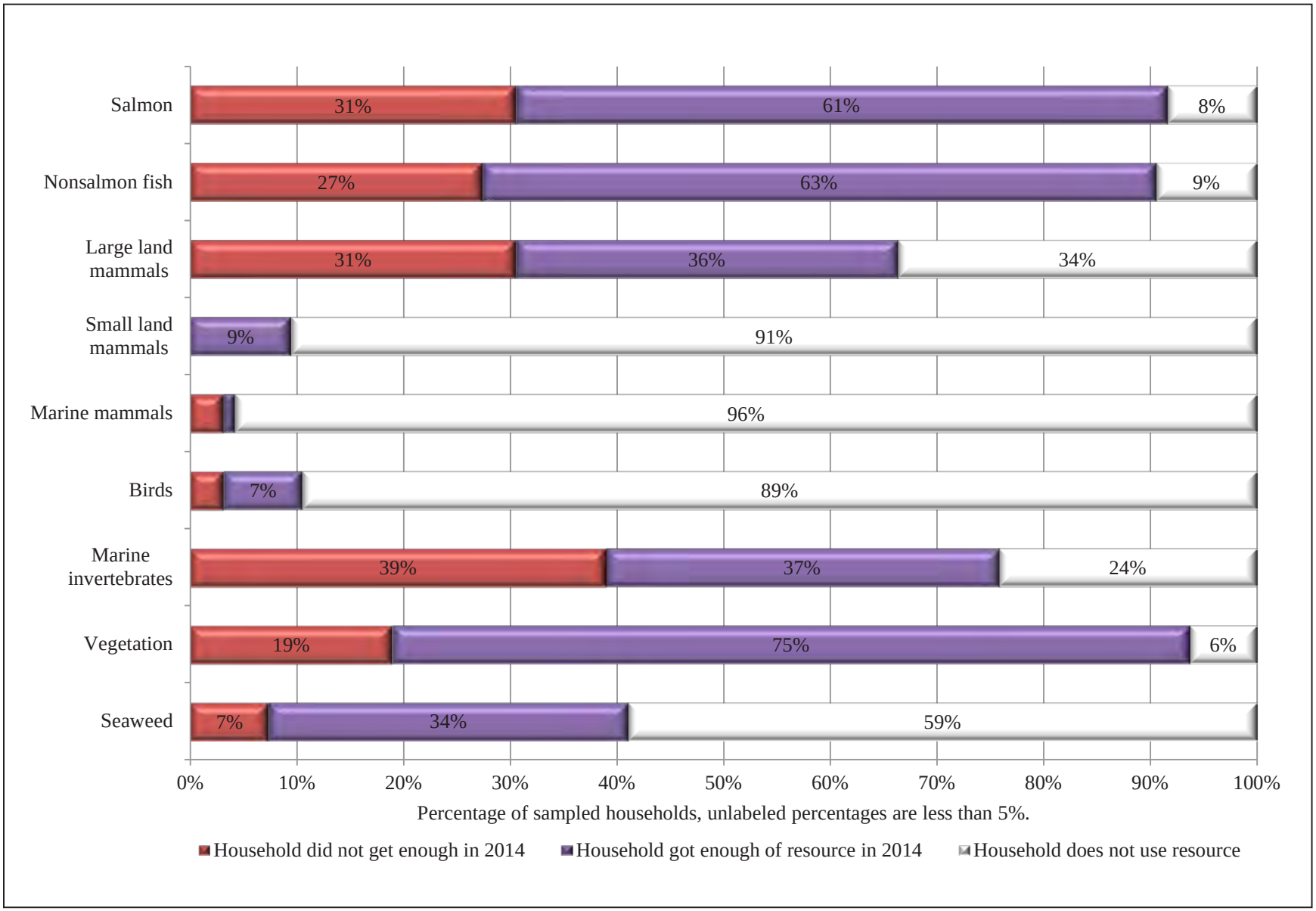


Figure 3-33.–Percentage of sampled households reporting whether they had enough resources, by resource category, Seldovia, 2014.

Table 3-23.–Reasons for less household uses of resources compared to recent years, Seldovia, 2014.

Resource category	Valid responses[a]	Households reporting reasons for less use	Family/ personal		Resources less available		Too far to travel		Lack of equipment		Less sharing		Lack of effort	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	95	73	25	34.2%	29	39.7%	0	0.0%	4	5.5%	21	28.8%	28	38.4%
All resources	**95**	**36**	**12**	**33.3%**	**10**	**27.8%**	**0**	**0.0%**	**2**	**5.6%**	**5**	**13.9%**	**2**	**5.6%**
Salmon	91	34	8	23.5%	4	11.8%	0	0.0%	1	2.9%	3	8.8%	4	11.8%
Nonsalmon fish	95	28	4	14.3%	3	10.7%	0	0.0%	4	14.3%	5	17.9%	5	17.9%
Large land mammals	93	19	1	5.3%	5	26.3%	0	0.0%	0	0.0%	10	52.6%	3	15.8%
Small land mammals	94	2	1	50.0%	1	50.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	95	3	1	33.3%	0	0.0%	0	0.0%	0	0.0%	1	33.3%	2	66.7%
Birds	92	3	2	66.7%	1	33.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	94	38	5	13.2%	16	42.1%	0	0.0%	2	5.3%	3	7.9%	8	21.1%
Vegetation	93	23	6	26.1%	1	4.3%	0	0.0%	0	0.0%	0	0.0%	8	34.8%
Seaweed	93	13	3	23.1%	3	23.1%	0	0.0%	0	0.0%	2	15.4%	5	38.5%

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Table 3-23.–Continued.

Resource category	Valid responses[a]	Households reporting reasons for less use	Unsuccessful		Weather/ environment		Other reasons		Working/ no time		Regulations		Small/ diseased animals	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	95	73	3	4.1%	5	6.8%	3	4.1%	27	37.0%	2	2.7%	4	5.5%
All resources	**95**	**36**	**0**	**0.0%**	**1**	**2.8%**	**0**	**0.0%**	**16**	**44.4%**	**0**	**0.0%**	**0**	**0.0%**
Salmon	91	34	3	8.8%	1	2.9%	1	2.9%	10	29.4%	0	0.0%	0	0.0%
Nonsalmon fish	95	28	2	7.1%	0	0.0%	1	3.6%	6	21.4%	0	0.0%	3	10.7%
Large land mammals	93	19	0	0.0%	0	0.0%	0	0.0%	4	21.1%	0	0.0%	0	0.0%
Small land mammals	94	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	95	3	0	0.0%	0	0.0%	0	0.0%	1	33.3%	0	0.0%	0	0.0%
Birds	92	3	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	94	38	0	0.0%	1	2.6%	0	0.0%	4	10.5%	2	5.3%	1	2.6%
Vegetation	93	23	0	0.0%	2	8.7%	0	0.0%	7	30.4%	0	0.0%	0	0.0%
Seaweed	93	13	0	0.0%	0	0.0%	1	7.7%	3	23.1%	0	0.0%	0	0.0%

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Table 3-23.–Page 2 of 2.

Resource category	Valid responses[a]	Households reporting reasons for less use	Did not get enough		Did not need		Competition		Equipment/ fuel expense		Used other resources	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	95	73	0	0.0%	7	9.6%	1	1.4%	2	2.7%	2	2.7%
All resources	**95**	**36**	**0**	**0.0%**	**2**	**5.6%**	0	0.0%	**0**	**0.0%**	**0**	**0.0%**
Salmon	91	34	0	0.0%	5	14.7%	1	2.8%	0	0.0%	1	2.9%
Nonsalmon fish	95	28	0	0.0%	3	10.7%	0	0.0%	0	0.0%	0	0.0%
Large land mammals	93	19	0	0.0%	0	0.0%	0	0.0%	2	10.5%	0	0.0%
Small land mammals	94	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	95	3	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Birds	92	3	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	94	38	0	0.0%	1	2.6%	0	0.0%	0	0.0%	1	2.6%
Vegetation	93	23	0	0.0%	3	13.0%	0	0.0%	0	0.0%	0	0.0%
Seaweed	93	13	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2015.

a. Valid responses do not include households that did not provide any response and households reporting never using the resource.

Table 3-24.–Reasons for more household uses of resources compared to recent years, Seldovia, 2014.

Resource category	Valid responses[a]	Households reporting reasons for more use	Increased availability		Used other resources		Favorable weather		Received more		Needed more		Increased effort		Had more help	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	95	48	24	50.0%	0	0.0%	4	8.3%	20	41.7%	5	10.4%	21	43.8%	12	25.0%
All resources	**95**	**20**	**10**	**50.0%**	**0**	**0.0%**	**1**	**5.0%**	**2**	**10.0%**	**2**	**10.0%**	**9**	**45.0%**	**3**	**15.0%**
Salmon	91	14	2	14.3%	0	0.0%	0	0.0%	4	28.6%	1	7.1%	5	35.7%	3	21.4%
Nonsalmon fish	95	13	1	7.7%	0	0.0%	0	0.0%	3	23.1%	3	23.1%	5	38.5%	1	7.7%
Large land mammals	93	12	0	0.0%	0	0.0%	0	0.0%	11	91.7%	1	8.3%	0	0.0%	0	0.0%
Small land mammals	94	3	1	33.3%	0	0.0%	0	0.0%	2	66.7%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	95	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Birds	92	1	0	0.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	94	8	1	12.5%	0	0.0%	0	0.0%	2	25.0%	1	12.5%	4	50.0%	1	12.5%
Vegetation	93	31	19	61.3%	0	0.0%	4	12.9%	0	0.0%	0	0.0%	8	25.8%	5	16.1%
Seaweed	93	11	4	36.4%	0	0.0%	1	9.1%	1	9.1%	1	9.1%	3	27.3%	2	18.2%

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Table 3-24.–Continued.

Resource category	Valid responses[a]	Households reporting reasons for more use	Other		Regulations		Traveled farther		More success		Needed less		Store-bought expense		Got/ fixed equipment	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	95	48	2	4.2%	0	0.0%	0	0.0%	6	12.5%	1	2.1%	1	2.1%	1	2.1%
All resources	**95**	**20**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**1**	**5.0%**	**0**	**0.0%**	**0**	**0.0%**	**1**	**5.0%**
Salmon	91	14	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	7.1%	1	7.1%	0	0.0%
Nonsalmon fish	95	13	0	0.0%	0	0.0%	0	0.0%	1	7.7%	0	0.0%	1	7.7%	1	7.7%
Large land mammals	93	12	0	0.0%	0	0.0%	0	0.0%	1	8.3%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	94	3	0	0.0%	0	0.0%	0	0.0%	1	33.3%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	95	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Birds	92	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	94	8	0	0.0%	0	0.0%	0	0.0%	1	12.5%	0	0.0%	0	0.0%	0	0.0%
Vegetation	93	31	2	6.5%	0	0.0%	0	0.0%	2	6.5%	0	0.0%	0	0.0%	0	0.0%
Seaweed	93	11	0	0.0%	0	0.0%	0	0.0%	1	9.1%	0	0.0%	0	0.0%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2015.

a. Valid responses do not include households that did not provide any response and households reporting never using the resource.

Table 3-25.–Reported impact to households reporting that they did not get enough of a type of resource, Seldovia, 2014.

		Households not getting enough _____ .				Impact to those not getting enough _____ .									
	Sample	Valid responses[a]		Did not get enough		No response		Not noticeable		Minor		Major		Severe	
Resource category	households	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
All resources	**95**	**92**	**96.8%**	**31**	**33.7%**	**4**	**12.9%**	**4**	**12.9%**	**14**	**45.2%**	**9**	**29.0%**	**0**	**0.0%**
Salmon	95	87	91.6%	29	33.3%	1	3.4%	4	13.8%	17	58.6%	7	24.1%	0	0.0%
Nonsalmon fish	95	86	90.5%	26	30.2%	3	11.5%	2	7.7%	13	50.0%	8	30.8%	0	0.0%
Large land mammals	95	63	66.3%	29	46.0%	3	10.3%	4	13.8%	12	41.4%	10	34.5%	0	0.0%
Small land mammals	95	9	9.5%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	95	4	4.2%	3	75.0%	0	0.0%	0	0.0%	3	100.0%	0	0.0%	0	0.0%
Birds	95	10	10.5%	3	30.0%	0	0.0%	0	0.0%	2	66.7%	1	33.3%	0	0.0%
Marine invertebrates	95	72	75.8%	37	51.4%	5	13.5%	6	16.2%	19	51.4%	5	13.5%	2	5.4%
Vegetation	95	89	93.7%	18	20.2%	3	16.7%	2	11.1%	9	50.0%	4	22.2%	0	0.0%
Seaweed	95	39	41.1%	7	17.9%	0	0.0%	0	0.0%	6	85.7%	1	14.3%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2015.

a. Includes households failing to respond to the question and those households that never used the resource.

years and provided a reason, 35% attributed this to lack of effort, 30% stated working/no time as a reason, and 26% cited family or personal issues (Table 3-23). Some (13%) stated they did not need vegetation, 9% cited the weather/environment as a reason for less use, and 4% reported that resources were less available. The majority of respondents (61%) who reported using more vegetation and provided a reason cited that more use was due to increased resource availability (Table 3-24). Other reasons included increased effort (26%), had more help (16%), favorable weather (13%), more harvest success (7%), or gave some other reason (7%). Approximately 19% of sampled households reported not getting enough (Figure 3-33). Of the respondents that stated that they did not get enough vegetation resources and answered the question about the impact of not having enough, 50% felt that not getting enough had a minor impact on their household, and 22% reported that it had a major impact (Table 3-25).

Seaweed is included within the vegetation resource category, but assessment questions were also asked specifically about seaweed use and harvest. Of the households that provided a valid response about use of seaweed, 16% reported using the same amount as they had in previous years, 15% reported using less, and 13% reported using more (Figure 3-32). Thirty-eight percent of those who gave a reason for using less seaweed said they did so due to lack of effort; 23% attributed less use to: family or personal reasons, resources were less available, or working or had no time; and 15% reported there was less sharing in 2014 (Table 3-23). Of those who gave reasons for using more seaweed, 36% attributed this to increased availability, 27% to increased harvest efforts, 18% had more help, and 9% reported either favorable weather, receiving more, needing more, or having more success (Table 3-24). Approximately 18% of households that gave a valid response had reported not getting enough seaweed; 86% of those respondents reported this had a minor impact on their household, and 14% reported this had a major impact on their household (Table 3-25).

Large land mammals were used by 61% of Seldovia households in 2014 (Table 3-12). Of the households that responded to the question, 32% reported using the same amount of large land mammals as they had in previous years, 22% reported using less, and 13% reported using more (Figure 3-32). Of those respondents who reported using less large land mammals and provided a reason, 53% reported this was due to less sharing, 26% cited less resources were available, 21% attributed this to working/no time, and 16% stated lack of effort (Table 3-23). Additionally, 11% reported equipment/fuel was too expensive, and 5% cited family/personal reasons for less use of large land mammals. Reasons for increased use included received more (92%), more success (8%), and needed more (8%). Almost one-half of the responding households (46%) felt that they did not get enough large game resources and reported some degree of impact to their households (Table 3-25). Fourteen percent of respondents felt not getting enough did not have a noticeable impact, 41% reported it had a minor impact on their household, and 35% felt the impact to their household was major.

Marine invertebrates were used by 68% of households during the study year (Table 3-12). Of those who provided a valid response to the question, 26% reported using the same amount of marine invertebrate resources in 2014 as they did in recent years, 43% reported using less, and 9% reported using more (Figure 3-32). The most cited reasons for using less marine invertebrates included decreases in resource availability (42%), lack of effort (21%), family/personal issues (13%), working or had no time (11%), and less sharing (8%) (Table 3-23). Reasons for increased use included increased effort (50%), received more (25%), more harvest success (13%), needed more (13%), had more help (13%), and increased resource availability (13%). Out of sampled households, 39% did not get enough marine invertebrates (Figure 3-33). Approximately 16% of those respondents who felt as though they did not get enough reported that it did not have a noticeable impact to their household, 51% reported a minor impact, 14% reported a major impact, and 5% reported that not getting enough marine invertebrates had a severe impact to their household (Table 3-25).

Less than one-quarter (23%) of Seldovia households were estimated to have used birds in 2014 (Table 3-12). Of those valid responses, 5% reported using the same amount in 2014 as in recent years, 4% reported using less, and less than 1% reported using more (Figure 3-32; Table 3-22). Those who reported using less and provided a reason cited family or personal reasons (66%), and 33% reported the resources were less

available (Table 3-23). The single reason cited for using more birds was that the respondent received more (Table 3-24). However, 30% of responding households who used birds reported not getting enough (Table 3-25). Of the 3 households that indicated they did not get enough birds, 2 households indicated the impact was minor and 1 indicated that not having enough birds had a major effect on the household (Table 3-25).

For the 2014 study year, 96% of Seldovia households reported that they did not use marine mammals (Figure 3-32). Of the households answering the question, 3% cited using less in 2014 than in previous years, and 1% reported using the same amount (Table 3-22). Those respondents who reported a reason for using less marine mammals cited lack of effort (67%), family or personal reasons (33%), working/no time (33%), and 33% reported there was less sharing (Table 3-23). Overall, marine mammal resources are not a significant element to the Seldovia community's wild resource use and harvest patterns, and the 3 respondents who indicated that they did not have enough marine mammals said this had a minor impact to their household (Table 3-25).

All households (100%) in Seldovia reported using at least 1 wild resource in 2014 (Table 3-22). Out of all households using all resources, 39% reported using the same amount of resources in 2014 as they had in recent years, 38% reported using less, and 23% reported using more. The most frequently reported reason for decreased use was working/no time (44%) (Table 3-23). Other reasons included family/personal circumstances (33%), resources were less available (28%), less sharing (14%), did not need (6%), lack of equipment (6%), lack of effort (6%), and weather or environmental factors (3%). The most frequently reported reason for using more resources in 2014 than in recent years was that there was increased resource availability (50%) (Table 3-24). Other reasons included: increased effort (45%), had more help (15%), needed more (10%), and received more (10%). In 2014, out of the responding households, 34% reported not getting enough resources overall (Table 3-25). Of those respondents who did not get enough, 13% said the impact to their household was not noticeable, 45% reported the impact as minor, and 29% said it was major. No households reported the shortage as having a severe effect. With regard to specific resources of which households wanted more, the top 2 species desired were moose and clams (23% of households) (Table 3-26). In addition, 21% of Seldovia households needed more Pacific halibut, 18% desired more sockeye salmon, and 12% needed more coho salmon and Chinook salmon.

Table 3-26.–Resources that households reported needing, Seldovia, 2014.

Resource	Households needing	Percentage of households
All resources	2	2.1%
Fish	7	7.4%
Salmon	7	7.4%
Chum salmon	1	1.1%
Coho salmon	11	11.6%
Chinook salmon	11	11.6%
Pink salmon	2	2.1%
Sockeye salmon	17	17.9%
Eulachon (hooligan, candlefish)	1	1.1%
Cod	7	7.4%
Pacific (gray) cod	4	4.2%
Greenling	1	1.1%
Pacific halibut	20	21.1%
Rockfish	1	1.1%
Black rockfish	2	2.1%
Sablefish (black cod)	1	1.1%
Brook trout	1	1.1%
Trout	1	1.1%
Rainbow trout	1	1.1%
Large land mammals	5	5.3%
Black bear	10	10.5%
Caribou	8	8.4%
Deer	5	5.3%
Mountain goat	4	4.2%
Moose	22	23.2%
Dall sheep	1	1.1%
Seal	2	2.1%
Steller sea lion	1	1.1%
Ducks	1	1.1%
Unknown ducks	1	1.1%
Spruce grouse	1	1.1%
Unknown grouse	1	1.1%
Ptarmigan	1	1.1%
Gull eggs	1	1.1%
Marine invertebrates	1	1.1%
Chitons (bidarkis, gumboots)	2	2.1%
Clams	22	23.2%
Butter clams	2	2.1%
Pacific littleneck clams (steamers)	3	3.2%
Crabs	10	10.5%
Dungeness crab	2	2.1%

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Resource	Households needing	Percentage of households
Mussels	4	4.2%
Scallops	1	1.1%
Shrimp	9	9.5%
Snails	1	1.1%
Berries	7	7.4%
Blueberry	9	9.5%
Lowbush cranberry	3	3.2%
Highbush cranberry	3	3.2%
Raspberry	2	2.1%
Salmonberry	2	2.1%
Plants, greens, and mushrooms	1	1.1%
Fiddlehead ferns	3	3.2%
Nettle	4	4.2%
Other wild greens	2	2.1%
Unknown mushrooms	5	5.3%
Seaweed/kelp	2	2.1%
Black seaweed	1	1.1%
Bull kelp	5	5.3%
Red seaweed	2	2.1%
Red laver (dulse)	2	2.1%
Unknown seaweed	1	1.1%

Source ADF&G Division of Subsistence household surveys, 2015.

Harvest Data

Changes in the harvest of resources by Seldovia residents can also be discerned through comparisons with findings from other study years. Comprehensive subsistence harvest surveys were conducted in Seldovia in 1982 (Reed 1985), 1991–1993 (Fall and Utermohle 1995), and 2014. In addition to the 2014 survey results, marine mammal harvests were estimated for all years from 1992–2008—except for 1999—as part of a comprehensive subsistence survey or targeted marine mammal survey.[8] In addition, Seldovia Village Tribe conducted an assessment of subsistence fish consumption for 2011, which added to the base of knowledge for subsistence resources consumption in Seldovia (Merrill and Opheim 2013).

In 1982, Seldovia households harvested 30,406 lb of wild resources, or 51 lb per capita (Reed 1985). After the 1982 study was complete, it was determined that the sample size was probably not representative, therefore the 1982 harvest estimates are low as a result of the small sample size. The study conducted by Fall and Utermohle (1995) was broken out into 3 study years: 1991, 1992, and 1993. In the first study year (1991), Seldovia households harvested 70,059 lb of wild resources, or 206 lb per capita. The second study year (1992), Seldovia households harvested 54,451 lb of wild resources, or 145 lb per capita. In the final

8. Results for both comprehensive and marine mammal subsistence harvest surveys are available in the CSIS. The survey months for each study year are noted in the CSIS project year "Methods" section. Marine mammal harvest survey results are reported in: Wolfe and Mishler (1995, 1996, 1997, 1998) for study years 1994, 1995, 1996, and 1997; Wolfe and Hutchinson-Scarbrough (1999) for study year 1998; Wolfe (2001) for study year 2000; and in Wolfe et al. (2002, 2003, 2004, 2005, 2006, 2008, 2009a–b) for study years 2001, 2002, 2003, 2004, 2005, 2006, 2007, and 2008.

study year (1993), Seldovia households harvested 79,063 lb of wild resources, or 184 lb per capita (Fall and Utermohle 1995). In 2014, Seldovia households harvested 38,455 lb of wild resources, or 138 lb per capita (Table 3-12).

The per capita annual harvests for all resources combined appear to have generally decreased since the early 1990s (Figure 3-34); also, the composition of the harvest has changed over time (Table 3-27). Harvest composition change can be discerned by a comparison of the changed percentage of total harvest by resource category between the 1982 and the 2014 estimates. The most significant decrease in the harvest composition is for marine invertebrates, which only contributed 4% of the harvest in 2014 compared to approximately 12–19% of the harvest in study years during the 1980s and 1990s. The decline of the marine invertebrate harvest as a proportion of the total harvest is offset most significantly by increased proportions of the harvest being represented by vegetation. The harvest of vegetation increased substantially during the 2014 study year. The harvest of vegetation contributed nearly 22% of the harvest in 2014 compared to approximately 6–9% of the harvest in study years during the 1980s and 1990s.

Figure 3-35 compares estimated harvests in pounds per capita for the 5 study years by resource category. There was a significant increase of the salmon per capita harvest between 1982 and 1991, though this may be related to the low sample size in the 1982 study year. From 1991 until the 2014 study, salmon harvests had, for the most part, remained stable. In 1982, the per capita harvest of salmon was 18 lb, in 1991 it was 65 lb, in 1992 it was 59 lb, in 1993 it was 64 lb, and in 2014 the per capita harvest of salmon decreased to 48 lb (Figure 3-35; Table 3-28).

The per capita harvest weight of nonsalmon fish has fluctuated over the study years, but generally the trend for nonsalmon fish represents a decline since 1991. In 1982, the per capita harvest of nonsalmon fish was 12 lb, in 1991 it was 68 lb, in 1992 it was 41 lb, in 1993 it was 44 lb, and in 2014 the per capita harvest of nonsalmon fish decreased to 36 lb (Figure 3-35; Table 3-28).

For large land mammals, the per capita harvest weight has fluctuated over the study years. In 1982, the per capita harvest weight for large land mammals was 7 lb. During the 1991 study year the per capita harvest increased to 30 lb, in 1992 the per capita harvest decreased to 15 lb, it increased again in 1993 to 24 lb, and in 2014 the per capita harvest of large land mammals was 17 lb (Figure 3-35; Table 3-28).

During all 5 study years, birds and eggs made up a small portion of the overall harvest for Seldovia (never exceeding more than 3% of the resource harvest) (Figure 3-34; Table 3-27). Though minimally harvested, bird and egg harvests have declined over time. In 1982, the bird and egg per capita harvest was 1.4 lb, and by 2014 the per capita harvest was less than 1 lb (Table 3-28).

Both historically and contemporarily, marine mammals have made up a small portion of the overall harvest (never exceeding more than 1% of the resource harvest) (Figure 3-34; Table 3-27). In both 1982 and 1991, the per capita harvest of marine mammals was 0 lb, it increased to 1.3 lb in 1992, in 1993 it was 1.2 lb, and during the 2014 study year the per capita harvest was 1.1 lb (Figure 3-35; Table 3-28). Results from harvest surveys conducted by the Alaska Native Harbor Seal Commission (ANHSC) found that 12 harbor seals were taken in 2014 (Bernadine Erickson, Alaska Native Harbor Seal Commission Project Coordinator, Anchorage, personal communication, July 2015). According to findings by the Division of Subsistence and the ANHSC, from 1994 through 2008, the most harbor seals taken in Seldovia in any given year was 8 (in 1994), and the lowest harvest amount took place in 2002 and 2003, with no harbor seal harvests (Wolfe et al. 2009b).

Current and Historical Harvest Areas

During the previous comprehensive subsistence harvest surveys, map data denoting wild resource search and harvest areas for the community of Seldovia were not collected. Therefore, there are no historical harvest maps against which the study year results can be compared.

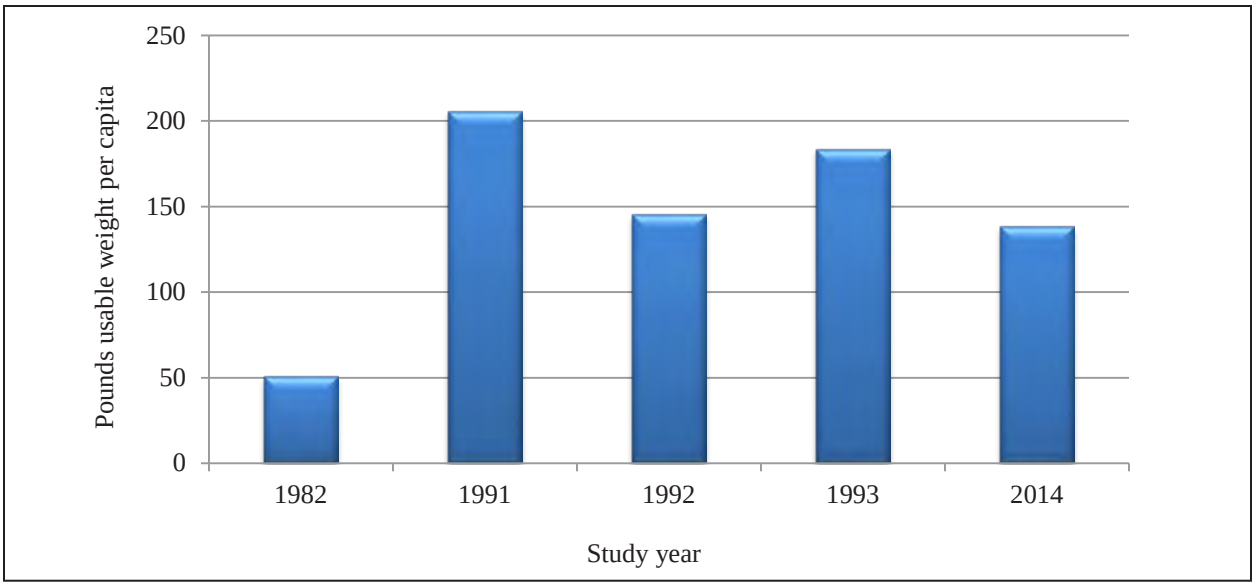

Figure 3-34.–Estimated per capita harvests in pounds usable weight, Seldovia, 1982, 1991, 1992, 1993, and 2014.

Table 3-27.–Comparison of harvest composition by resource category, Seldovia, 1982, 1991, 1992, 1993, and 2014.

Resource category	1982	1991	1992	1993	2014
Salmon	35.3%	31.4%	40.3%	35.0%	34.3%
Nonsalmon fish	22.8%	33.2%	28.3%	23.8%	26.0%
Land mammals	13.8%	14.4%	10.5%	12.9%	12.5%
Marine mammals	0.0%	0.0%	0.9%	0.7%	0.8%
Birds and eggs	2.8%	0.6%	0.9%	0.7%	0.7%
Marine invertebrates	16.6%	14.8%	12.3%	18.5%	4.0%
Vegetation	8.7%	5.6%	6.8%	8.5%	21.7%

Sources Community Subsistence Information System (CSIS) for 1982 and 1991–1993 data; ADF&G Division of Subsistence household surveys, 2015, for 2014 data.

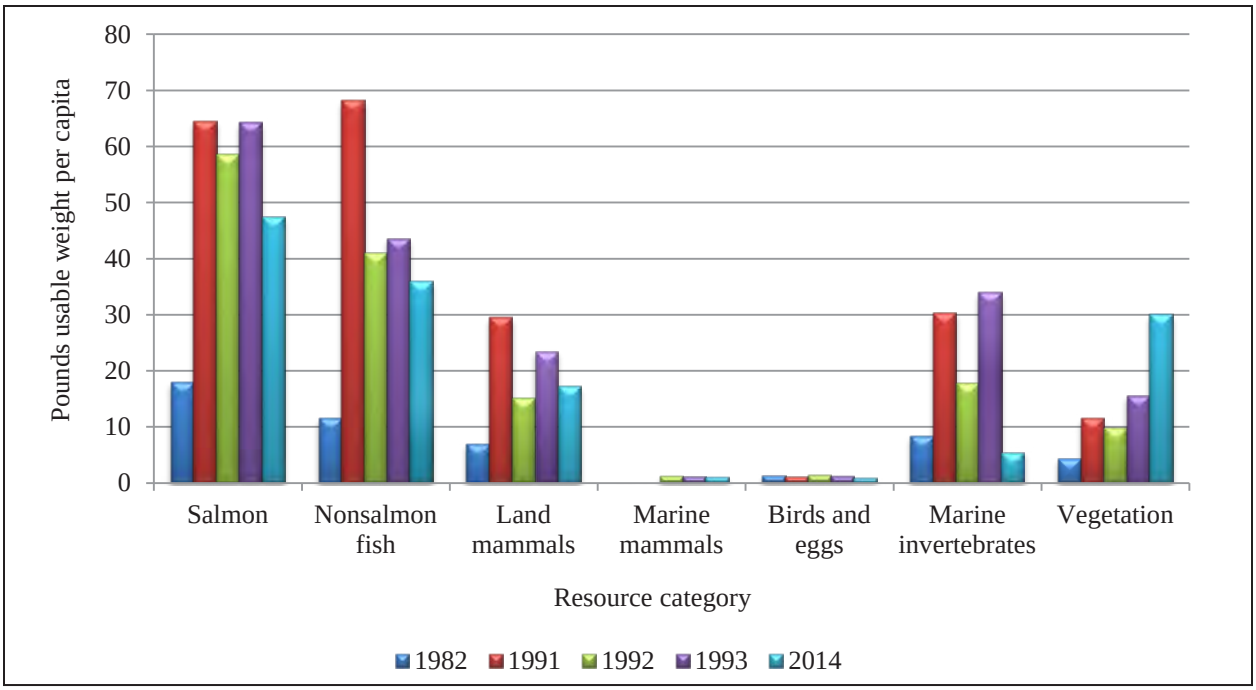

Figure 3-35.–Estimated per capita harvests in pounds usable weight by resource category, Seldovia, 1982, 1991, 1992, 1993, and 2014.

Table 3-28.–Estimated per capita harvests in pounds usable weight by resource category, Seldovia, 1982, 1991, 1992, 1993, and 2014.

Resource category	1982	1991	1992	1993	2014
Salmon	17.9	64.6	58.5	64.3	47.5
Nonsalmon fish	11.6	68.2	41.1	43.6	36.0
Land mammals	7.0	29.6	15.2	23.6	17.3
Marine mammals	0.0	0.0	1.3	1.2	1.1
Birds and eggs	1.4	1.2	1.3	1.3	0.9
Marine invertebrates	8.4	30.4	17.8	34.0	5.5
Vegetation	4.4	11.6	9.9	15.6	30.0
All resources	**50.7**	**205.5**	**145.1**	**183.6**	**138.3**

Sources Community Subsistence Information System (CSIS) for 1982 and 1991–1993 data; ADF&G Division of Subsistence household surveys, 2015, for 2014 data.

Subsistence Recovery Observations

This community's survey respondents were asked questions to evaluate the status of subsistence uses, which is an injured natural resource service that is "recovering" from the *Exxon Valdez* oil spill (EVOS) according to the EVOS Trustee Council (TC) (Exxon Valdez Oil Spill Trustee Council 2014). Assessment questions were asked to determine food safety, resource status and recovery, whether youth are learning subsistence skills, the role of elders, and the status of the recovery of the subsistence way of life. Respondents were able to provide more than one reason as part of their evaluations about the status of these topics, and as such percentages in the following tables could add to more than 100%.

Assessments of Natural Resource Conditions

Food Safety

Within the EVOS TC's recovery plan, a condition for assessing subsistence recovery is determining whether people are confident that resources are safe to eat. Respondents from Seldovia were asked to assess whether or not certain marine resources were safe for consumption. These resources included Pacific herring, harbor seals, chitons, and clams. The majority of respondents felt that these marine resources were safe to eat (Table 3-29). None of the reasons provided by respondents for believing resources were unsafe to eat during the 2014 study were related to EVOS contamination (Table 3-30).

In 2014, harbor seals were considered safe to consume by 92% of respondents, no respondents felt this resource was unsafe, and 8% did not know (Table 3-29). Similar to harbor seals, approximately 91% of respondents believed clams were safe for consumption in 2014. Those who felt clams were unsafe to eat made up approximately 4% of respondents, and those who did not know totaled 5%. Of the respondents who felt clams were unsafe to eat, 67% cited paralytic shellfish poisoning (PSP) as their reasoning, and 33% indicated non-EVOS contamination as a reason (Table 3-30).

In 2014, approximately 86% of Seldovia respondents felt that chitons were safe to eat, 3% felt they were unsafe, and 12% did not know (Table 3-29). All respondents who felt chitons were unsafe to eat gave a reason different from the listed categories, and did not indicate this sentiment was related to the oil spill (Table 3-30).

In 2014, approximately 76% of respondents felt Pacific herring were safe to eat, 3% felt they were unsafe, and 21% were unsure (Table 3-29). In 2014, respondents believed Pacific herring were unsafe to eat primarily because of non-spill contamination (67% of respondents who thought Pacific herring were unsafe to eat) (Table 3-30).

Status of Resource Populations

The 2014 survey included questions about the status of recovery of subsistence resources after the EVOS. Survey respondents were asked 2 questions about the status of natural resources, a condition that relates directly to the EVOS subsistence recovery objective. Respondents were asked to assess "the availability to harvest" for 6 resources: Pacific herring, Pacific halibut, harbor seals, sea ducks, chitons, and clams. If the availability to harvest had changed compared to 10 years before (when the last survey was conducted), respondents were asked for a reason. "Availability" might be directly related to abundance, but might be affected by accessibility, resource conditions (e.g., pollution, sickness), regulations, and competition, among other factors.

In 2014, the majority (59%) of respondents from Seldovia who answered "yes" or "no" when asked if subsistence resources had recovered since the EVOS event felt that subsistence resources had recovered, and 41% believed subsistence resources had not (Table 3-31). Those who felt resources had not recovered believed that the process could be helped by harvest regulation and management (24%), predator control (7%), administrative, legal, and political action (7%), restoration and enhancement projects (3%), and by reducing or eliminating oil pollution sources (3%) (Table 3-32). Some residents stated that nothing could

be done (14%), some provided other suggestions (28%); a portion of respondents did not know what could help (14%), or did not provide a suggestion at all (31%).

In Seldovia, the majority of respondents who had been in the community 10 years ago and answered with an assessment that availability was less, same, or more indicated that resource availability decreased compared to 10 years ago for 3 of the 6 species (Pacific herring, Pacific halibut, and clams), while the majority of respondents felt that resource availability remained the same for the other 3 species (harbor seals, ducks, and chitons) (Table 3-33).

Regarding the study year, 83% of Seldovia respondents felt that the availability of clams had decreased compared to 10 years ago, 2% of the respondents felt as though clams were more available, and 15% felt the availability remained the same (Table 3-33). Of those who felt that clams were less available, more than one-half (55%) of respondents felt this was due to environmental conditions and predation, and 49% cited competition or overharvest as the reason (Table 3-34).Other reasons identified by respondents for decreased availability of clams included the stock or population status (16%), non-EVOS contamination (2%), PSP (2%), or no reason was given (2%). In addition, 6% of respondents said that they did not know why the availability of clams had decreased.

The majority (72%) of Seldovia respondents felt that the availability of Pacific halibut had also decreased compared to 10 years ago, 3% of the respondents felt as though Pacific halibut were more available, and 25% felt the availability remained the same (Table 3-33). Of those who felt that Pacific halibut were less available, about one-half (48%) of respondents felt this was due to competition or overharvest (Table 3-34). Other reasons identified by respondents for decreased availability of Pacific halibut included the stock or population status (41%), environmental conditions and predation (16%), management or regulations (9%), economic conditions (2%), non-EVOS contamination (2%), or no reason was given (5%). In addition, 7% of respondents said that they did not know why Pacific halibut availability had decreased.

In 2014, there were 63% of Seldovia respondents who felt that the availability of Pacific herring populations decreased compared to 10 years ago; however, 7% of respondents felt that Pacific herring availability increased compared to 10 years ago, and 29% felt it had remained the same (Table 3-33). Those who indicated that Pacific herring were less available compared to 10 years ago believed this to be due to factors such as stock or population status (42% of respondents), competition or overharvest (23%), environmental conditions or predation (23%), non-EVOS contamination (8%), and contamination from the oil spill (4%) (Table 3-34). Others did not know a reason for the decline in the availability of Pacific herring (15%), or did not give a reason (7%).

Birds were not a significant proportion of the harvest during the study year, and few respondents (14%) answered the question about the availability of ducks to harvest. Of those Seldovia respondents who answered the question, approximately 64% considered the availability of ducks the same compared to 10 years ago, while 36% cited an increase in the availability of ducks (Table 3-33). No Seldovia respondents considered the availability of ducks as increased when compared to 10 years ago. Of those respondents that cited a decrease in ducks, 75% attributed this change to competition or overharvest, or environmental conditions or predation (50% of respondents) (Table 3-34). In addition, 25% of respondents did not know why ducks were less available in the area.

In 2014, few respondents (13%) answered the question about harbor seal availability, but 60% of those respondents indicated that the availability of harbor seals had remained the same compared to 10 years ago, while 30% believed availability had decreased, and 10% thought it had increased (Table 3-33). Of those who reported a decrease in the availability of harbor seals, 67% of respondents attributed this to changes in stock or population status, and 33% identified competition or overharvest as the reason (Table 3-34). A single reason was provided for increased availability of harbor seals, which was attributed to favorable environmental conditions or predation circumstances (Table 3-35).

In regard to chitons (also known as “bidarkis” or “gumboots”), 52% of respondents felt that their availability had remained the same in 2014 compared to the past 10 years, while 43% felt availability had decreased, and approximately 5% felt it had increased (Table 3-33). Of those who thought that the availability of chitons

Table 3-29.–Household assessments of the safety of eating Pacific herring, harbor seals, chitons, and clams harvested in traditional locations, Seldovia, 2014.

Resource	Estimated households	Do not use[c]		Missing[c]		Valid responses[a, c]		Safe[b]		Not safe[b]		Do not know[b]	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Pacific herring	127	9.4	7.4%	1.3	1.1%	116.3	91.6%	88.2	75.9%	4.0	3.4%	24.1	20.7%
Harbor seal	127	86.9	68.4%	22.7	17.9%	17.4	13.7%	16.0	92.3%	0.0	0.0%	1.3	7.7%
Chitons (bidarkis, gumboots	127	12.0	9.5%	10.7	8.4%	104.3	82.1%	89.6	85.9%	2.7	2.6%	12.0	11.5%
Clams	127	12.0	9.5%	6.7	5.3%	108.3	85.3%	98.9	91.4%	4.0	3.7%	5.3	4.9%

Source ADF&G Division of Subsistence household surveys, 2015.

a. Valid responses include only households that answered "safe," "not safe," or "do not know" to the question.

b. Computed as a percentage of valid responses.

c. Computed as a percentage of estimated households.

Table 3-30.–Reasons why Pacific herring, harbor seals, chitons, and clams are not safe to eat, Seldovia, 2014.

	Resource is not safe to eat		Reasons why respondents believe _____ are not safe to eat.[a]									
			Poor or missing information		Agency advice		Paralytic shellfish poisoning		EVOS contamination		Non-EVOS contamination	
Resource	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Pacific herring	4.0	3.4%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	2.7	66.7%
Harbor seal	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Chitons (bidarkis, gumboots)	2.7	2.6%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Clams	4.0	3.7%	0.0	0.0%	0.0	0.0%	2.7	66.7%	0.0	0.0%	1.3	33.3%

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Table 3-30.–Continued.

	Resource is not safe to eat		Reasons why respondents believe _____ are not safe to eat.[a]							
			Resource condition		Caused illness or reaction		Other reason		Missing	
Resource	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Pacific herring	4.0	3.4%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.3	33.3%
Harbor seal	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Chitons (bidarkis, gumboots)	2.7	2.6%	0.0	0.0%	0.0	0.0%	1.3	50.0%	1.3	50.0%
Clams	4.0	3.7%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%

Source ADF&G Division of Subsistence household surveys, 2015.

a. Computed as a percentage of households that indicated resources were not safe to eat.

Table 3-31.–Household assessments of the recovery of subsistence resources since the oil spill, Seldovia, 2014.

		Have subsistence resources recovered since the *Exxon Valdez* oil spill?									
	Community	Missing[a]		Do not know[a]		Valid responses[a, c]		Yes[b]		No[b]	
Community	households	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Kachemak Bay											
Seldovia	127	1.3	1.1%	30.7	24.2%	94.9	74.7%	56.1	59.2%	38.8	40.8%

Source ADF&G Division of Subsistence household surveys, 2015.

a. Computed as a percentage of estimated community households.

b. Computed as a percentage of valid responses.

c. Valid responses include only households that gave a "yes" or "no" response to the question.

Table 3-32.–Household assessments of what should be done to help with the recovery of subsistence resources, Seldovia, 2014.

				What should be done to help in the recovery of subsistence resources?[b]									
	Valid	Subsistence resources have not recovered[a]		No recovery suggestion provided		Do not know		More clean up		More studying and monitoring of populations		Harvest regulation and management	
Community	responses[c]	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Kachemak Bay													
Seldovia	94.9	38.8	40.8%	12.0	31.0%	5.3	13.8%	0.0	0.0%	0.0	0.0%	9.4	24.1%

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Table 3-32.–Continued.

				What should be done to help in the recovery of subsistence resources?[b]							
	Valid	Subsistence resources have not recovered[a]		Time		Education about spill effects		Administrative, legal, and political action		Restoration and enhancement projects	
Community	responses[c]	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Kachemak Bay											
Seldovia	94.9	38.8	40.8%	0.0	0.0%	0.0	0.0%	2.7	6.9%	1.3	3.4%

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Table 3-32.–Continued.

				What should be done to help in the recovery of subsistence resources?[b]							
	Valid	Subsistence resources have not recovered[a]		Predator control		Reduce or eliminate oil pollution sources		Other suggestion		Nothing can be done	
Community	responses[c]	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Kachemak Bay											
Seldovia	94.9	38.8	40.8%	2.7	6.9%	1.3	3.4%	10.7	27.6%	5.3	13.8%

Source ADF&G Division of Subsistence household surveys, 2015.

a. Computed as a percentage of valid responses.

b. Computed as a percentage of households that indicated that subsistence resources have not recovered.

c. Valid responses include only households that gave a "yes" or "no" response to the question: "Have subsistence resources recovered since the *Exxon Valdez* oil spill?"

Table 3-33.–Household assessments of change in resource availability compared to 10 years ago, Seldovia, 2014.

Resource	Estimated households	No response[a]		Not in community[a]		In community[a]		Valid responses[b, d]	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Pacific herring	127	49.5	38.9%	22.7	17.9%	104.3	82.1%	54.8	52.6%
Pacific halibut	127	22.7	17.9%	22.7	17.9%	104.3	82.1%	81.5	78.2%
Harbor seal	127	90.9	71.6%	22.7	17.9%	104.3	82.1%	13.4	12.8%
Ducks	127	89.6	70.5%	22.7	17.9%	104.3	82.1%	14.7	14.1%
Chitons (bidarkis, gumboots)	127	45.5	35.8%	22.7	17.9%	104.3	82.1%	58.8	56.4%
Clams	127	16.0	12.6%	22.7	17.9%	104.3	82.1%	88.2	84.6%

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Table 3-33.–Continued.

Resource	Estimated households	Less[c]		Same[c]		More[c]	
		Number	Percentage	Number	Percentage	Number	Percentage
Pacific herring	127	34.8	63.4%	16.0	29.3%	4.0	7.3%
Pacific halibut	127	58.8	72.1%	20.1	24.6%	2.7	3.3%
Harbor seal	127	4.0	30.0%	8.0	60.0%	1.3	10.0%
Ducks	127	5.3	36.4%	9.4	63.6%	0.0	0.0%
Chitons (bidarkis, gumboots)	127	25.4	43.2%	30.7	52.3%	2.7	4.5%
Clams	127	73.5	83.3%	13.4	15.2%	1.3	1.5%

Source ADF&G Division of Subsistence household surveys, 2015.

a. Computed as a percentage of estimated households.

b. Computed as a percentage of households that were in the community 10 years ago.

c. Computed as a percentage of valid responses.

d. Valid responses include only those households that were in the community 10 years ago and that responded that resource availability was either less, the same, or more compared to 10 years ago.

Table 3-34.–Reasons for less resource availability compared to 10 years ago, Seldovia, 2014.

	Responses[a, b]		EVOS contamination[c]		Non-EVOS contamination[c]		Paralytic shellfish poisoning[c]		Stock or population status[c]	
Resource	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Pacific herring	34.8	63.4%	1.3	3.8%	2.7	7.7%	0.0	0.0%	14.7	42.3%
Pacific halibut	58.8	72.1%	0.0	0.0%	1.3	2.3%	0.0	0.0%	24.1	40.9%
Harbor seal	4.0	30.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	2.7	66.7%
Ducks	5.3	36.4%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Chitons (bidarkis, gumboots)	25.4	43.2%	0.0	0.0%	2.7	10.5%	0.0	0.0%	6.7	26.3%
Clams	73.5	83.3%	0.0	0.0%	1.3	1.8%	1.3	1.8%	12.0	16.4%

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Table 3-34.–Continued.

	Responses[a, b]		Management or regulations[c]		Competition or overharvest[c]		Environmental conditions or predation[c]		Economic conditions[c]	
Resource	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Pacific herring	34.8	63.4%	0.0	0.0%	8.0	23.1%	8.0	23.1%	0.0	0.0%
Pacific halibut	58.8	72.1%	5.3	9.1%	28.1	47.7%	9.4	15.9%	1.3	2.3%
Harbor seal	4.0	30.0%	0.0	0.0%	1.3	33.3%	0.0	0.0%	0.0	0.0%
Ducks	5.3	36.4%	0.0	0.0%	4.0	75.0%	2.7	50.0%	0.0	0.0%
Chitons (bidarkis, gumboots)	25.4	43.2%	0.0	0.0%	8.0	31.6%	10.7	42.1%	0.0	0.0%
Clams	73.5	83.3%	0.0	0.0%	36.1	49.1%	40.1	54.5%	0.0	0.0%

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Table 3-34.–Continued.

	Responses[a, b]		General or other[c]		Not relevant[c]		Do not know[c]		No reason given[c]	
Resource	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Pacific herring	34.8	63.4%	0.0	0.0%	0.0	0.0%	5.3	15.4%	2.7	7.7%
Pacific halibut	58.8	72.1%	0.0	0.0%	0.0	0.0%	4.0	6.8%	2.7	4.5%
Harbor seal	4.0	30.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Ducks	5.3	36.4%	0.0	0.0%	0.0	0.0%	1.3	25.0%	0.0	0.0%
Chitons (bidarkis, gumboots)	25.4	43.2%	0.0	0.0%	0.0	0.0%	2.7	10.5%	1.3	5.3%
Clams	73.5	83.3%	0.0	0.0%	0.0	0.0%	4.0	5.5%	1.3	1.8%

Source ADF&G Division of Subsistence household surveys, 2015.

a. The number of households that were in the community 10 years ago and responded that resource availability was LESS than it was 10 years ago.

b. Computed as a percentage of valid responses.

c. Computed as a percentage of responses.

Table 3-35.–Reasons for more resource availability compared to 10 years ago, Seldovia, 2014.

	Responses[a, b]		EVOS contamination[c]		Non-EVOS contamination[c]		Paralytic shellfish poisoning[c]		Stock or population status[c]	
Resource	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Pacific herring	4.0	7.3%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.3	33.3%
Pacific halibut	2.7	3.3%	0.0	0.0%	0.0	0.0%	0.0	0.0%	2.7	100.0%
Harbor seal	1.3	10.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Ducks	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Chitons (bidarkis, gumboots)	2.7	4.5%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Clams	1.3	1.5%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.3	100.0%

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Table 3-35.–Continued.

	Responses[a, b]		Management or regulations[c]		Competition or overharvest[c]		Environmental conditions or predation[c]		Economic conditions[c]	
Resource	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Pacific herring	4.0	7.3%	0.0	0.0%	1.3	33.3%	0.0	0.0%	0.0	0.0%
Pacific halibut	2.7	3.3%	0.0	0.0%	1.3	50.0%	1.3	50.0%	0.0	0.0%
Harbor seal	1.3	10.0%	0.0	0.0%	0.0	0.0%	1.3	100.0%	0.0	0.0%
Ducks	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Chitons (bidarkis, gumboots)	2.7	4.5%	0.0	0.0%	1.3	50.0%	0.0	0.0%	0.0	0.0%
Clams	1.3	1.5%	0.0	0.0%	1.3	100.0%	0.0	0.0%	0.0	0.0%

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Table 3-35.–Continued.

	Responses[a, b]		General or other[c]		Not relevant[c]		Do not know[c]		No reason given[c]	
Resource	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Pacific herring	4.0	7.3%	0.0	0.0%	0.0	0.0%	1.3	33.3%	0.0	0.0%
Pacific halibut	2.7	3.3%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Harbor seal	1.3	10.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Ducks	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Chitons (bidarkis, gumboots)	2.7	4.5%	0.0	0.0%	0.0	0.0%	1.3	50.0%	0.0	0.0%
Clams	1.3	1.5%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%

Source ADF&G Division of Subsistence household surveys, 2015.

a. The number of households that were in the community 10 years ago and responded that resource availability was MORE than it was 10 years ago.

b. Computed as a percentage of valid responses.

c. Computed as a percentage of responses.

had decreased, the almost one-half (42%) felt this was due to environmental conditions or predation, 32% cited competition or overharvest, 26% referenced stock or population status, and 11% cited contamination from non-EVOS sources (11%) (Table 3-34). Also, 11% of the respondents were unsure about the reasons for chitons decreasing in availability, and 5% did not provide a reason for the decrease. Of those who felt that the availability of chitons had increased, one-half (50%) believed this was due to competition or overharvest, the other one-half (50%) did not know of a reason for increased availability of chitons (Table 3-35).

Assessments of Social and Economic Conditions

Young Adults' Involvement in Subsistence Activities

An established condition for assessing subsistence recovery under EVOS TC objectives is determining whether "the cultural values provided by gathering, preparing, and sharing food" have been "reintegrated into community life." In 2014, survey respondents were asked whether or not they felt that young adults were learning enough hunting, fishing, and processing skills. For this question, to be consistent with analysis from previous years, valid responses included only those indicating a "yes" or "no" assessment, and did not include the responses "do not know." The answers to this question in Seldovia presented a divided response: in 2014 approximately one-half (52%) of Seldovia respondents felt that young adults were learning enough of these skills while the other one-half (48%) felt that they were not (Table 3-36).

Those who felt that young adults were not learning enough hunting, fishing, and processing skills were asked to provide reasons why they felt that was the case. A little more than one-half of respondents (51%) felt that the community way of life was changing and affecting the transmission of these subsistence skills, 32% of respondents cited technology and modernization, 24% pointed to a lack of teachers, and 17% believed it was due to a lack of interest (Table 3-37). Other reasons given included: subsistence uses impeded and economics, which were both cited by 2% of respondents. Approximately 12% of respondents attributed this to some other reason and 7% gave no response.

In 2014, the majority of respondents who believed that young adults were learning enough hunting, fishing, and processing skills felt that this was because of family members' teachings (58%), or through other community members' and friends' teachings (22%), as well as spirit camps and other Native programs (22%) (Table 3-38). Other respondents felt that young people were learning these skills through elders (7%), or through school programs (2%), and involvement in activities (2%). Approximately 9% of respondents attributed this to some other source while others gave no response (22%).

Elders' Influence

During the survey effort, Seldovia residents were asked whether or not they felt that the influence of elders had changed compared to the last 10 years. For this question, to be consistent with analysis from previous years, valid responses included only those indicating a "increased," "decreased," or "same" assessment. More than one-half (60%) of respondents felt that elder influence had decreased, 29% felt it had remained the same, and 11% felt it had increased (Table 3-39).

In 2014, the majority of respondents who felt that elders' influence had decreased believed this was due to a cultural shift (51%), and 49% attributed it to a demographic change (Table 3-40). Other reasons included: decreased activity by elders (7%), social or political changes (4%), economic reasons (2%), other reasons (11%), or non-specific reasons (2%).

Table 3-36.–Household assessments of whether young adults learn enough subsistence skills, Seldovia, 2014.

		Are young adults learning enough hunting, fishing, and processing skills?									
	Community	Missing[a]		Do not know[a]		Valid response[a, c]		Yes[b]		No[b]	
Community	households	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Kachemak Bay											
Seldovia	127	0.0	0.0%	12.0	9.5%	115.0	90.5%	60.2	52.3%	54.8	47.7%

Source ADF&G Division of Subsistence household surveys, 2015.

a. Computed as a percentage of estimated community households.

b. Computed as a percentage of valid responses.

c. Valid resonses include only households that responded "yes" or "no" to the question.

Table 3-37.–Reasons why young adults are not learning enough subsistence skills, Seldovia, 2014.

				Why young adults are not learning enough hunting, fishing, and processing skills?[b]							
	Valid	Not learning enough[a]		No reason given		Do not know		No interest		Lack of teachers	
Community	responses[c]	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Kachemak Bay											
Seldovia	115.0	54.8	47.7%	4.0	7.3%	0.0	0.0%	9.4	17.1%	13.4	24.4%

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Table 3-37.–Continued.

				Why young adults are not learning enough hunting, fishing, and processing skills?[b]							
	Valid	Not learning enough[a]		Change in community way of life		Too much else to do		No time		Subsistence uses impeded	
Community	responses[c]	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Kachemak Bay											
Seldovia	115.0	54.8	47.7%	28.1	51.2%	0.0	0.0%	0.0	0.0%	1.3	2.4%

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Table 3-37.–Continued.

				Why young adults are not learning enough hunting, fishing, and processing skills?[b]							
	Valid	Not learning enough[a]		Decline in/scarcity of subsistence resources		Economics		Technology and modernization		Other reason	
Community	responses[c]	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Kachemak Bay											
Seldovia	115.0	54.8	47.7%	0.0	0.0%	1.3	2.4%	17.4	31.7%	6.7	12.2%

Source ADF&G Division of Subsistence household surveys, 2015.

a. Computed as a percentage of valid responses.

b. Computed as a percentage of households that responded "no" to the question.

c. Valid resonses include only households that responded "yes" or "no" to the question: "Are young adults learning enough hunting, fishing, and processing skills?"

Table 3-38.–Ways that young adults are learning subsistence skills, Seldovia, 2014.

				How young adults are learning hunting, fishing, and processing skills?[b]									
	Valid	Yes, learning enough[a]		No reason given		Do not know		Family members		Elders		Involvement in activities	
Community	responses[c]	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Kachemak Bay													
Seldovia	115.0	60.2	52.3%	13.4	22.2%	0.0	0.0%	34.8	57.8%	4.0	6.7%	1.3	2.2%

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Table 3-38.–Continued.

				How young adults are learning hunting, fishing, and processing skills?[b]							
	Valid	Yes, learning enough[a]		Spirit camps and Native programs		School programs		members and friends		Other	
Community	responses[c]	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Kachemak Bay											
Seldovia	115.0	60.2	52.3%	13.4	22.2%	1.3	2.2%	13.4	22.2%	5.3	8.9%

Source ADF&G Division of Subsistence household surveys, 2015.

a. Computed as a percentage of valid responses.

b. Computed as a percentage of households that responded "yes" to the question.

c. Valid resonses include only households that responded "yes" or "no" to the question: "Are young adults learning enough hunting, fishing, and processing skills?"

Table 3-39.–Household assessments of change in elders' influence in the last 10 years, Seldovia, 2014.

		Change in elders' influence compared to 10 years ago (2004)									
	Community	Missing		Valid responses		Decreased		Same		Increased	
Community	households	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Kachemak Bay											
Seldovia	127	26.7	21.1%	100.3	78.9%	60.2	60.0%	29.4	29.3%	10.7	10.7%

Source ADF&G Division of Subsistence household surveys, 2015.
Note The "missing" and "valid response" categories are computed as percentages of estimated community households. All other categories are calculated as percentages of valid responses.

Table 3-40.–Reasons for decreased influence of elders in the last 10 years, Seldovia, 2014.

		Reasons for decreased influence of elders compared to 10 years ago (2004)									
	Influence	Missing		Demographic		Cultural		Elders less active		Elders more active	
Community	decreased	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Kachemak Bay											
Seldovia	60.2	4.0	6.7%	29.4	48.9%	30.7	51.1%	4.0	6.7%	0.0	0.0%

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Table 3-40.–Continued.

		Reasons for decreased influence of elders compared to 10 years ago (2004)							
	Influence	Social/political		Economic		Non-specific		Other	
Community	decreased	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Kachemak Bay									
Seldovia	60.2	2.7	4.4%	1.3	2.2%	1.3	2.2%	6.7	11.1%

Source ADF&G Division of Subsistence household surveys, 2015.
Note Only households responding that the influence of elders has decreased are included.

Table 3-41.–Reasons for increased influence of elders in the last 10 years, Seldovia, 2014.

		Reasons for increased influence of elders compared to 10 years ago (2004)									
	Influence	Missing		Demographic		Cultural		Elders less active		Elders more active	
Community	increased	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Kachemak Bay											
Seldovia	10.7	1.3	12.5%	1.3	12.5%	1.3	12.5%	0.0	0.0%	2.7	25.0%

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Table 3-41.–Continued.

		Reasons for increased influence of elders compared to 10 years ago (2004)							
	Influence	Social/political		Economic		Non-specific		Other	
Community	increased	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Kachemak Bay									
Seldovia	10.7	6.7	62.5%	0.0	0.0%	0.0	0.0%	0.0	0.0%

Source ADF&G Division of Subsistence household surveys, 2015.

Note Only households responding that the influence of elders has increased are included.

In 2014, the majority of respondents who believed that the influence of elders had increased compared to the past 10 years felt that this was due to social or political change (63%) (Table 3-41). Other reasons included: increased activity by elders (25%), a cultural change (13%), or demographic reasons (13%).

Status of the Traditional Way of Life

The third aspect of the social and economic conditions assessment was an analysis of the impact the EVOS had on the traditional way of life in Seldovia. When asked, more than one-half (63%) of respondents reported that the traditional way of life had been affected by the spill, 22% of respondents felt it had not been affected, and 15% did not know (Table 3-42).

Of those 2014 survey respondents who reported that the traditional way of life had been affected by the oil spill, 53% reported it had not recovered, 36% reported that it had recovered, and 10% did not know (Table 3-43). Those who believed the traditional way of life had not recovered were asked to provide some suggestions as to what could be done to assist the recovery process (Table 3-44). Suggestions included a response to the social disruptions caused by the spill (29%), more education and spirit camps (19%), increasing resource populations (16%), and allowing more time to pass (13%). Other suggestions included: stopping cash distributions and dividend payments (6%), and removing the remaining oil (7%). Some (10%) felt that nothing could be done and the 29% provided alternative suggestions.

Local Comments and Concerns

Following is a summary of local observations of wild resource populations and trends that were recorded during the surveys in Seldovia. Some households did not offer any additional information during the survey interviews, so not all households are represented in the summary. In addition, respondents expressed their concerns about wild resources during the community review meeting of preliminary data. These concerns have been included in the summary.

Fish

During the survey effort several respondents mentioned that they were generally concerned about the mercury levels in fish. Community members also commented on the decreasing size of Pacific halibut in Kachemak Bay; many reported noticing a reduction in the size of fish throughout the past 15–20 years. In addition, several residents stated that within the past 5 years they have become increasingly concerned about the health of the Pacific halibut population. Pacific cod is another fish species survey respondents expressed concern about. The general consensus among respondents is that in order to harvest Pacific cod, one must travel farther away from the community than in the past. One Seldovia resident said he preferred to buy Pacific cod at the store now as a result of the increasing distance it takes to travel by boat to find Pacific cod, combined with the cost of fuel for this type of fishing endeavor. During the harvest surveys, Seldovia community members commonly stated that there are now fewer Pacific herring in the area of the community than in the past.

Large Land Mammals

Several households in Seldovia mentioned that the local black bear population was in decline. Many expressed that they thought that the hunting regulations for black bears, which currently include a season open year-round with a 3 bear limit, needed to be amended in order to protect the bear population. In addition, during the community review meeting, attendees explained that the local moose population has also decreased over the last 20 years. Thinking forward, this same group of Seldovia residents expressed concerned that there may be proposals put forth to the Alaska Board of Game to increase mountain goat harvest allocations in the area, and the residents believe that the mountain goat population is too small to allow harvest allocations to be increased.

Table 3-42.–Household assessments of the oil spill's effect on the traditional way of life, Seldovia, 2014.

		Was the traditional way of life affected by the *Exxon Valdez* oil spill?									
	Community	Missing[a]		Valid responses[a, c]		Do not know[b]		Not affected[b]		Affected[b]	
Community	households	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Kachemak Bay											
Seldovia	127	0.0	0.0%	127.0	100.0%	18.7	14.7%	28.1	22.1%	80.2	63.2%

Source ADF&G Division of Subsistence household surveys, 2015.

a. Computed as a percentage of community households.

b. Computed as a percentage of valid responses.

c. Valid responses include only households that responded "yes," "no," or "do not know" to the question.

Table 3-43.–Household assessments of the recovery of the traditional way of life since the oil spill, Seldovia, 2014.

		Has the traditional way of life recovered from the *Exxon Valdez* oil spill?									
	Yes, way of	Missing[a]		Valid responses[a, c]		Do not know[b]		Not recovered[b]		Recovered[b]	
Community	life affected	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Kachemak Bay											
Seldovia	80.2	2.7	3.3%	77.5	96.7%	8.0	10.3%	41.4	53.4%	28.1	36.2%

Source ADF&G Division of Subsistence household surveys, 2015.

a. Computed as a percentage of households that responded "yes" to the question: "Was the traditional way of life affected by the *Exxon Valdez* oil spill?"

b. Computed as a percentage of valid responses.

c. Valid responses include only households that responded "yes," "no," or "do not know" to the question.

Table 3-44.–Household assessments for ways to help the recovery of the traditional way of life, Seldovia, 2014.

				What should be done to help in the recovery of the traditional way of life?[b]									
	Yes, way of life affected	No, way of life not recovered[a]		Missing		Do not know		Increase resource populations		Respond to social disruptions		Create new jobs and new sources of income	
Community		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Kachemak Bay													
Seldovia	80.2	41.4	53.4%	5.3	12.9%	0.0	0.0%	6.7	16.1%	12.0	29.0%	0.0	0.0%

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Table 3-44.–Continued.

				What should be done to help in the recovery of the traditional way of life?[b]									
	Yes, way of life affected	No, way of life not recovered[a]		Get rid of the oil		Continue studies on effects		Take legal and political action		Stop cash distributions and dividend payments		More education and spirit camps	
Community		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Kachemak Bay													
Seldovia	80.2	41.4	53.4%	2.7	6.5%	0.0	0.0%	4.0	9.7%	2.7	6.5%	8.0	19.4%

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Table 3-44.–Continued.

				What should be done to help in the recovery of the traditional way of life?[b]							
	Yes, way of life affected	No, way of life not recovered[a]		Nothing can be done		Time		Need to involve elders more		Other suggestion	
Community		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Kachemak Bay											
Seldovia	80.2	41.4	53.4%	4.0	9.7%	5.3	12.9%	0.0	0.0%	12.0	29.0%

Source ADF&G Division of Subsistence household surveys, 2015.

a. Computed as a percentage of households that responded "yes" to the question: "Was the traditional way of life affected by the *Exxon Valdez* oil spill?"

b. Computed as a percentage of households that responded "no" to the question: "Has the traditional way of life recovered from the *Exxon Valdez* oil spill?"

Birds and Eggs

Survey respondents indicated that spruce grouse have become rarer in the area over the past few decades. It was noted that people do not see them as frequently as they used to, and that they are much harder to harvest than they were in the past.

Marine Invertebrates

Seldovia residents were concerned about the populations of butter and steamer clams around Seldovia. Many commented on the fact that there seem to be fewer clams today than in the early 2000s. Some residents thought that clams were being overharvested by people coming from outside the community. Residents expressed concerns that the ADF&G clam harvesting regulations were too liberal. Some residents believe the rebounding population of sea otters is partly to blame for the declined abundance of clams. Several community residents expressed concern about the introduction of farmed oysters in Jakolof Bay and the potential effects this may have on native marine invertebrate species in the area. Lastly, some survey respondents commented that Tanner crabs are harder to get now; people speculate that warming water temperatures may be to blame for this phenomenon.

Vegetation

Berries were mentioned by many households as an important subsistence food item for Seldovia households, and 2014 was a particularly good year for all berries.

Exxon Valdez Oil Spill Effects

Seldovia residents were not overly concerned with the effects from the EVOS. It was explained that the location of Seldovia Bay protected many of their localized resources from the injuries associated with the oil spill. However, as was pointed out during the community review meeting, the oil spill did affect the greater area and resource harvesting patterns have changed over time as a result. In addition to the EVOS, community members explained that major changes occurred as a result from the 1964 earthquake. The earthquake altered the flow rates in Seldovia Bay, which affected marine invertebrate habitat and resulted in a decreased number of local harvesting areas for clams and crabs.

ACKNOWLEDGMENTS

We would like to thank the residents of Seldovia and the Seldovia Village Tribe for their participation and support of this project. We would also like to thank Trinket Gallien and Michael Opheim for helping researchers to organize and implement this project. We are also very appreciative of our local research assistants Harmony Barrus, Megan Frey, Cindy Mom, Stephen Payton, and Alisha Silvers—their knowledge of the community of Seldovia was necessary in order to complete the survey effort. Lastly, we would like to thank our key respondents for providing significant context to assessing wildlife resource changes over time.

4. NANWALEK

James M. Van Lanen

Community Background

At 59˚ latitude, the Nanwalek census designated place (CDP) (previously known as English Bay) is located near the southwesternmost tip of Kenai Peninsula on the outer reaches of Kachemak Bay where Gulf of Alaska and Cook Inlet waters meet, approximately 35 miles southwest of Homer and 10 miles south of Seldovia. The landscape consists of rugged shoreline with fjords, bays, coves, small islands, lagoons, tidal flats, many small rivers and streams, and a few freshwater lakes. Nanwalek is surrounded on one side by the sea and on the other side by steep mountainous country. Located to the west on a clear day are views of the volcanoes of the Alaska Peninsula: Redoubt, Iliamna, and Augustine. The plant community is coastal rainforest consisting of Sitka spruce, cottonwood, and coastal hemlock. The understory is dominated by alder, willow, highbush cranberries, mountain ash, salmonberries, blueberries, devil's club, ferns, and mosses. An alpine tundra environ exists at elevation. Moose, black bears, mountains goats, salmon, trouts, wolves, coyotes, foxes, weasels, mink, porcupines, spruce grouse, and willow ptarmigan are land and freshwater fauna common to the area. Common marine fauna and tidewater plants include seaweeds, kelps, harbor seals, Steller sea lions, sea otters, waterfowl (mostly ducks and gulls), finfish, and shellfish—crabs, clams, snails, mollusks, octopuses, and chitons.

Today, Nanwalek is primarily a Sugpiaq Alaska Native community (Plate 4-1). The contemporary site of Nanwalek, "the place with a lagoon," was used seasonally by the Unegkuhmiut and their ancestors for at least hundreds of years, with more settled villages existing in Nuka, Yalik, and Aialik bays, lands now inside of Kenai Fjords National Park (Stanek 2000). In the late 1700s when the Unegkuhmiut came into contact with Russian fur traders, they were coerced into sea otter hunting for the fur trade and their system of social organization and subsistence economy was disrupted (Csoba DeHass 2007; Fall 2006; Salomon et al. 2011; Stanek 2000). Due to the highly-competitive nature of the fur trade, the Sugpiaq bands were broken up, and territorial conflicts arose among them (Csoba DeHass 2007; Fall 2006; Stanek 2000). The Sugpiat suffered from exploitation of their labor, disease epidemics, and a loss of control over their lands (Salomon et al. 2011). In the late 1700s and the early 1800s, Russian traders established trading posts in the region and Sugpiaq settlement patterns shifted from disbursed settlements to being focused around the new trading posts. As the supply of fur diminished, and the Suqpiat became increasingly dependent on cash and trade goods, many families settled permanently at Nanwalek.

In 1786, to claim the territory of lower Cook Inlet, Gregor Shelikov, director of the Shelikov-Golikov fur trading company, established Fort Alexandrovsk at Nanwalek, which became the second permanent Russian settlement in Alaska (Csoba DeHass 2007, 2012; Fall 2006; Stanek 2000). During the 1880s, Russian missionaries relocated many of the Sugpiaq peoples from their traditional villages in the Kenai Fjords to Alexandrovsk (later called English Bay), and also to Port Graham. In 1800, approximately 100 Sugpiat lived in Nanwalek, which was the last fur post on the Kenai Peninsula (Salomon et al. 2011). Russian traders intermarried with the Suqpiat, and the Russian Orthodox Church became the dominant spiritual practice of the region (Csoba DeHass 2007; Fall 2006; Stanek 2000).

Some Sugpiaq families continued to live into the late 1880s in small settlements along the outer coast of the Kenai Peninsula at places such as Aialik, Yalik, Windy, Koyuktolik, and Port Chatham bays (Stanek 2000). With the establishment of Russian Orthodox chapels and schools in specific locations, the remaining Sugpiaq families moved permanently to communities such as Tatitlek and Chenega Bay in Prince William Sound, and Port Graham and Nanwalek on the lower Kenai Peninsula.

The Russian period in Cook Inlet ended in 1867 when Alaska was acquired as a territory by the United States. Today, most Nanwalek residents are of some Russian descent and many Russian surnames and first names

Photography by James M. Van Lanen, ADF&G

Plate 4-1.–The Nanwalek Russian Orthodox Church in 2015, located at the same site as the original St. Sergius and Herman Church built in Nanwalek in the 1890s.

exist in the community (Csoba DeHass 2007). Moreover, ever since being exposed to Russian Orthodox missionary activities, the Sugpiaq people in Nanwalek have been devoted to the Russian Orthodox faith. Because they "are aware and generally proud of their Russian ancestry," today, Nanwalek identifies as a single-denominational Sugpiaq Russian Orthodox community (Csoba DeHass 2007, 2012:12).[1]

Beginning in the late 1880s, with the end of the Russian period and the collapse of the fur trade, commercial fishing for salmon, cod, crab, and shrimp became the dominant cash economy in the region.[2] In 1910, when a salmon cannery was established in Port Graham, many Sugpiaq families who had been residing in Nanwalek moved there (Salomon et al. 2011; Stanek 2000). Commercial fishing and cannery work were the primary wage sources from the early 1900s through the late 1980s (Stanek 1985). During this period, Nanwalek operated its own cannery for a time, but by the 1960s cannery operations were exclusive to Port Graham (Salomon et al. 2011).

Salmon prices declined following the 1989 *Exxon Valdez* oil spill (EVOS) and earning a profit in the salmon fishery became more difficult for Nanwalek residents. Operating costs, including fuel prices, permit fees, and equipment expenses, increased with no corresponding increase in fish prices paid to fishermen, and most of Nanwalek's commercial fishermen sold their permits, boats, and equipment. Then, low returns of salmon to the English Bay River system forced the closure of local waters to commercial fishing for a 10-year period. Only 3 commercial setnet permits remained in ownership by Nanwalek residents. In the late 1990s, an English Bay River fisheries enhancement project was established, leading to the restoration of sockeye salmon runs and the reopening of commercial fishing. However by this time Nanwalek fishermen had mostly divested themselves of their commercial interests (Fall 2006:84). Additionally, the Port Graham cannery, a continuous source of jobs for Nanwalek residents since the early 1900s, failed to make a profit and operated marginally throughout the early 1990s until it burned in 1996. A new, $1.5 million state-of-the-art cannery was built in 1998, but could not sustain a profit margin and closed after operating for 2

1. Medeia Csoba DeHass, "Sugpiaq Russian Orthodoxy—Conceptual Analogy in Religious Syncretism in Nanwalek, Alaska," (PhD diss., University of Alaska Fairbanks, 2009).
2. In 1911, the international Fur Seal Treaty ended commercial large-scale marine mammal fur hunting permanently in the region (*Anon* 1911).

Photography by James M. Van Lanen, ADF&G

Plate 4-2.–The Nanwalek IRA Council office in 2015.

years. By the 2000s, the fishing economy, including commercial fishing and cannery work, had mostly disappeared from Nanwalek.

The Sugpiaq peoples and their forebearers have relied on the wild resources of the Kachemak Bay region for several thousand years, and Nanwalek residents have always relied heavily on the subsistence uses of wild resources as a basis of their non-wage economy (Salomon et al. 2011). Marine resources are particularly abundant in the region and thus the Sugpiaq people have always relied heavily on wild marine resources (Stanek 2000). The occurrence of the EVOS in 1989 heavily affected Prince William Sound waters and, though little oil made it to Nanwalek-area waterways, the ecological effects spread all the way into Cook Inlet, creating long-lasting effects not only to local commercial salmon fisheries, but to coastal food webs generally (Salomon et al. 2011; Stanek 2000). During the last decade-and-a-half, recovery for some of these populations has occurred and wild resources continue to play a primary role in the everyday lives of Nanwalek residents as a source of sustenance, cultural identity, and economic survival.

Nanwalek is an unincorporated community located within Alaska's Kenai Peninsula Borough and is governed by its own Indian Reorganization Act (IRA) council, which receives substantial funding through the regional non-profit Chugachmiut. As a result of the Alaska Native Claims Settlement Act in 1971, Nanwalek residents became members of Chugach Alaska Corporation and English Bay Corporation, through which residents normally receive an annual dividend. During the 1990s, the Nanwalek Village Council obtained grants for housing and infrastructure development, which provided much-needed employment opportunities. A large number of new homes, a day-care facility, low-income housing, and a health clinic were constructed, and annual operating and maintenance activities for these facilities provided constant sources of income, but not enough to support a growing population. The village government provided most of the available full-time employment for Nanwalek residents and part-time work occasionally became available in housing maintenance, road maintenance, utility services, and at the fish weir established by the English Bay River fisheries enhancement project (Stanek 2000).

In 2014, Nanwalek maintained an IRA council office, a community center, a library, a health clinic, and a school (Plate 4-2). A resident family operated a small store. No road access exists to the community and transportation is exclusively by small aircraft and resident-owned skiffs and boats. Two local air carriers offer daily air service between Nanwalek and Homer.

Table 4-1.–Population estimates, Nanwalek, 2010 and 2014.

	U.S. Census (2010)	5-year American Community Survey (2010–2014)		This study (2014)	
		Estimate	Range[a]	Estimate	Range[b]
Total population					
Households	55	51	34 – 68	58.0	
Population	254	212	150 – 274	231.0	225 – 237
Alaska Native					
Population	227	197	140 – 254	212.3	207 – 218
Percentage	89.4%	92.9%		91.9%	

Sources U.S. Census Bureau (2011) for 2010 estimate; U.S. Census Bureau for American Community Survey (ACS) 2014 estimate (5-year average); and ADF&G Division of Subsistence household surveys, 2015, for 2014 estimate.

Note Division of Subsistence household survey elegiblity requirements differ from those used by (ACS).

a. ACS data range is the reported margin of error.

b. No range of households is estimated for division surveys.

Population Estimates and Demographic Information

According to the federal census, Nanwalek had 254 residents in 2010 (Table 4-1). The American Community Survey (ACS) estimated an annual average of 212 residents during the 2010–2014 time period. The household survey conducted for this study for 2014 estimated the population was 231 residents, of which 92% were Alaska Native (Table 4-1; Figure 4-1).

Prior to the study, Division of Subsistence researchers consulted with community members to obtain an estimated number of year-round households within the Nanwalek CDP. Community members estimated that 58 year-round households lived within the boundaries of the Nanwalek CDP; the survey confirmed this (Table 1-6). Of these, 56 households (97%) were interviewed (Table 4-2).

Available demographic information shows a 156-person population increase in the Nanwalek CDP in 2014 since 1950 (Figure 4-2). Nanwalek's population has grown steadily since 1970. There were years with moderate growth but during the periods 1970 to 1980 and 1990 to 2003 growth increased due to economic phases, such as the operating canneries and a trading post; also, Nanwalek's, population grew in the mid-1900s as a result of government-sponsored housing construction (Fall 2006; Stanek 1985). Community members during the 2014 study attributed continuing population growth primarily to an increase in childbirths and younger community members retaining residency in the community rather than relocating.

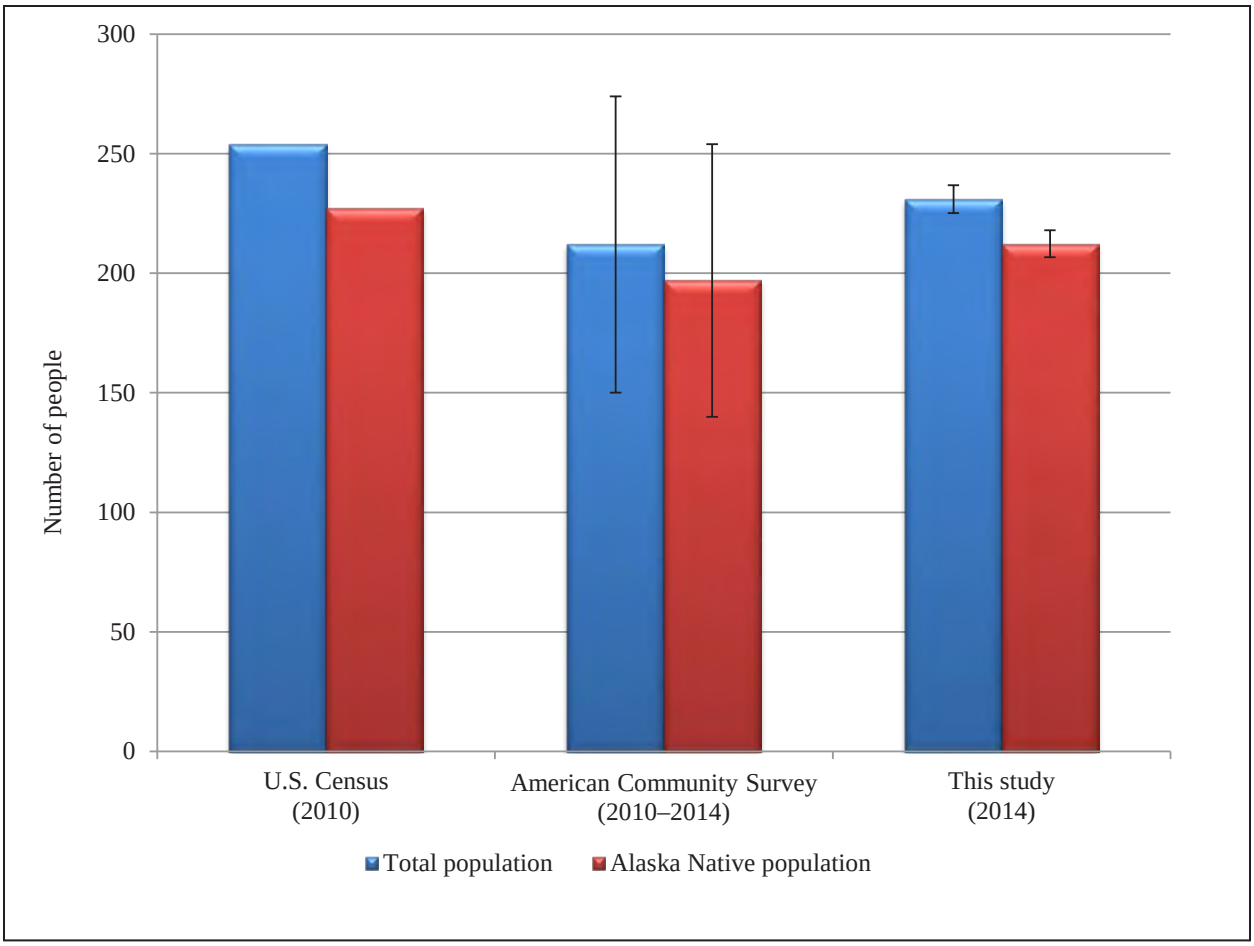


Figure 4-1.–Alaska Native and overall population estimates, Nanwalek, 2010 and 2014.

Not only has the Nanwalek population continued to grow, the majority (at least 57%) of residents are younger than the state's median age.[3] The largest age cohort for males was the 10–14 age range, and for females it was the 5–9 age range (Table 4-3; Figure 4-3). Only females were represented in the 70–74 and 85–89 age ranges (Figure 4-3). There were no male residents older than 65–69 years of age.

The average household size in Nanwalek for 2014 was 4 individuals (Table 4-2). The mean number of years of residency in Nanwalek was 20 years, with the maximum length of residence being 85 years. Of the Nanwalek household heads interviewed, 83% were born in Alaska, with 69% considering Nanwalek their place of birth (Table 4-4). The remaining (16%) household heads were born in other U.S. states. For the population overall, 69% of residents considered Nanwalek their birthplace, which is slightly more than for household heads (Table 4-5).

3. The 2010–2014 American Community Survey estimates that the median age for Alaska is 33. Source: U.S. Census Bureau, American Community Survey, Washington, D.C. n.d. "American FactFinder, Community Facts: Alaska, ACS Demographic and Housing Estimates, 2010–2014 ACS Community Survey 5-Year Estimates," http://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml (accessed March 2016).

Table 4-2.–Sample and demographic characteristics, Nanwalek, 2014.

Characteristics	Community Nanwalek
Sampled households	56
Eligible households	58
Percentage sampled	96.6%
Sampled population	223
Estimated community population	231.0
Household size	
Mean	4.0
Minimum	1
Maximum	8
Age	
Mean	26.2
Minimum[a]	0
Maximum	85
Median	23
Length of residency	
Total population	
Mean	19.5
Minimum[a]	0
Maximum	85
Heads of household	
Mean	31.1
Minimum[a]	1
Maximum	85
Alaska Native	
Estimated households[b]	
Number	51.8
Percentage	89.3%
Estimated population	
Number	212.3
Percentage	91.9%

Source ADF&G Division of Subsistence household surveys, 2015.

a. A minimum age of 0 (zero) is used for infants who are less than 1 year of age.

b. The estimated number of households in which at least 1 head of household is Alaska Native.

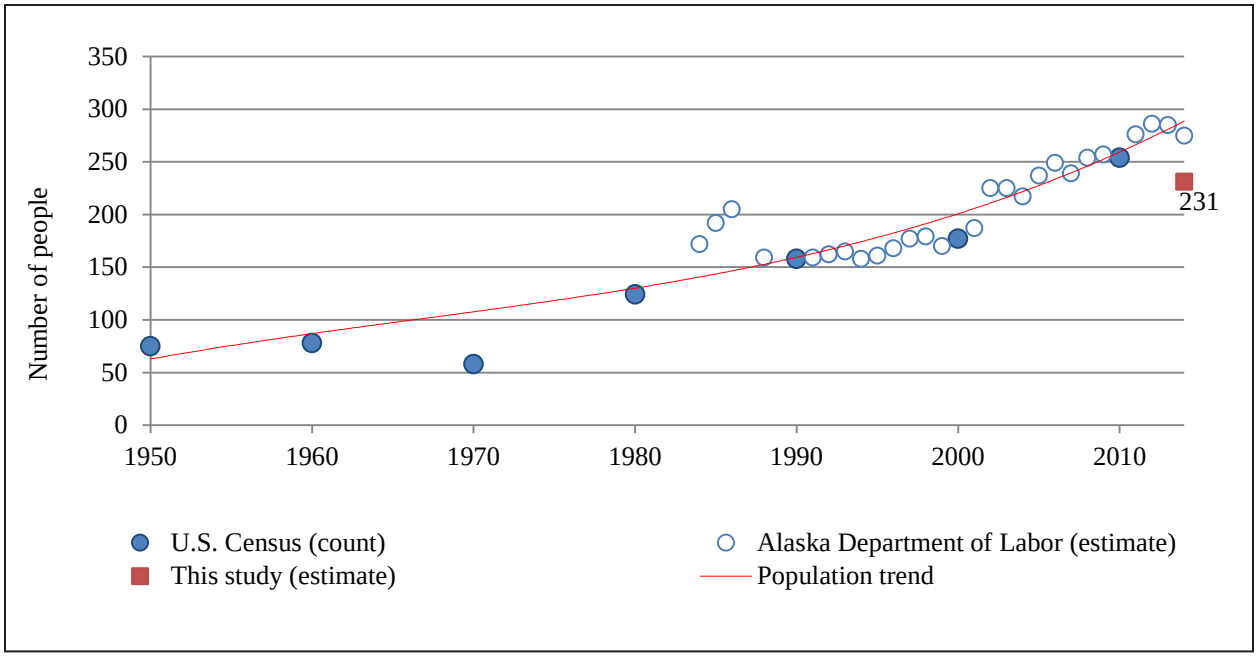


Figure 4-2.–Historical population estimates, Nanwalek, 1950–2014.

Table 4-3.–Population profile, Nanwalek, 2014.

	Male			Female			Total		
Age	Number	Percentage	Cumulative percentage	Number	Percentage	Cumulative percentage	Number	Percentage	Cumulative percentage
0–4	11.4	9.9%	9.9%	11.4	9.8%	9.8%	22.8	9.9%	9.9%
5–9	15.5	13.5%	23.4%	19.7	17.0%	26.8%	35.2	15.2%	25.1%
10–14	16.6	14.4%	37.8%	15.5	13.4%	40.2%	32.1	13.9%	39.0%
15–19	9.3	8.1%	45.9%	9.3	8.0%	48.2%	18.6	8.1%	47.1%
20–24	5.2	4.5%	50.5%	3.1	2.7%	50.9%	8.3	3.6%	50.7%
25–29	6.2	5.4%	55.9%	8.3	7.1%	58.0%	14.5	6.3%	57.0%
30–34	8.3	7.2%	63.1%	7.3	6.3%	64.3%	15.5	6.7%	63.7%
35–39	11.4	9.9%	73.0%	5.2	4.5%	68.8%	16.6	7.2%	70.9%
40–44	5.2	4.5%	77.5%	11.4	9.8%	78.6%	16.6	7.2%	78.0%
45–49	8.3	7.2%	84.7%	5.2	4.5%	83.0%	13.5	5.8%	83.9%
50–54	7.3	6.3%	91.0%	3.1	2.7%	85.7%	10.4	4.5%	88.3%
55–59	4.1	3.6%	94.6%	6.2	5.4%	91.1%	10.4	4.5%	92.8%
60–64	2.1	1.8%	96.4%	3.1	2.7%	93.8%	5.2	2.2%	95.1%
65–69	3.1	2.7%	99.1%	2.1	1.8%	95.5%	5.2	2.2%	97.3%
70–74	0.0	0.0%	99.1%	2.1	1.8%	97.3%	2.1	0.9%	98.2%
75–79	0.0	0.0%	99.1%	0.0	0.0%	97.3%	0.0	0.0%	98.2%
80–84	0.0	0.0%	99.1%	0.0	0.0%	97.3%	0.0	0.0%	98.2%
85–89	0.0	0.0%	99.1%	1.0	0.9%	98.2%	1.0	0.4%	98.7%
90–94	0.0	0.0%	99.1%	0.0	0.0%	98.2%	0.0	0.0%	98.7%
95–99	0.0	0.0%	99.1%	0.0	0.0%	98.2%	0.0	0.0%	98.7%
100–104	0.0	0.0%	99.1%	0.0	0.0%	98.2%	0.0	0.0%	98.7%
Missing	1.0	0.9%	100.0%	2.1	1.8%	100.0%	3.1	1.3%	100.0%
Total	**115.0**	**100.0%**	**100.0%**	**116.0**	**100.0%**	**100.0%**	**231.0**	**100.0%**	**100.0%**

Source ADF&G Division of Subsistence household surveys, 2015.

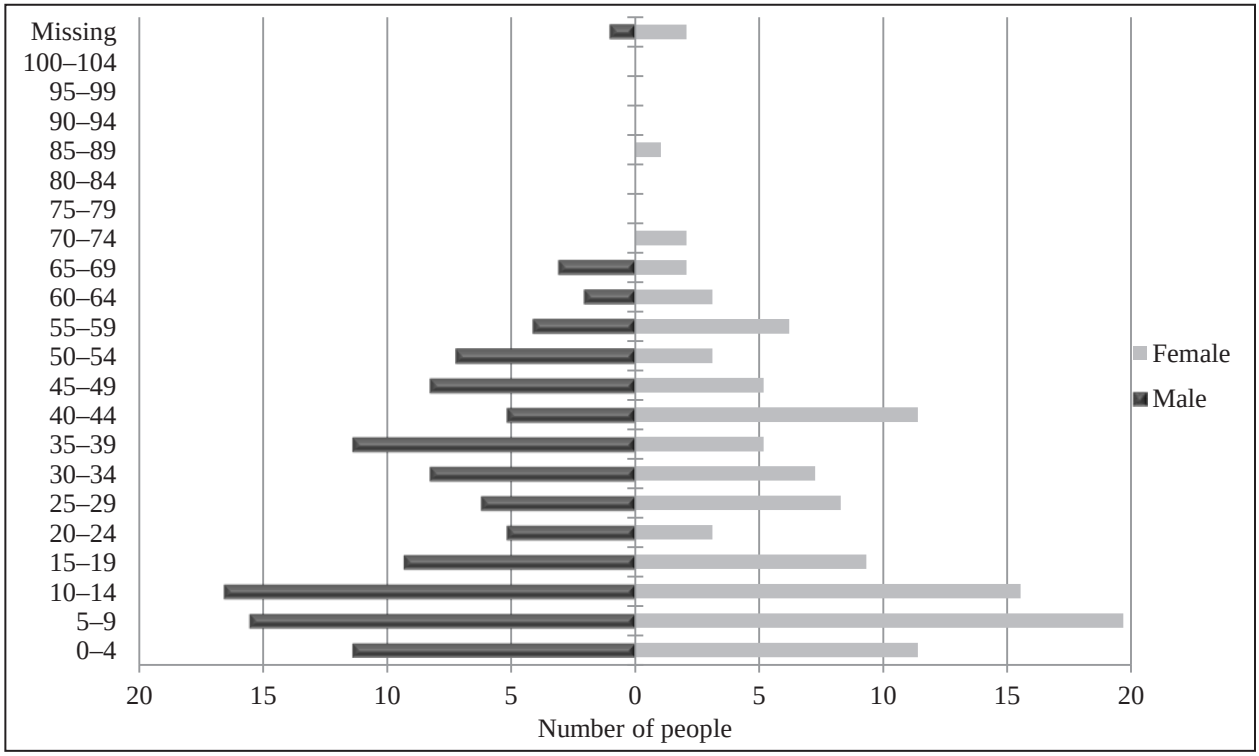


Figure 4-3.–Population profile, Nanwalek, 2014.

Table 4-4.–Birthplaces of household heads, Nanwalek, 2014.

Birthplace	Percentage
Akiachak	1.0%
Anchorage	6.1%
Dillingham	1.0%
Emmonak	1.0%
Nanwalek	59.6%
Homer	1.0%
Kasilof	1.0%
Kodiak City	1.0%
Mountain Village	1.0%
Old Harbor	2.0%
Port Graham	5.1%
Port Lions	1.0%
Seldovia	1.0%
Other Alaska	1.0%
Missing	1.0%
Other U.S.	16.2%

Source ADF&G Division of Subsistence household surveys, 2015.
Note "Birthplace" means the place of residence of the parents of the individual when the individual was born.

Table 4-5.–Birthplaces of population, Nanwalek, 2014.

Birthplace	Percentage
Akiachak	1.8%
Anchorage	5.8%
Bethel	0.9%
Dillingham	0.4%
Emmonak	0.4%
Nanwalek	69.1%
Homer	3.6%
Kasilof	0.4%
Kenai	0.9%
Kodiak City	0.4%
Mountain Village	0.4%
Old Harbor	0.9%
Port Graham	3.6%
Port Lions	0.4%
Seldovia	0.4%
Other Alaska	0.4%
Missing	1.8%
Other U.S.	7.6%
Foreign	0.4%

Source ADF&G Division of Subsistence household surveys, 2015.
Note "Birthplace" means the place of residence of the parents of the individual when the individual was born.

Cash Employment and Monetary Income

Table 4-6 is a summary of the estimated earned income as well as other sources of income for residents of Nanwalek in 2014. This table shows that in 2014 earned income accounted for an average of $16,027 per household, or 59% of the total community income, compared to other income sources that accounted for an average of $11,051 per household, or 41% of the total community income. Nanwalek's 2014 per capita income was $6,800, which was significantly lower than all of the other 3 study communities (Table 1-9).

Nanwalek's estimated median household income was $14,408 (Figure 4-4). In comparison, the ACS estimated Nanwalek's median income to average $32,750 for the years 2010–2014.[4] Additionally, ACS results estimated a median income of $71,829 from 2010–2014 for the state of Alaska as a whole, which is significantly more than Nanwalek's 2014 median income of $14,408 estimated during this study.

The largest source of income in Nanwalek in 2014 was income from jobs for the local government (including tribal) (Figure 4-5). The second largest source of income—contributing one-half as much as local government jobs—was Alaska Permanent Fund dividends (PFDs), which accounted for 21% of the total community income in 2014. For other income, trailing PFDs by a considerable amount, food stamps and Native corporation dividends accounted for 7% and 6%, of the total community income in 2014 (Table 4-6). The remaining sources of other income each contributed less than 2% to the total community income.

In 2014, most (47%) of the jobs in Nanwalek were in the local government sector, which also accounted for 74% of earned income (Table 4-7). Retail trade provided 6% of the jobs. Federal government; state government; agriculture, forestry, and fishing; and mining each provided 4% of the jobs. The construction industry provided 2% of the jobs. Of the jobs held by Nanwalek residents employed in 2014, 67% of jobs were full time and 16% were part time (Table 4-8).

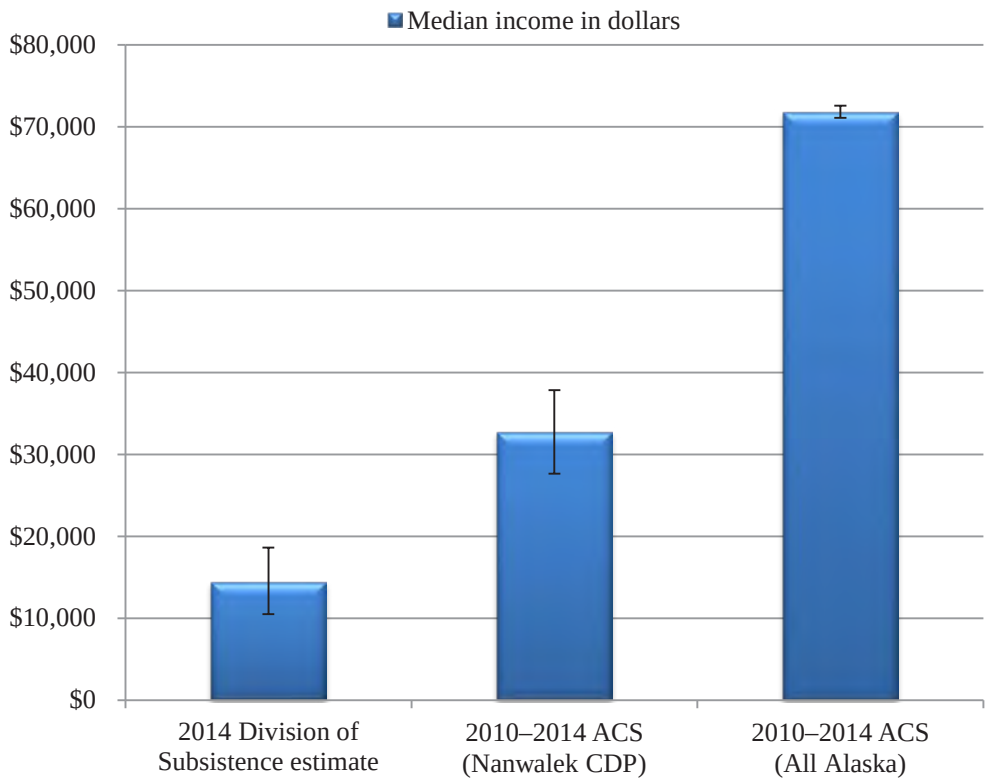
In 2014, an estimated 45% of the adults of working age (16 and older) at Nanwalek were employed at some point during the study year (Table 4-9). Of these employed adults, 47% were employed year-round. On average in the study year, 80% of households contained at least 1 adult who was employed. The mean number of jobs per employed household was 1.5.

4. The difference between the median household income based on the Division of Subsistence survey and that based on ACS findings may be the result of relatively low response rates for the income questions in the division survey. Nevertheless, the results from both studies documented a very low median household income in Nanwalek compared to the ACS estimate for the state of Alaska as a whole.

Table 4-6.–Estimated earned and other income, Nanwalek, 2014.

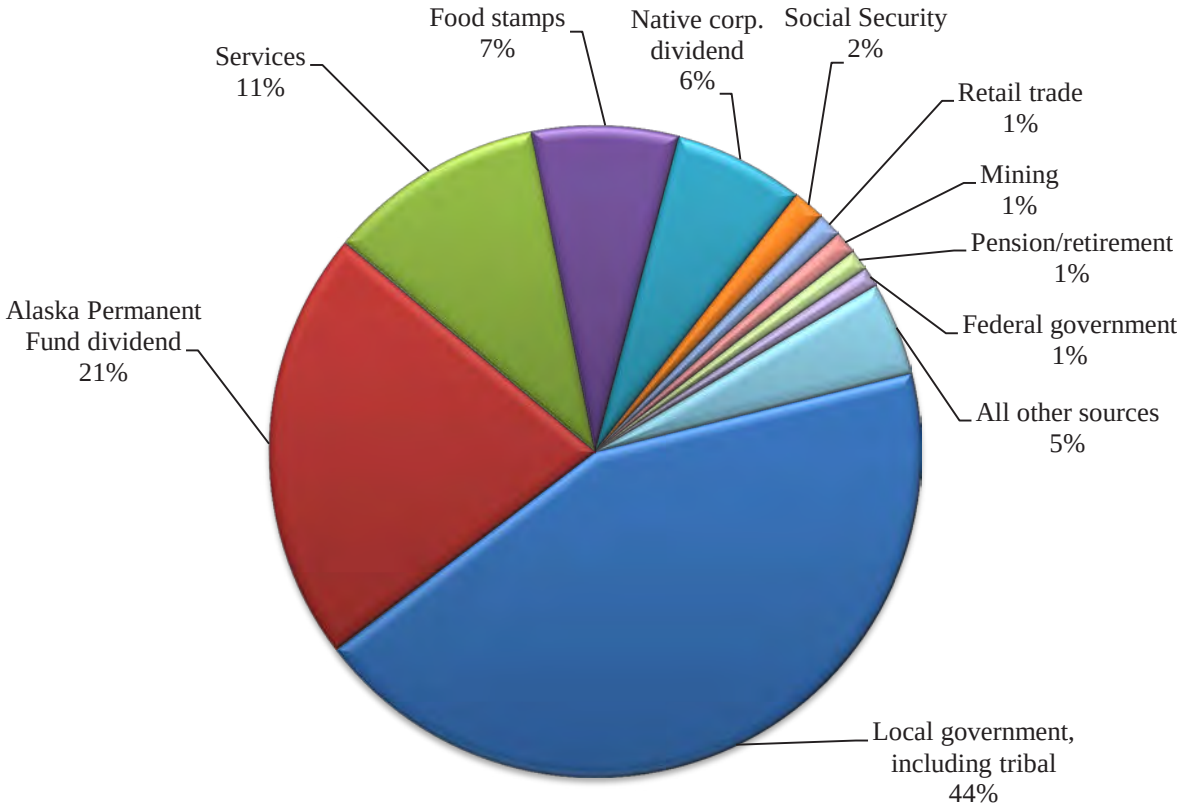
Income source	Number of employed adults	Number of households	Total for community	-/+ 95% CI	Mean per household	Percentage of total community income
Earned income						
Local government, including tribal	32.5	29.2	$683,342	$278,721 – $1,219,861	$11,782	43.5%
Services	19.8	20.6	$169,555	$63,358 – $349,983	$2,923	10.8%
Retail trade	4.2	5.2	$18,543	$1,447 – $43,871	$320	1.2%
Mining	2.8	3.4	$18,006	$5,949 – $41,138	$310	1.1%
Federal government	2.8	3.4	$15,392	$797 – $35,788	$265	1.0%
State government	2.8	3.4	$13,235	$1,769 – $30,497	$228	0.8%
Construction	1.4	1.7	$7,272	$6,672 – $7,676	$125	0.5%
Agriculture, forestry, and fishing	2.8	3.4	$4,202	$1,073 – $10,915	$72	0.3%
Earned income subtotal	**60.8**	**46.4**	**$929,548**	**$524,249 – $1,493,952**	**$16,027**	**59.2%**
Other income						
Alaska Permanent Fund dividend		46.6	$337,026	$277,083 – $400,200	$5,811	21.5%
Food stamps		13.5	$113,856	$63,282 – $179,766	$1,963	7.2%
Native corp. dividend		29.1	$101,384	$53,847 – $151,491	$1,748	6.5%
Social Security		3.1	$25,064	$0 – $67,321	$432	1.6%
Pension/retirement		1.0	$16,157	$0 – $32,314	$279	1.0%
Unemployment		5.2	$12,638	$208 – $34,954	$218	0.8%
Disability		1.0	$11,683	$0 – $23,366	$201	0.7%
Adult public assistance (OAA, APD)		1.0	$11,186	$0 – $22,371	$193	0.7%
Meeting honoraria		1.0	$7,250	$0 – $14,500	$125	0.5%
Child support		2.1	$1,987	$0 – $5,960	$34	0.1%
Heating assistance		1.0	$1,554	$0 – $3,107	$27	0.1%
Other		1.0	$1,191	$0 – $2,382	$21	0.1%
TANF (Temporary cash assistance for needy families)		0.0	$0	$0 – $0	$0	0.0%
Supplemental Security income		0.0	$0	$0 – $0	$0	0.0%
Longevity bonus		0.0	$0	$0 – $0	$0	0.0%
Workers' compemsation/insurance		0.0	$0	$0 – $0	$0	0.0%
Veterans assistance		0.0	$0	$0 – $0	$0	0.0%
Foster care		0.0	$0	$0 – $0	$0	0.0%
CITGO fuel voucher		0.0	$0	$0 – $0	$0	0.0%
Other income subtotal		**46.6**	**$640,975**	**$500,134 – $797,828**	**$11,051**	**40.8%**
Community income total			**$1,570,522**	**$1,122,300 – $2,127,251**	**$27,078**	**100.0%**

Source ADF&G Division of Subsistence household surveys, 2015.



Note For 2014, Division of Subsistence estimate does not include categories of income excluded by the 2010–2014 ACS median estimate, including food stamps, housing assistance, and one-time payments.

Figure 4-4.–Comparison of median income estimates, Nanwalek, 2014.



Note The "all other sources" category includes sources providing less than 1% each to the overall income.

Figure 4-5.–Top income sources, Nanwalek, 2014.

Table 4-7.–Employment by industry, Nanwalek, 2014.

Industry	Jobs	Households	Individuals	Percentage of wage earnings
Estimated total number	**69.3**	**46.4**	**60.8**	
Federal government	**4.1%**	**7.4%**	**4.7%**	**1.7%**
Teachers, librarians, and counselors	2.0%	3.7%	2.3%	1.6%
Handlers, equipment cleaners, helpers, and laborers	2.0%	3.7%	2.3%	0.1%
State government	**4.1%**	**7.4%**	**4.7%**	**1.4%**
Executive, administrative, and managerial	2.0%	3.7%	2.3%	1.2%
Service occupations	2.0%	3.7%	2.3%	0.2%
Local government, including tribal	**46.9%**	**63.0%**	**53.5%**	**73.5%**
Executive, administrative, and managerial	4.1%	7.4%	4.7%	0.2%
Teachers, librarians, and counselors	12.2%	18.5%	14.0%	36.6%
Health technologists and technicians	2.0%	3.7%	2.3%	1.5%
Technologists and technicians, except health	2.0%	3.7%	2.3%	4.7%
Administrative support occupations, including clerical	10.2%	18.5%	11.6%	18.6%
Service occupations	10.2%	14.8%	11.6%	6.1%
Precision production occupations	2.0%	3.7%	2.3%	1.0%
Handlers, equipment cleaners, helpers, and laborers	4.1%	7.4%	4.7%	4.6%
Agriculture, forestry, and fishing	**4.1%**	**7.4%**	**4.7%**	**0.5%**
Agricultural, forestry, and fishing occupations	4.1%	7.4%	4.7%	0.5%
Mining	**4.1%**	**7.4%**	**4.7%**	**1.9%**
Service occupations	2.0%	3.7%	2.3%	1.0%
Occupation not indicated	2.0%	3.7%	2.3%	0.9%
Construction	**2.0%**	**3.7%**	**2.3%**	**0.8%**
Construction and extractive occupations	2.0%	3.7%	2.3%	0.8%
Retail trade	**6.1%**	**11.1%**	**7.0%**	**2.0%**
Marketing and sales occupations	6.1%	11.1%	7.0%	2.0%
Services	**28.6%**	**44.4%**	**32.6%**	**18.2%**
Executive, administrative, and managerial	8.2%	11.1%	9.3%	2.1%
Health technologists and technicians	6.1%	11.1%	7.0%	9.8%
Technologists and technicians, except health	2.0%	3.7%	2.3%	0.6%
Service occupations	8.2%	11.1%	9.3%	3.8%
Agricultural, forestry, and fishing occupations	2.0%	3.7%	2.3%	0.7%
Handlers, equipment cleaners, helpers, and laborers	2.0%	3.7%	2.3%	1.3%

Source ADF&G Division of Subsistence household surveys, 2015.

Table 4-8.–Reported job schedules, Nanwalek, 2014.

	Jobs		Employed persons		Employed households	
Schedule	Number	Percentage	Number	Percentage	Number	Percentage
Full time	46.7	67.3%	45.3	74.4%	39.5	85.2%
Part time	11.3	16.3%	11.3	18.6%	13.7	29.6%
Shift	2.8	4.1%	2.8	4.7%	3.4	7.4%
On-call (occasional)	8.5	12.2%	8.5	14.0%	6.9	14.8%
Part-time shift	0.0	0.0%	0.0	0.0%	0.0	0.0%
Schedule not reported	0.0	0.0%	0.0	0.0%	0.0	0.0%

Source ADF&G Division of Subsistence household surveys, 2015.

Note Respondents who had more than 1 job in the study year could provide multiple responses, so the percentages may sum to more than 100%.

Table 4-9.–Employment characteristics, Nanwalek, 2014.

Characteristic	Community Nanwalek
All adults	
Number	136.5
Mean weeks employed	16.9
Employed adults	
Number	60.8
Percentage	44.6%
Jobs	
Number	69.3
Mean	1.1
Minimum	1
Maximum	2
Months employed	
Mean	8.7
Minimum	1
Maximum	12
Percentage employed year-round	46.5%
Mean weeks employed	37.9
Households	
Number	58.0
Employed	
Number	46.4
Percentage	80.0%
Jobs per employed household	
Mean	1.5
Minimum	1
Maximum	4
Employed adults	
Mean	
Employed households	1.3
Total households	1.0
Minimum	1
Maximum	4
Mean person-weeks of employment	39.7

Source ADF&G Division of Subsistence household surveys, 2015.

Food Security

Survey respondents were asked a set of questions intended to assess their household's food security, defined as, "access by all people at all times to enough food for an active, healthy life" (Coleman-Jensen et al. 2012). The food security questions were modeled after those developed by the U.S. Department of Agriculture (USDA) but modified by ADF&G to account for differences in access to subsistence and store-bought foods. The food security status of households is based on the aggregated number of affirmative responses to questions about experiencing food insecure conditions. Food security status is characterized by 4 ranges:

1. High food security;
2. Marginal food security;
3. Low food security; and
4. Very low food security.

For reporting purposes, households with high or marginal food security were broadly categorized as being food secure, and households with low or very low food security were broadly categorized as being food insecure following a USDA protocol (Bickel et al. 2000).[5]

Households with a high or marginal level of food security reported 1 or 2 instances of food access problems or limitations—typically anxiety over food sufficiency or a shortage of particular foods in the house—but gave little or no indication of changes in diets or food intake. Households with low food security reported reduced quality, variety, or desirability of their diet, but they, too, gave little indication of reduced food intake. Households classified as having very low food security were those that reported multiple instances of disrupted eating patterns and reduced food intake (Coleman-Jensen et al. 2012).

Food security results for surveys for Nanwalek, the state of Alaska, and the United States are summarized in Figure 4-6. In 2014, Nanwalek residents were classified as having high food security, with 89% of households falling within the high or marginal food security categories. Only 9% of households experienced low food security and only 2% experienced very low food security. The percentage of households classified as having high or marginal food security was higher than the 2014 Alaska average (88%) and the 2014 national average (86%).

The high and marginal food security subcategories do not mean that the household had no food insecure conditions, only that these conditions did not result in low or very low food security when considered alongside all conditions. Core questions and responses from Nanwalek residents are summarized in Figure 4-7. Approximately 14% of households worried about having enough food and lacking resources to get food, and 11% indicated that their food did not last and they could not get more. When households were asked if in 2014 they had at any time experienced eating less than they felt they should, 7% of Nanwalek households indicated yes. Smaller percentages of households reported cutting the size of meals or skipping meals (4%), being hungry but not eating (4%), and losing weight due to not having enough food (2%).

For this study, additional questions asked were designed to determine whether food insecurities, if any, were related to subsistence foods or store-bought foods. In Nanwalek, 9% of households indicated that subsistence food did not last and 11% indicated that store-bought food did not last (Figure 4-7). Note that during survey administration, due to interviewer error, not all respondents were asked these additional questions and the responses in Figure 4-7 are not a full representation of these conditions experienced by surveyed Nanwalek households.

Figure 4-8 portrays the mean number of food insecure conditions per household by food security category by month. The number of food insecure conditions experienced by low food security category households was highest in the fall and mid-winter, especially in August and September and also January through March. These conditions improved in the spring, summer, and early winter. Figure 4-9 shows which months

5. U.S. Department of Agriculture, Economic Research Service. 2015."Food Security in the U.S.: Measurement," http://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/measurement.aspx (accessed May 2016).

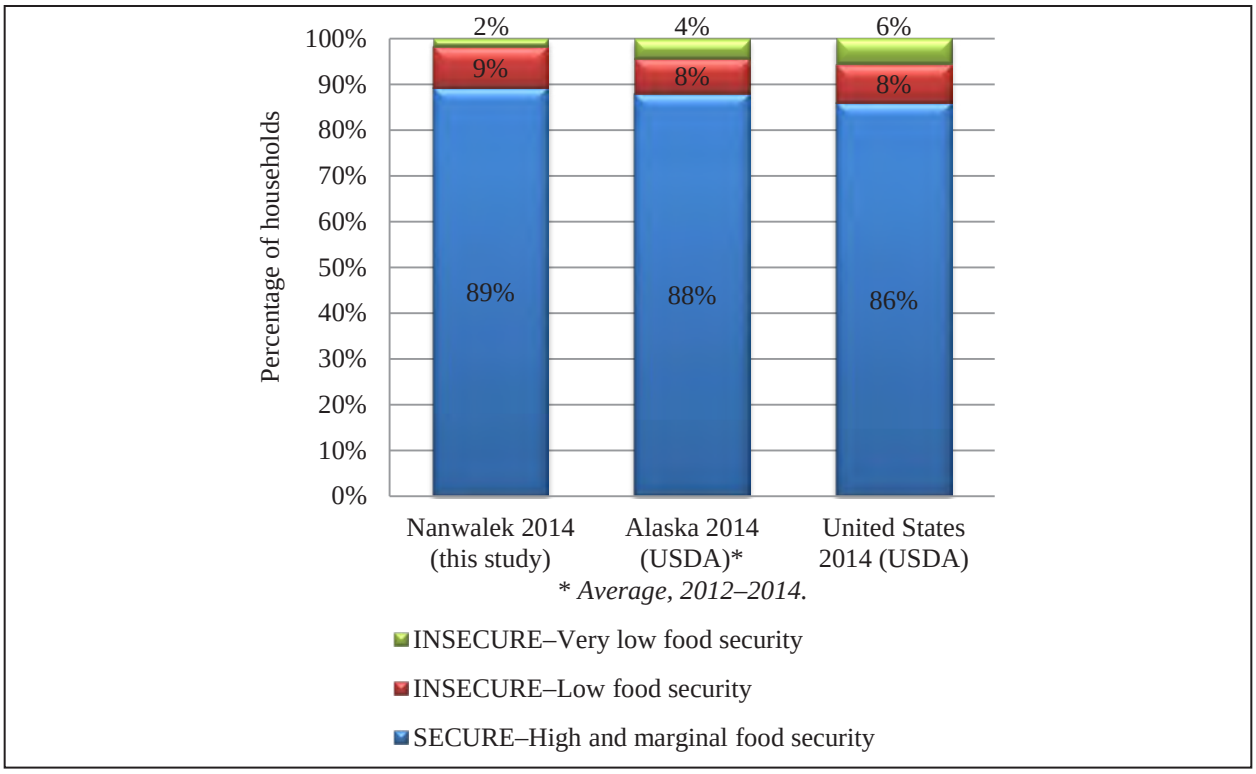


Figure 4-7.–Comparison of food security categories, Nanwalek, Alaska, and United States, 2014.

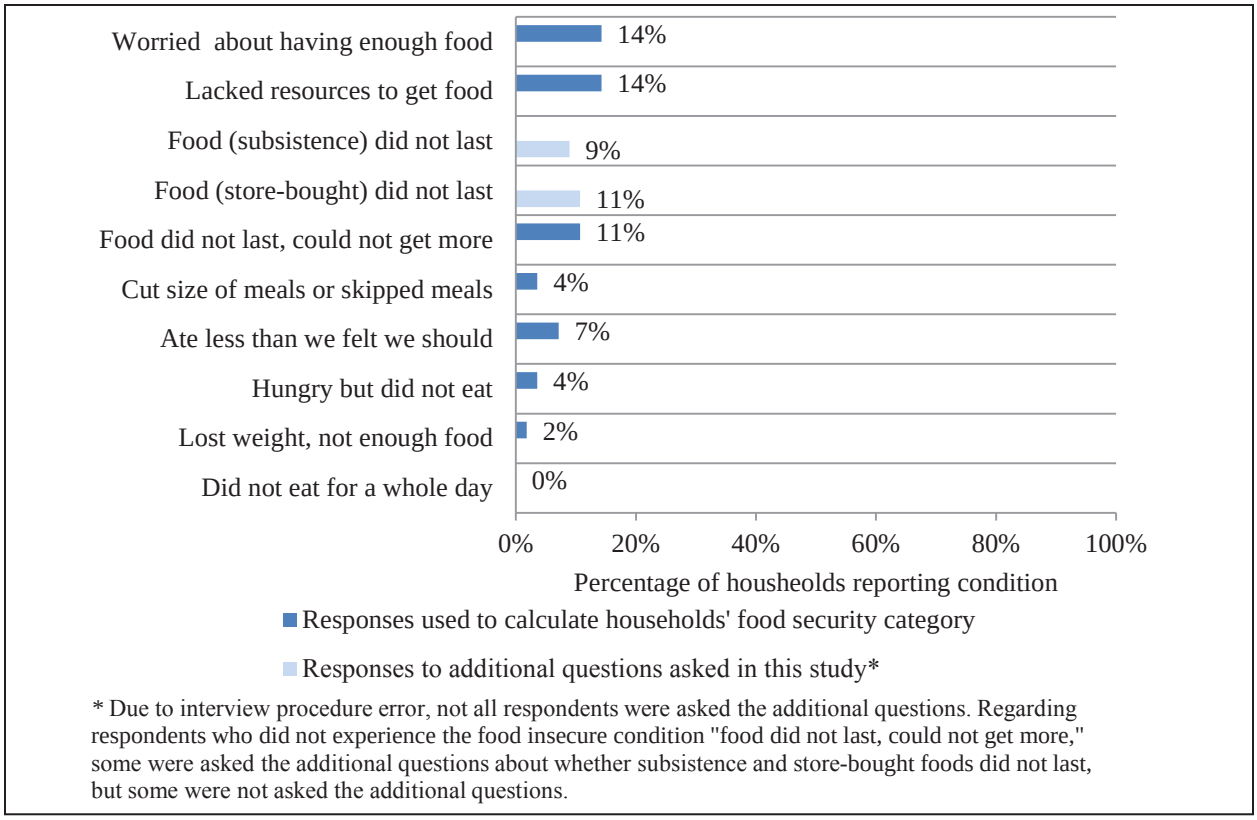


Figure 4-6.–Responses to questions about food insecure conditions, Nanwalek, 2014.

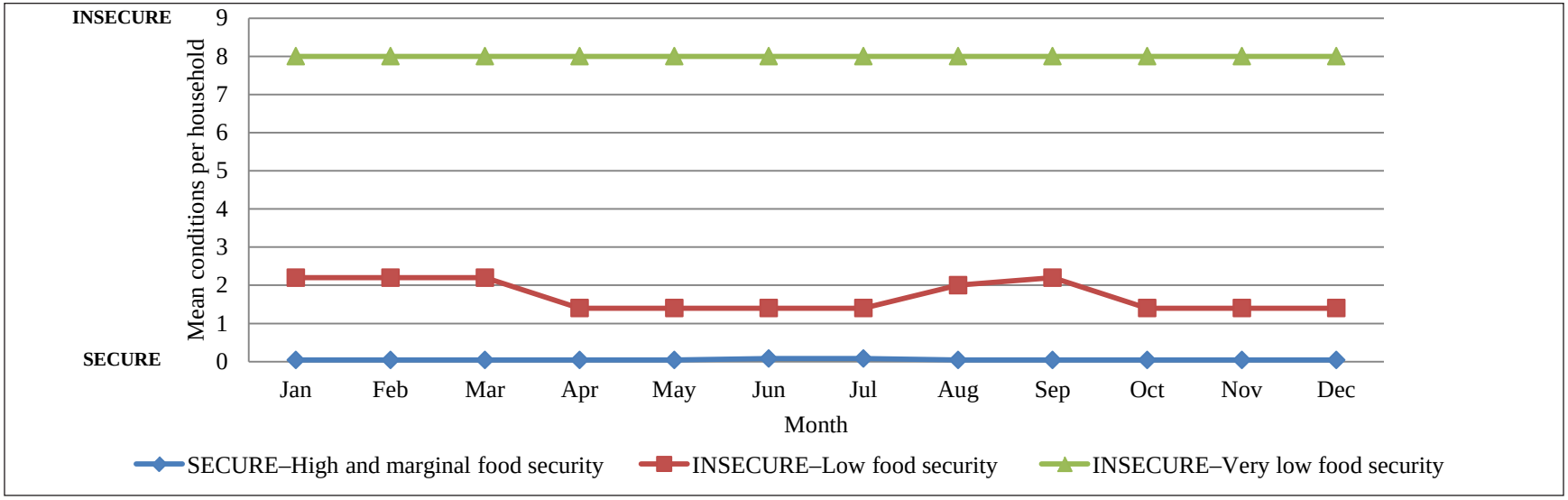
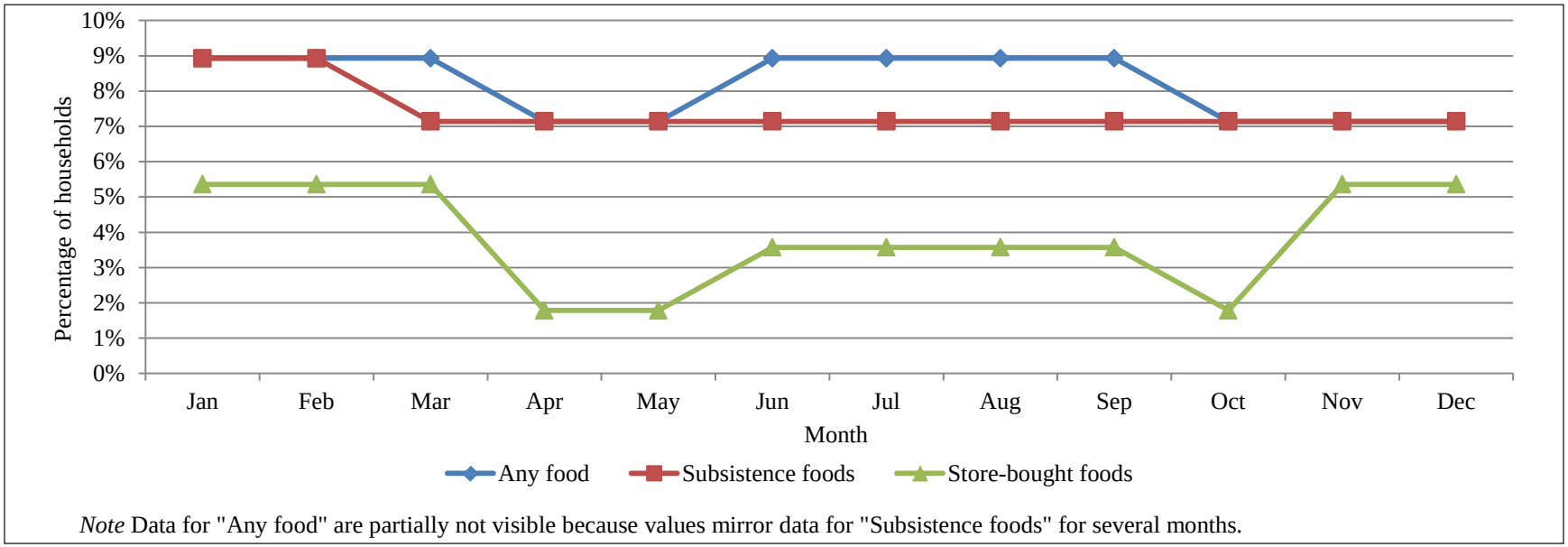


Figure 4-8.–Mean number of food insecure conditions by month and by household food security category, Nanwalek, 2014.



Note Data for "Any food" are partially not visible because values mirror data for "Subsistence foods" for several months.

Figure 4-9.–Comparison of months when food did not last, Nanwalek, 2014.

households reported foods not lasting. A lower percentage of households reported food not lasting in the spring and early winter than in mid-winter and in the summer. More households reported subsistence foods not lasting compared to store-bought foods not lasting.

Summary of Harvest and Use Patterns

Individual Participation in the Harvesting and Processing of Wild Resources

Table 4-10 reports the expanded levels of individual participation in the harvesting and processing of wild resources by Nanwalek residents in 2014. Approximately 75% of residents attempted to harvest resources in 2014. With reference to specific resource categories, 69% of all residents gathered plants and berries, 57% fished, 11% hunted for birds or gathered bird eggs, 7% hunted for marine mammals, and 5% hunted for large land mammals. Fewer residents (1%) were involved in small land mammal hunting or trapping. In comparison, 74% of all Nanwalek residents processed some resources in 2014. Participation in processing plants and berries was 66%. Most residents (61%) participated in processing fish. Marine mammals were processed by 14% of Nanwalek residents, indicating that a group effort is made by residents to process the meat once a successful hunter returns to the community. Additionally, 11% of residents participated in processing birds and eggs, and 7% of residents participated in large land mammal processing.

Harvest and Use of Wild Resources at the Household Level

Figure 4-10 shows by resource category the percentages of households that used wild resources, and also attempted to harvest and harvested wild foods. Vegetation and salmon were used by the greatest percentage of households (used by 88% and 86% of households, respectively), followed by marine invertebrates (77%), nonsalmon fish (75%), marine mammals (73%), birds and eggs (50%), large land mammals (34%), and small land mammals (2%). For all resource categories other than small land mammals, the percentage of households attempting to harvest resources was lower than those using resources. This indicates that households received resources from another household or that they used resources harvested in a prior year. Marine mammals particularly stood out as subject to extensive community-wide sharing since 73% of households used marine mammals while 25% of households hunted marine mammals and only 16% of Nanwalek households successfully harvested marine mammals in 2014. Also indicative of sharing among community members, 11% of households successfully harvested large land mammals while 34% used large land mammals.

For some resource categories, the percentage of households harvesting was lower than the percentage of households attempting to harvest those resources. This documents that some households were unsuccessful at harvesting 1 or more resource. The greatest difference between households attempting to harvest and actually harvesting occurred with marine mammals and large land mammals.

Table 4-11 summarizes resource harvest and use characteristics for Nanwalek in 2014 at the household level. Most households (89%) used wild resources in 2014 and most households attempted to harvest and harvested resources (86% and 84% of households, respectively). The average harvest was 1,008 lb usable weight per household, or 253 lb per capita. During the study year, households harvested an average of 12 kinds of resources and used an average of 17 kinds of resources. The maximum number of resources used by any household was 43. In addition, households gave away an average of 8 kinds of resources and an estimated 71% of households shared resources with other households. Resources were received by 84% of households.

Table 4-10.–Individual participation in subsistence harvesting and processing activities, Nanwalek, 2014.

Total number of people	**231.0**
Fish	
Fish	
Number	131.1
Percentage	56.8%
Process	
Number	141.5
Percentage	61.3%
Large land mammals	
Hunt	
Number	12.5
Percentage	5.4%
Process	
Number	16.6
Percentage	7.2%
Small land mammals	
Hunt or trap	
Number	3.1
Percentage	1.4%
Process	
Number	4.2
Percentage	1.8%
Marine mammals	
Hunt	
Number	16.6
Percentage	7.2%
Process	
Number	32.4
Percentage	14.0%
Birds and eggs	
Hunt/gather	
Number	25.0
Percentage	10.8%
Process	
Number	26.0
Percentage	11.3%
Vegetation	
Gather	
Number	158.1
Percentage	68.5%
Process	
Number	151.9
Percentage	65.8%
Any resource	
Attempt harvest	
Number	174.0
Percentage	75.3%
Process	
Number	169.9
Percentage	73.5%

Source ADF&G Division of Subsistence household surveys, 2015.

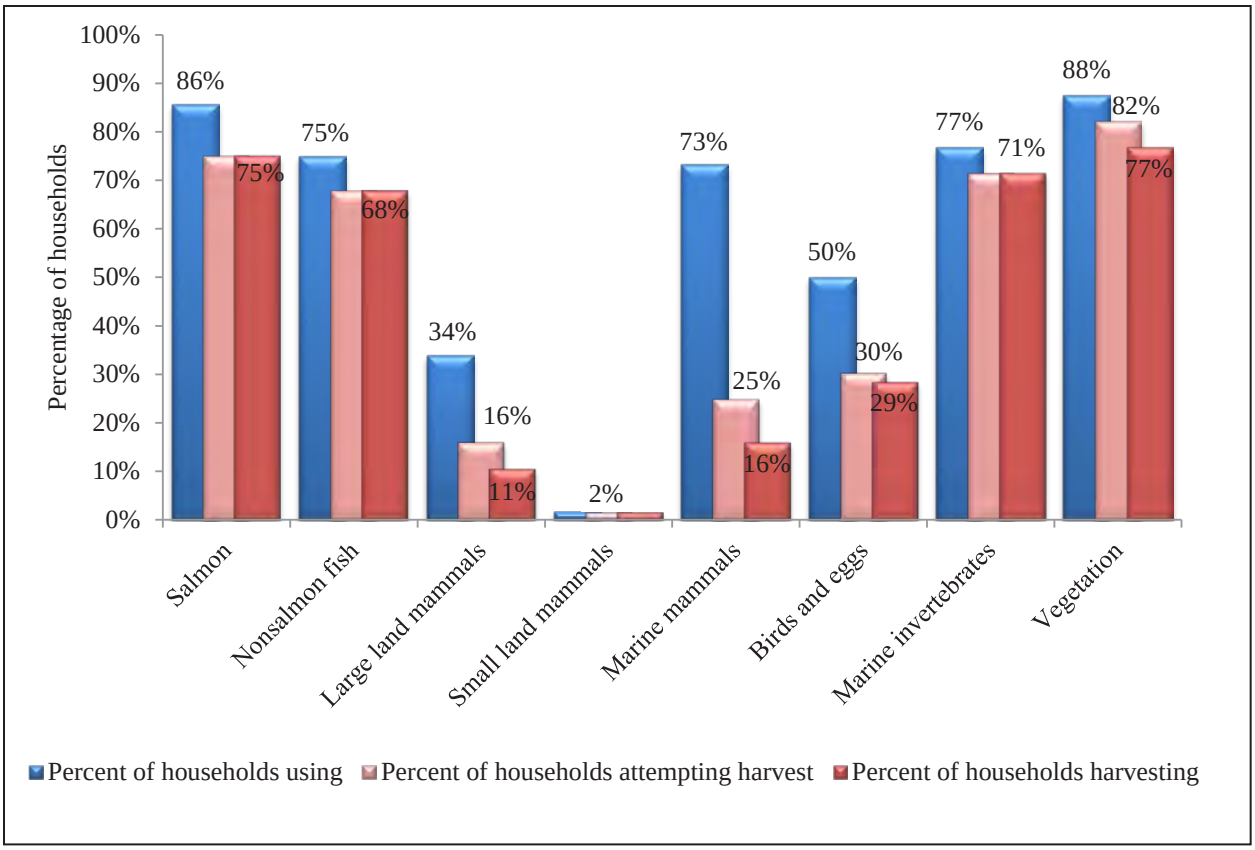


Figure 4-10.–Percentages of households using, attempting to harvest, and harvesting wild resources, by resource category, Nanwalek, 2014.

Table 4-11.–Resource harvest and use characteristics, Nanwalek, 2014.

Characteristic	
Mean number of resources used per household	**16.5**
Minimum	0
Maximum	43
95% confidence limit (±)	3.3%
Median	16
Mean number of resources attempted to harvest per household	**12.4**
Minimum	0
Maximum	39
95% confidence limit (±)	3.8%
Median	10.5
Mean number of resources harvested per household	**11.5**
Minimum	0
Maximum	34
95% confidence limit (±)	3.9%
Median	9.5
Mean number of resources received per household	**9.3**
Minimum	0
Maximum	33
95% confidence limit (±)	4.5%
Median	7
Mean number of resources given away per household	**7.6**
Minimum	0
Maximum	35
95% confidence limit (±)	5.6%
Median	5.5
Household harvest (pounds)	
Minimum	0
Maximum	12,893
Mean	1,007.6
Median	519
Total harvest weight (lb)	58,443.0
Community per capita harvest (lb)	253.0
Percentage using any resource	89.3%
Percentage attempting to harvest any resource	85.7%
Percentage harvesting any resource	83.9%
Percentage receiving any resource	83.9%
Percentage giving away any resource	71.4%
Number of households in sample	56
Number of resources asked about and identified voluntarily by respondents	161

Source ADF&G Division of Subsistence household surveys, 2015.

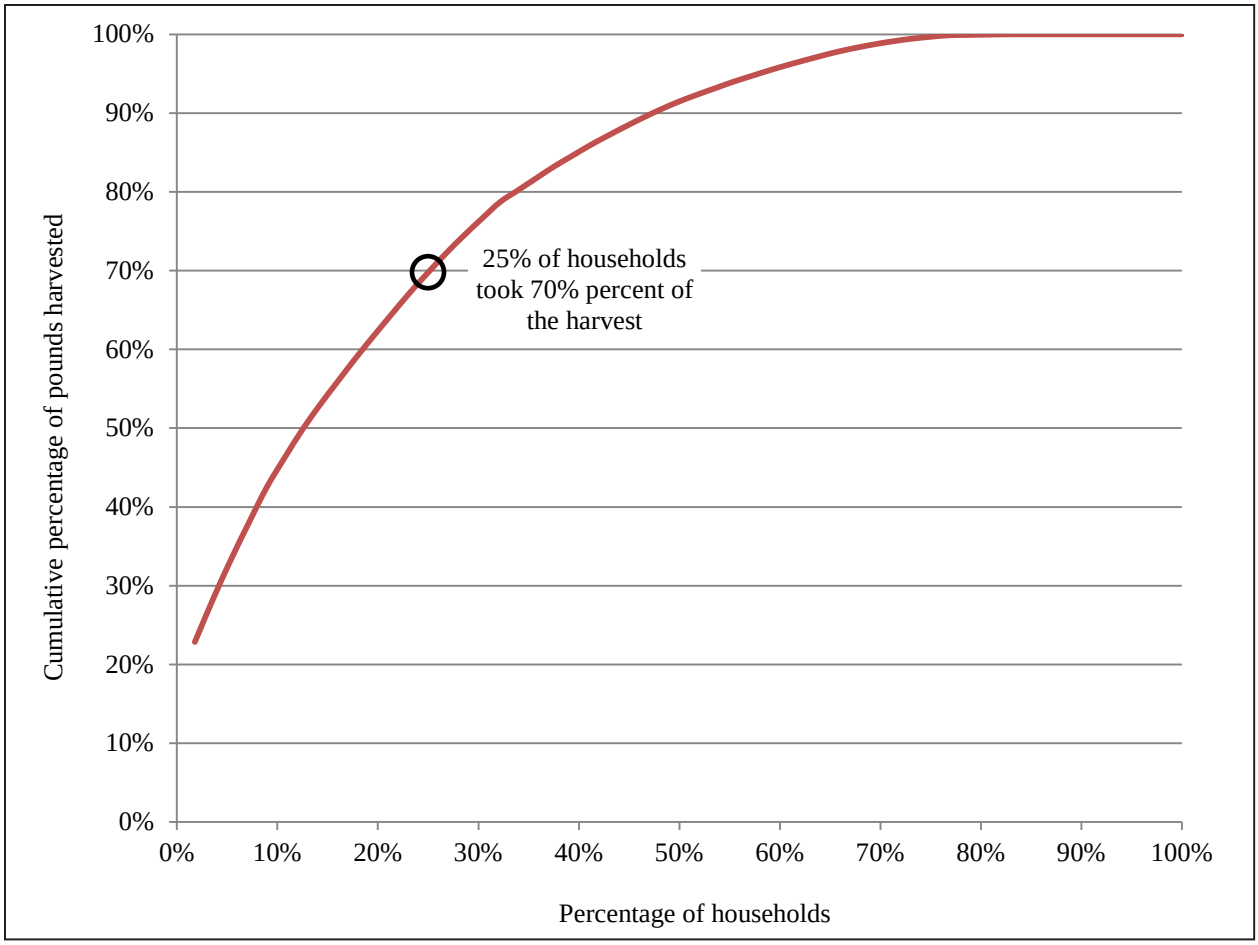


Figure 4-11.–Household specialization, Nanwalek, 2014.

Sharing of Wild Resources

Household Specialization in Resource Harvesting

Previous studies by the Division of Subsistence (Wolfe 1987; Wolfe et al. 2010) have shown that in most rural Alaska communities, a relatively small portion of households produces most of the community's fish and wildlife harvests, which they share with other households. A recent study of 3,265 households in 66 rural Alaska communities found that about 33% of the households accounted for 76% of subsistence harvests (Wolfe et al. 2010). Although overall the set of very productive households was diverse, factors that were associated with higher levels of subsistence harvests included larger households with a pool of adult male labor, higher wage income, involvement in commercial fishing, and community location.

As shown in Figure 4-11, in the 2014 study year in Nanwalek, about 70% of the harvests of wild resources as estimated in pounds usable weight were harvested by 25% of the community's households. Further analysis of the study findings, beyond the scope of this report, might identify characteristics of the highly productive households in Nanwalek and the other study communities.

Harvest Quantities and Composition

Table 4-12 reports estimated wild resource harvests and uses by Nanwalek residents in 2014 and is organized first by general category and then by species. All edible resources are reported in pounds usable weight (see Appendix B for conversion factors[6]).

The total estimated harvest for all fish, wildlife, and wild plant resources during 2014 for Nanwalek was 58,443 lb, or 253 lb per capita (Table 4-12). Fish provided the majority (86%) of the total pounds of wild resources harvested by Nanwalek households (49,748 lb, or 215 lb per capita) (Figure 4-12; Table 4-12). Vegetation provided 5% of the total harvest (2,721 lb, or 12 lb per capita). Both marine invertebrates (2,617 lb, or 11 lb per capita) and marine mammals (2,468 lb, or 11 lb per capita) provided 4% to the total harvest of wild resources by Nanwalek residents. Both large land mammals (576 lb, or 3 lb per capita) and birds and eggs (296 lb, or 1 lb per capita) provided 1% of the total harvest.

Seasonal Round

Harvest survey data and key respondent interview information describe a seasonal round of fishing, hunting, and gathering activities followed by Nanwalek residents where a variety of species are harvested throughout the year. In spring, summer, fall, and winter, Nanwalek residents harvest resources inside of Cook Inlet *Cungaciq*[7] and Kachemak Bay *Cacirpak* along the Kenai Peninsula's *Tamalkuaq's* southwestern shore and southern tip, within the English Bay Lagoon, the English Bay River and its tributary lakes, and the adjacent forests and mountains within its watershed. Important marine waters include China Poot Bay *Cainiim Nunii*, Tukta Bay *Tasiitnuuq*, Seldovia Bay *Angagkitqnuuq*, Koyuktolik Bay *Qugyugtuliq* (also referred to as "Dogfish Bay" by Nanwalek residents), Jakolof Bay, Port Graham Bay *Paluwik*, Bear Cove, the waters surrounding Yukon Island *Nikraq*, east of Elizabeth Island, and north of Perl Island (Figure 4-13) (Salomon et al. 2011). Residents use motorized boats suitable for ocean travel, highway vehicles, and all-terrain vehicles (ATVs) to reach their hunting, fishing, and gathering areas.

Salmon returning to the English Bay River lake system are easily accessible near the community from the saltwater beach where fishermen use setnets, and in the intertidal lagoon and river system where people use rod and reel. During spring and summer, salmon are caught in the English Bay Lagoon, along the shore of Cook Inlet south of the community, and inside of Port Graham Bay. During June and July, sockeye salmon, chum salmon, and pink salmon are caught by rod and reel and by setnet. Sometimes Chinook salmon are also caught in subsistence setnets. Coho salmon arrive in the area in late July and continue to return into mid-September. Coho salmon are caught by rod and reel in English Bay river and lagoon. During most of the year Chinook salmon are caught by trolling in offshore marine waters.

Dolly Varden are caught in English Bay Lagoon during summer by rod and reel. Lake trout, rainbow trout, and cutthroat trout are caught in the English Bay River lake system during summer, fall, and winter. Marine nonsalmon fish, such as kelp greenling, lingcod, starry flounder, sea bass, Pacific (gray) cod, Pacific tomcod, and Pacific halibut are caught year-round in offshore marine waters in Cook Inlet by rod and reel. Some Pacific halibut and Pacific tomcod are caught with longlines (skates) under subsistence regulations. Pacific tomcod are also sometimes caught with subsistence setnets.

Black bears, an important traditional food for Nanwalek residents, are harvested during spring, summer, and fall along the road extending from Nanwalek through the English Bay River corridor over a mountain pass and into Koyuktolik Bay. Mountain goats are also an important traditional food for Nanwalek residents, who usually participate in summer and fall mountain goat hunting (August 10–October 15), when state regulations allow for a limited registration hunt in Game Management Unit (GMU) 15C, with permits available only in Nanwalek and Port Graham. Mountain goat hunting occurs in the mountains encompassing the English Bay River watershed and along the shoreline of Koyuktolik Bay. Nanwalek residents often focus

6. Resources that are not eaten, such as firewood and some furbearers, are included in the table but are given a conversion factor of zero.
7. Sugpiaq place name.

Table 4-12.–Estimated uses and harvests of fish, game, and vegetation resources, Nanwalek, 2014.

	Percentage of households					Harvest weight (lb)			Harvest amount			95% confidence limit (±) harvest
Resource	Use %	Attempt %	Harvest %	Receive %	Give %	Total	Mean per household	Per capita	Total	Unit	Mean per household	
All resources	**89.3**	**85.7**	**83.9**	**83.9**	**71.4**	**58,443.0**	**1,007.6**	**253.0**	**58,443.0**	**lb**	**1,007.6**	**9.0**
Salmon	**85.7**	**75.0**	**75.0**	**64.3**	**58.9**	**40,082.9**	**691.1**	**173.5**	**40,082.9**	**lb**	**691.1**	**10.8**
Chum salmon	39.3	33.9	33.9	14.3	19.6	2,813.1	48.5	12.2	513.7	ind	8.9	13.9
Coho salmon	75.0	64.3	64.3	44.6	39.3	11,152.2	192.3	48.3	2,421.8	ind	41.8	12.1
Chinook salmon	39.3	25.0	23.2	23.2	14.3	457.9	7.9	2.0	41.4	ind	0.7	12.1
Pink salmon	69.6	62.5	62.5	44.6	39.3	8,594.6	148.2	37.2	3,270.4	ind	56.4	7.5
Sockeye salmon	85.7	71.4	69.6	55.4	50.0	17,049.6	294.0	73.8	3,802.0	ind	65.6	12.4
Landlocked salmon	1.8	1.8	1.8	0.0	0.0	3.1	0.1	0.0	2.1	ind	0.0	37.2
Unknown salmon	1.8	1.8	1.8	0.0	1.8	12.4	0.2	0.1	3.1	ind	0.1	0.0
Nonsalmon fish	**75.0**	**67.9**	**67.9**	**66.1**	**50.0**	**9,665.0**	**166.6**	**41.8**	**9,665.0**	**lb**	**166.6**	**8.0**
Pacific herring	1.8	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Pacific herring roe (unspecified)	1.8	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Pacific herring sac roe	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Pacific herring spawn on kelp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Eulachon (hooligan, candlefish)	1.8	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Unknown smelt	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Sea bass	7.1	3.6	3.6	7.1	3.6	62.1	1.1	0.3	62.1	ind	1.1	31.5
Pacific (gray) cod	16.1	12.5	12.5	10.7	12.5	202.2	3.5	0.9	63.2	ind	1.1	15.2
Pacific tomcod	32.1	17.9	17.9	25.0	14.3	404.0	7.0	1.7	766.6	ind	13.2	19.1
Walleye pollock (whiting)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Eel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Starry flounder	5.4	5.4	5.4	3.6	1.8	24.9	0.4	0.1	8.3	ind	0.1	23.4
Unknown flounder	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Kelp greenling	1.8	1.8	1.8	1.8	1.8	24.9	0.4	0.1	24.9	ind	0.4	37.2
Lingcod	7.1	5.4	5.4	3.6	1.8	20.7	0.4	0.1	5.2	ind	0.1	22.0
Unknown greenling	8.9	5.4	5.4	5.4	1.8	16.6	0.3	0.1	16.6	ind	0.3	25.9
Pacific halibut	67.9	50.0	50.0	51.8	41.1	6,124.1	105.6	26.5	6,124.1	lb	105.6	9.5
Black rockfish	1.8	0.0	0.0	1.8	1.8	0.0	0.0	0.0	0.0	ind	0.0	0.0
Red rockfish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0

-continued-

Table 4-12.–Page 2 of 6.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount			95% confidence limit (±) harvest
	Use %	Attempt %	Harvest %	Receive %	Give %	Total	Mean per household	Per capita	Total	Unit	Mean per household	
Nonsalmon fish, continued												
Yelloweye rockfish	1.8	1.8	1.8	0.0	0.0	3.1	0.1	0.0	1.0	ind	0.0	37.2
Unknown rockfish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Sablefish (black cod)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown Irish lord	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown sculpin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown shark	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Skates	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown sole	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Wolffish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Dolly Varden	42.9	39.3	39.3	25.0	26.8	1,886.6	32.5	8.2	1,347.5	ind	23.2	12.0
Lake trout	14.3	10.7	10.7	5.4	7.1	598.9	10.3	2.6	427.8	ind	7.4	28.2
Arctic grayling	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Northern pike	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown sturgeon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Cutthroat trout	5.4	3.6	3.6	1.8	3.6	50.8	0.9	0.2	36.3	ind	0.6	26.3
Rainbow trout	30.4	23.2	23.2	10.7	12.5	228.8	3.9	1.0	163.5	ind	2.8	11.9
Steelhead	10.7	8.9	8.9	3.6	3.6	17.4	0.3	0.1	12.4	ind	0.2	19.1
Unknown whitefishes	1.8	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Large land mammals	**33.9**	**16.1**	**10.7**	**28.6**	**14.3**	**575.9**	**9.9**	**2.5**	**575.9**	**lb**	**9.9**	**15.9**
Black bear	17.9	5.4	3.6	14.3	5.4	120.1	2.1	0.5	2.1	ind	0.0	26.1
Caribou	7.1	1.8	1.8	7.1	1.8	155.4	2.7	0.7	1.0	ind	0.0	37.2
Deer	1.8	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Mountain goat	12.5	8.9	5.4	8.9	7.1	300.4	5.2	1.3	4.1	ind	0.1	22.4
Moose	19.6	3.6	0.0	19.6	3.6	0.0	0.0	0.0	0.0	ind	0.0	0.0
Dall sheep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Small land mammals	**1.8**	**1.8**	**1.8**	**1.8**	**0.0**	**16.6**	**0.3**	**0.1**	**16.6**	**lb**	**0.3**	**37.2**
Beaver	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Coyote	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Red fox	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Snowshoe hare	1.8	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0

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Table 4-12.–Page 3 of 6.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount			95% confidence limit (±) harvest
	Use %	Attempt %	Harvest %	Receive %	Give %	Total	Mean per household	Per capita	Total	Unit	Mean per household	
Small land mammals, continued												
North American river (land) otter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Lynx	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Marten	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Mink	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Muskrat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Porcupine	1.8	1.8	1.8	0.0	0.0	16.6	0.3	0.1	2.1	ind	0.0	37.2
Arctic ground (parka) squirrel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Red (tree) squirrel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Weasel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Gray wolf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Wolverine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Marine mammals	**73.2**	**25.0**	**16.1**	**69.6**	**21.4**	**2,468.2**	**42.6**	**10.7**	**2,468.2**	**lb**	**42.6**	**15.6**
Harbor seal	71.4	25.0	16.1	66.1	21.4	1,225.3	21.1	5.3	21.9	ind	0.4	13.9
Sea otter	1.8	1.8	1.8	0.0	1.8	0.0	0.0	0.0	1.0	ind	0.0	37.2
Steller sea lion	25.0	8.9	7.1	21.4	10.7	1,242.9	21.4	5.4	6.2	ind	0.1	19.1
Bowhead whale	1.8	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Birds and eggs	**50.0**	**30.4**	**28.6**	**41.1**	**26.8**	**295.9**	**5.1**	**1.3**	**295.9**	**lb**	**5.1**	**14.0**
Bufflehead	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown eider	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Goldeneye	5.4	1.8	0.0	5.4	3.6	0.0	0.0	0.0	0.0	ind	0.0	0.0
Harlequin duck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Mallard	21.4	7.1	5.4	14.3	7.1	22.4	0.4	0.1	24.9	ind	0.4	26.2
Unknown merganser	3.6	0.0	0.0	3.6	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Long-tailed duck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Northern pintail	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown scaup	1.8	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Black scoter	5.4	0.0	0.0	5.4	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Surf scoter	1.8	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
White-winged scoter	1.8	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0

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Table 4-12.–Page 4 of 6.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount			95% confidence limit (±) harvest
	Use %	Attempt %	Harvest %	Receive %	Give %	Total	Mean per household	Per capita	Total	Unit	Mean per household	
Birds and eggs, continued												
Northern shoveler	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown teal	1.8	1.8	1.8	0.0	1.8	0.6	0.0	0.0	2.1	ind	0.0	37.2
Unknown wigeon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown Canada/ cackling geese	7.1	5.4	3.6	3.6	5.4	6.2	0.1	0.0	5.2	ind	0.1	26.6
White-fronted goose	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown swans	1.8	1.8	1.8	0.0	1.8	6.2	0.1	0.0	1.0	ind	0.0	37.2
Sandhill crane	1.8	1.8	1.8	0.0	1.8	8.7	0.2	0.0	1.0	ind	0.0	37.2
Unknown cormorant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown gull	1.8	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Black-legged kittiwake	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown murre	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown puffin	3.6	1.8	1.8	1.8	1.8	2.6	0.0	0.0	5.2	ind	0.1	37.2
Unknown grouse	16.1	16.1	12.5	1.8	7.1	13.8	0.2	0.1	19.7	ind	0.3	16.1
Unknown ptarmigan	1.8	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown duck eggs	1.8	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown goose eggs	1.8	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Black oystercatcher eggs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown gull eggs	41.1	17.9	17.9	33.9	19.6	235.4	4.1	1.0	784.6	ind	13.5	16.7
Unknown tern eggs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown eggs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Marine invertebrates	**76.8**	**71.4**	**71.4**	**51.8**	**53.6**	**2,617.3**	**45.1**	**11.3**	**2,617.3**	**lb**	**45.1**	**9.3**
Red (large) chitons	14.3	10.7	10.7	10.7	3.6	20.2	0.3	0.1	6.7	gal	0.1	21.4
Black (small) chitons	75.0	64.3	64.3	48.2	48.2	1,350.6	23.3	5.8	337.6	gal	5.8	10.0
Butter clams	37.5	23.2	23.2	26.8	19.6	349.9	6.0	1.5	116.6	gal	2.0	19.1
Horse clams	1.8	1.8	1.8	0.0	1.8	3.1	0.1	0.0	1.0	gal	0.0	0.0
Pacific littleneck clams (steamers)	8.9	7.1	7.1	7.1	3.6	124.3	2.1	0.5	41.4	gal	0.7	21.4
Pinkneck clams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Razor clams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0

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Table 4-12.–Page 5 of 6.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount			95% confidence limit (±) harvest
	Use %	Attempt %	Harvest %	Receive %	Give %	Total	Mean per household	Per capita	Total	Unit	Mean per household	
Marine invertebrates, continued												
Unknown clams	1.8	1.8	1.8	0.0	1.8	6.2	0.1	0.0	2.1	gal	0.0	37.2
Unknown cockles	3.6	1.8	1.8	3.6	1.8	46.6	0.8	0.2	15.5	gal	0.3	37.2
Dungeness crab	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown king crab	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Tanner crab, bairdi	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown tanner crab	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown crab	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Limpets	8.9	8.9	8.9	1.8	3.6	14.4	0.2	0.1	9.6	gal	0.2	23.3
Unknown mussels	37.5	32.1	32.1	17.9	17.9	115.0	2.0	0.5	76.6	gal	1.3	11.9
Octopus	53.6	33.9	33.9	41.1	25.0	517.9	8.9	2.2	129.5	ind	2.2	11.9
Weathervane scallops	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Unknown sea cucumber	1.8	1.8	1.8	0.0	0.0	0.2	0.0	0.0	0.1	gal	0.0	37.2
Unknown sea urchin	5.4	5.4	5.4	1.8	0.0	1.3	0.0	0.0	2.6	gal	0.0	31.3
Shrimp	3.6	3.6	3.6	0.0	1.8	0.1	0.0	0.0	0.1	lb	0.0	36.5
Snails	42.9	35.7	35.7	23.2	26.8	67.7	1.2	0.3	45.1	gal	0.8	9.1
Whelk	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Vegetation	**87.5**	**82.1**	**76.8**	**55.4**	**53.6**	**2,721.3**	**46.9**	**11.8**	**2,721.3**	**lb**	**46.9**	**5.8**
Blueberry	80.4	71.4	71.4	33.9	41.1	924.9	15.9	4.0	231.2	gal	4.0	6.7
Lowbush cranberry	1.8	1.8	1.8	0.0	0.0	2.1	0.0	0.0	0.5	gal	0.0	37.2
Highbush cranberry	46.4	41.1	41.1	17.9	21.4	207.1	3.6	0.9	51.8	gal	0.9	9.5
Gooseberry	10.7	8.9	8.9	5.4	7.1	47.6	0.8	0.2	11.9	gal	0.2	21.9
Currants	3.6	3.6	3.6	1.8	1.8	53.9	0.9	0.2	13.5	gal	0.2	34.4
Nagoonberry	7.1	7.1	7.1	1.8	1.8	13.5	0.2	0.1	3.4	gal	0.1	25.3
Salmonberry	80.4	75.0	75.0	30.4	41.1	935.5	16.1	4.1	233.9	gal	4.0	5.5
Strawberry	10.7	8.9	8.9	1.8	0.0	36.5	0.6	0.2	9.1	gal	0.2	23.3
Twisted stalk berry (watermelon berry)	3.6	3.6	3.6	0.0	0.0	2.1	0.0	0.0	0.5	gal	0.0	18.6
Beach asparagus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Goose tongue	30.4	30.4	30.4	10.7	12.5	45.6	0.8	0.2	45.6	gal	0.8	9.5
Wild rhubarb	1.8	1.8	1.8	0.0	0.0	2.1	0.0	0.0	2.1	gal	0.0	37.2
Devil's club	7.1	7.1	7.1	1.8	3.6	9.8	0.2	0.0	9.8	gal	0.2	22.9

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Table 4-12.–Page 6 of 6.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount			95% confidence limit (±) harvest
	Use %	Attempt %	Harvest %	Receive %	Give %	Total	Mean per household	Per capita	Total	Unit	Mean per household	
Vegetation, continued												
Fiddlehead ferns	10.7	7.1	7.1	3.6	0.0	7.8	0.1	0.0	7.8	gal	0.1	25.7
Nettle	1.8	1.8	1.8	0.0	0.0	0.3	0.0	0.0	0.3	gal	0.0	37.2
Hudson's Bay (Labrador) tea	1.8	1.8	1.8	0.0	0.0	0.5	0.0	0.0	0.5	gal	0.0	37.2
Sourdock	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Spruce tips	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Willow leaves	1.8	1.8	1.8	0.0	0.0	0.3	0.0	0.0	0.3	gal	0.0	37.2
Wild celery	19.6	19.6	19.6	7.1	7.1	10.7	0.2	0.0	36.8	gal	0.6	13.6
Wild parsley	5.4	5.4	5.4	1.8	1.8	2.6	0.0	0.0	2.6	gal	0.0	30.1
Wild rose hips	8.9	8.9	8.9	1.8	7.1	15.5	0.3	0.1	3.9	gal	0.1	22.2
Yarrow	3.6	3.6	3.6	0.0	0.0	2.3	0.0	0.0	2.3	gal	0.0	33.3
Other wild greens	3.6	3.6	3.6	0.0	1.8	1.3	0.0	0.0	1.3	gal	0.0	30.6
Unknown mushrooms	1.8	1.8	1.8	1.8	0.0	5.2	0.1	0.0	5.2	gal	0.1	37.2
Fireweed	3.6	3.6	3.6	0.0	3.6	8.3	0.1	0.0	8.3	gal	0.1	26.9
Beach greens	1.8	1.8	1.8	0.0	0.0	1.0	0.0	0.0	1.0	gal	0.0	37.2
Wild chives	1.8	1.8	1.8	1.8	1.8	1.0	0.0	0.0	1.0	gal	0.0	37.2
Black seaweed	57.1	46.4	46.4	26.8	21.4	314.9	5.4	1.4	78.7	gal	1.4	8.2
Bull kelp	3.6	3.6	3.6	0.0	3.6	12.4	0.2	0.1	3.1	gal	0.1	27.5
Red seaweed	3.6	3.6	3.6	0.0	0.0	5.2	0.1	0.0	1.3	gal	0.0	30.6
Sea ribbons	3.6	3.6	3.6	0.0	0.0	24.9	0.4	0.1	6.2	gal	0.1	31.5
Giant kelp (macrocystis)	1.8	1.8	1.8	0.0	0.0	8.3	0.1	0.0	2.1	gal	0.0	37.2
Alaria	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Bladder wrack	1.8	1.8	1.8	0.0	1.8	0.5	0.0	0.0	0.1	gal	0.0	37.2
Unknown seaweed	3.6	3.6	3.6	0.0	3.6	17.6	0.3	0.1	4.4	gal	0.1	35.1
Wood	69.6	62.5	62.5	28.6	16.1							

Source ADF&G Division of Subsistence household surveys, 2015.

Note Resources where the percentage using is greater than the combined received and harvest indicate use from resources obtained during a previous year.

Note For small land mammals, species that are not typically eaten show a non-zero harvest amount with a zero harvest wight. Harvest weight is not calculated for species harvested but not eaten.

Note "–" indicates the harvest amount for the resource was not collected during the survey.

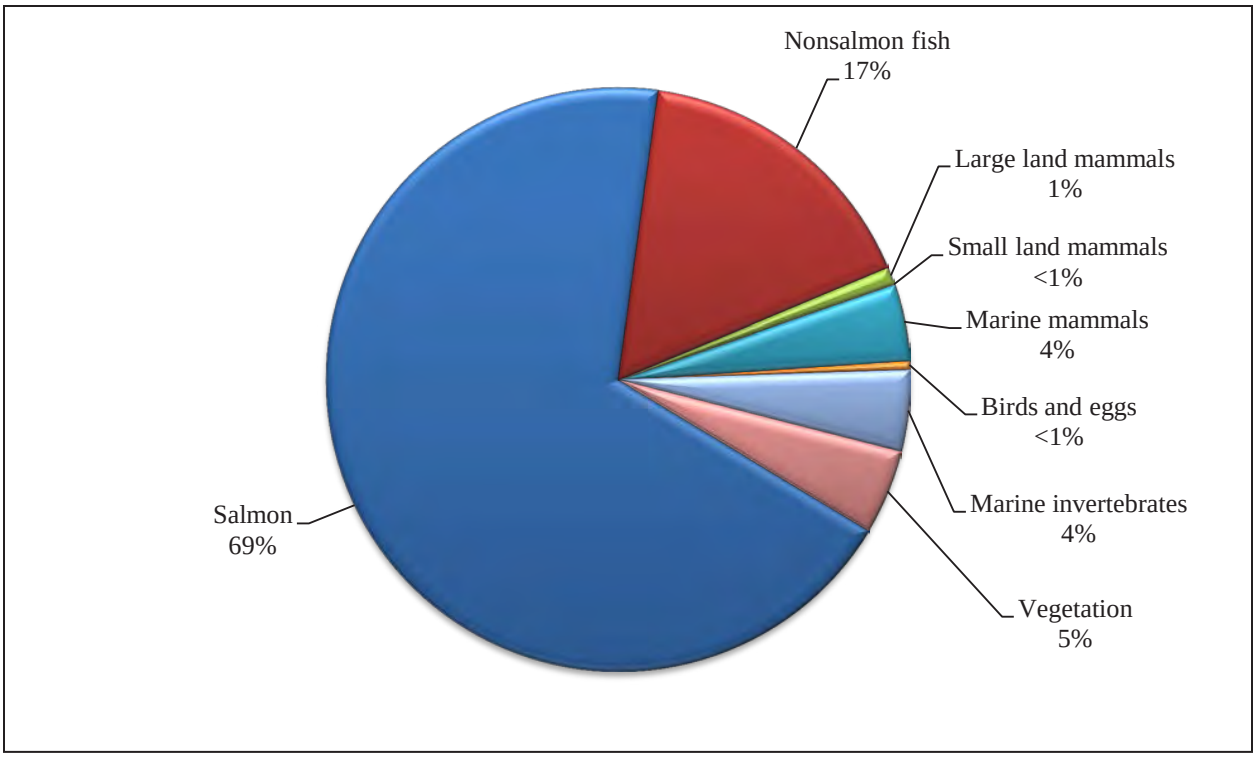


Figure 4-12.–Composition of harvest by resource category in pounds usable weight, Nanwalek, 2014.

on opportunistic mountain goat hunting along shorelines. "[Goats] are available if they come down [to the water], when I'm fishing, or hunting down in Dogfish [Koyuktolik] Bay. They come down in the evenings or early morning from the mountains for salt," explained a Nanwalek hunter. State Tier II[8] regulations allow for subsistence moose hunting in GMU 15C from August 25–September 30. Nanwalek residents usually participate in fall moose hunting but were unsuccessful in obtaining a permit in 2014. Moose are hunted along the road to Koyuktolik Bay, along the English Bay River, and past the lakes.

Grouses are sometimes harvested during summer and fall along the English Bay River road. Migratory birds are harvested during summer, fall, and winter along the shores of Cook Inlet extending south from Nanwalek and in Koyuktolik Bay. Gull eggs are also harvested in those locations during summer and fall.

Harbor seals and sea lions are hunted from late winter through fall at Bear Cove, China Poot Bay, Tukta Bay, Seldovia Bay, Koyuktolik Bay, Port Chatham *Arrulaa'ik*, in the waters south of Yukon Island, and along the shores of Cook Inlet close to Nanwalek. Octopuses are hunted year-round along the Cook Inlet shoreline from a point approximately 1.5 miles east of Nanwalek extending south and west to Point Adam *Yuuyaa'am Cingia* at the mouth of Koyuktolik Bay. According to an interview respondent during this study, the Sugpiaq people have been hunting octopuses for thousands of years. Octopuses are harvested with hooks under rocks on the beach, usually during minus tides. According to an elder respondent, traditionally the Sugpiat made these hooks with ivory or bird bone lashed to spruce wood.

Black (small) chitons, called *urritaq* in Sugt'stun, and often referred to as "bidarkis" by Nanwalek residents, which means "little kayak" in Russian, have long been documented as an important traditional food for Nanwalek people (Salomon et al. 2011). According to Salomon et al. (2011:7), for the Sugpiaq people, black chitons are "not only an important source of food, [they are] part of our stories, our songs, our culture, and

8. State Tier II hunts are held when there is not enough of a game population with a positive customary and traditional use finding to provide a reasonable opportunity for subsistence uses by all potential users. Hunters must answer questions on an application concerning their dependence on the game for their livelihood and availability of alternative resources. Applications are scored based on responses to the questionnaire and permits are issued to those with the highest scores.

our traditions." Black chitons, snails, mussels, and cockles are gathered along the Cook Inlet shoreline from a point approximately 1.5 miles east of Nanwalek extending south and west to Point Adam at the mouth of Koyuktolik Bay during late summer, fall, and winter. Black chitons are also gathered inside of Koyuktolik Bay. During summer and fall, clams are gathered in the tide flats of China Poot Bay, at the far end of Tukta Bay, and in Jakolof Bay. No crabs were harvested in 2014 due to scarcity of the resources. Survey respondents explained that clams are an extremely important traditional food for Nanwalek residents.

Nanwalek residents harvest plants, mushrooms, berries, and seaweeds during spring, summer, and fall. For example, fiddlehead fern shoots, fireweed shoots, devil's club buds, wild rhubarb stalks, willow leaves, and wild celery stalks are sought during spring; wild greens, such as goose tongue, nettles, Hudson's Bay (Labrador) tea, wild parsley, yarrow, beach greens, and wild chives are sought during summer; blueberries, lowbush cranberries, gooseberries, currants, nagoonberries, salmonberries, twisted stalk berries (known as watermelon berries), wild rose hips, and salmonberries are gathered during late summer; and highbush cranberries and mushrooms are gathered during fall. Marine vegetation such as black seaweed, red seaweed, bull kelp, giant kelp, and bladder wrack are harvested during spring, summer, and fall. Harvesting firewood for home heating is an important year-round activity for some Nanwalek residents.

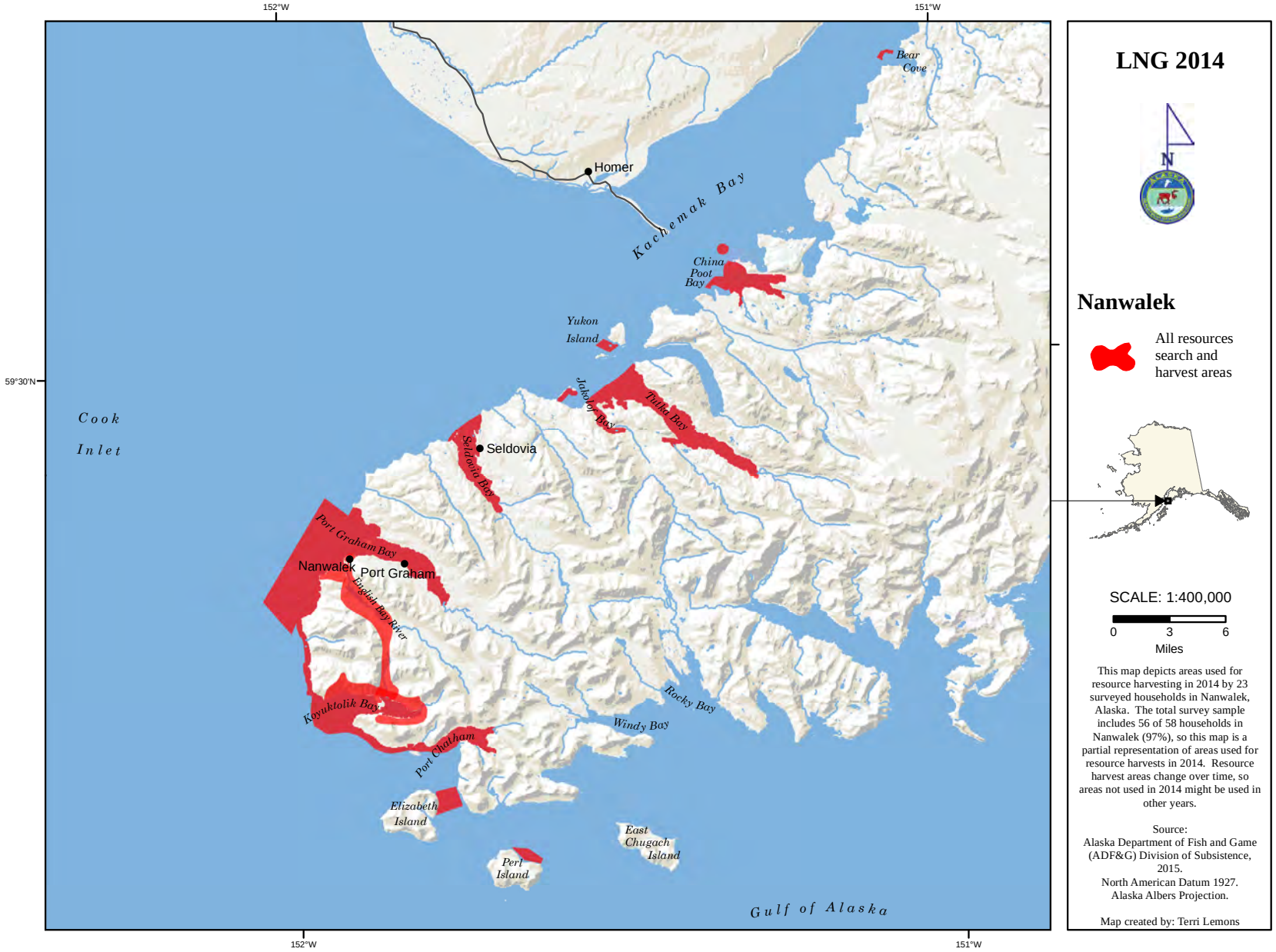
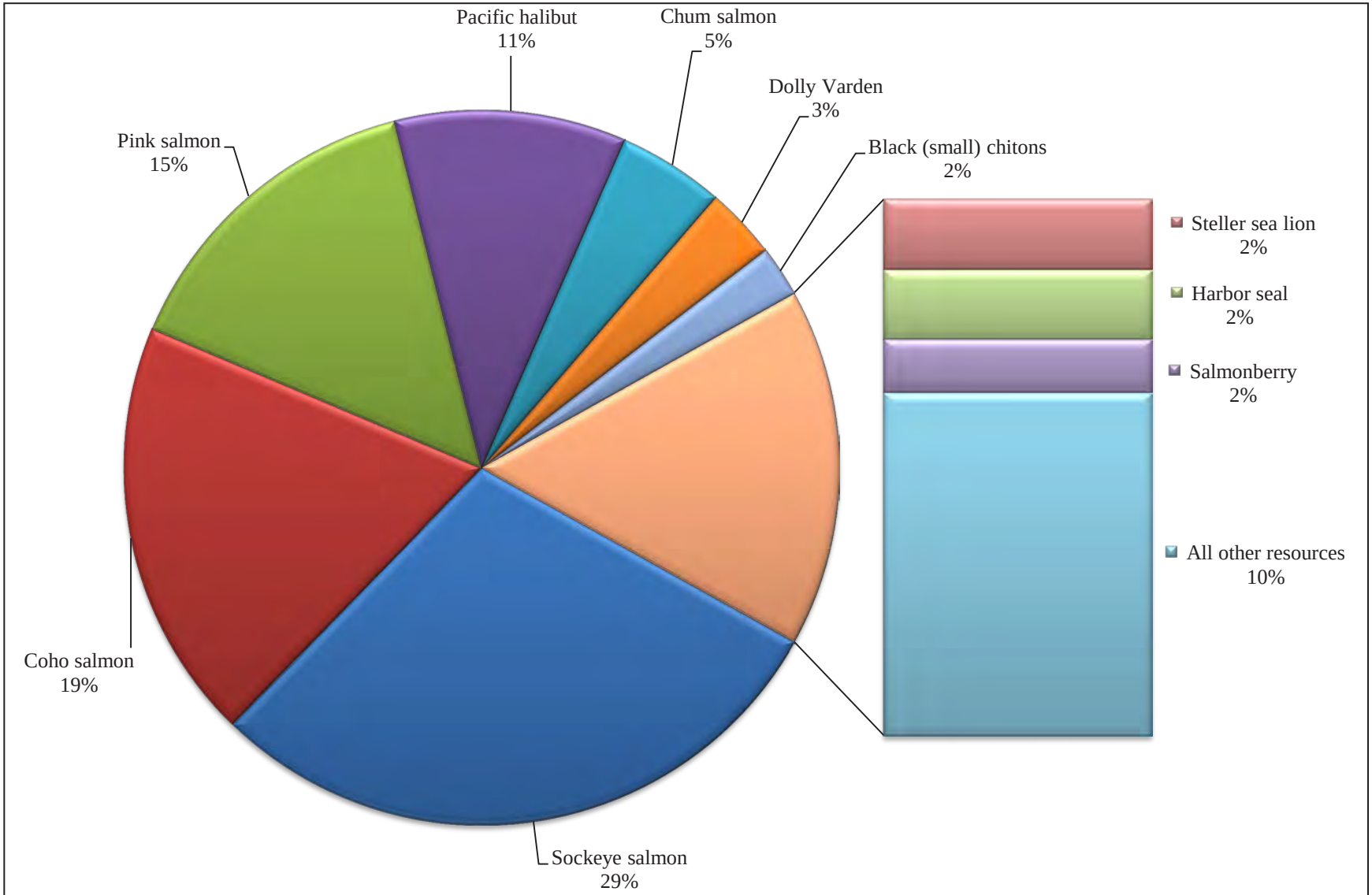


Figure 4-13.–Wild resource search and harvest areas, Nanwalek, 2014.



Note The "all other resources" category represents all species that contributed 1.5% or less to the total harvest.

Figure 4-14.–Top species harvested by percentage of total harvest in pounds usable weight, Nanwalek, 2014.

Table 4-13.–Top ranked resources used by households, Nanwalek, 2014.

Rank[a]	Resource	Percentage of households using
1.	Sockeye salmon	85.7%
2.	Blueberry	80.4%
2.	Salmonberry	80.4%
4.	Coho salmon	75.0%
4.	Black (small) chitons	75.0%
6.	Harbor seal	71.4%
7.	Pink salmon	69.6%
8.	Pacific halibut	67.9%
9.	Black seaweed	57.1%
10.	Octopus	53.6%

Source ADF&G Division of Subsistence household surveys, 2015.
a. Resources used by the same percentage of households share the lowest rank value instead of having sequential rank values.

Use and Harvest Characteristics by Resource Category

Estimates of sharing indicated that 84% of Nanwalek households received wild resources from other households and 71% of households gave resources away (Table 4-12). Salmon, marine invertebrates, vegetation, and nonsalmon fish were the most commonly shared resources. Salmon were used by 86% of households, were given away by 59% of households, and were received by 64% of households. Marine invertebrates were used by 77% of households, were given away by 54% of households, and were received by 52% of households. Vegetation resources were used by 88% of households, was given away by 54% of households, and received by 55% of households. Nonsalmon fish were used by 75% of households, were given away by 50% of households, and received by 66% of households. Sharing with relatives in Anchorage accounts for the higher percentage of households giving away marine invertebrates compared to Nanwalek households receiving these resources. Conversely, the most commonly received wild resources were marine mammals, which were used by 73% of households, received by 70%, and given away by 21% of households.

Figure 4-14 displays the top resources harvested, by pounds usable weight harvested, and Table 4-13 displays the resources most used by Nanwalek households during the 2014 study year. Sockeye salmon made the largest contribution (29%) to Nanwalek's 2014 wild resource harvest, followed by coho salmon (19%), pink salmon (15%), Pacific halibut (11%), and chum salmon (5%) (Figure 4-14). Of all the available resources, sockeye salmon were used the most by Nanwalek households (used by 86% of households), followed by blueberries and salmonberries (each used by 80% of households), coho salmon and black (small) chitons (each used by 75% of households), and harbor seals (used by 71% of households).

Salmon

For Nanwalek residents, salmon composed 69% of the wild resource harvest in pounds usable weight in 2014 (Figure 4-12). The composition of the salmon harvest was as follows: 43% sockeye salmon (17,050

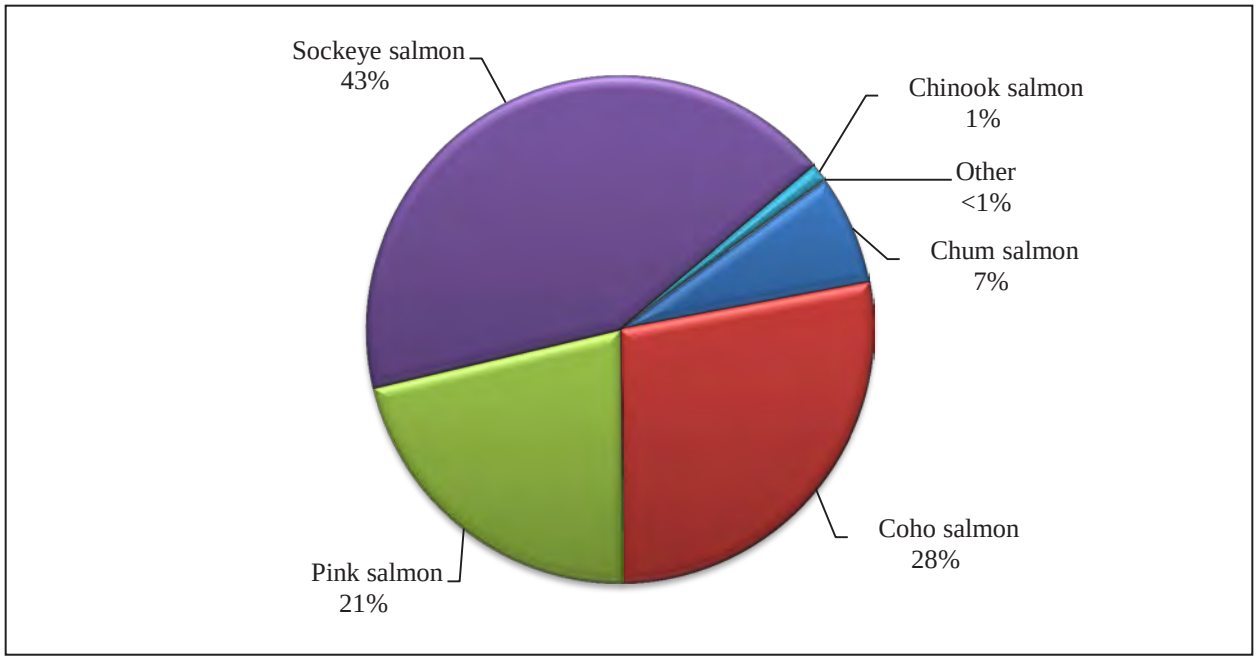


Figure 4-15.–Composition of salmon harvest in pounds usable weight, Nanwalek, 2014.

lb, or 74 lb per capita); 28% coho salmon (11,152 lb, or 48 lb per capita); 21% pink salmon (8,595 lb, or 37 lb per capita); 7% chum salmon (2,813 lb, or 12 lb per capita); and 1% Chinook salmon (458 lb, or 2 lb per capita) (Figure 4-15; Table 4-12).

The majority of the salmon harvest effort by Nanwalek households was directed toward sockeye salmon, coho salmon, and pink salmon. Of the 64% of households that attempted to harvest coho salmon and the 63% of households that attempted to harvest pink salmon, all were successful (Table 4-12). However, 71% of households attempted to harvest sockeye salmon, but slightly fewer Nanwalek households (70%) were successful. Many of the households that harvested salmon shared their catch with other Nanwalek households (55% of households received sockeye salmon, 45% of households received coho salmon and pink salmon, and 23% of households received Chinook salmon).

Survey respondents explained that salmon are being caught primarily with rod and reel gear due to ease of access and for financial reasons. A total of 9,163 salmon out of 10,055 salmon were harvested by rod and reel (Table 4-14). Figure 4-16 is a visual representation of the salmon harvest weight harvested by gear type. In 2014, rod and reel gear was used to harvest an estimated 91% of the salmon harvest weight (excluding Chinook salmon caught by trolling), subsistence setnets were used to harvest about 9% of the salmon harvest weight, and trolling for Chinook salmon was used to harvest about 1% of the salmon harvest weight (Table 4-15). Respondents explained that setnet fishing requires a boat and money for fuel, which limits participation. However, respondents said that community members who harvest salmon with setnets do tend to share the catch with the rest of the community. During 2014, an estimated 50% of households gave away sockeye salmon, 39% of households gave away coho and pink salmon, 20% gave away chum salmon, and 14% of households shared Chinook salmon.

During the 2014 study year, Nanwalek respondents reported harvesting coho salmon, sockeye salmon, chum salmon, and pink salmon in English Bay river and lagoon, along the shore of Cook Inlet south of the community, and inside Port Graham Bay (Figure 4-17). Nanwalek residents reported harvesting Chinook salmon in offshore marine waters west of the community.

Table 4-14.–Estimated harvest of salmon by gear type and resource, Nanwalek, 2014.

	Removed from commercial catch		Subsistence/personal use methods																			
			Setnet		Seine		Fish wheel		Jigging		Dip net		Other method		Subsistence/personal use gear, any method		Trolling		Rod and reel		Any method	
Resource	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Salmon	**3.1**	**12.4**	**836.9**	**3,461.9**	**51.8**	**232.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**888.6**	**3,694.1**	**38.3**	**423.5**	**9,162.7**	**36,376.4**	**10,054.5**	**40,082.9**
Chum salmon	0.0	0.0	51.8	283.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	51.8	283.6	0.0	0.0	461.9	2,529.5	513.7	2,813.1
Coho salmon	0.0	0.0	181.3	834.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	181.3	834.7	0.0	0.0	2,240.5	10,317.6	2,421.8	11,152.2
Chinook salmon	0.0	0.0	3.1	34.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.1	34.3	38.3	423.5	0.0	0.0	41.4	457.9
Pink salmon	0.0	0.0	207.1	544.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	207.1	544.4	0.0	0.0	3,063.3	8,050.2	3,270.4	8,594.6
Sockeye salmon	0.0	0.0	393.6	1,764.9	51.8	232.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	445.4	1,997.2	0.0	0.0	3,356.6	15,052.4	3,802.0	17,049.6
Landlocked salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	3.1	2.1	3.1
Unknown salmon	3.1	12.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.1	12.4

Source ADF&G Division of Subsistence household surveys, 2015.

Note The harvested number of salmon is represented as individual fish harvested.

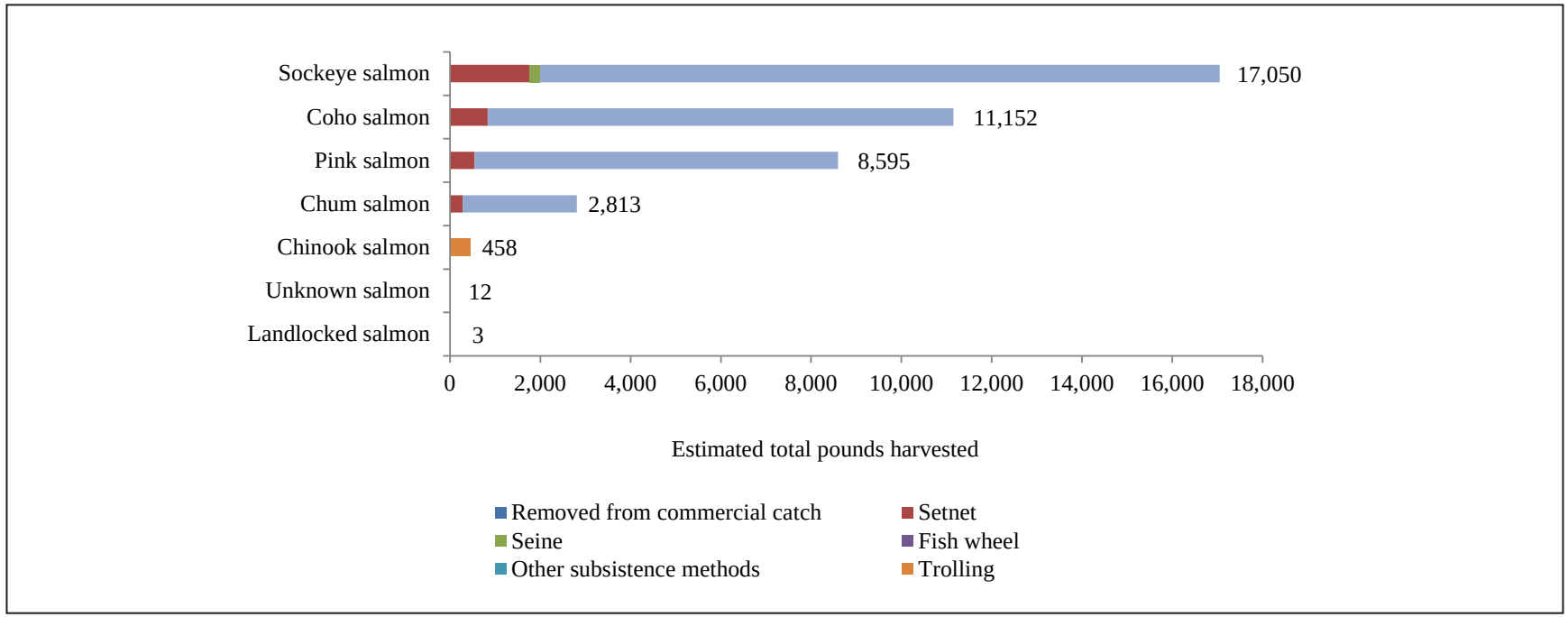


Figure 4-16.–Salmon harvest by gear type, Nanwalek, 2014.

Table 4-15.–Estimated percentages of salmon harvested by gear type, resource, and total salmon harvest, Nanwalek, 2014.

			Subsistence/personal use methods									
Resource	Percentage base	Removed from commercial catch	Setnet	Seine	Fish wheel	Jigging	Dip net	Other	Subsistence/ personal use gear, any method	Trolling	Rod and reel	Any method
Salmon	**Gear type**	**100.0%**	**100.0%**	**100.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
	Resource	**0.0%**	**8.6%**	**0.6%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**9.2%**	**1.1%**	**90.8%**	**100.0%**
	Total	**0.0%**	**8.6%**	**0.6%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**9.2%**	**1.1%**	**90.8%**	**100.0%**
Chum salmon	Gear type	0.0%	8.2%	0.0%	0.0%	0.0%	0.0%	0.0%	7.7%	0.0%	7.0%	7.0%
	Resource	0.0%	10.1%	0.0%	0.0%	0.0%	0.0%	0.0%	10.1%	0.0%	89.9%	100.0%
	Total	0.0%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	0.0%	6.3%	7.0%
Coho salmon	Gear type	0.0%	24.1%	0.0%	0.0%	0.0%	0.0%	0.0%	22.6%	0.0%	28.4%	27.8%
	Resource	0.0%	7.5%	0.0%	0.0%	0.0%	0.0%	0.0%	7.5%	0.0%	92.5%	100.0%
	Total	0.0%	2.1%	0.0%	0.0%	0.0%	0.0%	0.0%	2.1%	0.0%	25.7%	27.8%
Chinook salmon	Gear type	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	100%	0.0%	1.1%
	Resource	0.0%	7.5%	0.0%	0.0%	0.0%	0.0%	0.0%	7.5%	92.5%	0.0%	100.0%
	Total	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	1.1%	0.0%	1.1%
Pink salmon	Gear type	0.0%	15.7%	0.0%	0.0%	0.0%	0.0%	0.0%	14.7%	0.0%	22.1%	21.4%
	Resource	0.0%	6.3%	0.0%	0.0%	0.0%	0.0%	0.0%	6.3%	0.0%	93.7%	100.0%
	Total	0.0%	1.4%	0.0%	0.0%	0.0%	0.0%	0.0%	1.4%	0.0%	20.1%	21.4%
Sockeye salmon	Gear type	0.0%	51.0%	100.0%	0.0%	0.0%	0.0%	0.0%	54.1%	0.0%	41.4%	42.5%
	Resource	0.0%	10.4%	1.4%	0.0%	0.0%	0.0%	0.0%	11.7%	0.0%	88.3%	100.0%
	Total	0.0%	4.4%	0.6%	0.0%	0.0%	0.0%	0.0%	5.0%	0.0%	37.6%	42.5%
Landlocked salmon	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown salmon	Gear type	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Source ADF&G Division of Subsistence household surveys, 2015.

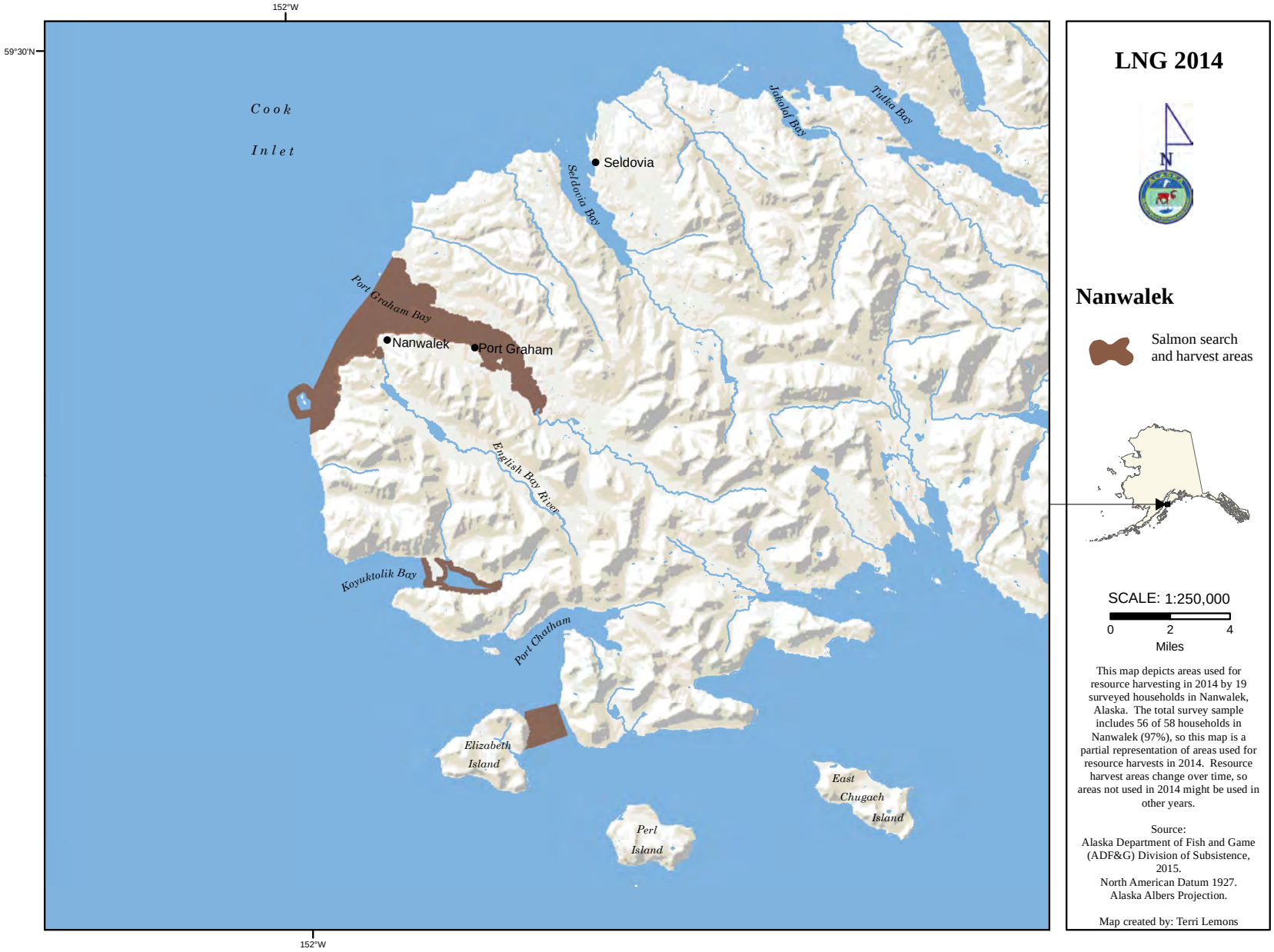
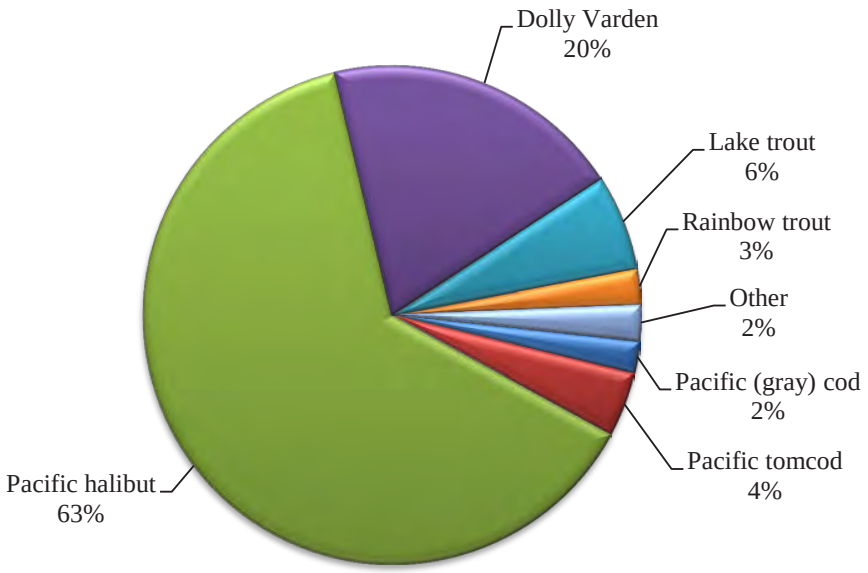


Figure 4-17.–Fishing and harvest locations of chum, coho, Chinook, pink, and sockeye salmon, Nanwalek, 2014.



Note The "other" category includes species each providing less than 2% to the total nonsalmon fish harvest.

Figure 4-18.–Composition of nonsalmon fish harvest in pounds usable weight, Nanwalek, 2014.

Nonsalmon Fish

In 2014, Nanwalek residents harvested an estimated total of 9,665 lb, or 42 lb per capita, of nonsalmon fish (Table 4-12). Nonsalmon fish composed 17% of the wild resource harvest in pounds usable weight in 2014 (Figure 4-12). In terms of total pounds and percentages harvested, most of the harvest (63%) was Pacific halibut (6,124 lb, or 27 lb per capita), followed by Dolly Varden (1,887 lb, or 8 lb per capita), lake trout (599 lb, or 3 lb per capita), Pacific tomcod (404 lb, or 2 lb per capita), rainbow trout (229 lb, or 1 lb per capita), and Pacific (gray) cod (202 lb, or 1 lb per capita); combined, these species composed 98% of the nonsalmon fish harvest (Figure 4-18; Table 4-12). During the community review meeting for this study, Nanwalek residents suggested that the reported Pacific halibut harvests for 2014 may be lower than what was actually caught.[9] Nanwalek residents also harvested sea bass, starry flounder, greenling, lingcod, yelloweye rockfish, cutthroat trout, and steelhead (Table 4-12).

During 2014, there were 75% of Nanwalek households that used nonsalmon fish, 68% harvested nonsalmon fish, 50% shared these resources, and 66% received nonsalmon fish (Table 4-12). Pacific halibut was the primary nonsalmon fish shared: 52% of Nanwalek households received Pacific halibut from other households, and 41% gave some away.

Table 4-16 lists each nonsalmon fish species harvested by Nanwalek residents in 2014 by gear type. Figure 4-19 is a visual representation of the nonsalmon fish harvest weight harvested by gear type, which depicts

9. There is another data collection program that provided Pacific halibut harvest estimates for 2014. Data were collected through a voluntary survey mailed to all holders of Subsistence Halibut Registration Certificates (SHARCs). Based on returned surveys that identified Nanwalek as the SHARC holder's place of residence, an estimated 14,301 lb of Pacific halibut were harvested in 2014 (Fall and Lemons 2016:103). Estimates for the 2 surveys may differ for several methodological reasons. The SHARCs only include those individuals who have registered with the National Marine Fisheries Service, and do not include harvests removed from commercial catches. The SHARC estimates are based on the mailing addresses of SHARC holders, some of whom might be seasonal residents of the community and not eligible to participate in the household survey. The household survey estimate includes harvests for home use from the subsistence and sport fisheries as well as fish retained from respondents' commercial harvests for home use or sharing.

Table 4-16.–Estimated harvest of nonsalmon fish by gear type and resource, Nanwalek, 2014.

		Removed from commercial catch		Subsistence/personal use methods													
				Setnet		Seine		Fish wheel		Other method		Subsistence/personal use gear, any method		Rod and reel		Any method	
Resource	Unit[a]	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds
Nonsalmon fish			**0.0**		**183.8**		**0.0**		**0.0**		**2,259.1**		**2,442.9**		**7,222.1**		**9,665.0**
Pacific herring	gal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pacific herring roe unspecified	gal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pacific herring sac roe	gal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pacific herring spawn on kelp	gal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Eulachon (hooligan, candlefish)	gal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown smelt	gal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sea bass	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	62.1	62.1	62.1	62.1
Pacific (gray) cod	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.2	16.6	5.2	16.6	58.0	185.6	63.2	202.2
Pacific tomcod	ind	0.0	0.0	367.7	183.8	0.0	0.0	0.0	0.0	126.5	63.3	494.2	247.1	272.4	156.9	766.6	404.0
Walleye pollock (whiting)	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Eel	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Starry flounder	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.3	24.9	8.3	24.9
Unknown flounder	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kelp greenling	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24.9	24.9	24.9	24.9
Lingcod	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	8.3	2.1	8.3	3.1	12.4	5.2	20.7
Unknown greenling	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.6	16.6	16.6	16.6
Pacific halibut	lb	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2,170.9	2,170.9	2,170.9	2,170.9	3,953.2	3,953.2	6,124.1	6,124.1
Black rockfish	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red rockfish	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yelloweye rockfish	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	3.1	1.0	3.1
Unknown rockfish	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sablefish (black cod)	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown Irish lord	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown sculpin	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown shark	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Skates	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown sole	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wolffish	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dolly Varden	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,347.5	1,886.6	1,347.5	1,886.6
Lake trout	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	427.8	598.9	427.8	598.9
Arctic grayling	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Northern pike	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown sturgeon	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cutthroat trout	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	36.3	50.8	36.3	50.8
Rainbow trout	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	163.5	228.8	163.5	228.8
Steelhead	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.4	17.4	12.4	17.4
Unknown whitefishes	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source ADF&G Division of Subsistence household surveys, 2015.

Note The summary row that includes incompatible units of measure for harvest number has been left blank.

a. The harvested number of each resource is measured by the unit in which the resource harvest information was collected; the unit of measurement is provided for each resource.

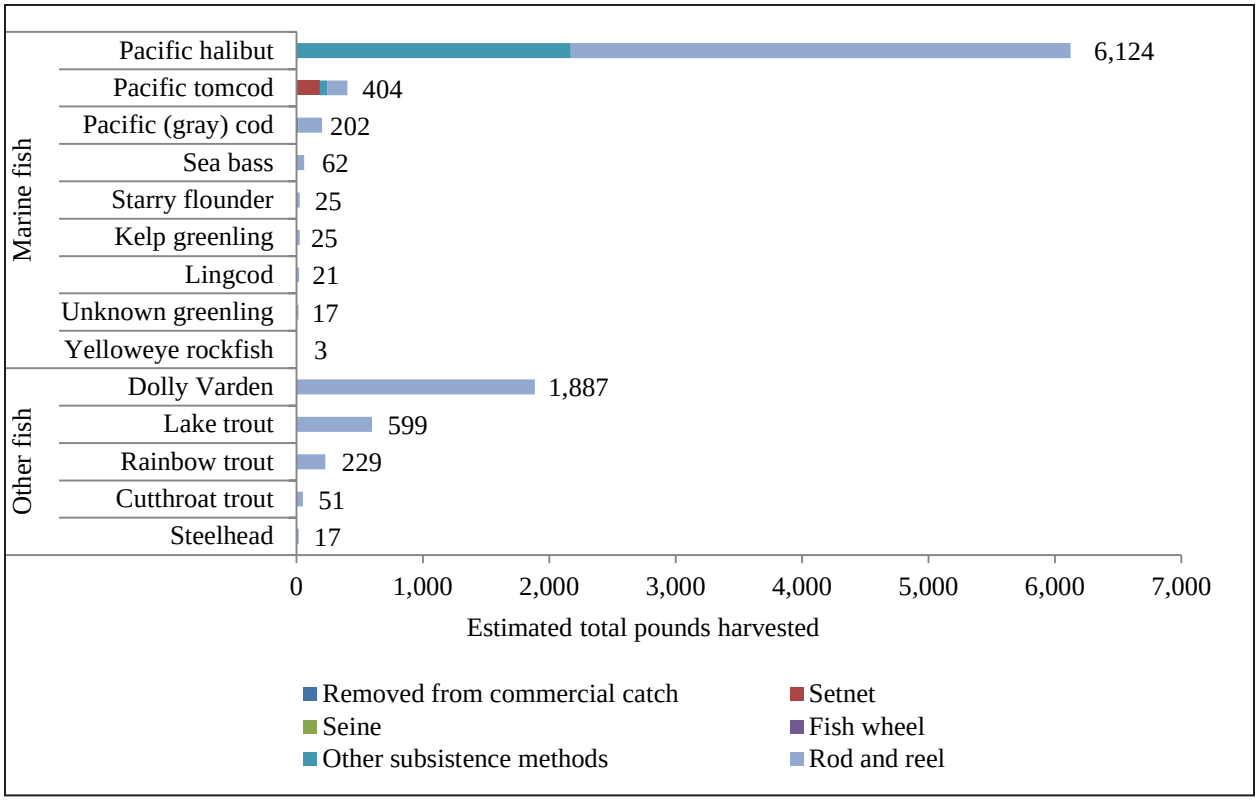


Figure 4-19.–Nonsalmon fish harvest by gear type, Nanwalek, 2014.

that rod and reel fishing and other subsistence methods (predominately skates) were used the most. Nanwalek residents harvested most of their nonsalmon fish with rod and reel (75% of nonsalmon fish harvest weight) (Table 4-17). A portion of the Pacific halibut harvest (35%) was accomplished by using subsistence skates and a portion of the Pacific tomcod harvest (46%) was accomplished by using subsistence setnets.

During the 2014 study year, Nanwalek respondents reported harvesting Dolly Varden in the English Bay Lagoon, and trouts in the English Bay River lake system (Figure 4-20). Marine nonsalmon fish such as kelp greenling, lingcod, starry flounder, seabass, Pacific cod, Pacific tomcod, and Pacific halibut were caught in offshore marine waters in Cook Inlet west of Nanwalek, in the outer reaches of Koyuktolik Bay, and north of Perl Island.

Table 4-17.–Estimated percentages of nonsalmon fish harvested by gear type, resource, and total nonsalmon fish harvest, Nanwalek, 2014.

			Subsistence/personal use methods						
Resource	Percentage base	Removed from commercial catch	Setnet	Seine	Fish wheel	Other	Subsistence/ personal use gear, any method	Rod and reel	Any method
Nonsalmon fish	**Gear type**	**0.0%**	**100.0%**	**0.0%**	**0.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
	Resource	**0.0%**	**1.9%**	**0.0%**	**0.0%**	**23.4%**	**25.3%**	**74.7%**	**100.0%**
	Total	**0.0%**	**1.9%**	**0.0%**	**0.0%**	**23.4%**	**25.3%**	**74.7%**	**100.0%**
Pacific herring	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Pacific herring roe unspecified	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Pacific herring sac roe	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Pacific herring spawn on kelp	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Eulachon (hooligan, candlefish)	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown smelt	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Sea bass	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.6%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.6%
Pacific (gray) cod	Gear type	0.0%	0.0%	0.0%	0.0%	0.7%	0.7%	2.6%	2.1%
	Resource	0.0%	0.0%	0.0%	0.0%	8.2%	8.2%	91.8%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.2%	0.2%	1.9%	2.1%
Pacific tomcod	Gear type	0.0%	100.0%	0.0%	0.0%	2.8%	10.1%	2.2%	4.2%
	Resource	0.0%	45.5%	0.0%	0.0%	15.7%	61.2%	38.8%	100.0%
	Total	0.0%	1.9%	0.0%	0.0%	0.7%	2.6%	1.6%	4.2%

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Table 4-17.–Page 2 of 4.

Resource	Percentage base	Removed from commercial catch	Subsistence/personal use methods: Setnet	Seine	Fish wheel	Other	Subsistence/ personal use gear, any method	Rod and reel	Any method
Walleye pollock (whiting)	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Eel	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Starry flounder	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.3%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.3%
Unknown flounder	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Kelp greenling	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.3%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.3%
Lingcod	Gear type	0.0%	0.0%	0.0%	0.0%	0.4%	0.3%	0.2%	0.2%
	Resource	0.0%	0.0%	0.0%	0.0%	40.0%	40.0%	60.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.2%
Unknown greenling	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.2%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.2%
Pacific halibut	Gear type	0.0%	0.0%	0.0%	0.0%	96.1%	88.9%	54.7%	63.4%
	Resource	0.0%	0.0%	0.0%	0.0%	35.4%	35.4%	64.6%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	22.5%	22.5%	40.9%	63.4%
Black rockfish	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

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Table 4-17.–Page 3 of 4.

Resource	Percentage base	Removed from commercial catch	Subsistence/personal use methods: Setnet	Seine	Fish wheel	Other	Subsistence/ personal use gear, any method	Rod and reel	Any method
Red rockfish	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Yelloweye rockfish	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown rockfish	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Sablefish (black cod)	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown Irish lord	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown sculpin	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown shark	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Skates	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown sole	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Wolffish	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

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Table 4-17.–Page 4 of 4.

Resource	Percentage base	Removed from commercial catch	Subsistence/personal use methods: Setnet	Seine	Fish wheel	Other	Subsistence/ personal use gear, any method	Rod and reel	Any method
Dolly Varden	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	26.1%	19.5%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	19.5%	19.5%
Lake trout	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	8.3%	6.2%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.2%	6.2%
Arctic grayling	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Northern pike	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown sturgeon	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Cutthroat trout	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	0.5%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.5%
Rainbow trout	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.2%	2.4%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.4%	2.4%
Steelhead	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.2%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.2%
Unknown whitefishes	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Source ADF&G Division of Subsistence household surveys, 2015.

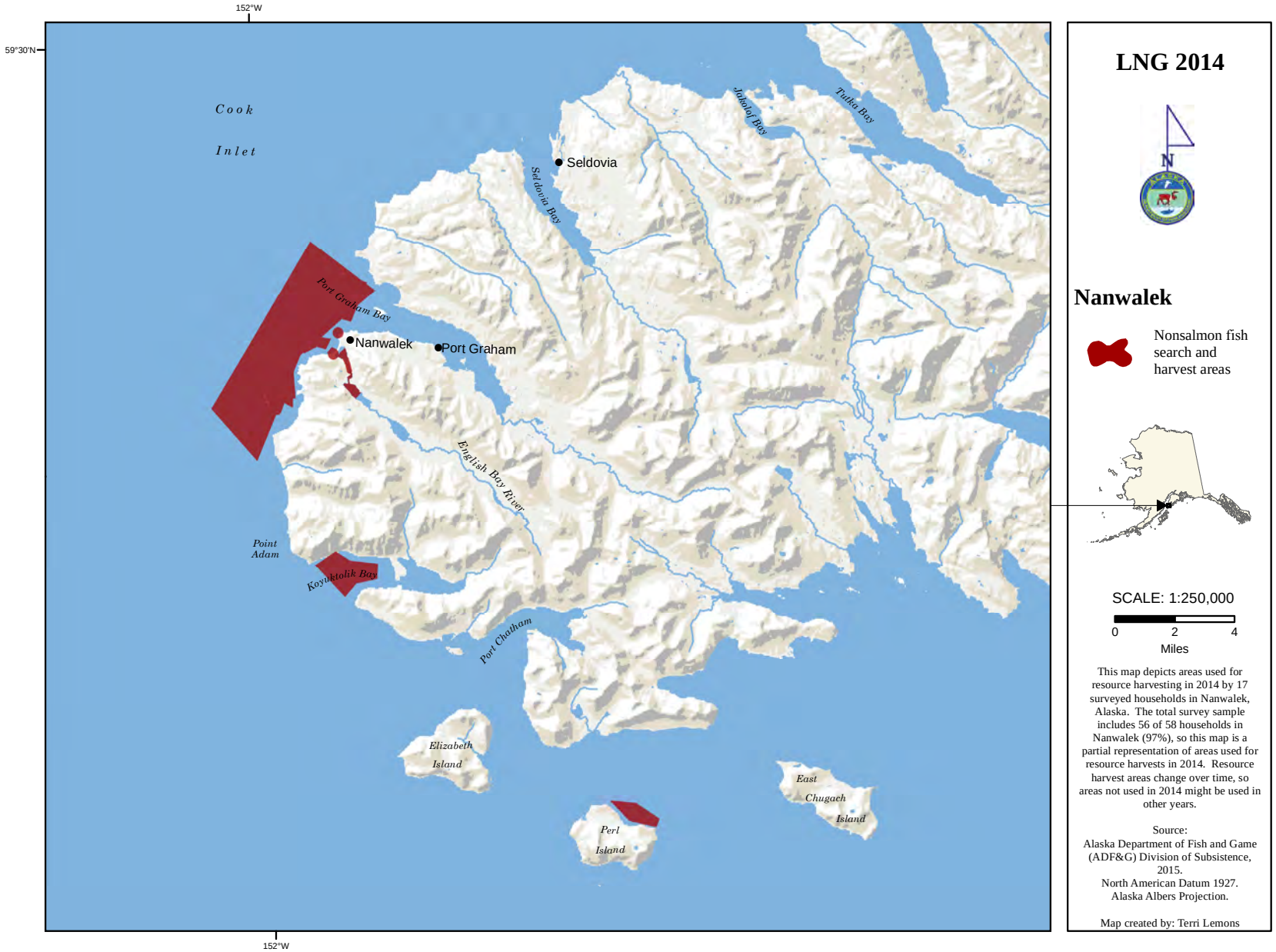


Figure 4-20.–Fishing and harvest locations of all nonsalmon fish resources, Nanwalek, 2014.

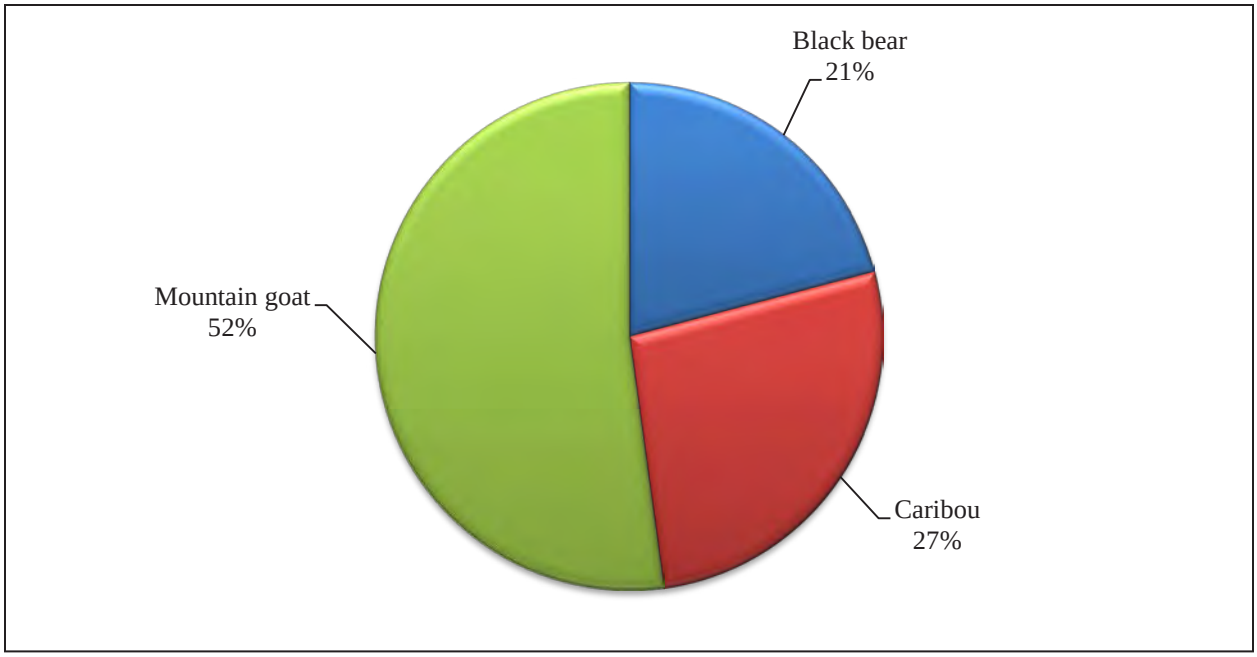


Figure 4-21.–Composition of large land mammal harvest in pounds usable weight, Nanwalek, 2014.

Large Land Mammals

In 2014, large land mammals, predominantly mountain goats, contributed only 1% of the total Nanwalek wild resource harvest by weight (Figure 4-12). Mountain goats, black bears, and caribou made up the composition of the large land mammal harvest for the community (Figure 4-21). Mountain goats provided 52% of the usable pounds of large land mammals harvested by Nanwalek households. Mountain goats were used by 13% of Nanwalek households (9% hunted mountain goats and 5% of community households were successful harvesters) (Table 4-12). According to the study, successful mountain goat hunting took place during fall. In October 2014, an estimated 4 mountain goats were harvested (Table 4-18). Mountain goats were shared among Nanwalek households (7% of households gave mountain goats away and 9% of households received mountain goats from other households) (Table 4-12).

In 2014, Nanwalek residents harvested 2 black bears (Table 4-12). Of the 5% of households that attempted to harvest black bears, nearly all (4% of Nanwalek households) were successful. Black bears were used by 18%, shared by 5%, and received by 14% of households. One black bear was harvested in May and a second black bear was harvested in September (Table 4-18). During March, 1 Nanwalek hunter traveled to GMU 13 and harvested a caribou.

During the 2014 study year, Nanwalek households reported searching for black bears along the road extending from Nanwalek through the English Bay River corridor over a mountain pass and into Koyuktolik Bay (Figure 4-22). Mountain goat hunting occurred in the mountains encompassing the English Bay River watershed and along the shoreline of Koyuktolik Bay on its northern shore extending to its mouth at Point Adam.

Table 4-18.–Estimated large land mammal harvests by month and sex, Nanwalek, 2014.

	Estimated harvest by month													
Resource	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk	**Total**
All large land mammals	**0.0**	**0.0**	**1.0**	**0.0**	**1.0**	**0.0**	**0.0**	**0.0**	**1.0**	**4.1**	**0.0**	**0.0**	**0.0**	**7.3**
Black bear	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	**2.1**
Caribou	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**1.0**
Caribou, male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Caribou, female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Caribou, unknown sex	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**1.0**
Deer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Mountain goat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.1	0.0	0.0	0.0	**4.1**
Moose	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Moose, bull	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Moose, cow	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Moose, unknown sex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Dall sheep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**

Source ADF&G Division of Subsistence household surveys, 2015.

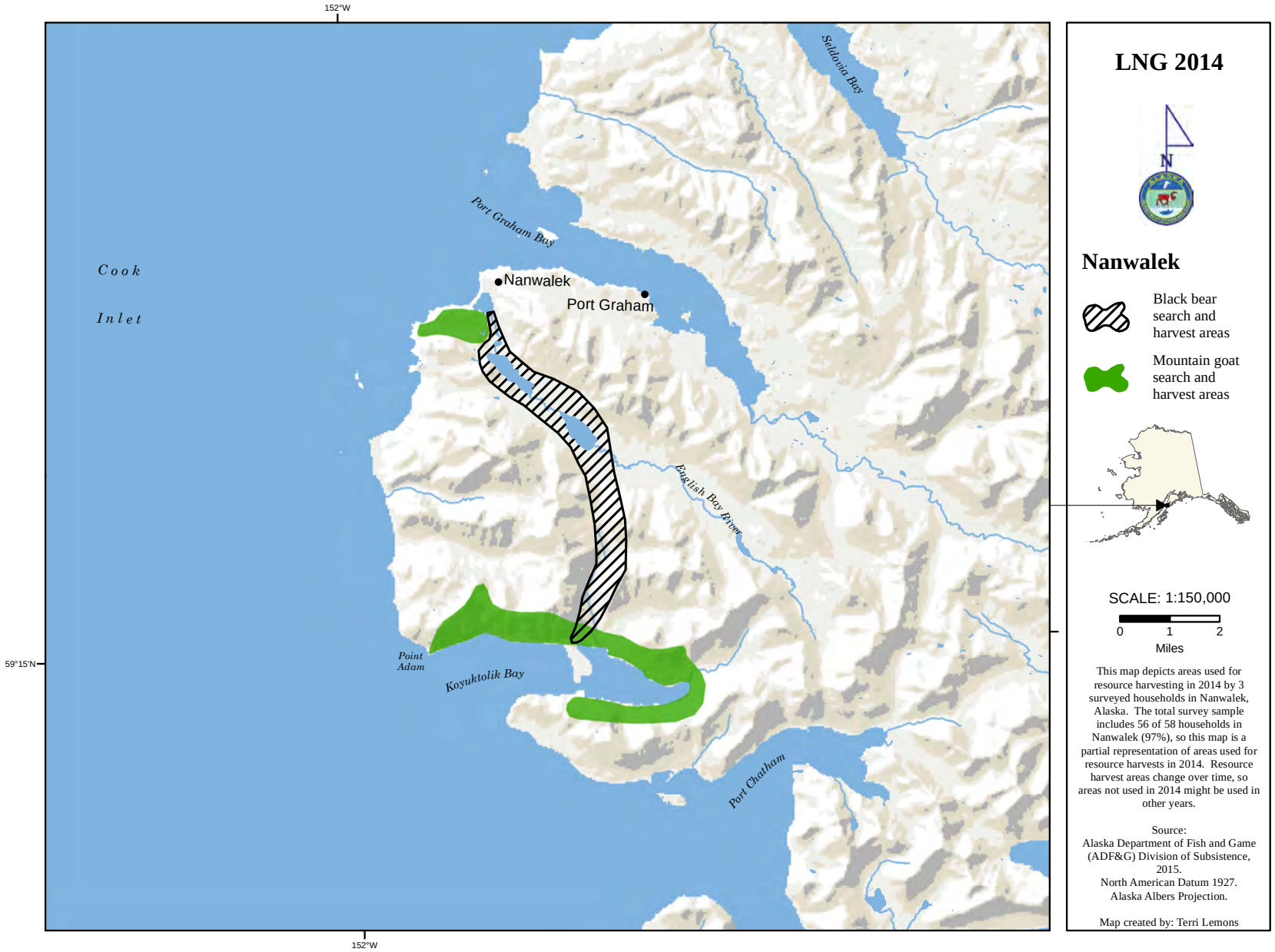


Figure 4-22.–Hunting locations of black bear and mountain goat, Nanwalek, 2014.

Small Land Mammals/Furbearers

As listed in Table 4-19, the total harvest of small land mammals by Nanwalek residents in 2014 consisted of 2 porcupines, both harvested in October. The harvest of small land mammals composed less than 1% of Nanwalek's total harvest of wild food resources in 2014 (Figure 4-12). During 2014, no other species of small land mammals were sought or used by Nanwalek residents, with the exception of 2% of households that received and used snowshoe hares (Table 4-12). Survey respondents reported that there are very few small land mammal or furbearer resources inhabiting the local area. Respondents said that a small number of wolves inhabit the southern tip of the Kenai Peninsula, but that community members rarely make attempts to trap wolves. During the 2014 study year, Nanwalek households reported searching for small land mammals along the road extending from Nanwalek through the English Bay River corridor over a mountain pass and into Koyuktolik Bay.

Marine Mammals

In 2014, marine mammals made up 4% of the total Nanwalek wild resource harvest weight (Figure 4-12). Steller sea lions and harbor seals made up the marine mammal food harvest for the community, each providing 50% of the usable pounds of marine mammals harvested (Table 4-12). Harbor seals were used by 71% of Nanwalek households (25% hunted harbor seals and 16% of Nanwalek households were successful harvesters). Steller sea lions were used by 25% of Nanwalek households (9% hunted Steller sea lions and 7% of Nanwalek households were successful harvesters). Harbor seals were shared by 21% of households and received by 66% of households. Steller sea lions were shared by 11% of households and received by 21% of households.

According to the study, a total of 22 harbor seals were harvested from March–October 2014, with the majority of the harvests occurring in April when 7 harbor seals were harvested (Table 4-20). Three of the estimated 6 total Steller sea lions harvested by the community were taken in August; 2 were harvested in May, and 1 was harvested in November 2014. For use for fur only, 1 sea otter was harvested by a Nanwalek household in the month of May. Given these harvests, harbor seals composed 75% of the individual marine mammal harvest, Steller sea lions composed 21%, and 4% was sea otter (Figure 4-23). Bowhead whale, received from outside the community, was used by 2% of Nanwalek households during 2014 (Table 4-12).

During the 2014 study year, Nanwalek households reported hunting harbor seals and Steller sea lions at Bear Cove, China Poot Bay, Tukta Bay, Seldovia Bay, Koyuktolik Bay, Port Chatham, in the waters south of Yukon Island, and along the shores of Cook Inlet close to Nanwalek (Figure 4-24). Survey respondents reported that harbor seals and Steller sea lions are important traditional subsistence resources for the community, but that they are harvested much less today than in the past.

Table 4-19.–Estimated small land mammal/furbearer harvests by month, Nanwalek, 2014.

	Estimated harvest by month													
Resource	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk	**Total**
All small land mammals	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**2.1**	**0.0**	**0.0**	**0.0**	**2.1**
Beaver	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Coyote	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Red fox	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Snowshoe hare	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
North American river (land) otter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Lynx	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Marten	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Mink	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Muskrat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Porcupine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	0.0	0.0	0.0	**2.1**
Arctic ground (parka) squirrel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Red (tree) squirrel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Weasel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Gray wolf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Wolverine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**

Source ADF&G Division of Subsistence household surveys, 2015.

Table 4-20.–Estimated marine mammal harvests by month and sex, Nanwalek, 2014.

	Estimated harvest by month													
Resource	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk	**Total**
All marine mammals	**0.0**	**0.0**	**3.1**	**7.3**	**4.1**	**1.0**	**3.1**	**4.1**	**4.2**	**1.0**	**1.0**	**0.0**	**0.0**	**29.1**
Harbor seal	0.0	0.0	3.1	7.3	1.0	1.0	3.1	1.0	4.2	1.0	0.0	0.0	0.0	**21.9**
Harbor seal, male	0.0	0.0	2.1	7.3	1.0	0.0	0.0	1.0	3.1	1.0	0.0	0.0	0.0	**15.5**
Harbor seal, female	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	0.0	0.0	**3.1**
Harbor seal, unknown sex	0.0	0.0	0.0	0.0	0.0	1.0	2.1	0.0	0.0	0.0	0.0	0.0	0.0	**3.2**
Sea otter	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**1.0**
Steller sea lion	0.0	0.0	0.0	0.0	2.1	0.0	0.0	3.1	0.0	0.0	1.0	0.0	0.0	**6.2**
Steller sea lion, male	0.0	0.0	0.0	0.0	1.0	0.0	0.0	3.1	0.0	0.0	1.0	0.0	0.0	**5.2**
Steller sea lion, female	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**1.0**
Steller sea lion, unknown sex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Bowhead whale	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**

Source ADF&G Division of Subsistence household surveys, 2015.

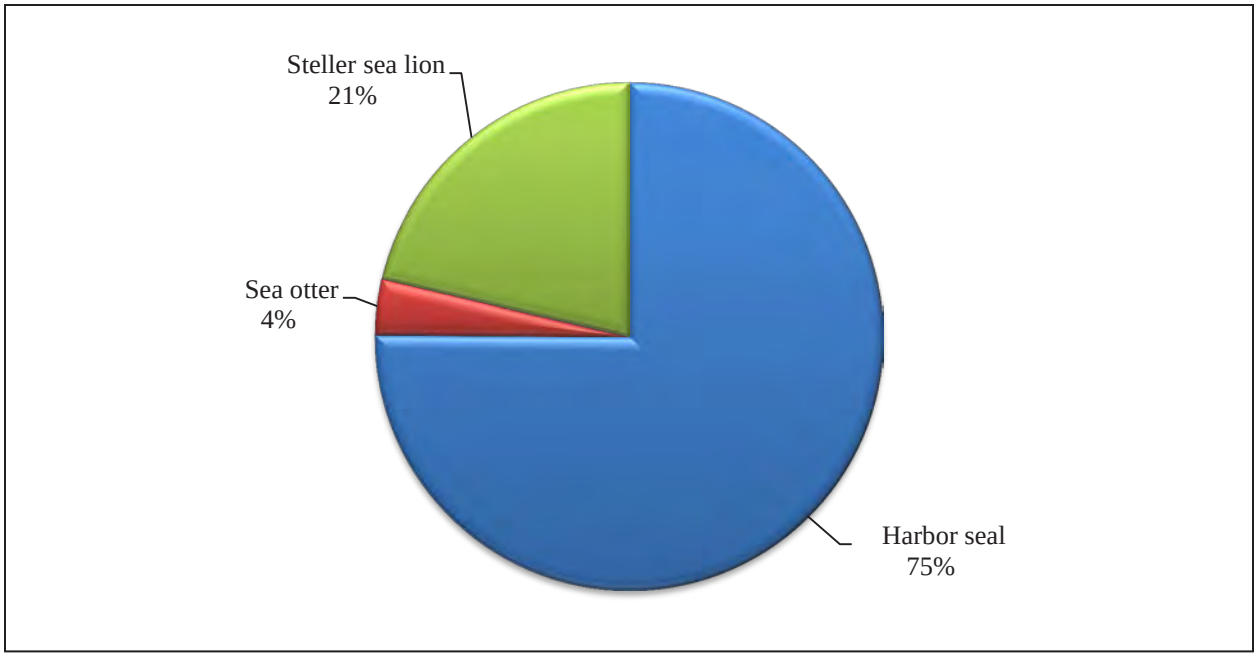


Figure 4-23.–Composition of marine mammal harvest by individual animals harvested, Nanwalek, 2014.

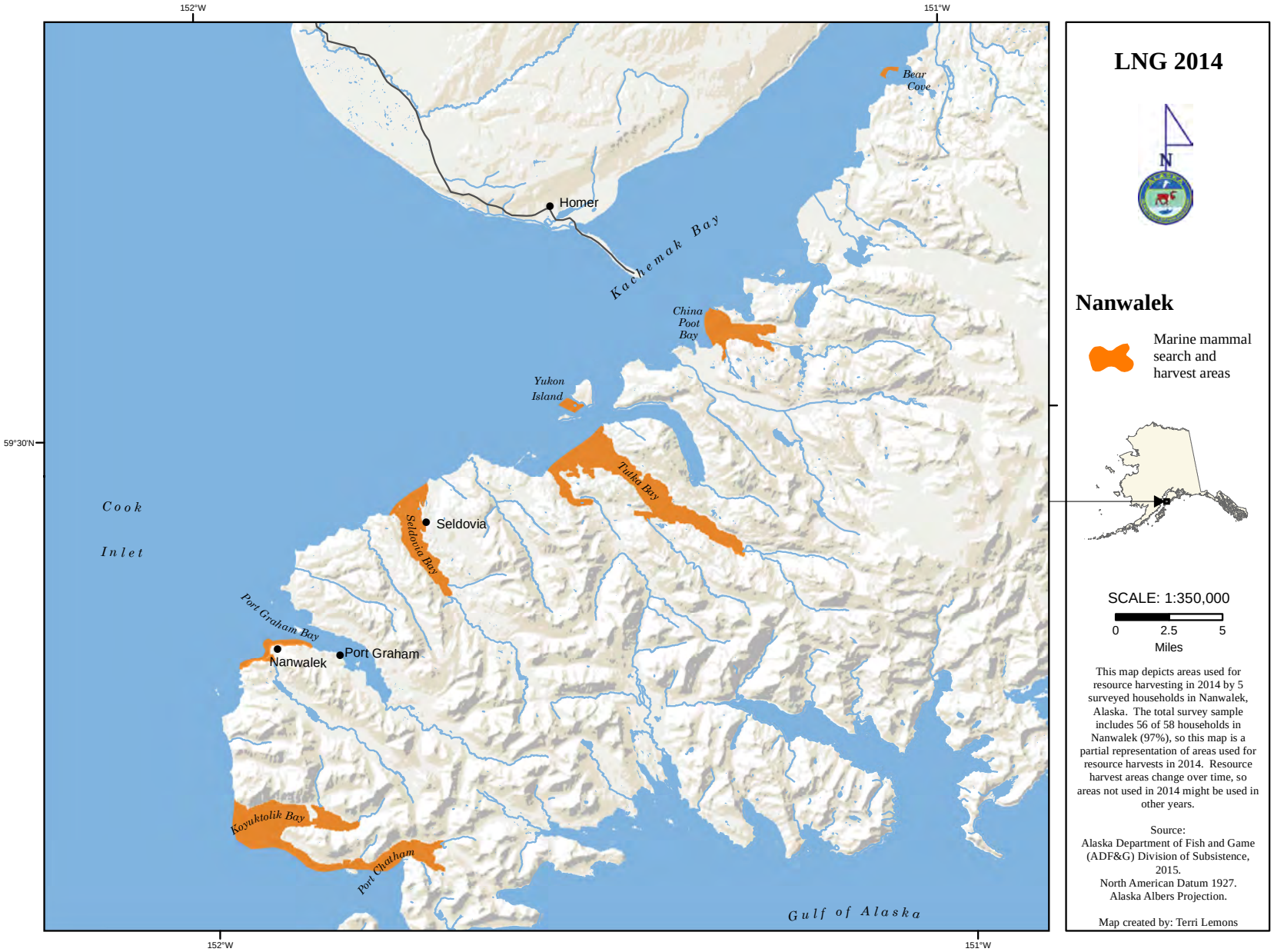
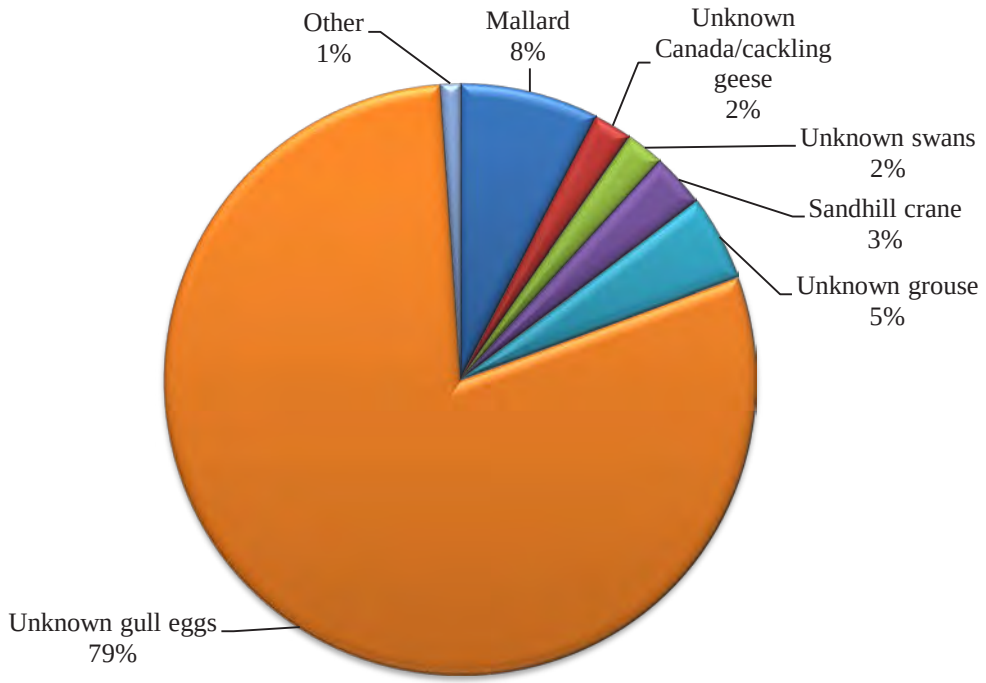


Figure 4-24.–Hunting and harvest locations of marine mammals, Nanwalek, 2014.



Note The "other" category includes species providing less than 2% each to the estimated harvest weight.

Figure 4-25.–Composition of bird and bird egg harvest in pounds usable weight, Nanwalek, 2014.

Birds and Eggs

Birds and eggs were used by 50% of Nanwalek households (Table 4-12). Of the 30% of households that attempted to harvest birds and eggs, nearly all were successful (29% of Nanwalek households). Birds and eggs were shared by 27% of Nanwalek households and received by 41% of households. Gull eggs composed 79% of the total bird and egg harvest, migratory birds composed 15% of the total bird and egg harvest, and non-migratory birds composed 6% of the total bird and egg harvest (Figure 4-25). The total harvest of bird eggs was an estimated 235 lb, or around 1 lb per capita (Table 4-12). The total harvest of migratory birds and seabirds was an estimated 47 lb, or less than 1 lb per capita. The harvest of upland game birds, which consisted of unspecified species of grouse, totaled 14 lb, which was also less than 1 lb per capita.

Mallards accounted for most of the bird harvest by the community (22 lb), followed by unspecified species of grouse (14 lb), sandhill cranes (9 lb), Canada geese and swans (6 lb, each), puffins (3 lb), and teals, which provided 1 lb. Duck and goose harvests by Nanwalek residents occurred during fall and winter (Table 4-21). Sandhill crane, puffin, and most of the grouse harvests occurred during summer, and some grouse harvests were during fall.

In 2014, Nanwalek residents searched for grouse along the corridor of the English Bay River road (Figure 4-26). Migratory birds and gull eggs were sought along the shores of Cook Inlet extending south from Nanwalek and inside of Koyuktolik Bay.

Table 4-21.–Estimated bird harvests by season, Nanwalek, 2014.

	Estimated harvest by season					
Resource	Spring	Summer	Fall	Winter	Season unknown	**Total**
All birds	**0.0**	**17.6**	**22.8**	**18.6**	**0.0**	**59.0**
Bufflehead	0.0	0.0	0.0	0.0	0.0	0.0
Unknown eider	0.0	0.0	0.0	0.0	0.0	0.0
Goldeneye	0.0	0.0	0.0	0.0	0.0	0.0
Harlequin duck	0.0	0.0	0.0	0.0	0.0	0.0
Mallard	0.0	0.0	9.3	15.5	0.0	24.9
Unknown merganser	0.0	0.0	0.0	0.0	0.0	0.0
Long-tailed duck	0.0	0.0	0.0	0.0	0.0	0.0
Northern pintail	0.0	0.0	0.0	0.0	0.0	0.0
Unknown scaup	0.0	0.0	0.0	0.0	0.0	0.0
Black scoter	0.0	0.0	0.0	0.0	0.0	0.0
Surf scoter	0.0	0.0	0.0	0.0	0.0	0.0
White-winged scoter	0.0	0.0	0.0	0.0	0.0	0.0
Northern shoveler	0.0	0.0	0.0	0.0	0.0	0.0
Unknown teal	0.0	0.0	0.0	2.1	0.0	2.1
Unknown wigeon	0.0	0.0	0.0	0.0	0.0	0.0
Unknown Canada/cackling geese	0.0	0.0	5.2	0.0	0.0	5.2
White-fronted goose	0.0	0.0	0.0	0.0	0.0	0.0
Unknown swans	0.0	0.0	0.0	1.0	0.0	1.0
Sandhill crane	0.0	1.0	0.0	0.0	0.0	1.0
Unknown cormorant	0.0	0.0	0.0	0.0	0.0	0.0
Unknown gull	0.0	0.0	0.0	0.0	0.0	0.0
Black-legged kittiwake	0.0	0.0	0.0	0.0	0.0	0.0
Unknown murre	0.0	0.0	0.0	0.0	0.0	0.0
Unknown puffin	0.0	5.2	0.0	0.0	0.0	5.2
Unknown grouse	0.0	11.4	8.3	0.0	0.0	19.7
Unknown ptarmigan	0.0	0.0	0.0	0.0	0.0	0.0

Source ADF&G Division of Subsistence household surveys, 2015.

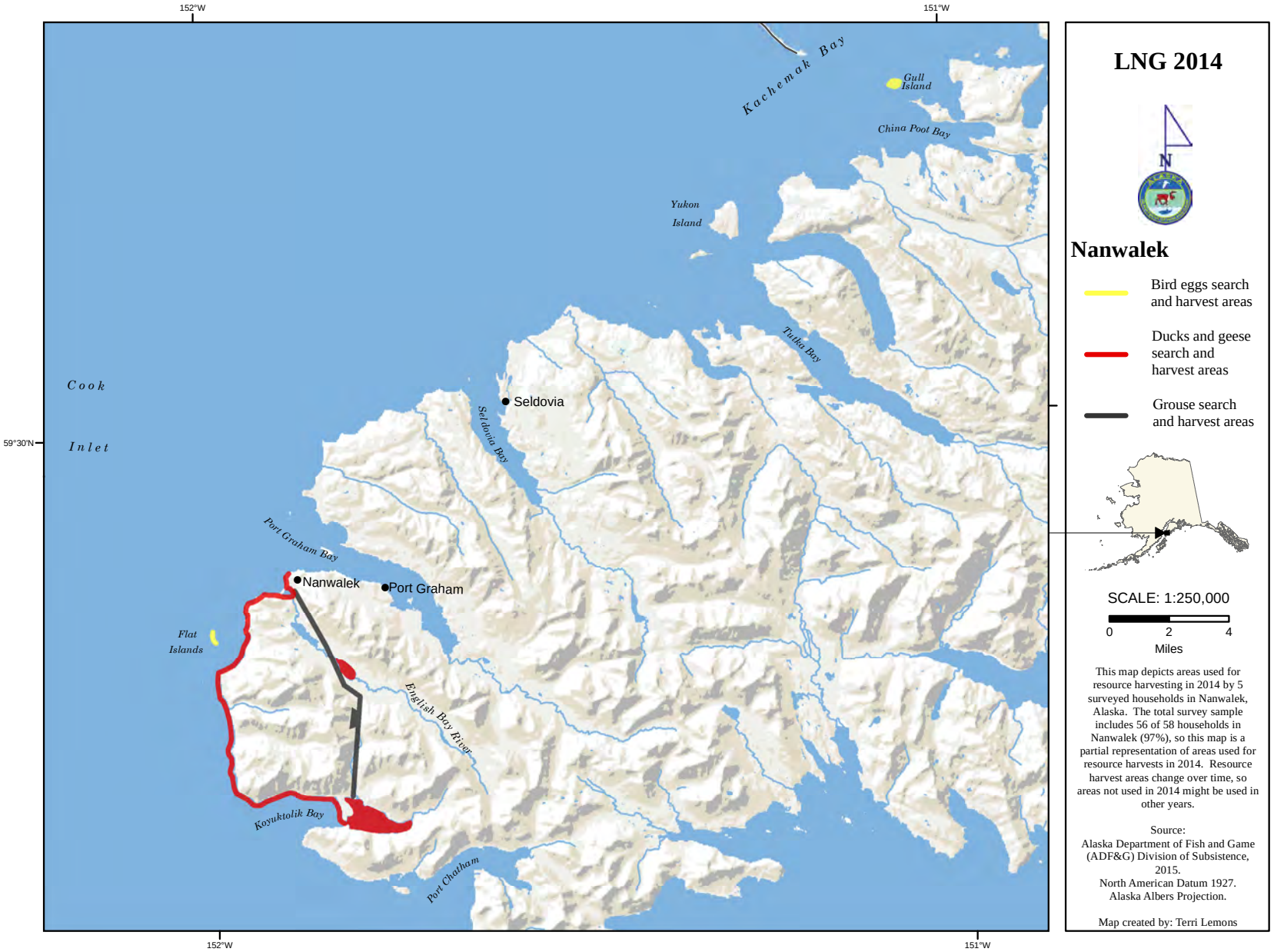
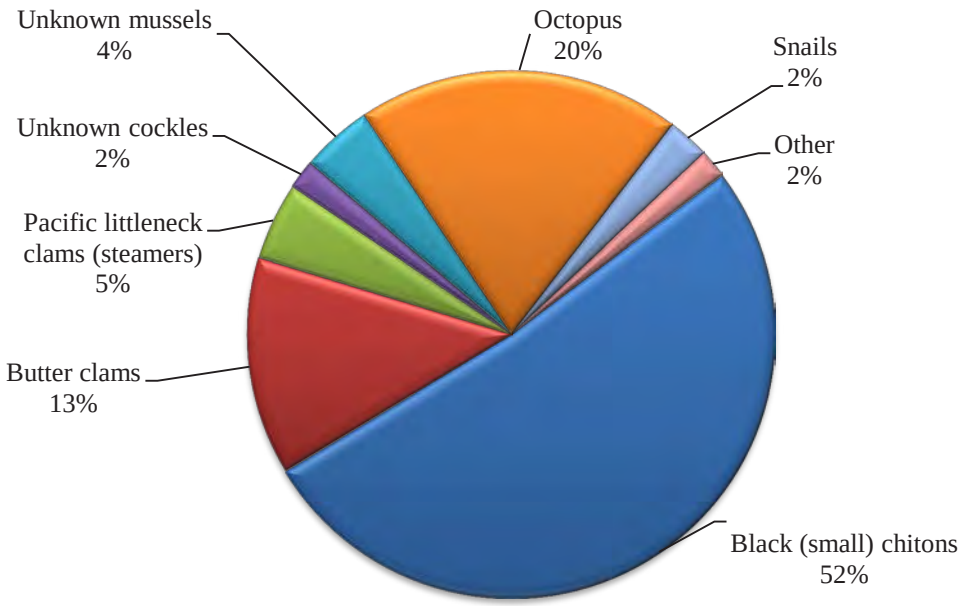


Figure 4-26.–Hunting and harvest locations of bird eggs, migratory waterfowl, and grouse, Nanwalek, 2014.



Note The "other" category includes species providing less than 1.5% each to the estimated marine invertebrates harvest weight.

Figure 4-27.–Composition of marine invertebrates harvest in pounds usable weight, Nanwalek, 2014.

Marine Invertebrates

As estimated in Table 4-12, the total harvest of marine invertebrates by Nanwalek residents in 2014 was 2,617 lb. The harvest of marine invertebrates totaled approximately 4% of the total wild food harvest in 2014 (Figure 4-12). In terms of total pounds and percentages harvested, most (52%) of the harvest was black (small) chitons (1,351 lb, or 6 lb per capita), followed by octopuses (518 lb, or 2 lb per capita), butter clams (350 lb, or 2 lb per capita), Pacific littleneck clams (steamers) (124 lb, or 1 lb per capita), mussels (115 lb, or 1 lb per capita), snails (68 lb), and cockles (47 lb); combined, these species composed 98% of the marine invertebrate harvest weight (Table 4-12; Figure 4-27). Nanwalek residents also harvested red (large) chitons, horse clams, limpets, sea urchins, sea cucumbers, and shrimp (Table 4-12). During the research results community review meeting for this study, Nanwalek residents suggested that the reported snail harvests for 2014 may be lower than what was actually caught due to being residents out of the community during the survey effort, thus causing the estimated harvest weight to be low for this community.

During 2014, an estimated 77% of Nanwalek households used marine invertebrates, all of the 71% of households that attempted to harvest marine invertebrates were successful, 54% shared marine invertebrates, and 52% received marine invertebrates from other households. Black chiton was the primary marine invertebrate species shared; 48% of Nanwalek households received black chitons from other households. “Lots of people [harvesting black chitons] every tide they go out there, day and night,” said a Nanwalek elder.

In 2014, Nanwalek residents reported harvesting octopuses along the Cook Inlet shoreline from a point approximately 1.5 miles east of Nanwalek extending south and west to Point Adam at the mouth of Koyuktolik Bay (Figure 4-28). Black chitons, snails, mussels, and cockles were gathered along this same section of shoreline. Black chitons were also gathered inside of Koyuktolik Bay. Clams were gathered in the tide flats of China Poot Bay, at the far end of Tukta Bay, and in Jakolof Bay. A Nanwalek elder said that in the past when clams were more abundant they were harvested “from Port Chatham all the way to Homer [*Ilaraa’alek*].”

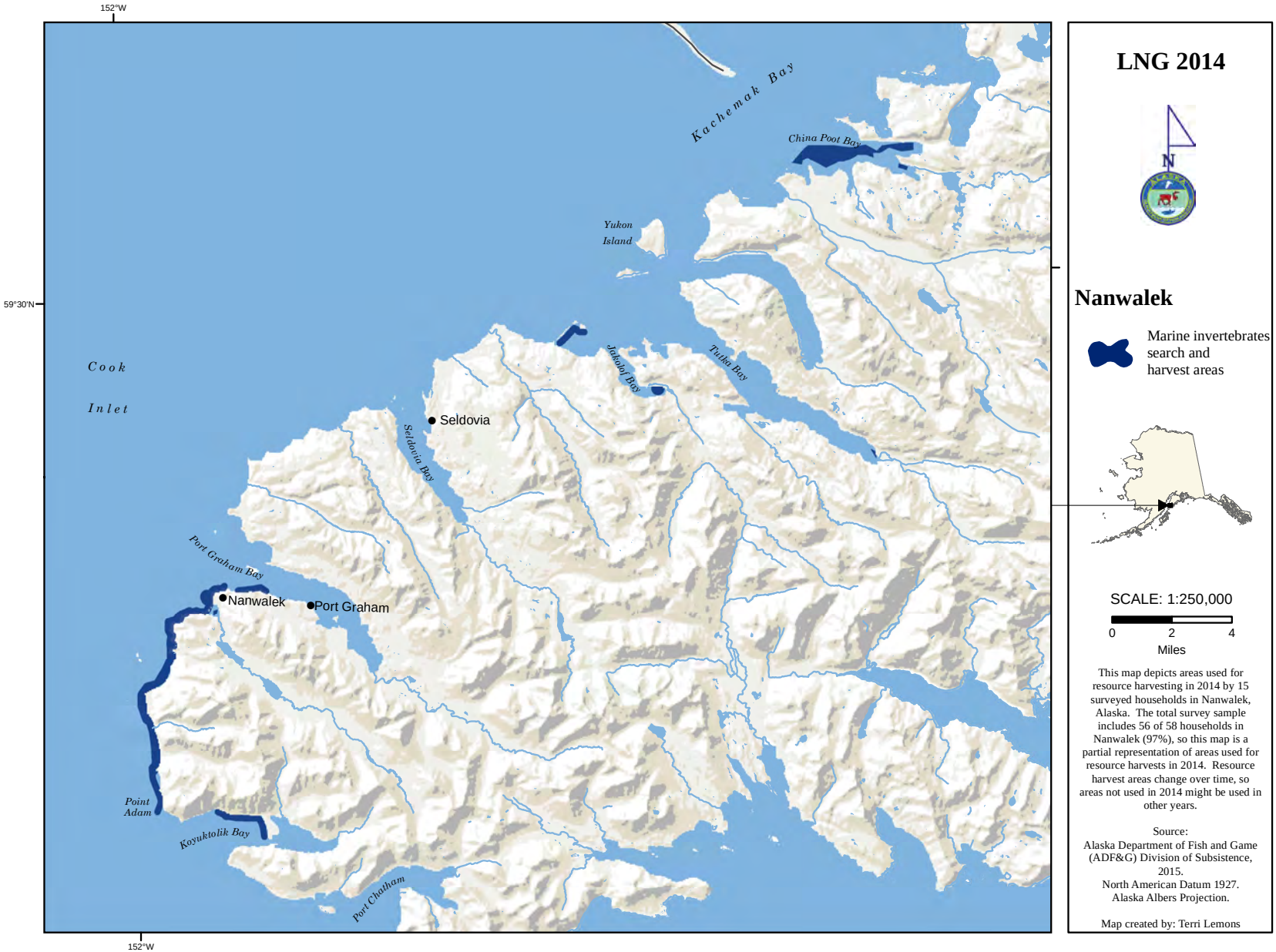
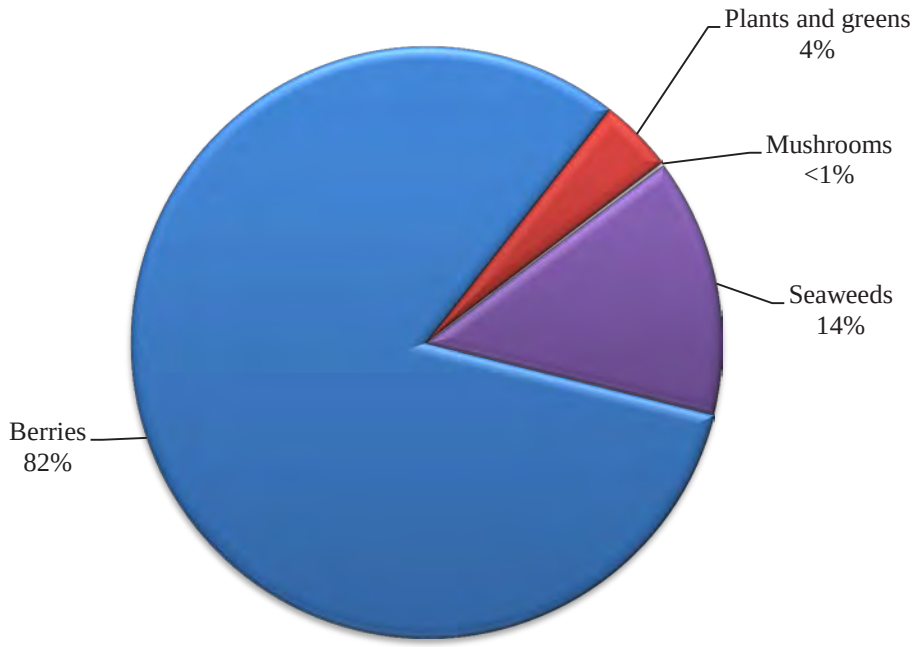


Figure 4-28.–Fishing and harvest locations of marine invertebrates, Nanwalek, 2014.



Note Seaweed totals do not include amounts used for fertelizer.

Figure 4-29.–Composition of vegetation harvest by type and pounds usable weight, Nanwalek, 2014.

Vegetation

The majority of households in Nanwalek attempted to harvest (82%), harvested (77%) and used (88%) vegetation during the 2014 study year (Table 4-12). In 2014, Nanwalek residents harvested 2,721 lb, or 12 lb per capita, of edible vegetation. Edible vegetation consisted of various species of berries (82% of edible vegetation harvest), terrestrial plants and greens (4% of harvest), unspecified types of mushrooms (less than 1%), and also seaweeds (14% of harvest) (Figure 4-29). Wood harvests were not included in the estimate of harvested pounds usable weight of vegetation, but resources such as willow leaves were included (as plants and greens). The berry harvest mostly comprised salmonberries (936 lb, or 4 lb per capita), blueberries (925 lb, or 4 lb per capita), and highbush cranberries (207 lb, or 1 lb per capita) (Table 4-12). The harvest of plants, greens, mushrooms, and seaweeds was mostly composed of black seaweed (315 lb, or 1 lb per capita). An estimated 53 lb of currants were harvested, and the harvests of remaining vegetation resources (including more than a dozen kinds of plants and greens, 5 kinds of berries, and also several types of seaweed) were each less than 50 lb total. Wood, collected for home heating or other purposes, was used by an estimated 70% of households (63% of households attempted to harvest and harvested wood and 16% of households gave wood away). Approximately one-third (31%) of responding households indicated firewood was used for all home heating (Table 1-10).

In 2014, Nanwalek residents reported harvesting berries and wild greens in the forests near the community, along the road extending from Nanwalek through the English Bay River corridor over a mountain pass and into Koyuktolik Bay, and in the surrounding mountains (Figure 4-30). Shoreline wild greens such as goose tongue, wild parsley, and beach greens were harvested on the spit inside of Koyuktolik Bay and around English Bay Lagoon. Marine vegetation and seaweeds were harvested inside of English Bay, English Bay Lagoon, and Koyuktolik Bay.

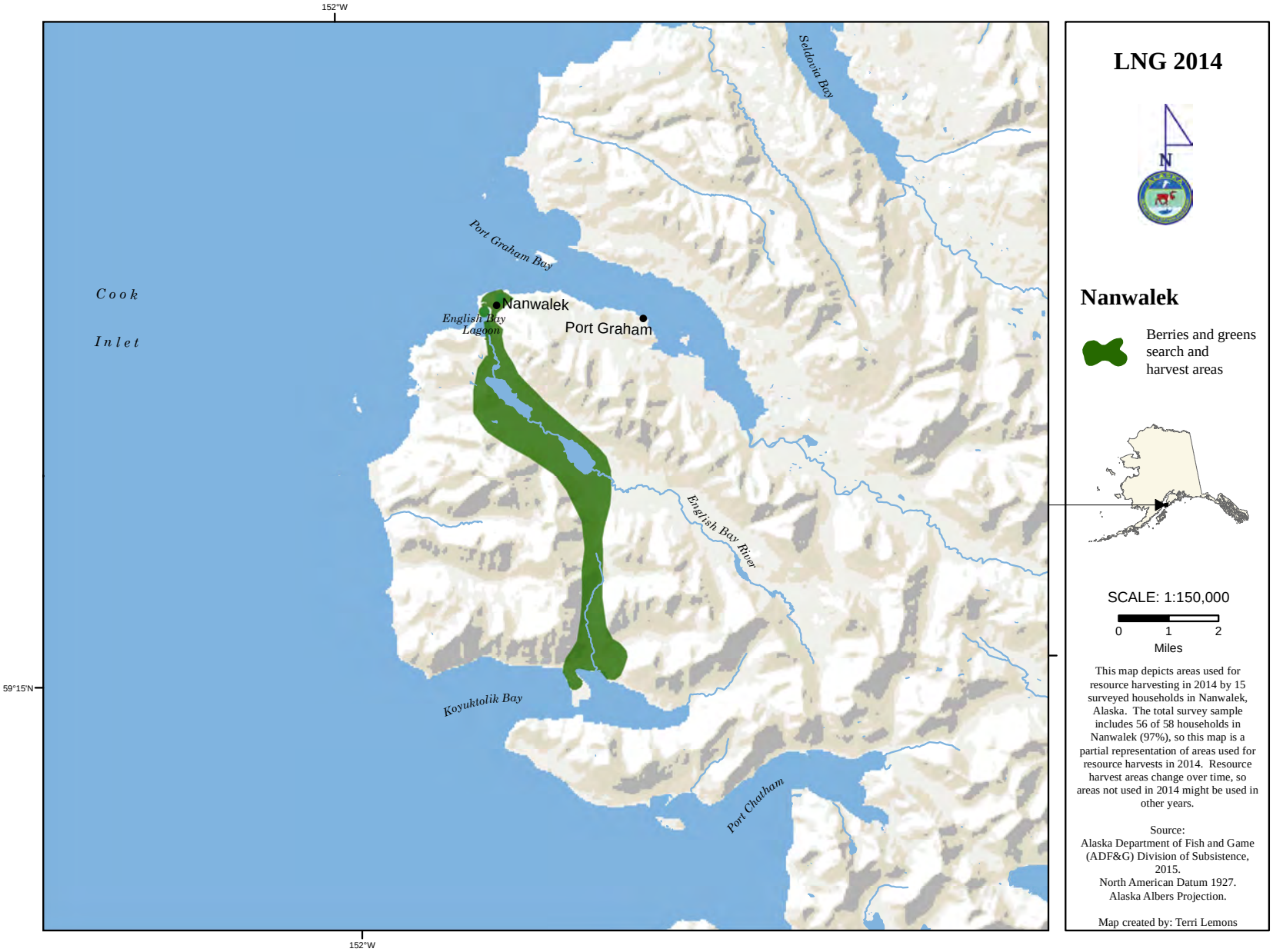


Figure 4-30.–Gathering and harvest locations of berries and plants, greens, and mushrooms, Nanwalek, 2014.

Comparing Harvests and Uses in 2014 with Previous Years

Harvest Assessments

Researchers asked respondents to assess their own harvests in 2 ways: whether they got more, less, or about the same amount of 9 resource categories in 2014 as in the past 5 years, and whether they got "enough" of each of the 9 resource categories. Households also were asked to provide reasons if their use was different or if they were unable to get enough of a resource. This was an open-ended question, and respondents could provide more than one reason for each resource category. Project staff grouped the responses into categories, such as regulations affecting residents from harvesting resources, changes to sharing of harvests, effects of weather on animals and subsistence activities, changes in the animal populations, personal reasons such as work and health, and other causes that affected residents' opportunities to engage in hunting, fishing, and gathering activities. If they did not get enough of a resource, they were asked to evaluate the severity of the impact to their household as a result of not getting enough. This section discusses responses to those questions.

Together, Table 4-22 and Figure 4-31 and Figure 4-32 provide a broad overview of households' assessments of their harvests in 2014. Because not everyone uses all resource categories, some households did not respond to the assessment questions. Additionally, some households that do typically use a resource category simply did not answer questions.

Taking all the resource categories into consideration, 40% of Nanwalek households that responded to the question said they used the same amounts of wild resources in general over the previous 12 months compared to recent years (Table 4-22). A slightly smaller number, 33% of all responding households, said they used less amounts of wild resources in 2014 compared to recent years. Only 16% said they used more. The discussion for the specific resource categories focuses on those categories for which use was high (used by more than 70% of households), and the most frequently cited reasons explaining changes to use in 2014 compared to the previous 5 years.

Nanwalek households reported that use levels of vegetation had changed more than any other resource category (Figure 4-31). More surveyed households (38%) reported using more vegetation during the previous 12 months compared to recent years than for any other category (Table 4-22; Figure 4-31). Community members reported that more berries were harvested in 2014 because the previous year's crop had been very low as a result of a moth epidemic. Meanwhile, 36% of sampled households said they used about the same amount of salmon during 2014 and 32% said they used less. Regarding nonsalmon fish, 38% of sampled households said they used about the same amount during 2014, and 29% said they used less. Moreover, 43% of responding households said they used about the same amount of marine mammals during 2014, and 46% said they used about the same amount of marine invertebrates, and 38% said they used about the same amount of seaweed (Figure 4-31).

Table 4-23 depicts the reasons Nanwalek respondents gave for lower harvests and uses by resource category. Of the households that provided assessments in the 2014 survey, the reasons most cited for less use of wild resources overall were working/no time (33%), lack of effort (17%), family/personal reasons (17%), lack of equipment or did not need the resources (11% for both), less resource availability (6%), and 22% of responding households cited other reasons. Working/no time was the primary reason cited for less use of salmon (by 28% of households that used less); salmon is the most harvested of all subsistence resource categories used by Nanwalek households. Also, 17% of households cited regulations, lack of effort, and family/personal circumstances as reasons for less use of salmon. Working/no time was also the primary reason cited for less use of seaweed[10] (44% of households that used less and cited a reason), vegetation and marine mammals (each by 38%), nonsalmon fish (28%), and small land mammals (100%). Less sharing was the primary reason cited for less use of large land mammals (56% of households that used less and cited a reason), followed by lack of effort (33%), and resource availability (22%). A variety of reasons were cited

10. Seaweed is included within the vegetation resource category, but assessment questions were also asked specifically about seaweed use and harvest.

for less use of marine invertebrates, but for birds most responding households that used less (55%) cited lack of effort as the cause of less use.

Increased effort was the main reason cited for more use of all resources (56% of responding households that used more resources overall), followed by needing more (33%), and increased availability (22%) (Table 4-24). The main reason cited for use of more vegetation in 2014 compared to previous years was increased availability (74% of households that used more and provided a reason). The main reasons cited for more use of salmon in 2014 compared to previous years were increased availability (20% of households that used more and provided a reason), and needed more and increased effort (each by 30%). Increased effort was the primary reason attributed to higher use of marine invertebrates (by 80% of households that used more and provided a reason). The main reasons cited for increased use of marine mammals in the study year were that the household received more (50% of households that used more and provided a reason), increased effort (30%), and needed more resources (20%). The main reasons cited for more use of nonsalmon fish in 2014 were that the households needed more and had more success with harvests (each cited by 29% of households that used more and provided a reason).

In Nanwalek, out of the sampled households, 25% stated that they did not get enough nonsalmon fish, 20% stated that they did not get enough vegetation, 18% stated that they did not get enough salmon, 16% stated that they did not get enough marine invertebrates, and 14% stated that they did not get enough marine mammals; these were the resource categories that were highly used by Nanwalek households in 2014 (Figure 4-32; Figure 4-10).

When asked to evaluate the impact of not getting enough nonsalmon fish, 7% of households that did not get enough described it as not noticeable, 50% described the impact as minor, and 36% explained that not getting enough nonsalmon fish had a major effect on their household (Table 4-25). When asked what nonsalmon fish resources were needed, 18% of households said they needed more Pacific halibut (Table 4-26).

When asked to evaluate the impact of not getting enough vegetation, 27% of respondents that did not have enough described it as not noticeable, 46% described the impact as minor, and 27% explained that not getting enough vegetation had a major effect on their household (Table 4-25). When asked what vegetation resources were needed, 9% of households said they needed more berries in general (Table 4-26). Respondents were asked to assess separately whether they had enough seaweed, which is a type of vegetation. When asked to evaluate the impact of not getting enough seaweed, 67% of respondents that did not get enough described the impact as minor, 25% described the impact as major, and 8% explained that not getting enough seaweed had a severe effect on their household (Table 4-25). When asked what seaweed resources were needed, 18% of households said they needed more black seaweed (Table 4-26).

When asked to evaluate the impact of not getting enough salmon, 10% of households that did not have enough described it as not noticeable, 30% described the impact as minor, and 60% explained that not getting enough salmon had a major effect on their household (Table 4-25). When asked what salmon resources were needed, more households wanted sockeye salmon (5%) than any other species (Table 4-26).

When asked to evaluate the impact of not getting enough marine invertebrates, 11% of households that did not have enough described the impact as not noticeable, 22% described the impact as minor or major, and 11% explained that not getting enough marine invertebrates had a severe effect on their household (Table 4-25). When asked what marine invertebrate resources were needed, several kinds of chitons were mentioned, as well as clams in general, octopuses, and snails (Table 4-26).

When asked to evaluate the impact of not getting enough of all subsistence resources in general, 36% of households that did not have enough described the impact as minor or major, and 18% explained that not getting enough wild resources had a severe effect on their household.

Table 4-22.–Changes in household uses of resources compared to recent years, Nanwalek, 2014.

			Households reporting use									
	Sampled	Valid	Total households		Less		Same		More		Households not using	
Resource category	households	responses[a]	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	56	56	50	89.3%	36	64.3%	48	85.7%	30	53.6%	NA	NA
All resources	**56**	**55**	**49**	**89.1%**	**18**	**32.7%**	**22**	**40.0%**	**9**	**16.4%**	**6**	**10.9%**
Salmon	56	56	48	85.7%	18	32.1%	20	35.7%	10	17.9%	8	14.3%
Nonsalmon fish	56	56	44	78.6%	16	28.6%	21	37.5%	7	12.5%	12	21.4%
Large land mammals	56	54	20	37.0%	10	18.5%	8	14.8%	2	3.7%	34	63.0%
Small land mammals	56	55	1	1.8%	1	1.8%	0	0.0%	0	0.0%	54	98.2%
Marine mammals	56	54	41	75.9%	8	14.8%	23	42.6%	10	18.5%	13	24.1%
Birds	56	56	31	55.4%	11	19.6%	18	32.1%	2	3.6%	25	44.6%
Marine invertebrates	56	55	43	78.2%	13	23.6%	25	45.5%	5	9.1%	12	21.8%
Vegetation	56	56	47	83.9%	8	14.3%	18	32.1%	21	37.5%	9	16.1%
Seaweed	56	56	35	62.5%	9	16.1%	21	37.5%	5	8.9%	21	37.5%

Source ADF&G Division of Subsistence household surveys, 2015.

Note "NA" indicates that there is not applicable data.

a. Valid responses do not include households that did not provide any response.

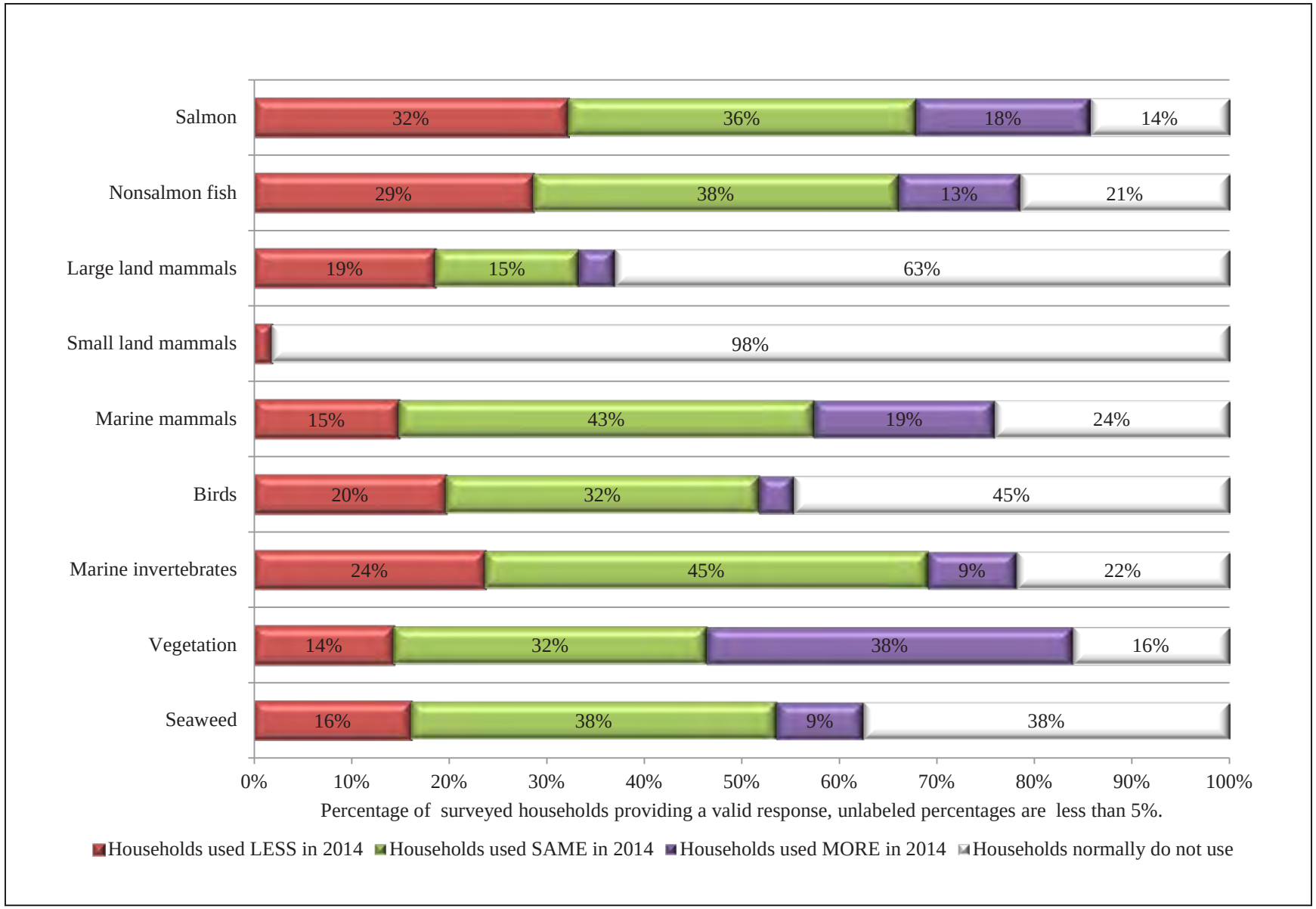


Figure 4-31.–Changes in household uses of resources compared to recent years, Nanwalek, 2014.

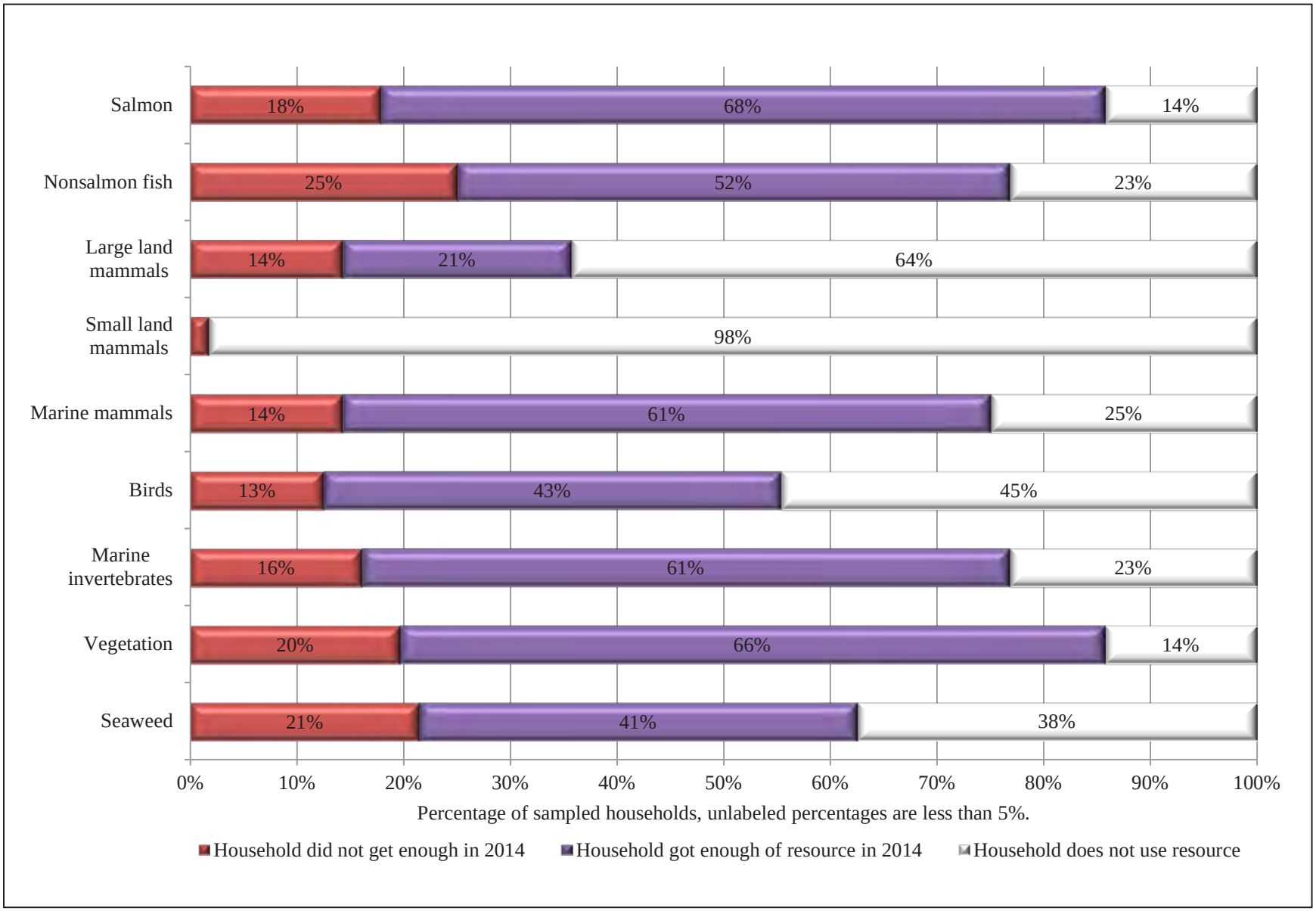


Figure 4-32.–Percentage of sampled households reporting whether they had enough resources, by resource category, Nanwalek, 2014.

Table 4-23.–Reasons for less household uses of resources compared to recent years, Nanwalek, 2014.

Resource category	Valid responses[a]	Households reporting reasons for less use	Family/ personal		Resources less available		Too far to travel		Lack of equipment		Less sharing		Lack of effort	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	56	35	6	17.1%	7	20.0%	1	2.9%	2	5.7%	9	25.7%	16	45.7%
All resources	**55**	**18**	**3**	**16.7%**	**1**	**5.6%**	**0**	**0.0%**	**2**	**11.1%**	**0**	**0.0%**	**3**	**16.7%**
Salmon	56	18	3	16.7%	1	5.6%	0	0.0%	1	5.6%	0	0.0%	3	16.7%
Nonsalmon fish	56	15	1	6.7%	1	6.7%	0	0.0%	1	6.7%	0	0.0%	3	20.0%
Large land mammals	54	9	1	11.1%	2	22.2%	0	0.0%	0	0.0%	5	55.6%	3	33.3%
Small land mammals	55	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	54	8	0	0.0%	0	0.0%	0	0.0%	1	12.5%	0	0.0%	1	12.5%
Birds	56	11	0	0.0%	1	9.1%	0	0.0%	1	9.1%	3	27.3%	6	54.5%
Marine invertebrates	55	13	2	15.4%	2	15.4%	1	7.7%	0	0.0%	1	7.7%	2	15.4%
Vegetation	56	8	1	12.5%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	12.5%
Seaweed	56	9	0	0.0%	0	0.0%	1	11.1%	0	0.0%	0	0.0%	3	33.3%

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Table 4-23.–Continued.

Resource category	Valid responses[a]	Households reporting reasons for less use	Unsuccessful		Weather/ environment		Other reasons		Working/ no time		Regulations		Small/ diseased animals	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	56	35	4	11.4%	2	5.7%	8	22.9%	12	34.3%	3	8.6%	0	0.0%
All resources	**55**	**18**	**0**	**0.0%**	**0**	**0.0%**	**4**	**22.2%**	**6**	**33.3%**	**0**	**0.0%**	**0**	**0.0%**
Salmon	56	18	1	5.6%	0	0.0%	2	11.1%	5	27.8%	3	16.7%	0	0.0%
Nonsalmon fish	56	15	1	6.7%	0	0.0%	2	13.3%	5	33.3%	0	0.0%	0	0.0%
Large land mammals	54	9	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	55	1	0	0.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%	0	0.0%
Marine mammals	54	8	0	0.0%	0	0.0%	3	37.5%	3	37.5%	0	0.0%	0	0.0%
Birds	56	11	0	0.0%	0	0.0%	1	9.1%	1	9.1%	0	0.0%	0	0.0%
Marine invertebrates	55	13	2	15.4%	0	0.0%	1	7.7%	1	7.7%	0	0.0%	0	0.0%
Vegetation	56	8	0	0.0%	1	12.5%	2	25.0%	3	37.5%	0	0.0%	0	0.0%
Seaweed	56	9	0	0.0%	1	11.1%	1	11.1%	4	44.4%	0	0.0%	0	0.0%

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Table 4-23.–Page 2 of 2.

Resource category	Valid responses[a]	Households reporting reasons for less use	Did not get enough		Did not need		Competition		Equipment/ fuel expense		Used other resources	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	56	35	0	0.0%	5	14.3%	0	0.0%	1	2.9%	0	0.0%
All resources	**55**	18	**0**	**0.0%**	**2**	**11.1%**	0	0.0%	**0**	**0.0%**	**0**	**0.0%**
Salmon	56	18	0	0.0%	1	5.6%	0	0.0%	0	0.0%	0	0.0%
Nonsalmon fish	56	15	0	0.0%	0	0.0%	0	0.0%	1	6.7%	0	0.0%
Large land mammals	54	9	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	55	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	54	8	0	0.0%	1	12.5%	0	0.0%	0	0.0%	0	0.0%
Birds	56	11	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	55	13	0	0.0%	2	15.4%	0	0.0%	0	0.0%	0	0.0%
Vegetation	56	8	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Seaweed	56	9	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2015.

a. Valid responses do not include households that did not provide any response and households reporting never using the resource.

Table 4-24.–Reasons for more household uses of resources compared to recent years, Nanwalek, 2014.

Resource category	Valid responses[a]	Households reporting reasons for more use	Increased availability		Used other resources		Favorable weather		Received more		Needed more		Increased effort		Had more help	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	56	29	16	55.2%	1	3.4%	0	0.0%	6	20.7%	5	17.2%	11	37.9%	1	3.4%
All resources	**55**	**9**	**2**	**22.2%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**3**	**33.3%**	**5**	**55.6%**	**0**	**0.0%**
Salmon	56	10	2	20.0%	0	0.0%	0	0.0%	0	0.0%	3	30.0%	3	30.0%	0	0.0%
Nonsalmon fish	56	7	0	0.0%	1	14.3%	0	0.0%	0	0.0%	2	28.6%	1	14.3%	0	0.0%
Large land mammals	54	2	0	0.0%	0	0.0%	0	0.0%	1	50.0%	0	0.0%	1	50.0%	0	0.0%
Small land mammals	55	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	54	10	0	0.0%	0	0.0%	0	0.0%	5	50.0%	2	20.0%	3	30.0%	0	0.0%
Birds	56	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	50.0%	1	50.0%	0	0.0%
Marine invertebrates	55	5	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	20.0%	4	80.0%	0	0.0%
Vegetation	56	19	14	73.7%	0	0.0%	0	0.0%	0	0.0%	2	10.5%	3	15.8%	1	5.3%
Seaweed	56	5	1	20.0%	0	0.0%	0	0.0%	0	0.0%	1	20.0%	3	60.0%	0	0.0%

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Table 4-24.–Continued.

Resource category	Valid responses[a]	Households reporting reasons for more use	Other		Regulations		Traveled farther		More success		Needed less		Store-bought expense		Got/ fixed equipment	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	56	29	2	6.9%	1	3.4%	0	0.0%	2	6.9%	0	0.0%	0	0.0%	0	0.0%
All resources	**55**	**9**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**
Salmon	56	10	1	10.0%	1	10.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Nonsalmon fish	56	7	1	14.3%	0	0.0%	0	0.0%	2	28.6%	0	0.0%	0	0.0%	0	0.0%
Large land mammals	54	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	55	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	54	10	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Birds	56	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	55	5	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	56	19	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Seaweed	56	5	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2015.

a. Valid responses do not include households that did not provide any response and households reporting never using the resource.

Table 4-25.–Reported impact to households reporting that they did not get enough of a type of resource, Nanwalek, 2014.

		Households not getting enough _____ .				Impact to those not getting enough _____ .									
	Sample	Valid responses[a]		Did not get enough		No response		Not noticeable		Minor		Major		Severe	
Resource category	households	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
All resources	**56**	**49**	**87.5%**	**11**	**22.4%**	**1**	**9.1%**	**0**	**0.0%**	**4**	**36.4%**	**4**	**36.4%**	**2**	**18.2%**
Salmon	56	48	85.7%	10	20.8%	0	0.0%	1	10.0%	3	30.0%	6	60.0%	0	0.0%
Nonsalmon fish	56	43	76.8%	14	32.6%	1	7.1%	1	7.1%	7	50.0%	5	35.7%	0	0.0%
Large land mammals	56	20	35.7%	8	40.0%	1	12.5%	2	25.0%	2	25.0%	3	37.5%	0	0.0%
Small land mammals	56	1	1.8%	1	100.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%	0	0.0%
Marine mammals	56	42	75.0%	8	19.0%	1	12.5%	1	12.5%	4	50.0%	2	25.0%	0	0.0%
Birds	56	31	55.4%	7	22.6%	1	14.3%	3	42.9%	3	42.9%	0	0.0%	0	0.0%
Marine invertebrates	56	43	76.8%	9	20.9%	3	33.3%	1	11.1%	2	22.2%	2	22.2%	1	11.1%
Vegetation	56	48	85.7%	11	22.9%	0	0.0%	3	27.3%	5	45.5%	3	27.3%	0	0.0%
Seaweed	56	35	62.5%	12	34.3%	0	0.0%	0	0.0%	8	66.7%	3	25.0%	1	8.3%

Source ADF&G Division of Subsistence household surveys, 2015.

a. Includes households failing to respond to the question and those households that never used the resource.

Table 4-26.–Resources that households reported needing, Nanwalek, 2014.

Resource	Households needing	Percentage of households
All resources	5	8.9%
Salmon	4	7.1%
Coho salmon	1	1.8%
Chinook salmon	1	1.8%
Pink salmon	1	1.8%
Sockeye salmon	3	5.4%
Spawning pink salmon	1	1.8%
Spawning sockeye salmon	1	1.8%
Nonsalmon fish	1	1.8%
Pacific halibut	10	17.9%
Trout	2	3.6%
Large land mammals	1	1.8%
Black bear	4	7.1%
Mountain goat	1	1.8%
Moose	5	8.9%
Snowshoe hare	1	1.8%
Porcupine	1	1.8%
Marine mammals	1	1.8%
Seal	4	7.1%
Harbor seal	3	5.4%
Steller sea lion	1	1.8%
Birds and eggs	2	3.6%
Ducks	1	1.8%
Bird eggs	1	1.8%
Gull eggs	3	5.4%
Marine invertebrates	2	3.6%
Chitons (bidarkis, gumboots)	1	1.8%
Red (large) chitons	1	1.8%
Black (small) chitons	3	5.4%
Clams	3	5.4%
Octopus	3	5.4%
Snails	1	1.8%
Berries	5	8.9%
Blueberry	5	8.9%
Highbush cranberry	1	1.8%
Currants	1	1.8%
Cloudberry	1	1.8%
Salmonberry	4	7.1%
Plants, greens, and mushrooms	1	1.8%
Goose tongue	1	1.8%

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Table 4-26.–Page 2 of 2.

Resource	Households needing	Percentage of households
Nettle	1	1.8%
Wild parsley	1	1.8%
Seaweed/kelp	1	1.8%
Black seaweed	10	17.9%

Source ADF&G Division of Subsistence household surveys, 2015.

Harvest Data

Changes in the harvest of resources by Nanwalek residents can also be discerned through comparisons with findings from other study years in which comprehensive harvest surveys were conducted in Nanwalek. Comprehensive harvest surveys were conducted in Nanwalek in 1987, 1989, 1990, 1991, 1992, 1993, 1997, 2003, and 2014. In addition to the 2014 survey results, marine mammal harvests were estimated for all years from 1987–2008—except for 1988 and 1999—as part of a comprehensive subsistence survey or targeted marine mammal survey.[11]

The usable weight harvested per capita was 285 lb in 1987 and 253 lb in 2014 (Table 4-27). The lowest estimated per capita harvest between these years was 141 lb in 1989, the same year as the EVOS. The highest per capita harvest was estimated in 2003 at 393 lb.

While Nanwalek's total per capita harvest was 36% less in 2014 compared to 2003, the post-spill per capita harvests following 1990 all appear to generally have rebounded to approximately the pre-spill harvest level (Figure 4-33); however, the composition of the harvest has changed (Table 4-28). Harvest composition change can be discerned through a comparison of the changed resource category proportions contributing to the total harvest between the 1987 and the 2014 estimates. The most significant change in the harvest composition is that nonsalmon fish contributed only about 17% of the harvest in 2014 compared to approximately 30–38% of the harvest in most study years from 1987 to 1993. The highest per capita harvest estimate for nonsalmon fish was 107 lb in 1987, which declined to 42 lb per capita in 1997 and 2014.

The decline of the nonsalmon fish harvest as a proportion of the total harvest is offset most significantly by increased proportions of the harvest being represented by salmon (Table 4-28). In the period from study years 1987–1993, salmon made up between 38–50% of Nanwalek's annual harvest, but from study years during 1997–2014, salmon harvests increased to account for 62–74% of the total harvest. An additional notable change is the estimated drop in marine invertebrates as a component of Nanwalek's harvest composition. In the period from study years 1987–1993, marine invertebrates made up between 7–11% of Nanwalek's annual harvest, but for study years 1997 and 2003, marine invertebrate harvests decreased to only 4% of the community's total harvest. Overall, declines in harvests of nonsalmon fish and marine invertebrates as

11. Results for both comprehensive and marine mammal subsistence harvest surveys are available in the CSIS. The survey months for each study year are noted in the CSIS project year "Methods" section. Additionally, comprehensive subsistence survey results are reported in: Fall (1997, 2006) for study years 1990 and 2003; and Fall and Utermohle (1995, 1999) for study years 1991, 1992, 1993, and 1997. Marine mammal harvest survey results are reported in: Wolfe and Mishler (1995, 1996, 1997, 1998) for study years 1994, 1995, 1996, and 1997; Wolfe and Hutchinson-Scarbrough (1999) for study year 1998; Wolfe (2001) for study year 2000; and in Wolfe et al. (2002, 2003, 2004, 2005, 2006, 2008, 2009a–b) for study years 2001, 2002, 2003, 2004, 2005, 2006, 2007, and 2008.

Table 4-27.–Estimated per capita harvests in pounds usable weight by resource category, Nanwalek, 1987, 1989, 1990, 1991, 1992, 1993, 1997, 2003, and 2014.

Resource category	1987	1989	1990	1991	1992	1993	1997	2003	2014
Salmon	109.1	60.2	91.5	125.6	121.6	149.4	157.8	292.6	173.5
Nonsalmon fish	107.2	30.2	56.4	82.7	88.4	90.1	41.6	58.1	41.8
Land mammals	9.0	14.8	1.8	3.1	14.5	8.9	12.1	1.6	2.6
Marine mammals	22.0	13.0	5.4	6.4	16.8	18.6	24.0	8.7	10.7
Birds and eggs	4.1	2.5	2.2	3.8	1.7	2.3	3.6	2.2	1.3
Marine invertebrates	18.6	16.0	16.7	24.4	24.8	23.3	9.0	15.4	11.3
Vegetation	14.7	4.4	7.3	12.9	11.3	12.2	5.8	14.6	11.8
All resources	**284.7**	**140.9**	**181.3**	**258.8**	**279.0**	**304.9**	**253.9**	**393.2**	**253.0**

Sources Community Subsistence Information System (CSIS) for 1987, 1989–1993, 1997, and 2003 data; ADF&G Division of Subsistence household surveys, 2015, for 2014 data.

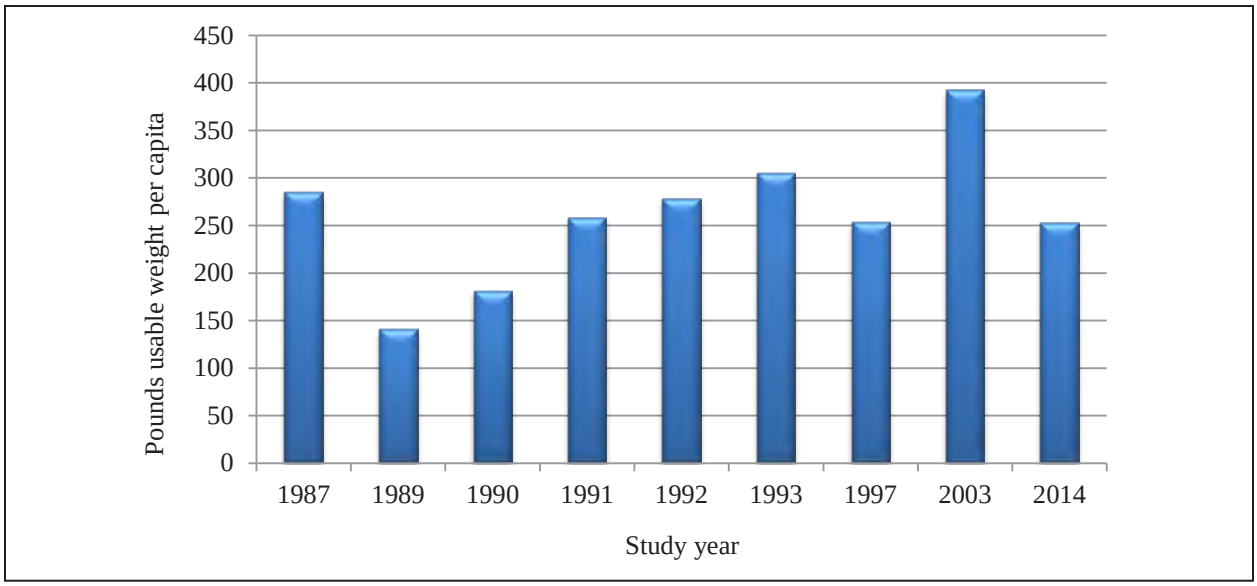

Figure 4-33.–Estimated per capita harvests in pounds usable weight, Nanwalek, 1987, 1989, 1990, 1991, 1992, 1993, 1997, 2003, and 2014.

Table 4-28.–Comparison of harvest composition by resource category, Nanwalek, 1987, 1989, 1990, 1991, 1992, 1993, 1997, 2003, and 2014.

Resource category	1987	1989	1990	1991	1992	1993	1997	2003	2014
Salmon	38.3%	42.7%	50.5%	48.5%	43.6%	49.0%	62.2%	74.4%	68.6%
Nonsalmon fish	37.7%	21.4%	31.1%	32.0%	31.7%	29.6%	16.4%	14.8%	16.5%
Land mammals	3.2%	10.5%	1.0%	1.2%	5.2%	2.9%	4.8%	0.4%	1.0%
Marine mammals	7.7%	9.2%	3.0%	2.5%	6.0%	6.1%	9.4%	2.2%	4.2%
Birds and eggs	1.4%	1.7%	1.2%	1.5%	0.6%	0.8%	1.4%	0.6%	0.5%
Marine invertebrates	6.5%	11.4%	9.2%	9.4%	8.9%	7.7%	3.5%	3.9%	4.5%
Vegetation	5.2%	3.1%	4.0%	5.0%	4.0%	4.0%	2.3%	3.7%	4.7%

Sources Community Subsistence Information System (CSIS) for 1987, 1989–1993, 1997, and 2003 data; ADF&G Division of Subsistence household surveys, 2015, for 2014 data.

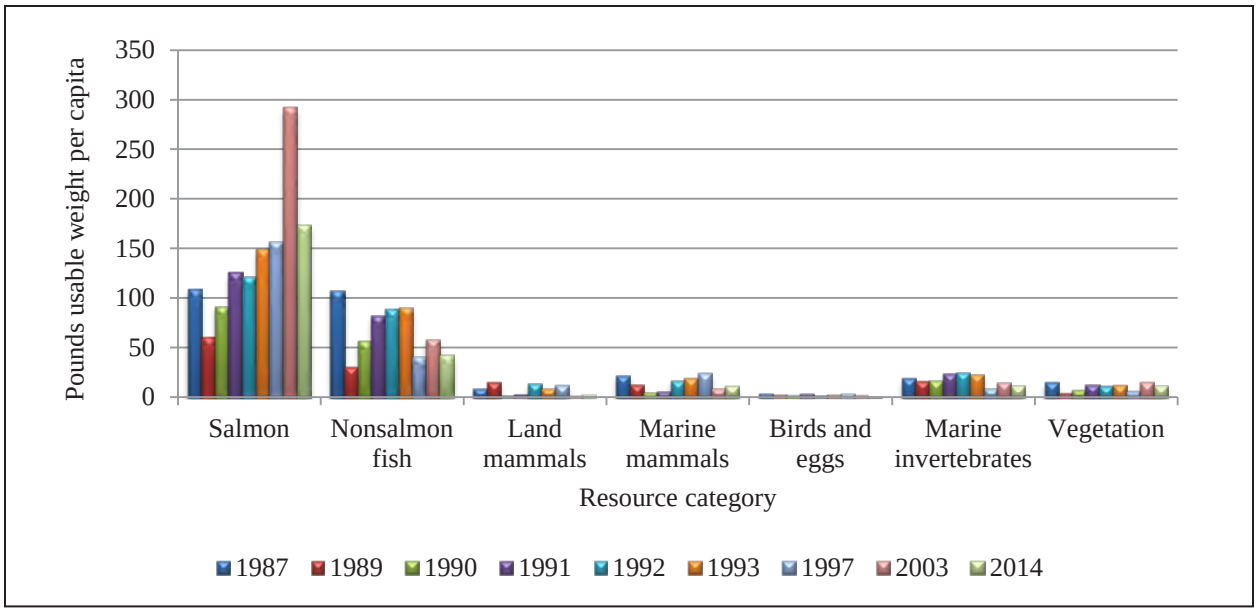

Figure 4-34.–Estimated per capita harvests in pounds usable weight by resource category, Nanwalek, 1987, 1989, 1990, 1991, 1992, 1993, 1997, 2003, and 2014.

percentages of Nanwalek's total harvest composition portrayed by the existing data are generally entirely compensated for by increases in the proportion of salmon harvested.

The harvest of salmon has increased substantially over the years following the EVOS. In 1989, the per capita salmon harvest was 60 lb and in 1990 it was 92 lb (Table 4-27). Then, from study years during 1991–1997, salmon harvests increased to between 122–158 lb per capita. In 2003, salmon harvests nearly doubled to 293 lb per capita in comparison to the 1997 per capita harvest (Figure 4-34). In 2014, salmon harvests remained higher than any other year's estimated per capita harvest, other than 2003, with a 174 lb per capita harvest (Table 4-27).

The harvest of marine invertebrates rebounded in the years immediately following the EVOS, but subsequently declined (Table 4-27; Figure 4-34). In 1989, the per capita marine invertebrate harvest was 16 lb. From 1991–1993, marine invertebrate harvests increased to between 23–25 lb per capita, but for study years from 1997–2014, marine invertebrate harvests declined to between 9–15 lb per capita.

Since 1991, harvests in the other resource categories—land mammals, marine mammals, birds and eggs, and vegetation—have more or less varied from year to year, and the 2014 estimates were not significantly different from the post-spill estimates in the early 1990s (Figure 4-34).

The estimated harvest in Nanwalek in 2003, at 393 lb per capita, was the highest for any study year, but the harvests in 1991 (259 lb per capita), 1992 (279 lb per capita), 1993 (305 lb per capita), and 1997 (254 lb per capita) were similar to the 2014 harvest (253 lb per capita). Nevertheless, the 2014 harvest for Nanwalek was 15% less than the average of previous post-spill harvests (estimates averaged for 1991 through 2003). Additionally, the 2014 harvest was 11% less than Nanwalek's 1987 pre-spill estimate (Table 4-27).

Individual participation in the harvesting and processing of wild resources by Nanwalek residents has declined when compared to estimated participation levels from previous years. The 75% of Nanwalek residents who attempted to harvest any resources in 2014 represents the lowest harvest participation level in the time period extending after the EVOS for which data are available (Table 4-10) (Fall 2006:96; Fall and Utermohle 1999:27). In 4 of the 6 previous post-spill study years, an estimated 90–94% of individuals participated in harvest activities.

As mentioned previously, additional analysis beyond what was done for other Alaska LNG study communities is available for the EVOS-affected communities of Nanwalek and Port Graham; as part of the ongoing effort to evaluate the status of subsistence resources since the oil spill in these communities, additional use characteristics results are presented. Changes in subsistence patterns can also be tracked by the average number of resources used per household in the study year, which is a measure of diet breadth. As shown in Figure 4-35, the average number of resources used per household in Nanwalek was notably less in 2014 compared to 2003 (down 33%). In 2014, the average number of resources used per household in Nanwalek was the lowest since the spill year, and 34% below the pre-spill average. Diet breadth can also be measured by the number of specific resources used by 50% or more of community households. A significant drop in this number occurred in Nanwalek in 2014 compared to 2003, when 19 resources were used by 50% or more of Nanwalek households, compared to just 7 types in 2014 (Figure 4-36).

More detail on changes in the diversity of harvests appears for Nanwalek in Figure 4-37, which shows the 25 resources used by most households in 2003, and compares household use of those same resources in 2014. No single resource was used by an equal or greater percentage of Nanwalek households in 2014 compared to 2003. This decrease in use was substantial for many resources (e.g., Pacific halibut from 91% using to 68% using, octopuses from 91% to 54%, Chinook salmon from 82% using to 39% using, chum salmon from 73% using to 39% using, Pacific cod from 64% using to 16% using, Pacific tomcod from 73% to 32%, black bears from 64% using to 18% using, red chitons from 64% using to 14% using, black rockfish from 59% using to 2% using, and razor clams from 46% using to 0% using). On average, use decreased by 31 percentage points for these 25 resources across the 2 study years.

In summary, while subsistence harvests vary from year to year based on a variety of factors, 2014 harvests as estimated in usable pounds per person were among the lowest in Nanwalek since 1991 (Figure 4-33). In addition, the declines in diversity of harvests and uses are particularly noteworthy, and might signal a

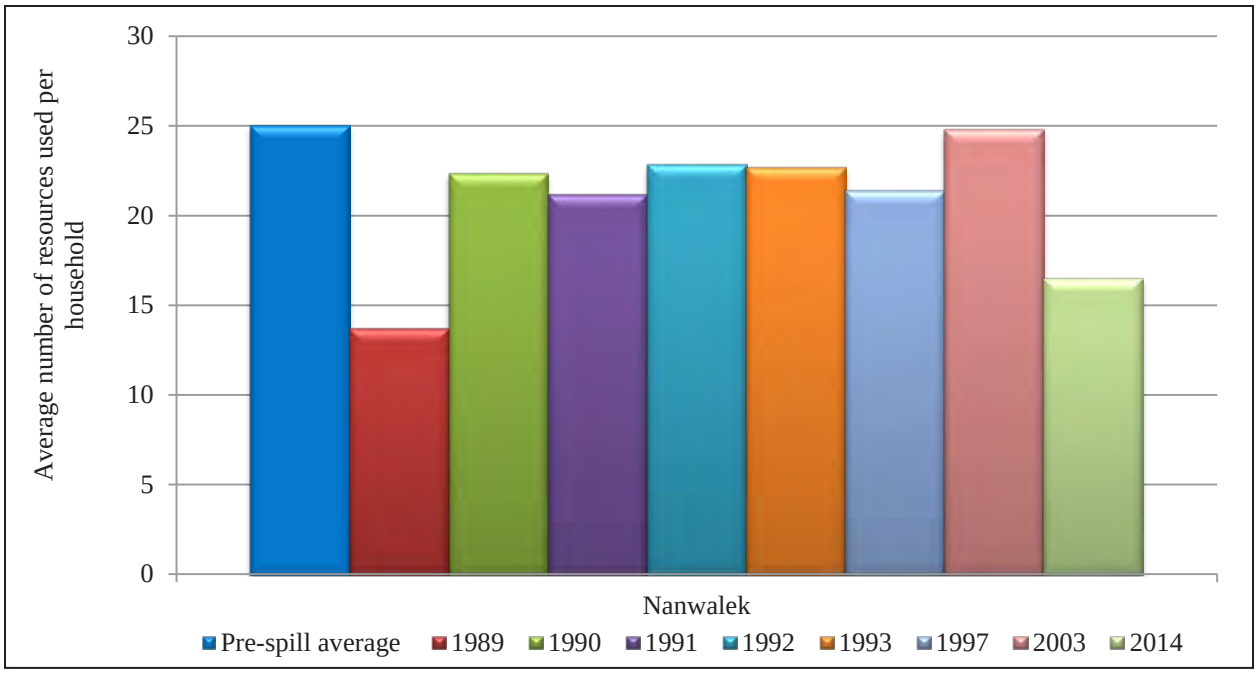

Figure 4-35.–Average number of resources used per household, Nanwalek, pre-spill average, 1989, 1990, 1991, 1992, 1993, 1997, 2003, and 2014.

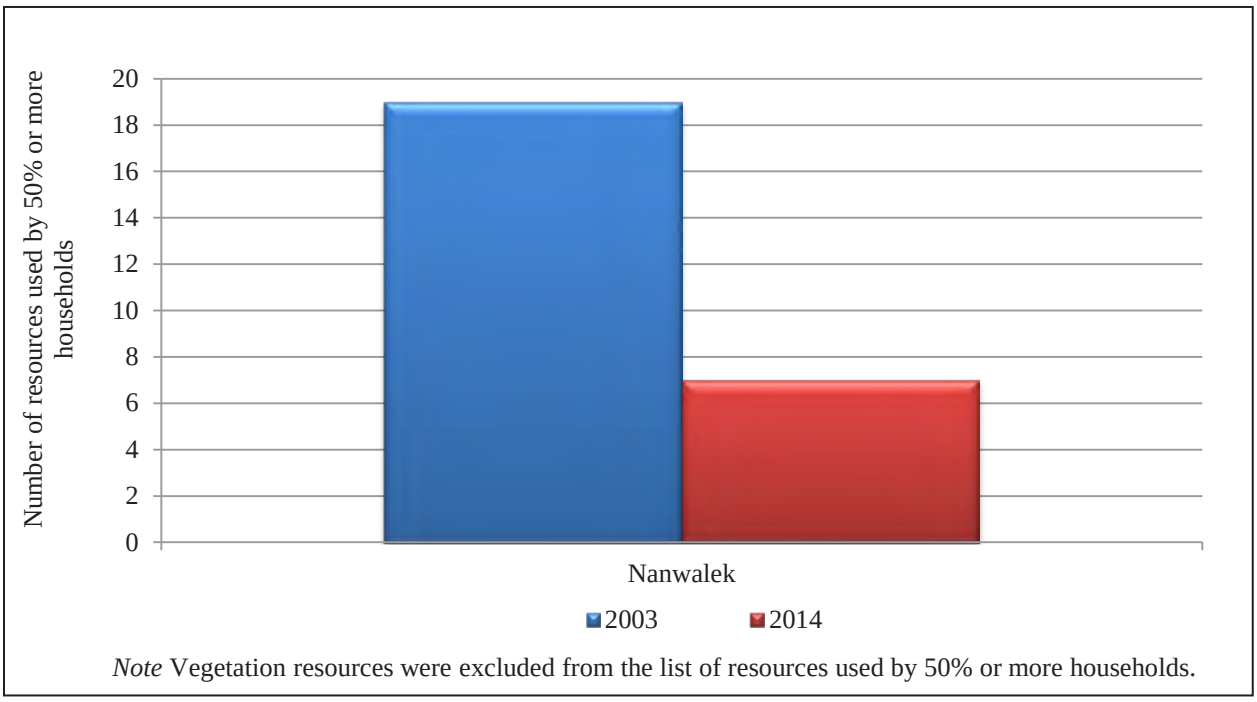

Figure 4-36.–Number of resources used by 50% or more households, Nanwalek, 2003 and 2014.

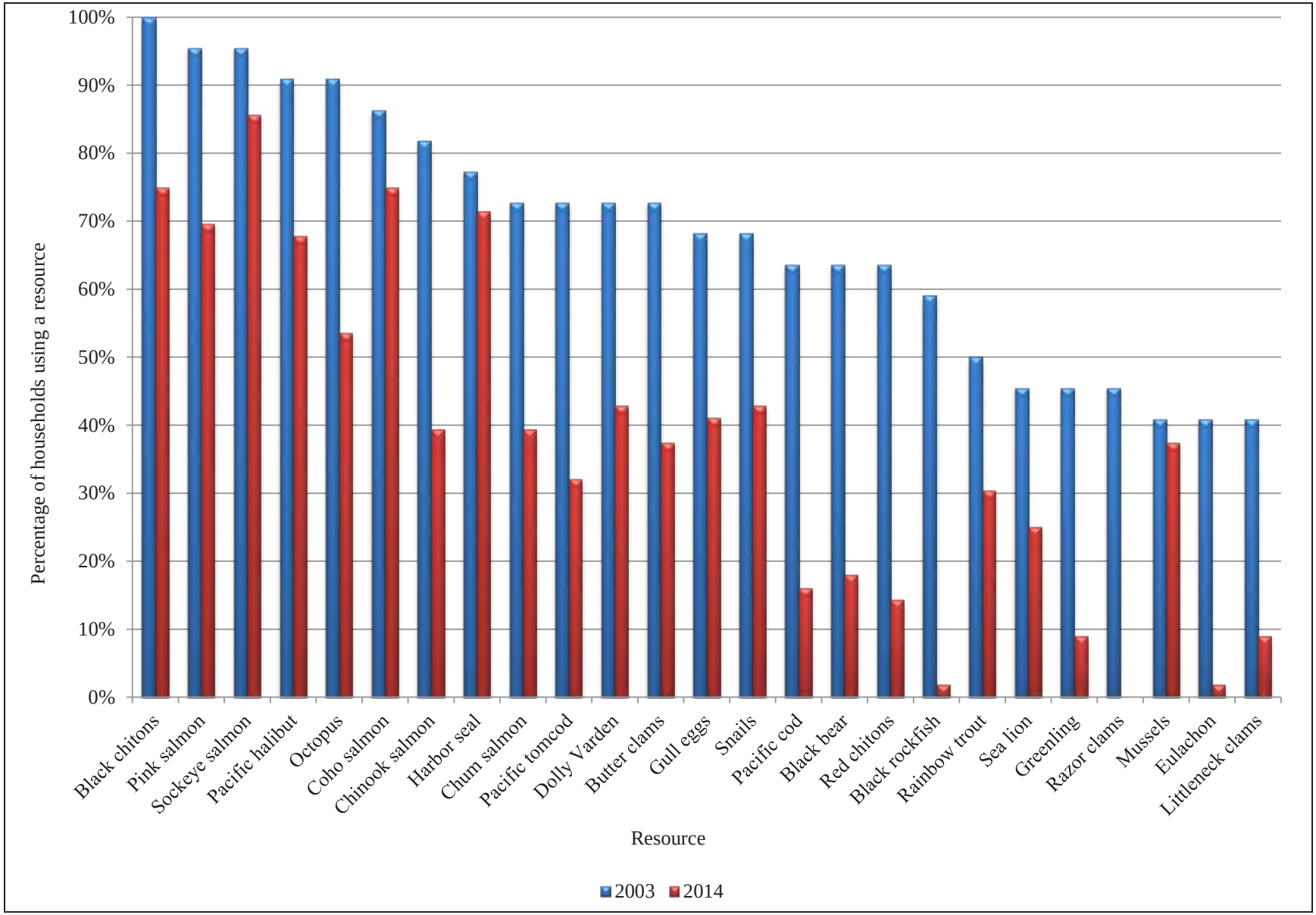

Figure 4-37.–Comparison of use of the 25 resources used by the most households in 2003 and use of the same resources in 2014, Nanwalek.

changing pattern of uses in the community. Additional years of comprehensive data collection would be necessary, however, to demonstrate if a trend toward a narrower range of subsistence uses is taking place, as well as to determine the possible cultural, economic, or environmental causes of such a change.

Current and Historical Harvest Areas

The 2014 research provides the first known subsistence harvest mapping data available for the Nanwalek community for a single year. An earlier report documents limited mapping data; however, the maps depict combined use areas for multiple rural communities and therefore are not comparable to the maps shown in this chapter, which document harvest and use areas specific to the community of Nanwalek (Fall 1997:2). In spite of the limitations to comparing wild resource search and harvest areas, general patterns of the pursuit of wild resources can be identified. Please see Chapter 5, which presents results for the neighboring community of Port Graham, for a summary of historical harvest and use areas based on interviews with both Nanwalek and Port Graham residents. The discussion "Current and Historical Harvest Areas" appears in the section "Comparing Harvests and Uses in 2014 with Previous Years" in the Port Graham chapter.

Subsistence Recovery Observations

This community's survey respondents were asked questions to evaluate the status of subsistence uses, which is an injured natural resource service that is "recovering" from the *Exxon Valdez* oil spill (EVOS) according to the EVOS Trustee Council (TC) (Exxon Valdez Oil Spill Trustee Council 2014). Assessment questions were asked to determine food safety, resource status and recovery, whether youth are learning subsistence skills, the role of elders, and the status of the recovery of the subsistence way of life. Respondents were able to provide more than one reason as part of their evaluations about the status of these topics, and as such percentages in the following tables could add to more than 100%.

Assessments of Natural Resource Conditions

Food Safety

Within the EVOS TC's recovery plan, a condition for assessing subsistence recovery is determining whether people are confident that resources are safe to eat. For 2014, Nanwalek residents were asked to assess the safety of eating clams, chitons, Pacific herring, and harbor seals. Although the assessments were by no means unanimous, a strong majority of households in Nanwalek said they are confident in the safety of eating these subsistence foods; of the remainder, far more respondents said they were not sure about safety rather than voiced a definite negative response that, "no, they are not safe" (Table 4-29). Compared to 2003, there was a very notable increase in the confidence that these resources were safe for consumption in 2014 (Fall 2006:A-156–A-163). Furthermore, fewer respondents in 2014 felt unsure that these resources were unsafe or believed them to be unsafe. According to survey data, 2% of households giving a valid response expressed concern about consuming Pacific herring or clams in 2014.

Out of the respondents who provided a valid response, 87% felt that chitons were safe to eat in 2014 compared to 13% who were unsure (Table 4-29). No respondents reported feeling that chitons were unsafe. Compared to study findings from 2003, Nanwalek residents' confidence in consuming chitons appears to have increased. In 2003, approximately 36% of respondents felt chitons were safe for consumption while the remaining 64% either felt that they were unsafe, or were unsure (Fall 2006:A-158). In 2003, most (43%) of those who thought chitons were unsafe for consumption were either unsure why they felt this way or did not provide any reason (Fall 2006:A-159). Respondents who provided a reason for assessing chitons as not safe in 2003 reported concerns over contamination from the oil spill (29%), concerns about paralytic shellfish poisoning (14%), or feeling that they lacked information about the safety of the resource (14%).

High levels of confidence in the safety of eating harbor seals have generally been the norm since 1991, although there was a drop in confidence in Nanwalek in 2003 and a rebound in 2014 (Fall 2006; Fall and Utermohle 1999:55) (Table 4-29). In 2014, approximately 83% of respondents felt harbor seals were safe

to eat. In 2003, the corresponding number was approximately 33% of respondents. Furthermore, in 2014, no respondents felt that harbor seals were unsafe to eat, but approximately 17% felt unsure about seal consumption. In 2003, approximately 10% of respondents felt harbor seals were unsafe to consume, and 57% of respondents were unsure. One-half of the respondents who felt harbor seals were unsafe to eat in 2003 felt so because of contamination from the oil spill; one-half did not know why or did not provide a reason.

Regarding clams, confidence in this resource has rebounded in Nanwalek in 2014 after dropping to relatively low levels in 1997 and 2003, although the community has yet to express full confidence (Fall 2006; Fall and Utermohle 1999:56) (Table 4-29). In 2014, approximately 75% of Nanwalek respondents felt that clams were safe to eat while 2% felt that they were unsafe, and 23% felt unsure. No reasons were provided for assessing clams as not safe to eat (Table 4-30). In 2003, approximately 36% of respondents felt clams were safe to eat. One-half of those who felt clams were unsafe in 2003 were concerned about paralytic shellfish poisoning and contamination from the oil spill; one-half of respondents did not know why or did not provide a reason.

Compared to other resources, Nanwalek respondents in 2014 had the least confidence in the safety of Pacific herring (Table 4-29). One-half of the respondents reported confidence in eating Pacific herring compared to 48% who were unsure, and 2% who felt Pacific herring were unsafe for consumption. No reasons were provided for assessing Pacific herring as not safe to eat (Table 4-30), and the uncertainty about resource safety might be related more to unfamiliarity with the resource rather than a concern about using it. The percentage of Nanwalek respondents feeling that Pacific herring are safe to consume increased substantially from 2003 when only approximately 10% of respondents considered Pacific herring safe to eat (Fall 2006). In 2003, the majority (86%) of respondents was unsure whether Pacific herring were safe to eat or not. Of those who believed Pacific herring was unsafe in 2003, all believed that Pacific herring were contaminated by the spill.

Status of Resource Populations

Similar to the previous study for 2003, the 2014 survey included questions about the status of recovery of subsistence resources after the EVOS. Survey respondents were asked 2 questions about the status of natural resources, a condition that relates directly to the EVOS subsistence recovery objective. Respondents were asked to assess "the availability to harvest" for 6 resources: Pacific herring, Pacific halibut, harbor seals, sea ducks, chitons, and clams. If the availability to harvest had changed compared to 10 years before (when the last survey was conducted), respondents were asked for a reason. "Availability" might be directly related to abundance, but might be affected by accessibility, resource conditions (e.g., pollution, sickness), regulations, and competition, among other factors.

The majority (63%) of respondents in Nanwalek who answered "yes" or "no" felt that subsistence resources had not recovered since the oil spill, compared to 38% who felt that they had (Table 4-31). Although the percentage of respondents who thought that resources had not recovered remained consistent from 2003, the percentage of those who felt that resources had recovered increased from 5% of valid responses in 2003 to 38% respondents in 2014 (Fall 2006:A-47).

Respondents who felt that resources had not recovered since the oil spill were asked to give suggestions for what could be done to help the recovery process. While most of the respondents (36%) did not provide any suggestion, some did (Table 4-32). Suggestions included allowing more time (24% of respondents), restoration and enhancement projects (16%), more cleanup (4%), more studying and monitoring of resource populations (4%), harvest regulation and management changes (4%), and predator control (4%). Others provided different suggestions (8% of respondents), did not know what could help (8%), or believed that nothing could be done (4%).

For several of the species discussed in the survey, respondents were asked to assess whether or not they felt these species were more or less available in 2014 compared to 10 years ago (Table 4-33). Overall, the

Table 4-29.–Household assessments of the safety of eating Pacific herring, harbor seals, chitons, and clams harvested in traditional locations, Nanwalek, 2014.

	Estimated	Do not use[c]		Missing[c]		Valid responses[a, c]		Safe[b]		Not safe[b]		Do not know[b]	
Resource	households	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Pacific herring	58	0.0	0.0%	6.2	10.7%	51.8	89.3%	25.9	50.0%	1.0	2.0%	24.9	48.0%
Harbor seal	58	0.0	0.0%	4.1	7.1%	53.9	92.9%	44.5	82.7%	0.0	0.0%	9.3	17.3%
Chitons (bidarkis, gumboots)	58	0.0	0.0%	3.1	5.4%	54.9	94.6%	47.6	86.8%	0.0	0.0%	7.3	13.2%
Clams	58	0.0	0.0%	4.1	7.1%	53.9	92.9%	40.4	75.0%	1.0	1.9%	12.4	23.1%

Source ADF&G Division of Subsistence household surveys, 2015.

a. Valid responses include only households that answered "safe," "not safe," or "do not know" to the question.

b. Computed as a percentage of valid responses.

c. Computed as a percentage of estimated households.

Table 4-30.–Reasons why Pacific herring, harbor seals, chitons, and clams are not safe to eat, Nanwalek, 2014.

	Resource is not safe to eat		Reasons why respondents believe _____ are not safe to eat.[a]									
			Poor or missing information		Agency advice		Paralytic shellfish poisoning		EVOS contamination		Non-EVOS contamination	
Resource	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Pacific herring	1.0	2.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Harbor seal	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Chitons (bidarkis, gumboots)	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Clams	1.0	1.9%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%

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Table 4-30.–Continued.

	Resource is not safe to eat		Reasons why respondents believe _____ are not safe to eat.[a]							
			Resource condition		Caused illness or reaction		Other reason		Missing	
Resource	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Pacific herring	1.0	2.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	100.0%
Harbor seal	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Chitons (bidarkis, gumboots)	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Clams	1.0	1.9%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	100.0%

Source ADF&G Division of Subsistence household surveys, 2015.

a. Computed as a percentage of households that indicated resources were not safe to eat.

Table 4-31.–Household assessments of the recovery of subsistence resources since the oil spill, Nanwalek, 2014.

		Have subsistence resources recovered since the *Exxon Valdez* oil spill?									
	Community	Missing[a]		Do not know[a]		Valid responses[a, c]		Yes[b]		No[b]	
Community	households	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Lower Cook Inlet											
Nanwalek	58	1.0	1.8%	15.5	26.8%	41.4	71.4%	15.5	37.5%	25.9	62.5%

Source ADF&G Division of Subsistence household surveys, 2015.

a. Computed as a percentage of estimated community households.

b. Computed as a percentage of valid responses.

c. Valid responses include only households that gave a "yes" or "no" response to the question.

Table 4-32.–Household assessments of what should be done to help with the recovery of subsistence resources, Nanwalek, 2014.

				What should be done to help in the recovery of subsistence resources?[b]									
		Subsistence resources have not recovered[a]		No recovery suggestion provided		Do not know		More clean up		More studying and monitoring of populations		Harvest regulation and management	
Community	Valid responses[c]	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Lower Cook Inlet													
Nanwalek	41.4	25.9	62.5%	9.3	36.0%	2.1	8.0%	1.0	4.0%	1.0	4.0%	1.0	4.0%

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Table 4-32.–Continued.

				What should be done to help in the recovery of subsistence resources?[b]							
		Subsistence resources have not recovered[a]		Time		Education about spill effects		Administrative, legal, and political action		Restoration and enhancement projects	
Community	Valid responses[c]	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Lower Cook Inlet											
Nanwalek	41.4	25.9	62.5%	6.2	24.0%	0.0	0.0%	0.0	0.0%	4.1	16.0%

-continued-

Table 4-32.–Continued.

				What should be done to help in the recovery of subsistence resources?[b]							
		Subsistence resources have not recovered[a]		Predator control		Reduce or eliminate oil pollution sources		Other suggestion		Nothing can be done	
Community	Valid responses[c]	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Lower Cook Inlet											
Nanwalek	41.4	25.9	62.5%	1.0	4.0%	0.0	0.0%	2.1	8.0%	1.0	4.0%

Source ADF&G Division of Subsistence household surveys, 2015.

a. Computed as a percentage of valid responses.

b. Computed as a percentage of households that indicated that subsistence resources have not recovered.

c. Valid responses include only households that gave a "yes" or "no" response to the question: "Have subsistence resources recovered since the *Exxon Valdez* oil spill?"

Table 4-33.–Household assessments of change in resource availability compared to 10 years ago, Nanwalek, 2014.

Resource	Estimated households	No response[a]		Not in community[a]		In community[a]		Valid responses[b, d]	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Pacific herring	58	26.9	46.4%	9.3	16.1%	48.7	83.9%	21.8	44.7%
Pacific halibut	58	11.4	19.6%	9.3	16.1%	48.7	83.9%	37.3	76.6%
Harbor seal	58	10.4	17.9%	9.3	16.1%	48.7	83.9%	38.3	78.7%
Ducks	58	21.8	37.5%	9.3	16.1%	48.7	83.9%	26.9	55.3%
Chitons (bidarkis, gumboots)	58	6.2	10.7%	9.3	16.1%	48.7	83.9%	42.5	87.2%
Clams	58	11.4	19.6%	9.3	16.1%	48.7	83.9%	37.3	76.6%

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Table 4-33.–Continued.

Resource	Estimated households	Less[c]		Same[c]		More[c]	
		Number	Percentage	Number	Percentage	Number	Percentage
Pacific herring	58	4.1	19.0%	17.6	81.0%	0.0	0.0%
Pacific halibut	58	13.5	36.1%	21.8	58.3%	2.1	5.6%
Harbor seal	58	6.2	16.2%	26.9	70.3%	5.2	13.5%
Ducks	58	3.1	11.5%	21.8	80.8%	2.1	7.7%
Chitons (bidarkis, gumboots)	58	18.6	43.9%	21.8	51.2%	2.1	4.9%
Clams	58	13.5	36.1%	22.8	61.1%	1.0	2.8%

Source ADF&G Division of Subsistence household surveys, 2015.

a. Computed as a percentage of estimated households.

b. Computed as a percentage of households that were in the community 10 years ago.

c. Computed as a percentage of valid responses.

d. Valid responses include only those households that were in the community 10 years ago and that responded that resource availability was either less, the same, or more compared to 10 years ago.

Table 4-34.–Reasons for less resource availability compared to 10 years ago, Nanwalek, 2014.

	Responses[a, b]		EVOS contamination[c]		Non-EVOS contamination[c]		Paralytic shellfish poisoning[c]		Stock or population status[c]	
Resource	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Pacific herring	4.1	19.0%	2.1	50.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Pacific halibut	13.5	36.1%	0.0	0.0%	0.0	0.0%	0.0	0.0%	3.1	23.1%
Harbor seal	6.2	16.2%	1.0	16.7%	0.0	0.0%	0.0	0.0%	1.0	16.7%
Ducks	3.1	11.5%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	33.3%
Chitons (bidarkis, gumboots)	18.6	43.9%	1.0	5.6%	0.0	0.0%	1.0	5.6%	4.1	22.2%
Clams	13.5	36.1%	2.1	15.4%	0.0	0.0%	0.0	0.0%	3.1	23.1%

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Table 4-34.–Continued.

	Responses[a, b]		Management or regulations[c]		Competition or overharvest[c]		Environmental conditions or predation[c]		Economic conditions[c]	
Resource	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Pacific herring	4.1	19.0%	0.0	0.0%	1.0	25.0%	0.0	0.0%	1.0	25.0%
Pacific halibut	13.5	36.1%	1.0	7.7%	6.2	46.2%	0.0	0.0%	0.0	0.0%
Harbor seal	6.2	16.2%	0.0	0.0%	0.0	0.0%	1.0	16.7%	1.0	16.7%
Ducks	3.1	11.5%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Chitons (bidarkis, gumboots)	18.6	43.9%	0.0	0.0%	11.4	61.1%	0.0	0.0%	0.0	0.0%
Clams	13.5	36.1%	1.0	7.7%	1.0	7.7%	7.3	53.8%	0.0	0.0%

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Table 4-34.–Continued.

	Responses[a, b]		General or other[c]		Not relevant[c]		Do not know[c]		No reason given[c]	
Resource	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Pacific herring	4.1	19.0%	0.0	0.0%	0.0	0.0%	1.0	25.0%	0.0	0.0%
Pacific halibut	13.5	36.1%	1.0	7.7%	2.1	15.4%	0.0	0.0%	0.0	0.0%
Harbor seal	6.2	16.2%	2.1	33.3%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Ducks	3.1	11.5%	0.0	0.0%	0.0	0.0%	1.0	33.3%	1.0	33.3%
Chitons (bidarkis, gumboots)	18.6	43.9%	3.1	16.7%	0.0	0.0%	2.1	11.1%	0.0	0.0%
Clams	13.5	36.1%	0.0	0.0%	0.0	0.0%	2.1	15.4%	0.0	0.0%

Source ADF&G Division of Subsistence household surveys, 2015.

a. The number of households that were in the community 10 years ago and responded that resource availability was LESS than it was 10 years ago.

b. Computed as a percentage of valid responses.

c. Computed as a percentage of responses.

Table 4-35.–Reasons for more resource availability compared to 10 years ago, Nanwalek, 2014.

	Responses[a, b]		EVOS contamination[c]		Non-EVOS contamination[c]		Paralytic shellfish poisoning[c]		Stock or population status[c]	
Resource	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Pacific herring	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Pacific halibut	2.1	5.6%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Harbor seal	5.2	13.5%	0.0	0.0%	0.0	0.0%	0.0	0.0%	3.1	60.0%
Ducks	2.1	7.7%	0.0	0.0%	0.0	0.0%	0.0	0.0%	2.1	100.0%
Chitons (bidarkis, gumboots)	2.1	4.9%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	50.0%
Clams	1.0	2.8%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	100.0%

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Table 4-35.–Continued.

	Responses[a, b]		Management or regulations[c]		Competition or overharvest[c]		Environmental conditions or predation[c]		Economic conditions[c]	
Resource	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Pacific herring	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Pacific halibut	2.1	5.6%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Harbor seal	5.2	13.5%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Ducks	2.1	7.7%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Chitons (bidarkis, gumboots)	2.1	4.9%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Clams	1.0	2.8%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%

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Table 4-35.–Continued.

	Responses[a, b]		General or other[c]		Not relevant[c]		Do not know[c]		No reason given[c]	
Resource	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Pacific herring	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Pacific halibut	2.1	5.6%	0.0	0.0%	0.0	0.0%	2.1	100.0%	0.0	0.0%
Harbor seal	5.2	13.5%	0.0	0.0%	0.0	0.0%	1.0	20.0%	1.0	20.0%
Ducks	2.1	7.7%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Chitons (bidarkis, gumboots)	2.1	4.9%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	50.0%
Clams	1.0	2.8%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%

Source ADF&G Division of Subsistence household surveys, 2015.

a. The number of households that were in the community 10 years ago and responded that resource availability was MORE than it was 10 years ago.

b. Computed as a percentage of valid responses.

c. Computed as a percentage of responses.

majority of respondents who had been in the community 10 years ago felt that resource availability has remained the same.

In 2014, the majority (81%) of Nanwalek respondents felt that the availability of Pacific herring populations was the same compared to 10 years ago. No respondent felt that Pacific herring was more available, and 19% of respondents thought the resource was less available (Table 4-33). Of those who considered Pacific herring less available compared to 10 years ago, 50% attributed the decline to contamination from the EVOS (Table 4-34). Other reasons identified by respondents for a decline in the availability of Pacific herring included competition or overharvest (25% of respondents) and economic conditions (25%). One respondent was unsure about the reasons for the decline of Pacific herring.

The majority (58%) of Nanwalek respondents felt that the availability of Pacific halibut remained the same in 2014 compared to 10 years ago (Table 4-33). Approximately 6% of respondents felt that Pacific halibut were more available, and 36% thought they were less available. Of the small number of respondents who thought that Pacific halibut were more available compared to 10 years ago, all were unsure why this was the case (Table 4-35). In comparison, the majority of respondents (46%) who felt that Pacific halibut were less available thought that this was due to competition or overharvest (Table 4-34). Other reasons identified by respondents for decreased availability of Pacific halibut related to the status of the stock or population (23% of respondents), a result of management or regulations (8%), general reasons (8%), or were not relevant (15%).

In 2014, approximately 70% of respondents in Nanwalek felt that the availability of harbor seals remained the same compared to the past 10 years, while 14% felt that their availability had increased, and 16% felt availability had decreased (Table 4-33). This is a notable change from 2003, when the percentage of respondents assessing less availability of harbor seals was 80% (Fall 2006:A-117). The increased availability of harbor seals was attributed to stock or population status by 60% of respondents who reported an increase in availability (Table 4-35). Respondents who considered that the availability of harbor seals had decreased compared to 10 years ago attributed the decline evenly (17% of respondents) to contamination from the oil spill, stock or population status, environmental conditions or predation, and economic conditions (Table 4-34). However, more respondents (33%) who considered the availability of harbor seals as declined felt this was due to reasons grouped under "general or other."

Regarding ducks, 81% of Nanwalek respondents said that their availability was same in 2014 compared to 10 years ago (Table 4-33). Approximately 8% of respondents felt that the availability of ducks had increased while 12% felt that their availability had decreased. For the 2003 study year, 59% of valid responses assessed that sea duck availability was less compared to recent previous years (Fall 2006:A-132). Regarding the 2014 assessments, an increase in the availability of ducks compared to 10 years ago was attributed to stock or population status by all respondents who reported an increase (Table 4-35). In comparison, one-third of respondents who considered the availability of ducks as decreased compared to 10 years ago thought this was due to stock or population status; no other specific reasons were cited (Table 4-34).

Regarding chitons, 51% of respondents felt that their availability had remained the same, while 5% felt availability had increased, and 44% said chitons were less available (Table 4-33). One-half of the respondents who considered the availability of chitons as increased believed this was due to stock or population status, while one-half of respondents did not provide a reason (Table 4-35). In comparison, the majority (61%) of respondents who considered the availability of chitons has decreased felt this was due to competition or overharvest (Table 4-34). Other reasons identified by respondents as a cause for decreased availability included: stock or population status (22% of respondents), general or other factors (17%), and contamination from the EVOS (6%). In addition, 11% of respondents were unsure about the reasons for declined availability of chitons.

Regarding the availability of clams in 2014, the majority of Nanwalek respondents (61%) felt that availability had remained the same, 3% felt availability had increased, and 36% felt clams had decreased compared to 10 years ago (Table 4-33). All respondents who felt that the availability of clams had increased attributed this to stock or population status (Table 4-35). In comparison, the majority (54%) of respondents

who felt that the availability of clams had decreased believed this was due to environmental conditions or predation, while 23% felt the decline was the result of stock or population status, and 15% attributed the decline to contamination from the oil spill (Table 4-34). Other reasons identified by a smaller number of respondents included management or regulations (8% of respondents) and competition or overharvest (8%). Approximately 15% of respondents were unsure why clam availability had declined.

Assessments of Social and Economic Conditions

Young Adults' Involvement in Subsistence Activities

An established condition for assessing subsistence recovery under EVOS TC objectives is determining whether "the cultural values provided by gathering, preparing, and sharing food" have been "reintegrated into community life." In 2014, survey respondents were asked if young adults are learning subsistence skills, and if not, why not. For this question, to be consistent with analysis from previous years, valid responses included only those indicating a "yes" or "no" assessment, and did not include the responses "do not know."

When asked whether or not young adults were learning enough hunting, fishing, and processing skills, slightly more Nanwalek respondents (52%) felt that they were, compared to the 48% of respondents who felt that they were not (Table 4-36). This nearly even divide in responses was also present in the study findings from 2003 (Fall 2006). That the majority of respondents felt that young adults were learning enough hunting, fishing, and processing skills was primarily attributed to the influence of elders (31%) (Table 4-37). Other reasons identified by respondents for young adults' continued learning of hunting, fishing, and processing skills included the influence of family members (27%), involvement in subsistence activities (23%), the influence of other community members or friends (23%), as well as participation in spirit camps and other Native programs (4%). Others respondents provided a different reason (12%) or did not provide any reason (15%).

In comparison, the majority (54%) of the respondents who believed young adults were not learning enough of these skills assigned a general lack of interest as the primary explanation given for their failure to learn subsistence skills (Table 4-38). This was the same primary explanation given in 2003 (Fall 2006). Although this percentage dropped for Nanwalek from 64% in 2003 to 26% in 2014, the change might in part be the result of a new category ("technology and modernization") being used to code responses in 2014: this explanation was cited by 21% of respondents in 2014. While 13% of respondents thought that there had been changes in the community way of life, a smaller percentage of respondents (8%) thought that there were not enough teachers and 4% of respondents were of the opinion that economic conditions did not support young adult participation in these activities. Approximately 17% of respondents provided alternative reasons, while 4% of respondents were unsure about the reasons. Additionally, 4% of respondents did not provide a response.

Elders' Influence

Another question addressing the status of the subsistence way of life asked if the role of elders in teaching subsistence skills and values in the community had changed over the last 10 years. For this question, to be consistent with analysis from previous years, valid responses included only those indicating an "increased," "decreased," or "same" assessment. When asked whether or not the influence of elders had changed in the community compared to the last 10 years, the majority of respondents in Nanwalek felt that it had decreased (63%) (Table 4-39). Others felt that elders' influence in the community had either increased (12% of respondents), or stayed the same (25%). The percentage of respondents saying that elders' influence has declined rose 10% from the 2003 results in Nanwalek, when approximately 53% of Nanwalek respondents indicated elders' influence was decreased compared to the 5 years prior to that study year (Fall 2006). Further, compared to the 2003 study year, 26% of respondents considered elders' influence as increased and 21% of respondents believed it had remained the same.

Table 4-36.–Household assessments of whether young adults learn enough subsistence skills, Nanwalek, 2014.

		Are young adults learning enough hunting, fishing, and processing skills?									
	Community	Missing[a]		Do not know[a]		Valid response[a, c]		Yes[b]		No[b]	
Community	households	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Lower Cook Inlet											
Nanwalek	58	1.0	1.8%	5.2	8.9%	51.8	89.3%	26.9	52.0%	24.9	48.0%

Source ADF&G Division of Subsistence household surveys, 2015.

a. Computed as a percentage of estimated community households.

b. Computed as a percentage of valid responses.

c. Valid resonses include only households that responded "yes" or "no" to the question.

Table 4-37.–Ways that young adults are learning subsistence skills, Nanwalek, 2014.

				How young adults are learning hunting, fishing, and processing skills?[b]									
	Valid	Yes, learning enough[a]		No reason given		Do not know		Family members		Elders		Involvement in activities	
Community	responses[c]	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Lower Cook Inlet													
Nanwalek	51.8	26.9	52.0%	4.1	15.4%	0.0	0.0%	7.3	26.9%	8.3	30.8%	6.2	23.1%

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Table 4-37.–Continued.

				How young adults are learning hunting, fishing, and processing skills?[b]							
	Valid	Yes, learning enough[a]		Spirit camps and Native programs		School programs		Other community members and friends		Other	
Community	responses[c]	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Lower Cook Inlet											
Nanwalek	51.8	26.9	52.0%	1.0	3.8%	0.0	0.0%	6.2	23.1%	3.1	11.5%

Source ADF&G Division of Subsistence household surveys, 2015.

a. Computed as a percentage of valid responses.

b. Computed as a percentage of households that responded "yes" to the question.

c. Valid resonses include only households that responded "yes" or "no" to the question: "Are young adults learning enough hunting, fishing, and processing skills?"

Table 4-38.–Reasons why young adults are not learning enough subsistence skills, Nanwalek, 2014.

				Why young adults are not learning enough hunting, fishing, and processing skills?[b]							
	Valid	Not learning enough[a]		No reason given		Do not know		No interest		Lack of teachers	
Community	responses[c]	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Lower Cook Inlet											
Nanwalek	51.8	24.9	48.0%	1.0	4.2%	1.0	4.2%	13.5	54.2%	2.1	8.3%

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Table 4-38.–Continued.

				Why young adults are not learning enough hunting, fishing, and processing skills?[b]							
	Valid	Not learning enough[a]		Change in community way of life		Too much else to do		No time		Subsistence uses impeded	
Community	responses[c]	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Lower Cook Inlet											
Nanwalek	51.8	24.9	48.0%	3.1	12.5%	0.0	0.0%	0.0	0.0%	0.0	0.0%

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Table 4-38.–Continued.

				Why young adults are not learning enough hunting, fishing, and processing skills?[b]							
	Valid	Not learning enough[a]		Decline in/scarcity of subsistence resources		Economics		Technology and modernization		Other reason	
Community	responses[c]	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Lower Cook Inlet											
Nanwalek	51.8	24.9	48.0%	0.0	0.0%	1.0	4.2%	5.2	20.8%	4.1	16.7%

Source ADF&G Division of Subsistence household surveys, 2015.

a. Computed as a percentage of valid responses.

b. Computed as a percentage of households that responded "no" to the question.

c. Valid resonses include only households that responded "yes" or "no" to the question: "Are young adults learning enough hunting, fishing, and processing skills?"

Table 4-39.–Household assessments of change in elders' influence in the last 10 years, Nanwalek, 2014.

		Change in elders' influence compared to 10 years ago (2004)									
	Community	Missing		Valid responses		Decreased		Same		Increased	
Community	households	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Lower Cook Inlet											
Nanwalek	58	7.3	12.5%	50.8	87.5%	32.1	63.3%	12.4	24.5%	6.2	12.2%

Source ADF&G Division of Subsistence household surveys, 2015.
Note The "missing" and "valid response" categories are computed as percentages of estimated community households. All other categories are calculated as percentages of valid responses.

Table 4-40.–Reasons for decreased influence of elders in the last 10 years, Nanwalek, 2014.

		Reasons for decreased influence of elders compared to 10 years ago (2004)									
	Influence	Missing		Demographic		Cultural		Elders less active		Elders more active	
Community	decreased	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Lower Cook Inlet											
Nanwalek	32.1	1.0	3.2%	5.2	16.1%	22.8	71.0%	5.2	16.1%	0.0	0.0%

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Table 4-40.–Continued.

		Reasons for decreased influence of elders compared to 10 years ago (2004)							
	Influence	Social/political		Economic		Non-specific		Other	
Community	decreased	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Lower Cook Inlet									
Nanwalek	32.1	1.0	3.2%	1.0	3.2%	1.0	3.2%	1.0	3.2%

Source ADF&G Division of Subsistence household surveys, 2015.
Note Only households responding that the influence of elders has decreased are included.

Table 4-41.–Reasons for increased influence of elders in the last 10 years, Nanwalek, 2014.

		Reasons for increased influence of elders compared to 10 years ago (2004)									
	Influence	Missing		Demographic		Cultural		Elders less active		Elders more active	
Community	increased	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Lower Cook Inlet											
Nanwalek	6.2	1.0	16.7%	0.0	0.0%	3.1	50.0%	0.0	0.0%	2.1	33.3%

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Table 4-41.–Continued.

		Reasons for increased influence of elders compared to 10 years ago (2004)							
	Influence	Social/political		Economic		Non-specific		Other	
Community	increased	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Lower Cook Inlet									
Nanwalek	6.2	0.0	0.0%	0.0	0.0%	0.0	0.0%	2.1	33.3%

Source ADF&G Division of Subsistence household surveys, 2015.

Note Only households responding that the influence of elders has increased are included.

In 2014, the majority of respondents (71%) who considered elders' influence as decreased felt this was the result of a cultural shift in the community (Table 4-40). Other respondents attributed this to a demographic change (16% of respondents), or to a decline in elders' activity (16%). Other respondents provided reasons grouped under social/political reasons (3% of respondents), or economic change (3%). Some respondents provided either an alternative reason (3% of respondents) or were non-specific (3%) in their response. In comparison, the majority (50%) of respondents who considered that the influence of elders has increased thought this change was a result of a cultural shift in the community, while 33% attributed the change to increased elder activity (Table 4-41). Additionally, 33% of respondents provided some other reason.

Status of the Traditional Way of Life

The third element of the social and economic assessment was to ask whether or not the traditional way of life had been affected by the EVOS. When asked, 80% of respondents from Nanwalek responded that it had (Table 4-42). Fewer respondents (13%) said that they did not know and the least number of respondents (7%) said that the traditional life way was not affected. Compared to 2003, there was a slight drop in the percentage of "yes" responses in Nanwalek in 2014—from approximately 91% of respondents in 2003 who felt the traditional way of life had been affected by the spill (Fall 2006). In 2014, among the respondents who believed that the traditional way of life had been affected by the oil spill, 66% said that the traditional way of life has not recovered. Half as many said it had recovered (32%), and 2% of respondents were unsure (Table 4-43). Those who responded that the traditional way of life had not recovered were asked what could be done to help the recovery process. Suggestions provided by 14% of respondents included: allowing more time, more education and spirit camps, a response to social disruptions, and increasing resource populations (Table 4-44). A smaller number of respondents suggested increased elder involvement in the process (7% of respondents), and the creation of new jobs and income sources (3%). However, most respondents either had other suggestions (28% of respondents) or did not know what could be done (21%).

Local Comments and Concerns

Following is a summary of local observations of wild resource populations and trends that were recorded during the surveys in Nanwalek. Some households did not offer any additional information during the survey interviews, so not all households are represented in the summary. In addition, respondents expressed their concerns about wild resources during the community review meeting of preliminary data. These concerns have been included in the summary.

Fish

Salmon returns to English Bay River have fluctuated dramatically over time, but continue to provide for the bulk of Nanwalek's per capita wild food harvest. The English Bay River fisheries enhancement project implemented in the late 1990s successfully rehabilitated the fishery and Nanwalek residents especially benefited from large returns of sockeye salmon. However, in recent years, community members have become concerned that the implementation of a salmon egg-take project by Cook Inlet Aquaculture Association, the project's operator, has been removing too many salmon eggs from the English Bay River lakes. Some residents are under the impression that sockeye salmon returns have been steadily decreasing as a result of this activity, and that not enough fry are being returned to English Bay River lakes from the hatchery.

Additionally, community members voiced concerns about sources of erosion that may be altering the salmon rearing habitat in the English Bay River lakes and the English Bay River. Mainly, off-road vehicle traffic on the road corridor in the watershed is believed by community members to be creating increasing erosion and pushing silt into the river. A Nanwalek elder said:

> The lagoon is a very important habitat for salmon, they bunch up in the eel grass in the lagoon and the silt is filtering into the lagoon and wrecking the eel grass and lowering

Table 4-42.–Household assessments of the oil spill's effect on the traditional way of life, Nanwalek, 2014.

		Was the traditional way of life affected by the *Exxon Valdez* oil spill?									
	Community	Missing[a]		Valid responses[a, c]		Do not know[b]		Not affected[b]		Affected[b]	
Community	households	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Lower Cook Inlet											
Nanwalek	58	1.0	1.8%	57.0	98.2%	7.3	12.7%	4.1	7.3%	45.6	80.0%

Source ADF&G Division of Subsistence household surveys, 2015.

a. Computed as a percentage of community households.

b. Computed as a percentage of valid responses.

c. Valid responses include only households that responded "yes," "no," or "do not know" to the question.

Table 4-43.–Household assessments of the recovery of the traditional way of life since the oil spill, Nanwalek, 2014.

		Has the traditional way of life recovered from the *Exxon Valdez* oil spill?									
	Yes, way of	Missing[a]		Valid responses[a, c]		Do not know[b]		Not recovered[b]		Recovered[b]	
Community	life affected	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Lower Cook Inlet											
Nanwalek	45.6	0.0	0.0%	45.6	100.0%	1.0	2.3%	30.0	65.9%	14.5	31.8%

Source ADF&G Division of Subsistence household surveys, 2015.

a. Computed as a percentage of households that responded "yes" to the question: "Was the traditional way of life affected by the *Exxon Valdez* oil spill?"

b. Computed as a percentage of valid responses.

c. Valid responses include only households that responded "yes," "no," or "do not know" to the question.

Table 4-44.–Household assessments for ways to help the recovery of the traditional way of life, Nanwalek, 2014.

				What should be done to help in the recovery of the traditional way of life?[b]									
	Yes, way of life affected	No, way of life not recovered[a]		Missing		Do not know		Increase resource populations		Respond to social disruptions		Create new jobs and new sources of income	
Community		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Lower Cook Inlet													
Nanwalek	45.6	30.0	65.9%	3.1	10.3%	6.2	20.7%	4.1	13.8%	4.1	13.8%	1.0	3.4%

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Table 4-44.–Continued.

				What should be done to help in the recovery of the traditional way of life?[b]									
	Yes, way of life affected	No, way of life not recovered[a]		Get rid of the oil		Continue studies on effects		Take legal and political action		Stop cash distributions and dividend payments		More education and spirit camps	
Community		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Lower Cook Inlet													
Nanwalek	45.6	30.0	65.9%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	4.1	13.8%

-continued-

Table 4-44.–Continued.

				What should be done to help in the recovery of the traditional way of life?[b]							
	Yes, way of life affected	No, way of life not recovered[a]		Nothing can be done		Time		Need to involve elders more		Other suggestion	
Community		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Lower Cook Inlet											
Nanwalek	45.6	30.0	65.9%	0.0	0.0%	4.1	13.8%	2.1	6.9%	8.3	27.6%

Source ADF&G Division of Subsistence household surveys, 2015.

a. Computed as a percentage of households that responded "yes" to the question: "Was the traditional way of life affected by the *Exxon Valdez* oil spill?"

b. Computed as a percentage of households that responded "no" to the question: "Has the traditional way of life recovered from the *Exxon Valdez* oil spill?"

> the water level. The water level has dropped a few feet and this exposes the eel grass to the ice when the lagoon freezes.

Residents are concerned that climate change is also contributing to lower water levels in the English Bay River system. According to a Nanwalek resident:

> There is something going wrong right now with salmon. It has something to do with not getting enough snow in the mountains. The runoff is not cooling lake water and river water enough because salmon prefer cool water.

A project by the North Pacific Rim Housing Authority aimed at building several new home sites upriver from the community is an additional topic of community concern. Nanwalek residents fear that increasing traffic on the road by residents as a result of occupying the home sites will increase the level of erosion occurring in the river and will thus further affect salmon habitat. "A lot of people are totally against it. [The housing project is] going to be a disaster hit for our fisheries, besides this climate change of ours," said a Nanwalek elder.

Declines in Chinook salmon available to the community are also a concern. While Nanwalek residents have traditionally used less Chinook salmon than other salmon species, residents have found it increasingly difficult to harvest Chinook salmon and also report that the average size of fish has decreased drastically. A Nanwalek elder said that effects from commercial fishing on Chinook salmon began in the mid-1980s and have been increasing negatively ever since. "Chinook were abundant prior to that," said the elder.

Community concerns regarding nonsalmon fish mostly revolve around declining availability of Pacific halibut. Nanwalek residents assert that negative effects to Pacific halibut populations in Kachemak Bay by sportfishing charter boats from Homer, Ninilchik, and Anchor Point have been heavy. Residents believe that both the abundance and average size of Pacific halibut have declined in the area as a result of these activities. "There are too many halibut charters. The sports industry has done a lot of damage out there," said a Nanwalek resident. Residents also believe that commercial Pacific halibut fishing has led to local declines. A Nanwalek elder said that following a crash of commercial crab and shrimp harvests in the 1980s, the commercial fisheries turned away from shellfish and began to focus on Pacific halibut. Community members voiced frustration that these concerns for Pacific halibut seem to them to be generally disregarded by fisheries managers. Community members noted that other marine nonsalmon fish, such as lingcod and rockfish, have been less affected and remain relatively abundant. However, Pacific herring populations were said to have never recovered from the effects associated with the EVOS.

Large Land Mammals

Mountain goats, black bears, and moose are traditional large land mammal resources used by Nanwalek residents. Nanwalek hunters are satisfied with the mountain goat hunting opportunities available to them but do have concerns regarding non-local mountain goat hunters hunting on privately-owned Alaska Native lands without permission. Residents reported that non-local hunters who often hunt on Native lands are not subject to law enforcement and that the community has no means to regulate them. Community members also share this concern for non-local hunters pursuing black bears on Native lands. Moreover, Nanwalek residents reported observations that local black bear populations have declined drastically as a result of non-local hunters (viewed as "sport hunters" by Nanwalek residents) excessively pursuing black bears from boats along the shores of Cook Inlet and Kachemak Bay. "Bears are in trouble. They have been overharvested. We got all them guides coming from across the bay [Homer] that have been doing a lot of hunting," explained a Nanwalek hunter.

Regarding moose, Nanwalek residents believe that the local population is stable but that the current Tier II permit system has been unfairly favorable to Port Graham hunters, who have been obtaining all 4 of the annually available "any bull" subsistence moose permits for the local hunting area. "Nanwalek people have missed getting moose permits for the last few years because Port Graham people have obtained all of the available permits," said a Nanwalek hunter. Currently the local Tier II subsistence hunt (TM 549) awards

the 4 available permits based on weighted scores resulting from specific information provided by applicants. During regulatory year 2015, there were 16 applicants who applied for TM 549 permits and all 4 permits were awarded to Port Graham residents. In fact, over the other previous 3 regulatory years—2012, 2013, and 2014—all of the TM 549 Tier II subsistence moose permits were awarded to Port Graham residents and none were awarded to Nanwalek residents.[12] Nanwalek residents expressed frustration regarding the scoring process and would like to see ADF&G split the allocation of permits between the 2 separate communities in the future.

Marine Mammals

Marine mammal hunters generally thought it took more time and effort to harvest seals and sea lions mainly because of having to travel farther from the community to be successful. Concerns mostly pertained to harbor seal scarcity rather than to sea lion populations, which were reported as remaining stable. Declined harbor seal abundance was attributed to the depletion of groundfish stocks by sport fisheries operating in Kachemak Bay. Community members explained that harbor seals feed heavily on groundfish and thus have been unable to maintain their populations as a result of an increased scarcity of prey. "Too many people fishing in the bay, trolling. At Yukon Island the charter boat or tourist boat that goes around that island is impacting the [seal] rookery there," said a Nanwalek elder. Additionally, Nanwalek elders, with whom marine mammal harvests are often shared, complained that younger community members are not putting in enough time and effort to hunt marine mammals for the community today.

Birds and Eggs

Duck hunting, spruce grouse hunting, and seagull egg gathering are important traditional subsistence activities for the Nanwalek community. Community members reported that spruce grouse populations in the area have declined severely, but were not sure why. Community members also reported that while puffin eggs were once a very important resource for the community, they have not been available in the local area since 1989 when the EVOS occurred. In contrast, Nanwalek residents reported that migratory bird populations remain stable. "There are plenty of ducks around, we get whatever we need," said a Nanwalek hunter.

Marine Invertebrates

Above all the other resource categories, sustainability of marine invertebrate populations represented the greatest cause for ongoing concern among Nanwalek community members during this study. Because they are very accessible, intertidal foods—including various shellfish, such as mollusks, octopuses, snails, clams, cockles, crabs, sea urchins, sea cucumbers, and chitons—are traditionally extremely important foods for Nanwalek residents. Yet, community members reported observations of generalized decline in intertidal marine invertebrate resource availability. "Shellfish has been declining, now we need to travel further away to get what we need," said a Nanwalek resident.

A Nanwalek elder said that until at least the mid-20th century, Dungeness crab, king crab, Tanner crab, and shrimp were abundant in the Nanwalek area and were important traditional foods for the community but that commercial crab harvests in lower Cook Inlet during the 1950s and 1960s decimated the populations. The elder said that as a result of this, the community's use of shrimp and crabs, especially Dungeness crab, became increasingly rare and that by the 1980s very few harvests occurred. Sea otter predation on juvenile crabs was also blamed for population declines. Residents also asserted that sea otter predation is a major cause of the decline of clam populations in Kachemak Bay. Clams are also an important traditional food for Nanwalek residents. "[Clams] have been wiped out pretty well," said a Nanwalek elder. Residents said that harvest of clams that are very small in size is the norm today, whereas harvest of large-sized clams is very rare. Beginning in the mid-1990s, Nanwalek residents also began to observe declines in the

12. ADF&G, WinfoNet: http://winfonet.alaska.gov/ (accessed April 2016).

abundance and size of individual chitons, both black and red chitons, which are 2 of Nanwalek residents' most important traditional foods. Red chitons became especially rare and the average size of black (small) chitons diminished. Nanwalek residents blame a combination of sea otter predation, community overharvest in concentrated areas, water pollution, and EVOS-related factors for the chiton decline.

Residents explained that during the mid-20th century, sea otter populations in Cook Inlet and Kachemak Bay began to recover immensely from past exploitation. Sea otters feed on many of the marine invertebrates that are important to Nanwalek residents as subsistence foods. With a formerly much-reduced sea otter population in the area as a result of the fur trade, shellfish populations flourished in the region. Sea otter recovery meant burgeoning populations and increasing effects on marine invertebrates. As a result, many Nanwalek residents express a desire for sea otter control measures in local waters and would like to see younger residents putting forth an effort to harvest more sea otters for fur. However, Nanwalek residents do not view sea otters as the single cause of marine invertebrate declines, and some residents explained that sea otters are important to the marine ecosystem because they also help keep chitons and sea urchins from overgrazing on kelp forests, which are vital habitat for nonsalmon fish such as rockfish and lingcod.

Many Nanwalek residents openly blamed community overharvest of chitons as the primary cause for declines (Salomon et al. 2011). A Nanwalek elder said that with declines in other marine invertebrates, such as crabs and clams, chitons became increasingly in demand as a subsistence food. The elder explained that Nanwalek's increasing population over the years has meant further demand and said that the major declines in chiton abundance "have been more recent with more and more people going out for them." The elder also said that chiton harvests occurring in a concentrated area within proximity to the community has only furthered the problem. "Some people don't have boats so they can't go too far, but they have freezers to store bidarkis in," said the elder. "They don't even give 'em a chance to get bigger," he continued, expressing his concern for the small size of the average chitons now harvested by the community. Another Nanwalek resident said that a good portion of the community's annual chiton harvest ends up being sent by airplane to relatives in Anchorage and expressed concern that this practice also contributes to overharvest. While several community residents expressed great concern for what they see as damage being done to chiton populations by the community, they also expressed a strong desire to take measures to remedy the problem. For example, some residents were in support of temporary harvest closures for certain areas of local shorelines as a measure to allow for chiton population recovery.

Lastly, some residents also expressed concern that warming water temperatures resulting from climate change might also be playing a role in marine invertebrate declines generally.

EVOS and Other Environmental Concerns

Without the bounty of the sea and land around them, Nanwalek residents would have a very difficult time surviving since the cost of purchasing food would be prohibitive. As such, the EVOS presented a major threat to the community, which residents said continues to have negative effects. "Oil is still on the bottom and once in a while it washes up, it is still doing its damage," said a Nanwalek elder. Aside from the effects of the EVOS on the marine environment, Nanwalek residents expressed additional concerns regarding wastewater discharge from Cook Inlet natural gas drilling platforms and wells. These discharges were said to contain various contaminants and community members saw water pollution resulting from this as a pronounced threat.

Several elder residents relayed an observation that the EVOS not only created negative ecological effects for the community, but also negative socio-cultural impacts. Because of the financial compensation received by community members as a result of the EVOS, an unprecedented level of income was brought into the community. Elders asserted that this new level of financial wealth negatively affected the community's social environment because individual families were able to purchase motorized equipment, and other related advanced technology, thus leading to a situation where participation in resource harvests became increasingly individualized and nuclear and thus done increasingly less in the traditional communal fashion. A Nanwalek elder explained:

> The oil spill in one way was worse for subsistence and traditional community culture because it gave everyone money and this gave them the ability for each individual to have their own boat motor. Lots of people ended up doing subsistence only for themselves and overall people shared lots less together.

While the elder was implying that less sharing of harvests was one aspect of what occurred, he also wanted to convey that less sharing is also playing out within the context of participation in subsistence activities at the group and multi-generational levels.

ACKNOWLEDGMENTS

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5. PORT GRAHAM

Malla Kukkonen and Erica Mitchell

Community Background

The community of Port Graham, also known as *Paluwik*, is located in lower Cook Inlet, close to the southern tip of the Kenai Peninsula approximately 28 air miles southeast from Homer. This traditional Alaska Native community is nestled in Port Graham Bay and can be accessed only with small aircraft, or by boat from outside the peninsula. On the peninsula, Port Graham is connected to the neighboring Alaska Native community of Nanwalek by foot trail, which is approximately 4 miles long. Kachemak Bay, the large water body separating Port Graham from Homer, the closest community with road access to other Kenai Peninsula communities and beyond, is a meeting point for the waters of Cook Inlet and the Gulf of Alaska, making the bay prone to rapidly changing weather. Kachemak Bay is also home to the first Alaska state park and the only wilderness park. The Kachemak Bay State Park and State Wilderness Park encompasses nearly 400,000 acres.[1] Since 1999, Kachemak Bay has also been part of the National Estuarine Research Reserve network, which was established by the federal Coastal Zone Management Act and is managed by the National Oceanic and Atmospheric Administration's (NOAA) Office for Coastal Management in collaboration with the Alaska Department of Fish and Game (ADF&G) and other local partners.[2]

The coastline of southeast Kachemak Bay is characterized by mountain peaks, as well as rugged and rocky shorelines leading into many bays, fjords, or coves (Plate 5-1). Many small islands are also a common feature of the landscape, which continues to be greatly affected by tidal forces as well. There are no glaciers in the southern tip of the Kenai Peninsula and the terrain is mostly low alpine mountains with rounded peaks. The hillsides are covered with coastal rainforest leading down to the often steep and rocky shores. Common vegetation on the hillsides includes Sitka spruce, cottonwood, devil's club, and a variety of berry bushes such as salmonberries and highbush blueberries. In the lower elevation, the ground is covered with different kinds of brush, grass, and moss. The area hosts a few freshwater lakes, and many small streams crisscross their way down the hillsides as well. The climate in Port Graham is maritime with mild winters and cool summers with moderate seasonal range of temperatures, high humidity, and moderate levels of precipitation as rain or snow.

The permanent community of Port Graham developed around a fish processing plant and dock built and operated by the Fidalgo Island Company from 1910 to 1912 (Fall 2006). However, according to oral histories told by both Port Graham and Nanwalek residents, as well as archeological evidence, a seasonal or permanent settlement had been at the site prior to the 1880s (Stanek 2000). The first trading center and fort closest to Port Graham had been built in 1786 at nearby Alexandrovsk (later renamed English Bay and now known as Nanwalek) by Russian fur traders with the Shelikov-Golikov Company. As described by Braund and Behnke (1980), the influence of the Russian fur traders and the introduction of the Russian Orthodox Church in the traditional culture of the Kachemak Bay area was devastating due to the long-term negative effects on the traditional subsistence patterns and the social organization of the local Native population inhabiting the area. The further negative influence of outsiders on traditional Native cultures and social composition continued after the territory of Alaska became part of the United States in 1867 and American entrepreneurs took over trading and sea otter hunting in the area that were previously led by the Russians (Braund and Behnke 1980; Stanek 2000).

1. Alaska Department of Natural Resources, Division of Parks & Outdoor Recreation, n.d. "Kachemak Bay State Park and State Wilderness Park." http://dnr.alaska.gov/parks/units/kbay/kbayl.htm (accessed December 8, 2015).
2. National Oceanic and Atmospheric Administration, Office for Coastal Management, National Estuarine Research Reserve System, n.d. "Kachemak National Estuarine Research Reserve." http://nerrs.noaa.gov/reserves/kachemak-bay.html (accessed December 8, 2015).

Photography by Malla Kukkonen, ADF&G

Plate 5-1.–Aerial view of the eastern end of Port Graham Bay in November 2014.

By the early 20th century, the Alutiiq or Sugpiaq people, who had inhabited the Kachemak Bay area for centuries, had become economically immersed with the fur trade and the fishing industry, and had settled in the vicinity of trading posts and canneries. To replace the dwindling fur trade, the commercial fishing industry in lower Cook Inlet had begun to develop in the late 1800s. American companies built several salteries and canneries in lower Cook Inlet, including the cannery in Port Graham, which processed both salmon and Pacific herring. With the establishment of a cannery in Port Graham, more people from neighboring settlements and seasonal habitations moved into the community after 1912. The first school in the community was built in 1932. With the growing fishing industry, the cannery soon needed additional housing for its seasonal as well as year-round workforce, which was composed of local Native peoples as well as cannery workers brought in by the packing companies. These mostly seasonal workers came from diverse ethnic backgrounds including Chinese, Japanese, Filipino, and Euro-American, which further diversified the already culturally diverse population in Port Graham. By 1950, the estimated population of Port Graham had grown to 92 people (Braund and Behnke 1980; Fall 2006; Stanek 2000).

In the early years of the commercial fishery, many local Native people were able to participate in the commercial fishery only in small roles, including working in the cannery, attending the salmon traps, and fishing with setnets. It was not until after World War II that local village residents could afford to lease or buy commercial fishing boats and gear. This further changed the economics in the community by making cash more prevalent in the local economy (Braund and Behnke 1980; Stanek 2000). The salmon runs in Cook Inlet began to decline in the 1950s due to over-exploitation, and many of the canneries in lower Cook Inlet began to close. The Port Graham cannery burned down in 1960 and was not rebuilt until 1968. The years in between were very hard on local residents, who had become accustomed to having employment opportunities in the community and then had to move elsewhere to earn cash from wages (Braund and Behnke 1980). Over the decades, the alternating ups and downs of the commercial fishing industry continued to leave marks on the community. However, regardless of the need for families to move away from Port Graham to seek employment or educational opportunities, the population of the community remained relatively stable between 1960 and 1990 (Stanek 2000).

Development of local infrastructure, including construction of new housing, roads, an airport, public sewer and water utilities, as well as the arrival of telephones, satellite television, and electrical services,

all took place in Port Graham between the late 1950s and 1980s. Other events with long-term effects on the community include the 1964 Good Friday earthquake, the Alaska Native Settlement Act (ANCSA) in 1971, and the *Exxon Valdez* oil spill (EVOS) in 1989 (Stanek 2000).[3] Commercial fishing in Cook Inlet, the community's economic lifeline, was severely affected by the EVOS and the cannery in Port Graham closed after a decade of declining salmon runs in the inlet. The cannery facility burned down again in January 1998 but was rebuilt and reopened in June 1999.[4] In 2000, a total of 15 commercial fishing licenses were held by 12 community residents with the majority of permits being for salmon fisheries.[5]

In order to provide a more reliable supply of high-quality salmon for the local cannery operation, the Port Graham Hatchery Corporation (PGHC), a non-profit corporation of the Port Graham Village Council, applied for a salmon hatchery permit in 1991, and was issued a permit in 1992. The PGHC constructed the hatchery in 1992 and continued to operate the hatchery, rearing primarily pink and sockeye salmon, until 2007 when it closed due to budget constraints (Stopha 2012). In 2010, the number of commercial fishing permits held by community residents had declined to a total of 6 held by 5 residents; most of the licenses continued to be for salmon fisheries.[6] In April 2014, the Cook Inlet Aquaculture Association purchased the hatchery and began pink salmon hatchery operations later that year. The reopening of the hatchery brought new hopes for a positive effect on the local economy since the hatchery was planning on employing between 4–6 people year-around, and another 6–12 people in the summer months. Furthermore, if successful, the hatchery-enhanced salmon runs would enable the reopening of the Port Graham cannery, which would lead to more local employment opportunities.[7]

At the time of the survey effort, Port Graham had a school that provided education to students from kindergarten through 12th grade. Health care services were provided by the local clinic but expectant mothers needed to leave the community and go to Homer approximately 30 days prior to their due date to receive medical care. Two stores, one privately owned and one owned by the Port Graham Corporation, served community residents with a variety of grocery as well as household items for sale. Mail was delivered daily by small airplanes operated on a regular schedule by Homer Air and Smokey Bay Air (Plate 5-2). In addition to mail, these airlines regularly delivered supplies to community households. These airlines were also the primary transportation available to the nearby communities of Nanwalek and Seldovia, as well as Homer, the regional hub.

3. Alaska Energy Authority. 2014. "Creating Our Future – IRMP Phase 2," [in] "AEA-15003-RE Fund Renewable Energy Fund Round VIII: Port Graham Village Council Submittal: 'Renewable Energy Development Project.'"
4. Alaska Energy Authority. 2014. "Creating Our Future – IRMP Phase 2," [in] "AEA-15003-RE Fund Renewable Energy Fund Round VIII: Port Graham Village Council Submittal: 'Renewable Energy Development Project.'"
5. Alaska Commercial Fisheries Entry Commission, Fishery Statistics. n.d. "Permit & Fishing Activity by Year, State, Census Area, or City: Year 2000." https://www.cfec.state.ak.us/gpbycen/2000/122233.htm (accessed January 11, 2016).
6. Alaska Commercial Fisheries Entry Commission, Fishery Statistics. n.d. "Permit % Fishing Activity by Year, State, Census Area, or City: Year 2010." https://www.cfec.state.ak.us/gpbycen/2010/12233.htm (accessed January 11, 2016).
7. Aaron Selbig, 2014. "Port Graham hatchery set to reopen." Kachemak Bay Broadcasting, Inc. http://kdll.org/port-graham-hatchery-set-to-reopen/ (accessed March 30, 2016).

Photography by Malla Kukkonen, ADF&G

Plate 5-2.–Sign at the Port Graham airport.

Population Estimates and Demographic Information

According to the federal census, Port Graham had an estimated population of 177 people in 79 households in 2010 (Table 5-1). The household survey conducted for study year 2014 found an estimated population of 149 residents, of which approximately 90% (133 people) self-identified as Alaska Native. This study's estimate falls below the 2010–2014 American Community Survey (ACS) estimate of 166 residents and the 2010 decennial census estimate of 177 residents (Figure 5-1). Figure 5-2 shows the population of the community over time from U.S Census Bureau data and Alaska Department of Labor and Workforce Development estimates. The graph demonstrates that the population in the community has been very stable since the 1980s. This is likely a result of the improvements in the community housing situation, local utilities, and the local road system that all took place during the 1980s and 1990s. At the same time, limited employment and educational opportunities have continued to make it challenging for young people to remain in or move back to the community.

Prior to the study, the Division of Subsistence researchers, in collaboration with local research assistants and the Port Graham Tribal Council, estimated 59 year-round households were in Port Graham in 2014. During the survey effort it became evident that 1 of the 59 households was not eligible to participate in the survey because the residents had not lived in the community permanently in 2014. Project staff were able to survey 41 of the 58 eligible households, thus achieving a 71% sample (Table 5-2). Of the 58 eligible households in the community, 10 declined to be interviewed and 7 were unable to be contacted (Table 1-6). The following data are expanded estimates for all households in the community.

Table 5-1.–Population estimates, Port Graham, 2010 and 2014.

	U.S. Census (2010)	5-year American Community Survey (2010–2014)		This study (2014)	
		Estimate	Range[a]	Estimate	Range[b]
Total population					
Households	79	65	49 – 81	58.0	
Population	177	166	133 – 199	148.5	132 – 165
Alaska Native					
Population	160	152	120 – 184	133.0	116 – 150
Percentage	90.4%	91.6%		89.5%	

Sources U.S. Census Bureau (2011) for 2010 estimate; U.S. Census Bureau for American Community Survey (ACS) 2014 estimate (5-year average); and ADF&G Division of Subsistence household surveys, 2015, for 2014 estimate.

Note Division of Subsistence household survey elegiblity requirements differ from those used by (ACS).

a. ACS data range is the reported margin of error.

b. No range of households is estimated for division surveys.

According to survey results, on average, Port Graham households were composed of approximately 3 people with a minimum of 1 household member and a maximum of 8 household members. In general, 61% of the population was male and 39% female (Table 5-3). Overall, the largest age cohort of the entire population was men between the ages of 50 and 54 (approximately 16% of the male population) (Table 5-3; Figure 5-3). Another large age cohort in the community was both men and women between ages 30 and 34; approximately 20% of the total female population and 11% of the total male population were included in that age cohort. The average age in the community was approximately 36 years of age, which is 10 years more than that of the neighboring community of Nanwalek (Table 5-2; Table 4-2).

Study findings show that the average length of residency for household heads in Port Graham was 32 years compared to an estimated 24 years for the total population (Table 5-2). Regarding places of birth, 53% of Port Graham household heads identified Port Graham as their birthplace, compared to 18% of household heads who were born outside Alaska in other states in the U.S. (Table 5-4). Approximately 10% of community household heads were born in the nearby community of Nanwalek, and an additional 3% each were born in Anchorage, Kodiak City, and Seldovia. The remaining household heads were born in Kenai, Beaver, in the Southeast region of Alaska, or outside the United States. Among the total population, the majority (60%) identified Port Graham as their place of birth (Table 5-5). Others were born elsewhere in the U.S. (13%), in Nanwalek (7%), Anchorage (6%), Kodiak City (3%), Beaver (3%), or elsewhere on the Kenai Peninsula and around Southeast Alaska.

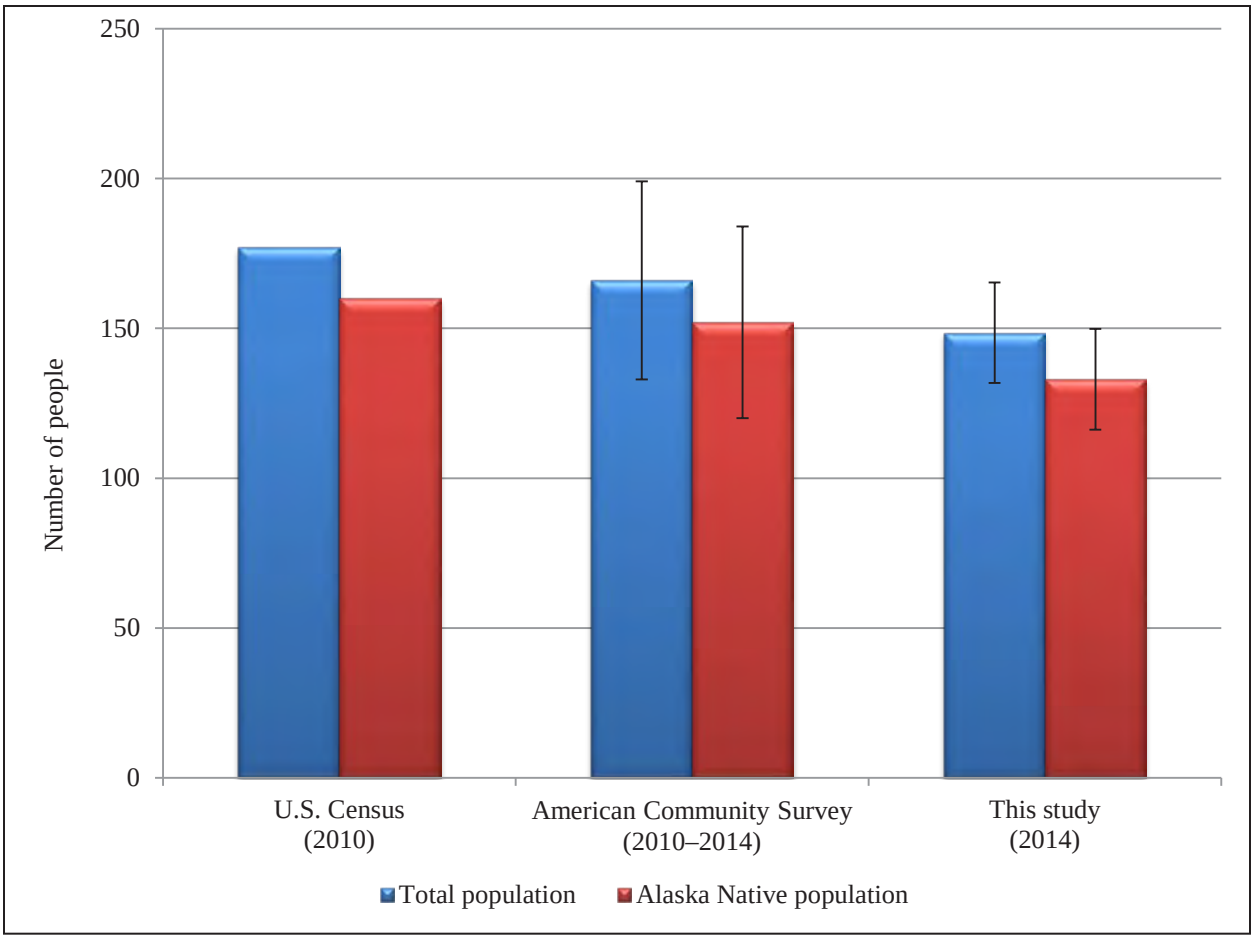


Figure 5-1.–Alaska Native and overall population estimates, Port Graham, 2010 and 2014.

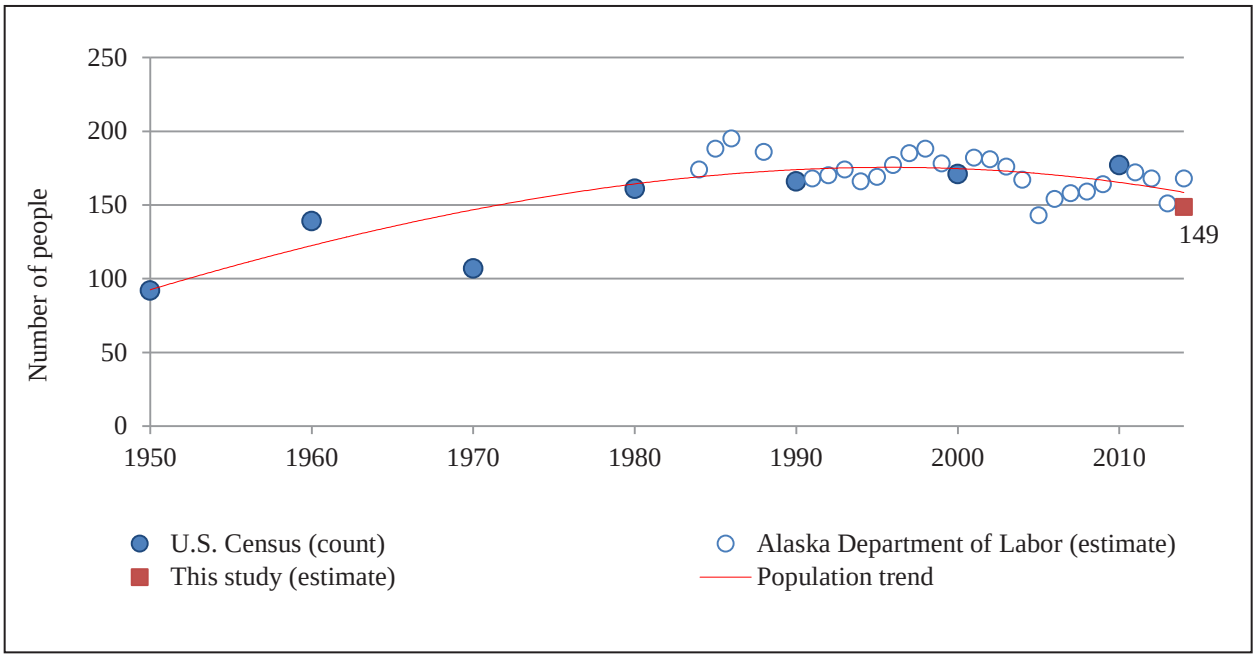


Figure 5-2.–Historical population estimates, Port Graham, 1950–2014.

Table 5-2.–Sample and demographic characteristics, Port Graham, 2014.

Characteristics	Community Port Graham
Sampled households	41
Eligible households	58
Percentage sampled	70.7%
Sampled population	105
Estimated community population	148.5
Household size	
Mean	2.6
Minimum	1
Maximum	8
Age	
Mean	35.8
Minimum[a]	0
Maximum	79
Median	33
Length of residency	
Total population	
Mean	23.6
Minimum[a]	0
Maximum	74
Heads of household	
Mean	31.5
Minimum[a]	1
Maximum	74
Alaska Native	
Estimated households[b]	
Number	55.2
Percentage	95.1%
Estimated population	
Number	133.0
Percentage	89.5%

Source ADF&G Division of Subsistence household surveys, 2015.

a. A minimum age of 0 (zero) is used for infants who are less than 1 year of age.

b. The estimated number of households in which at least 1 head of household is Alaska Native.

Table 5-3.–Population profile, Port Graham, 2014.

	Male			Female			Total		
Age	Number	Percentage	Cumulative percentage	Number	Percentage	Cumulative percentage	Number	Percentage	Cumulative percentage
0–4	7.1	7.8%	7.8%	5.7	9.8%	9.8%	12.7	8.6%	8.6%
5–9	8.5	9.4%	17.2%	4.2	7.3%	17.1%	12.7	8.6%	17.1%
10–14	2.8	3.1%	20.3%	2.8	4.9%	22.0%	5.7	3.8%	21.0%
15–19	8.5	9.4%	29.7%	2.8	4.9%	26.8%	11.3	7.6%	28.6%
20–24	8.5	9.4%	39.1%	2.8	4.9%	31.7%	11.3	7.6%	36.2%
25–29	1.4	1.6%	40.6%	1.4	2.4%	34.1%	2.8	1.9%	38.1%
30–34	9.9	10.9%	51.6%	11.3	19.5%	53.7%	21.2	14.3%	52.4%
35–39	2.8	3.1%	54.7%	0.0	0.0%	53.7%	2.8	1.9%	54.3%
40–44	1.4	1.6%	56.3%	2.8	4.9%	58.5%	4.2	2.9%	57.1%
45–49	5.7	6.3%	62.5%	4.2	7.3%	65.9%	9.9	6.7%	63.8%
50–54	14.1	15.6%	78.1%	7.1	12.2%	78.0%	21.2	14.3%	78.1%
55–59	8.5	9.4%	87.5%	4.2	7.3%	85.4%	12.7	8.6%	86.7%
60–64	1.4	1.6%	89.1%	1.4	2.4%	87.8%	2.8	1.9%	88.6%
65–69	4.2	4.7%	93.8%	2.8	4.9%	92.7%	7.1	4.8%	93.3%
70–74	4.2	4.7%	98.4%	1.4	2.4%	95.1%	5.7	3.8%	97.1%
75–79	1.4	1.6%	100.0%	2.8	4.9%	100.0%	4.2	2.9%	100.0%
80–84	0.0	0.0%	100.0%	0.0	0.0%	100.0%	0.0	0.0%	100.0%
85–89	0.0	0.0%	100.0%	0.0	0.0%	100.0%	0.0	0.0%	100.0%
90–94	0.0	0.0%	100.0%	0.0	0.0%	100.0%	0.0	0.0%	100.0%
95–99	0.0	0.0%	100.0%	0.0	0.0%	100.0%	0.0	0.0%	100.0%
100–104	0.0	0.0%	100.0%	0.0	0.0%	100.0%	0.0	0.0%	100.0%
Missing	0.0	0.0%	100.0%	0.0	0.0%	100.0%	0.0	0.0%	100.0%
Total	**90.5**	**100.0%**	**100.0%**	**58.0**	**100.0%**	**100.0%**	**148.5**	**100.0%**	**100.0%**

Source ADF&G Division of Subsistence household surveys, 2015.

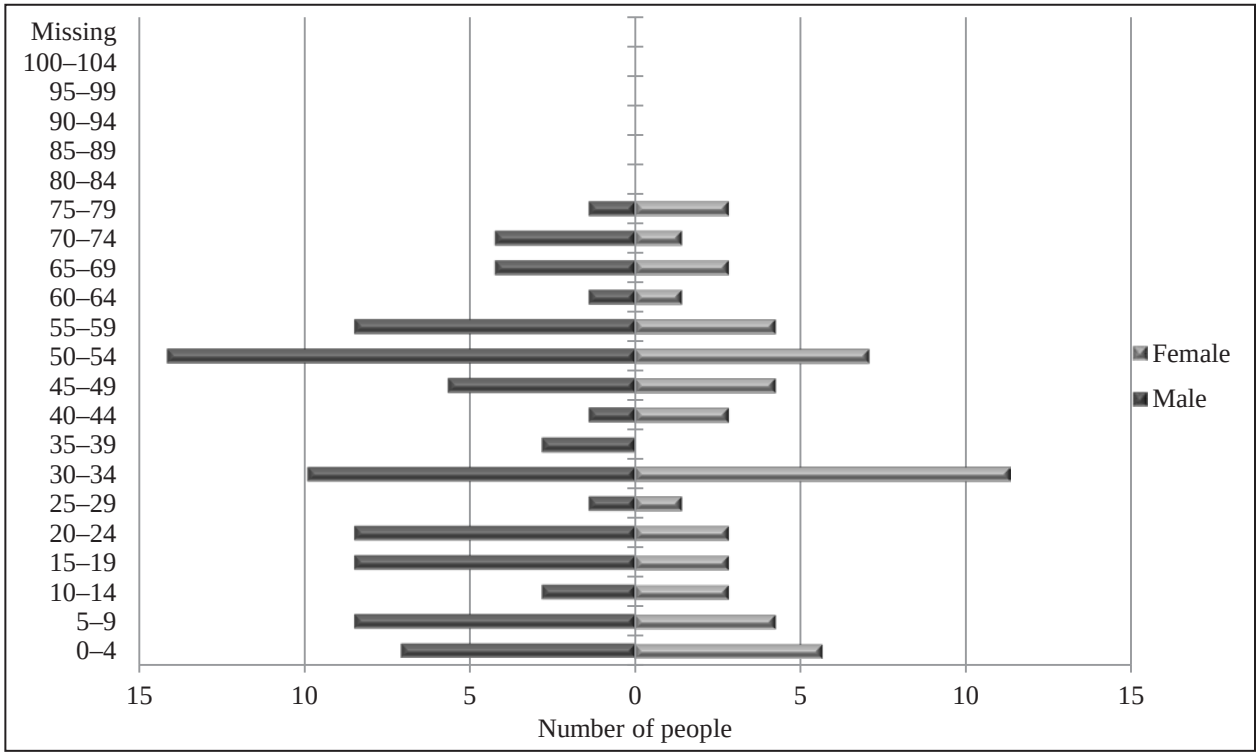


Figure 5-3.–Population profile, Port Graham, 2014.

Table 5-4.–Birthplaces of household heads, Port Graham, 2014.

Birthplace	Percentage
Anchorage	3.2%
Beaver	1.6%
Craig	1.6%
Nanwalek	9.7%
Kenai	1.6%
Kodiak City	3.2%
Port Graham	53.2%
Seldovia	3.2%
Sitka	1.6%
Port Chatham	1.6%
Other U.S.	17.7%
Foreign	1.6%

Source ADF&G Division of Subsistence household surveys, 2015.
Note "Birthplace" means the place of residence of the parents of the individual when the individual was born.

Table 5-5.–Birthplaces of population, Port Graham, 2014.

Birthplace	Percentage
Anchorage	5.7%
Beaver	2.9%
Craig	1.0%
Nanwalek	6.7%
Juneau	1.0%
Kenai	1.0%
Kodiak City	2.9%
Port Graham	60.0%
Seldovia	1.9%
Sitka	1.0%
Port Chatham	1.0%
Paxson	1.0%
Other U.S.	13.3%
Foreign	1.0%

Source ADF&G Division of Subsistence household surveys, 2015.
Note "Birthplace" means the place of residence of the parents of the individual when the individual was born.

Cash Employment and Monetary Income

The secluded location of Port Graham, which is on the southern Kenai Peninsula approximately 28 air miles from Homer and other road-connected communities on the Kenai Peninsula, makes local employment opportunities vital. As described earlier, prior to its destruction, the cannery in Port Graham was a very important employer. The cannery has been rebuilt but due to the low volume of fish coming in to the facility to be processed, it has not been able to provide employment for the local population. As described by Fall (2006), the importance of commercial salmon fishing as a source of cash income for Port Graham residents declined considerably after the EVOS and has not recovered. According to the Alaska Commercial Fisheries Entry Commission, a total of 11 salmon-only fishing permits were held by 11 Port Graham residents in 2003 and fishery participation changed by 2014 when 5 Port Graham residents held a total of 7 commercial fishing permits, including Pacific halibut, other groundfish, and salmon fisheries. In 2003, there were only 2 active fishermen engaged in the commercial salmon fisheries compared to 4 active fishermen engaged in the more diverse fisheries in 2014.[8]

Table 5-6 is a summary of the estimated earned and other income for residents of Port Graham in 2014. The table shows that in 2014, earned income accounted for an average of $22,322 per household, or 68% of the total community income. Other sources of income, such as dividends, food stamps, and Social Security, accounted for an average of $10,653 per household, or 32% of the total community income. The total average household income composed of both earned income and other income sources in Port Graham during 2014 was $32,975. The median income for Port Graham households was an estimated $12,868 (Figure 5-4). This estimate is substantially lower than the 5-year average of $71,829 for the 2010–2014 finding by the ACS for all Alaska.[9] The Division of Subsistence median income finding for Port Graham is also noticeably lower than the ACS 5-year average estimate of $29,583. In comparison to the other study communities, the estimated Port Graham per capita annual income of $12,876, which includes income from sources other than employment, ranked 3rd after Nikiski (Table 1-9). Comparing study community average income estimates at the household level, Port Graham also ranked 3rd after Seldovia with an estimated annual household income of $32,975. However, it is worth noting that among the 4 study communities, Port Graham had the second largest percentage (32%) of income from sources other than employment, ranking after Nanwalek.

Overall, income from jobs with the local government (including tribal) contributed the most income (37%) to the community of Port Graham (Figure 5-5). Income from agriculture, forestry, and fishing jobs and from Native corporation dividends were the next most significant sources of income in 2014 (17% of total community income for both income sources).

In 2014, both part-time and full-time employment opportunities in the community were offered by the Port Graham Corporation, Port Graham Tribal Council, State of Alaska, and the hatchery. As shown in Table 5-7, the largest number (or 40%) of all jobs in Port Graham were full time, followed by part-time jobs (32%), and on-call positions (29%). Out of the employed adults in Port Graham, 43% worked full time, approximately 37% were employed part time, and 33% had on-call employment. In terms of employed households, the same percentage of households, 50% each, were employed full time and part time. Also, 33% of community households had a family member who held an on-call position.

In 2014, earned income in Port Graham came from 7 different employment sectors (Table 5-8). The majority of employed adults (63% of individuals) worked in local government, including tribal governments; this income made up 55% of total community wage earnings. Local government employment was followed by employment in the services sector (30% of individuals), agriculture, forestry, and fishing sector (10% of

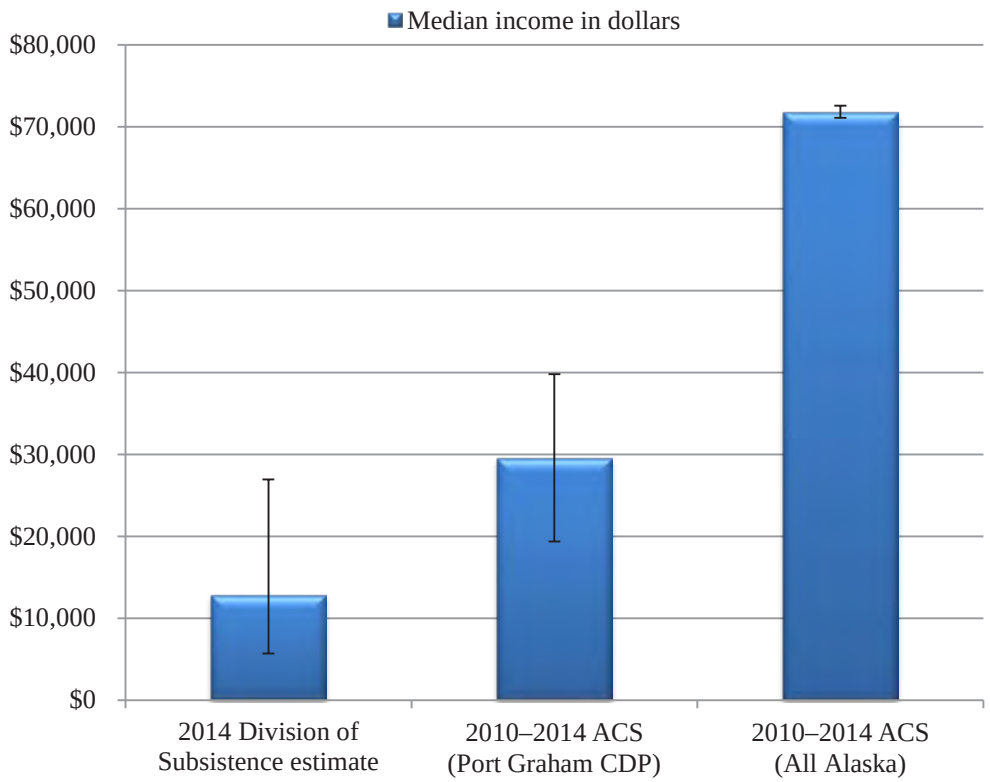
8. Alaska Commercial Fisheries Entry Commission, "Permit and Fishing activity by Year, State, Census Area, or City: State or Census Area: Kenai Peninsula Borough, City: Port Graham: All Fisheries Combined 2003 and 2014." https://www.cfec.state.ak.us/gpbycen/2003/122233.htm (accessed May 16, 2016).

9. The difference between the median household income based on the Division of Subsistence survey and that based on ACS findings may be the result of relatively low response rates for the income questions in the division survey. Nevertheless, the results from both studies documented a very low median household income in Port Graham compared to the ACS estimate for the state of Alaska as a whole.

Table 5-6.–Estimated earned and other income, Port Graham, 2014.

Income source	Number of employed adults	Number of households	Total for community	-/+ 95% CI	Mean per household	Percentage of total community income
Earned income						
Local government, including tribal	35.5	29.1	$715,132	$282,336 – $1,310,339	$12,330	37.4%
Agriculture, forestry, and fishing	5.6	6.2	$315,238	$28,906 – $949,484	$5,435	16.5%
Services	16.8	14.6	$104,264	$12,745 – $249,492	$1,798	5.5%
State government	3.7	4.2	$81,859	$4,204 – $222,724	$1,411	4.3%
Retail trade	3.7	4.2	$64,664	$23,206 – $161,799	$1,115	3.4%
Construction	1.9	2.1	$9,619	$6,243 – $15,260	$166	0.5%
Manufacturing	1.9	2.1	$3,880	$3,317 – $4,595	$67	0.2%
Earned income subtotal	**56.0**	**37.4**	**$1,294,655**	**$608,241 – $2,197,215**	**$22,322**	**67.7%**
Other income						
Native corp. dividend		41.0	$317,879	$165,590 – $548,200	$5,481	16.6%
Alaska Permanent Fund dividend		43.9	$158,314	$119,805 – $207,356	$2,730	8.3%
Food stamps		15.6	$39,956	$12,854 – $75,557	$689	2.1%
Social Security		7.1	$37,059	$1,215 – $95,596	$639	1.9%
Disability		7.1	$24,375	$1,737 – $77,563	$420	1.3%
Supplemental Security income		4.2	$21,118	$0 – $65,021	$364	1.1%
Longevity bonus		4.2	$5,949	$0 – $19,333	$103	0.3%
Unemployment		4.2	$4,785	$0 – $13,920	$83	0.3%
Heating assistance		4.2	$2,320	$0 – $6,097	$40	0.1%
CITGO fuel voucher		2.8	$2,030	$0 – $6,090	$35	0.1%
Child support		1.4	$1,015	$0 – $4,323	$18	0.1%
Other		1.4	$1,015	$0 – $4,304	$18	0.1%
Meeting honoraria		1.4	$1,015	$0 – $4,522	$18	0.1%
Pension/retirement		1.4	$690	$0 – $2,734	$12	0.0%
Adult public assistance (OAA, APD)		1.4	$354	$0 – $1,654	$6	0.0%
TANF (Temporary cash assistance for needy families)		0.0	$0	$0 – $0	$0	0.0%
Workers' compensaiton/insurance		0.0	$0	$0 – $0	$0	0.0%
Veterans assistance		0.0	$0	$0 – $0	$0	0.0%
Foster care		0.0	$0	$0 – $0	$0	0.0%
Other income subtotal		**45.3**	**$617,875**	**$415,285 – $898,705**	**$10,653**	**32.3%**
Community income total			**$1,912,530**	**$1,188,219 – $2,842,162**	**$32,975**	**100.0%**

Source ADF&G Division of Subsistence household surveys, 2015.

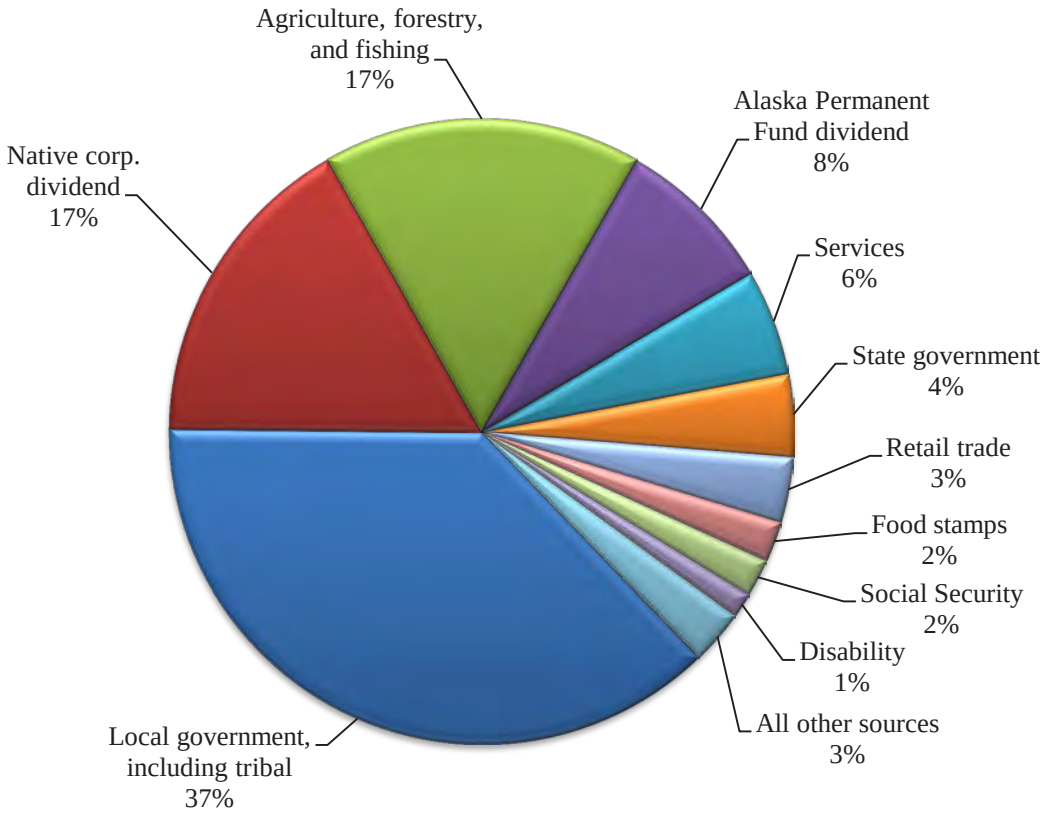


Note For 2014, Division of Subsistence estimate does not include categories of income excluded by the 2010–2014 ACS median estimate, including food stamps, housing assistance, and one-time payments.

Figure 5-4.–Comparison of median income estimates, Port Graham, 2014.

individuals), and state government as well as retail trade sectors (7% of individuals each). Only approximately 3% of individuals were employed in the construction and manufacturing sectors. While more Port Graham residents were employed in the services sector, earnings from employment in the agriculture, forestry, and fishery sector made up the second largest portion of the total community earned income (24%), followed by wages earned from employment in the services sector (8% of total wage earnings), state government (6%), and retail trade industry (5%). Income generated from employment in construction and manufacturing each contributed less than 1% to the total community wage earnings.

The study found 112 adults over the age of 16 in Port Graham in 2014 and the average length of employment for all Port Graham working-age adults was 20 weeks, or 5 months (Table 5-9). Of the 112 adults in Port Graham, the study found 56, or 50%, were employed for at least a portion of 2014. According to study results, the employed adults were employed for an average of 9 months in approximately 71 different jobs during the study period. Furthermore, approximately 53% of employed adults worked year-round. At the household level, 37 of the 58 households (65%) had an adult household member employed at some point during the study year. During the study period, employed households held an average of 1.9 jobs, and on average there were 1.5 employed adults per household.



Note The "all other sources" category includes sources providing less than 1.25% each to the overall income.

Figure 5-5.–Top income sources, Port Graham, 2014.

Table 5-7.–Reported job schedules, Port Graham, 2014.

	Jobs		Employed persons		Employed households	
Schedule	Number	Percentage	Number	Percentage	Number	Percentage
Full time	28.0	39.5%	24.3	43.3%	18.7	50.0%
Part time	22.4	31.6%	20.5	36.7%	18.7	50.0%
Shift	0.0	0.0%	0.0	0.0%	0.0	0.0%
On-call (occasional)	20.5	28.9%	18.7	33.3%	12.5	33.3%
Part-time shift	0.0	0.0%	0.0	0.0%	0.0	0.0%
Schedule not reported	0.0	0.0%	0.0	0.0%	0.0	0.0%

Source ADF&G Division of Subsistence household surveys, 2015.

Note Respondents who had more than 1 job in the study year could provide multiple responses, so the percentages may sum to more than 100%.

Table 5-8.–Employment by industry, Port Graham, 2014.

Industry	Jobs	Households	Individuals	Percentage of wage earnings
Estimated total number	**70.9**	**37.4**	**56.0**	
State government	**7.9%**	**11.1%**	**6.7%**	**6.3%**
Construction and extractive occupations	5.3%	11.1%	6.7%	3.5%
Transportation and material moving occupations	2.6%	5.6%	3.3%	2.8%
Local government, including tribal	**50.0%**	**77.8%**	**63.3%**	**55.2%**
Executive, administrative, and managerial	2.6%	5.6%	3.3%	3.5%
Teachers, librarians, and counselors	10.5%	22.2%	13.3%	10.6%
Health technologists and technicians	5.3%	11.1%	6.7%	7.0%
Administrative support occupations, including clerical	7.9%	16.7%	10.0%	16.7%
Service occupations	2.6%	5.6%	3.3%	2.0%
Construction and extractive occupations	7.9%	16.7%	10.0%	7.8%
Transportation and material moving occupations	2.6%	5.6%	3.3%	0.6%
Handlers, equipment cleaners, helpers, and laborers	10.5%	16.7%	13.3%	7.1%
Agriculture, forestry, and fishing	**7.9%**	**16.7%**	**10.0%**	**24.3%**
Agricultural, forestry, and fishing occupations	7.9%	16.7%	10.0%	24.3%
Construction	**2.6%**	**5.6%**	**3.3%**	**0.7%**
Transportation and material moving occupations	2.6%	5.6%	3.3%	0.7%
Manufacturing	**2.6%**	**5.6%**	**3.3%**	**0.3%**
Writers, artists, entertainers, and athletes	2.6%	5.6%	3.3%	0.3%
Retail trade	**5.3%**	**11.1%**	**6.7%**	**5.0%**
Executive, administrative, and managerial	2.6%	5.6%	3.3%	3.1%
Marketing and sales occupations	2.6%	5.6%	3.3%	1.9%
Services	**23.7%**	**38.9%**	**30.0%**	**8.1%**
Executive, administrative, and managerial	2.6%	5.6%	3.3%	2.1%
Technologists and technicians, except health	5.3%	11.1%	6.7%	2.8%
Service occupations	5.3%	5.6%	6.7%	1.2%
Transportation and material moving occupations	2.6%	5.6%	3.3%	1.5%
Handlers, equipment cleaners, helpers, and laborers	7.9%	11.1%	10.0%	0.5%

Source ADF&G Division of Subsistence household surveys, 2015.

Table 5-9.–Employment characteristics, Port Graham, 2014.

Characteristic	Community Port Graham
All adults	
Number	111.8
Mean weeks employed	20.0
Employed adults	
Number	56.0
Percentage	50.1%
Jobs	
Number	70.9
Mean	1.3
Minimum	1
Maximum	3
Months employed	
Mean	9.2
Minimum	1
Maximum	12
Percentage employed year-round	53.3%
Mean weeks employed	39.9
Households	
Number	58.0
Employed	
Number	37.4
Percentage	64.5%
Jobs per employed household	
Mean	1.9
Minimum	1
Maximum	4
Employed adults	
Mean	
Employed households	1.5
Total households	1.0
Minimum	1
Maximum	3
Mean person-weeks of employment	38.5

Source ADF&G Division of Subsistence household surveys, 2015.

Food Security

Survey respondents were asked a set of questions intended to assess their household's food security, defined as, "access by all people at all times to enough food for an active, healthy life" (Coleman-Jensen et al. 2012). The food security questions were modeled after those developed by the U.S. Department of Agriculture (USDA) but modified by ADF&G to account for differences in access to subsistence and store-bought foods. The food security status of households is based on the aggregated number of affirmative responses to questions about experiencing food insecure conditions. Food security status is characterized by 4 ranges:

1. High food security;
2. Marginal food security;
3. Low food security; and
4. Very low food security.

For reporting purposes, households with high or marginal food security were broadly categorized as being food secure, and households with low or very low food security were broadly categorized as being food insecure following a USDA protocol (Bickel et al. 2000).[10]

Households with a high or marginal level of food security reported 1 or 2 instances of food access problems or limitations—typically anxiety over food sufficiency or a shortage of particular foods in the house—but gave little or no indication of changes in diets or food intake. Households with low food security reported reduced quality, variety, or desirability of their diet, but they, too, gave little indication of reduced food intake. Households classified as having very low food security were those that reported multiple instances of disrupted eating patterns and reduced food intake (Coleman-Jensen et al. 2012).

Food security results for surveys for Port Graham, the state of Alaska, and the United States are summarized in Figure 5-6. Overall, levels of food insecurity in Port Graham were comparable to those across Alaska and in the United States as a whole. The majority (85%) of households in Port Graham were classified as being food secure, 10% had low food security, and 5% had very low food security.

The high and marginal food security subcategories do not mean that the household had no food insecure conditions, only that these conditions did not result in low or very low food security when considered alongside all conditions. Core questions and responses from Port Graham residents are summarized in Figure 5-7. Approximately 17% of households in Port Graham worried about having enough food, and 20% lacked the resources needed to get food. In this case, resources were defined as what is needed to hunt, fish, gather, or purchase food. Overall, 12% said that their food in general did not last and that they were not able to get more. Furthermore, 10% of households cut the size of meals, or skipped meals, while another 7% of households said they had eaten less than they felt they should. Equal percentages (2% each) indicated that at times they were hungry but did not eat, lost weight because there was not enough food, or did not eat for a whole day; these are conditions that indicate an increase in the severity of food insecurity in a household.

For this study, additional questions asked were designed to determine whether food insecurities, if any, were related to subsistence foods or store-bought foods. Approximately 24% of households indicated subsistence foods did not last and that they could not get more, compared to 5% of households that had their store-bought foods not last (Figure 5-7). Note that during survey administration, due to interviewer error, not all respondents were asked these additional questions and the responses in Figure 5-7 are not a full representation of these conditions experienced by surveyed Port Graham households.

Figure 5-8 portrays the mean number of food insecure conditions per household by food security level during specific months. Figure 5-9 shows the months in which households reported foods not lasting. Study results for 2014 show that households identified as having low food security experienced a gradually increasing number of food insecure conditions beginning in June and continuing into the winter months (Figure 5-8).

10. U.S. Department of Agriculture, Economic Research Service. 2015."Food Security in the U.S.: Measurement," http://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/measurement.aspx (accessed May 2016).

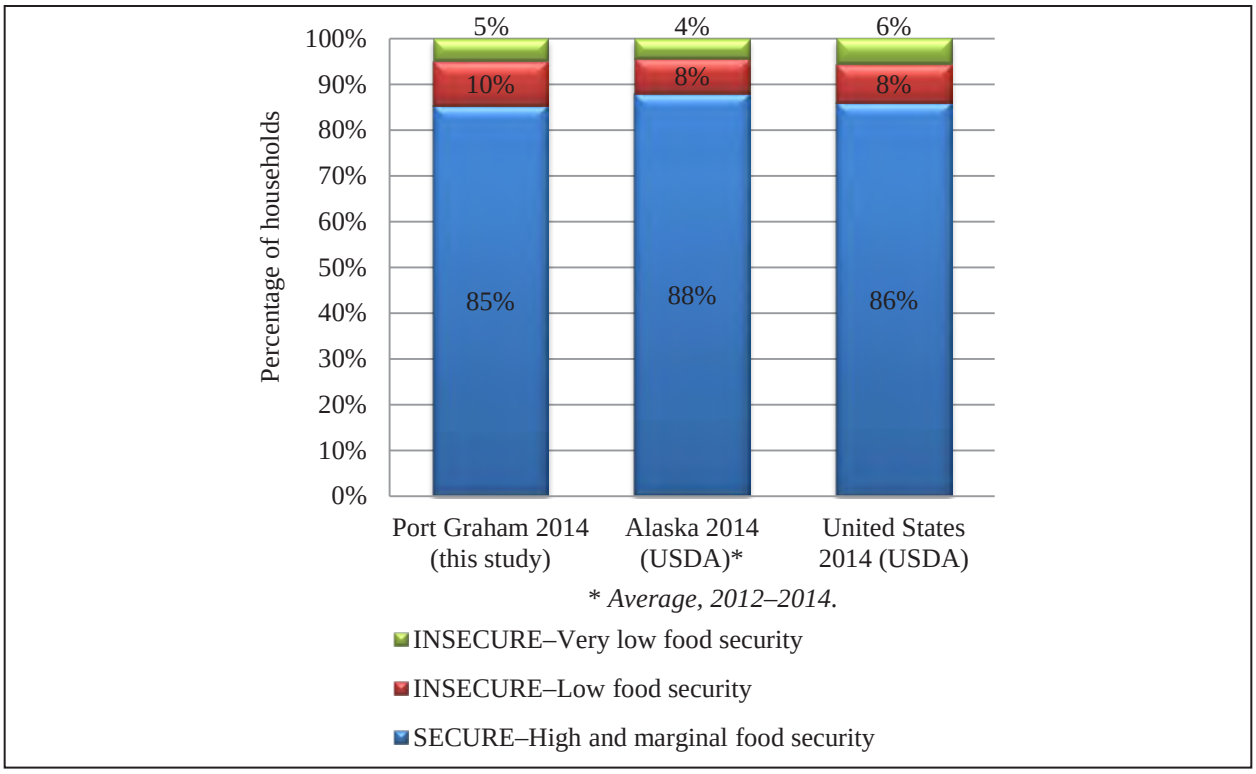


Figure 5-7.–Comparison of food security categories, Port Graham, Alaska, and United States, 2014.

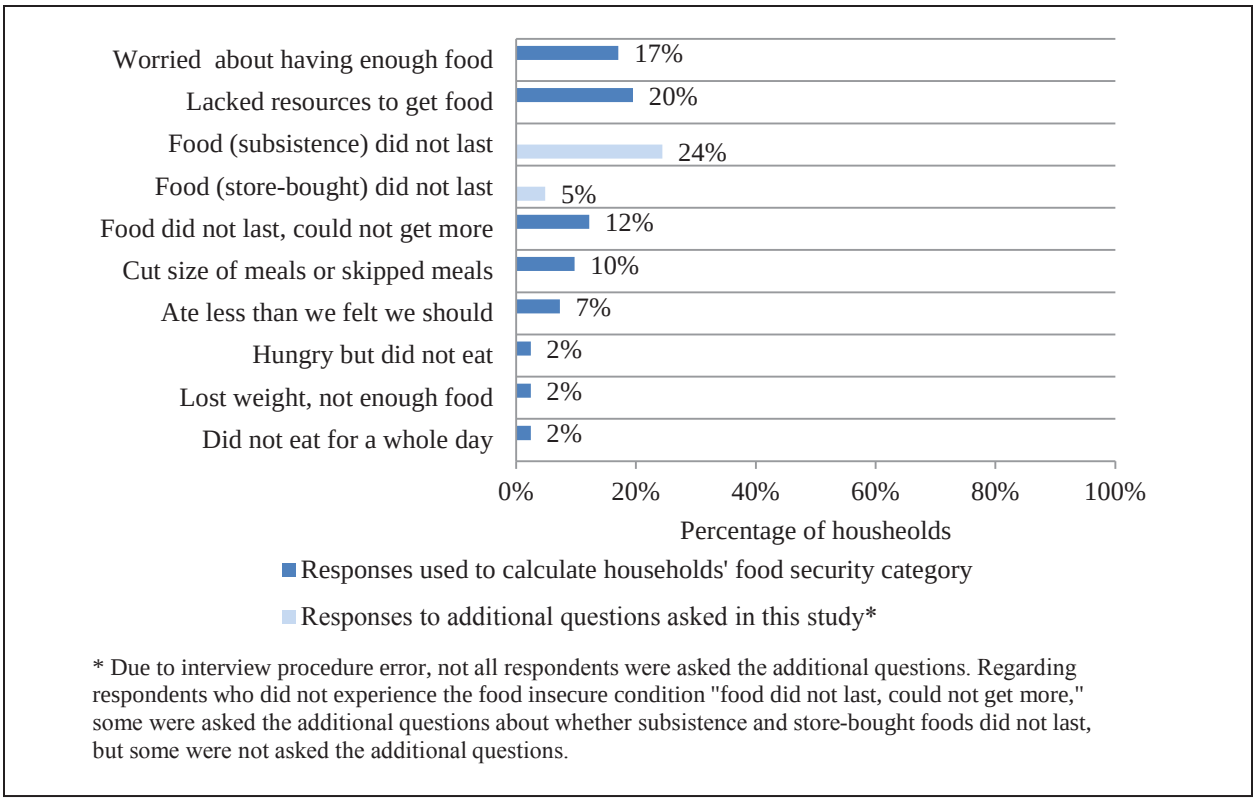


Figure 5-6.–Responses to questions about food insecure conditions, Port Graham, 2014.

However, households characterized as having low food security experienced, on average, under 3 food insecure conditions per household year-round during this study period. In 2014, the gradual increase in food insecurity conditions was also experienced by households with very low food security; however, the level of severity was noticeably more intense. While both household types experienced an increase in food insecurity conditions beginning in mid- to late summer, households with very low food security showed a dramatic increase in experiencing food insecurity conditions from September to November by jumping from an average of 3 insecure conditions to approximately 8 per household for this time period. Interestingly, the number of food insecurity conditions for these households dropped back to an average of 3 in December. Households with high food security did not experience any changes to food insecurity conditions during 2014.

Similar to the increase in the average food insecurity conditions experienced by households categorized as having low or very low food security, beginning in September there was an increase in the percentage of households that reported running out of subsistence foods (Figure 5-9). According to study findings, a shortage of subsistence foods occurred among a larger percentage of households in the winter months than in the spring and summer. This was, however, not the case for store-bought foods, which remained equally accessible to the majority of households most of the year. In the summer months (June through August), approximately 5% of Port Graham households experienced a shortage in store-bought foods. Regarding shortage of any food, between 10% and 17% of Port Graham households experienced an increase in the shortage of their overall food supply during January and February, and again in September through December; the highest percentage of households reporting any food shortage occurred in November. In comparison, the lowest percentage of households (5%) indicating a food shortage of any kind of food occurred during early spring and summer months (March through July).

Although there is no established causation, and excluding the month of December from the study period, the figures demonstrate a general correlation between the months in which subsistence foods ran out, and when households with very low food security experienced a higher number of food insecure conditions.

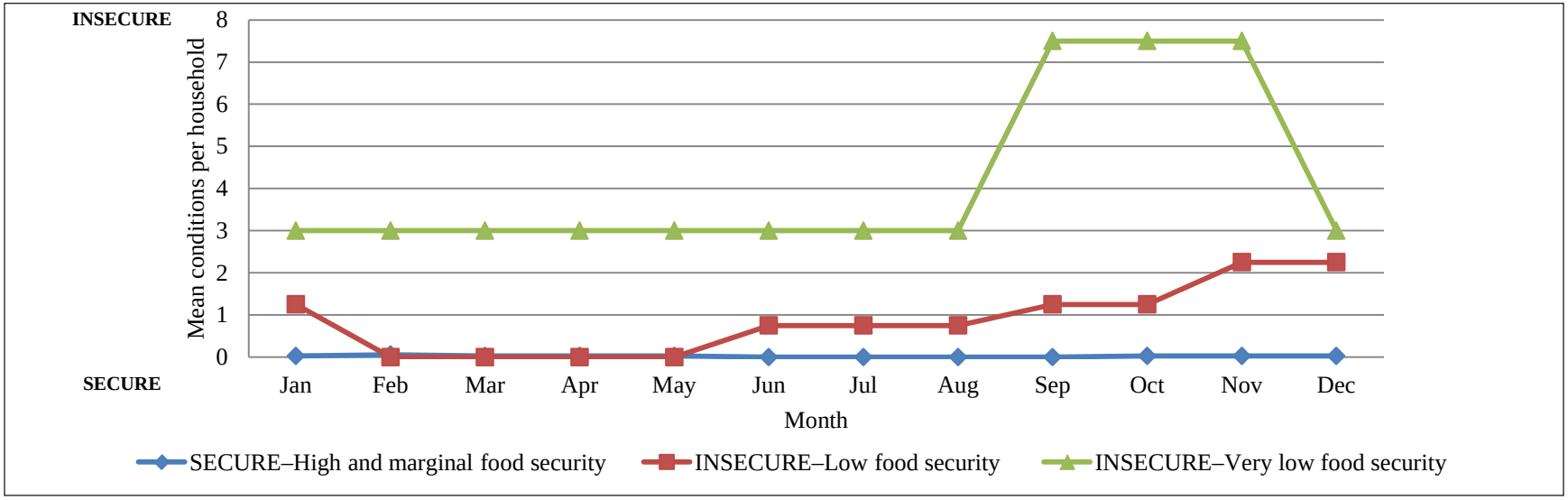
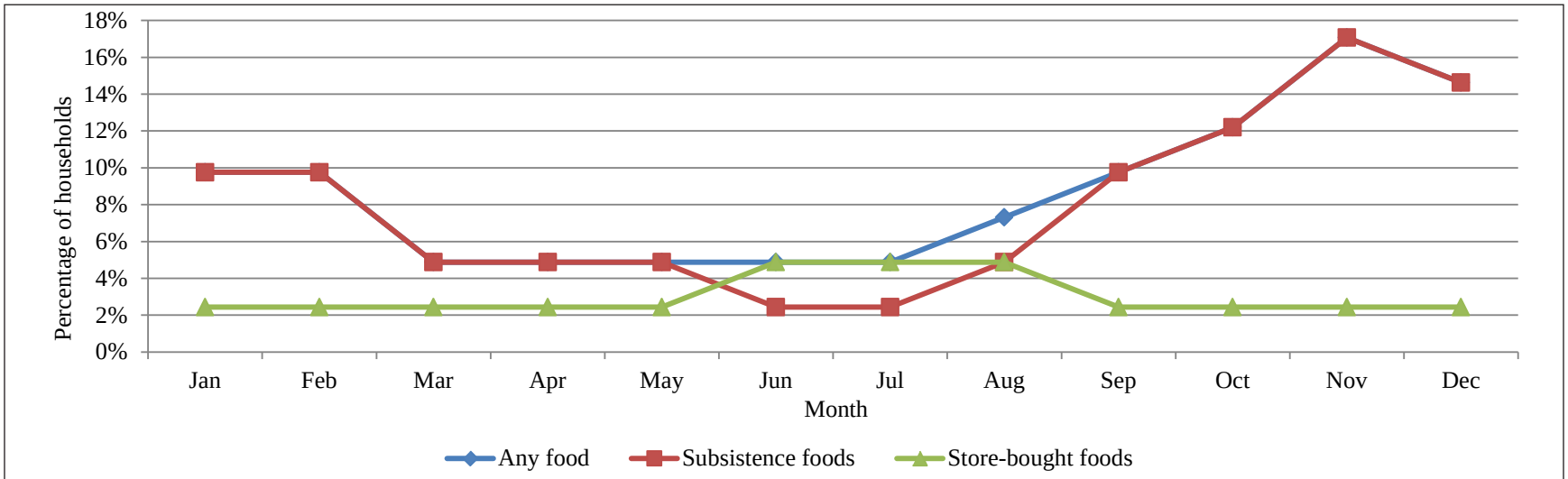


Figure 5-8.–Mean number of food insecure conditions by month and by household food security category, Port Graham, 2014.



Note Data for "Any food" are partially not visible because values mirror data for "Subsistence foods" for the months January through May and September through December.

Figure 5-9.–Comparison of months when food did not last, Port Graham, 2014.

Summary of Harvest and Use Patterns

Individual Participation in the Harvesting and Processing of Wild Resources

Table 5-10 reports the expanded levels of individual participation in the harvesting and processing of wild resources by all Port Graham residents in 2014. Most individuals participated in collecting (86%) or processing (83%) at least 1 resource. By resource category, individual participation in harvesting activities was highest for vegetation (75% of individuals), followed by fish (57%), marine mammals (18%), birds and eggs (15%), large land mammals (10%), and small land mammals (8%). For all resources other than vegetation and small land mammals, higher percentages of individuals participated in processing than in harvesting activities, including processing of fish (71% of individuals), marine mammals (28%), birds and eggs (17%), and large land mammals (16%).

Harvest and Use of Wild Resources at the Household Level

Figure 5-10 shows, by resource category, the percentages of households that used wild resources, and also attempted to harvest and harvested wild foods. In 2014, salmon and vegetation were the most commonly used resources in Port Graham with 98% of households using resources from each category. Other commonly used resources were nonsalmon fish (88% of households using), marine invertebrates (80%), marine mammals (76%), large land mammals (68%), and birds and eggs (39%). A noticeably smaller percentage of households (only 15%) used small land mammals. Since resources are commonly shared in rural Alaska communities, overall there were larger percentages of Port Graham households that used resources from individual resource categories than households that harvested or attempted to harvest them.

Looking at household participation in harvesting activities, the largest percentage of households harvested vegetation (95% of households), followed by salmon and marine invertebrates (66% of households in each category), nonsalmon fish (59%), birds and eggs (29%), and marine mammals (20%). Noticeably smaller percentages of Port Graham households harvested small land mammals (12% of households), and large land mammals (5%). Vegetation and small land mammals were successfully harvested by all households that attempted harvests.

In 2014, the greatest difference between the percentage of households successfully harvesting resources from a resource category and the percentage of households using resources from the category occurred with large land mammals. A possible explanation for the small percentage of Port Graham households successfully harvesting large land mammal resources is that there was a very limited local subsistence moose hunting opportunity (under the state-issued TM 549 permit), which in 2014 allowed a total of 4 bulls taken with the total 4 Tier II permits[11] awarded for this hunt. Additional hunting opportunities for other large land mammals, such as black bears (bag limit: 3) and mountain goats (bag limit: 1), were also available for community residents in Game Management Unit (GMU) 15C in 2014; however, project key respondents commented that the number of black bears in the Port Graham area had declined during the last few years and that bears were harder to find than in the past. However, as the figure demonstrates, when a successful large land mammal species hunt takes place, the resource gets shared widely in the community.

11. State Tier II hunts are held when there is not enough of a game population with a positive customary and traditional use finding to provide a reasonable opportunity for subsistence uses by all potential users. Hunters must answer questions on an application concerning their dependence on the game for their livelihood and availability of alternative resources. Applications are scored based on responses to the questionnaire and permits are issued to those with the highest scores.

Table 5-10.–Individual participation in subsistence harvesting and processing activities, Port Graham, 2014.

Total number of people	**148.5**
Fish	
Fish	
Number	84.9
Percentage	57.1%
Process	
Number	104.7
Percentage	70.5%
Large land mammals	
Hunt	
Number	14.1
Percentage	9.5%
Process	
Number	24.0
Percentage	16.2%
Small land mammals	
Hunt or trap	
Number	11.3
Percentage	7.6%
Process	
Number	9.9
Percentage	6.7%
Marine mammals	
Hunt	
Number	26.9
Percentage	18.1%
Process	
Number	41.0
Percentage	27.6%
Birds and eggs	
Hunt/gather	
Number	22.6
Percentage	15.2%
Process	
Number	25.5
Percentage	17.1%
Vegetation	
Gather	
Number	111.8
Percentage	75.2%
Process	
Number	108.9
Percentage	73.3%
Any resource	
Attempt harvest	
Number	127.3
Percentage	85.7%
Process	
Number	123.1
Percentage	82.9%

Source ADF&G Division of Subsistence household surveys, 2015.

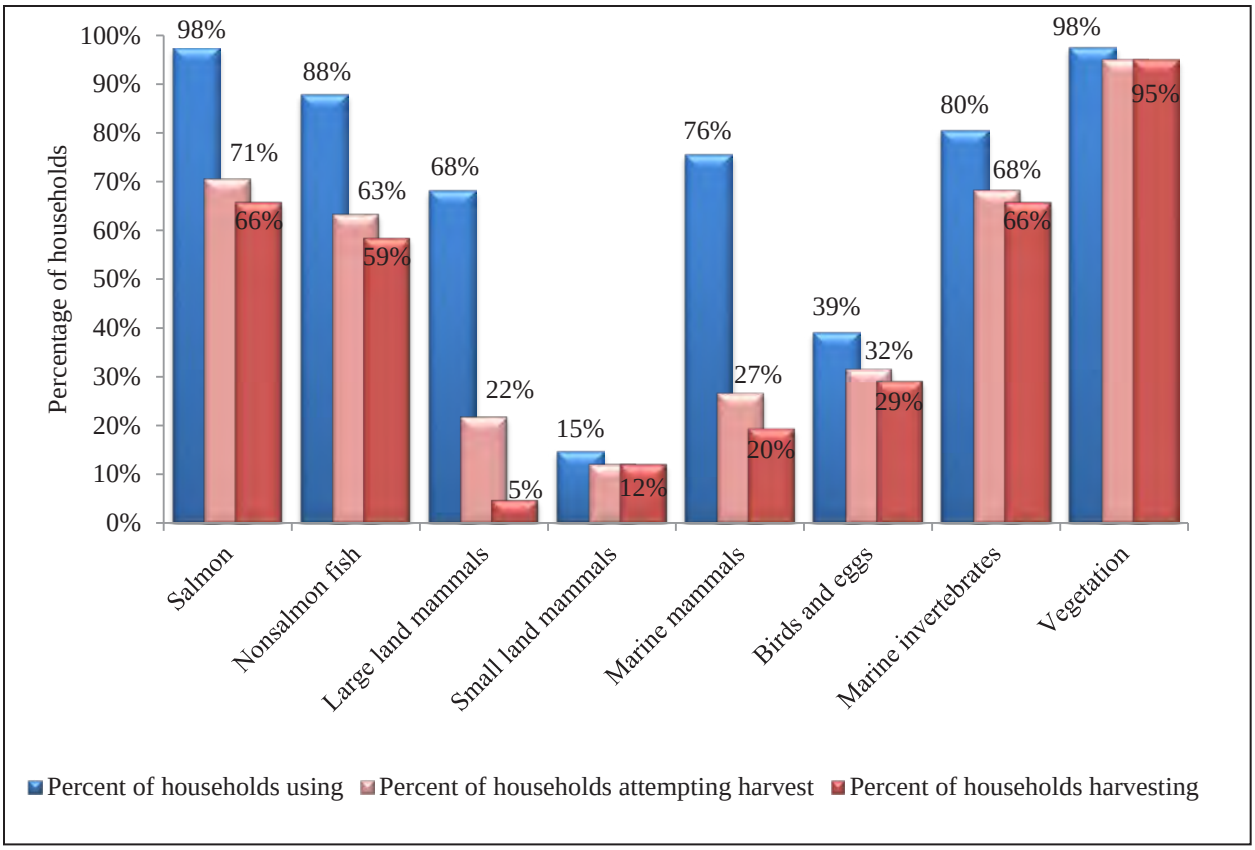


Figure 5-10.–Percentages of households using, attempting to harvest, and harvesting wild resources, by resource category, Port Graham, 2014.

Table 5-11 summarizes resource harvest and use characteristics for Port Graham in 2014 at the household level. The estimated average harvest of wild resources was 552 lb per household, or 216 lb per capita. During the study year, community households harvested an average of 9 kinds of resources and used an average of 16 kinds of resources. The maximum number of resources used by any household was 42. In addition, households gave away an average of 7 kinds of resources and received an average of 10 different resources. At the household level, 90% of Port Graham households shared some resources and all households received and used some wild resources in 2014. Overall, as many as 156 species were available for households to harvest in the study area; this included species that survey respondents identified but were not asked about in the survey instrument.

Table 5-11.–Resource harvest and use characteristics, Port Graham, 2014.

Characteristic	
Mean number of resources used per household	**16.0**
Minimum	4
Maximum	42
95% confidence limit (±)	7.8%
Median	17
Mean number of resources attempted to harvest per household	**10.7**
Minimum	0
Maximum	36
95% confidence limit (±)	11.3%
Median	10
Mean number of resources harvested per household	**9.5**
Minimum	0
Maximum	32
95% confidence limit (±)	11.4%
Median	9
Mean number of resources received per household	**9.6**
Minimum	1
Maximum	29
95% confidence limit (±)	12%
Median	7
Mean number of resources given away per household	**7.3**
Minimum	0
Maximum	37
95% confidence limit (±)	17.3%
Median	5
Household harvest (pounds)	
Minimum	0
Maximum	4,617
Mean	559.1
Median	159.5
Total harvest weight (lb)	32,429.1
Community per capita harvest (lb)	218.3
Percentage using any resource	100.0%
Percentage attempting to harvest any resource	97.6%
Percentage harvesting any resource	97.6%
Percentage receiving any resource	100.0%
Percentage giving away any resource	90.2%
Number of households in sample	41
Number of resources asked about and identified voluntarily by respondents	156

Source ADF&G Division of Subsistence household surveys, 2015.

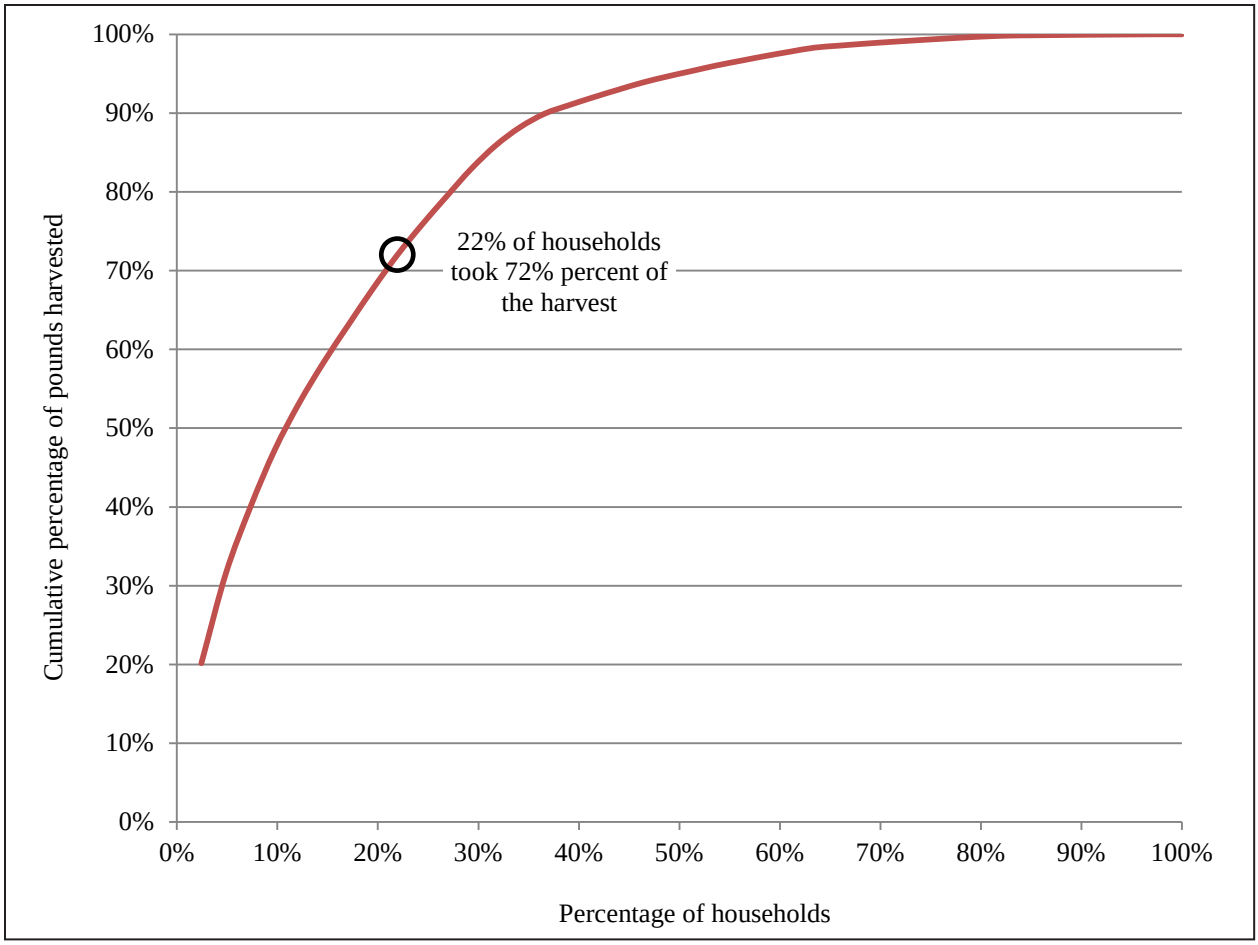


Figure 5-11.–Household specialization, Port Graham, 2014.

Sharing of Wild Resources

Household Specialization in Resource Harvesting

Previous studies by the Division of Subsistence (Wolfe 1987; Wolfe et al. 2010) have shown that in most rural Alaska communities, a relatively small portion of households produces most of the community's fish and wildlife harvests, which they share with other households. A recent study of 3,265 households in 66 rural Alaska communities found that about 33% of the households accounted for 76% of subsistence harvests (Wolfe et al. 2010). Although overall the set of very productive households was diverse, factors that were associated with higher levels of subsistence harvests included larger households with a pool of adult male labor, higher wage income, involvement in commercial fishing, and community location.

As shown in Figure 5-11, in the 2014 study year in Port Graham, about 72% of the harvests of wild resources as estimated in pounds usable weight were harvested by 22% of the community's households. Further analysis of the study findings, beyond the scope of this report, might identify characteristics of the highly productive households in Port Graham and the other study communities.

Harvest Quantities and Composition

Table 5-12 reports estimated wild resource harvests and uses by Port Graham residents in 2014 and is organized first by general category and then by species. All edible resources are reported in pounds usable weight (see Appendix B for conversion factors[12]).

According to study results, in 2014 the estimated community harvest of wild resources totaled 32,033 lb, or 216 lb per capita (Table 5-12). Salmon harvests accounted for 49% of the overall harvest (totaling 15,975 lb, or 108 lb per capita) (Figure 5-12; Table 5-12). Nonsalmon fish was the second most harvested resource category, contributing 29% to the total harvest at 9,406 lb total, or 63 lb per capita. Vegetation was the third most harvested category accounting for 8% of the overall harvest and totaling 2,450 lb, or 17 lb per capita. The harvest of marine invertebrates and large land mammals each contributed 5% to the overall wild resource harvest (Figure 5-12). The total harvest of marine invertebrates was 1,680 lb and the total harvest of large land mammals was 1,610 lb; interestingly, the per capita harvest of resources from each category was approximately 11 lb even though 66% of community households harvested marine invertebrates compared to only 5% of households that harvested large land mammals (Table 5-12). Marine mammal harvests contributed 4% to the overall harvest weight (totaling 1,154 lb, or 8 lb per capita). The harvests of birds and eggs, as well as small land mammals for food, were very small, and resources from each of these 2 categories contributed less than 1% to the overall harvest (Figure 5-12).

Seasonal Round

As described by Stanek (2000) and Salomon et al. (2011), as well as others in previous reports and publications, Port Graham residents in 2014 continued to harvest wild resources year-round with seasonal patterns shaped by resource availability as well as resource management regulations. In addition to salmon, key fish resources for the community continue to be Pacific halibut, rockfish, and Dolly Varden, some of which can be harvested year-round. Migratory birds (primarily ducks), moose, and mountain goats are important resources harvested at a certain time of the year in accordance with the regulatory framework. In comparison, black bears, harbor seals, sea otters, and sea lions can be harvested year-round. The same is also true for a number of marine invertebrates, such as octopuses and black as well as red chitons, which are used widely in the community. Both octopuses and chitons, locally known as "bidarkis," or *urriitaq* in Sugt'stun, are harvested year-around, while sea snails are taken from late spring to late June. No crabs were harvested in 2014 due to scarcity of the resources. Wood, whether it is used for home heating or for smoking fish, is also harvested year-round based on households' needs.

Much of the residents' harvest activities take place in the marine environment close to the community in Port Graham Bay, but residents with access to different modes of transportation travel around the lower Kenai Peninsula to harvest a variety of wild resources. The commonly used harvest areas extend from the northernmost point of China Poot Bay located across from the Homer Spit, to Perl Island in the south, and Rocky Bay in the east (Figure 5-13). Boats and skiffs are used to travel to marine harvest areas outside the immediate community area around Port Graham Bay. A limited road system connects the community to some harvest areas, and is traveled by a highway vehicle, all-terrain vehicles (ATVs), and snowmachine during winter months.

During the spring months, small game, including grouses, small land mammals, and furbearers, are harvested close to the community. Residents gather seaweeds, particularly black seaweed, as the first wild green resource harvested for the calendar year, although the opportune harvest window is small and residents often have to balance harvesting opportunities with the correct tide, weather, and work schedules. Seaweed harvests are done in early spring in order to get the young growth; however, this harvest is difficult during years with unusually long winters and a short spring season. The seaweed harvest is generally dried and used as flavoring, for example for rice eaten with salmon. As spring progresses the young fern growth, known as fiddlehead ferns, are harvested along with new spruce tips, and the new growth on devil's club.

12. Resources that are not eaten, such as firewood and some furbearers, are included in the table but are given a conversion factor of zero.

Table 5-12.–Estimated uses and harvests of fish, game, and vegetation resources, Port Graham, 2014.

	Percentage of households					Harvest weight (lb)			Harvest amount			95% confidence limit (±) harvest
Resource	Use %	Attempt %	Harvest %	Receive %	Give %	Total	Mean per household	Per capita	Total	Unit	Mean per household	
All resources	**100.0**	**97.6**	**97.6**	**100.0**	**90.2**	**32,429.1**	**559.1**	**218.3**	**32,429.1**	**lb**	**559.1**	**27.3**
Salmon	**97.6**	**70.7**	**65.9**	**80.5**	**63.4**	**15,974.9**	**275.4**	**107.5**	**15,974.9**	**lb**	**275.4**	**32.3**
Chum salmon	65.9	43.9	36.6	43.9	31.7	2,596.4	44.8	17.5	474.2	ind	8.2	41.4
Coho salmon	87.8	58.5	51.2	53.7	41.5	1,713.8	29.5	11.5	372.2	ind	6.4	25.0
Chinook salmon	65.9	43.9	34.1	48.8	31.7	1,188.2	20.5	8.0	107.5	ind	1.9	32.8
Pink salmon	78.0	53.7	51.2	51.2	46.3	2,534.0	43.7	17.1	964.3	ind	16.6	38.9
Sockeye salmon	78.0	43.9	36.6	56.1	43.9	7,942.4	136.9	53.5	1,771.1	ind	30.5	43.0
Landlocked salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Nonsalmon fish	**87.8**	**63.4**	**58.5**	**61.0**	**51.2**	**9,406.1**	**162.2**	**63.3**	**9,406.1**	**lb**	**162.2**	**40.5**
Pacific herring	7.3	7.3	4.9	2.4	4.9	31.1	0.5	0.2	5.2	gal	0.1	84.3
Pacific herring roe	24.4	2.4	2.4	22.0	12.2	6.2	0.1	0.0	0.9	gal	0.0	109.4
Pacific herring sac roe	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Pacific herring spawn on kelp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Eulachon (hooligan, candlefish)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Unknown smelt	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Sea bass	2.4	2.4	2.4	0.0	2.4	2.8	0.0	0.0	2.8	ind	0.0	109.4
Pacific (gray) cod	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Pacific tomcod	39.0	12.2	12.2	29.3	7.3	113.9	2.0	0.8	227.8	ind	3.9	56.5
Walleye pollock (whiting)	2.4	2.4	2.4	0.0	2.4	396.1	6.8	2.7	282.9	ind	4.9	109.4
Eel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Arrowtooth flounder (turbot)	2.4	2.4	2.4	0.0	2.4	12.7	0.2	0.1	4.2	ind	0.1	109.4
Starry flounder	4.9	4.9	4.9	0.0	0.0	161.3	2.8	1.1	53.8	ind	0.9	100.9
Unknown flounder	2.4	0.0	0.0	2.4	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Lingcod	2.4	2.4	2.4	2.4	2.4	11.3	0.2	0.1	2.8	ind	0.0	109.4
Unknown greenling	2.4	2.4	2.4	0.0	2.4	56.6	1.0	0.4	56.6	ind	1.0	109.4
Pacific halibut	75.6	51.2	39.0	46.3	39.0	6,071.2	104.7	40.9	6,071.2	lb	104.7	44.4
Black rockfish	9.8	4.9	4.9	9.8	2.4	89.1	1.5	0.6	59.4	ind	1.0	104.2

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Table 5-12.–Page 2 of 6.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount			95% confidence limit (±) harvest
	Use %	Attempt %	Harvest %	Receive %	Give %	Total	Mean per household	Per capita	Total	Unit	Mean per household	
Nonsalmon fish, continued												
Red rockfish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown rockfish	2.4	0.0	0.0	2.4	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Sablefish (black cod)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown Irish lord	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown sculpin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown shark	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Skates	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown sole	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Wolffish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Dolly Varden	29.3	26.8	26.8	7.3	19.5	2,407.0	41.5	16.2	1,719.3	ind	29.6	62.8
Lake trout	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Arctic grayling	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Northern pike	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown sturgeon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Cutthroat trout	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Rainbow trout	4.9	4.9	4.9	2.4	0.0	43.6	0.8	0.3	31.1	ind	0.5	99.7
Steelhead	2.4	0.0	0.0	2.4	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown whitefishes	2.4	0.0	0.0	2.4	2.4	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown nonsalmon fish	2.4	2.4	2.4	0.0	0.0	3.2	0.1	0.0	2.8	ind	0.0	109.4
Large land mammals	**68.3**	**22.0**	**4.9**	**63.4**	**14.6**	**1,609.9**	**27.8**	**10.8**	**1,609.9**	**lb**	**27.8**	**76.5**
Black bear	9.8	2.4	2.4	7.3	7.3	82.0	1.4	0.6	1.4	ind	0.0	109.4
Caribou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Deer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Mountain goat	7.3	2.4	0.0	7.3	2.4	0.0	0.0	0.0	0.0	ind	0.0	0.0
Moose	68.3	19.5	4.9	63.4	14.6	1,527.8	26.3	10.3	2.8	ind	0.0	76.4
Dall sheep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Small land mammals	**14.6**	**12.2**	**12.2**	**2.4**	**7.3**	**49.5**	**0.9**	**0.3**	**49.5**	**lb**	**0.9**	**76.7**
Beaver	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Coyote	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Red fox	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0

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Table 5-12.–Page 3 of 6.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount			95% confidence limit (±) harvest
	Use %	Attempt %	Harvest %	Receive %	Give %	Total	Mean per household	Per capita	Total	Unit	Mean per household	
Small land mammals, continued												
Snowshoe hare	4.9	2.4	2.4	2.4	2.4	25.5	0.4	0.2	12.7	ind	0.2	109.4
North American river (land) otter	0.0	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Lynx	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Marten	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Mink	0.0	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Muskrat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Porcupine	2.4	2.4	2.4	0.0	0.0	22.6	0.4	0.2	2.8	ind	0.0	109.4
Arctic ground (parka) squirrel	2.4	2.4	2.4	0.0	2.4	1.4	0.0	0.0	2.8	ind	0.0	109.4
Red (tree) squirrel	2.4	2.4	2.4	0.0	2.4	0.0	0.0	0.0	29.7	ind	0.5	109.4
Weasel	7.3	7.3	7.3	0.0	4.9	0.0	0.0	0.0	14.1	ind	0.2	79.5
Gray wolf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Wolverine	0.0	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Marine mammals	**75.6**	**26.8**	**19.5**	**65.9**	**26.8**	**1,154.3**	**19.9**	**7.8**	**1,154.3**	**lb**	**19.9**	**43.4**
Harbor seal	68.3	22.0	14.6	61.0	24.4	871.4	15.0	5.9	15.6	ind	0.3	47.3
Sea otter	7.3	4.9	4.9	2.4	0.0	0.0	0.0	0.0	24.0	ind	0.4	97.1
Steller sea lion	26.8	7.3	2.4	24.4	7.3	282.9	4.9	1.9	1.4	ind	0.0	109.4
Birds and eggs	**39.0**	**31.7**	**29.3**	**24.4**	**14.6**	**103.7**	**1.8**	**0.7**	**103.7**	**lb**	**1.8**	**42.0**
Bufflehead	2.4	2.4	2.4	0.0	2.4	2.8	0.0	0.0	7.1	ind	0.1	109.4
Unknown eider	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Goldeneye	19.5	19.5	12.2	9.8	12.2	23.8	0.4	0.2	29.7	ind	0.5	66.4
Harlequin duck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Mallard	12.2	9.8	2.4	9.8	4.9	8.9	0.2	0.1	9.9	ind	0.2	109.4
Unknown merganser	4.9	2.4	2.4	2.4	0.0	2.5	0.0	0.0	2.8	ind	0.0	109.4
Long-tailed duck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Northern pintail	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown scaup	4.9	2.4	2.4	2.4	0.0	1.3	0.0	0.0	1.4	ind	0.0	109.4
Black scoter	4.9	0.0	0.0	4.9	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Surf scoter	2.4	2.4	2.4	0.0	2.4	2.5	0.0	0.0	2.8	ind	0.0	109.4

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Table 5-12.–Page 4 of 6.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount			95% confidence limit (±) harvest
	Use %	Attempt %	Harvest %	Receive %	Give %	Total	Mean per household	Per capita	Total	Unit	Mean per household	
Birds and eggs, continued												
White-winged scoter	2.4	2.4	2.4	0.0	2.4	2.5	0.0	0.0	2.8	ind	0.0	109.4
Northern shoveler	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown teal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown wigeon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown Canada/cackling geese	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
White-fronted goose	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Sandhill crane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown cormorant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown gull	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Black-legged kittiwake	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Pacific/arctic loon	2.4	2.4	2.4	0.0	2.4	4.2	0.1	0.0	1.4	ind	0.0	109.4
Unknown murre	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown puffin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Spruce grouse	24.4	22.0	19.5	9.8	4.9	52.5	0.9	0.4	75.0	ind	1.3	51.0
Unknown duck eggs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown goose eggs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Black oystercatcher eggs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown gull eggs	9.8	2.4	2.4	9.8	4.9	2.5	0.0	0.0	8.5	ind	0.1	109.4
Unknown tern eggs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown eggs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Marine invertebrates	**80.5**	**68.3**	**65.9**	**65.9**	**56.1**	**1,680.4**	**29.0**	**11.3**	**1,680.4**	**lb**	**29.0**	**52.4**
Red (large) chitons	12.2	12.2	12.2	2.4	9.8	92.7	1.6	0.6	30.9	gal	0.5	62.1
Black (small) chitons	68.3	53.7	53.7	39.0	39.0	400.2	6.9	2.7	100.1	gal	1.7	26.4
Butter clams	34.1	7.3	7.3	29.3	7.3	53.0	0.9	0.4	17.7	gal	0.3	77.5
Horse clams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Pacific littleneck clams (steamers)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Pinkneck clams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Razor clams	7.3	2.4	0.0	7.3	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0

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Table 5-12.–Page 5 of 6.

Resource	Percentage of households: Use %	Attempt %	Harvest %	Receive %	Give %	Harvest weight (lb): Total	Mean per household	Per capita	Harvest amount: Total	Unit	Mean per household	95% confidence limit (±) harvest
Marine invertebrates, continued												
Softshell clams	2.4	2.4	2.4	0.0	0.0	4.2	0.1	0.0	1.4	gal	0.0	109.4
Unknown clams	4.9	0.0	0.0	4.9	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Unknown cockles	2.4	2.4	2.4	0.0	0.0	0.5	0.0	0.0	0.2	gal	0.0	109.4
Dungeness crab	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown king crab	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown Tanner crab	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown crab	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Limpets	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Unknown mussels	7.3	7.3	7.3	4.9	2.4	19.1	0.3	0.1	12.7	gal	0.2	76.9
Octopus	65.9	34.1	26.8	56.1	39.0	1,069.5	18.4	7.2	267.4	ind	4.6	82.0
Weathervane scallops	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Rock scallops	2.4	2.4	2.4	0.0	0.0	2.8	0.0	0.0	2.8	gal	0.0	109.4
Unknown sea cucumber	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Unknown sea urchin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Shrimp	2.4	2.4	2.4	0.0	2.4	0.1	0.0	0.0	0.1	lb	0.0	109.4
Snails	39.0	24.4	24.4	19.5	22.0	38.2	0.7	0.3	25.5	gal	0.4	40.1
Whelk	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Vegetation	**97.6**	**95.1**	**95.1**	**82.9**	**63.4**	**2,450.3**	**42.2**	**16.5**	**2,450.3**	**lb**	**42.2**	**28.6**
Blueberry	90.2	75.6	75.6	39.0	43.9	1,139.2	19.6	7.7	284.8	gal	4.9	37.8
Lowbush cranberry	7.3	7.3	7.3	2.4	4.9	11.6	0.2	0.1	2.9	gal	0.1	74.5
Highbush cranberry	61.0	46.3	46.3	24.4	26.8	237.2	4.1	1.6	59.3	gal	1.0	32.9
Gooseberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Currants	4.9	4.9	4.9	0.0	2.4	17.0	0.3	0.1	4.2	gal	0.1	80.7
Nagoonberry	4.9	4.9	4.9	0.0	2.4	6.0	0.1	0.0	1.5	gal	0.0	103.0
Salmonberry	90.2	85.4	85.4	31.7	48.8	936.9	16.2	6.3	234.2	gal	4.0	24.8
Strawberry	4.9	4.9	4.9	0.0	2.4	0.9	0.0	0.0	0.2	gal	0.0	89.7
Other wild berry	2.4	2.4	2.4	0.0	2.4	2.8	0.0	0.0	0.7	gal	0.0	109.4
Beach asparagus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Goose tongue	7.3	4.9	4.9	2.4	4.9	1.8	0.0	0.0	1.8	gal	0.0	89.7
Devil's club	4.9	4.9	4.9	0.0	2.4	0.2	0.0	0.0	0.2	gal	0.0	106.8

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Table 5-12.–Page 6 of 6.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount			95% confidence limit (±) harvest
	Use %	Attempt %	Harvest %	Receive %	Give %	Total	Mean per household	Per capita	Total	Unit	Mean per household	
Vegetation, continued												
Fiddlehead ferns	2.4	2.4	2.4	0.0	0.0	1.4	0.0	0.0	1.4	gal	0.0	109.4
Hudson's Bay (Labrador) tea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Sourdock	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Spruce tips	4.9	4.9	4.9	0.0	2.4	0.2	0.0	0.0	0.2	gal	0.0	106.8
Wild celery	26.8	24.4	24.4	7.3	4.9	10.4	0.2	0.1	19.2	gal	0.3	74.8
Wild parsley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Wild rose hips	4.9	4.9	4.9	2.4	2.4	2.8	0.0	0.0	0.7	gal	0.0	76.4
Yarrow	14.6	12.2	12.2	7.3	9.8	19.1	0.3	0.1	19.1	gal	0.3	56.8
Other wild greens	7.3	7.3	7.3	0.0	4.9	6.0	0.1	0.0	6.0	gal	0.1	80.9
Unknown mushrooms	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Stinkweed	2.4	2.4	2.4	0.0	0.0	2.8	0.0	0.0	2.8	gal	0.0	109.4
Beach greens	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Wild chives	22.0	22.0	22.0	4.9	4.9	10.5	0.2	0.1	10.5	gal	0.2	40.4
Black seaweed	34.1	19.5	12.2	29.3	9.8	43.5	0.8	0.3	10.9	gal	0.2	64.2
Bull kelp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Red seaweed	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Sea ribbons	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Giant kelp (macrocystis)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Alaria	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Unknown seaweed	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Wood	58.5	48.8	48.8	41.5	26.8	–	–	–	–		–	–

Source ADF&G Division of Subsistence household surveys, 2015.

Note Resources where the percentage using is greater than the combined received and harvest indicate use from resources obtained during a previous year.

Note For small land mammals, species that are not typically eaten show a non-zero harvest amount with a zero harvest wight. Harvest weight is not calculated for species harvested but not eaten.

Note "–" indicates the harvest amount for the resource was not collected during the survey.

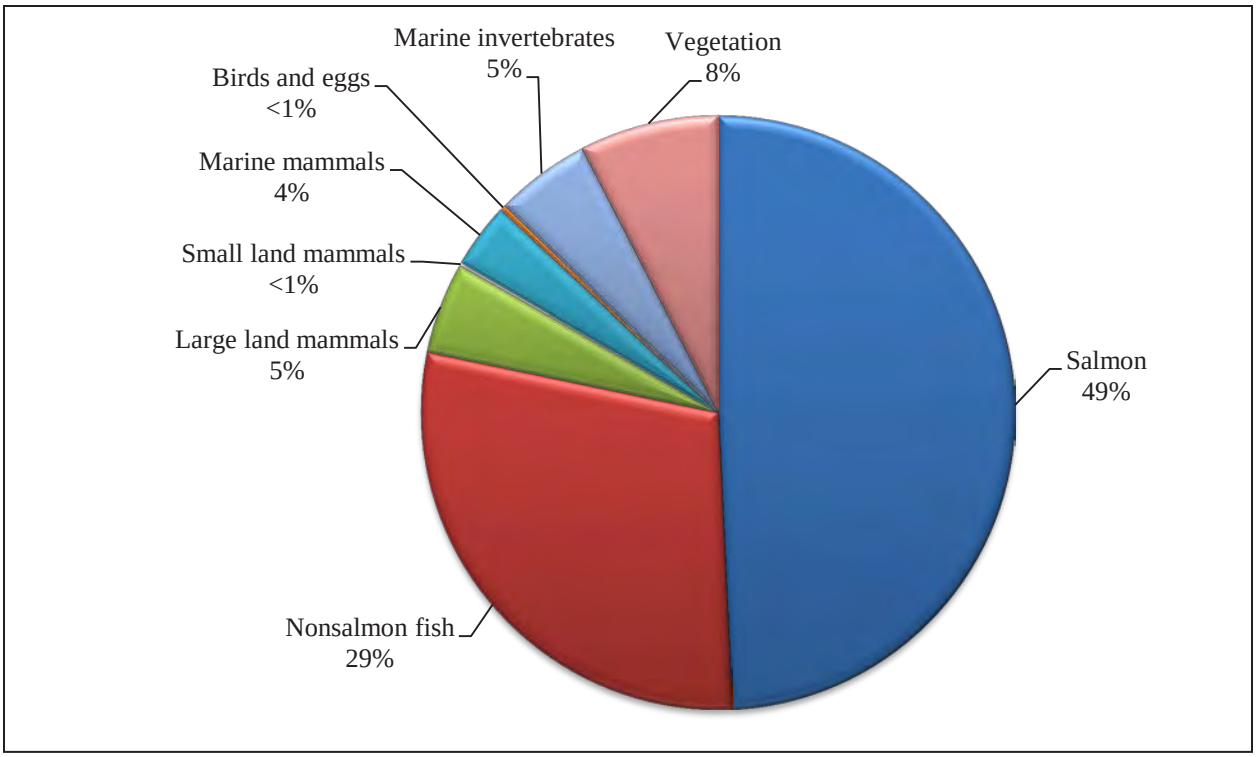


Figure 5-12.–Composition of harvest by resource category in pounds usable weight, Port Graham, 2014.

Another springtime activity is egg gathering, which in 2014 was largely focused on gull eggs. According to key respondents, participation in the harvest of bird eggs has declined in the community but some residents continue to harvest them and share with other households in the community.

While some Chinook salmon (locally known as "winter king salmon") are available in Kachemak Bay, or *Cacirpak* in Sugt'stun, and Cook Inlet all year long, Chinook salmon begin to return to the Port Graham area in larger numbers in late spring and early summer. These early salmon are harvested primarily by setnet in Port Graham Bay. Later in the year, Chinook salmon are harvested with rod and reel in the mouth of Port Graham Bay as well as from Rocky and Windy bays located to the southeast. Many local residents also troll for Chinook salmon in Port Graham Bay as well as along the coast past the community of Nanwalek all year long when the weather allows. Other salmon species, including sockeye, chum, coho, and pink salmon arrive later in the year and are harvested in both marine and freshwater environments with both setnets and rod and reel gear. While Chinook salmon is often smoked and frozen or canned, other salmon species continue to be either air dried, frozen, or canned for later use.

Nonsalmon fish, such as Dolly Varden, Pacific halibut, rockfish, greenlings (locally known as "pogies"), and lingcod, are harvested in varying times of the year. The 2 most important nonsalmon fish species for the community are Pacific halibut and Dolly Varden, the latter of which is caught with rod and reel and also with seines during summer months. In comparison, Pacific halibut are harvested from May to August with longlines (skates) as well as rod and reel. Both species continue to be air dried, but also frozen and eaten fresh. Other than pursuing salmon, marine mammals, and nonsalmon fish species, summer months are also a time of hunting small game species, such as squirrels and grouse. The long days of the summer are also the prime harvest time of many species of wild greens. Commonly used wild plants include wild chives, coltsfoot, and yarrow, the latter of which is used as a medicinal plant to help, for example, with colds. Depending on the weather and timing of wild berry ripening each year, a number of wild berry species are

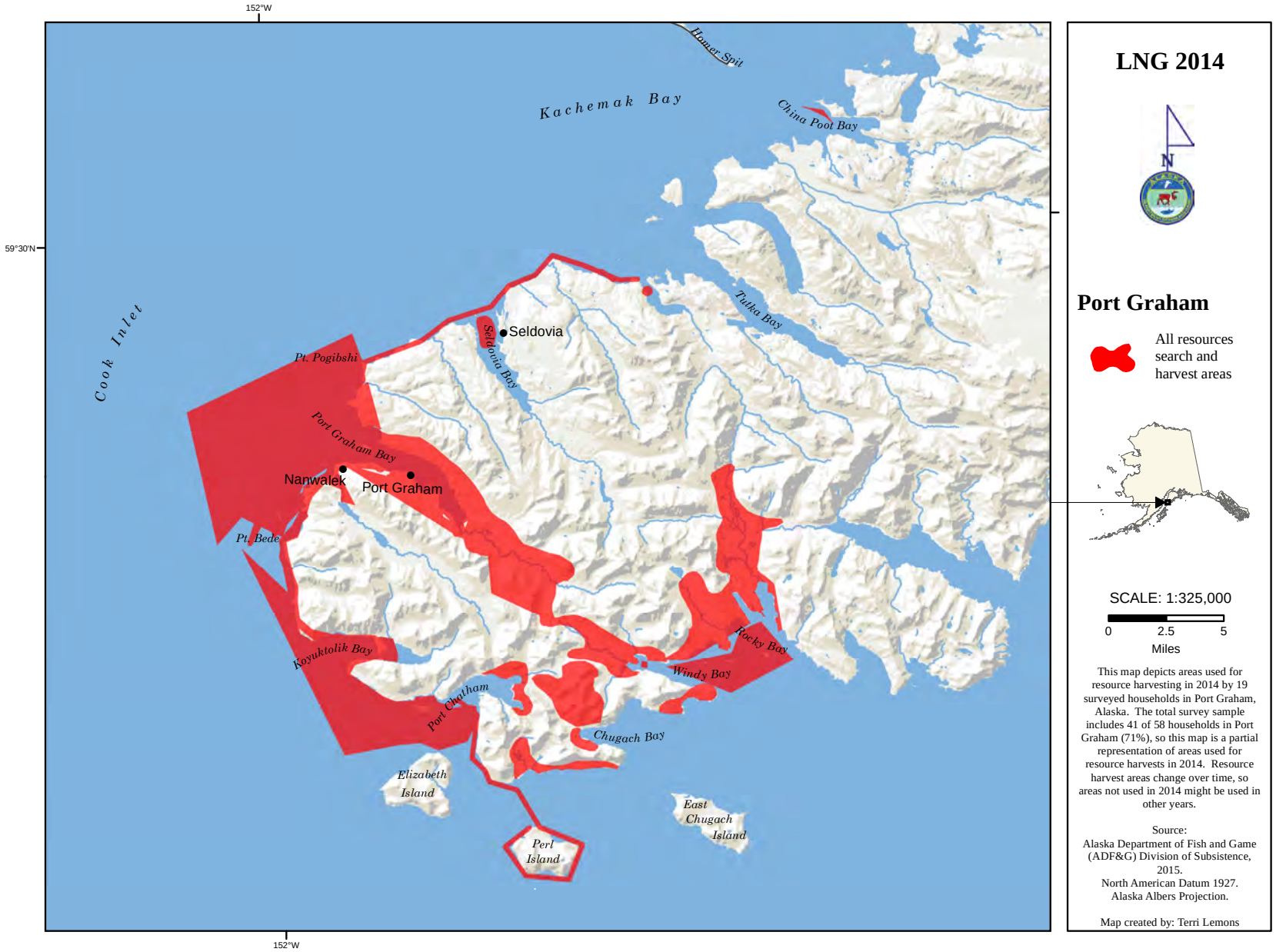


Figure 5-13.–Wild resource search and harvest areas, Port Graham, 2014.

harvested from late spring to early fall, including salmonberries, blueberries, and highbush cranberries, all of which are plentiful around the community.

In the fall months, large land mammal harvests begin. In the area south of Point Pogibshi to the southern end of the peninsula near Rocky and Windy bays (a section of GMU 15C), 1 bull moose may be taken with a Tier II moose hunting permit between late August and the end of September. Depending on permit type, mountain goat season extends from early August to the end of November in the southern Kenai Peninsula area. Another fall activity is picking lowbush cranberries, which are generally harvested after the first frost. In 2014, bird and migratory waterfowl harvests peaked in the fall but these activities often extend into the winter months with the season usually ending in mid-December. The harvest of marine mammals also continues through the fall and early winter. In 2014, a second peak of small land mammal and furbearer harvests occurred in the winter months, primarily for snowshoe hares and weasels since their fur changes with the season. Due to milder winters, Port Graham Bay has not been freezing during winter months like it used to. One could think that the open water would potentially make seal hunting more challenging but local residents commented that they have learned to look for them in the open water. According to survey respondents, the overall availability of harbor seals in the bay fluctuates throughout the year depending on the availability of feed that comes into the bay.

Use and Harvest Characteristics by Resource Category

Table 5-12 identifies the harvest and use of each resource category in Port Graham during 2014, including resources that were received or shared. Nearly all households (98%) harvested at least 1 resource. All households in Port Graham received at least 1 resource from another household, and 90% gave away at least 1 resource. The most frequently received resource category was vegetation; 83% of households received some, and 63% gave some away. Salmon was the second most frequently received resource category (81% of households receiving), followed by marine invertebrates and marine mammals (66% of households each), large land mammals (63%), nonsalmon fish (61%), birds and eggs (24%) and small land mammals (2%). In comparison, salmon was given away by 63% of households, followed by marine invertebrates (56%), nonsalmon fish (51%), marine mammals (27%), large land mammals (15%), birds and eggs (15%), and small land mammals (7%).

Table 5-13 lists the top ranked resources used by households and Figure 5-14 shows the species with the highest usable harvest weights during the 2014 study year. Blueberries and salmonberries were at the top of the most used resources list, used by 90% of households (Table 5-13). These were followed by 3 salmon species: coho salmon, used by 88% of households, then pink and sockeye salmon, each used by 78% of households. Pacific halibut placed 6th and was used by 76% of households. Seventh place was shared by 3 resources: moose, harbor seals, and black chitons (locally known as “bidarkis”), and all were used by 68% of Port Graham households. Chum salmon, which placed 10th along with Chinook salmon and octopus, were used by a smaller percentage (66%) of households compared to the 3 salmon species previously mentioned.

Despite being frequently used, some resources may not compose a significant portion of the total community harvest. For example, some resources such as berries may be harvested in smaller quantities in terms of pounds usable weight but are still used by a high number of households. Sockeye salmon accounted for the greatest percentage of the harvest (25%), followed by Pacific halibut (19%), chum and pink salmon (8% each), Dolly Varden (7%), coho salmon (5%), and moose (5%) (Figure 5-14). All other resources combined made up 24% of the harvest; the largest contributions were from Chinook salmon, blueberries (a most-used resource), and octopus. Resources composing the “all other resources” category, which represents a compilation of resources from different resource categories, each contributed less than 3% to the total harvest.

Table 5-13.–Top ranked resources used by households, Port Graham, 2014.

Rank[a]	Resource	Percentage of households using
1.	Blueberry	90.2%
1.	Salmonberry	90.2%
3.	Coho salmon	87.8%
4.	Pink salmon	78.0%
4.	Sockeye salmon	78.0%
6.	Pacific halibut	75.6%
7.	Moose	68.3%
7.	Harbor seal	68.3%
7.	Black (small) chitons	68.3%
10.	Chum salmon	65.9%
10.	Chinook salmon	65.9%
10.	Octopus	65.9%

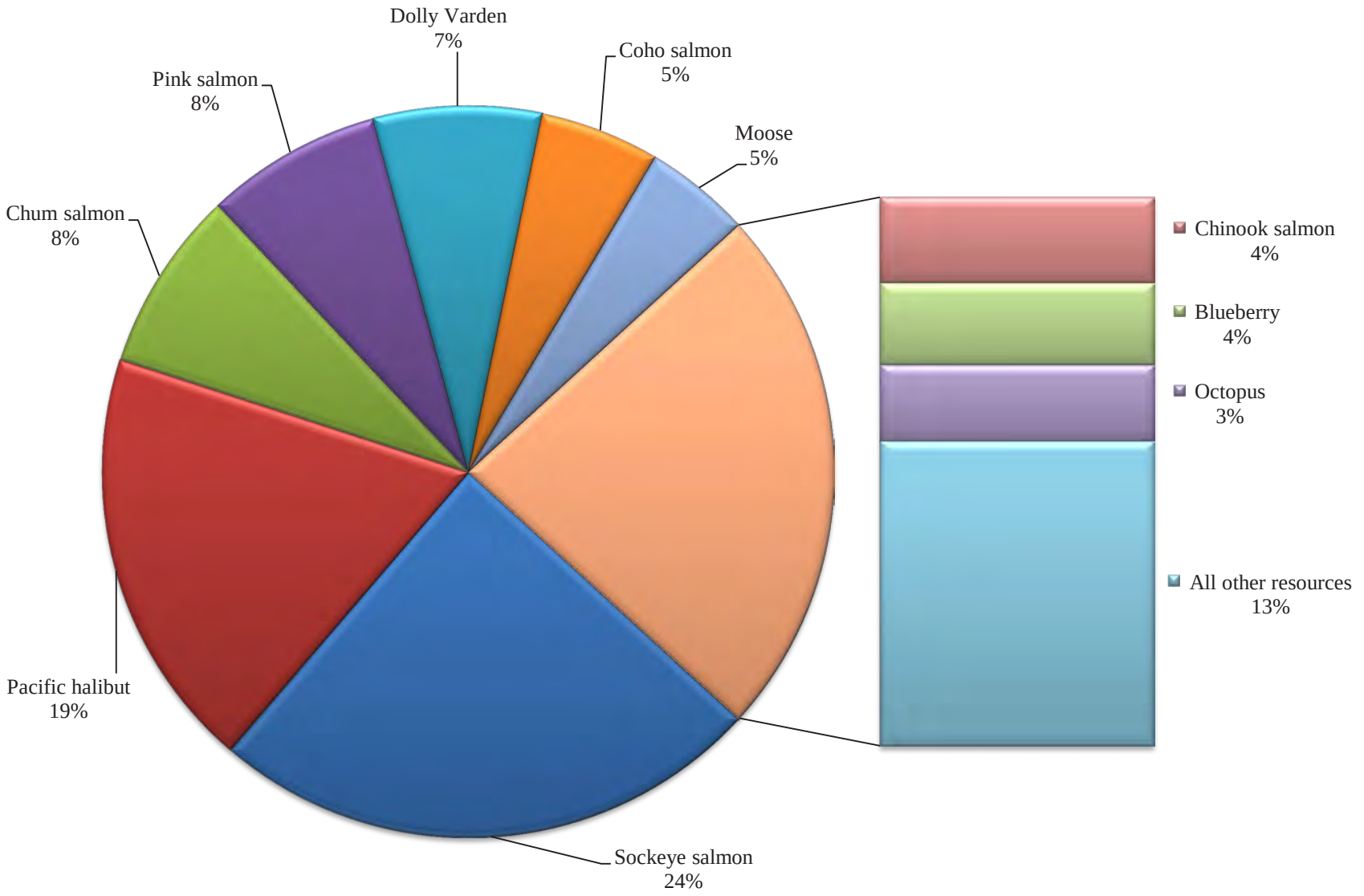
Source ADF&G Division of Subsistence household surveys, 2015.
a. Resources used by the same percentage of households share the lowest rank value instead of having sequential rank values.

Salmon

Salmon are an essential source of nutrition for residents of Port Graham. In 2014, the total salmon harvest amounted to 15,975 lb, or 108 lb per capita, and made up 49% of the total wild resource harvest in the community that year (Table 5-12; Figure 5-12). During the study period, all 5 species of Pacific salmon found in Alaska were among the top resources used in community households and all 5 species of salmon were harvested (Table 5-13; Table 5-12). Sockeye salmon was the single most harvested resource compared to any other resource (Figure 5-14). Furthermore, sockeye salmon contributed 50% of the total salmon harvest, followed by chum and pink salmon (16% each) (Figure 5-15). Coho salmon made up 11% of the total salmon harvest while the harvest of Chinook salmon contributed the least (7%) to the total salmon harvest. In 2014, the total harvest weight of sockeye salmon (7,942 lb, or 54 lb per capita) far exceeded that of any other salmon species; in comparison, the harvests of the remaining salmon species were each less than 3,000 lb (Table 5-12). The harvest of chum salmon totaled 2,596 lb (or 18 lb per capita), pink salmon totaled 2,534 lb (or 17 lb per capita), coho salmon totaled 1,714 lb (or 12 lb per capita), and Chinook salmon totaled 1,188 lb (or 8 lb per capita).

Coho salmon was used by 88% of the Port Graham households, making it the most commonly used salmon species in 2014 (Table 5-12). Looking at the use of the 5 salmon species at the household level, use of coho salmon was followed by use of sockeye and pink salmon, which were each used by 78% of Port Graham households and shared 4th place on the list of most used resources in 2014 (Table 5-12; Table 5-13). A smaller percentage of community households used both chum and Chinook salmon (66% of households each), which, along with octopus, shared 10th place on the list of most used resources in 2014 (Table 5-13).

Regarding harvests of the individual salmon species, approximately 59% of households attempted to harvest coho salmon and 51% of households in Port Graham were successful (Table 5-12). A slightly smaller percentage (54%) of community households attempted to harvest pink salmon, and, similar to coho salmon, 51% were successful. Interestingly, approximately 44% of households attempted to harvest both sockeye and chum salmon, and 37% were successful at harvesting each species, yet the harvest of sockeye salmon made up 50% of the total salmon harvest in 2014 compared to chum salmon having contributed 16% (Table 5-12; Figure 5-15). While Chinook salmon contributed the smallest amount to the total salmon harvest in 2014, approximately 44% of households attempted to harvest Chinook salmon and 34% of Port Graham households were successful (Table 5-12).



Note The "all other resources" category represents all species that contributed less than 3% to the total harvest.

Figure 5-14.–Top species harvested by percentage of total harvest in pounds usable weight, Port Graham, 2014.

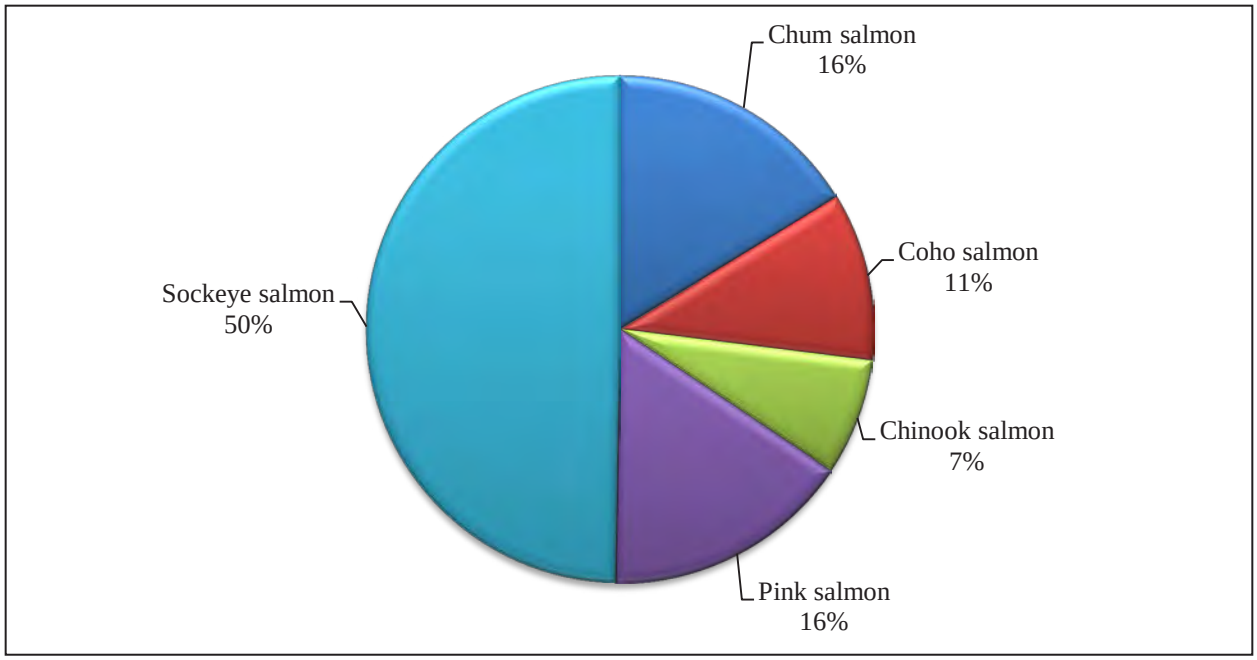


Figure 5-15.–Composition of salmon harvest in pounds usable weight, Port Graham, 2014.

Similar to findings of previous studies (for example, see Fall [2006]), survey results indicate that all salmon species were frequently shared in Port Graham (Table 5-12). Sockeye salmon were received by 56% of households and given away by 44% of households. Coho salmon were received by 54% of households and given away by 42% of households. Pink salmon, which were as commonly used in Port Graham households as sockeye salmon, were received by 51% of households and given away by 46% of households. Notably, Chinook salmon, which were harvested by the smallest percentage of community households, were received by 49% of households and given away by 32% of households. Chum salmon, which were as commonly used in the community as Chinook salmon during 2014, were received by the smallest percentage (44%) of Port Graham households but given away by the same percentage (32%) of households as Chinook salmon.

During the 2014 study year, Port Graham residents harvested 2,384 salmon (10,283 lb) using subsistence setnets, 1,219 salmon (5,295 lb), excluding Chinook salmon, were caught using rod and reel, and 96 Chinook salmon (1,063 lb) were caught by trolling. An additional 86 salmon (396 lb), mostly sockeye, were removed from commercial harvests for home use (Table 5-14). Figure 5-16 is a visual representation of the salmon harvest weight harvested by gear type.

Overall, subsistence setnet harvests accounted for most (64%) of the salmon harvest (Table 5-15). For sockeye and chum salmon, subsistence setnet was the most commonly used harvest method: 87% of the sockeye salmon and 77% of the chum salmon harvests were caught with setnets. Rod and reel was the most commonly used harvest method for coho and pink salmon: 95% of the coho salmon and 53% of pink salmon harvests were caught with rod and reel. The majority (90%) of the Chinook salmon harvest was caught by trolling. Removal from commercial catches was the least frequently used harvest method, and only used for Chinook and sockeye salmon. Approximately 5% of the sockeye salmon and 1% of the Chinook salmon harvests were removed from commercial catches.

In 2014, Port Graham residents fished for salmon close to the community in the waters of Port Graham Bay as well as in waters near the neighboring community of Nanwalek (Figure 5-17). Some residents also traveled substantial distances from the community to harvest the different salmon species with the help of a vehicle or a boat. An old logging road exists between the community and Windy Bay, and the road is regularly used by Port Graham residents to access fishing areas in Windy and Rocky bays. During the study

Table 5-14.–Estimated harvest of salmon by gear type and resource, Port Graham, 2014.

			Subsistence/personal use methods																			
	Removed from commercial catch		Setnet		Seine		Fish wheel		Jigging		Dip net		Other method		Subsistence/personal use gear, any method		Trolling		Rod and reel		Any method	
Resource	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Salmon	**86.3**	**396.3**	**2,383.7**	**10,283.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**2,383.7**	**10,283.3**	**96.2**	**1,063.1**	**1,219.2**	**5,295.3**	**3,689.2**	**15,974.9**
Chum salmon	0.0	0.0	364.0	1,993.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	364.0	1,993.0	0.0	0.0	110.2	603.5	474.2	2,596.4
Coho salmon	0.0	0.0	19.8	91.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.8	91.2	0.0	0.0	352.4	1,622.6	372.2	1,713.8
Chinook salmon	1.4	15.6	9.9	109.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.9	109.4	96.2	1,063.1	0.0	0.0	107.5	1,188.2
Pink salmon	0.0	0.0	449.5	1,181.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	449.5	1,181.3	0.0	0.0	514.8	1,352.8	964.3	2,534.0
Sockeye salmon	84.9	380.6	1,540.5	6,908.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,540.5	6,908.4	0.0	0.0	145.7	653.4	1,771.1	7,942.4
Landlocked salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source ADF&G Division of Subsistence household surveys, 2015.

Note The harvested number of salmon is represented as individual fish harvested.

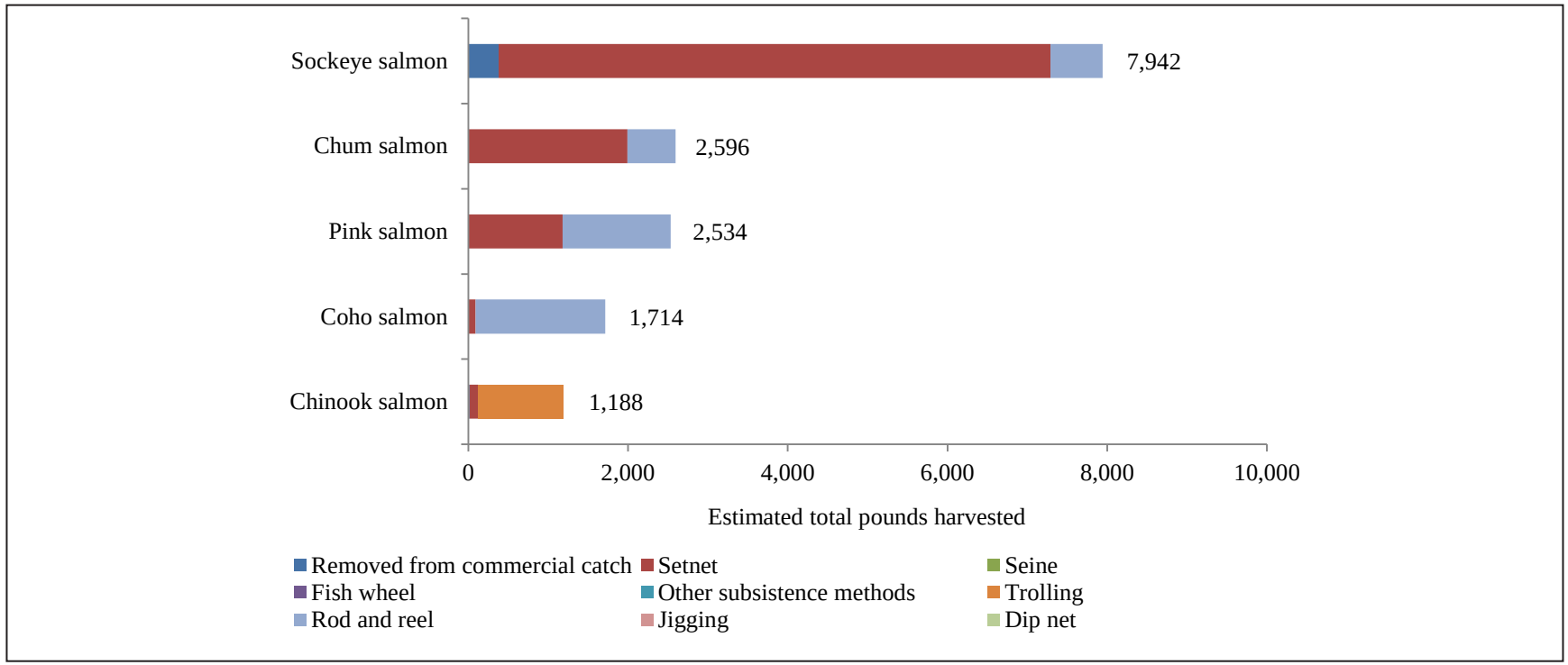


Figure 5-16.–Salmon harvest by gear type, Port Graham, 2014.

Table 5-15.–Estimated percentages of salmon harvested by gear type, resource, and total salmon harvest, Port Graham, 2014.

			Subsistence/personal use methods									
Resource	Percentage base	Removed from commercial catch	Setnet	Seine	Fish wheel	Jigging	Dip net	Other	Subsistence/ personal use gear, any method	Trolling	Rod and reel	Any method
Salmon	**Gear type**	**100.0%**	**100.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
	Resource	**2.5%**	**64.4%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**64.4%**	**6.7%**	**33.1%**	**100.0%**
	Total	**2.5%**	**64.4%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**64.4%**	**6.7%**	**33.1%**	**100.0%**
Chum salmon	Gear type	0.0%	19.4%	0.0%	0.0%	0.0%	0.0%	0.0%	19.4%	0.0%	11.4%	16.3%
	Resource	0.0%	76.8%	0.0%	0.0%	0.0%	0.0%	0.0%	76.8%	0.0%	23.2%	100.0%
	Total	0.0%	12.5%	0.0%	0.0%	0.0%	0.0%	0.0%	12.5%	0.0%	3.8%	16.3%
Coho salmon	Gear type	0.0%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.0%	30.6%	10.7%
	Resource	0.0%	5.3%	0.0%	0.0%	0.0%	0.0%	0.0%	5.3%	0.0%	94.7%	100.0%
	Total	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.0%	10.2%	10.7%
Chinook salmon	Gear type	3.9%	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%	1.1%	100.0%	0.0%	7.4%
	Resource	1.3%	9.2%	0.0%	0.0%	0.0%	0.0%	0.0%	9.2%	89.5%	0.0%	100.0%
	Total	0.1%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	6.7%	0.0%	7.4%
Pink salmon	Gear type	0.0%	11.5%	0.0%	0.0%	0.0%	0.0%	0.0%	11.5%	0.0%	25.5%	15.9%
	Resource	0.0%	46.6%	0.0%	0.0%	0.0%	0.0%	0.0%	46.6%	0.0%	53.4%	100.0%
	Total	0.0%	7.4%	0.0%	0.0%	0.0%	0.0%	0.0%	7.4%	0.0%	8.5%	15.9%
Sockeye salmon	Gear type	96.1%	67.2%	0.0%	0.0%	0.0%	0.0%	0.0%	67.2%	0.0%	12.3%	49.7%
	Resource	4.8%	87.0%	0.0%	0.0%	0.0%	0.0%	0.0%	87.0%	0.0%	8.2%	100.0%
	Total	2.4%	43.2%	0.0%	0.0%	0.0%	0.0%	0.0%	43.2%	0.0%	4.1%	49.7%
Landlocked salmon	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown salmon	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Source ADF&G Division of Subsistence household surveys, 2015.

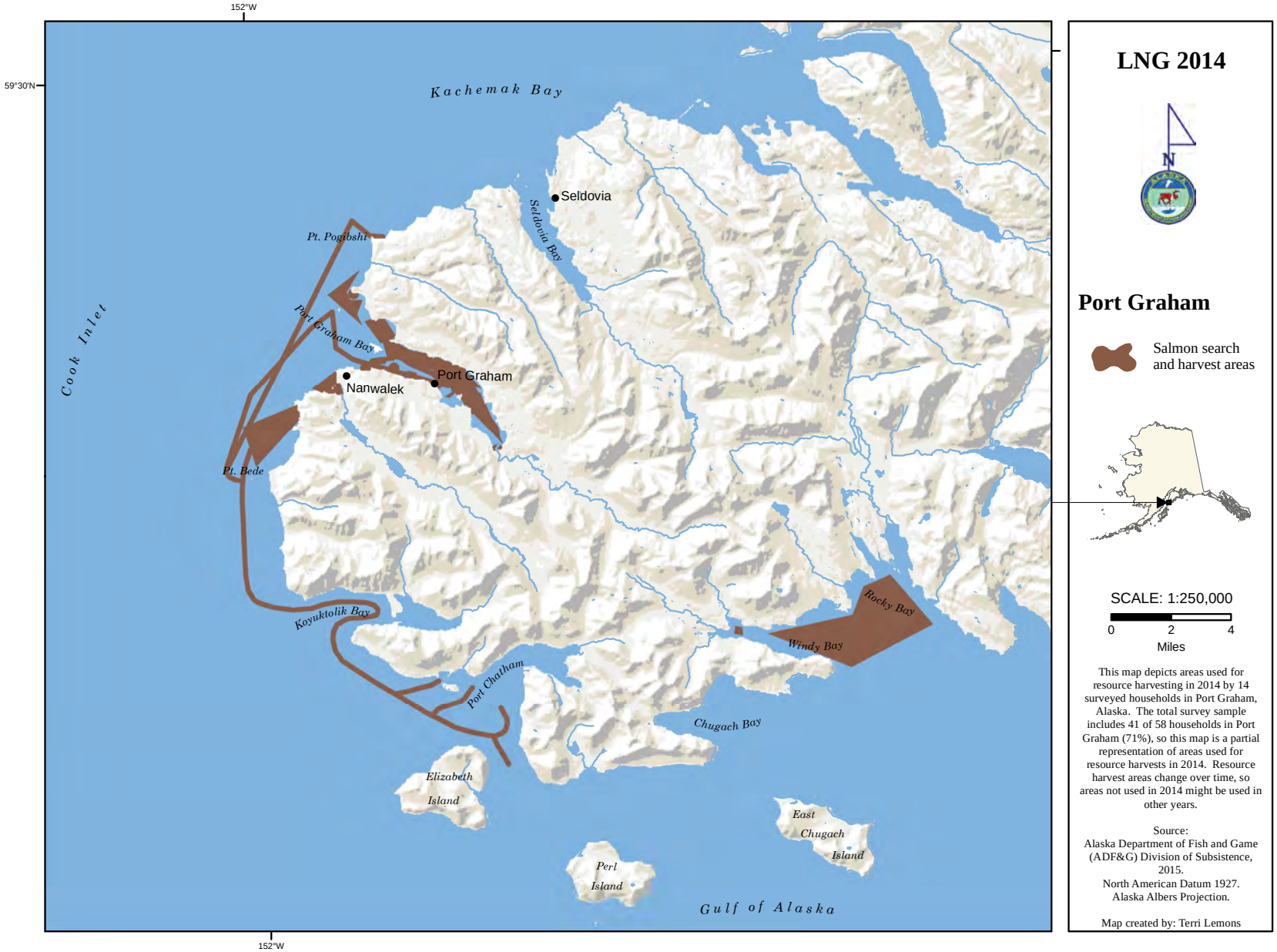
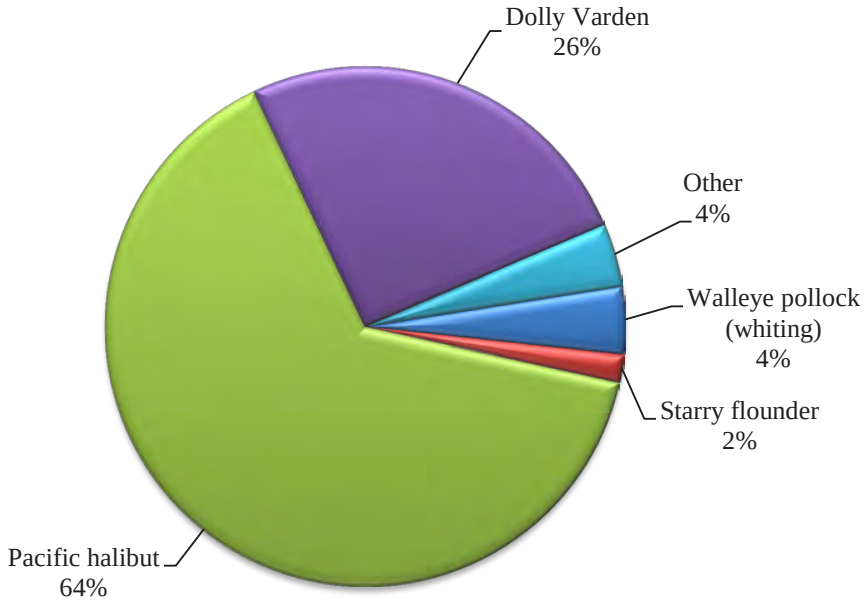


Figure 5-17.–Fishing and harvest locations of chum, coho, Chinook, pink, and sockeye salmon, Port Graham, 2014.



Note The "other" category includes species each providing less than 1.5% to the total nonsalmon fish harvest.

Figure 5-18.–Composition of nonsalmon fish harvest in pounds usable weight, Port Graham, 2014.

year, community members with access to a boat also traveled south in the waters of Cook Inlet along the coast past Nanwalek and Point Bede all the way into Koyuktolik Bay and waters of Port Chatham north of Elizabeth Island to fish for salmon.

Nonsalmon Fish

Similar to salmon, nonsalmon fish species are very important resources for Port Graham residents. During the study period, community households harvested a total of 9,406 lb, or 63 lb per capita, of nonsalmon fish, which made up 29% of the total wild resource harvest in 2014 (Table 5-12; Figure 5-12). In terms of individual nonsalmon fish species, community residents used more than a dozen different nonsalmon fish species during the study period; the majority of these species were caught in the marine environment (Table 5-12). The 2 most harvested species, which together composed 90% of the total nonsalmon fish harvest weight, were Pacific halibut (6,071 lb, or 41 lb per capita) and Dolly Varden (2,407 lb, or 16 lb per capita) (Figure 5-18; Table 5-12). Following with a considerably smaller harvest weight were walleye pollock (396 lb, or 3 lb per capita) and starry flounder (161 lb, or 1 lb per capita), which made up 4% and 2% of the total nonsalmon fish harvest weight, respectively. The remaining nonsalmon fish harvest was composed of a number of species, including Pacific tomcod, black rockfish, greenlings, rainbow trout, and Pacific herring. The per capita harvest for each of the remaining species harvested was less than 1 lb.

In 2014, Pacific halibut was the most frequently used nonsalmon fish species with 76% of households using some (Table 5-12). Furthermore, Pacific halibut was fished for by 51% of Port Graham households and harvested by 39% of households. Slightly more than 46% of households received Pacific halibut, and 39% gave some away, making this species the most commonly shared and received nonsalmon fish species in 2014. Compared to other individual resources, Pacific halibut ranked 6th on the list of most used resources by Port Graham households (Table 5-13). Furthermore, in 2014, Pacific halibut was the second most harvested wild resource overall (Figure 5-12).

While Pacific tomcod was not harvested in as large a quantity (total harvest 114 lb, or less than 1 lb per capita) as Dolly Varden or starry flounder, more households (39%) used Pacific tomcod than either Dolly

Table 5-16.–Estimated harvest of nonsalmon fish by gear type and resource, Port Graham, 2014.

		Removed from commercial catch		Subsistence/personal use methods													
				Setnet		Seine		Fish wheel		Other method		Subsistence/personal use gear, any method		Rod and reel		Any method	
Resource	Units[a]	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds
Nonsalmon fish			**0.0**		**877.1**		**1,202.4**		**0.0**		**4,160.8**		**6,240.3**		**3,165.8**		**9,406.1**
Pacific herring	gal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.2	31.1	5.2	31.1
Pacific herring roe	gal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	6.2	0.9	6.2
Pacific herring sac roe	gal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pacific herring spawn on kelp	gal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Eulachon (hooligan, candlefish)	gal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown smelt	gal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sea bass	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	2.8	2.8	2.8
Pacific (gray) cod	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pacific tomcod	ind	0.0	0.0	70.7	35.4	28.3	14.1	0.0	0.0	0.0	0.0	99.0	49.5	128.7	64.4	227.8	113.9
Walleye pollock (whiting)	ind	0.0	0.0	282.9	396.1	0.0	0.0	0.0	0.0	0.0	0.0	282.9	396.1	0.0	0.0	282.9	396.1
Eel	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Arrowtooth flounder (turbot)	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.2	12.7	4.2	12.7
Starry flounder	ind	0.0	0.0	49.5	148.5	0.0	0.0	0.0	0.0	0.0	0.0	49.5	148.5	4.2	12.7	53.8	161.3
Unknown flounder	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lingcod	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	11.3	2.8	11.3
Unknown greenling	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	56.6	56.6	56.6	56.6
Pacific halibut	lb	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4,160.8	4,160.8	4,160.8	4,160.8	1,910.4	1,910.4	6,071.2	6,071.2
Black rockfish	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	59.4	89.1	59.4	89.1
Red rockfish	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown rockfish	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sablefish (black cod)	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown Irish lord	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown sculpin	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown shark	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Skates	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown sole	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wolffish	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dolly Varden	ind	0.0	0.0	212.2	297.1	848.8	1,188.3	0.0	0.0	0.0	0.0	1,061.0	1,485.4	658.3	921.6	1,719.3	2,407.0
Lake trout	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Arctic grayling	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Northern pike	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown sturgeon	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cutthroat trout	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rainbow trout	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	31.1	43.6	31.1	43.6
Steelhead	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown whitefishes	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown nonsalmon fish	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	3.2	2.8	3.2

Source ADF&G Division of Subsistence household surveys, 2015.

Note The summary row that includes incompatible units of measure for harvest number has been left blank.

a. The harvested number of each resource is measured by the unit in which the resource harvest information was collected; the unit of measurement is provided for each resource.

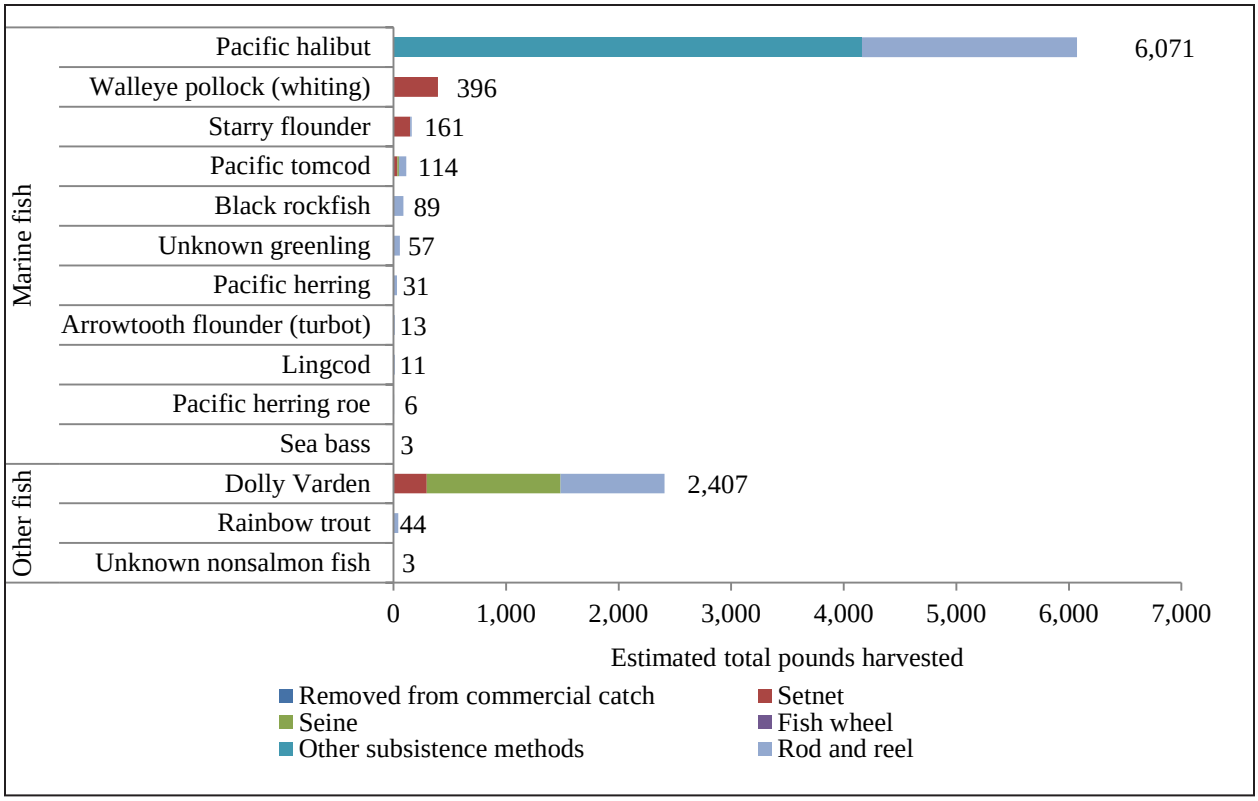


Figure 5-19.–Nonsalmon fish harvest by gear type, Port Graham, 2014.

Varden (29% of households) or starry flounder (5% of households) (Table 5-12). Approximately 12% of households attempted to harvest, and all successfully harvested, Pacific tomcod, which was given away by 7% of households and received by 29%. Every household that attempted to harvest Dolly Varden (27% of households) was successful as well. Approximately 7% of households received Dolly Varden, while 20% of households gave some away. In comparison, starry flounder was harvested by 5% of households but no household shared or received any in 2014.

Other nonsalmon fish resources used in Port Graham households during 2014 included Pacific herring roe (used by 24% of households), black rockfish (10% of households), Pacific herring (7% of households), and rainbow trout (5%) (Table 5-12). Additional nonsalmon fish species used by 2% of households each included sea bass, arrowtooth flounder, lingcod, steelhead, as well as unspecified flounder, greenling, rockfish, and unspecified whitefishes. It is important to note that some community members harvested walleye pollock to use for bait only; this resource was also used by 2% of Port Graham households.

Port Graham households harvested approximately 6,240 lb of nonsalmon fish using subsistence setnets, seines, and other subsistence methods including skates, and 3,166 lb with rod and reel gear (Table 5-16). Figure 5-19 is a visual representation of the nonsalmon fish harvest weight harvested by gear type. For 2 species, subsistence setnet was the most commonly used harvest method: 92% of the starry flounder and 100% of the walleye pollock harvests were taken with setnets in 2014; also, 31% of the Pacific tomcod and 12% of the Dolly Varden harvests were taken with setnets. Two species of nonsalmon fish were caught with seines: Dolly Varden (49%) and Pacific tomcod (12%). In comparison, the majority (69%) of the Pacific halibut harvest was caught using other subsistence harvest methods, primarily skates. Port Graham residents also harvested nonsalmon fish with rod and reel, which was the primary gear type used for harvesting a variety of species caught in smaller amounts. These species included Pacific herring (100%), sea bass (100%), arrowtooth flounder (100%), lingcod (100%), greenlings (100%), black rockfish (100%),

Table 5-17.–Estimated percentages of nonsalmon fish harvested by gear type, resource, and total nonsalmon fish harvest, Port Graham, 2014.

			Subsistence/personal use methods						
Resource	Percentage base	Removed from commercial catch	Setnet	Seine	Fish wheel	Other	Subsistence/ personal use gear, any method	Rod and reel	Any method
Nonsalmon fish	**Gear type**	**0.0%**	**100.0%**	**100.0%**	**0.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
	Resource	**0.0%**	**9.3%**	**12.8%**	**0.0%**	**44.2%**	**66.3%**	**33.7%**	**100.0%**
	Total	**0.0%**	**9.3%**	**12.8%**	**0.0%**	**44.2%**	**66.3%**	**33.7%**	**100.0%**
Pacific herring	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	0.3%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.3%
Pacific herring roe	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.1%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%
	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Pacific herring sac roe	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Pacific herring spawn on kelp	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Eulachon (hooligan, candlefish)	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown smelt	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Sea bass	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Pacific (gray) cod	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Pacific tomcod	Gear type	0.0%	4.0%	1.2%	0.0%	0.0%	0.8%	2.0%	1.2%
	Resource	0.0%	31.1%	12.4%	0.0%	0.0%	43.5%	56.5%	100.0%
	Total	0.0%	0.4%	0.2%	0.0%	0.0%	0.5%	0.7%	1.2%

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Table 5-17.–Page 2 of 4.

Resource	Percentage base	Removed from commercial catch	Subsistence/personal use methods: Setnet	Seine	Fish wheel	Other	Subsistence/ personal use gear, any method	Rod and reel	Any method
Walleye pollock (whiting)	Gear type	0.0%	45.2%	0.0%	0.0%	0.0%	6.3%	0.0%	4.2%
	Resource	0.0%	100.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%
	Total	0.0%	4.2%	0.0%	0.0%	0.0%	4.2%	0.0%	4.2%
Eel	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Arrowtooth flounder (turbot)	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	0.1%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%
Starry flounder	Gear type	0.0%	16.9%	0.0%	0.0%	0.0%	2.4%	0.4%	1.7%
	Resource	0.0%	92.1%	0.0%	0.0%	0.0%	92.1%	7.9%	100.0%
	Total	0.0%	1.6%	0.0%	0.0%	0.0%	1.6%	0.1%	1.7%
Unknown flounder	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Lingcod	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	0.1%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%
Unknown greenling	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.8%	0.6%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.6%
Pacific halibut	Gear type	0.0%	0.0%	0.0%	0.0%	100.0%	66.7%	60.3%	64.5%
	Resource	0.0%	0.0%	0.0%	0.0%	68.5%	68.5%	31.5%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	44.2%	44.2%	20.3%	64.5%
Black rockfish	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.8%	0.9%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.9%

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Table 5-17.–Page 3 of 4.

Resource	Percentage base	Removed from commercial catch	Subsistence/personal use methods: Setnet	Seine	Fish wheel	Other	Subsistence/ personal use gear, any method	Rod and reel	Any method
Red rockfish	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown rockfish	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Sablefish (black cod)	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown Irish lord	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown sculpin	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown shark	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Skates	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown sole	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Wolffish	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

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Table 5-17.–Page 4 of 4.

Resource	Percentage base	Removed from commercial catch	Subsistence/personal use methods: Setnet	Seine	Fish wheel	Other	Subsistence/ personal use gear, any method	Rod and reel	Any method
Dolly Varden	Gear type	0.0%	33.9%	98.8%	0.0%	0.0%	23.8%	29.1%	25.6%
	Resource	0.0%	12.3%	49.4%	0.0%	0.0%	61.7%	38.3%	100.0%
	Total	0.0%	3.2%	12.6%	0.0%	0.0%	15.8%	9.8%	25.6%
Lake trout	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Arctic grayling	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Northern pike	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown sturgeon	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Cutthroat trout	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rainbow trout	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.4%	0.5%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.5%
Steelhead	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown whitefishes	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown nonsalmon fish	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Source ADF&G Division of Subsistence household surveys, 2015.

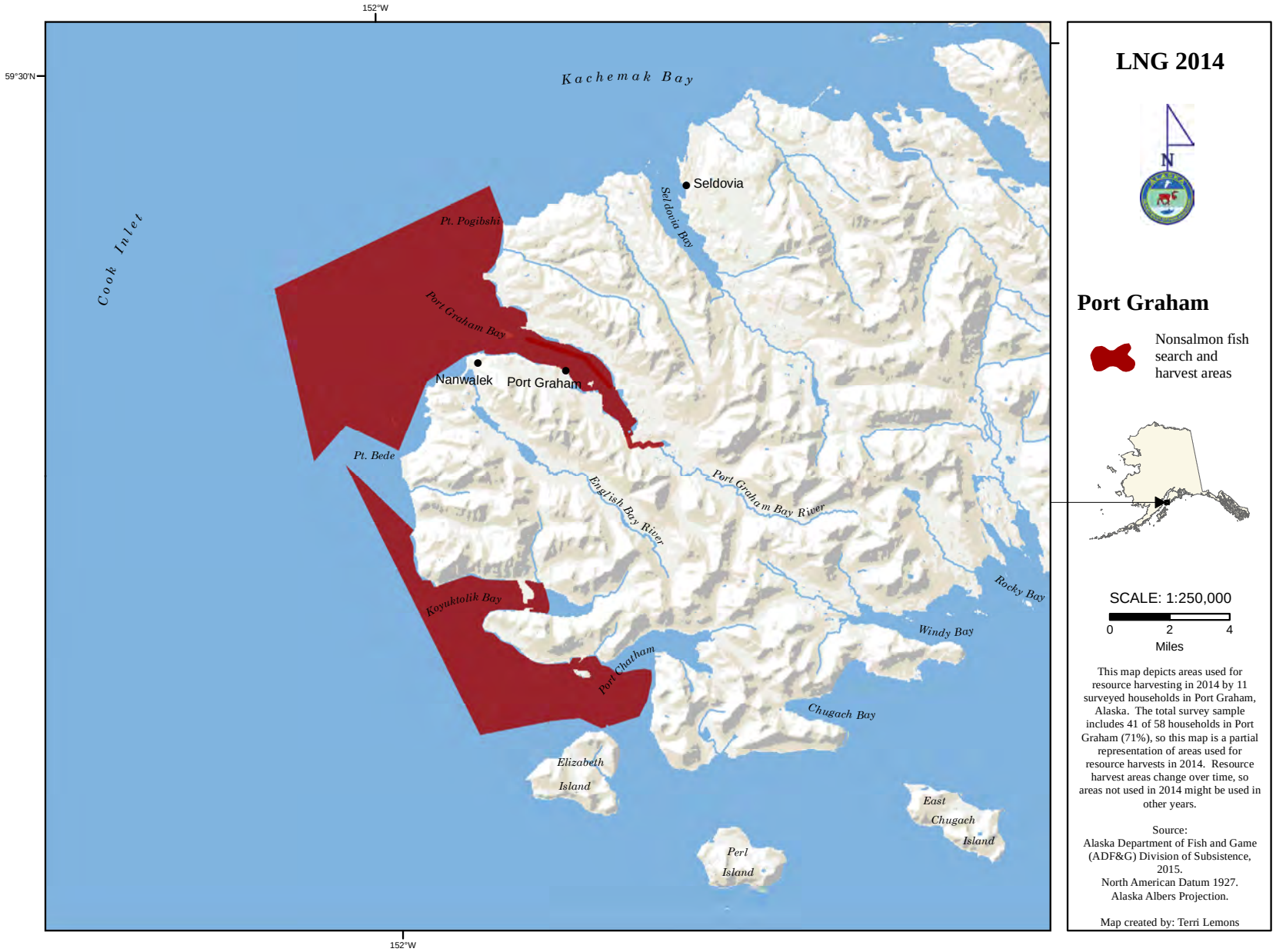


Figure 5-20.–Fishing and harvest locations of all nonsalmon fish resources, Port Graham, 2014.

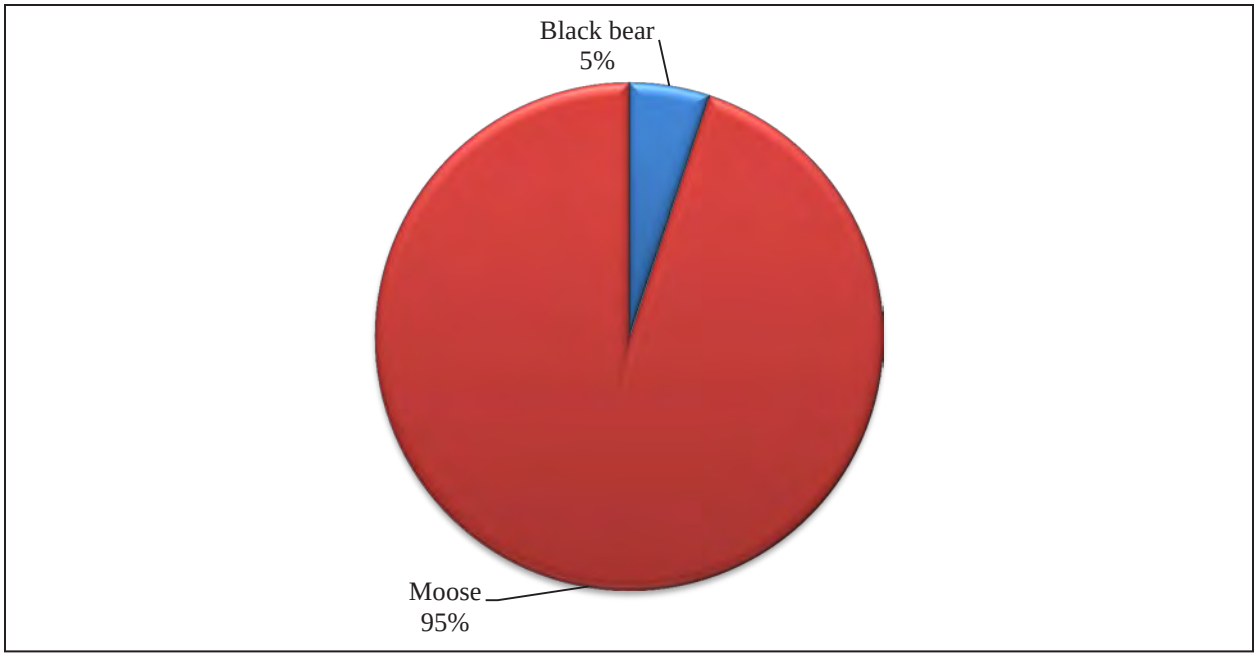


Figure 5-21.–Composition of large land mammal harvest in pounds usable weight, Port Graham, 2014.

rainbow trout (100%), and Pacific tomcod (57%). Also, Dolly Varden (38%), Pacific halibut (22%), and starry flounder (8%) were caught by rod and reel in 2014.

In 2014, Port Graham households' search and harvest areas for nonsalmon fish included areas close to the community around Port Graham Bay but also extended out to Kachemak Bay northwest and southwest of the community (Figure 5-20). Additionally, more distant nonsalmon fish harvest areas stretched into Koyuktolik Bay as well as into waters northwest of Elizabeth Island. The most distant nonsalmon fish search and harvest areas in 2014 were documented around Port Chatham, which is just north of Elizabeth Island.

Large Land Mammals

Large land mammals accounted for approximately 5% of the total harvest in Port Graham during 2014 (Figure 5-12). The harvest was composed of moose and black bears, and totaled approximately 1,610 lb, or 11 lb per capita (Table 5-12). Moose made up the majority (95%) of the large land mammal harvest, totaling 1,528 lb, or 10 lb per capita (Figure 5-21; Table 5-12). Although 20% of the community households attempted to harvest moose, only 5% of Port Graham households were successful (Table 5-12). As described previously by Fall (2006) and commented upon by some survey respondents in 2015, moose continue to be uncommon in the Port Graham area. Some survey respondents also commented that due to the warmer fall weather, moose are not seen in the area as frequently as in the past during hunting season. The limited number of Tier II moose hunting permits available in this portion of GMU 15C, and the special skill as well as the necessary resources and time required to participate in moose hunting, may be factors that limit some households' participation in this activity. However, while only 15% of Port Graham households shared moose, the resource was widely used in the community with 63% of Port Graham households receiving moose. Overall, an estimated 68% of community households used moose in 2014, making it the 7th most used resource in the community along with harbor seals and black chitons (Table 5-13).

While the harvest of black bears was small (82 lb total, or less than 1 lb per capita), black bear was the second most frequently used large land mammal species in Port Graham during the study period with approximately 10% of households using this resource (Table 5-12). Black bears were successfully harvested

Table 5-18.–Estimated large land mammal harvests by month and sex, Port Graham, 2014.

	Estimated harvest by month													
Resource	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk	**Total**
All large land mammals	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**1.4**	**0.0**	**2.8**	**0.0**	**0.0**	**4.2**
Black bear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0	**1.4**
Caribou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Caribou, male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Caribou, female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Caribou, unknown sex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Deer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Mountain goat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Moose	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0	1.4	0.0	0.0	**2.8**
Moose, bull	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0	1.4	0.0	0.0	**2.8**
Moose, cow	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Moose, unknown sex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Dall sheep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**

Source ADF&G Division of Subsistence household surveys, 2015.

by only 2% of households but were shared and received by 7% of households. This could be because some households shared harvests from a previous year, or received black bear resources during the study period that they then gave away. The third large land mammal species used by Port Graham households during 2014 was mountain goat with 7% of households using some. However, all of the mountain goats used by households were received since, in spite of 2% of households attempting to harvest mountain goats, none were successful at harvesting this species. Due to a larger percentage of Port Graham households receiving mountain goats than sharing, it is possible that some of the meat was received from outside the community. No other large land mammal species were used in the community in 2014.

An estimated 4 large land mammals were harvested by Port Graham households in 2014. The harvest was composed of approximately 3 bull moose and 1 black bear. The moose were taken in September and November and the single black bear in November (Table 5-18).

During study year 2014, Port Graham households hunted for large land mammals relatively close to the community across Port Graham Bay but also traveled farther to look for moose, black bears, and mountain goats (Figure 5-22). Community members utilized a number of moose search and harvest areas southeast of the community. These areas follow the old logging road, which leads southeast from the community into a combination of flats and elevated areas ranging in elevation from 500–1,500 feet. Another large moose search and harvest area was documented along the coast that also extended inland from Picnic Harbor, north of Rocky Bay, as well as along the entrance to Windy Bay. Black bear search and harvest areas partly coincided with the westernmost moose harvest area along the logging road but bears were also hunted along the eastern shoreline of Port Chatham Bay as well as on the western shores of Chugach and Windy bays. In 2014, additional black bear hunting areas were located on the very southern tip of the Kenai Peninsula north of Perl Island and on the lands just south of Windy Bay. A large mountain goat search and harvest area was documented stretching across land areas with elevations from 500–2,000 feet located between the coasts of Chugach Bay and Port Chatham.

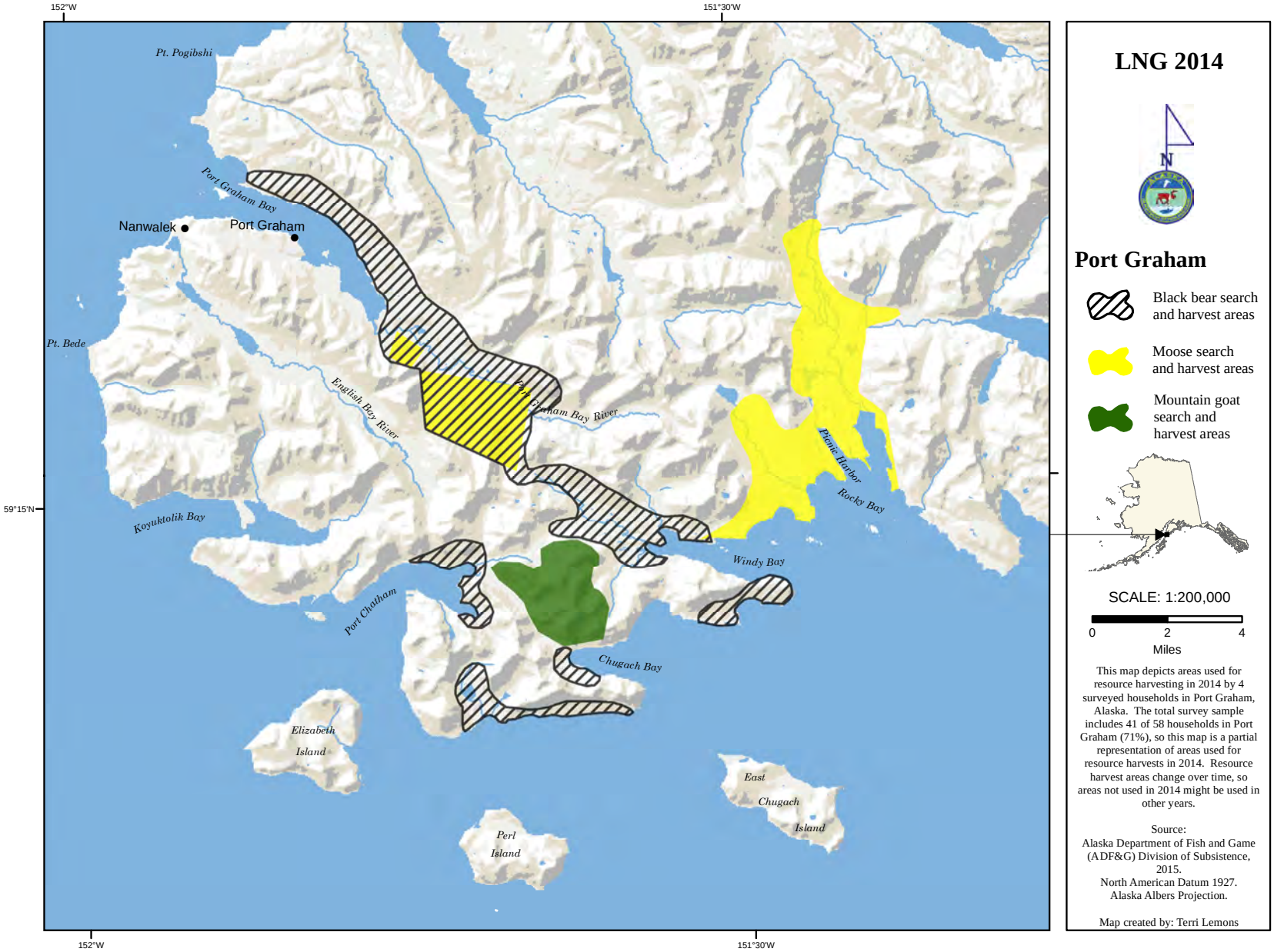


Figure 5-22.–Hunting locations of black bear, moose, and mountain goat, Port Graham, 2014.

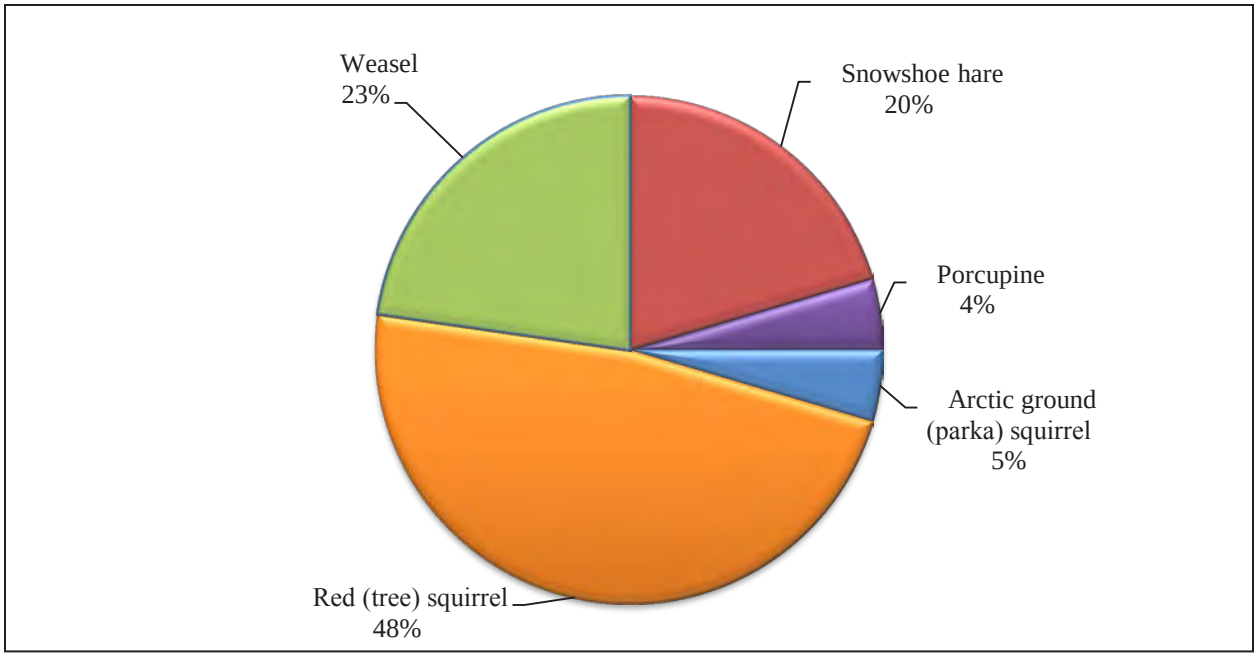


Figure 5-23.–Composition of small land mammal/furbearer harvest by individual animals harvested, Port Graham, 2014.

Small Land Mammals/Furbearers

Only a very few people in Port Graham continue to hunt or trap small land mammals and furbearers, and therefore the use of these resources in the community appears to be limited to a small portion of community households. The harvest of individual animals was composed of 5 species, including porcupine (4%), Arctic ground (parka) squirrel (5%), snowshoe hare (20%), weasel (23%), and red (tree) squirrel (48%) (Figure 5-23). According to survey results, out of these 5 species, snowshoe hare, porcupine, and Arctic ground squirrel were consumed as food (Table 5-12). The other species (red squirrel and weasel) were used for fur only. As listed in Table 5-12, the harvest of small land mammals and furbearers in Port Graham during 2014 was small, totaling only approximately 50 lb usable weight. Only slightly over 12% of households attempted to harvest small mammals, and all were successful. Compared to species from other resource categories, sharing of small land mammals was minimal: 7% of community households gave them away, and 2% received them. Overall, small land mammals and furbearers were used in some manner by 15% of households in Port Graham in 2014. The most frequently used small land mammals were weasels, used by 7% of households, followed by snowshoe hares (5% of households). Only approximately 2% of Port Graham households used porcupines, arctic ground squirrels, or red squirrels.

During the study period, a total of 62 small land mammals were harvested throughout all 4 seasons of the year (Table 5-19). Approximately 3 Arctic ground squirrels were harvested in April, followed by harvests of red squirrels in June through August (a total of 27 individuals), and again 3 individuals harvested in October. Weasels were harvested in September (1 individual), November (4), and December (9). Snowshoe hares were also harvested in December (13 individuals). No months were reported for the harvests of the 3 porcupines.

Since the number of Port Graham residents engaged in small land mammal and furbearer hunting and trapping is very small, only a single search and harvest area south of the community was documented during the project for small land mammals (Figure 5-24). This area stretches along the logging road into higher elevations of approximately 500–1,500 feet.

Table 5-19.–Estimated small land mammal/furbearer harvests by month, Port Graham, 2014.

	Estimated harvest by month													
Resource	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk	**Total**
All small land mammals	**0.0**	**0.0**	**0.0**	**2.8**	**0.0**	**8.5**	**4.2**	**14.1**	**1.4**	**2.8**	**4.2**	**21.2**	**2.8**	**62.2**
Beaver	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Coyote	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Red fox	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Snowshoe hare	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.7	0.0	**12.7**
North American river (land) otter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Lynx	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Marten	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Mink	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Muskrat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Porcupine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	**2.8**
Arctic ground (parka) squirrel	0.0	0.0	0.0	2.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**2.8**
Red (tree) squirrel	0.0	0.0	0.0	0.0	0.0	8.5	4.2	14.1	0.0	2.8	0.0	0.0	0.0	**29.7**
Weasel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0	4.2	8.5	0.0	**14.1**
Gray wolf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Wolverine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**

Source ADF&G Division of Subsistence household surveys, 2015.

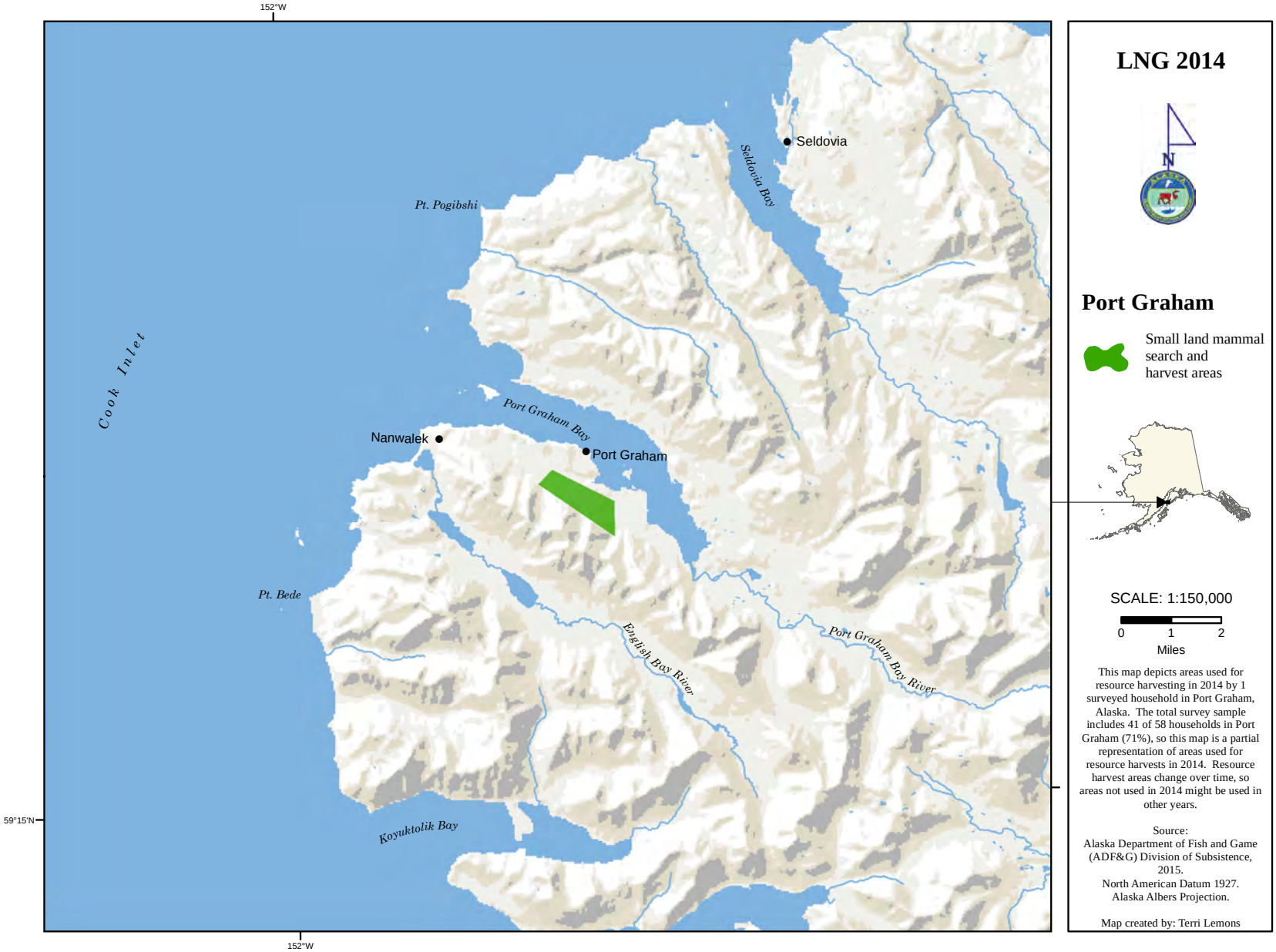


Figure 5-24.–Hunting and trapping locations of small land mammals/furbearers, Port Graham, 2014.

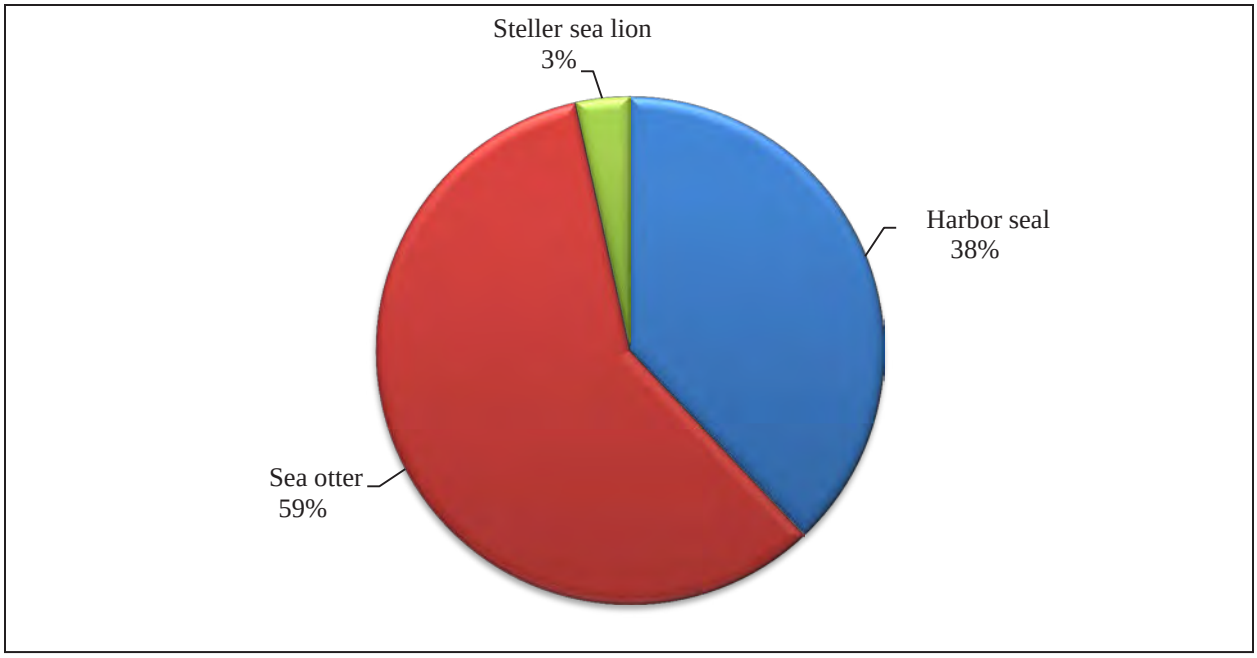


Figure 5-25.–Composition of marine mammal harvest by individual animals harvested, Port Graham, 2014.

Marine Mammals

According to study results, the harvest of marine mammals by Port Graham residents in 2014 totaled 1,154 lb, or 8 lb per capita (Table 5-12). The harvest was composed of individual animals from 3 species, including harbor seal (38%), sea otter (59%), and Steller sea lion (3%), although only harbor seals and Steller sea lions were consumed as food (Figure 5-25; Table 5-12). During 2014, Port Graham households harvested approximately 24 sea otters, 16 harbor seals, and 1 Steller sea lion. The harvest of harbor seals contributed 75% of the total usable harvest weight (871 lb, or 6 lb per capita) and the remaining 25% was made of Steller sea lions (283 lb total, or 2 lb per capita) (Table 5-12). Overall, marine mammals were used by 76% of households in Port Graham, and made up 4% of the overall wild resource harvest in the community during 2014 (Table 5-12; Figure 5-12).

Harbor seals were the most frequently used marine mammal in Port Graham (68% of households), and also shared 7th place with moose and black chitons on the list of most used resources in the community in 2014 (Table 5-12; Table 5-13). Regarding harvesting, it is important to note that only Alaska Natives are allowed to hunt for marine mammals. In 2014, approximately 22% of Port Graham households attempted to harvest harbor seals and 15% in the community were successful (Table 5-12). Of the households that used harbor seals, 61% received the resource compared to 24% who shared some. The difference in the number of Port Graham households sharing and receiving harbor seals could be explained by some households receiving the resource from outside the community, or from several households within Port Graham.

Compared to harbor seals, Steller sea lions were used by noticeably fewer households with approximately 27% of households in Port Graham using some (Table 5-12). Close to 7% of community households attempted to harvest Steller sea lions; however, only 2% of Port Graham households were successful. This indicates that, similar to harbor seal hunting, the hunting of Steller sea lions is a very specialized skill. Nearly 25% of Port Gram households received Steller sea lions, and 7% gave some away. Compared to the other marine mammal species, sea otter was used by the smallest percentage of households in Port Graham (7% of households). However, all households that attempted to harvest sea otters were successful (5% of households). No household in the community reported giving sea otters away, making it likely that 2% of Port Graham households received the resource from outside the community.

Table 5-20.–Estimated marine mammal harvests by month and sex, Port Graham, 2014.

	Estimated harvest by month													
Resource	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk	**Total**
All marine mammals	**1.4**	**0.0**	**2.8**	**0.0**	**0.0**	**0.0**	**4.2**	**2.8**	**2.8**	**0.0**	**11.3**	**14.1**	**1.4**	**41.0**
Harbor seal	1.4	0.0	2.8	0.0	0.0	0.0	4.2	2.8	2.8	0.0	0.0	1.4	0.0	**15.6**
Harbor seal, male	0.0	0.0	2.8	0.0	0.0	0.0	4.2	1.4	0.0	0.0	0.0	1.4	0.0	**9.9**
Harbor seal, female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Harbor seal, unknown sex	1.4	0.0	0.0	0.0	0.0	0.0	0.0	1.4	2.8	0.0	0.0	0.0	0.0	**5.7**
Sea otter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.3	12.7	0.0	**24.0**
Steller sea lion	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	**1.4**
Steller sea lion, male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Steller sea lion, female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Steller sea lion, unknown sex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	**1.4**

Source ADF&G Division of Subsistence household surveys, 2015.

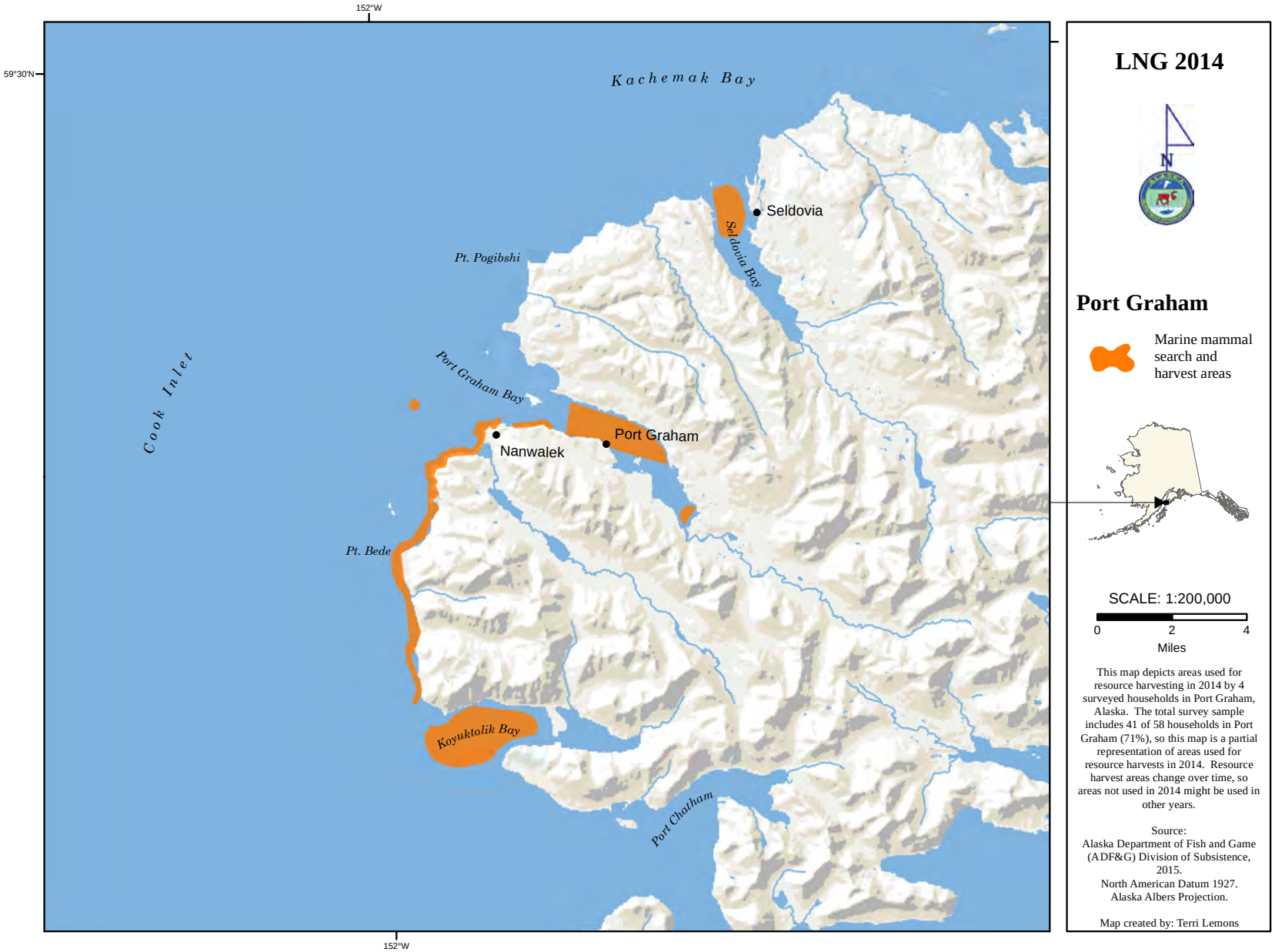


Figure 5-26.–Hunting and harvest locations of marine mammals, Port Graham, 2014.

The majority of the harbor seal harvests occurred during July–September when approximately 10 harbor seals were harvested; 6 of the approximately 10 harvested animals in that time were identified as male while the sex of the other 4 harvested seals was unknown (Table 5-20). In addition, approximately 4 harbor seals were harvested during January–March; 3 of the harvested animals during this period were identified as male while the sex of 1 animal was unknown. An additional male harbor seal was harvested in December. A total of 24 sea otters were harvested during November and December 2014. The Steller sea lion harvest was not attributed to a particular month in the year.

Similar to other resources, Port Graham residents hunted and harvested marine mammals close to the community in Port Graham Bay but also traveled farther from the community in search of these resources in 2014 (Figure 5-26). Search and harvest areas outside the immediate vicinity of the community included the coast south of Nanwalek and Point Bede stretching all the way into Koyuktolik Bay. Additional hunting and harvesting sites were documented at the mouth of Seldovia Bay north of Port Graham, as well as in the waters of Cook Inlet northeast and northwest from the community of Nanwalek.

Birds and Eggs

In 2014, Port Graham households hunted birds and gathered bird eggs for an estimated total harvest of 104 lb, or less than 1 lb per capita (Table 5-12). Looking at the community's total wild resource harvest, birds and eggs made up less than 1% of the total harvest weight (Figure 5-12). The harvest was composed of 7 identified species of birds and 1 type of bird egg, as well as harvests of unspecified kinds of merganser and scaup ducks (Table 5-12; Figure 5-27). One additional bird species (black scoter) was used by community households but this resource was received from outside the community (Table 5-12). In terms of total pounds harvested, spruce grouse contributed 51% to the overall bird and egg harvest, totaling 53 lb (Table 5-12; Figure 5-27). It was also the most commonly used bird species in Port Graham during the study period with approximately 24% of households using some (Table 5-12). Goldeneye duck was the second most harvested and used bird species in the community in 2014, contributing 23% (or 24 lb total) to the overall bird and egg harvest (Figure 5-27; Table 5-12). The third most harvested bird species was the mallard, which contributed 9% (or 9 lb total) to the total bird and egg harvest. Mallard was also the third most commonly used bird species with approximately 12% of community households using some (Table 5-12). The remaining harvest was composed of several species, each of which were harvested in smaller quantities: Pacific/Arctic loon (4% of the harvest weight), merganser and bufflehead (3% of the harvest each), and surf scooter and white-winged scoter (2% of the harvest each) (Figure 5-27). Of the less harvested species, merganser, scaup, and black scoter were used by 5% of households while bufflehead, surf scoter, white-winged scoter, and Pacific/Arctic loon each were used by only 2% of community households (Table 5-12).

In regard to harvests of birds and eggs, the households that attempted to harvest birds and eggs in 2014 were relatively successful: approximately 32% of community households attempted to harvest birds and eggs, and 29% of community households were successful (Table 5-12). Looking at the 3 most harvested bird species, spruce grouse was hunted by 22% of Port Graham households, and nearly all (20%) were successful. For goldeneye ducks, approximately 20% of households attempted to harvest them but only 12% of Port Graham households were successful. In comparison, mallard hunters were even less successful since nearly 10% of households attempted to harvest some in 2014 but only 2% in the community were successful.

Survey results indicate that while only 15% of Port Graham households shared some birds and eggs, overall, these resources were widely used in the community since 39% of Port Graham households used some in 2014 (Table 5-12). With regard to the 3 most harvested bird species, goldeneye ducks were the most shared bird species with 12% of households giving some away and approximately 10% of households receiving. While a similar percentage (10%) of households received both spruce grouse and mallards, only 5% of households shared either species.

In 2014, only a small number of Port Graham households harvested eggs, but, like many other resources, bird eggs were shared in the community. During the study period, gull eggs were the only type of bird egg

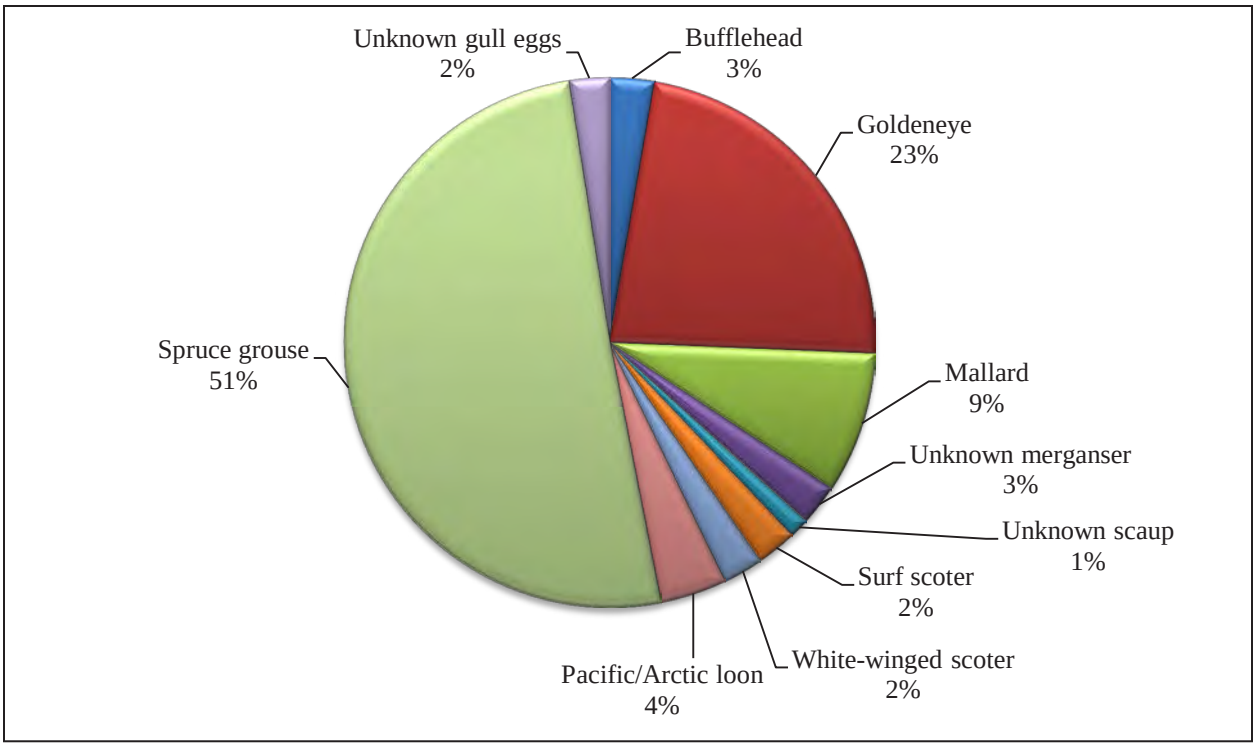


Figure 5-27.–Composition of bird and bird egg harvest in pounds usable weight, Port Graham, 2014.

harvested (approximately 3 lb) (Table 5-12). Overall, the small harvest of gull eggs contributed 2% to the total harvest of birds and eggs in 2014 (Figure 5-27). Gull eggs were harvested by only 2% of community households but were received and used by 10% of households (Table 5-12). All households that attempted to harvest eggs were successful. Interestingly, gull eggs share a similar sharing pattern to spruce grouse and mallard: 5% of households gave gull eggs away, and 10% received them.

In 2014, Port Graham residents harvested a total of 133 individual birds. Spruce grouse, which made up the majority of the bird and egg harvest, were harvested during spring, summer, and fall with the majority (52 individuals) harvested in the fall (Table 5-21). Summer was the second most productive spruce grouse hunting season with 17 individuals harvested. In comparison, spring was the least productive season with only 6 grouse taken during that period. Overall, the majority (96 individuals) of birds were harvested in the fall and the least during the spring (only 6 individuals). In 2014, the fall harvests included 27 goldeneye ducks, 52 spruce grouse, 7 buffleheads, 3 merganser ducks, 3 surf scoters, 3 white-winged scoters, and 1 Pacific/Arctic loon. In the winter, only 3 goldeneye ducks were harvested along with 10 mallards and 1 scaup.

The bird and egg search and harvest areas documented for study year 2014 proximate the community of Port Graham (Figure 5-28). Search and harvest areas for ducks included the waters and shoreline of Port Graham Bay, and also extended northwest past Dangerous Cape and on to the land area south of Point Pogibshi. In comparison, grouse hunting areas were located just south of the community, following along the logging road on the lower elevations. Bird eggs were harvested on Flat Islands as well as on a cliff locally known as the “60 foot rock.”

Table 5-21.–Estimated bird harvests by season, Port Graham, 2014.

	Estimated harvest by season					
Resource	Spring	Summer	Fall	Winter	Season unknown	**Total**
All birds	**5.7**	**17.0**	**96.2**	**14.1**	**0.0**	**133.0**
Bufflehead	0.0	0.0	7.1	0.0	0.0	**7.1**
Unknown eider	0.0	0.0	0.0	0.0	0.0	**0.0**
Goldeneye	0.0	0.0	26.9	2.8	0.0	**29.7**
Harlequin duck	0.0	0.0	0.0	0.0	0.0	**0.0**
Mallard	0.0	0.0	0.0	9.9	0.0	**9.9**
Unknown merganser	0.0	0.0	2.8	0.0	0.0	**2.8**
Long-tailed duck	0.0	0.0	0.0	0.0	0.0	**0.0**
Northern pintail	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown scaup	0.0	0.0	0.0	1.4	0.0	**1.4**
Black scoter	0.0	0.0	0.0	0.0	0.0	**0.0**
Surf scoter	0.0	0.0	2.8	0.0	0.0	**2.8**
White-winged scoter	0.0	0.0	2.8	0.0	0.0	**2.8**
Northern shoveler	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown teal	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown wigeon	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown Canada/cackling geese	0.0	0.0	0.0	0.0	0.0	**0.0**
White-fronted goose	0.0	0.0	0.0	0.0	0.0	**0.0**
Sandhill crane	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown cormorant	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown gull	0.0	0.0	0.0	0.0	0.0	**0.0**
Black-legged kittiwake	0.0	0.0	0.0	0.0	0.0	**0.0**
Pacific/Arctic loon	0.0	0.0	1.4	0.0	0.0	**1.4**
Unknown murre	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown puffin	0.0	0.0	0.0	0.0	0.0	**0.0**
Spruce grouse	5.7	17.0	52.3	0.0	0.0	**75.0**

Source ADF&G Division of Subsistence household surveys, 2015.

Marine Invertebrates

In 2014, marine invertebrates composed 5% of Port Graham households' wild resource harvest, totaling 1,680 lb, or 11 lb per capita (Figure 5-12; Table 5-12). Overall, 9 specified marine invertebrate species were used plus unspecified kinds of clams, cockles, and mussels; with the exception of razor clams and the unknown varieties of clams, all were harvested by Port Graham households (Table 5-12). The majority (64%) of the marine invertebrate harvest was composed of octopuses, which totaled approximately 1,070 lb, or 7 lb per capita (Table 5-12; Figure 5-29). In terms of total pounds harvested, the remaining marine invertebrate harvest was composed of black (small) chitons (24% of total harvest, or 3 lb per capita), red (large) chitons (5%, or 93 lb total), butter clams (3%, or 53 lb total), snails (2%, or 28 lb total), and several other species, which combined contributed 2% to the total marine invertebrate harvest weight (Figure 5-29). However, other than black chitons, the per capita harvests of these species were less than 1 lb (Table 5-12).

In 2014, the most widely used marine invertebrate species in Port Graham was black chiton (Table 5-12). Approximately 68% of community households used black chitons, and equal percentages (39%) of households reported receiving and giving some away. Approximately 54% of households attempted to harvest black chitons and all were successful. Black chitons were included among the list of top resources used in the community in 2014, which shared 7th place with moose and harbor seals (Table 5-13). While

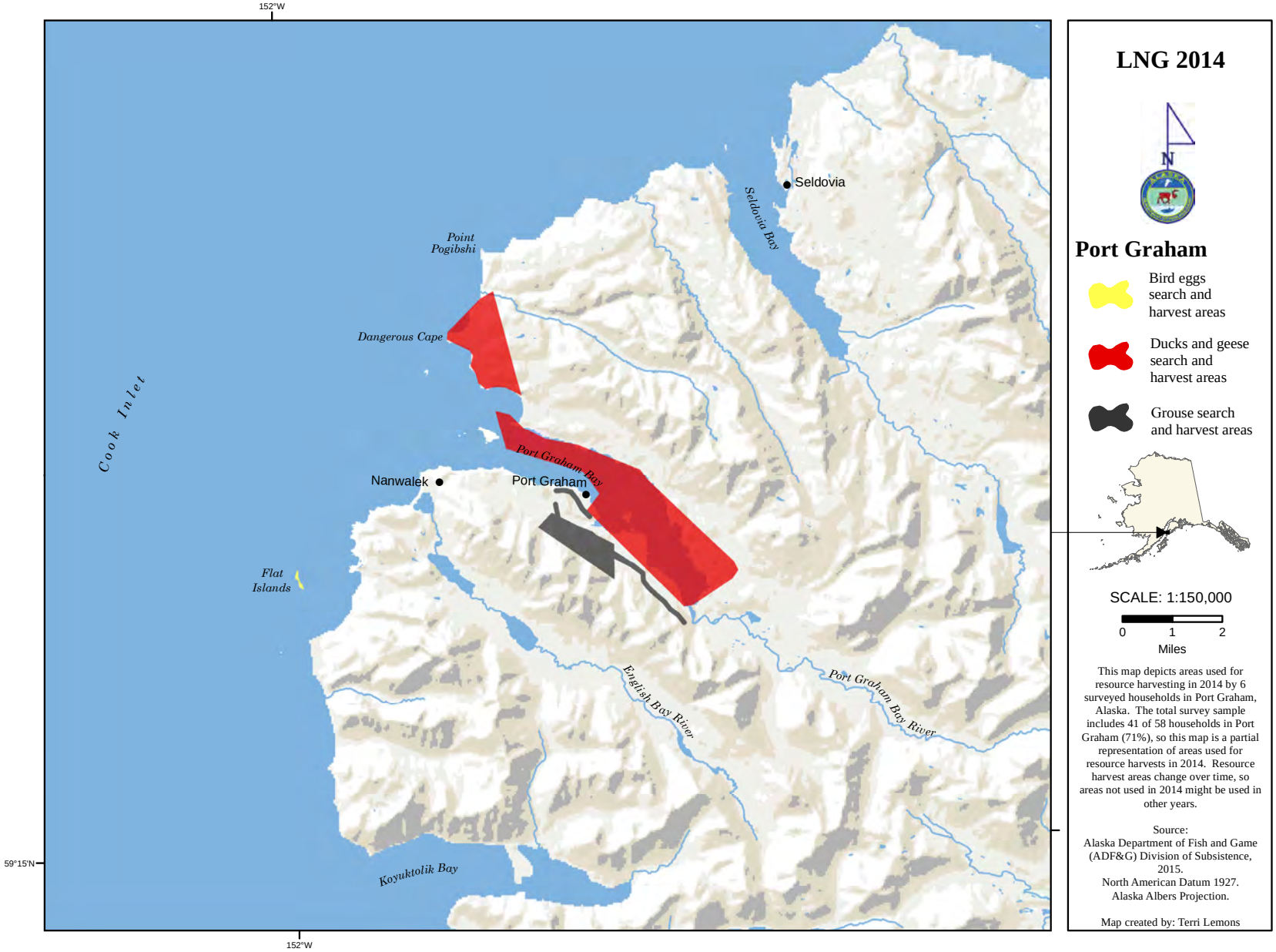
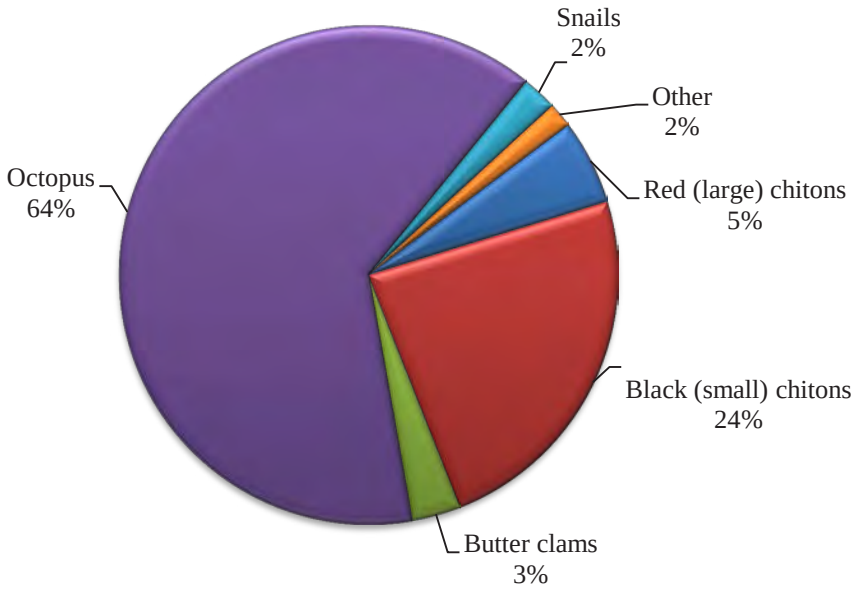


Figure 5-28.–Hunting and harvest locations of bird eggs, migratory waterfowl, and grouse, Port Graham, 2014.



Note The "other" category includes species providing less than 2% each to the total marine invertebrates harvest.

Figure 5-29.–Composition of marine invertebrates harvest in pounds usable weight, Port Graham, 2014.

octopuses were hunted by 34% of community households and successfully harvested by 27% of households, they were frequently shared with 39% of households giving some away and 56% receiving some (Table 5-12). Overall, octopuses were used by 66% of households in Port Graham, making this the second most commonly used marine invertebrate species, and 10th most used individual resource along with chum and Chinook salmon during the study period (Table 5-13).

Snails, the third most commonly used marine invertebrate species in Port Graham during the study period, were used by 39% of households (Table 5-12). In general, community households that attempted to harvest were successful since all households (24%) that attempted to get some were able to harvest snails. In comparison, 22% of households shared snails and just less than 20% of households received them. While the total harvest weight of red chitons, also locally known as “lady slippers,” was larger than that of butter clams, the clams were used by approximately 34% of Port Graham households compared to only 12% of households that used red chitons. However, more community households attempted to harvest and successfully harvested red chitons (12% each) compared to approximately 7% of households that attempted to harvest and harvested butter clams. According to project key respondents, butter clams are not abundant in the Port Graham area but a few times a year a small number of community households with bigger vessels travel to other locations in Kachemak Bay to harvest some and share with other community households. Therefore it is not surprising that a considerably larger percentage of households (29%) received butter clams than red chitons (2% of households), which are available locally. In comparison, a larger percentage of households shared red chitons (10% of households) than butter clams (7%). The noticeable difference between the percentage of community households receiving butter clams and sharing them could be a result of some households receiving the resource from outside the community, or that some of the received butter clams were further shared to additional households in the community.

Other marine invertebrate species used by households in Port Graham during the study period included razor clams (7% of households), unspecified mussels (7%), unspecified clams (5%), softshell clams (2%), rock scallops (2%), and shrimp (2%).

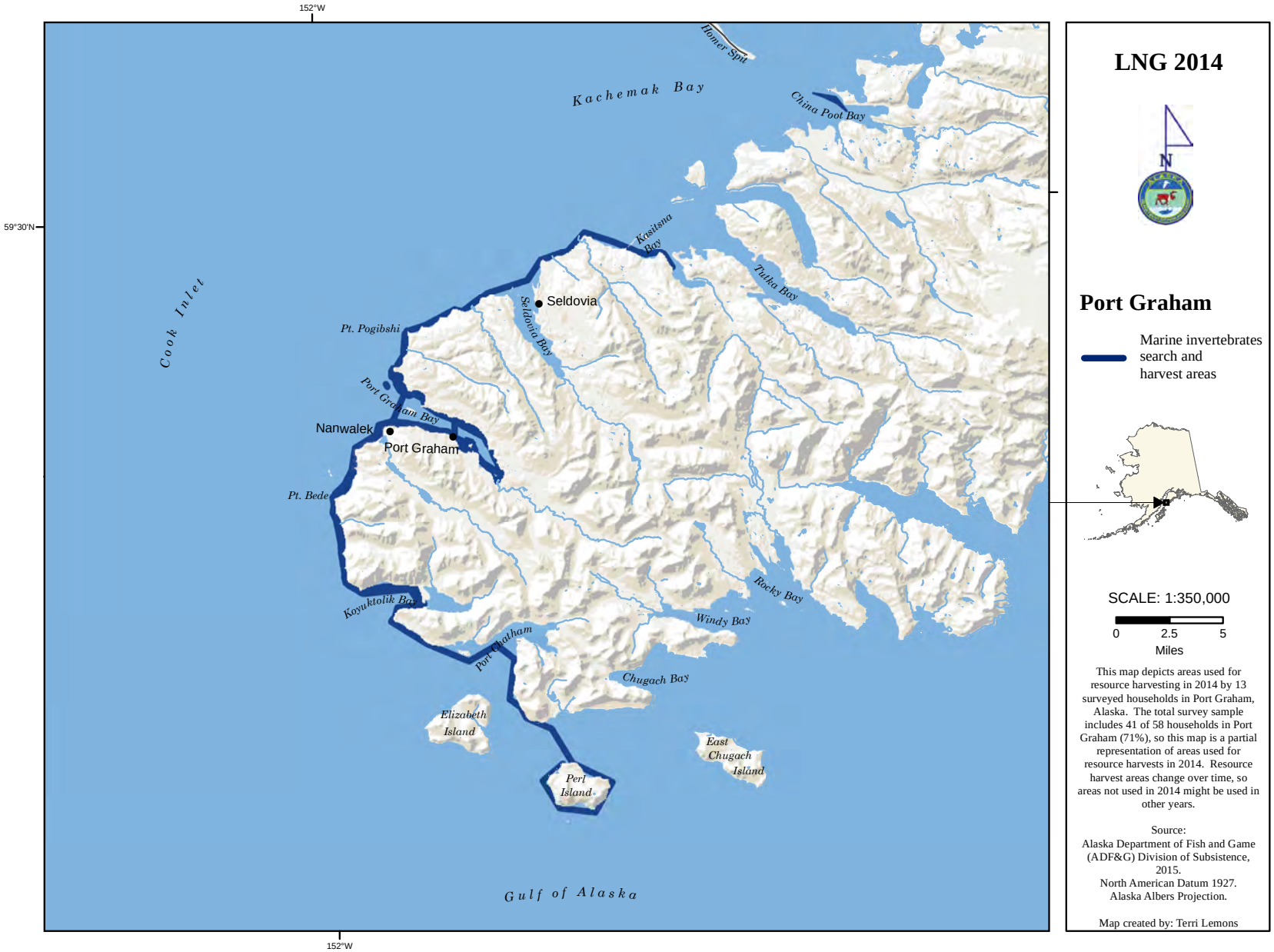
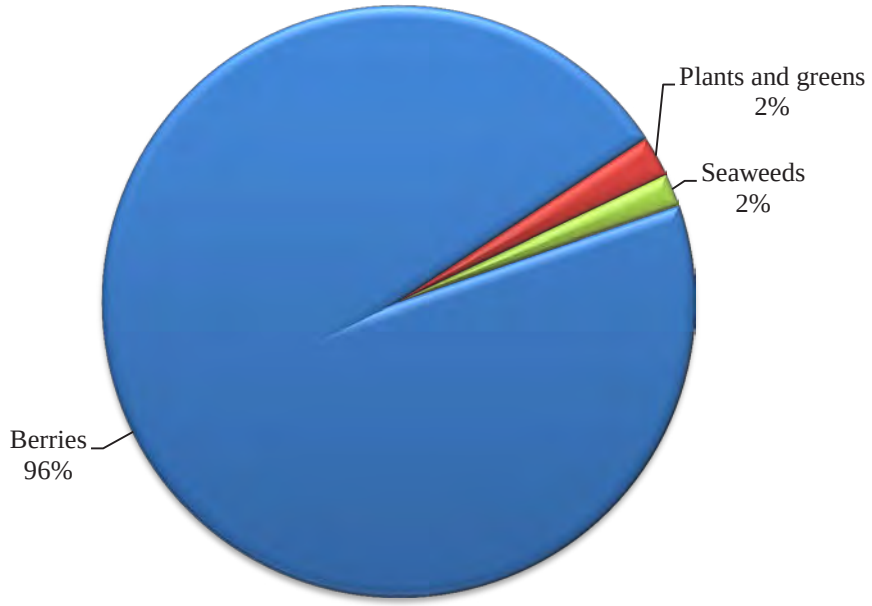


Figure 5-30.–Fishing and harvest locations of marine invertebrates, Port Graham, 2014.



Note Seaweed totals do not include amounts used for fertelizer.

Figure 5-31.–Composition of vegetation harvest by type and pounds usable weight, Port Graham, 2014.

During the study year, Port Graham households searched for and harvested marine invertebrates close to the community on the waters and shores of Port Graham Bay but also traveled notable distances from the community to obtain these resources (Figure 5-30). In 2014, additional search and harvest areas for marine invertebrates extended south along the western coast of the lower Kenai Peninsula south of the community of Nanwalek and past Point Bede into waters of Koyuktolik Bay and Port Chatham and stretching all the way around Perl Island south of Port Chatham. In comparison, the northernmost search and harvest areas were documented along the northern coast of China Poot Bay across from the Homer Spit. Additional harvest areas were documented at the mouth of Kasitsna Bay northeast of Seldovia as well as along the coast across the mouth of Seldovia Bay south past Point Pogibshi and into Port Graham Bay.

Vegetation

Vegetation is a highly harvested and utilized resource in Port Graham. In 2014, the total harvest of vegetation, including plants, berries, and seaweeds totaled 2,450 lb, or 17 lb per capita, and contributed 8% to the total wild resources harvest (Table 5-12; Figure 5-12). The majority of the harvest (96%) was composed of berries, followed by plants and greens as well as seaweeds each contributing 2% to the total vegetation harvest (Figure 5-31). Overall, Port Graham households used 17 specified species of vegetation, as well as unidentified kinds of berries, wild greens, and wood, all of which were harvested by community members (Table 5-12). Among berry species, blueberry was the most harvested species with the total harvest accounting for 1,139 lb, or 8 lb per capita. Salmonberry and highbush cranberry were the second and third most harvested vegetation resources: the salmonberry harvest totaled 937 lb (or 6 lb per capita) and the total highbush cranberry harvest was 237 lb (or 2 lb per capita). Although harvested in lesser quantity and used by fewer households in the community, a number of Port Graham households continued to harvest wild plants as well. In terms of total harvest weight, the most harvested species were yarrow, which is used as a medicinal plant, wild celery, and wild chive. During the study period, the combined harvest weight for all 3 species was 40 lb, or less than 1 lb per person. The same can also be said about seaweeds, particularly

black seaweed. In 2014, the harvest of black seaweed totaled approximately 44 lb (less than 1 lb per capita). According to survey results, no mushrooms were harvested in 2014.

In 2014, every household that attempted to harvest blueberries (76% of households), salmonberries (85%), and highbush cranberries (46%) was successful (Table 5-12). The same was also true for households attempting to harvest wild celery (24% of households), wild chives (22%), and yarrow (12%); these wild plants were, however, used in fewer community households: wild celery was used by 27% of households, wild chives by 22% of households, and yarrow by 15% of households. Black seaweed, the only harvested seaweed species in 2014, was used by 34% of households; approximately 20% of households attempted harvest, and 12% of households harvested black seaweed. Interestingly, black seaweed was the only vegetation type that fewer households were successful at harvesting compared to those attempting harvest.

Survey results indicate that vegetation resources were widely used in Port Graham during the study period since 98% of households used at least 1 type of vegetation resource and all households (95%) that attempted to harvest vegetation were successful (Table 5-12). Regarding individual species, blueberry and salmonberry were the most frequently used types of vegetation, each being used by 90% of households. These 2 species were also the most widely used individual resources in Port Graham households and shared 1st place on the list of top most used resources in 2014 (Table 5-13). In comparison, highbush cranberries were used by 61% of Port Graham households (Table 5-12). Other vegetation types used less frequently by households in Port Graham included lowbush cranberry, goose tongue, and other wild greens (7% of households using each), currant, nagoonberry, strawberry, devil's club, spruce tip, wild rose hip (5% of households using each), and fiddlehead fern as well as stinkweed and other unspecified wild berries (2% of households using each).

Regarding sharing and receiving, 63% of Port Graham households shared at least 1 vegetation resource and 83% received some during the study period (Table 5-12). The 3 most shared and received individual vegetation species were salmonberry (49% of households sharing and 32% receiving), blueberry (44% of households sharing and 39% receiving), and highbush cranberry (27% of households sharing and 24% receiving). Among wild plants, yarrow was the most frequently shared plant (10% of households sharing) but as many households received yarrow and wild celery (7% of households each). In comparison, black seaweed was shared by approximately 10% of community households and received by 29% of households. The noticeable difference between the percentage of community households receiving black seaweed and sharing some could be a result of some households receiving the resource from outside the community, or that some of the received black seaweed was further shared with additional households in the community.

The survey also included questions about community residents' harvest and use of firewood. Approximately 59% of Port Graham households used firewood while 49% harvested some (Table 5-12). An estimated 27% of community households shared firewood and 42% received some, making wood the most received vegetation resource. Respondents were also asked to describe what percentage of their household's heat came from firewood. Approximately 18% stated that all their household heat came from firewood, and 15% said that 76–99% of their household heat came from firewood (Table 1-10). Nearly 48% of community households said that they did not use any firewood for heating their home in 2014.

In 2014, Port Graham households' vegetation search and harvest areas were largely located near the community (Figure 5-32). Another large vegetation harvest area was documented southeast of the neighboring community of Nanwalek along the English Bay River drainage. The northernmost area for seeking vegetation was identified south of Dangerous Cape along the shore across the mouth of Port Graham Bay northwest of the community. Passage Island, which lies in the middle of the mouth of Port Graham Bay, was also identified as a search and harvest area for vegetation resources. In 2014, vegetation was also collected within the community itself, as well as in areas northwest and southeast of the communities.

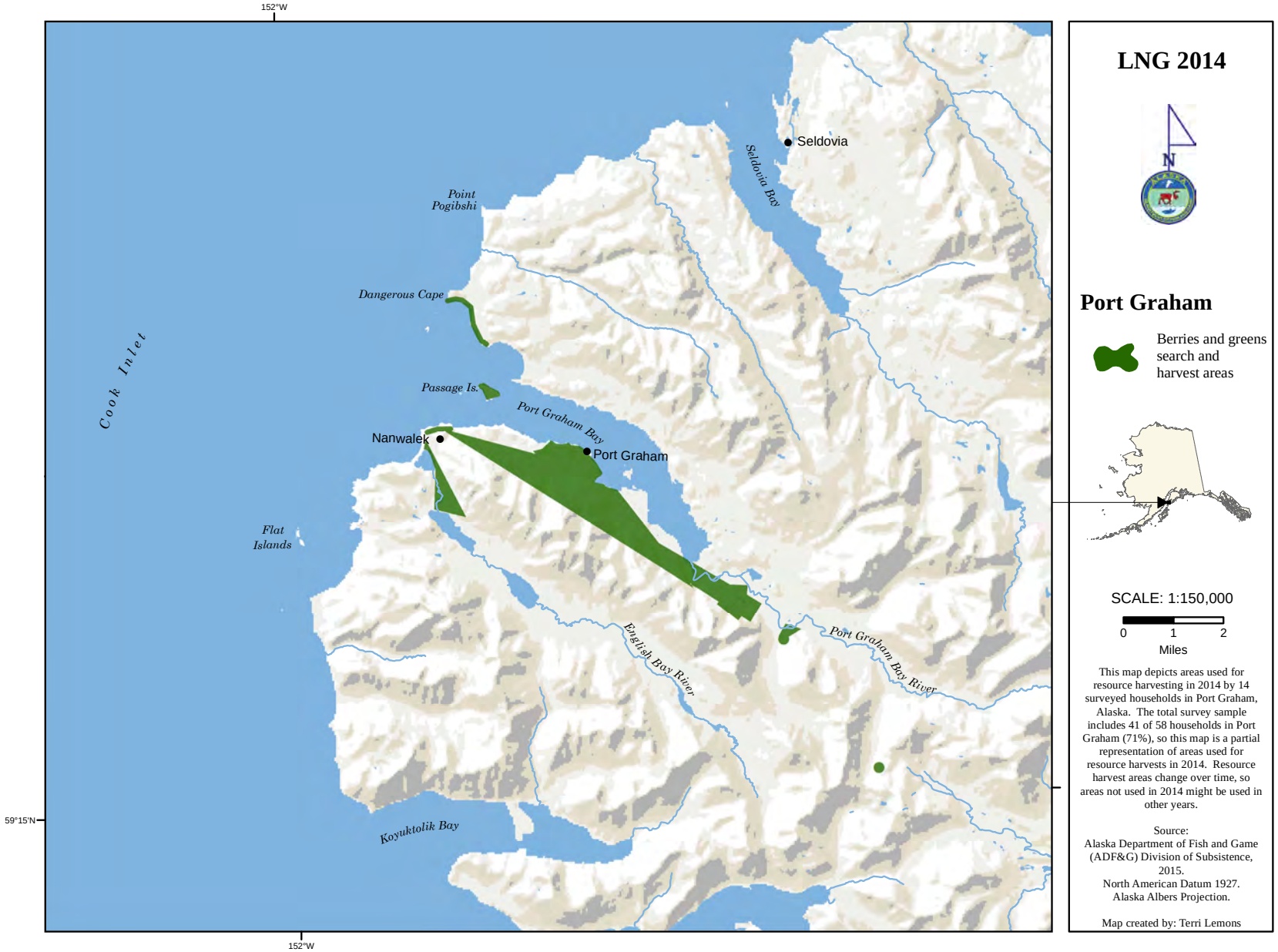


Figure 5-32.–Gathering and harvest locations of berries, plants, and greens, Port Graham, 2014.

Comparing Harvests and Uses in 2014 with Previous Years

Harvest Assessments

Researchers asked respondents to assess their own harvests in 2 ways: whether they got more, less, or about the same amount of 9 resource categories in 2014 as in the past 5 years, and whether they got "enough" of each of the 9 resource categories. Households also were asked to provide reasons if their use was different or if they were unable to get enough of a resource. If they did not get enough of a resource, they were asked to evaluate the severity of the impact to their household as a result of not getting enough. This section discusses responses to those questions.

Together, Table 5-22 and Figure 5-33 and Figure 5-34 provide a broad overview of households' assessments of their harvests in 2014. Because not everyone uses all resource categories, some households did not respond to the assessment questions. Additionally, some households that do typically use a resource category simply did not answer questions.

According to survey results, all Port Graham households used at least 1 wild resource in 2014 (Table 5-11). Taking into consideration all resource categories, 39% (or 16 households) of 41 responding households said that they had used the same amount of resources in 2014 as they had in recent years, 44% (or 18 households) reported using less, and 17% (or 7 households) reported using more (Table 5-22). When asked to assess reasons for less use, 18 responses were received, and family or personal reasons as well as diminished resource availability were the most frequently cited reasons for decreased use of all resources (8 households, or 44% of valid responses each) (Table 5-23). Other reasons for less use of all resources included less sharing (2 households, or 11% of valid responses), as well as 1 household (or 6% of valid responses) citing: lack of equipment, lack of effort, weather or environmental barriers, household members were working or had no time, household did not get enough, or household did not need as much. In comparison, when asked to assess reasons for more use of all resources, 7 responses were received, and increased harvest effort (3 households, or 43% of valid responses) and received more (2 households, or 29% of valid responses) were given as the primary reasons for increased use (Table 5-24). Other reasons for increased use included increased availability of resources, household needed more, or that store-bought alternatives were too expensive (1 household, or 14% of valid responses each).

In terms of total pounds, the harvest of salmon (50% of total pounds), nonsalmon fish (28%), and vegetation (8%) contributed the largest portions to the overall wild resource harvest in Port Graham during the study year (Figure 5-12). Looking at the use of salmon, only 1 out of 41 households reported not using salmon (Table 5-22). The majority (25 or 61%) of the sampled households said that their use was less in 2014 compared to 13 households (or 32%) that reported having used the same amount, and only 2 households (or 5%) said that they had used more salmon in 2014 (Table 5-22; Figure 5-33). For nonsalmon fish, 39 responses were received with 5 households reporting not using any nonsalmon fish. Similar to salmon, most of the responding households (16, or 41%) reported using less in 2014 compared to 15 households (or 39%) that said their use had been the same, and 3 households (or 8%) that reported using more nonsalmon fish during the study period. A total of 40 responses were received for the same questions regarding vegetation with 1 household reporting no use of these resources. Different from both salmon and nonsalmon fish, the majority (21 households, or 53%) of the 40 responding households said that they had used more compared to 13 households (or 33%) saying that they had used the same, and only 5 households (or 13%) said they had used less vegetation in 2014 than in previous years.

In other resource categories, the number of valid responses indicating use of large and small land mammals was split equally between households saying their use was the same or their use was less (13 responses, or 32% for large land mammals and 2 responses, or 5% for small land mammals) in 2014 compared to previous years (Table 5-22; Figure 5-33). Furthermore, birds was a resource category for which only slightly more households using the resources responded that their use of the resources was less in 2014 than in previous years (9 responses, or 23% for less use compared to 8 responses, or 20% for using the same amount). For marine mammals, marine invertebrates, and seaweed, most of the valid responses indicated

that Port Graham households used the same amount of resources from these resource categories during 2014 compared to previous years (Figure 5-33). Overall, the only resource category for which the majority of the valid responses indicated the level of use was more during 2014 than in recent years was vegetation.

In considering individual resource categories, the single most cited reason for less use of salmon was declined resource availability (40% of 25 responding households); the next most cited reason was family/personal reasons (16% of households) (Table 5-23). In addition, less sharing, lack of effort, and working/not having time (12% of 25 responding households each) were also commonly stated reasons for less use of salmon in 2014 compared to recent years. For nonsalmon fish, resource availability and personal reasons (25% of 16 responding households each) were the primary reasons cited for less use of these resources. For vegetation, the primary reason for using less was personal/family (60% of 5 responding households). In other resource categories, declined resource availability was identified as the primary reason for less use of small land mammals and marine invertebrates. For large land mammals and birds, declined resource availability as well as less sharing were the primary reasons for using less of these resources in study year 2014. In comparison, less sharing was the reason to which most Port Graham households attributed less use of marine mammals.

Looking at reasons to which Port Graham households attributed using more resources from individual resource categories, increased effort as well as cost of store-bought foods were the most cited reasons for increased use of salmon in 2014 (Table 5-24). In comparison, receiving more was given as the primary reason for using more nonsalmon fish, and availability of resources was cited for using more vegetation resources in 2014. For the increased use of large land mammals as well as birds, receiving more was the main reason indicated by community households. For marine mammals, receiving more as well as reasons categorized as "other" were the explanations identified for having increased the use of these resources in 2014. Furthermore, increased effort and being more successful were attributed as reasons for increased use of marine invertebrates. For increased use of small land mammals, several reasons were cited: increased availability, received more resources, and increased harvest effort. In comparison, increased resource availability was the reason Port Graham households said their use of seaweed increased during study year 2014.

The survey also asked Port Graham households to assess the impact to their household if they did not get enough wild resources in 2014. Seaweed is included within the vegetation resource category, but assessment questions were also asked specifically about seaweed use and harvest. Looking at all resources, 27% (or 11 households) said that they did not get enough resources overall in 2014 (Table 5-25). Of the 11 households that indicated that they did not get enough, 55% (or 6 households) reported the impact to their household as minor compared to 36% (or 4 households) that said it was major. No households reported the shortage as having a severe or non-noticeable impact on their household in 2014.

Looking at the 3 resource categories (salmon, nonsalmon fish, and vegetation) that contributed the most to the overall wild resource harvest composition for study year 2014, nearly the same percentage of sampled households did not have enough salmon (22%) and nonsalmon fish (27%), but fewer households did not get enough vegetation (7%) (Figure 5-34). When asked to evaluate the impact of not getting enough salmon, 11% of valid respondents (or 1 household) described it as not noticeable, 44% (or 4 households) characterized this as minor, and 44% explained that not getting enough salmon had a major effect on their household (Table 5-25). However, no households stated that the impact was severe. When asked to evaluate the impact of not getting enough nonsalmon fish, 64% of valid respondents (or 7 households) reported it was minor compared to 27% of respondents (or 3 households) who said it had a major impact on their household. As with salmon, no valid responses indicated that not getting enough nonsalmon fish had a severe impact on their household. Additionally, 1 valid response did not provide any assessment. Finally, the majority (67%) of responding households that did not have enough vegetation felt that not getting enough had a minor impact on their household compared to 33% of households (or 1 household) that felt the impact was not noticeable.

For the other resource categories, the most notable assessments were for large land mammals, marine invertebrates, and seaweed, which were the categories that had the most households that lacked enough

Table 5-22.–Changes in household uses of resources compared to recent years, Port Graham, 2014.

			Households reporting use									
	Sampled	Valid	Total households		Less		Same		More		Households not using	
Resource category	households	responses[a]	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	41	41	41	100.0%	34	82.9%	33	80.5%	25	61.0%	NA	NA
All resources	**41**	**41**	**41**	**100.0%**	**18**	**43.9%**	**16**	**39.0%**	**7**	**17.1%**	**0**	**0.0%**
Salmon	41	41	40	97.6%	25	61.0%	13	31.7%	2	4.9%	1	2.4%
Nonsalmon fish	41	39	34	87.2%	16	41.0%	15	38.5%	3	7.7%	5	12.8%
Large land mammals	41	41	29	70.7%	13	31.7%	13	31.7%	3	7.3%	12	29.3%
Small land mammals	41	40	7	17.5%	2	5.0%	2	5.0%	3	7.5%	33	82.5%
Marine mammals	41	41	31	75.6%	7	17.1%	22	53.7%	2	4.9%	10	24.4%
Birds	41	40	18	45.0%	9	22.5%	8	20.0%	1	2.5%	22	55.0%
Marine invertebrates	41	41	35	85.4%	14	34.1%	17	41.5%	4	9.8%	6	14.6%
Vegetation	41	40	39	97.5%	5	12.5%	13	32.5%	21	52.5%	1	2.5%
Seaweed	41	41	19	46.3%	7	17.1%	11	26.8%	1	2.4%	22	53.7%

Source ADF&G Division of Subsistence household surveys, 2015.

Note "NA" indicates that there is not applicable data.

a. Valid responses do not include households that did not provide any response.

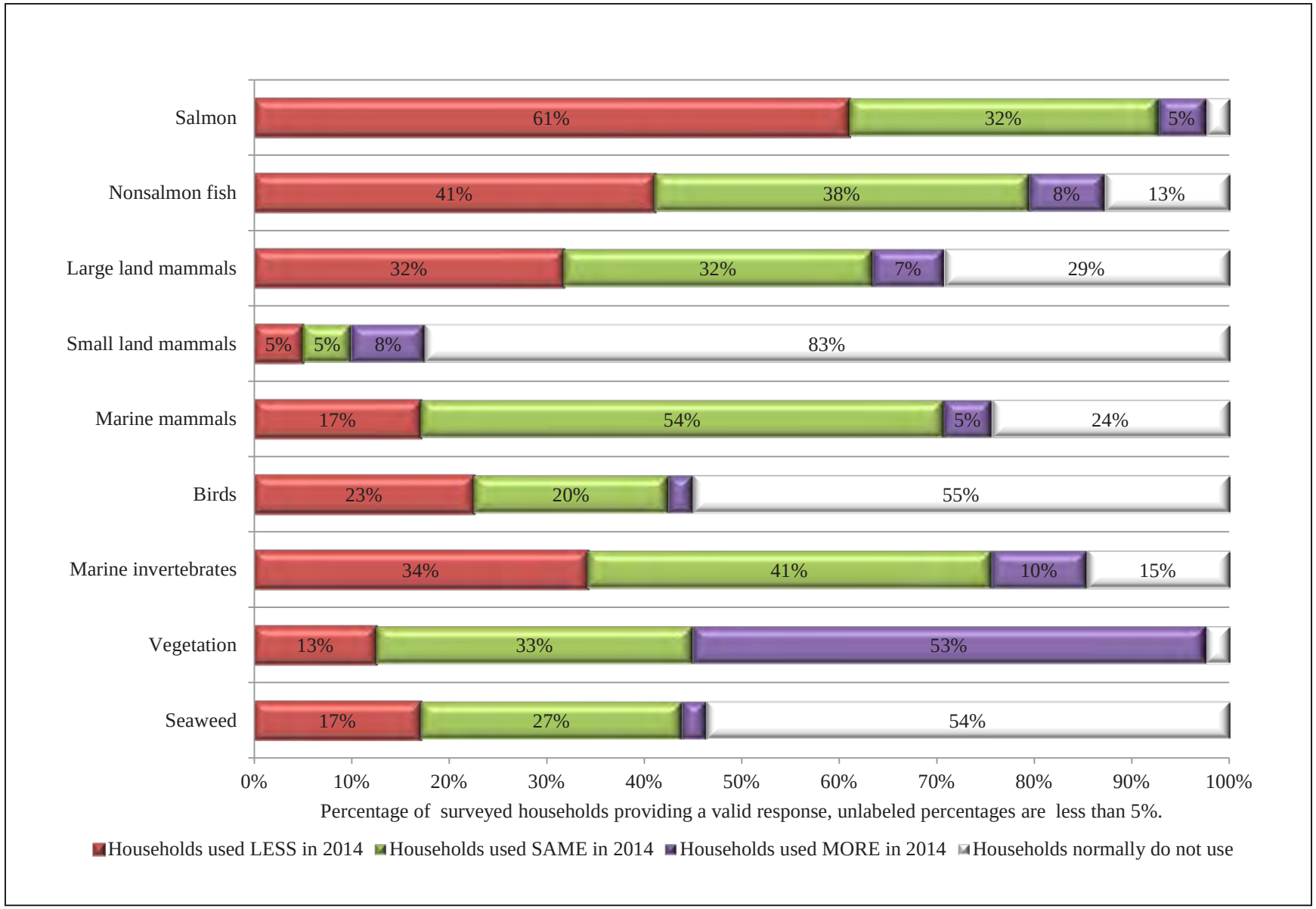


Figure 5-33.–Changes in household uses of resources compared to recent years, Port Graham, 2014.

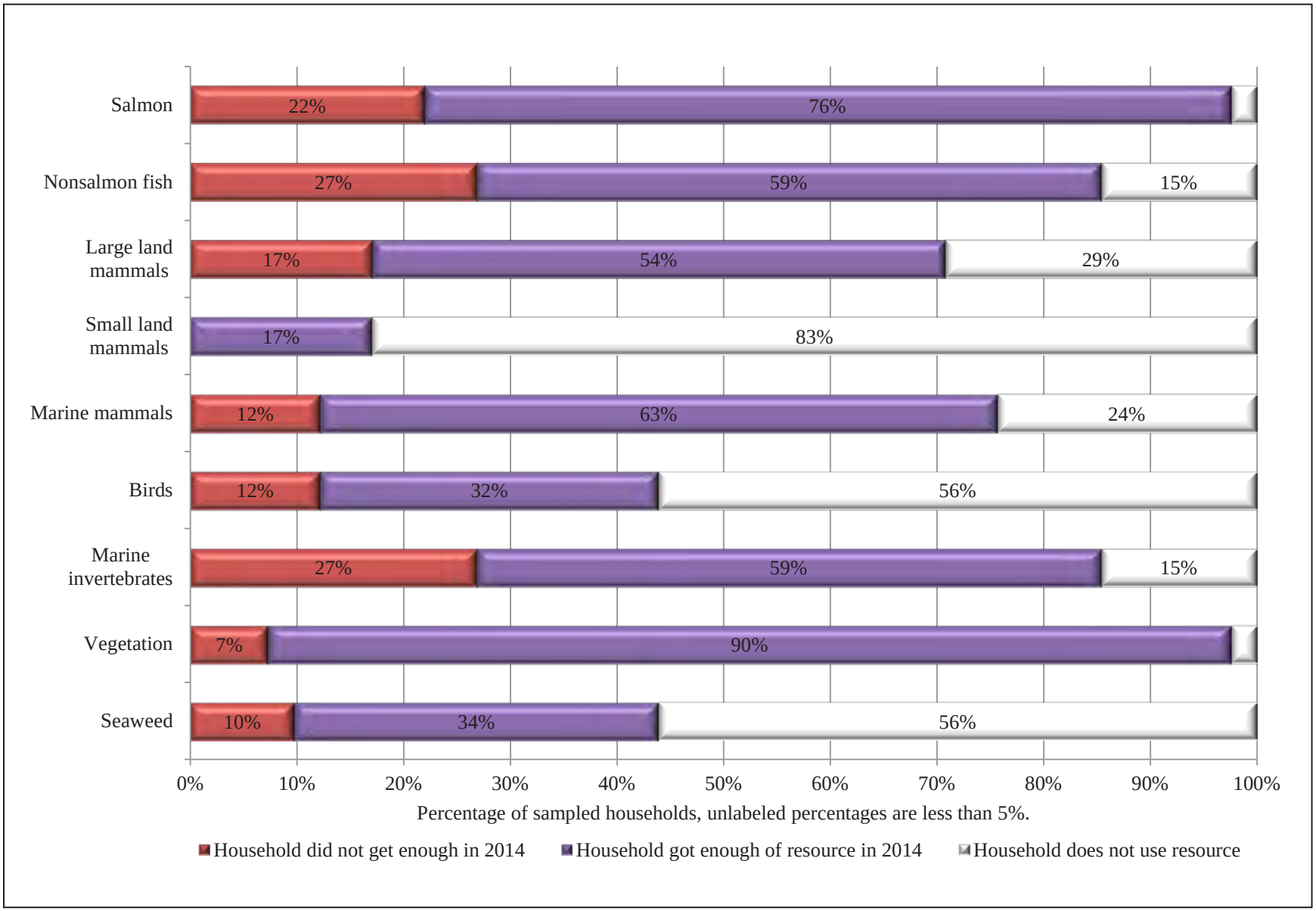


Figure 5-34.–Percentage of sampled households reporting whether they had enough resources, by resource category, Port Graham, 2014.

Table 5-23.–Reasons for less household uses of resources compared to recent years, Port Graham, 2014.

Resource category	Valid responses[a]	Households reporting reasons for less use	Family/ personal		Resources less available		Too far to travel		Lack of equipment		Less sharing		Lack of effort	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	41	34	11	32.4%	17	50.0%	0	0.0%	2	5.9%	14	41.2%	8	23.5%
All resources	**41**	**18**	**8**	**44.4%**	**8**	**44.4%**	**0**	**0.0%**	**1**	**5.6%**	**2**	**11.1%**	**1**	**5.6%**
Salmon	41	25	4	16.0%	10	40.0%	0	0.0%	0	0.0%	3	12.0%	3	12.0%
Nonsalmon fish	39	16	4	25.0%	4	25.0%	0	0.0%	1	6.3%	2	12.5%	2	12.5%
Large land mammals	41	13	1	7.7%	3	23.1%	0	0.0%	0	0.0%	3	23.1%	0	0.0%
Small land mammals	40	2	0	0.0%	2	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	41	7	0	0.0%	2	28.6%	0	0.0%	0	0.0%	5	71.4%	0	0.0%
Birds	40	9	1	11.1%	3	33.3%	0	0.0%	0	0.0%	3	33.3%	2	22.2%
Marine invertebrates	41	14	4	28.6%	6	42.9%	0	0.0%	0	0.0%	2	14.3%	1	7.1%
Vegetation	40	5	3	60.0%	1	20.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Seaweed	41	7	2	28.6%	0	0.0%	0	0.0%	0	0.0%	1	14.3%	1	14.3%

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Table 5-23.–Continued.

Resource category	Valid responses[a]	Households reporting reasons for less use	Unsuccessful		Weather/ environment		Other reasons		Working/ no time		Regulations		Small/ diseased animals	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	41	34	4	11.8%	3	8.8%	4	11.8%	6	17.6%	2	5.9%	1	2.9%
All resources	**41**	**18**	**0**	**0.0%**	**1**	**5.6%**	**1**	**5.6%**	**1**	**5.6%**	**0**	**0.0%**	**0**	**0.0%**
Salmon	41	25	1	4.0%	0	0.0%	2	8.0%	3	12.0%	0	0.0%	0	0.0%
Nonsalmon fish	39	16	1	6.3%	0	0.0%	1	6.3%	2	12.5%	0	0.0%	0	0.0%
Large land mammals	41	13	2	15.4%	1	7.7%	1	7.7%	0	0.0%	2	15.4%	1	7.7%
Small land mammals	40	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	41	7	0	0.0%	1	14.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Birds	40	9	0	0.0%	1	11.1%	0	0.0%	1	11.1%	1	11.1%	0	0.0%
Marine invertebrates	41	14	0	0.0%	1	7.1%	0	0.0%	1	7.1%	0	0.0%	0	0.0%
Vegetation	40	5	0	0.0%	0	0.0%	1	20.0%	0	0.0%	0	0.0%	0	0.0%
Seaweed	41	7	0	0.0%	1	14.3%	0	0.0%	2	28.6%	0	0.0%	0	0.0%

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Table 5-23.–Page 2 of 2.

Resource category	Valid responses[a]	Households reporting reasons for less use	Did not get enough		Did not need		Competition		Equipment/ fuel expense		Used other resources	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	41	34	1	2.9%	3	8.8%	0	0.0%	0	0.0%	1	2.9%
All resources	**41**	18	**1**	**5.6%**	**1**	**5.6%**	0	0.0%	**0**	**0.0%**	**0**	**0.0%**
Salmon	41	25	0	0.0%	2	8.0%	0	0.0%	0	0.0%	1	4.0%
Nonsalmon fish	39	16	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Large land mammals	41	13	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	40	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	41	7	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Birds	40	9	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	41	14	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	40	5	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Seaweed	41	7	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2015.

a. Valid responses do not include households that did not provide any response and households reporting never using the resource.

Table 5-24.–Reasons for more household uses of resources compared to recent years, Port Graham, 2014.

Resource category	Valid responses[a]	Households reporting reasons for more use	Increased availability		Used other resources		Favorable weather		Received more		Needed more		Increased effort		Had more help	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	41	25	12	48.0%	0	0.0%	2	8.0%	8	32.0%	1	4.0%	7	28.0%	0	0.0%
All resources	**41**	**7**	**1**	**14.3%**	**0**	**0.0%**	**0**	**0.0%**	**2**	**28.6%**	**1**	**14.3%**	**3**	**42.9%**	**0**	**0.0%**
Salmon	41	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	50.0%	0	0.0%
Nonsalmon fish	39	3	0	0.0%	0	0.0%	0	0.0%	2	66.7%	0	0.0%	0	0.0%	0	0.0%
Large land mammals	41	3	0	0.0%	0	0.0%	0	0.0%	3	100.0%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	40	3	1	33.3%	0	0.0%	0	0.0%	1	33.3%	0	0.0%	1	33.3%	0	0.0%
Marine mammals	41	2	0	0.0%	0	0.0%	0	0.0%	1	50.0%	0	0.0%	0	0.0%	0	0.0%
Birds	40	1	0	0.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	41	4	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	2	50.0%	0	0.0%
Vegetation	40	19	11	57.9%	0	0.0%	2	10.5%	1	5.3%	1	5.3%	4	21.1%	0	0.0%
Seaweed	41	1	1	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

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Table 5-24.–Continued.

Resource category	Valid responses[a]	Households reporting reasons for more use	Other		Regulations		Traveled farther		More success		Needed less		Store-bought expense		Got/ fixed equipment	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	41	25	2	8.0%	0	0.0%	0	0.0%	2	8.0%	0	0.0%	1	4.0%	0	0.0%
All resources	**41**	**7**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**1**	**14.3%**	**0**	**0.0%**
Salmon	41	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	50.0%	0	0.0%
Nonsalmon fish	39	3	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	33.3%	0	0.0%
Large land mammals	41	3	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	40	3	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	41	2	1	50.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Birds	40	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	41	4	0	0.0%	0	0.0%	0	0.0%	2	50.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	40	19	1	5.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Seaweed	41	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2015.

a. Valid responses do not include households that did not provide any response and households reporting never using the resource.

Table 5-25.–Reported impact to households reporting that they did not get enough of a type of resource, Port Graham, 2014.

		Households not getting enough _____ .				Impact to those not getting enough _____ .									
	Sample	Valid responses[a]		Did not get enough		No response		Not noticeable		Minor		Major		Severe	
Resource category	households	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
All resources	**41**	**41**	**100.0%**	**11**	**26.8%**	**0**	**0.0%**	**1**	**9.1%**	**6**	**54.5%**	**4**	**36.4%**	**0**	**0.0%**
Salmon	41	40	97.6%	9	22.5%	0	0.0%	1	11.1%	4	44.4%	4	44.4%	0	0.0%
Nonsalmon fish	41	35	85.4%	11	31.4%	1	9.1%	0	0.0%	7	63.6%	3	27.3%	0	0.0%
Large land mammals	41	29	70.7%	7	24.1%	0	0.0%	0	0.0%	3	42.9%	3	42.9%	1	14.3%
Small land mammals	41	7	17.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	41	31	75.6%	5	16.1%	1	20.0%	0	0.0%	4	80.0%	0	0.0%	0	0.0%
Birds	41	18	43.9%	5	27.8%	0	0.0%	1	20.0%	4	80.0%	0	0.0%	0	0.0%
Marine invertebrates	41	35	85.4%	11	31.4%	1	9.1%	2	18.2%	6	54.5%	2	18.2%	0	0.0%
Vegetation	41	40	97.6%	3	7.5%	0	0.0%	1	33.3%	2	66.7%	0	0.0%	0	0.0%
Seaweed	41	18	43.9%	4	22.2%	0	0.0%	0	0.0%	2	50.0%	0	0.0%	2	50.0%

Source ADF&G Division of Subsistence household surveys, 2015.

a. Includes households failing to respond to the question and those households that never used the resource.

of these resources and provided an assessment citing that a shortage caused a major or severe impact for their household (Table 5-25). For large land mammals, 7 households (or 24%) reported that they did not get enough in 2014. Of these responses, 3 households (or 43%) noted the impact as minor and 3 households as major. In addition, 1 household noted that the impact from not having enough large land mammals was severe. In comparison, 11 households (or 31%) reported that they did not get enough marine invertebrates in 2014. For 2 households, the lack of resources was not noticeable, and for 6 households, the impact of not getting enough was minor, while 2 households reported the impact as major. Another notable assessment was a lack of seaweed as indicated by 4 households (or 22%) that did not get enough in 2014. Two of the 4 households noted that the impact was minor while the other 2 households said that the impact was severe. Overall, seaweed and large land mammals were the only categories for which a few Port Graham households reported that not having enough resources had a severe impact.

The survey also asked respondents to identify of which resources they needed more during the study year. Table 5-26 shows that Pacific halibut and moose were the single most commonly identified resources needed by 27% and 22% of Port Graham households, respectively. Regarding individual salmon species, Chinook salmon was the most needed species in Port Graham households (15% of households needing more) followed by sockeye salmon (12% of households needing more). Black chitons were also needed by 12% of community households. Furthermore, approximately 10% of households reported needing black seaweed, red chitons, and salmon in general. It is worth noting that the majority of the resources that Port Graham households needed more of are available in the marine environment. In addition, between 2% and 7% of Port Graham households needed a variety of individual resources as well as resources from general categories such as fish or marine invertebrates. Only 1 community household reported needing more of all resources.

Table 5-26.–Resources that households reported needing, Port Graham, 2014.

Resource	Households needing	Percentage of households
All resources	1	2.4%
Fish	1	2.4%
Salmon	4	9.8%
Coho salmon	3	7.3%
Chinook salmon	6	14.6%
Pink salmon	1	2.4%
Sockeye salmon	5	12.2%
Salmon roe	1	2.4%
Pacific herring roe	1	2.4%
Pacific tomcod	1	2.4%
Flounder	1	2.4%
Pacific halibut	11	26.8%
Black bear	3	7.3%
Mountain goat	1	2.4%
Moose	9	22.0%
Seal	2	4.9%
Harbor seal	3	7.3%
Ducks	2	4.9%
Mallard	1	2.4%
Merganser	1	2.4%
Loon	1	2.4%
Spruce grouse	1	2.4%
Gull eggs	2	4.9%
Marine invertebrates	1	2.4%
Chitons (bidarkis, gumboots)	2	4.9%
Red (large) chitons	4	9.8%
Black (small) chitons	5	12.2%
Clams	3	7.3%
Butter clams	1	2.4%
Razor clams	1	2.4%
Crabs	1	2.4%
Octopus	2	4.9%
Shrimp	1	2.4%
Snails	1	2.4%
Berries	1	2.4%
Blueberry	1	2.4%
Highbush cranberry	2	4.9%
Salmonberry	1	2.4%
Devil's club	1	2.4%
Hudson's Bay (Labrador) tea	1	2.4%
Black seaweed	4	9.8%

Source ADF&G Division of Subsistence household surveys, 2015.

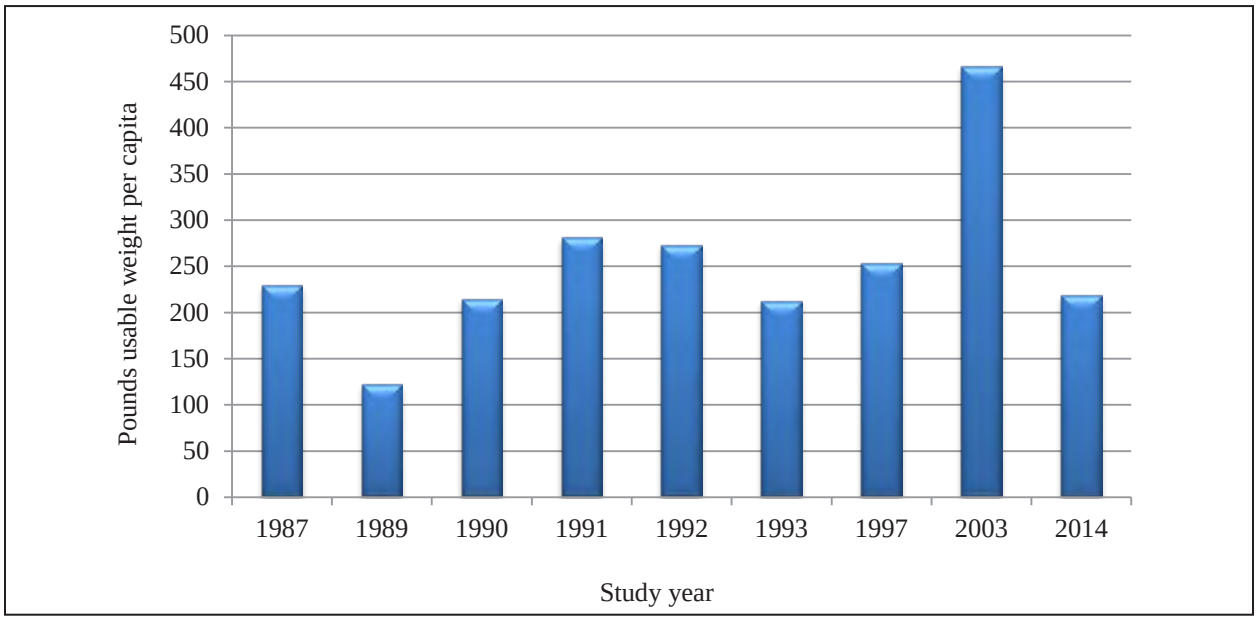

Figure 5-35.–Estimated per capita harvests in pounds usable weight, Port Graham, 1987, 1989, 1990, 1991, 1992, 1993, 1997, 2003, and 2014.

Harvest Data

Changes in the harvest of resources by Port Graham residents can also be discerned through comparisons with findings from other study years in which comprehensive harvest surveys were conducted in Port Graham. Comprehensive harvest surveys were conducted in Port Graham in 1987, 1989, 1990, 1991, 1992, 1993, 1997, 2003, and 2014. In addition to the 2014 survey results, marine mammal harvests were estimated for all years from 1987–2008—except for 1988 and 1999—as part of a comprehensive subsistence survey or targeted marine mammal survey.[13]

Comparing the harvests of all wild resources at the total pounds harvested per capita level shows that during 1987–2014 the overall harvest of wild resources in Port Graham has remained within a 70 lb range with 2 notable exceptions (Figure 5-35). The first exception was the low harvest of study period 1989, the year when the EVOS occurred and the per capita harvest dropped to an all-time low of 122 lb per capita from 229 lb per capita estimated in 1987 (Table 5-27). The second exception took place in 2003, when the area saw a very strong sockeye salmon return to English Bay River lakes (Hammarstrom and Dickson 2004), bringing the per capita harvest up to an all-time high of 466 lb per capita compared to the estimated 253 lb per capita harvested in 1997. Study results from the 2014 survey show that the per capita harvest declined back to approximately 218 lb in 2014 compared to the previously estimated all-time high of 466 lb in 2003. Comparing the 2003 and 2014 survey results shows that in 2014 there was a substantial drop in the per capita harvest of salmon and nonsalmon fish species, as well as marine mammals, which likely brought down the overall per capita harvest as well (Figure 5-36).

While the per capita harvest amounts have fluctuated since the oil spill, change in harvest patterns may also be identified from changes in harvest composition. Table 5-28 reports the historical harvest composition

13. Results for both comprehensive and marine mammal subsistence harvest surveys are available in the CSIS. The survey months for each study year are noted in the CSIS project year "Methods" section. Additionally, comprehensive subsistence survey results are reported in: Fall (1997, 2006) for study years 1990 and 2003; and Fall and Utermohle (1995, 1999) for study years 1991, 1992, 1993, and 1997. Marine mammal harvest survey results are reported in: Wolfe and Mishler (1995, 1996, 1997, 1998) for study years 1994, 1995, 1996, and 1997; Wolfe and Hutchinson-Scarbrough (1999) for study year 1998; Wolfe (2001) for study year 2000; and in Wolfe et al. (2002, 2003, 2004, 2005, 2006, 2008, 2009a–b) for study years 2001, 2002, 2003, 2004, 2005, 2006, 2007, and 2008.

Table 5-27.–Estimated per capita harvests in pounds usable weight by resource category, Port Graham, 1987, 1989, 1990, 1991, 1992, 1993, 1997, 2003, and 2014.

Resource category	1987	1989	1990	1991	1992	1993	1997	2003	2014
Salmon	96.4	39.9	95.0	132.6	106.8	97.4	144.2	264.4	107.5
Nonsalmon fish	78.3	59.7	92.8	99.7	108.6	72.8	75.5	150.4	63.3
Land mammals	5.4	0.4	1.5	3.3	4.1	4.1	1.4	11.8	11.2
Marine mammals	13.1	8.9	3.3	14.7	16.9	8.7	9.3	17.4	7.8
Birds and eggs	3.2	2.0	1.1	1.8	1.7	0.7	1.2	1.3	0.7
Marine invertebrates	16.7	8.6	14.5	21.6	23.9	16.0	12.8	12.0	11.3
Vegetation	15.8	2.8	5.7	7.3	10.7	12.7	9.0	9.1	16.5
All resources	**228.8**	**122.2**	**214.0**	**280.9**	**272.7**	**212.3**	**253.4**	**466.3**	**218.3**

Sources Community Subsistence Information System (CSIS) for 1987, 1989–1993, 1997, and 2003 data; ADF&G Division of Subsistence household surveys, 2015, for 2014 data.

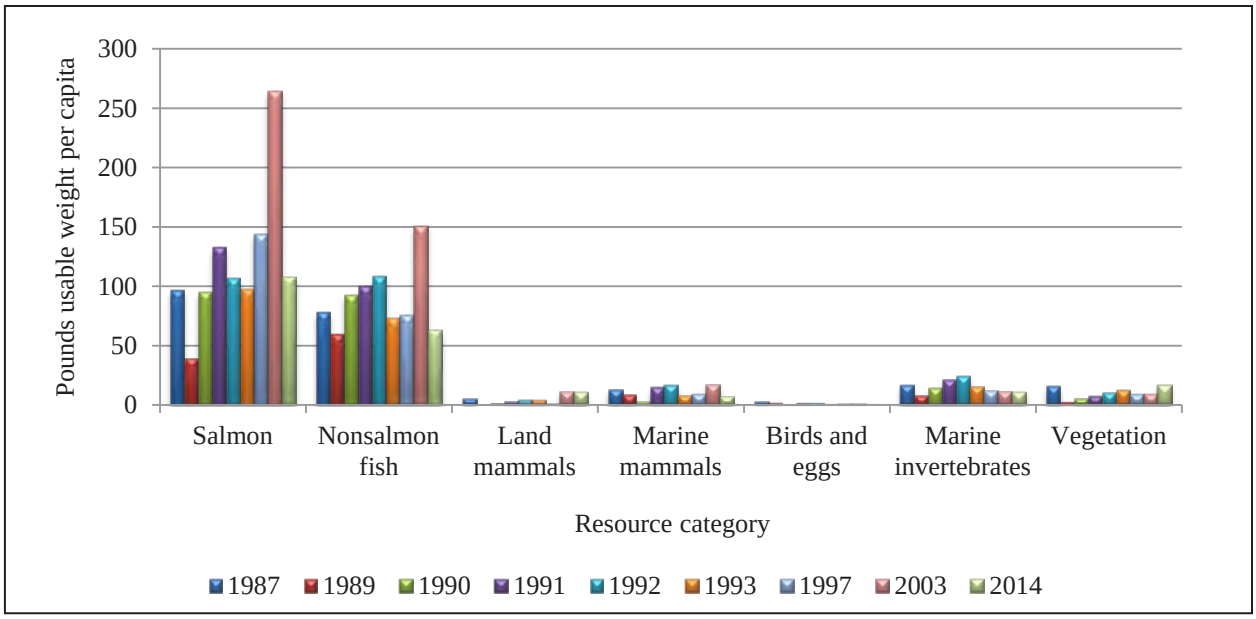

Figure 5-36.–Estimated per capita harvests in pounds usable weight by resource category, Port Graham, 1987, 1989, 1990, 1991, 1992, 1993, 1997, 2003, and 2014.

Table 5-28.–Comparison of harvest composition by resource category, Port Graham, 1987, 1989, 1990, 1991, 1992, 1993, 1997, 2003, and 2014.

Resource category	1987	1989	1990	1991	1992	1993	1997	2003	2014
Salmon	42.1%	32.6%	44.4%	47.2%	39.2%	45.9%	56.9%	56.7%	49.3%
Nonsalmon fish	34.2%	48.9%	43.4%	35.5%	39.8%	34.3%	29.8%	32.2%	29.0%
Land mammals	2.4%	0.3%	0.7%	1.2%	1.5%	1.9%	0.6%	2.5%	5.1%
Marine mammals	5.7%	7.3%	1.5%	5.2%	6.2%	4.1%	3.7%	3.7%	3.6%
Birds and eggs	1.4%	1.6%	0.5%	0.6%	0.6%	0.3%	0.5%	0.3%	0.3%
Marine invertebrates	7.3%	7.0%	6.8%	7.7%	8.8%	7.5%	5.0%	2.6%	5.2%
Vegetation	6.9%	2.3%	2.7%	2.6%	3.9%	6.0%	3.5%	2.0%	7.6%

Sources Community Subsistence Information System (CSIS) for 1987, 1989–1993, 1997, and 2003 data; ADF&G Division of Subsistence household surveys, 2015, for 2014 data.

for Port Graham during 1987–2014. The table shows that the community's reliance on resources from key resource categories (salmon, nonsalmon fish, marine invertebrates, and marine mammals) has remained stable. Disregarding the 1989 oil spill year, salmon harvests made up between 39–57% of the total harvest in all study years (Table 5-28). In terms of per capita harvest, with the exception of 1989 and 2003 (when the sockeye salmon runs were exceptionally good), salmon harvests have ranged from 95–144 lb per capita during the study years. In 2014, salmon made up 49% of the total harvest, averaging 108 lb per capita, falling within the historical range. Overall, salmon harvests have increased since the oil spill in 1989 and have returned to, or exceed, pre-spill levels.

Nonsalmon fish continue to make up another significant percentage of the harvest, making up 30–49% of the total wild resource harvest during 1987–2003 (Table 5-28). Since the first harvest assessment in 1987, and again disregarding the oil spill year of 1989, nonsalmon fish have contributed between 73 lb and 150 lb per capita to the community total wild resource harvest (Table 5-27). In the years following the oil spill, nonsalmon fish harvest levels retuned to, and in some years exceeded, pre-spill estimates. The study year with the highest estimated nonsalmon fish harvest thus far is 2003, when Port Graham households harvested an estimated 150 lb of nonsalmon fish per capita. One explanation for the large nonsalmon fish harvest in 2003 could be that this was the first year when the federal subsistence Pacific halibut fishing regulations were in effect. Under these new regulations, eligible Alaska Native tribe members and rural Alaska community residents with a Subsistence Halibut Registration Certificate (also known as SHARC) could harvest Pacific halibut with setline gear (longlines and skates) as well as with hand-operated gear (hook and line and hook and rod) with increased number of allowable hooks than previously allowed, and a larger daily harvest limit than previously allowed (Fall et al. 2004). At the per capita level, the estimated harvest of Pacific halibut in 2003 totaled 102 lb compared to approximately 41 lb in 2014 (CSIS; Table 5-12). In 2014, the percentage of the community's total harvest represented by nonsalmon fish decreased to 29%, an all-time low accompanied by an all-time low per capita harvest since 1989 of 63 lb. An explanation for the decline in harvest could be the decade-long decline in the size and abundance of Pacific halibut in the North Pacific (Stewart and Martell [*n.d.*]).

The harvests of marine mammals and marine invertebrates by Port Graham households have also varied in the years following the oil spill (Figure 5-36). The all-time low per capita harvest for marine mammals took place during the 1990 assessment year, which was immediately after the oil spill (Table 5-27). Between 1990 and 2014, the estimated per capita harvest levels of marine mammals exceeded the pre-spill (1987) measurement of approximately 13 lb per capita harvested in 1991, and has since fluctuated from an all-time high of 17 lb in 2003 to a low estimate of 8 lb in 2014 (Figure 5-36; Table 5-28). However, at the same time, the total harvest of marine mammals by Port Graham households has continued to contribute an estimated 4% to the community's overall wild resource harvest during the last 4 study years (1993, 1997, 2003 and 2014). In comparison, after the oil spill, the contribution of marine invertebrates to the community's overall wild resource harvest during the last 4 study years has declined from 8% in 1993 to 5% in 2014 (Table 5-28). Interestingly, the proportion of the harvest made of marine invertebrates was up in 2014 compared

to 2003, when marine invertebrates made up only 3% of the community's total resource harvest. Overall, the 2014 per capita harvest of marine invertebrates was very similar to values estimated during study years 1997 and 2003 (Figure 5-36).

Study results indicate that during 1987–2003, the harvest of land mammals has made up less than 1% and up to 3% of the total wild resource harvest (Table 5-28). During the same time period, in terms of per capita harvest, land mammal harvests varied from less than 1 lb to 12 lb per capita. Between the 1997 and 2003 assessments, the land mammal harvest proportion of the total harvest and per capita harvest substantially increased, and this appears to have been maintained in the 2014 harvest assessment (Table 5-28; Table 5-27). In 1997, land mammals made up less than 1% of the community's total harvest, increasing to 3% in 2003 and to 5% in 2014. In terms of pounds per capita harvested, the land mammal harvest produced slightly more than 1 lb per capita in 1997, increasing to 12 lb per capita in 2003, and was 11 lb per capita in 2014. This increase in the land mammal harvest, which is predominately composed of large land mammal species, seemingly offsets the decline in the nonsalmon fish harvest when comparing 1997 to 2014, and keeps the community's total wild resource harvest amount relatively steady.

Historically, the harvests of birds and eggs have contributed a very small portion to the total wild resource harvest by Port Graham households (Table 5-28). During 1987–2014, the harvest of birds and eggs has made up less than 1% and up to 2% of the total harvest weight. The per capita harvest of these resources has remained very low over time (Table 5-27). For study years 1990 through 2014, the per capita harvests of birds and eggs have not exceeded 2 lb per capita, thus never meeting the pre-spill measurement of approximately 3 lb per capita. In comparison, the harvests of vegetation resources have contributed between 2% and up to 8% of the community's total annual harvest weight during 1987–2014 (Table 5-28). Interestingly, both the total proportion and per capita harvest of vegetation resources in 2014 are the highest amounts thus far estimated for the community (exceeding even the pre-spill measurement) (Table 5-28; Table 5-27). During the survey effort, community residents commented that 2014 was a very good berry year compared to the past 5 years.

Individual participation in the harvesting and processing of wild resources by Port Graham residents has remained relatively stable when compared to estimated participation levels from previous years. While it is not possible to directly compare individual participation in harvesting activities for all the different resource categories included in the 2014 study due to differences in data categorization in previous studies, the level of resident participation in harvesting and processing any wild resources has remained very high (approximately 82% or higher) in all study years (Table 5-10) (Fall 2006:124; Fall and Utermohle 1999:27). This indicates that most Port Graham residents continue to engage in wild resource harvesting in some way. This trend is different from the neighboring community of Nanwalek, where the level of resident participation in resource use activities has been declining.

As mentioned previously, additional analysis beyond what was done for other Alaska LNG study communities is available for the EVOS-affected communities of Port Graham and Nanwalek; as part of the ongoing effort to evaluate the status of subsistence resources since the oil spill in these communities, additional use characteristics results are presented. An additional measurement of changes in wild resource use patterns is the average number of resources used per household during the study year. This measurement can be used to better understand changes in the breadth of households' diet in a community. Figure 5-37 displays the average number of wild resources used per Port Graham household prior to the oil spill as well during all the study years, including 2014. The study findings for 2014 are slightly lower than in 2003 but similar to previous findings in 1990 and 1997. However, in 2014, the average number of resources used per household in Port Graham continued to be lower than the pre-spill average, which has been the case since 1993. Another way to measure diet breadth is the number of specific resources used by 50% or more community households. Figure 5-38 presents the 26 most commonly used resources in Port Graham households in 2003 and 2014. In 2003, a total of 13 resources were used by 50% or more Port Graham households. In 2014, this number had declined to a total of 10 resources. While the decline is noticeable, it is also important to note that the levels of use for many individual resources are very similar in both years. Furthermore, a few resources (Pacific tomcod and grouse) were used by more households in 2014 than in

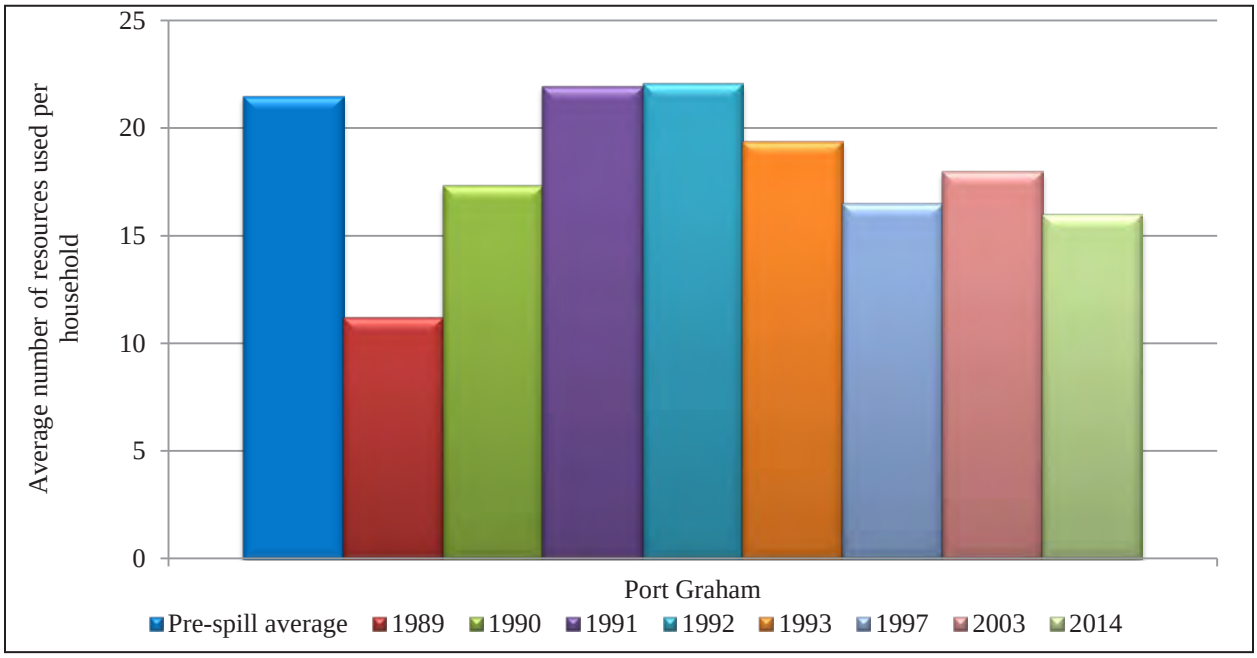

Figure 5-37.–Average number of resources used per household, Port Graham, pre-spill average, 1989, 1990, 1991, 1992, 1993, 1997, 2003, and 2014.

2003. Also, some of the decline in use for certain resources can be explained by decreased availability of the resource. For example, community residents commented that Chinook salmon abundance has been lower for the past 10 years or so. Other resources that have not been as abundant for several decades are Pacific herring and clams. The Pacific herring decline is often related to effects of the oil spill, but according to local residents, the clam beds in the Port Graham Bay had already been damaged in the early 1960s after the Good Friday earthquake.

While the reasons for changes in wild resource harvest and use patterns are complex and can vary from one year to the next, overall the 2014 wild resource harvest falls in line with previously recorded estimates for Port Graham. Resident participation in harvesting activities has declined in some resource categories but overall has remained stable between 2003 and 2014 (Fall 2006). Furthermore, there continues to be breadth in the variety of species harvested by community households. Additional years of data collection could assist in understanding the reasons for changes in the use of certain individual resources as well as provide information on how the community is responding to these potentially long-term changes.

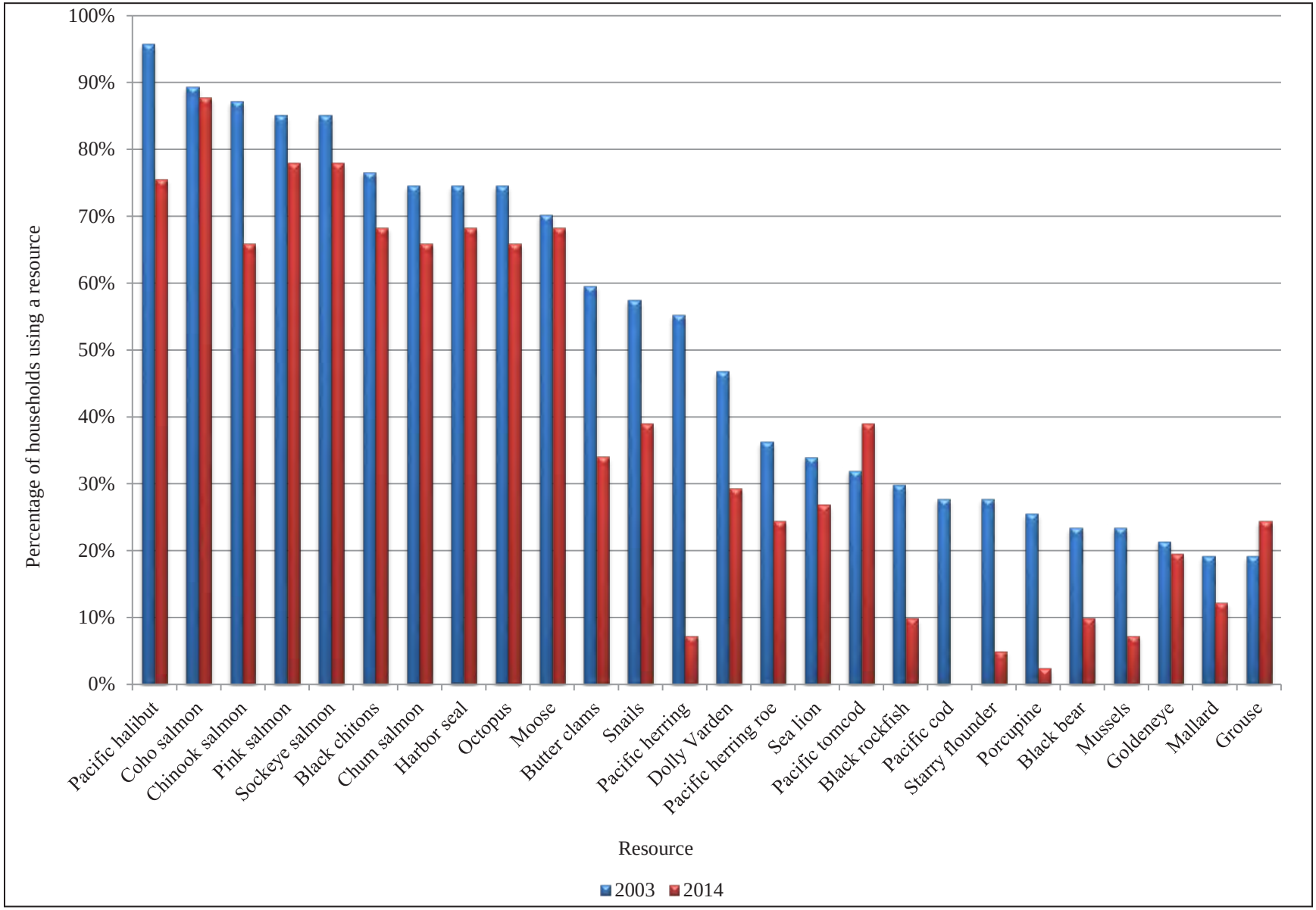

Figure 5-38.–Comparison of use of the 25 resources used by the most households in 2003 and use of the same resources in 2014, Port Graham.

Current and Historical Harvest Areas

Historical spatial data regarding community residents' wild resource harvest and use areas have been collected for Nanwalek and Port Graham jointly during previous Division of Subsistence studies, primarily during years 1981–1984 (Stanek 1985). Thus, the 2014 research provides the first known wild resource harvest mapping data collected by the Division of Subsistence individually for the communities of Nanwalek and Port Graham for a single year.

The principal historical mapping data documented by Division of Subsistence researcher Ron Stanek in the course of fieldwork sessions with a small number of Port Graham and Nanwalek residents[14] during 1982 also appeared as part of the Alaska Habitat Management Guide series published in 1985–1986. Specifically, the maps depicting the harvest and use areas utilized by Nanwalek and Port Graham residents during a 10-year span from 1972–1982 were published as a part of the *Alaska Habitat Management Guide Southcentral Region: Reference Maps—Volume 3. Community Use of Fish, Wildlife, and Plants* published by the ADF&G Division of Habitat (1985).[15] While these maps did not record harvest and use areas for all wild food categories that were included in the 2014 survey, changes in the overall resource harvest and use/search areas by Port Graham and Nanwalek area residents can be discerned through limited comparisons of these maps and the mapping data collected during the most recent study. Regarding map data collection methods, it is important to note that while the map data for the period of 1972–1982 were limited to the Cook Inlet area, during the 2014 study year survey respondents from both Nanwalek and Port Graham were offered the option to map harvest locations across the state using a mapping application developed for a mobile device. However, as represented in the maps included in the community chapters, no harvest areas were documented outside Cook Inlet for study year 2014.

Comparing the map data sets from the 1985 and 2014 studies shows that within Cook Inlet, the extent of the search and harvest areas utilized by Nanwalek and Port Graham residents is very similar: the southern portion of GMU 15C is the primary unit of most land-based activities in both the historical and current study year maps. However, given the 10-year timeframe of the earlier study period, more areas were used over time by harvesters than were shown for the 1 year of harvesting effort for this study. That said, in 2014, search and harvest areas were primarily along the previously documented areas, including all of Port Graham Bay, as well as the waters and coastline north as well as south of the communities of Port Graham and Nanwalek. The waters of these coastal areas were used by community members to harvest salmon as well as nonsalmon fish, such as Pacific halibut, that are present in the marine environment. Both sets of map data show that nonsalmon fish, such as Dolly Varden and rainbow trout, were, and continue to be, harvested in the local river systems (specifically the English Bay River and Port Graham River).

The historical mapping shows that Nanwalek and Port Graham residents used the entire eastern shore of Kachemak Bay as well as areas south and northeast of the southernmost tip of the lower Kenai Peninsula during the 1972–1982 timeframe to harvest migratory waterfowl and bird eggs, as well as marine mammals. In comparison, the 2014 maps portraying bird and bird egg harvest and search areas show that bird egg harvests are now much more concentrated to a few select traditional locations north and southwest of the communities. At the same time, residents continue to hunt for ducks and geese in the vicinity of Port Graham and Nanwalek, and continue to travel south along the coast all the way into Koyuktolik Bay. It is also important to note that while the historical maps only included areas used for hunting migratory waterfowl, the 2014 maps also included areas used for hunting upland game birds. Marine invertebrate harvest and search areas documented in 2014 show extensive areas used along the coastline of Port Graham Bay extending south, or down the coast past Nanwalek, into Koyuktolik Bay and Port Chatham, and farther south around Perl Island. In the north, the farthest marine invertebrate search and harvest area was in

14. A total of 3 key informants from Port Graham and 2 from Nanwalek who were identified by community leaders from each community as knowledgeable individuals of the areas used by community members worked with Stanek during 1982 to develop preliminary maps of community resource harvest areas. These maps were later amended with additional information collected by Stanek through on-site observations and interviews with resource harvesters. The revised maps were subjected to public review by each community before finalization in 1985 (Stanek 1985).

15. Digital copies of the Alaska Habitat Management Guide Southcentral Region narrative documents and color atlases can be accessed at: http://www.arlis.org/docs/vol1/C/AHMG/.

China Poot Bay, southeast of the Homer Spit. These areas appear to extend farther distances from the communities than the previously separately documented marine invertebrate and shellfish harvest and use areas for 1972–1982, and could be an indication of the changing availability of these resources that were previously harvested closer to the communities.

Regarding large land mammals, both the historical as well as the current harvest areas for black bears, moose, and mountain goats are very similar. The areas close to the communities continue to be used for hunting moose and black bears while the coast, as well as higher elevations south of Nanwalek, including Koyuktolik Bay, are used for hunting mountain goats. In 2014, additional black bear and mountain goat hunting areas were documented farther distances from the communities along the coasts of several bays, including Windy and Rocky bays. In comparison, the historical maps portray black bear and mountain goat hunting areas even farther away from the communities along the coast of Port Dick. Another moose and black bear hunting area documented during the 1972–1982 timeframe is the northernmost corner of Kachemak Bay, specifically the Fox River Flats area and the eastern coast of the bay all the way south to Aurora Spit. The Fox River Flats State Critical Habitat Area was established in 1972 and the Kachemak Bay State Critical Habitat Area in 1974 by the Alaska Legislature. While the area remained open for public use, including hunting and fishing, the creation of these special use areas added some restrictions on how the areas may be accessed and what kind of motorized vehicles may be utilized in the area (ADF&G 1993).[16] Another major change to the area was the construction of the Bradley Lake hydroelectric plant, which took place during 1986–1991.[17] Moose and black bear hunting opportunities, and access to this area, have not declined since the beginning of the development of the hydroelectric plant, and therefore it is possible that other reasons—such as the long distance and associated cost to travel to this area from both Port Graham and Nanwalek, or the availability of resources closer to the communities—have kept potential hunters away from these areas for several years (Jason Herreman, Assistant Area Management Biologist, ADF&G Division of Wildlife Conservation, Homer, February 29, 2016, personal communication).

The hunting and trapping of small land mammals has declined in both communities, and the majority of the few households that engage in small land mammal hunting and trapping choose to use the areas close to the communities, or areas that are relatively easy to access from the communities, for their hunting and trapping activities. In the historical maps, community households were utilizing the same areas in the northernmost corner of Kachemak Bay described above to hunt small land mammals as well as black bears and moose. In comparison, in the 2014 maps as well as in the historical maps, residents indicated vegetation resources were harvested close to the communities as well as farther away from the communities while hunting, such as for moose, or fishing for salmon in a freshwater environment.

Subsistence Recovery Observations

This community's survey respondents were asked questions to evaluate the status of subsistence uses, which is an injured natural resource service that is "recovering" from the *Exxon Valdez* oil spill (EVOS) according to the EVOS Trustee Council (TC) (Exxon Valdez Oil Spill Trustee Council 2014). Assessment questions were asked to determine food safety, resource status and recovery, whether youth are learning subsistence skills, the role of elders, and the status of the recovery of the subsistence way of life. Respondents were

16. In 2014, only motorized vehicles weighing less than 1,000 pounds were allowed to be used on the Fox River Flats trails (Alaska Department of Fish and Game Division of Wildlife Conservation 2014).

17. Homer Electric Association. n.d. "Bradley Lake Project Provides Renewable Power to the Railbelt," http://www.homerelectric.com/bradley-lake-project-provides-renewable-power-to-the-railbelt/?doing_wp_cron=1456948312.1207680702209472656250 (accessed February 29, 2016).

able to provide more than one reason as part of their evaluations about the status of these topics, and as such percentages in the following tables could add to more than 100%.

Assessments of Natural Resource Conditions

Food Safety

Within the EVOS TC's recovery plan, a condition for assessing subsistence recovery is determining whether people are confident that resources are safe to eat. Respondents from Port Graham were asked to assess whether or not certain marine resources were safe for consumption. These resources included Pacific herring, harbor seals, chitons, and clams. According to findings of the 2014 survey, overall, fewer respondents who used the resources and provided an assessment felt unsure whether these resources were safe or not for consumption compared to results from the previous study in 2003 (Table 5-29) (Fall 2006). However, for 3 of the 4 resources (clams, chitons, and harbor seals), the percentage of respondents who felt the resources were safe, as well as unsafe, have both increased since 2003. Pacific herring is the only resource for which confidence is represented by an increase in those believing it is safe to consume paired with a decrease in those who either felt it was unsafe or were unsure. None of the reasons provided by respondents who believed resources were unsafe during the 2014 study were related to EVOS contamination (Table 5-30).

In 2014, approximately 75% of Port Graham respondents felt that chitons were safe to eat, 10% felt they were unsafe, and 15% were not sure (Table 5-29). Of those who believed that chitons were unsafe to eat, one-half reported feeling this way due to contamination unrelated to the EVOS (Table 5-30). The other one-half did not provide a reason. This represents an increase in the confidence of the safety to consume chitons compared to 2003, when 65% of respondents felt chitons were safe (Fall 2006). At the same time, the percentage of Port Graham respondents who felt that chitons are unsafe to eat went up in 2014 compared to approximately 4% of respondents in 2003 who felt they were unsafe (Table 5-29) (Fall 2006). In 2003, the percentage of respondents who were unsure about the safety of chitons was higher (30%) than in 2014.

In 2014, harbor seals were considered safe to consume by 71% of respondents, 5% felt they were unsafe, and 24% were unsure (Table 5-29). All respondents who felt seals were unsafe to eat attributed this to the resource condition (Table 5-30). Compared to findings of the 2003 study, the percentage of respondents who felt the resource was safe to eat in 2014 increased from approximately 63% recorded in 2003 (Table 5-29) (Fall 2006). At the same time, the percentage of respondents who felt the resource was unsafe to eat also slightly increased from approximately 2% of respondents in 2003. In comparison, the number of respondents who were unsure of the safety of harbor seals for consumption had decreased from 35% in 2003.

Similar to harbor seals, 70% of respondents believed Pacific herring to be safe for consumption in 2014 (Table 5-29). Those who felt Pacific herring were unsafe to eat made up approximately 3% of respondents, and those who did not know approximately 28%. All respondents who felt Pacific herring were unsafe to eat gave a reason different from the listed categories, and did not indicate this sentiment was related to the oil spill (Table 5-30). Confidence in the safety of Pacific herring to consume increased from 54% in 2003 (Fall 2006). Those who felt that Pacific herring were unsafe to eat decreased from 4%, as did the percentage of respondents who were unsure (41% of respondents in 2003). One-half of those who responded that Pacific herring were unsafe to eat in 2003 believed this was due to contamination from the oil spill.

Compared to the other resource categories, the fewest number of respondents felt that clams were safe to eat, although this did increase from 2003 (Table 5-29) (Fall 2006). In 2014, approximately 67% of respondents felt clams were safe to eat, 13% felt they were unsafe, and 21% were unsure. In 2014, respondents believed clams were unsafe to eat primarily because of non-spill related contamination (40% of respondents), resource condition (20%), and risk of paralytic shellfish poisoning (20%) (Table 5-30). In 2003, approximately 35% of respondents believed clams were safe to eat, compared to 9% who felt they

Table 5-29.–Household assessments of the safety of eating Pacific herring, harbor seals, chitons, and clams harvested in traditional locations, Port Graham, 2014.

Resource	Estimated households	Do not use[c]		Missing[c]		Valid responses[a, c]		Safe[b]		Not safe[b]		Do not know[b]	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Pacific herring	58	0.0	0.0%	1.4	2.4%	56.6	97.6%	39.6	70.0%	1.4	2.5%	15.6	27.5%
Harbor seal	58	0.0	0.0%	0.0	0.0%	58.0	100.0%	41.0	70.7%	2.8	4.9%	14.1	24.4%
Chitons (bidarkis, gumboots)	58	1.4	2.4%	0.0	0.0%	56.6	97.6%	42.4	75.0%	5.7	10.0%	8.5	15.0%
Clams	58	1.4	2.4%	1.4	2.4%	55.2	95.1%	36.8	66.7%	7.1	12.8%	11.3	20.5%

Source ADF&G Division of Subsistence household surveys, 2015.

a. Valid responses include only households that answered "safe," "not safe," or "do not know" to the question.

b. Computed as a percentage of valid responses.

c. Computed as a percentage of estimated households.

Table 5-30.–Reasons why Pacific herring, harbor seals, chitons, and clams are not safe to eat, Port Graham, 2014.

Resource	Resource is not safe to eat		Reasons why respondents believe _____ are not safe to eat.[a]									
			Poor or missing information		Agency advice		Paralytic shellfish poisoning		EVOS contamination		Non-EVOS contamination	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Pacific herring	1.4	2.5%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Harbor seal	2.8	4.9%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Chitons (bidarkis, gumboots)	5.7	10.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	2.8	50.0%
Clams	7.1	12.8%	0.0	0.0%	0.0	0.0%	1.4	20.0%	0.0	0.0%	2.8	40.0%

-continued-

Table 5-30.–Continued.

Resource	Resource is not safe to eat		Reasons why respondents believe _____ are not safe to eat.[a]							
			Resource condition		Caused illness or reaction		Other reason		Missing	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Pacific herring	1.4	2.5%	0.0	0.0%	0.0	0.0%	1.4	100.0%	0.0	0.0%
Harbor seal	2.8	4.9%	2.8	100.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Chitons (bidarkis, gumboots)	5.7	10.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	2.8	50.0%
Clams	7.1	12.8%	1.4	20.0%	0.0	0.0%	1.4	20.0%	1.4	20.0%

Source ADF&G Division of Subsistence household surveys, 2015.

a. Computed as a percentage of households that indicated resources were not safe to eat.

were unsafe, and 57% who were unsure (Fall 2006). In 2003, one-quarter (25%) of respondents attributed this to spill-related contamination.

Status of Resource Populations

The 2014 survey included questions about the status of recovery of subsistence resources after the EVOS. Survey respondents were asked 2 questions about the status of natural resources, a condition that relates directly to the EVOS subsistence recovery objective. Respondents were asked to assess "the availability to harvest" for 6 resources: Pacific herring, Pacific halibut, harbor seals, sea ducks, chitons, and clams. If the availability to harvest had changed compared to 10 years before (when the last survey was conducted), respondents were asked for a reason. "Availability" might be directly related to abundance, but might be affected by accessibility, resource conditions (e.g., pollution, sickness), regulations, and competition, among other factors.

In 2014, exactly 50% of respondents from Port Graham who answered "yes" or "no" felt that subsistence resources had recovered since the EVOS, and 50% believed they had not (Table 5-31). In 2003, approximately 60% of respondents felt that the resources had not recovered, while 22% felt they had, and 19% felt there was no change (Fall 2006:A-47). In 2014, those who felt that resources had not recovered believed that the recovery process could be helped by harvest regulation and management (21%), time (21%), restoration and enhancement projects (16%), more clean-up action (11%), administrative, legal, and political action (11%), and additional studying and monitoring of resource populations (5%) (Table 5-32). Some provided other suggestions (21%), did not know what could help (5%), or did not provide a suggestion at all (26%).

For several of the species discussed in the survey, respondents were asked whether or not they felt these species were more or less available compared to 10 years ago (Table 5-33). In Port Graham, most of the respondents who had been in the community 10 years ago and answered with an assessment that availability was less, same, or more felt that resource availability decreased compared to 10 years ago for all but 1 species.

In 2014, the majority (74%) of Port Graham respondents felt that the availability of Pacific herring decreased compared to 10 years ago (Table 5-33). Furthermore, 9% of respondents felt that Pacific herring availability increased compared to 10 years ago, and 17% felt it had remained the same. Those who felt that Pacific herring were less available compared to 10 years ago believed this to be due to factors such as competition or overharvest (24% of respondents), stock or population status (18%), environmental conditions or predation (12%), management or regulations (6%), and contamination from the oil spill (6%) (Table 5-34). Others did not know a reason for the decline in the availability of Pacific herring (29% of respondents), or believed the reasons to be caused by general change (6%), or were not relevant (12%). Those who felt Pacific herring were more available attributed this change to stock or population status (50%) and environmental conditions or predation (50%) (Table 5-35).

The majority (69%) of Port Graham respondents felt that the availability of Pacific halibut had also decreased compared to 10 years ago (Table 5-33). None of the respondents felt as though Pacific halibut were more available, and 31% felt the availability remained the same. Of those who felt that Pacific halibut were less available, the majority (50% of respondents) felt this was due to competition or overharvest (Table 5-34). Other reasons identified by respondents for decreased availability of Pacific halibut included the environmental conditions and predation (20%), stock or population status (15%), contamination from the oil spill (5%), management or regulations (5%), economic conditions (5%), or no reason was given (5%).

Approximately 48% of respondents in Port Graham felt that the availability of harbor seals had remained the same compared to the past 10 years while 12% felt availability had increased, and 40% felt it had decreased in 2014 (Table 5-33). Those who reported an increase in the availability of harbor seals attributed this to environmental conditions or predation (67%) and stock or population status (33%) (Table 5-35). Most respondents (30%) who believed that the availability of harbor seals had decreased compared to 10 years ago felt this was due to a declined stock or population status (Table 5-34). Other reasons identified by respondents included competition or overharvest (20% of respondents), environmental conditions or

predation (20%), general changes (20%), and contamination from the oil spill (10%), or the respondent did not know why (10%).

In 2014, approximately 40% of Port Graham respondents considered the availability of ducks diminished compared to 10 years ago (Table 5-33). Other perceptions of change to the availability of ducks was split, with equal percentages of respondents (30%) believing that the availability had increased or remained the same. Of those who felt that the availability of ducks had decreased compared to 10 years ago, one-half felt this was due to stock or population status while the other one-half of respondents thought the decrease was a result of contamination from the oil spill (Table 5-34). An increase in the availability of ducks compared to 10 years ago was attributed to stock or population status by 67% of respondents who reported an increase (Table 5-35). The remaining 33% of respondents who thought that the availability of ducks increased believed this to be due to management or regulations.

The availability of chitons and clams was considered to have decreased by the majority of Port Graham respondents in 2014. Regarding chitons (also known as "bidarkis" or "gumboots"), 58% of respondents felt that their availability had decreased while 16% felt it had increased, and 26% felt it had remained the same (Table 5-33). Of those who thought that the availability of chitons had decreased, the majority (50%) felt this was due to competition or overharvest (Table 5-34). Other reasons identified by respondents for a decrease in availability of chitons included stock or population status (28% of respondents), environmental conditions or predation (28%), contamination from the oil spill (6%), contamination from non-oil related sources (6%), and general changes (6%). An additional 6% of the respondents were unsure about the reasons for the decrease of chitons. Of those who felt that the availability of chitons had increased, 40% believed this was due to stock or population status, while equal percentages (20% of respondents) felt this was due to general change, did not know why, or felt the reason was not relevant (Table 5-35).

Regarding the availability of clams in 2014, approximately 81% of respondents felt their availability had decreased, 8% felt their availability had increased, and 12% felt it had remained the same compared to 10 years ago (Table 5-33). Of those who felt the availability of clams had decreased, 33% believed this was due to environmental conditions or predation, 19% felt it was because of non-oil spill contamination, 14% attributed the decline to stock or population status, and 10% felt it was caused by oil spill contamination (Table 5-34). Other reasons identified by respondents included competition or overharvest (10% of respondents) and economic conditions (5%). Approximately 10% of respondents were unsure about the reasons for decreased availability of clams and another 10% did not provide a reason. All respondents who felt that the availability of clams had increased attributed this to stock or population status, and 50% of respondents gave a general or other reason (Table 5-35).

Table 5-31.–Household assessments of the recovery of subsistence resources since the oil spill, Port Graham, 2014.

		Have subsistence resources recovered since the *Exxon Valdez* oil spill?									
	Community	Missing[a]		Do not know[a]		Valid responses[a, c]		Yes[b]		No[b]	
Community	households	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Lower Cook Inlet											
Port Graham	58	0.0	0.0%	4.2	7.3%	53.8	92.7%	26.9	50.0%	26.9	50.0%

Source ADF&G Division of Subsistence household surveys, 2015.

a. Computed as a percentage of estimated community households.

b. Computed as a percentage of valid responses.

c. Valid responses include only households that gave a "yes" or "no" response to the question.

Table 5-32.–Household assessments of what should be done to help with the recovery of subsistence resources, Port Graham, 2014.

				What should be done to help in the recovery of subsistence resources?[b]									
	Valid	Subsistence resources have not recovered[a]		No recovery suggestion provided		Do not know		More clean up		More studying and monitoring of populations		Harvest regulation and management	
Community	responses[c]	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Lower Cook Inlet													
Port Graham	53.8	26.9	50.0%	7.1	26.3%	1.4	5.3%	2.8	10.5%	1.4	5.3%	5.7	21.1%

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Table 5-32–Continued.

				What should be done to help in the recovery of subsistence resources?[b]							
	Valid	Subsistence resources have not recovered[a]		Time		Education about spill effects		Administrative, legal, and political action		Restoration and enhancement projects	
Community	responses[c]	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Lower Cook Inlet											
Port Graham	53.8	26.9	50.0%	5.7	21.1%	0.0	0.0%	2.8	10.5%	4.2	15.8%

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Table 5-32–Continued.

				What should be done to help in the recovery of subsistence resources?[b]							
	Valid	Subsistence resources have not recovered[a]		Predator control		Reduce or eliminate oil pollution sources		Other suggestion		Nothing can be done	
Community	responses[c]	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Lower Cook Inlet											
Port Graham	53.8	26.9	50.0%	0.0	0.0%	0.0	0.0%	5.7	21.1%	0.0	0.0%

Source ADF&G Division of Subsistence household surveys, 2015.

a. Computed as a percentage of valid responses.

b. Computed as a percentage of households that indicated that subsistence resources have not recovered.

c. Valid responses include only households that gave a "yes" or "no" response to the question: "Have subsistence resources recovered since the *Exxon Valdez* oil spill?"

Table 5-33.–Household assessments of change in resource availability compared to 10 years ago, Port Graham, 2014.

Resource	Estimated households	No response[a]		Not in community[a]		In community[a]		Valid responses[b, d]	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Pacific herring	58	17.0	29.3%	8.5	14.6%	49.5	85.4%	32.5	65.7%
Pacific halibut	58	8.5	14.6%	8.5	14.6%	49.5	85.4%	41.0	82.9%
Harbor seal	58	14.1	24.4%	8.5	14.6%	49.5	85.4%	35.4	71.4%
Ducks	58	35.4	61.0%	8.5	14.6%	49.5	85.4%	14.1	28.6%
Chitons (bidarkis, gumboots)	58	5.7	9.8%	8.5	14.6%	49.5	85.4%	43.9	88.6%
Clams	58	12.7	22.0%	8.5	14.6%	49.5	85.4%	36.8	74.3%

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Table 5-33.–Continued.

Resource	Estimated households	Less[c]		Same[c]		More[c]	
		Number	Percentage	Number	Percentage	Number	Percentage
Pacific herring	58	24.0	73.9%	5.7	17.4%	2.8	8.7%
Pacific halibut	58	28.3	69.0%	12.7	31.0%	0.0	0.0%
Harbor seal	58	14.1	40.0%	17.0	48.0%	4.2	12.0%
Ducks	58	5.7	40.0%	4.2	30.0%	4.2	30.0%
Chitons (bidarkis, gumboots)	58	25.5	58.1%	11.3	25.8%	7.1	16.1%
Clams	58	29.7	80.8%	4.2	11.5%	2.8	7.7%

Source ADF&G Division of Subsistence household surveys, 2015.

a. Computed as a percentage of estimated households.

b. Computed as a percentage of households that were in the community 10 years ago.

c. Computed as a percentage of valid responses.

d. Valid responses include only those households that were in the community 10 years ago and that responded that resource availability was either less, the same, or more compared to 10 years ago.

Table 5-34.–Reasons for less resource availability compared to 10 years ago, Port Graham, 2014.

	Responses[a, b]		EVOS contamination[c]		Non-EVOS contamination[c]		Paralytic shellfish poisoning[c]		Stock or population status[c]	
Resource	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Pacific herring	24.0	73.9%	1.4	5.9%	0.0	0.0%	0.0	0.0%	4.2	17.6%
Pacific halibut	28.3	69.0%	1.4	5.0%	0.0	0.0%	0.0	0.0%	4.2	15.0%
Harbor seal	14.1	40.0%	1.4	10.0%	0.0	0.0%	0.0	0.0%	4.2	30.0%
Ducks	5.7	40.0%	2.8	50.0%	0.0	0.0%	0.0	0.0%	2.8	50.0%
Chitons (bidarkis, gumboots)	25.5	58.1%	1.4	5.6%	1.4	5.6%	0.0	0.0%	7.1	27.8%
Clams	29.7	80.8%	2.8	9.5%	5.7	19.0%	0.0	0.0%	4.2	14.3%

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Table 5-34.–Continued.

	Responses[a, b]		Management or regulations[c]		Competition or overharvest[c]		Environmental conditions or predation[c]		Economic conditions[c]	
Resource	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Pacific herring	24.0	73.9%	1.4	5.9%	5.7	23.5%	2.8	11.8%	0.0	0.0%
Pacific halibut	28.3	69.0%	1.4	5.0%	14.1	50.0%	5.7	20.0%	1.4	5.0%
Harbor seal	14.1	40.0%	0.0	0.0%	2.8	20.0%	2.8	20.0%	0.0	0.0%
Ducks	5.7	40.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Chitons (bidarkis, gumboots)	25.5	58.1%	0.0	0.0%	12.7	50.0%	7.1	27.8%	0.0	0.0%
Clams	29.7	80.8%	0.0	0.0%	2.8	9.5%	9.9	33.3%	1.4	4.8%

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Table 5-34.–Continued.

	Responses[a, b]		General or other[c]		Not relevant[c]		Do not know[c]		No reason given[c]	
Resource	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Pacific herring	24.0	73.9%	1.4	5.9%	2.8	11.8%	7.1	29.4%	0.0	0.0%
Pacific halibut	28.3	69.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.4	5.0%
Harbor seal	14.1	40.0%	2.8	20.0%	0.0	0.0%	1.4	10.0%	0.0	0.0%
Ducks	5.7	40.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Chitons (bidarkis, gumboots)	25.5	58.1%	1.4	5.6%	0.0	0.0%	1.4	5.6%	0.0	0.0%
Clams	29.7	80.8%	0.0	0.0%	0.0	0.0%	2.8	9.5%	2.8	9.5%

Source ADF&G Division of Subsistence household surveys, 2015.

a. The number of households that were in the community 10 years ago and responded that resource availability was LESS than it was 10 years ago.

b. Computed as a percentage of valid responses.

c. Computed as a percentage of responses.

Table 5-35.–Reasons for more resource availability compared to 10 years ago, Port Graham, 2014.

	Responses[a, b]		EVOS contamination[c]		Non-EVOS contamination[c]		Paralytic shellfish poisoning[c]		Stock or population status[c]	
Resource	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Pacific herring	2.8	8.7%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.4	50.0%
Pacific halibut	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Harbor seal	4.2	12.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.4	33.3%
Ducks	4.2	30.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	2.8	66.7%
Chitons (bidarkis, gumboots)	7.1	16.1%	0.0	0.0%	0.0	0.0%	0.0	0.0%	2.8	40.0%
Clams	2.8	7.7%	0.0	0.0%	0.0	0.0%	0.0	0.0%	2.8	100.0%

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Table 5-35.–Continued.

	Responses[a, b]		Management or regulations[c]		Competition or overharvest[c]		Environmental conditions or predation[c]		Economic conditions[c]	
Resource	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Pacific herring	2.8	8.7%	0.0	0.0%	0.0	0.0%	1.4	50.0%	0.0	0.0%
Pacific halibut	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Harbor seal	4.2	12.0%	0.0	0.0%	0.0	0.0%	2.8	66.7%	0.0	0.0%
Ducks	4.2	30.0%	1.4	33.3%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Chitons (bidarkis, gumboots)	7.1	16.1%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Clams	2.8	7.7%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%

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Table 5-35.–Continued.

	Responses[a, b]		General or other[c]		Not relevant[c]		Do not know[c]		No reason given[c]	
Resource	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Pacific herring	2.8	8.7%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Pacific halibut	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Harbor seal	4.2	12.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Ducks	4.2	30.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Chitons (bidarkis, gumboots)	7.1	16.1%	1.4	20.0%	1.4	20.0%	1.4	20.0%	0.0	0.0%
Clams	2.8	7.7%	1.4	50.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%

Source ADF&G Division of Subsistence household surveys, 2015.

a. The number of households that were in the community 10 years ago and responded that resource availability was MORE than it was 10 years ago.

b. Computed as a percentage of valid responses.

c. Computed as a percentage of responses.

Young Adults' Involvement in Subsistence Activities

An established condition for assessing subsistence recovery under EVOS TC objectives is determining whether "the cultural values provided by gathering, preparing, and sharing food" have been "reintegrated into community life." In 2014, survey respondents were asked whether or not they felt that young adults were learning enough hunting, fishing, and processing skills. For this question, to be consistent with analysis from previous years, valid responses included only those indicating a "yes" or "no" assessment, and did not include the responses "do not know." The answers to this question presented a divided response; in 2014 approximately one-half of Port Graham respondents who answered "yes" or "no" felt that young adults were learning enough of these skills (53%) while the other one-half felt they were not (48%) (Table 5-36). In 2014, the percentage of those who felt that young adults were not learning enough of these skills had decreased from 64% recorded in 2003 (Fall 2006).

Those who felt that young adults were not learning enough hunting, fishing, and processing skills were asked to provide reasons why they felt that was the case. Most respondents (47%) felt that technology and modernization affected the transmission of these skills, followed by the sentiment that kids had no interest (37%) (Table 5-37). Equal percentages of respondents felt there was a lack of teachers, or that the community way of life was changing (26%). Other reasons included subsistence resources being scarce (11%), that the economic situation did not support learning these skills (5%), or some other reason (11%). In 2003 and 1998, the main reasons given by survey respondents as to why young people were not learning enough hunting, fishing, or processing skills were lack of interest, and lack of teachers (Fall 2006:120).

In 2014, most respondents who believed that young adults were learning enough hunting, fishing, and processing skills felt that this was because of family members' teachings (38%), or through elders' teachings (29%) (Table 5-38). Nearly one-quarter (24%) of respondents felt that young people were learning these skills through spirit camps and Native programs or through other community members and friends. Approximately 10% of respondents attributed this to some other source while others gave no response (14%).

Elders' Influence

During the survey effort, Port Graham residents were asked whether or not they felt that the influence of elders had changed compared to the last 10 years. For this question, to be consistent with analysis from previous years, valid responses included only those indicating an "increased," "decreased," or "same" assessment. Nearly one-half (48%) of respondents who provided an assessment felt that elder influence had decreased, 30% felt it had remained the same, and 23% felt it had increased (Table 5-39). These sentiments have shifted slightly since 2003. At that time approximately one-half (52%) felt that elders' influence had decreased compared to the 5 years prior to the 2003 study year (Fall 2006). However, during the same study year, close to an equal percentage of respondents felt that the influence of elders remained the same or had increased (26% and 23%, respectively).

In 2014, the majority of respondents who felt that elders' influence had decreased believed this was due to a demographic change (53%) and/or a cultural shift (32%). Other reasons included decreased activity by elders (16%), social or political change (5%), other reasons (26%), or non-specific reasons (5%) (Table 5-40). In 2003, there were 31% of respondents who attributed the decrease in elders' influence to demographic change or decreased activity.

In 2014, most respondents who believed that the influence of elders had increased compared to the past 10 years felt that this was due to social or political change (44%) (Table 5-41). Other reasons included increased activity by elders (22%), a cultural change (11%), or some alternative reason (33%). In 2003, the primary reasons given for increased elders' influence were related to increased activity by elders (57%), cultural reasons (14%), and social or political factors (14%) (Fall 2006).

Table 5-36.–Household assessments of whether young adults learn enough subsistence skills, Port Graham, 2014.

		Are young adults learning enough hunting, fishing, and processing skills?									
	Community	Missing[a]		Do not know[a]		Valid response[a, c]		Yes[b]		No[b]	
Community	households	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Lower Cook Inlet											
Port Graham	58	0.0	0.0%	1.4	2.4%	56.6	97.6%	29.7	52.5%	26.9	47.5%

Source ADF&G Division of Subsistence household surveys, 2015.

a. Computed as a percentage of estimated community households.

b. Computed as a percentage of valid responses.

c. Valid resonses include only households that responded "yes" or "no" to the question.

Table 5-37.–Reasons why young adults are not learning enough subsistence skills, Port Graham, 2014.

Community	Valid responses[c]	Not learning enough[a]		Why young adults are not learning enough hunting, fishing, and processing skills?[b]							
				No reason given		Do not know		No interest		Lack of teachers	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Lower Cook Inlet											
Port Graham	56.6	26.9	47.5%	0.0	0.0%	0.0	0.0%	9.9	36.8%	7.1	26.3%

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Table 5-37.–Continued.

Community	Valid responses[c]	Not learning enough[a]		Why young adults are not learning enough hunting, fishing, and processing skills?[b]							
				Change in community way of life		Too much else to do		No time		Subsistence uses impeded	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Lower Cook Inlet											
Port Graham	56.6	26.9	47.5%	7.1	26.3%	0.0	0.0%	0.0	0.0%	0.0	0.0%

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Table 5-37.–Continued.

Community	Valid responses[c]	Not learning enough[a]		Why young adults are not learning enough hunting, fishing, and processing skills?[b]							
				Decline in/scarcity of subsistence resources		Economics		Technology and modernization		Other reason	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Lower Cook Inlet											
Port Graham	56.6	26.9	47.5%	2.8	10.5%	1.4	5.3%	12.7	47.4%	2.8	10.5%

Source ADF&G Division of Subsistence household surveys, 2015.

a. Computed as a percentage of valid responses.

b. Computed as a percentage of households that responded "no" to the question.

c. Valid resonses include only households that responded "yes" or "no" to the question: "Are young adults learning enough hunting, fishing, and processing skills?"

Table 5-38.–Ways that young adults are learning subsistence skills, Port Graham, 2014.

				How young adults are learning hunting, fishing, and processing skills?[b]									
	Valid	Yes, learning enough[a]		No reason given		Do not know		Family members		Elders		Involvement in activities	
Community	responses[c]	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Lower Cook Inlet													
Port Graham	56.6	29.7	52.5%	4.2	14.3%	0.0	0.0%	11.3	38.1%	8.5	28.6%	0.0	0.0%

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Table 5-38.–Continued.

				How young adults are learning hunting, fishing, and processing skills?[b]							
	Valid	Yes, learning enough[a]		Spirit camps and Native programs		School programs		Other community members and friends		Other	
Community	responses[c]	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Lower Cook Inlet											
Port Graham	56.6	29.7	52.5%	7.1	23.8%	0.0	0.0%	7.1	23.8%	2.8	9.5%

Source ADF&G Division of Subsistence household surveys, 2015.

a. Computed as a percentage of valid responses.

b. Computed as a percentage of households that responded "yes" to the question.

c. Valid resonses include only households that responded "yes" or "no" to the question: "Are young adults learning enough hunting, fishing, and processing skills?"

Table 5-39.–Household assessments of change in elders' influence in the last 10 years, Port Graham, 2014.

		Change in elders' influence compared to 10 years ago (2004)									
	Community	Missing		Valid responses		Decreased		Same		Increased	
Community	households	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Lower Cook Inlet											
Port Graham	58	1.4	2.4%	56.6	97.6%	26.9	47.5%	17.0	30.0%	12.7	22.5%

Source ADF&G Division of Subsistence household surveys, 2015.

Note The "missing" and "valid response" categories are computed as percentages of estimated community households. All other categories are calculated as percentages of valid responses.

Table 5-40.–Reasons for decreased influence of elders in the last 10 years, Port Graham, 2014.

		Reasons for decreased influence of elders compared to 10 years ago (2004)									
	Influence	Missing		Demographic		Cultural		Elders less active		Elders more active	
Community	decreased	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Lower Cook Inlet											
Port Graham	26.9	1.4	5.3%	14.1	52.6%	8.5	31.6%	4.2	15.8%	0.0	0.0%

-continued-

Table 5-40.–Continued.

		Reasons for decreased influence of elders compared to 10 years ago (2004)							
	Influence	Social/political		Economic		Non-specific		Other	
Community	decreased	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Lower Cook Inlet									
Port Graham	26.9	1.4	5.3%	0.0	0.0%	1.4	5.3%	7.1	26.3%

Source ADF&G Division of Subsistence household surveys, 2015.

Note Only households responding that the influence of elders has decreased are included.

Table 5-41.–Reasons for increased influence of elders in the last 10 years, Port Graham, 2014.

		Reasons for increased influence of elders compared to 10 years ago (2004)									
	Influence	Missing		Demographic		Cultural		Elders less active		Elders more active	
Community	increased	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Lower Cook Inlet											
Port Graham	12.7	1.4	11.1%	0.0	0.0%	1.4	11.1%	0.0	0.0%	2.8	22.2%

-continued-

Table 5-41.–Continued.

		Reasons for increased influence of elders compared to 10 years ago (2004)							
	Influence	Social/political		Economic		Non-specific		Other	
Community	increased	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Lower Cook Inlet									
Port Graham	12.7	5.7	44.4%	0.0	0.0%	0.0	0.0%	4.2	33.3%

Source ADF&G Division of Subsistence household surveys, 2015.

Note Only households responding that the influence of elders has increased are included.

Status of the Traditional Way of Life

The third aspect of the social and economic conditions assessment was an analysis of the effects that the EVOS had on the traditional way of life in Port Graham. When asked, the majority of respondents (71%) reported that the traditional way of life had been affected by the spill (Table 5-42). Just over one-quarter (27%) of respondents felt it had not been affected, and 2% did not know. This represents a slight decrease from the 78% of respondents who, in 2003, felt the traditional way of life had been affected by the spill (Fall 2006).

Of those in 2014 who reported that the traditional way of life had been affected by the oil spill, 52% reported it had not recovered, 41% reported that it had recovered, and 7% did not know (Table 5-43). Those who believed the traditional way of life had not recovered were asked to provide some suggestions as to what could be done to assist the recovery process. Suggestions included responding to the social disruptions caused by the spill (27%), more education and spirit camps (13%), and giving the environment time (13%) (Table 5-44). Other suggestions included enhancement of resource populations (7%), getting rid of remaining oil (7%), and legal and political action (7%). Some felt that nothing could be done (7%) and the most responses provided alternative suggestions (47%).

Local Comments and Concerns

Following is a summary of local observations of wild resource populations and trends that were recorded during the surveys in Port Graham. Some households did not offer any additional information during the survey interviews, so not all households are represented in the summary. In addition, respondents expressed their concerns about wild resources during the community review meeting of preliminary data. These concerns have been included in the summary.

Fish

Port Graham residents reported that over the years the wild salmon runs have generally decreased and that it takes longer now for them to harvest what they need for their annual use. The cost of gasoline has a major effect on how much households are able to travel to harvest salmon as well as nonsalmon fish. Residents are aware of and particularly concerned about the continuous decline of Chinook salmon over the last 10 years; some residents are also worried about additional restrictions for Chinook salmon harvesting in the future if the status of the stock does not improve. Regarding Chinook salmon, data review meeting participants commented that they have been catching a lot of jack[18] Chinook salmon over the past few years, which is unusual for them. Another salmon species of concern is coho salmon, which long-term community residents think have been overharvested due to easier access to these fish along the logging road for more than 10 years now. A few community members also expressed their concern about the increasing number of hatchery fish (both sockeye and pink salmon) in relation to the wild stocks. The primary concern regarding the hatchery-raised fish is the look and taste of the meat, which some survey respondents describe as mushy and pale. This is a striking contrast to the firm and bright flesh characteristic of the natural stocks. Most residents do not care for the hatchery fish even though in some years they are abundantly available. It is also worth noting that all of these salmon-related concerns were also documented in the previous harvest assessment in 2003.

The decline of commercial fishing has had a major negative effect on the community over several decades now. Due to financial concerns, many people sold their boats in the 1990s after the oil spill, which led to a situation where only a handful of community residents are actively participating in any commercial fisheries. The lack of commercial fishing vessels also negatively affects the ability of many residents to go out and harvest other resources, such as clams, from areas farther away from the community. Some respondents believed that commercial fishing and related employment in the local cannery present a viable

18. Sexually mature salmon that return to fresh water 1 or 2 years earlier than their counterparts are referred to as "jack salmon." They are typically smaller in weight and size than their counterparts when returning to fresh water.

Table 5-42.–Household assessments of the oil spill's effect on the traditional way of life, Port Graham, 2014.

Community	Community households	Was the traditional way of life affected by the *Exxon Valdez* oil spill?									
		Missing[a]		Valid responses[a, c]		Do not know[b]		Not affected[b]		Affected[b]	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Lower Cook Inlet											
Port Graham	58	0.0	0.0%	58.0	100.0%	1.4	2.4%	15.6	26.8%	41.0	70.7%

Source ADF&G Division of Subsistence household surveys, 2015.

a. Computed as a percentage of community households.

b. Computed as a percentage of valid responses.

c. Valid responses include only households that responded "yes," "no," or "do not know" to the question.

Table 5-43.–Household assessments of the recovery of the traditional way of life since the oil spill, Port Graham, 2014.

Community	Yes, way of life affected	Has the traditional way of life recovered from the *Exxon Valdez* oil spill?									
		Missing[a]		Valid responses[a, c]		Do not know[b]		Not recovered[b]		Recovered[b]	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Lower Cook Inlet											
Port Graham	41.0	0.0	0.0%	41.0	100.0%	2.8	6.9%	21.2	51.7%	17.0	41.4%

Source ADF&G Division of Subsistence household surveys, 2015.

a. Computed as a percentage of households that responded "yes" to the question: "Was the traditional way of life affected by the *Exxon Valdez* oil spill?"

b. Computed as a percentage of valid responses.

c. Valid responses include only households that responded "yes," "no," or "do not know" to the question.

Table 5-44.–Household assessments for ways to help the recovery of the traditional way of life, Port Graham, 2014.

				What should be done to help in the recovery of the traditional way of life?[b]									
	Yes, way of life affected	No, way of life not recovered[a]		Missing		Do not know		Increase resource populations		Respond to social disruptions		Create new jobs and new sources of income	
Community		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Lower Cook Inlet													
Port Graham	41.0	21.2	51.7%	2.8	13.3%	0.0	0.0%	1.4	6.7%	5.7	26.7%	0.0	0.0%

-continued-

Table 5-44.–Continued.

				What should be done to help in the recovery of the traditional way of life?[b]									
	Yes, way of life affected	No, way of life not recovered[a]		Get rid of the oil		Continue studies on impacts		Take legal and political action		Stop cash distributions and dividend payments		More education and spirit camps	
Community		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Lower Cook Inlet													
Port Graham	41.0	21.2	51.7%	1.4	6.7%	0.0	0.0%	1.4	6.7%	0.0	0.0%	2.8	13.3%

-continued-

Table 5-44.–Continued.

				What should be done to help in the recovery of the traditional way of life?[b]							
	Yes, way of life affected	No, way of life not recovered[a]		Nothing can be done		Time		Need to involve elders more		Other suggestion	
Community		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Lower Cook Inlet											
Port Graham	41.0	21.2	51.7%	1.4	6.7%	2.8	13.3%	0.0	0.0%	9.9	46.7%

Source ADF&G Division of Subsistence household surveys, 2015.

a. Computed as a percentage of households that responded "yes" to the question: "Was the traditional way of life affected by the *Exxon Valdez* oil spill?"

b. Computed as a percentage of households that responded "no" to the question: "Has the traditional way of life recovered from the *Exxon Valdez* oil spill?"

option for creating additional employment opportunities in the community, since there are currently few jobs available. Others believe that the commercial fishers are responsible for the depletion of wild stocks due to overfishing, creating an unsustainable "boom and bust" cycle. One respondent recommended that commercial fishing should be suspended for a period of time in order to let the stocks recover. Amid the discussion of the value that commercial fishing may have for the community, many community members acknowledged the high price of gas needed to travel to some harvest locations is a challenge.

Another major concern among community residents, which was also previously documented, is the intensive fishing pressure placed on both salmon and nonsalmon fish marine species in Kachemak Bay by charter fishermen based out of Homer and other Kenai Peninsula coastal communities. Several respondents described how large numbers of boats will travel south from Homer and overcrowd an area where local residents used to fish for salmon and Pacific halibut. One particularly problematic area, according to community members, is the area around Flat Island southwest of Nanwalek where local residents used to find abundant Pacific halibut but now encounter fewer fish, a depleted resource they attribute to overharvest by sport fishermen. Local residents feel that there is a need for increased enforcement directed toward sport fishermen, who they feel continuously abuse harvest limits and take illegally sized fish. One respondent also commented how the catch-and-release fishing practiced by sport fishermen fishing for both Chinook salmon and Pacific halibut is negatively affecting the local populations since fish that are caught often die after being released.

Large Land Mammals

Several respondents in Port Graham commented on the large mammal harvest, saying that less large land mammal meat is being consumed in the community now than in the past. Use of black bears as a primary meat source has diminished in prominence over the years, but there are still some community members who consume black bear meat. Many survey respondents commented that they were noticing a decline in the local black bear population since fewer bears are seen regularly anymore. Moose continues to be an important large land mammal species utilized in the community, although only a few households hunt for moose. Although, many survey respondents commented that overall the households that hunt moose in the community are good at sharing the meat with everyone. However, a few respondents pointed out that since sharing of resources is often based on relations, this may leave some people outside of the sharing network.

Many respondents also commented on the low number of moose hunting permits available for community residents. All Alaska residents are eligible to apply for Tier II moose hunt permits awarded for GMU 15C, which is where Port Graham is located. In 2014, there were a total of 4 permits awarded for the Tier II moose hunt in GMU 15C (TM 549). The small number of moose permits available in this area for Alaska residents does pose a challenge for community households to obtain wild meat. Also, while some residents were of the thought that area moose populations had decreased, others thought that the warm fall weather was the primary reason why fewer moose have been seen in the area during fall months. Additionally, a few community members expressed concerns about the number of guided hunters arriving to the area to hunt for black bears and mountain goats; will there be enough wild game available for local residents in the future if guided hunting increases in the near future?

Birds and Eggs

The spring harvest of bird eggs has been a traditional activity for Port Graham residents. While the harvest of eggs has declined, the tradition is carried on with new generations that are not afraid of climbing on and over steep rocks. One of the community's traditional bird egg harvest areas is Gull Island, located close to Homer. The Pratt Museum from Homer first acquired permission from the Seldovia Native Association to place 2 cameras on the island in 1998 as a part of a project called Kachemak Bay Discovery, and ever since they have continued live streaming video from the island over the summer months (Scott Bartlett, Pratt Museum Curator of Exhibits, Homer, March 4, 2016, personal communication).[19] According to

19. Alaska Sea Grant. 1998. "Arctic Science Journeys: Bird Cam [radio script]." https://seagrant.uaf.edu/news/98ASJ/05.19.98_

Port Graham residents, the community was informed about the placement of the cameras and they were encouraged to continue collecting eggs from the island as they had in the past. However, a few survey respondents commented that community residents generally feel intimidated by the presence of the cameras and do not feel comfortable going out to harvest eggs from Gull Island as they have in the past.

Marine Invertebrates

Residents of Port Graham have continued to rely on a variety of marine invertebrate species for decades. Survey respondents reported that, in previous years, shellfish used to be more widely available, but that they are less available now due to the landmass shifts during the 1964 earthquake, overharvesting, and an increasing sea otter population using them (particularly clams and bidarkis) as a food source. Some respondents believed that the local bidarki populations are declining because harvesters are taking immature bidarkis and leaving fewer to mature into reproductive adulthood. Lifelong community residents believe bidarkis need to be harvested when palm-sized in order for the population to be sustainable (Salomon et al. 2011). Many survey respondents commented that they need to travel farther and father to harvest bidarkis as local populations decline due to unsustainable harvest practices. Community members also expressed concern that the beaches where shellfish are harvested for subsistence are not monitored for paralytic shellfish poisoning or other pollution, and some expressed hesitation to harvest in those areas. A few survey respondents commented that they have noticed the area octopus population declining in the recent past as well, and that they are concerned about the sustainability of the octopus population if the community does not come together and began to limit the local octopus harvest. According to survey respondents, an additional stress for the local marine invertebrate populations is the large number of sea otters that continue to inhabit the bay.

Vegetation

Wild greens and berries are important fresh resources of spring, summer, and early fall that add diversity to local diet and are consumed fresh, dried, and in different cooked forms. During the survey effort, respondents said that 2014 was the first very good berry year in several years. Between 2010 and 2013, local berry plants, particularly blueberries and salmonberries, were at least partially destroyed every year by caterpillars that later in the year turned into moths. According to some residents, the caterpillars did not seem to have a negative effect on the cranberries for some reason. However, the cyclical and continuous partial loss of local berry harvests has been unfortunate to many community households that like to pick berries and use them on a regular basis throughout the year.

Increasing Challenges to Traditional Way of Life and Living Off the Land

Port Graham households face several challenges to continue living off the land following their cultural traditions. For some households in Port Graham, lack of access to a boat, skiff, or other means of transportation to access harvest areas is the primary factor keeping them from harvesting more wild resources. For other households, the cost of fuel for operating a motor or an ATV can be a prohibiting factor for harvesting resources. While highly valuable, full-time employment can prevent some households from participating in a lot of subsistence activities, even when given "subsistence days," or leave from work specifically to allow residents to harvest resources. One respondent felt this was unfortunate, because 2014 was a productive fishing year. As a result of not getting enough fishing done, some employed community members in 2014 ended up relying more heavily on store-bought foods. An example was given in regard to black seaweed harvests. Timing the harvest of seaweed with safe weather, tides, and work schedules is difficult and often prevents households from harvesting seaweed even though they would like to. Limited freezer and storage space was also discussed as affecting residents' ability to engage in harvest activities, especially if they only have limited time available for harvesting and processing activities. Residents can only take what will not spoil if they do not have room to freeze it. Some respondents reported that if people had more resources,

BirdCam.html (accessed February 17, 2016).

like freezers and boats, they may be able to increase their harvests. On the other hand, some community members expressed concern that with arrival of modern conveniences such as freezers, people may be taking more than they need. Some households expressed particular concern about the increased reliance on processed store-bought foods, which, according to local observation, have a detrimental effect on the health of community members, which is evident in the high rates of cancer and diabetes.

Efforts to educate young people about the traditional way of life in the area are considered to be difficult due to the low number of knowledgeable elders in the area to pass on these skills, and survey respondents described that elders remaining in the community have been falling ill. Another difficulty in passing on traditional skills is the reduced resource populations, which, in some cases—such as blue mussels and Dungeness crab—have been entirely gone from the Port Graham Bay for several decades now. Younger people are taught the traditional way of life by watching elders, which becomes difficult during periods of illness. Some community members believed that stories are not adequate as a method of knowledge transmission, and that sometimes it is best to see something done in order to truly learn the skill. There is also concern about the lack of interest by the young people in learning these skills as computer games and television continue to distract young people from learning traditional hunting, fishing, gathering, and processing skills. An additional challenge for engaging younger people in resource harvesting identified by a number of survey respondents is the easy availability of store-bought food in the community, which over time has become the preferred food to consume for some younger people as they have begun to lose connection with traditional wild foods.

With the challenges of passing on traditional harvesting and processing skills, older generations of Port Graham residents have become more and more concerned about the increased competition over resources in the community. Several survey respondents said that overharvesting of resources is their primary concern because younger generations do not seem to be interested or motivated to learn traditional ways of sharing and only taking what you need. As one survey respondent said: "The young people are tired of hearing '*In the old days*… .' We need to find a better way to get them interested in our traditional way of life and how to hunt, process, and cook the wild resources. Traditional way of life is about learning every day."

Environmental Pollution

In addition to concerns about paralytic shellfish poisoning, some survey respondents were concerned about contamination of natural resources from both the EVOS and the Fukushima Daiichi nuclear disaster in Japan in March 2011. Another concern is resource overharvest. Several community members expressed interest in receiving more information about the health of the widely used wild resources in the community, such as salmon, Pacific halibut, and bidarkis. The proposed liquefied natural gas treatment plant in upper Cook Inlet and the potential environmental risks related to the development and maintenance of this plant, as well as transportation of the liquefied natural gas through Cook Inlet, are major concerns for Port Graham residents.

Changing Weather

The changing and more unpredictable weather was another topic of concern for the future for many survey respondents. The most notable changes are related to winter conditions, which in 2014 and 2013 were substantially warmer than in the past. As mentioned before, Port Graham Bay used to freeze all the way across to the village site, but according to project key respondents that has not happened in more than 10 years. The winters are arriving later and have become substantially warmer with less snowfall. With the warming weather, the timing of seasonal harvesting activities is changing as is the behavior of some animal and fish species according to local observations. One example brought up by data review participants is the swimming pattern of Chinook salmon that now might be swimming farther away from the shore to stay away from the warmer, shallow water. This makes harvesting them with setnets tied to the shoreline more challenging. Another local observation has to do with the local moose population; during the warm fall months, moose do not wander down to lower elevations anymore, instead preferring to stay higher up where

the air is cooler. The decreased sightings of moose on lower elevations pose an additional challenge to local moose hunters during hunting season since hunters now have to travel a longer distance to locate any animals. Overall, the added unpredictability of weather is another factor adding to the cost of wild resource harvesting for Port Graham residents throughout the year.

How the Data Collected with the Survey Will Be Used

In the beginning of the project, several community residents expressed concerns about how the data collected through this survey will be used. The same concern was echoed by community members who took part in the survey. The primary concern for the community is that as a result of the updated data on wild resource harvests and uses, regulations guiding the use of these essential resources will be changed in a negative way for the community; perhaps, for example, by establishing more limited salmon harvest limits. Another concern was that the data will be made available to entities that could use it against the community.

ACKNOWLEDGMENTS

The Division of Subsistence would like to thank Port Graham Tribal Council for the support for this project. Our thanks also go to our hardworking local research assistants Pauline Allen, Jennifer Fomin, and Christalina Jager, whose efforts in contacting local residents and getting the surveys completed were essential for the study. And to conclude, a big thank you also to the community of Port Graham for your participation in the survey as well as taking the time to share some of the local history and your stories with us. Thank you all.

6. DISCUSSION AND CONCLUSIONS

Bronwyn Jones

Overview of Findings for the Study Communities, 2014

This report documents the estimated harvests and uses of wild resources by 4 communities in the Cook Inlet and Kachemak Bay areas of Southcentral Alaska. These communities are diverse in terms of location, local environment, history, economy, and resident mobility. Nikiski is located on the Alaska Highway system and is approximately a half-hour drive from Soldotna and a 3-hour drive from Anchorage. Residents of Nikiski traveled great distances to harvest some resources, such as marine fish in the waters of Prince William Sound. Port Graham, Nanwalek, and Seldovia are remote communities that can only be reached by air or water. Seldovia is the largest of these non-road connected communities, and is more accessible than Port Graham and Nanwalek. Unlike Port Graham and Nanwalek, Seldovia has ferry service to the community. Port Graham and Nanwalek are the 2 most remote and least populated communities included in this study.

Each community chapter includes maps depicting where harvests occurred in the study year as well as a general description of the seasonal round of harvests. Overall, during the study year, residents of Port Graham, Nanwalek, and Seldovia tended to concentrate their harvesting pursuits closer to their communities compared to the distances traveled by Nikiski residents (Figure 6-1). In addition, this study found that the non-road connected communities of Port Graham, Nanwalek, and Seldovia had higher per capita and average household harvests, and a wider diversity of resources harvested, than demonstrated in the community of Nikiski (Table 1-9). Although there is some diversity in terms of resident mobility and harvesting patterns, the study communities share many common trends, which will be the focus of this discussion.

As this research has shown, the 4 study communities exhibit a range of contemporary characteristics and patterns of wild resource harvest and use. Table 1-9 compares some of the key findings for community characteristics, including demography, cash economy, and resource harvests and uses.

Demography

Of the 4 study communities, Nikiski had the largest population (pop. 4,264), followed by that of Seldovia (pop. 278), Nanwalek (pop. 231), and Port Graham (pop. 149) (Table 1-9). When compared with the other study communities, Nikiski had a relatively low Alaska Native population (12% of residents identified as Alaska Native); in Seldovia, 23% of residents identified as Alaska Native, while the majority of residents in both Nanwalek and Port Graham identified as Alaska Native (92% in Nanwalek and 90% in Port Graham). This study found that the 2 communities with the largest percentage of household heads born in Alaska (Nanwalek and Port Graham) also had the highest average length of residency in the community for household heads (approximately 31 years for both) (Table 1-9). Population trends through time demonstrate similarities between the communities: the populations of Nikiski and Nanwalek have grown steadily over the last 30 years, while the populations of Seldovia and Port Graham have remained relatively stable since at least the 1980s (Figures 2-2, 3-2, 4-2, and 5-2).

Cash Economy

With the exception of Nikiski, the cash sector of the local economy in the study communities was relatively limited. Based on data from this research as well as from the American Community Survey (ACS) conducted by the U.S. Census Bureau, the average household income in all 4 of the study communities was below the state average of about $88,583 for the comparable 5-year estimate (2010–2014).[1] The average household

1. American Community Survey. 2014. "Income in the Past 12 Months (In 2014 Inflation-Adjusted Dollars, 2010–2014 American Community Survey 5-Year Estimates," American FactFinder, U.S. Census Bureau http://factfinder.census.gov/faces/nav/jsf/

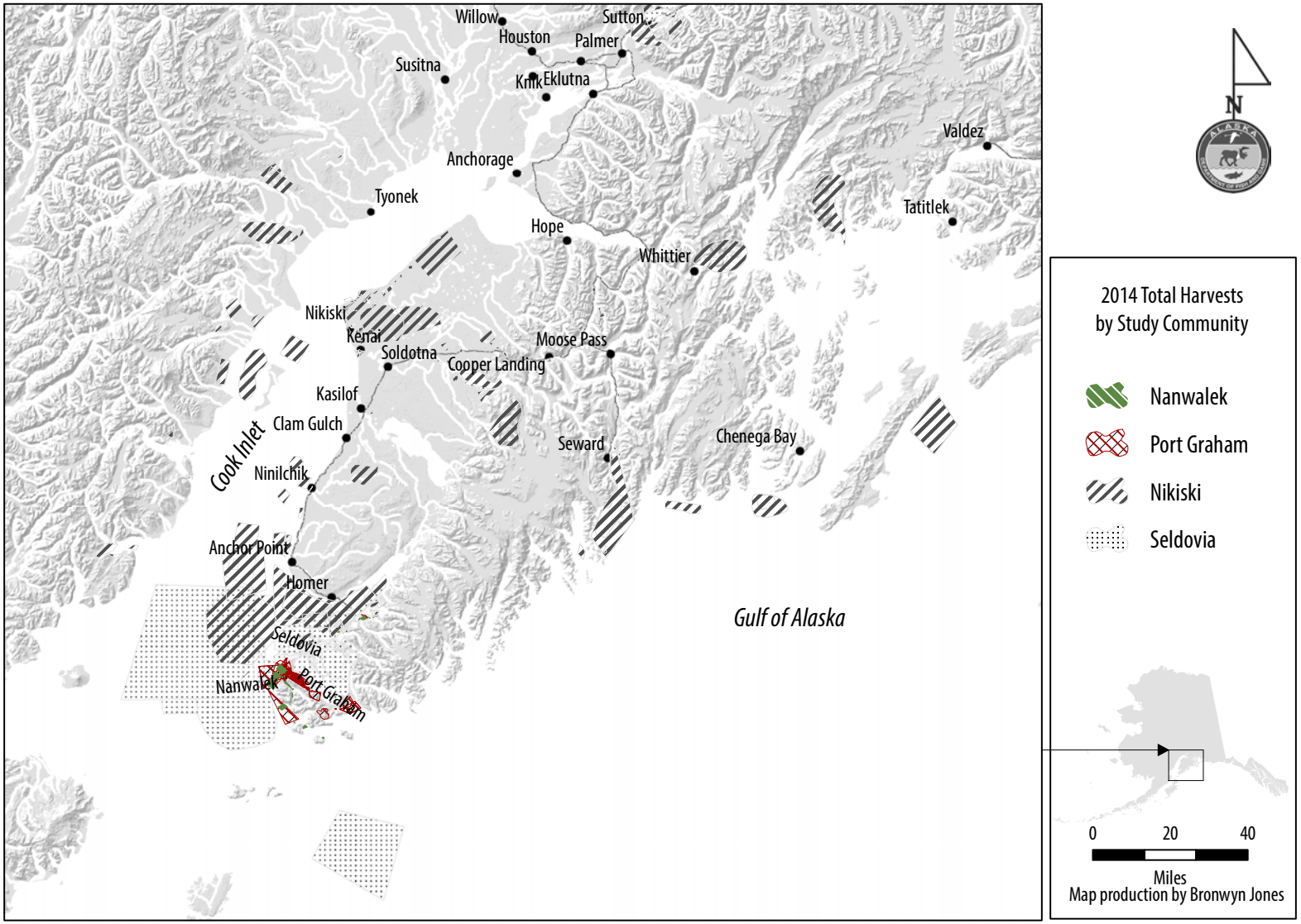

Figure 6-1.–Fishing, hunting, gathering, and harvest locations of all resources, study communities, 2014.

income in each study community as estimated from this survey, from highest to lowest, was: $61,970 in Nikiski, $55,747 in Seldovia, $32,975 in Port Graham, and $27,078 in Nanwalek (Table 1-9). In this study, the household income amount generally corresponded with the percentage of employed adults working year-round. Nikiski had the highest percentage of year-round employed adults (age 16 and older), with 75% of employed adults working year-round; Seldovia year-round employment was second highest with 70% of employed adults; cash employment was generally seasonal in the other 2 study communities. Nikiski is on the road system and also has an established industrial development, which provides more year-round employment opportunities than those found in the more remote and smaller communities. In Port Graham, just over one-half (53%) of employed adults worked year-round, and in Nanwalek the average number of months employed was 3.9.

Wild Resource Harvest and Use Patterns

As this research has shown, the study communities exhibit a range of contemporary patterns of wild resource harvests and uses. During the study year, the per capita weight of wild food harvests differed by a range of 185 lb when comparing the highest per capita harvest with the lowest per capita harvest (Table 1-9). Nikiski had the lowest per capita harvest of wild foods, with residents harvesting 69 lb per capita; the per capita harvest in Seldovia was 138 lb; for Port Graham the per capita harvest was 218 lb; and Nanwalek had the highest per capita harvest weight totaling 253 lb. The average number of resources harvested by households was highest in Nanwalek (12 kinds of resources per household), followed by Seldovia (10), Port Graham (10), and Nikiski (5).

During the 2014 study year, the majority of households in each study community participated in wild resource hunting, fishing, and gathering for nutrition and to support their way of life. Almost every household (89% or more) used wild resources in Nikiski and Nanwalek; 99% of households in Seldovia and 100% of households in Port Graham used wild resources (Figure 6-2). In addition, approximately 79% or more of the households in each community engaged in harvesting activities.

Sharing of resources was also common in all of the study communities. Sharing includes resources given or received within 1 community as well as sharing that occurred with people residing in other locations. For the communities of Nanwalek, Seldovia, and Port Graham, 84% or more of households received resources and 71% or more gave away resources. In Nikiski, 64% of households received resources and 51% gave away resources.

Figure 6-3 shows a comparison of the composition of the harvest for each of the 4 study communities. For all 4 communities, salmon made up the largest portion of the harvest in terms of pounds per capita harvested in 2014. Cook Inlet and Kachemak Bay provide local salmon harvesting opportunities for each of the study communities. In terms of specific salmon species, sockeye salmon was the most harvested type of salmon in all 4 study communities (figures 2-15, 3-15, 4-15, and 5-15). This survey found a shared sentiment across the study communities: residents expressed concerns that wild salmon runs have generally decreased over the past 10 years, and many reported that it now takes longer to harvest what they need for their annual subsistence use.

Nonsalmon fish made up a large portion of the overall harvest in terms of the pounds per capita harvested for Port Graham, Nanwalek, and Seldovia; Nikiski residents harvested more land mammals than nonsalmon fish (Figure 6-3). Because of its geographic positioning and ecological habitat, upper Cook Inlet does not offer as many opportunities for harvesting nonsalmon fish as Kachemak Bay. With Nikiski being farther to the north in Cook Inlet, and conveniently connected to other harvest areas by road, residents tended to travel to locations outside of their community area to fish for nonsalmon fish—including south to Kachemak Bay and east to Prince William Sound (Figure 2-17; Figure 2-20). Residents of Port Graham, Nanwalek, and Seldovia did not travel far to harvest nonsalmon fish because they had more easily accessible marine nonsalmon fishing opportunities close to their communities, as well as more limited cash income. However, a commonality found across all 4 study communities is the importance of Pacific halibut. Harvests of

pages/index.xhtml (accessed April 2016).

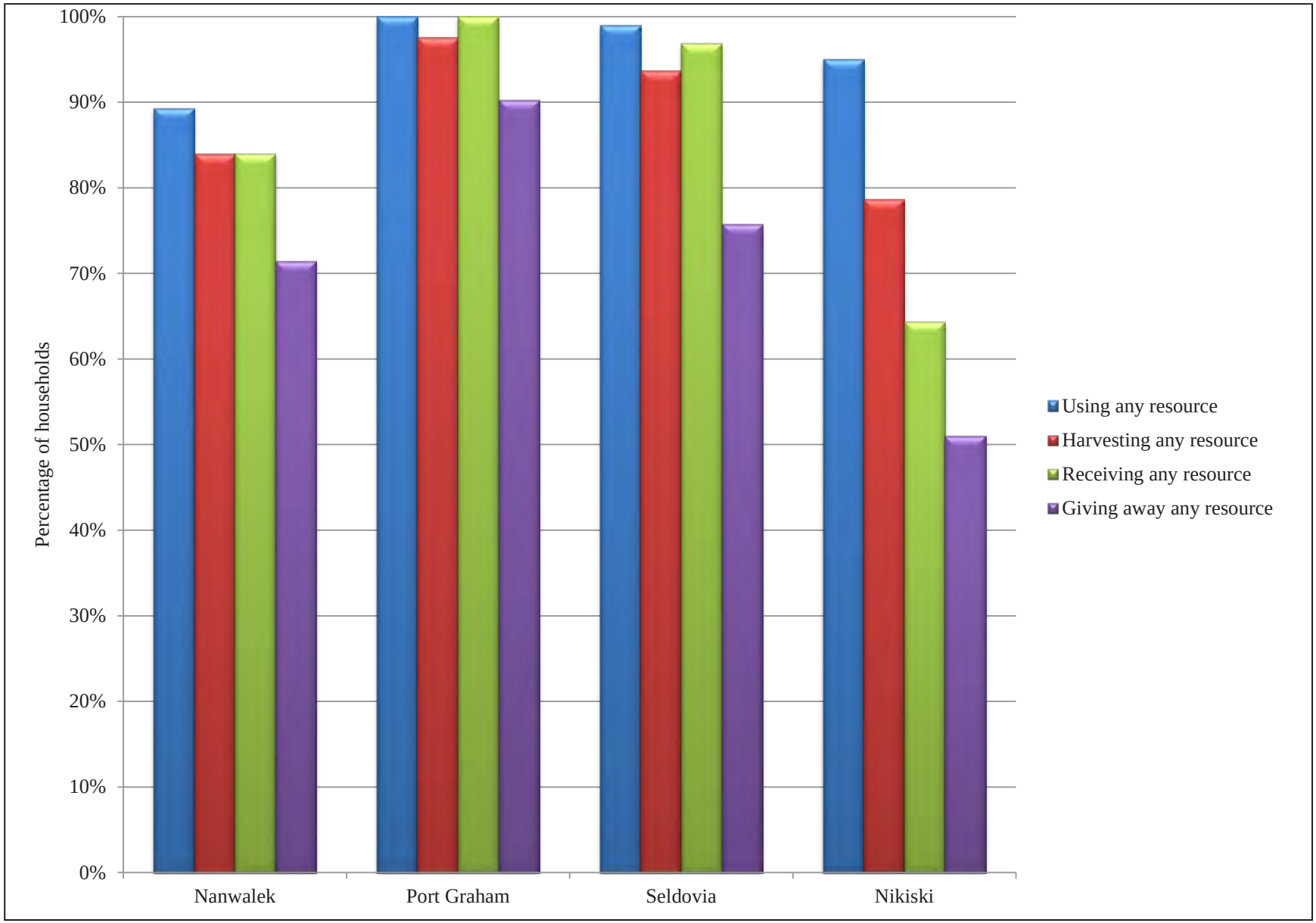

Figure 6-2.–Percentages of households using, attempting to harvest, harvesting, and sharing wild resources, study communities, 2014.

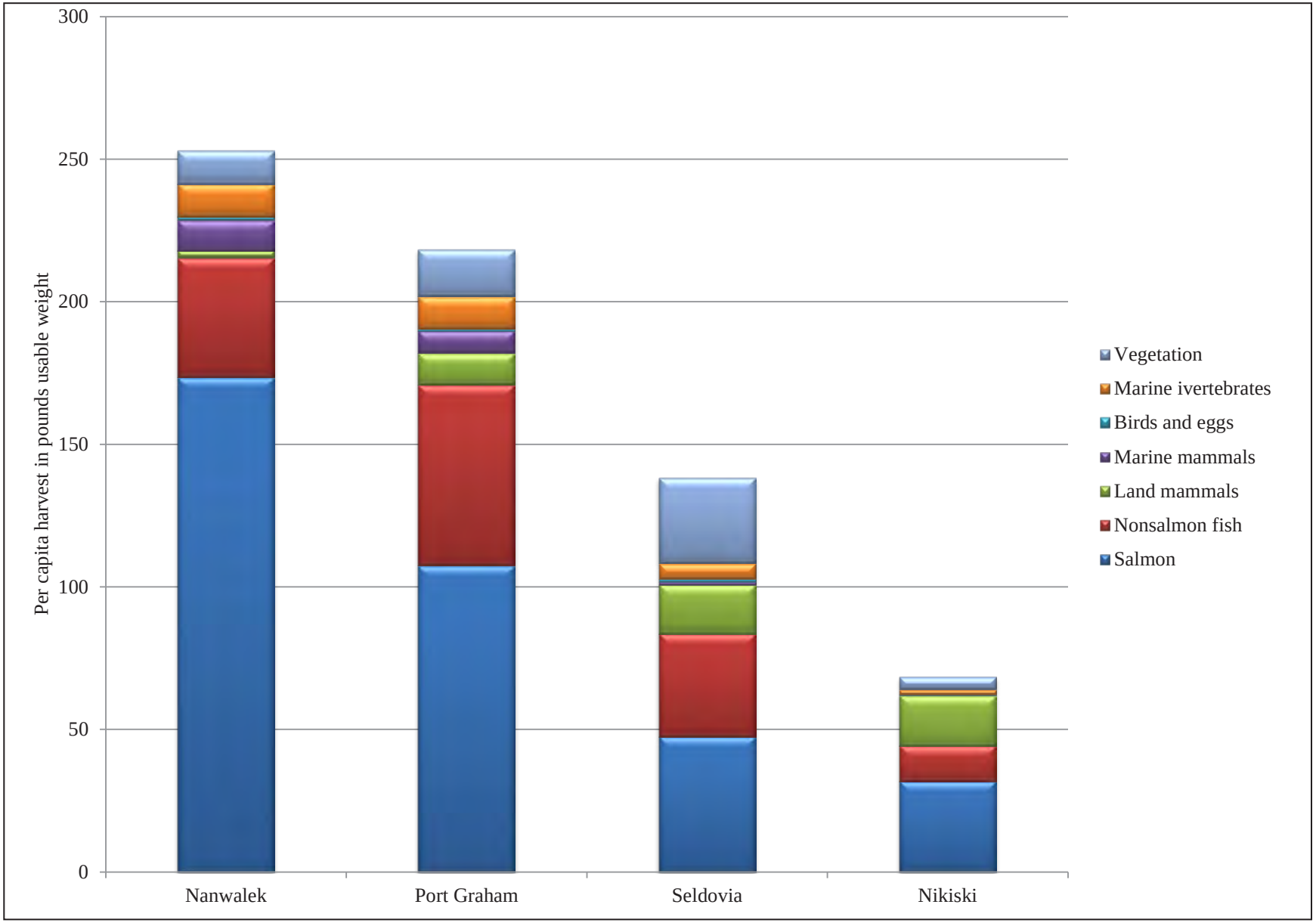

Figure 6-3.–Estimated harvests by pounds per capita and by resource category, study communities, 2014.

Pacific halibut made up 63% or higher of the nonsalmon fish harvest in each community (figures 2-18, 3-18, 4-18, and 5-18). Port Graham harvested the highest pounds per capita of freshwater nonsalmon fish[2] in 2014; the majority of the weight came from the harvest of Dolly Varden.

Large land mammal species made up a small component of the overall harvest in the communities of Nanwalek and Port Graham, and a larger component of the overall harvest in Nikiski and Seldovia (Figure 6-3). The 4 species of large land mammals harvested during the 2014 study year include: black bear, caribou, moose, and mountain goat. In all communities except Nanwalek (where no moose harvest permits were obtained and no harvests occurred), moose made up the majority of the large land mammal harvest composition (figures 2-21, 3-21, and 5-21). Nanwalek residents focused their large land mammal harvesting efforts on mountain goats (Figure 4-21). Black bears were harvested in all of the study communities. Caribou were harvested by all study communities except Port Graham.

Marine invertebrates were harvested and used in all 4 study communities (Figure 6-3). Nanwalek and Port Graham had the highest per capita harvest weight for marine invertebrates (approximately 11 lb), followed by Seldovia (6 lb) and Nikiski (2 lb). Nanwalek had the largest variety in its marine invertebrate harvest: community residents harvested approximately 13 different types of marine invertebrates during the 2014 study year (figures 2-27, 3-27, 4-27, and 5-29).

Marine mammals were harvested by 3 of the 4 study communities (Figure 6-3). Harbor seals, Steller sea lions, and sea otters made up the entire composition of marine mammal harvests for this study year in the surveyed communities; sea otters were harvested for fur only (Figure 6-4). The highest per capita harvest (for consumption only) of marine mammals occurred in Nanwalek (11 lb); Port Graham had the second highest per capita harvest (8 lb), followed by Seldovia (1 lb) (Figure 6-3). Nikiski residents did not attempt to harvest this resource category (Table 2-12). This trend reflects the community harvest patterns for marine invertebrates and nonsalmon fish: based on the harvest composition for each community, the 3 communities located in Kachemak Bay relied more on locally available marine resources, while Nikiski—located along upper Cook Inlet—did not harvest marine resources to the same extent.

In contrast to marine mammals, for another resource category, small land mammals, Nikiski had the most abundant usable harvest and diverse harvest composition (Figure 6-5). Nikiski residents harvested 11 different kinds of small land mammals. Overall, snowshoe hares, porcupines, and weasels were harvested by 2 or more of the communities. Generally, there was low harvest weight. Nikiski's harvest of birds and eggs was also more diverse than the harvests from the other study communities for these resources; in 2014, Nikiski households harvested 14 kinds of birds and eggs (figures 2-25, 3-25, 4-25, and 5-27).

Vegetation, which includes berries along with plants, greens, mushrooms, and also seaweeds, accounted for 5 lb per capita in Nikiski compared to an estimated 30 lb per capita in Seldovia (Figure 6-3). A great deal of effort was expended locally in all 4 communities to harvest berries in and around each community, as well as in other locations. Roadways were noted as especially important locations for harvesting berries by all communities. At the individual level of participation for gathering vegetation resources, anywhere from 61% to 77% of residents participated in gathering vegetation in 2014 (Table 6-1). According to survey respondents and information from key respondent interviews, 2014 was a very good berry year.

Historical Comparisons

Overall, only limited comparisons can be made between the 2014 harvest data and earlier study years. No comprehensive surveys have been previously conducted in Nikiski; this study represents the establishment of a harvest and use baseline for Nikiski. However, in this report a comparison was made between the community of Nikiski and Kenai. Kenai was certainly larger but also harvested a greater per capita harvest. The 1993 estimated per capita harvest was approximately 84 lb of wild resources, compared to approximately 69 lb of wild resources for Nikiski residents in 2014.

2. Dolly Varden can be harvested in both marine and fresh water.

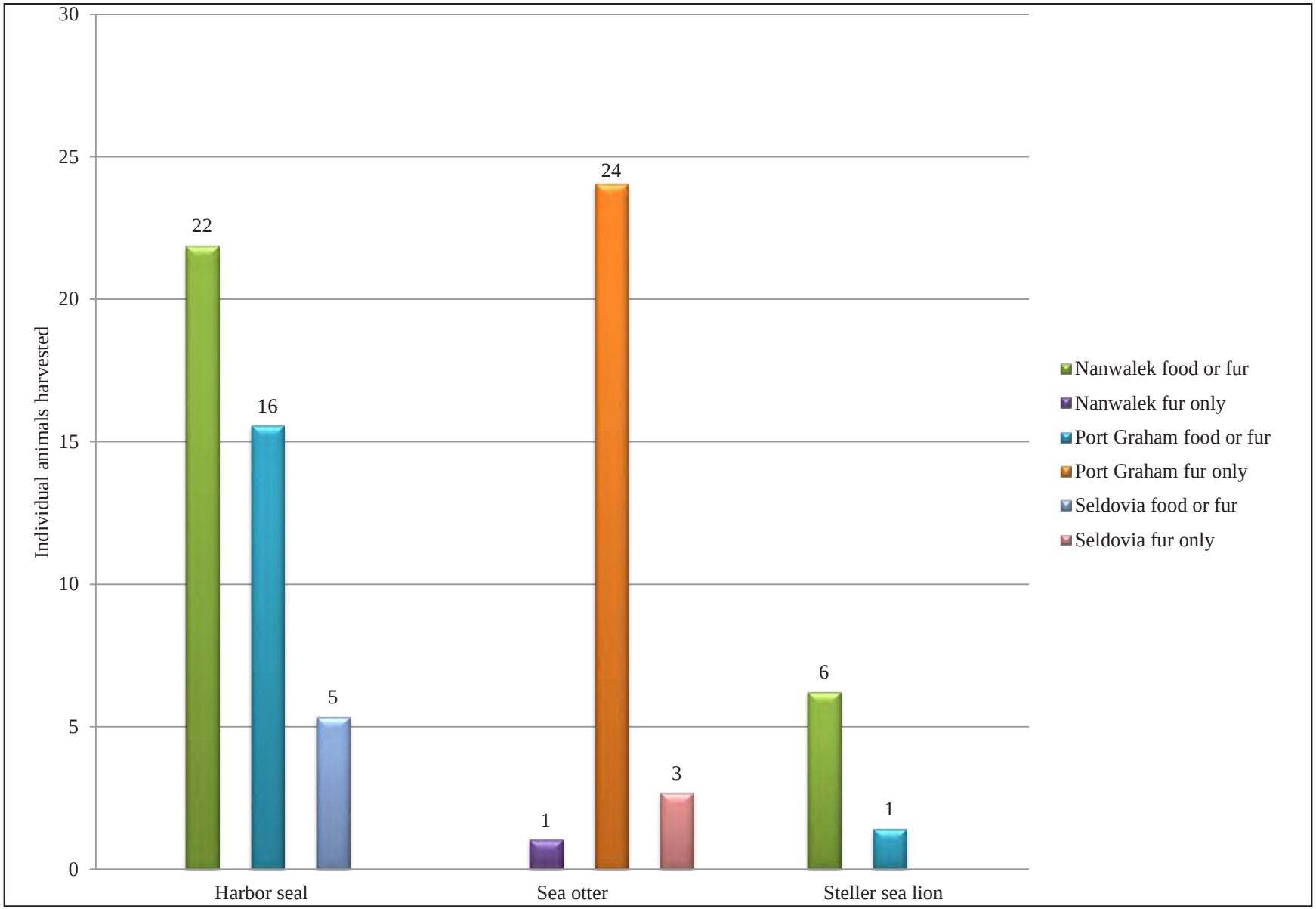

Figure 6-4.–Estimated marine mammal harvests by individual animals harvested for fur and food, study communities, 2014.

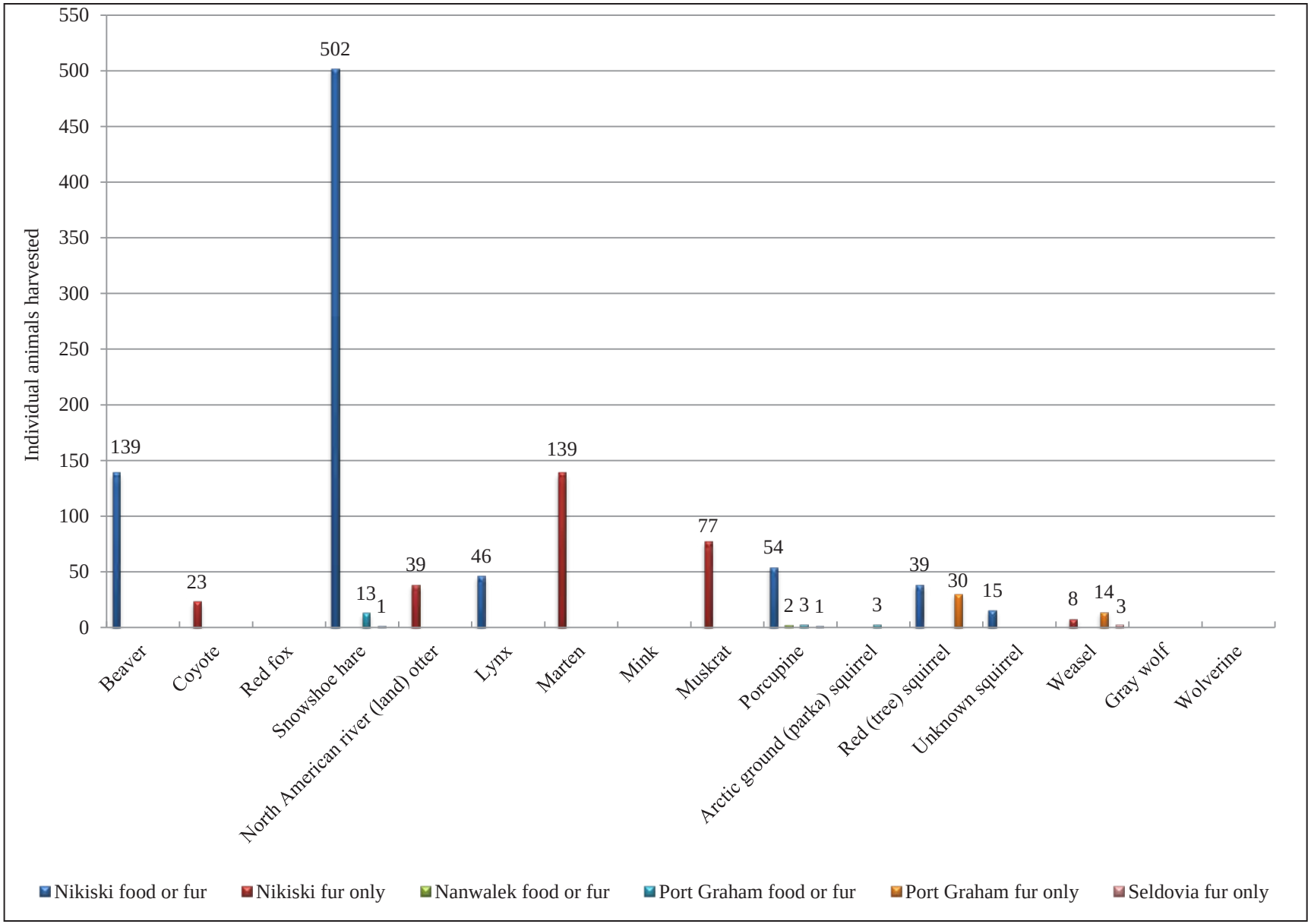

Figure 6-5.–Estimated small land mammal/furbearer harvests by individual animals harvested for fur and food, study communities, 2014.

For Seldovia, comprehensive surveys were conducted for study years 1982, 1991, 1992, and 1993. Past comprehensive surveys were conducted in Port Graham and Nanwalek for study years 1987,1989,1990, 1991,1992,1993,1997, and 2003. Results for comprehensive subsistence harvest surveys are available in Alaska Department of Fish and Game Technical Papers[3] and also the CSIS. Additionally, further discussion of study findings for Nanwalek and Port Graham in relation to *Exxon Valdez* oil spill effects and harvest and use patterns for 2014 compared to previous study years can be found in Fall and Zimpelman (2016).

For all of these communities where comparisons can be made, there are measurable differences in the harvest composition between study years, which were discussed in each community chapter, with the exception of Nikiski (tables 3-27, 4-28, and 5-28).

Overall, the Port Graham per capita harvests (in pounds usable weight) of wild resources have remained within a range of 70 lb with 2 notable annual exceptions (1989, the year when the *Exxon Valdez* oil spill occurred, and in 2003 when a very strong sockeye salmon return occurred to English Bay River lakes) (Figure 5-35). Salmon and nonsalmon fish continue to be important to local residents in this community (Figure 5-36). In Nanwalek, the trend is similar to that identified for Port Graham, and, like Port Graham, both salmon and nonsalmon fish remain the 2 most important resource categories for residents (Figure 4-34; Table 4-28). As mentioned in the Seldovia chapter, the sampling method during the 1982 study year was inconsistent with the other study years. Therefore, disregarding the 1982 study, the per capita harvest levels for Seldovia have remained relatively steady throughout the 4 other study years and have remained within a range of 67 lb. The per capita harvest of berries in Seldovia was nearly doubled in 2014 from the previous study year (1993) as a result of an excellent berry year (CSIS; Table 3-12).

Conclusions

This study documented the importance of the harvest of wild resources to the residents of the Cook Inlet communities of Port Graham, Nanwalek, Nikiski, and Seldovia. There were relatively high participation rates for attempting to gather wild resources at both the individual and household levels in all 4 communities—at least 75% participation or better for each level. Harvest levels, as estimated in pounds usable weight per capita, differed among the communities. The highest harvests estimated were for the 3 communities that are off the road system: Nanwalek, Port Graham, and Seldovia (Table 1-9). Similarly, the widest range of resources used occurred among households living off the road system. Generally, in each community, salmon, Pacific halibut, moose, and berries were the primary wild foods harvested as measured in usable pounds during the study year (figures 2-14, 3-14, 4-14, and 5-14). However, as noted above, residents from Port Graham, Nanwalek, and Seldovia used a wider diversity of wild foods, such as harbor seals, clams, Pacific tomcod, and other locally available marine resources. In addition to their own harvests, most households in each community also received wild resources from other households in their communities as shown by the number of resources given and received.

Although the study found evidence of a long-term pattern of harvest and use of wild resources, many participants reported that their wild resource uses and harvests have changed over their lifetimes as resource abundance fluctuated. Most notably, many community members mentioned changes in salmon and Pacific halibut abundance and size. Many residents expressed the desire to continue to harvest wild resources locally, not only for themselves, but also for future generations.

3. Comprehensive subsistence survey results are reported in: Reed (1985) for study year 1982; Fall (1997, 2006) for study years 1990 and 2003; and Fall and Utermohle (1995, 1999) for study years 1991, 1992, 1993, and 1997.

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APPENDIX A–SURVEY INSTRUMENT (PORT GRAHAM)

LNG

COMPREHENSIVE SUBSISTENCE SURVEY

PORT GRAHAM, ALASKA

From January 1, 2014 to December 31, 2014

printed: 2015-01-21

This survey is used to estimate wild food harvests and to describe rural community economies. We will publish a short summary report, that will be available to community members. We share this information with the Alaska Department of Fish and Game. We work with the Federal Regional Advisory Councils and with local Fish and Game Advisory Committees to better manage wild food resources.

We will NOT identify your household. We will NOT use this information for enforcement. Participation in this survey is voluntary. Even if you agree to be surveyed, you may stop at any time.

HOUSEHOLD ID:		
COMMUNITY ID:	282	282
INTERVIEWER #1:		
INTERVIEWER #2:		
INTERVIEW DATE:		
START TIME:		
STOP TIME:		
DATA CODED BY:		
DATA ENTERED BY:		
SUPERVISOR:		

Photo by James VanLanen

COOPERATING ORGANIZATIONS

DIVISION OF SUBSISTENCE, ALASKA DEPARTMENT OF FISH
333 RASPBERRY ROAD
ANCHORAGE, AK 99518
907-267-2353

PORT GRAHAM VILLAGE COUNCIL
PO BOX 5510
PORT GRAHAM, AK 99603
907-284-2227

DIVISION OF PUBLIC HEALTH AND SOCIAL SERVICES
3601 C STREET, SUITE 540
ANCHORAGE, AK 99503
907-269-8000

HOUSEHOLD MEMBERS

HOUSEHOLD ID

First, I would like to ask about the people in your household, permanent members of your household who live in your house. This includes students who return home every summer. I am NOT interested in people who lived with you temporarily, even if they stayed several months.

Last year, that is, between January 1, 2014 and December 31, 2014 WHO were the head or heads of your household?

Is this person answering questions on this survey?		How is this person related to HEAD 1?	Is this person MALE or FEMALE?	Is this person an ALASKA NATIVE?	How OLD is this person?	Where were parents living when this person was born?	How many years has this person lived in Port Graham?
ID #	*(circle)*	*(relation)*	*(circle)*	*(circle)*	*(years)*	*(AK city or state)*	*(number)*
HEAD 1	Y N		M F	Y N			
1							
NEXT enter spouse or partner. If a household has a SINGLE HEAD, leave HEAD 2 row BLANK and move to PERSON 3.							
HEAD 2	Y N		M F	Y N			
2							
BELOW, enter children (oldest to youngest), grandchildren, grandparents, or anyone else living full-time in this household.							
PERSON 03	Y N		M F	Y N			
3							
PERSON 04	Y N		M F	Y N			
4							
PERSON 05	Y N		M F	Y N			
5							
PERSON 06	Y N		M F	Y N			
6							
PERSON 07	Y N		M F	Y N			
7							
PERSON 08	Y N		M F	Y N			
8							
PERSON 09	Y N		M F	Y N			
9							
PERSON 10	Y N		M F	Y N			
10							
PERSON 11	Y N		M F	Y N			
11							
PERSON 12	Y N		M F	Y N			
12							
PERSON 13	Y N		M F	Y N			
13							

PERMANENT HH MEMBERS: 01 **PORT GRAHAM: 282**

HOUSEHOLD PARTICIPATION

HOUSEHOLD ID

To continue our questions about people in your household, I would like to ask a few questions about participation in subsistence activities…

Between January 1, 2014 and December 31, 2014

Did this person ….

PERSON ID# FROM PAGE 2	FISH		LARGE LAND MAMMALS		SMALL LAND MAMMALS		MARINE MAMMALS		BIRDS AND EGGS		PLANTS / BERRIES / WOOD	
	FISH FOR	PROCESS	HUNT	PROCESS	HUNT / TRAP	PROCESS	HUNT	PROCESS	HUNT / GATHER	PROCESS	GATHER	PROCESS
ID #	*(circle)*	*(circle)*	*(circle)*	*(circle)*	*(circle)*	*(circle)*	*(circle)*	*(circle)*	*(circle)*	*(circle)*	*(circle)*	*(circle)*
HEAD 1	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
1												
HEAD 2	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
2												
PERSON 03	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
3												
PERSON 04	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
4												
PERSON 05	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
5												
PERSON 06	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
6												
PERSON 07	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
7												
PERSON 08	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
8												
PERSON 09	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
9												
PERSON 10	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
10												
PERSON 11	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
11												
PERSON 12	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
12												
PERSON 13	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
13												

PERMANENT HH MEMBERS: 01 **PORT GRAHAM: 282**

RETAINED COMMERCIAL HARVESTS: SALMON

HOUSEHOLD ID

1. Do you or members of your household USUALLY participate in commercial SALMON fishing?..... Y N

2. During the last year (between January 1, 2014 and December 31, 2014)
   did you, or members of your household PARTICIPATE in a commercial SALMON fishery?..... Y N

IF the answer to QUESTION 2 is NO, go to the *NEXT PAGE*.

IF the answer is *YES*, continue on this page …

During the last year,[1]

did you or members of your household…

A … FISH commercially for _____?

B … KEEP any ____ from your commercial catch for your own use[2] or to share?

C Was the ____ that you kept INCIDENTAL[4] catch?

if keep is "yes"

Please estimate how many fish ALL MEMBERS OF YOUR HOUSEHOLD removed from commercial harvests for personal use during the last year.

Include COMMERCIALLY HARVESTED fish that members of this household gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If helping others, report ONLY THIS HOUSEHOLD'S share.

Read names below in blanks above	A COMM FISH?	B KEEP?	C INCI?	How many were removed for your OWN USE?[5]	How many were removed for your CREW?[5]	How many were removed to give to OTHERS?	Units[3]	
				number	*number*	*number*	*specify*	*comments*
CHINOOK (KING) SALMON	Y N	Y N	Y N				IND.	
113000001								
CHUM (DOG) SALMON	Y N	Y N	Y N				IND.	
111000001								
SOCKEYE (RED) SALMON	Y N	Y N	Y N				IND.	
115000001								
PINK SALMON (HUMPIES)	Y N	Y N	Y N				IND.	
114000001								
COHO SALMON (SILVERS)	Y N	Y N	Y N				IND.	
112000001								
UNKNOWN SALMON	Y N	Y N	Y N				IND.	
119000001								
	Y N	Y N	Y N					
	Y N	Y N	Y N					
	Y N	Y N	Y N					

1 *"LAST YEAR" means between January 1, 2014 and December 31, 2014.*
2 *"USE" includes eating, feeding to dogs, sharing or trading with others, etc.*
3 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.*
4 *"INCIDENTAL CATCH" means the fish kept was not being commercially fished. For example, a king salmon kept from a chum commerical fishery.*
5 *Double counting (captains' removals for crew members and crew members' removal for own uses) is fixed in analysis. Collect both.*

COMMERCIAL FISHING: 03 **PORT GRAHAM: 282**

RETAINED COMMERCIAL HARVESTS: OTHER FISH

HOUSEHOLD ID

1. Do you or members of your household USUALLY participate in a commercial fishery for OTHER FISH?..... Y N

2. During the last year (between January 1, 2014 and December 31, 2014) did you, or members of your household PARTICIPATE in a commercial fishery for OTHER FISH?..... Y N

IF the answer to QUESTION 2 is NO, go to the *NEXT PAGE*.

IF the answer is *YES*, continue on this page …

During the last year,[1]

did you or members of your household…

A … FISH commercially for _____?

B … KEEP any ____ from your commercial catch for your own use[2] or to share?

C Was the ____ that you kept INCIDENTAL[4] catch?

if keep is "yes"

Please estimate how many fish ALL MEMBERS OF YOUR HOUSEHOLD removed from commercial harvests for personal use during the last year.

Include COMMERCIALLY HARVESTED fish that members of this household gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If helping others, report ONLY THIS HOUSEHOLD'S share.

Read names below in blanks above	A COMM FISH?	B KEEP?	C INCI?	How many were removed for your OWN USE?[5]	How many were removed for your CREW?[5]	How many were removed to give to OTHERS?	Units[3]	
				number	*number*	*number*	*specify*	*comments*
HERRING	Y N	Y N	Y N				GAL.	
120200001								
HERRING SPAWN ON KELP	Y N	Y N	Y N				GAL.	
120306001								
HERRING SAC ROE	Y N	Y N	Y N				GAL.	
120304001								
STURGEON	Y N	Y N	Y N				IND.	
125800001								
LINGCOD	Y N	Y N	Y N				IND.	
121606001								
PACIFIC COD (GRAY)	Y N	Y N	Y N				IND.	
121004001								
SABLEFISH (BLACK COD)	Y N	Y N	Y N				IND.	
122800001								
UNKNOWN FLOUNDER	Y N	Y N	Y N				IND.	
121499001								
UNKNOWN SOLE	Y N	Y N	Y N				IND.	
123699001								
HALIBUT	Y N	Y N	Y N				LB.	
121800001								

1 *"LAST YEAR" means between January 1, 2014 and December 31, 2014.*
2 *"USE" includes eating, feeding to dogs, sharing or trading with others, etc.*
3 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.*
4 *"INCIDENTAL CATCH" means the fish kept was not being commercially fished. For example, a king salmon kept from a chum commerical fishery.*
5 *Double counting (captains' removals for crew members and crew members' removal for own uses) is fixed in analysis. Collect both.*

COMMERCIAL FISHING: 03 **PORT GRAHAM: 282**

RETAINED COMMERCIAL HARVESTS: OTHER FISH

HOUSEHOLD ID

…. CONTINUED from previous page

During the last year,[1]
did you or members of your household…

A … FISH commercially for _____?
B … KEEP any ____ from your commercial catch for your own use[2] or to share?

C Was the ____ that you kept INCIDENTAL[4] catch?

if keep is "yes"

Please estimate how many fish ALL MEMBERS OF YOUR HOUSEHOLD removed from commercial harvests for personal use during the last year.
Include COMMERCIALLY HARVESTED fish that members of this household gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If helping others, report ONLY THIS HOUSEHOLD'S share.

Read names below in blanks above	A COMM FISH?	B KEEP?	C INCI?	How many were removed for your OWN USE?[5]	How many were removed for your CREW?[5]	How many were removed to give to OTHERS?	Units[3]	
				number	*number*	*number*	*specify*	*comments*
BLACK ROCKFISH *(BLACK BASS)*	Y N	Y N	Y N				IND.	
122602001								
RED ROCKFISH	Y N	Y N	Y N				IND.	
122604001								
UNKNOWN ROCKFISH	Y N	Y N	Y N				IND.	
122699001								
GREENLING (POGIES)	Y N	Y N	Y N				IND.	
121600001								
SHARK	Y N	Y N	Y N				IND.	
123299001								
WALLEYE POLLOCK *(WHITING)*	Y N	Y N	Y N				IND.	
121012001								
SCULPIN	Y N	Y N	Y N				IND.	
123000001								
DOLLY VARDEN	Y N	Y N	Y N				IND.	
125006001								
	Y N	Y N	Y N					
	Y N	Y N	Y N					
	Y N	Y N	Y N					

1 *"LAST YEAR" means between January 1, 2014 and December 31, 2014.*
2 *"USE" includes eating, feeding to dogs, sharing or trading with others, etc.*
3 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.*
4 *"INCIDENTAL CATCH" means the fish kept was not being commercially fished. For example, a king salmon kept from a chum commerical fishery.*
5 *Double counting (captains' removals for crew members and crew members' removal for own uses) is fixed in analysis. Collect both.*

RETAINED COMMERCIAL HARVESTS: MARINE INVERTEBRATES

HOUSEHOLD ID

1. Do you or members of your household USUALLY participate in a commercial fishery for MARINE INVERTEBRATES? Y N

2. During the last year (between January 1, 2014 and December 31, 2014) did you, or members of your household PARTICIPATE in a commercial fishery for MARINE INVERTEBRATES? …… Y N

IF the answer to QUESTION 2 is NO, go to the *NEXT PAGE*.

IF the answer is *YES*, continue on this page …

During the last year,[1]

did you or members of your household…

A … FISH commercially for _____?

B … KEEP any ____ from your commercial catch for your own use[2] or to share?

if keep is "yes"

C Was the ____ that you kept INCIDENTAL[4] catch?

Please estimate how many fish ALL MEMBERS OF YOUR HOUSEHOLD removed from commercial harvests for personal use during the last year.

Include COMMERCIALLY HARVESTED fish that members of this household gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If helping others, report ONLY THIS HOUSEHOLD'S share.

Read names below in blanks above	A COMM FISH?	B KEEP?	C INCI?	How many were removed for your OWN USE?[5]	How many were removed for your CREW?[5]	How many were removed to give to OTHERS?	Units[3]	
				number	*number*	*number*	*specify*	*comments*
RAZOR CLAMS	Y N	Y N	Y N				GAL.	
500612001								
PACIFIC LITTLENECK CLAMS *(STEAMERS)*	Y N	Y N	Y N				GAL.	
500608001								
DUNGENESS CRAB	Y N	Y N	Y N				IND.	
501004001								
KING CRAB	Y N	Y N	Y N				IND.	
501008991								
TANNER CRAB	Y N	Y N	Y N				IND.	
501012991								
OCTOPUS	Y N	Y N	Y N				IND.	
502200001								
SHRIMP	Y N	Y N	Y N				LB.	
503400001								
	Y N	Y N	Y N					
	Y N	Y N	Y N					
	Y N	Y N	Y N					

1 *"LAST YEAR" means between January 1, 2014 and December 31, 2014.*
2 *"USE" includes eating, feeding to dogs, sharing or trading with others, etc.*
3 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.*
4 *"INCIDENTAL CATCH" means the fish kept was not being commercially fished. For example, a king salmon kept from a chum commerical fishery.*
5 *Double counting (captains' removals for crew members and crew members' removal for own uses) is fixed in analysis. Collect both.*

HARVESTS: SALMON

HOUSEHOLD ID

1. Do you or members of your household USUALLY fish for salmon ?..... Y N

2. During the last year (between January 1, 2014 and December 31, 2014)
   did you, or members of your household USE or TRY TO HARVEST salmon?..... Y N

IF the answer to QUESTION 2 is NO, go to the *NEXT PAGE*.

IF the answer is *YES*, continue on this page …

Please estimate how many salmon ALL MEMBERS OF YOUR HOUSEHOLD HARVESTED in 2014, including with a rod and reel. INCLUDE salmon you gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If fishing with others, report ONLY YOUR SHARE of the catch. Do not include fish caught and released.

	In 2014 did members of your household …					In 2014 HOW MANY _____ DID YOUR HOUSEHOLD HARVEST WITH ….						*# of those used just for dog food?*
	USE?	TRY TO HARVEST?	HARVEST?	RECEIVE?	GIVE AWAY?	SET GILL NET	SEINE NET	FISH WHEEL	ROD & REEL	OTHER GEAR (specify type)	UNITS	
Read names below	*(circle)*					*(number harvested by each gear type)*				*amount / type*	*specify*	*amt.*
CHINOOK (KING) SALMON	Y N	Y N	Y N	Y N	Y N					/	IND.	
113000000												
CHUM (DOG) SALMON	Y N	Y N	Y N	Y N	Y N					/	IND.	
111000000												
SOCKEYE (RED) SALMON	Y N	Y N	Y N	Y N	Y N					/	IND.	
115000000												
PINK SALMON (HUMPIES)	Y N	Y N	Y N	Y N	Y N					/	IND.	
114000000												
COHO SALMON (SILVERS)	Y N	Y N	Y N	Y N	Y N					/	IND.	
112000000												
LANDLOCKED SALMON	Y N	Y N	Y N	Y N	Y N					/	IND.	
116000000												
UNKNOWN SALMON	Y N	Y N	Y N	Y N	Y N					/	IND.	
119000000												

These columns should include ALL the salmon HARVESTED by members of this household in 2014.

ASSESSMENTS: SALMON

110000000

Between January 1, 2014 and December 31, 2014…

To conclude our salmon section, I am going to ask a few general questions about salmon.

Last year…

… did your household use LESS, SAME, or MORE salmon than in recent years? …… X L S M

X = do not use

IF LESS or MORE …

WHY was your use different? _____ 1

_____ 2

Last year…

…did your household GET ENOUGH salmon?..... Y N

If NO…

What KIND of salmon did you need? _____

How would you describe the impact to your household of not getting enough salmon last year?

… not noticable?	*… minor ?*	*… major?*	*… Severe?*
(0)	*(1)*	*(2)*	*(3)*

SALMON: 04 **PORT GRAHAM: 282**

FISHERY PARTICIPATION — HOUSEHOLD ID

SALMON

If the houshold harvested salmon in the previous section, continue this section. If the household did not harvest salmon go to the PARTICIPATION questions below…

Last year, did your household get a subsistence salmon permit?.....		Y N
If YES …how many members of your household were listed on the permit?	*(# HH Members)*	
…were there other people outside of your household listed on the permit?		Y N
…if yes how many people besides those in your household were listed on the permit?	*(# outside HH)*	
…did you share your net with another household?		Y N
... if yes how many other households?	*(# Other HH)*	
If NO …were you listed on another household's permit?.....		Y N
Does your household own a net for harvesting salmon?		Y N
Does your houshold own a boat?		Y N
If YES what size?	*(boat size in feet)*	
Is your boat used for commercial fishing?		Y N

PARTICIPATION IN FISHERIES AND COMMUNITY

Does a member of your household participate in the commercial fishery? Y N

If YES, continue this section

Is a member of your household.. *1. Permit holder* *2. Crew* *3. Both*

How much of your household income comes from commercial fishing?

0%	*1-25%*	*26-50%*	*50-75%*	*76-100%*
(0)	*(1)*	*(2)*	*(3)*	*(4)*

Do you usually retain Chinook salmon for home use?	Y N
Do you usually retain sockeye salmon for home use?	Y N
If you retain salmon for home use, do you still usually participate in subsistence fishing? *(Usually is the past 5 years)*	Y N

COMMUNITY AND ECONOMY

In your opinion, what are the reasons you continue to live in Port Graham? List most important reason first.

1 _____

2 _____

3 _____

Do you plan on leaving in the future? Y N

If so why? _____

Do you consider commercial fishing to be important for the economy of Port Graham? Y N

Not Important ☐ *(0)* Somewhat Important ☐ *(1)* Very Important ☐ *(2)*

HARVESTS: OTHER FISH

HOUSEHOLD ID

1. Do you or members of your household USUALLY fish for other fish?..... Y N

2. During the last year (between January 1, 2014 and December 31, 2014) did you, or members of your household USE or TRY TO HARVEST other fish?..... Y N

IF the answer to QUESTION 2 is NO, go to the *NEXT PAGE*.

IF the answer is *YES*, continue on this page …

Please estimate how many other fish ALL MEMBERS OF YOUR HOUSEHOLD HARVESTED in 2014, including with a rod and reel. INCLUDE other fish you gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If fishing with others, report ONLY YOUR SHARE of the catch. Do not include fish caught and released.

	In 2014 did members of your household …					In 2014 HOW MANY _____ DID YOUR HOUSEHOLD HARVEST WITH ….						# of those used just for dog food?
	USE?	TRY TO HARVEST?	HARVEST?	RECEIVE?	GIVE AWAY?	SET GILL NET	SEINE NET	FISH WHEEL	ROD & REEL	OTHER GEAR (specify type)	UNITS	
Read names below	(circle)					(number harvested by each gear type)				amount / type	specify	amt.
HERRING	Y N	Y N	Y N	Y N	Y N					/	GAL.	
120200000												
HERRING ROE	Y N	Y N	Y N	Y N	Y N					/	GAL.	
120300000												
EULACHON (HOOLIGAN)	Y N	Y N	Y N	Y N	Y N					/	GAL.	
120404000												
UNKNOWN SMELT	Y N	Y N	Y N	Y N	Y N					/	GAL.	
120499000												
SABLEFISH (BLACK COD)	Y N	Y N	Y N	Y N	Y N					/	IND.	
122800000												
PACIFIC COD (GRAY)	Y N	Y N	Y N	Y N	Y N					/	IND.	
121004000												
LINGCOD	Y N	Y N	Y N	Y N	Y N					/	IND.	
121606000												
PACIFIC TOM COD	Y N	Y N	Y N	Y N	Y N					/	IND.	
121008000												
STARRY FLOUNDER	Y N	Y N	Y N	Y N	Y N					/	IND.	
121406000												
SOLE	Y N	Y N	Y N	Y N	Y N					/	IND.	
123699000												
HALIBUT	Y N	Y N	Y N	Y N	Y N					/	LB.	
121800000												
BLACK ROCKFISH	Y N	Y N	Y N	Y N	Y N					/	IND.	
122602000												

These columns should include ALL the other fish HARVESTED by members of this household in 2014.

OTHER FISH: 06 **PORT GRAHAM: 282**

HARVESTS: OTHER FISH

HOUSEHOLD ID

…continued from previous page

	In 2014 did members of your household …					In 2014 HOW MANY _____ DID YOUR HOUSEHOLD HARVEST WITH ….						# of those used just for dog food?
	USE?	TRY TO HARVEST?	HARVEST?	RECEIVE?	GIVE AWAY?	SET GILL NET	SEINE NET	FISH WHEEL	ROD & REEL	OTHER GEAR (specify type)	UNITS	
Read names below	(circle)					(number harvested by each gear type)				amount / type	specify	amt.
UNKNOWN ROCKFISH	Y N	Y N	Y N	Y N	Y N					/	IND.	
122699000												
GREENLING (POGIES)	Y N	Y N	Y N	Y N	Y N					/	IND.	
121600000												
WALLEYE POLLOCK *(WHITING)*	Y N	Y N	Y N	Y N	Y N					/	IND.	
121012000												
SHARK	Y N	Y N	Y N	Y N	Y N					/	IND.	
123299000												
SKATES	Y N	Y N	Y N	Y N	Y N					/	IND.	
123400000												
DOLLY VARDEN	Y N	Y N	Y N	Y N	Y N					/	IND.	
125006000												
LAKE TROUT	Y N	Y N	Y N	Y N	Y N					/	IND.	
125010000												
RAINBOW TROUT	Y N	Y N	Y N	Y N	Y N					/	IND.	
126204000												
STEELHEAD	Y N	Y N	Y N	Y N	Y N					/	IND.	
126206000												
CUTTHROAT TROUT	Y N	Y N	Y N	Y N	Y N					/	IND.	
126202000												
SEA BASS	Y N	Y N	Y N	Y N	Y N					/	IND.	
120602000												
WOLF EEL (WOLF FISH)	Y N	Y N	Y N	Y N	Y N					/	IND.	
124200000												
GRAYLING	Y N	Y N	Y N	Y N	Y N					/	IND.	
125200000												
PIKE	Y N	Y N	Y N	Y N	Y N					/	IND.	
125500000												

These columns should include ALL the other fish HARVESTED by members of this household in 2014.

OTHER FISH: 06 **PORT GRAHAM: 282**

HARVESTS: OTHER FISH

HOUSEHOLD ID

…continued from previous page

	In 2014 did members of your household …					In 2014 HOW MANY _____ DID YOUR HOUSEHOLD HARVEST WITH ….						# of those used just for dog food?
	USE?	TRY TO HARVEST?	HARVEST?	RECEIVE?	GIVE AWAY?	SET GILL NET	SEINE NET	FISH WHEEL	ROD & REEL	OTHER GEAR (specify type)	UNITS	
Read names below	(circle)					(number harvested by each gear type)				amount / type	specify	amt.
WHITEFISH	Y N	Y N	Y N	Y N	Y N					/	IND.	
126499000												
IRISH LORD	Y N	Y N	Y N	Y N	Y N					/	IND.	
123006000												
UNKNOWN SCULPIN	Y N	Y N	Y N	Y N	Y N					/	IND.	
123099000												
EEL	Y N	Y N	Y N	Y N	Y N					/	IND.	
121200000												
	Y N	Y N	Y N	Y N	Y N					/		
	Y N	Y N	Y N	Y N	Y N					/		

These columns should include ALL the other fish HARVESTED by members of this household in 2014.

ASSESSMENTS: OTHER FISH

120000000

Between January 1, 2014 and December 31, 2014…

To conclude our other fish section, I am going to ask a few general questions about other fish.

Last year…

… did your household use LESS, SAME, or MORE other fish than in recent years? …… X L S M

IF LESS or MORE … X = do not use

WHY was your use different? _____ 1

_____ 2

Last year…

…did your household GET ENOUGH other fish?..... Y N

If NO…

What KIND of other fish did you need? _____

How would you describe the impact to your household of not getting enough other fish last year? *… not noticable? (0)* *… minor ? (1)* *… major? (2)* *… Severe? (3)*

Think back to about ten years ago (2004). Would you say that *HALIBUT* available to harvest in this area are less, the same, or more than ten year ago? L S M

If not the same, why? _____ 1

_____ 2

Think back to about ten years ago (2004). Would you say that *HERRING* available to harvest in this area are less, the same, or more than ten year ago? L S M

If not the same, why? _____ 1

_____ 2

Do you think *HERRING* from your traditional harvest areas are safe for you to eat? Y N

If NOT safe, why? _____ 1

_____ 2

HARVESTS: MARINE INVERTEBRATES

HOUSEHOLD ID

1. Do you or members of your household USUALLY attempt to harvest marine invertebrates?..... Y N

2. During the last year (between January 1, 2014 and December 31, 2014)
   did you, or members of your household USE or TRY TO HARVEST marine invertebrates?..... Y N

IF the answer to QUESTION 2 is NO, go to the *NEXT PAGE*.

IF the answer is *YES*, continue on this page …

Please estimate how many marine invertebrates ALL MEMBERS OF YOUR HOUSEHOLD HARVESTED in 2014. INCLUDE marine invertebrates you gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If harvesting with others, report ONLY YOUR SHARE of the harvest.

	In 2014 did members of your household …					In 2014 HOW MANY _____ DID YOUR HOUSEHOLD HARVEST….		
	USE?	TRY TO HARVEST?	HARVEST?	RECEIVE?	GIVE AWAY?	AMOUNT	UNITS	COMMENTS
Read names below	(circle)					(amt)	specify	(text)
BUTTER CLAMS	Y N	Y N	Y N	Y N	Y N		GAL.	
500602000								
RAZOR CLAMS	Y N	Y N	Y N	Y N	Y N		GAL.	
500612000								
LITTLENECK CLAMS	Y N	Y N	Y N	Y N	Y N		GAL.	
500608000								
PINKNECK (SURF) CLAMS	Y N	Y N	Y N	Y N	Y N		GAL.	
500610000								
HORSE CLAMS (GAPER)	Y N	Y N	Y N	Y N	Y N		GAL.	
500606000								
UNKNOWN CLAMS	Y N	Y N	Y N	Y N	Y N		GAL.	
500699000								
DUNGENESS CRAB	Y N	Y N	Y N	Y N	Y N		IND.	
501004000								
KING CRAB	Y N	Y N	Y N	Y N	Y N		IND.	
501008000								
TANNER CRAB, BAIRDI *(SNOW CRAB)*	Y N	Y N	Y N	Y N	Y N		IND.	
501012020								
UNKNOWN CRABS	Y N	Y N	Y N	Y N	Y N		IND.	
501099000								
COCKLES	Y N	Y N	Y N	Y N	Y N		GAL.	
500899000								
WEATHERVANE SCALLOPS	Y N	Y N	Y N	Y N	Y N		GAL.	
502602000								

Include ALL the marine invertebrates HARVESTED by members of this household in 2014.

MARINE INVERTEBRATES: 08 **PORT GRAHAM: 282**

HARVESTS: MARINE INVERTEBRATES

HOUSEHOLD ID

…continued from previous page

	In 2014 did memers of your household …					In 2014 HOW MANY _____ DID YOUR HOUSEHOLD HARVEST….		
	USE?	TRY TO HARVEST?	HARVEST?	RECEIVE?	GIVE AWAY?	AMOUNT	UNITS	COMMENTS
Read names below	(circle)					(amt)	specify	(text)
MUSSELS	Y N	Y N	Y N	Y N	Y N		GAL.	
502099000								
BLACK BIDARKIS (CHITONS)	Y N	Y N	Y N	Y N	Y N		GAL.	
500408000								
RED (LARGE) BIDARKIS	Y N	Y N	Y N	Y N	Y N		GAL.	
500404000								
SEA URCHIN	Y N	Y N	Y N	Y N	Y N		GAL.	
503200000								
SHRIMP	Y N	Y N	Y N	Y N	Y N		LBS.	
503400000								
OCTOPUS	Y N	Y N	Y N	Y N	Y N		IND.	
502200000								
SNAILS	Y N	Y N	Y N	Y N	Y N		GAL.	
503600000								
LIMPETS	Y N	Y N	Y N	Y N	Y N		GAL.	
501800000								
SEA CUCUMBER	Y N	Y N	Y N	Y N	Y N		GAL.	
503099000								
WHELK	Y N	Y N	Y N	Y N	Y N		GAL.	
504000000								
	Y N	Y N	Y N	Y N	Y N			
	Y N	Y N	Y N	Y N	Y N			
	Y N	Y N	Y N	Y N	Y N			
	Y N	Y N	Y N	Y N	Y N			

Include ALL the marine invertebrates HARVESTED by members of this household in 2014.

MARINE INVERTEBRATES: 08 **PORT GRAHAM: 282**

HARVESTS: MARINE INVERTEBRATES

HOUSEHOLD ID

…continued from previous page

	In 2014 did memers of your household …					In 2014 HOW MANY _____ DID YOUR HOUSEHOLD HARVEST….		
	USE?	TRY TO HARVEST?	HARVEST?	RECEIVE?	GIVE AWAY?	AMOUNT	UNITS	COMMENTS
Read names below	(circle)					(amt)	specify	(text)
	Y N	Y N	Y N	Y N	Y N		GAL.	
	Y N	Y N	Y N	Y N	Y N		GAL.	
	Y N	Y N	Y N	Y N	Y N		GAL.	
	Y N	Y N	Y N	Y N	Y N		GAL.	
	Y N	Y N	Y N	Y N	Y N		GAL.	

Include ALL the marine invertebrates HARVESTED by members of this household in 2014.

ASSESSMENTS: MARINE INVERTEBRATES

500000000

Between January 1, 2014 and December 31, 2014…

To conclude our marine invertebrates section, I am going to ask a few general questions about marine invertebrates.

Last year…

… did your household use LESS, SAME, or MORE marine invertebrates than in recent years? …… X L S M

IF LESS or MORE … X = do not use

WHY was your use different? _____ 1

_____ 2

Last year…

…did your household GET ENOUGH marine invertebrates?..... Y N

If NO…

What KIND of marine invertebrates did you need? _____

How would you describe the impact to your household of not getting enough marine invertebrates last year?

… not noticable?	*… minor ?*	*… major?*	*… Severe?*
(0)	*(1)*	*(2)*	*(3)*

Think back to about ten years ago (2004). Would you say that *BIDARKIES (CHITONS)* available to harvest in this area are less, the same, or more than ten year ago? L S M

If not the same, why? _____ 1

_____ 2

Do you think the *BIDARKIES (CHITONS)* from your traditional harvest areas are safe to eat?..... Y N

If NOT safe, why? _____ 1

_____ 2

Think back to about ten years ago (2004). Would you say that *CLAMS* available to harvest in this area are less, the same, or more than ten year ago? L S M

If not the same, why? _____ 1

_____ 2

Do you think the *CLAMS* from your traditional harvest areas are safe to eat?..... Y N

If NOT safe, why? _____ 1

_____ 2

MARINE INVERTEBRATES: 08 **PORT GRAHAM: 282**

HARVESTS: LARGE LAND MAMMALS

HOUSEHOLD ID

1. Do you or members of your household USUALLY hunt for large land mammals?..... Y N

2. During the last year (between January 1, 2014 and December 31, 2014)
   did you, or members of your household USE or TRY TO HARVEST large land mammals?..... Y N

IF the answer to QUESTION 2 is NO, go to the *NEXT PAGE*.

IF the answer is *YES*, continue on this page …

Please estimate how many large land mammals ALL MEMBERS OF YOUR HOUSEHOLD HARVESTED in 2014. INCLUDE large land mammals you gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If hunting with others, report ONLY YOUR SHARE of the harvest.

	In 2014 did members of your household …					In 2014 HOW MANY _____ DID MEMBERS OF YOUR HOUSEHOLD HARVEST….													
	USE?	TRY TO HARVEST?	HARVEST?	RECEIVE?	GIVE AWAY?	SEX	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	UNKNOWN	UNITS
Read names below	(circle)					M/F	(specify amount harvested per month)													(specify)
MOOSE	Y N	Y N	Y N	Y N	Y N	M														IND
						F														IND
211800000						Unk														IND
211800001						1														
211800002						2														
211800009						-9														
CARIBOU	Y N	Y N	Y N	Y N	Y N	M														IND
						F														IND
211000000						Unk														IND
211000001						1														
211000002						2														
211000009						-9														
BLACK BEAR	Y N	Y N	Y N	Y N	Y N															IND.
210600000						1														
DEER	Y N	Y N	Y N	Y N	Y N															IND.
211200000						1														
MOUNTAIN GOAT	Y N	Y N	Y N	Y N	Y N															IND.
211600000						1														
DALL SHEEP	Y N	Y N	Y N	Y N	Y N															IND.
212200000						1														

Include ALL the large land mammals HARVESTED by members of this household in 2014.

ASSESSMENTS: LARGE LAND MAMMALS

210000000

Between January 1, 2014 and December 31, 2014…

To conclude our large land mammals section, I am going to ask a few general questions about large land mammals.

Last year…

… did your household use LESS, SAME, or MORE large land mammals than in recent years? …… X L S M

IF LESS or MORE … X = do not use

WHY was your use different? _____ 1

_____ 2

Last year…

…did your household GET ENOUGH large land mammals?..... Y N

If NO…

What KIND of large land mammals did you need? _____

How would you describe the impact to your household of not getting enough large land mammals last year?

… not noticable?	*… minor ?*	*… major?*	*… Severe?*
(0)	*(1)*	*(2)*	*(3)*

HARVESTS: SMALL LAND MAMMALS

HOUSEHOLD ID

1. Do you or members of your household USUALLY hunt or trap for small land mammals?..... Y N

2. During the last year (between January 1, 2014 and December 31, 2014)
   did you, or members of your household USE or TRY TO HARVEST small land mammals?..... Y N

IF the answer to QUESTION 2 is NO, go to the *NEXT PAGE*.

IF the answer is *YES*, continue on this page …

Please estimate how many small land mammals ALL MEMBERS OF YOUR HOUSEHOLD HARVESTED in 2014. INCLUDE small land mammals you gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If hunting or trapping with others, report ONLY YOUR SHARE of the harvest.

	In 2014 did members of your household …					In 2014 HOW MANY _____ DID MEMBERS OF YOUR HOUSEHOLD HARVEST….														
	USE?	TRY TO HARVEST?	HARVEST?	RECEIVE?	GIVE AWAY?	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	UNKNOWN	HOW MANY _____ WERE USED FOR FUR ONLY?	UNITS
Read names below	(circle)					(specify amount harvested per month)													(amount)	(specify)
	Y N	Y N	Y N	Y N	Y N															IND.
RED FOX	Y N	Y N	Y N	Y N	Y N															IND.
220804000 BEAVER	Y N	Y N	Y N	Y N	Y N															IND.
220200000 MUSKRAT	Y N	Y N	Y N	Y N	Y N															IND.
222400000 SNOWSHOE HARE	Y N	Y N	Y N	Y N	Y N															IND.
221004000 RIVER OTTER	Y N	Y N	Y N	Y N	Y N															IND.
221200000 MINK	Y N	Y N	Y N	Y N	Y N															IND.
222200000 WEASEL	Y N	Y N	Y N	Y N	Y N															IND.
223000000 MARTEN	Y N	Y N	Y N	Y N	Y N															IND.
222000000 LYNX	Y N	Y N	Y N	Y N	Y N															IND.
221600000 COYOTE	Y N	Y N	Y N	Y N	Y N															IND.
220400000 WOLF	Y N	Y N	Y N	Y N	Y N															IND.
223200000																				

Include ALL the small land mammals HARVESTED by members of this household in 2014.

SMALL LAND MAMMALS: 14 **PORT GRAHAM: 282**

HARVESTS: SMALL LAND MAMMALS

HOUSEHOLD ID

…continued from previous page

	In 2014 did members of your household …					In 2014 HOW MANY _____ DID MEMBERS OF YOUR HOUSEHOLD HARVEST….														
	USE?	TRY TO HARVEST?	HARVEST?	RECEIVE?	GIVE AWAY?	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	UNKNOWN	HOW MANY _____ WERE USED FOR FUR ONLY?	UNITS
Read names below	(circle)					(specify amount harvested per month)													(amount)	(specify)
WOLVERINE	Y N	Y N	Y N	Y N	Y N															IND.
223400000																				
TREE SQUIRREL	Y N	Y N	Y N	Y N	Y N															IND.
222804000																				
PARKA SQUIRREL (GROUND)	Y N	Y N	Y N	Y N	Y N															IND.
222802000																				
	Y N	Y N	Y N	Y N	Y N															
	Y N	Y N	Y N	Y N	Y N															
	Y N	Y N	Y N	Y N	Y N															
	Y N	Y N	Y N	Y N	Y N															
	Y N	Y N	Y N	Y N	Y N															

Include ALL the small land mammals HARVESTED by members of this household in 2014.

ASSESSMENTS: SMALL LAND MAMMALS

220000000

Between January 1, 2014 and December 31, 2014…

To conclude our small land mammals section, I am going to ask a few general questions about small land mammals.

Last year…

… did your household use LESS, SAME, or MORE small land mammals than in recent years? …… X L S M

IF LESS or MORE … X = do not use

WHY was your use different? _____ 1

_____ 2

Last year…

…did your household GET ENOUGH small land mammals?..... Y N

If NO…

What KIND of small land mammals did you need? _____

How would you describe the impact to your household of not getting enough small land mammals last year?

… not noticable?	*… minor ?*	*… major?*	*… Severe?*
(0)	*(1)*	*(2)*	*(3)*

SMALL LAND MAMMALS: 14 **PORT GRAHAM: 282**

HARVESTS: MARINE MAMMALS

HOUSEHOLD ID

1. Do you or members of your household USUALLY hunt for marine mammals ?..... Y N

2. During the last year (between January 1, 2014 and December 31, 2014)
   did you, or members of your household USE or TRY TO HARVEST marine mammals?..... Y N

IF the answer to QUESTION 2 is NO, go to the *NEXT PAGE*.

IF the answer is *YES*, continue on this page …

Please estimate how many marine mammals ALL MEMBERS OF YOUR HOUSEHOLD HARVESTED in 2014. INCLUDE marine mammals you gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If hunting with others, report ONLY YOUR SHARE of the harvest.

	In 2014 did memers of your household …					In 2014 HOW MANY _____ DID MEMBERS OF YOUR HOUSEHOLD HARVEST….													
	USE?	TRY TO HARVEST?	HARVEST?	RECEIVE?	GIVE AWAY?	SEX	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	UNKNOWN	UNITS
Read names below	(circle)					M/F	(specify amount harvested per month)													(specify)
HARBOR SEAL	Y N	Y N	Y N	Y N	Y N	M														IND
						F														IND
300806000						Unk														IND
300806001						1														
300806002						2														
300806009						-9														
SEA LION	Y N	Y N	Y N	Y N	Y N	M														IND
						F														IND
301200000						Unk														IND
301200001						1														
301200002						2														
301200009						-9														
SEA OTTER	Y N	Y N	Y N	Y N	Y N															IND
301000000						1														
	Y N	Y N	Y N	Y N	Y N															
						1														
	Y N	Y N	Y N	Y N	Y N															
						1														
	Y N	Y N	Y N	Y N	Y N															
						1														

Include ALL the marine mammals HARVESTED by members of this household in 2014.

MARINE MAMMALS: 12 **PORT GRAHAM: 282**

HARVESTS: MARINE MAMMALS

HOUSEHOLD ID

ASSESSMENTS: MARINE MAMMALS

300000000

Between January 1, 2014 and December 31, 2014…

To conclude our marine mammals section, I am going to ask a few general questions about marine mammals.

Last year…

… did your household use LESS, SAME, or MORE marine mammals than in recent years? …… X L S M

IF LESS or MORE … X = do not use

WHY was your use different? _____ 1

_____ 2

Last year…

…did your household GET ENOUGH marine mammals?..... Y N

If NO…

What KIND of marine mammals did you need? _____

How would you describe the impact to your household of not getting enough marine mammals last year?

… not noticable?	*… minor ?*	*… major?*	*… Severe?*
(0)	*(1)*	*(2)*	*(3)*

Think back to about ten years ago (2004). Would you say that *HARBOR SEALS* available to harvest in this area are less, the same, or more than ten year ago? L S M

If not the same, why? _____ 1

_____ 2

Do you think the *HARBOR SEALS* from your traditional harvest areas are safe to eat?..... Y N

If NOT safe, why? _____ 1

_____ 2

MARINE MAMMALS: 12 **PORT GRAHAM: 282**

HARVESTS: DUCKS

HOUSEHOLD ID

1. Do you or members of your household USUALLY hunt for ducks?..... Y N
2. During the last year (between January 1, 2014 and December 31, 2014) did you, or members of your household USE or TRY TO HARVEST ducks?..... Y N

IF the answer to QUESTION 2 is NO, go to the *NEXT PAGE* .

IF the answer is *YES* , continue on this page …

Please estimate how many ducks ALL MEMBERS OF YOUR HOUSEHOLD HARVESTED in 2014. INCLUDE ducks you gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If hunting with others, report ONLY YOUR SHARE of the harvest.

	In 2014 did members of your household …					In 2014 HOW MANY _____ DID MEMBERS OF YOUR HOUSEHOLD HARVEST….					
						WINTER	SPRING	SUMMER	FALL		
	USE?	TRY TO HARVEST?	HARVEST?	RECEIVE?	GIVE AWAY?	JANUARY FEBRUARY MARCH APRIL	MAY JUNE	JULY AUGUST SEPTEMBER	OCTOBER NOVEMBER DECEMBER	UNKNOWN SEASON	UNITS
Read names below	*(circle)*					*(specify amount harvested per season)*					*(specify)*
WIGEON	Y N	Y N	Y N	Y N	Y N						IND.
410236020											
TEAL	Y N	Y N	Y N	Y N	Y N						IND.
410232990											
MALLARD	Y N	Y N	Y N	Y N	Y N						IND.
410214000											
NORTHERN PINTAIL	Y N	Y N	Y N	Y N	Y N						IND.
410220000											
SHOVELER	Y N	Y N	Y N	Y N	Y N						IND.
410230000											
BLACK SCOTER	Y N	Y N	Y N	Y N	Y N						IND.
410228020											
SURF SCOTER	Y N	Y N	Y N	Y N	Y N						IND.
410228040											
WHITE-WINGED SCOTER	Y N	Y N	Y N	Y N	Y N						IND.
410228060											
BUFFLEHEAD	Y N	Y N	Y N	Y N	Y N						IND.
410202000											
GOLDENEYE	Y N	Y N	Y N	Y N	Y N						IND.
410210000											
SCAUP (BLUEBILL)	Y N	Y N	Y N	Y N	Y N						IND.
410226990											
EIDER (UNKNOWN/SPECIFY)	Y N	Y N	Y N	Y N	Y N						IND.
410206990											

Include ALL the ducks HARVESTED by members of this household in 2014.

DUCKS: 15 **PORT GRAHAM: 282**

HARVESTS: DUCKS AND GEESE

HOUSEHOLD ID

…continued from previous page

	In 2014 did members of your household …					In 2014 HOW MANY _____ DID MEMBERS OF YOUR HOUSEHOLD HARVEST….					
						WINTER	SPRING	SUMMER	FALL		
	USE?	TRY TO HARVEST?	HARVEST?	RECEIVE?	GIVE AWAY?	JANUARY FEBRUARY MARCH APRIL	MAY JUNE	JULY AUGUST SEPTEMBER	OCTOBER NOVEMBER DECEMBER	UNKNOWN SEASON	UNITS
Read names below	*(circle)*					*(specify amount harvested per season)*					*(specify)*
HARLEQUIN DUCK	Y N	Y N	Y N	Y N	Y N						IND.
410210990											
LONG-TAILED DUCK (OLDSQUAW)	Y N	Y N	Y N	Y N	Y N						IND.
410218000											
MERGANSER	Y N	Y N	Y N	Y N	Y N						IND.
410216000											
CANADA GOOSE	Y N	Y N	Y N	Y N	Y N						IND.
410404990											
WHITE-FRONTED GEESE	Y N	Y N	Y N	Y N	Y N						IND.
410410000											
	Y N	Y N	Y N	Y N	Y N						
	Y N	Y N	Y N	Y N	Y N						
	Y N	Y N	Y N	Y N	Y N						
	Y N	Y N	Y N	Y N	Y N						
	Y N	Y N	Y N	Y N	Y N						
	Y N	Y N	Y N	Y N	Y N						
	Y N	Y N	Y N	Y N	Y N						
	Y N	Y N	Y N	Y N	Y N						
	Y N	Y N	Y N	Y N	Y N						

Include ALL the ducks HARVESTED by members of this household in 2014.

DUCKS AND GEESE: 15 **PORT GRAHAM: 282**

HARVESTS: OTHER BIRDS

HOUSEHOLD ID

1. Do you or members of your household USUALLY hunt for other birds?..... Y N

2. During the last year (between January 1, 2014 and December 31, 2014)
   did you, or members of your household USE or TRY TO HARVEST other birds?..... Y N

IF the answer to QUESTION 2 is NO, go to the *NEXT PAGE*.

IF the answer is *YES*, continue on this page …

Please estimate how many other birds ALL MEMBERS OF YOUR HOUSEHOLD HARVESTED in 2014. INCLUDE other birds you gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If hunting with others, report ONLY YOUR SHARE of the harvest.

	In 2014 did members of your household …					In 2014 HOW MANY _____ DID MEMBERS OF YOUR HOUSEHOLD HARVEST….					
						WINTER	SPRING	SUMMER	FALL		
	USE?	TRY TO HARVEST?	HARVEST?	RECEIVE?	GIVE AWAY?	JANUARY FEBRUARY MARCH APRIL	MAY JUNE	JULY AUGUST SEPTEMBER	OCTOBER NOVEMBER DECEMBER	UNKNOWN SEASON	UNITS
Read names below	*(circle)*					*(specify amount harvested per season)*					*(specify)*
CRANE	Y N	Y N	Y N	Y N	Y N						IND.
410802000											
GROUSE (UNKNOWN/SPECIFY)	Y N	Y N	Y N	Y N	Y N						IND.
421802990											
CORMORANTS	Y N	Y N	Y N	Y N	Y N						IND.
411204000											
MURRE	Y N	Y N	Y N	Y N	Y N						IND.
411218000											
PUFFIN	Y N	Y N	Y N	Y N	Y N						IND.
411222990											
GULL (UNKNOWN/SPECIFY)	Y N	Y N	Y N	Y N	Y N						IND.
411212990											
BLACK LEGGED KITTIWAKE	Y N	Y N	Y N	Y N	Y N						IND.
411214020											
	Y N	Y N	Y N	Y N	Y N						
	Y N	Y N	Y N	Y N	Y N						
	Y N	Y N	Y N	Y N	Y N						
	Y N	Y N	Y N	Y N	Y N						
	Y N	Y N	Y N	Y N	Y N						

Include ALL the other birds HARVESTED by members of this household in 2014.

OTHER BIRDS: 15 **PORT GRAHAM: 282**

HARVESTS: BIRD EGGS

HOUSEHOLD ID

1. Do you or members of your household USUALLY try to harvest bird eggs ?..... Y N

2. During the last year (between January 1, 2014 and December 31, 2014)
   did you, or members of your household USE or TRY TO HARVEST bird eggs?..... Y N

IF the answer to QUESTION 2 is NO, go to the *NEXT PAGE* .

IF the answer is *YES* , continue on this page …

Please estimate how many bird eggs ALL MEMBERS OF YOUR HOUSEHOLD HARVESTED in 2014. INCLUDE bird eggs you gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If harvesting with others, report ONLY YOUR SHARE of the harvest.

	In 2014 did members of your household …					In 2014 HOW MANY _____ DID YOUR HOUSEHOLD HARVEST….		
	USE?	TRY TO HARVEST?	HARVEST?	RECEIVE?	GIVE AWAY?	AMOUNT	UNITS	COMMENTS
Read names below	(circle)					(amt)	specify	(text)
DUCK EGGS (UNKNOWN/SPECIFY)	Y N	Y N	Y N	Y N	Y N		IND.	
430299000								
GOOSE EGGS (UNKNOWN/SPECIFY)	Y N	Y N	Y N	Y N	Y N		IND.	
430499000								
GULL EGGS (UNKNOWN/SPECIFY)	Y N	Y N	Y N	Y N	Y N		IND.	
431212990								
TERN EGGS	Y N	Y N	Y N	Y N	Y N		IND.	
431226000								
BLACK OYSTERCATCHER EGGS	Y N	Y N	Y N	Y N	Y N		IND.	
431004000								
OTHER EGGS (SPECIFY)	Y N	Y N	Y N	Y N	Y N		IND.	
439900000								
	Y N	Y N	Y N	Y N	Y N			

Include ALL the bird eggs HARVESTED by members of this household in 2014.

ASSESSMENTS: BIRDS AND EGGS

400000000

Between January 1, 2014 and December 31, 2014…

To conclude our birds and eggs section, I am going to ask a few general questions about birds and eggs.

Last year…

… did your household use LESS, SAME, or MORE birds and eggs than in recent years? …… X L S M

IF LESS or MORE … X = do not use

WHY was your use different? _____ 1

_____ 2

Last year…

…did your household GET ENOUGH birds and eggs?..... Y N

If NO…

What KIND of birds and eggs did you need? _____

How would you describe the impact to your household of not getting enough birds and eggs last year?	*… not noticable?*	*… minor ?*	*… major?*	*… Severe?*
	(0)	*(1)*	*(2)*	*(3)*

Think back to about ten years ago (2004). *Would you say that SEA DUCKS available to harvest in this area are less, the same, or more than ten year ago?* L S M

If not the same, why? _____ 1

_____ 2

BIRD EGGS: 08 **PORT GRAHAM: 282**

HARVESTS: PLANTS AND BERRIES

HOUSEHOLD ID

1. Do you or members of your household USUALLY try to harvest plants and berries?..... Y N

2. During the last year (between January 1, 2014 and December 31, 2014)
   did you, or members of your household USE or TRY TO HARVEST plants and berries?..... Y N

IF the answer to QUESTION 2 is NO, go to the *NEXT PAGE*.

IF the answer is *YES*, continue on this page …

Please estimate how many plants and berries ALL MEMBERS OF YOUR HOUSEHOLD HARVESTED in 2014. INCLUDE plants and berries you gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If harvesting with others, report ONLY YOUR SHARE of the harvest.

	In 2014 did members of your household …					In 2014 HOW MANY _____ DID YOUR HOUSEHOLD HARVEST….		
	USE?	TRY TO HARVEST?	HARVEST?	RECEIVE?	GIVE AWAY?	AMOUNT	UNITS	COMMENTS
Read names below	(circle)					(amt)	specify	(text)
BLUEBERRY	Y N	Y N	Y N	Y N	Y N		GAL.	
601002000								
HIGH BUSH CRANBERRY	Y N	Y N	Y N	Y N	Y N		GAL.	
601006000								
LOW BUSH CRANBERRY	Y N	Y N	Y N	Y N	Y N		GAL.	
601004000								
SALMONBERRY	Y N	Y N	Y N	Y N	Y N		GAL.	
601022000								
GOOSEBERRY	Y N	Y N	Y N	Y N	Y N		GAL.	
601010000								
NAGOONBERRY	Y N	Y N	Y N	Y N	Y N		GAL.	
601018000								
STRAWBERRY	Y N	Y N	Y N	Y N	Y N		GAL.	
601026000								
WILD ROSE HIPS	Y N	Y N	Y N	Y N	Y N		GAL.	
602036000								
SPRUCE TIPS	Y N	Y N	Y N	Y N	Y N		GAL.	
602030000								
HUDSON BAY TEA	Y N	Y N	Y N	Y N	Y N		GAL.	
602018000								
FIDDLEHEAD FERNS	Y N	Y N	Y N	Y N	Y N		GAL.	
602014000								
WILD CELERY	Y N	Y N	Y N	Y N	Y N		GAL.	
602032000								

Include ALL the plants and berries HARVESTED by members of this household in 2014.

PLANTS AND BERRIES: 17 **PORT GRAHAM: 282**

HARVESTS: PLANTS AND BERRIES

HOUSEHOLD ID

…continued from previous page

	In 2014 did members of your household …					In 2014 HOW MANY _____ DID YOUR HOUSEHOLD HARVEST….		
	USE?	TRY TO HARVEST?	HARVEST?	RECEIVE?	GIVE AWAY?	AMOUNT	UNITS	COMMENTS
Read names below	(circle)					(amt)	specify	(text)
WILD PARSLEY	Y N	Y N	Y N	Y N	Y N		GAL.	
602034000								
DEVILS CLUB	Y N	Y N	Y N	Y N	Y N		GAL.	
602012000								
SOURDOCK	Y N	Y N	Y N	Y N	Y N		GAL.	
602028000								
BEACH ASPARAGUS	Y N	Y N	Y N	Y N	Y N		GAL.	
602002000								
GOOSE TONGUE	Y N	Y N	Y N	Y N	Y N		GAL.	
602004000								
BEACH GREENS	Y N	Y N	Y N	Y N	Y N		GAL.	
602051000								
OTHER WILD GREENS	Y N	Y N	Y N	Y N	Y N		GAL.	
602038000								
MUSHROOMS	Y N	Y N	Y N	Y N	Y N		GAL.	
602040000								

Include ALL the plants and berries HARVESTED by members of this household in 2014.

	USE?	TRY TO HARVEST?	HARVEST?	RECEIVE?	GIVE AWAY?	Please estimate the percentage of your household's heating needs in 2014 that came from firewood.					
FIREWOOD	Y N	Y N	Y N	Y N	Y N	0% (0)	1% - 25% (1)	26% - 50% (2)	51% - 75% (3)	76% - 99% (4)	100% (5)
604000000								(circle one)			

ASSESSMENTS: PLANTS AND BERRIES

600000000

Between January 1, 2014 and December 31, 2014…

To conclude our plants and berries section, I am going to ask a few general questions about plants and berries.

Last year…

… did your household use LESS, SAME, or MORE plants and berries than in recent years? …… X L S M

IF LESS or MORE … X = do not use

WHY was your use different? _____ 1

_____ 2

Last year…

…did your household GET ENOUGH plants and berries?..... Y N

If NO…

What KIND of plants and berries did you need? _____

How would you describe the impact to your household of not getting enough plants and berries last year?

… not noticable?	*… minor ?*	*… major?*	*… Severe?*
(0)	*(1)*	*(2)*	*(3)*

HARVESTS: SEAWEED

HOUSEHOLD ID

1. Do you or members of your household USUALLY try to harvest seaweed?..... Y N

2. During the last year (between January 1, 2014 and December 31, 2014)
   did you, or members of your household USE or TRY TO HARVEST seaweed?..... Y N

IF the answer to QUESTION 2 is NO, go to the *NEXT PAGE*.

IF the answer is *YES*, continue on this page …

Please estimate how many seaweed ALL MEMBERS OF YOUR HOUSEHOLD HARVESTED in 2014. INCLUDE seaweed you gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If harvesting with others, report ONLY YOUR SHARE of the harvest.

	In 2014 did members of your household …					In 2014 HOW MANY _____ DID YOUR HOUSEHOLD HARVEST….		
	USE?	TRY TO HARVEST?	HARVEST?	RECEIVE?	GIVE AWAY?	AMOUNT	UNITS	COMMENTS
Read names below	(circle)					(amt)	specify	(text)
BLACK SEAWEED	Y N	Y N	Y N	Y N	Y N		GAL.	
603002000								
BULL KELP	Y N	Y N	Y N	Y N	Y N		GAL.	
603004000								
RED SEAWEED	Y N	Y N	Y N	Y N	Y N		GAL.	
603006000								
SEA RIBBONS	Y N	Y N	Y N	Y N	Y N		GAL.	
603008000								
GIANT KELP (MACROCYSTIS)	Y N	Y N	Y N	Y N	Y N		GAL.	
603010000								
ALARIA	Y N	Y N	Y N	Y N	Y N		GAL.	
603012000								
UNKNOWN SEAWEED	Y N	Y N	Y N	Y N	Y N		GAL.	
603099000								

Include ALL the seaweed HARVESTED by members of this household in 2014.

ASSESSMENTS: SEAWEED

603000000

Between January 1, 2014 and December 31, 2014…

To conclude our seaweed section, I am going to ask a few general questions about seaweed.

Last year…

… did your household use LESS, SAME, or MORE seaweed than in recent years? …… X L S M

IF LESS or MORE … X = do not use

WHY was your use different? _____ 1

_____ 2

Last year…

…did your household GET ENOUGH seaweed?..... Y N

If NO…

What KIND of seaweed did you need? _____

How would you describe the impact to your household of not getting enough seaweed last year?

… not noticable?	*… minor ?*	*… major?*	*… Severe?*
(0)	*(1)*	*(2)*	*(3)*

SEAWEED: 17 **PORT GRAHAM: 282**

HARVEST SUMMARY: ALL RESOURCES

HOUSEHOLD ID

ASSESSMENTS: ALL RESOURCES 0

To conclude our subsistence harvests section, I am going to ask a few general questions about wild resources.

During the last year,[1]

… did your household use LESS, SAME, or MORE wild resources than in recent years? …… X L S M

IF LESS or MORE … X = do not use

WHY was your use different? _____ 1

_____ 2

During the last year,[1]

…did your household GET ENOUGH wild resources?..... Y N

If NO…

What KIND of wild resources did you need? _____

How would you describe the impact to your household of not getting enough wild resources last year? ……	*… not noticable?*	*… minor ?*	*… major?*	*… Severe?*
	(0)	*(1)*	*(2)*	*(3)*

Are there any subsistence foods from your traditional areas that you are concerned about eating? ..... Y N

If YES, whay are the species and why are you concerned? _____

_____

_____

_____

HEALTH IMPACT ASSESSMENTS

We know things change throughout the year, but in general, over the whole year, how often are wild foods such as fish, game, birds, berries, and other wild resources served in your household?

(circle ONE response)

None, don't use (0)	less than once per week (1)	1 - 3 times per week (2)	4 - 6 times per week (3)	once per day (4)	2 times per day (5)	3 or more times per day (6)

If this household does NOT USE wild foods, go to the next page

Otherwise, continue below…

Please list the most important wild foods that are used in your household each year. Include wild foods that may not be available now, but are important at other times of the year. Please list most important wild foods first.

(Not necessary to fill out every line)

	Wild Food 1	Wild Food 2	Wild Food 3	Wild Food 4	Wild Food 5
TOP FIVE WILD FOODS					

If your household cannot get or runs short of wild foods, what do members of your household eat instead? These can be foods from the store or garden, such as: meat, grains, prepared foods, or fruits and vegetables. Please list your most important alternative foods first.

(Not necessary to fill out every line)

	Other Food	Other Food	Other Food	Other Food	Other Food
OTHER FOODS[2] (1 TO 5)					
OTHER FOODS[2] (6 TO 10)					

1 *"LAST YEAR" means between January 1, 2014 and December 31, 2014.*

2 *For "OTHER FOODS", we are not interested in condiments or staples, such as sugar, flour, coffee, or butter etc... We are interested in foods used in place of traditional foods for meals or snacks. This includes foods substituted by personal preference or out of necessity (traditional food not available).*

ASSESSMENTS OF ALL RESOURCES: 66 **PORT GRAHAM: 282**

SUBSISTENCE OBSERVATIONS

RECOVERY

In your view have subsistence resources recovered since the oil spill[1]? Y N

If NO, what do you think should be done to help in the recovery of subsistence resources?

1 _____

2 _____

SUBSISTENCE SKILLS

Do you think that young adults are learning enough hunting, fishing, and processing skills? Y N

If YES, how are they learning these skills?

1 _____

2 _____

If NO, why? 1 _____

2 _____

ELDERS

Over the last ten years, do you think the influence of elders in teaching subsistence skills and values in the community has decreased, stayed the same, or increased?

Don't Use	*Decreased*	*Stayed the same*	*Increased*	*Don't Know*
(0)	*(1)*	*(2)*	*(3)*	*(-8)*

If not the same, why?

1 _____

2 _____

SUBSISTENCE WAY OF LIFE

Do you think the traditional way of life was affected by the oil spill[1]? Y N

If YES, in your view has the traditional way of life recovered since the oil spill[1]? Y N

If NOT recovered, what do you think is needed to help the traditional way of life recover?
[Consider spill and non-spill factors]

1 _____

2 _____

1 Exxon Valdez oil spill in Prince William Sound on March 24, 1989

FOOD SECURITY

HOUSEHOLD ID

The questions on this page have been asked all over the United States to find out if Americans have enough to eat. We would like to know if people in your community have enough to eat. I'd like you to think about all your household's food, both wild food and store-bought...

Which of these three statements best describes the food eaten in your household in the last 12 months…

(Circle one)

STATEMENT 1. We had enough of the kinds of food we wanted to eat…….
❷ **STATEMENT 2**. We had enough food, but not always the KIND of food we wanted to eat……
❸ **STATEMENT 3**. Sometimes, or often, we did **NOT HAVE ENOUGH** food to eat……

1 2 3

HH1 [ ] If 2 or 3

If STATEMENT 2 or STATEMENT 3 was TRUE, continue with food security questions on this page. Otherwise, go to next section…

Now I am going to read you several statements about different food situations.
Please tell me whether EACH statement was true for your household (HH) in the last 12 months.

❹ **STATEMENT 4. We WORRIED that our household would run out of food before we could get more.** HH2

In the last 12 months, was this ever true for your household?..... Y N ? [ ]
If YES…
…in which months did this happen?..... J F M A M J J A S O N D [ ]

…did this happen because your household couldn't get WILD FOOD,
your HH couldn't get STORE-BOUGHT food, or your HH couldn't get BOTH KINDS of food?..... WILD STOR BOTH [ ]

❺ **STATEMENT 5. We could not get the kinds of foods we wanted to eat because of a LACK OF RESOURCES** HH4

By "lack of resources," we mean your household did NOT have what you needed to hunt, fish, gather, OR did not have enough money to buy food.

In the last 12 months, was this ever true for your household?..... Y N ? [ ]
If YES…
…in which months did this happen?..... J F M A M J J A S O N D [ ]

…did this happen because your household couldn't get WILD FOOD,
your HH couldn't get STORE-BOUGHT food, or your HH couldn't get BOTH KINDS of food?..... WILD STOR BOTH [ ]

❻ **STATEMENT 6. The food we had JUST DID NOT LAST, and we could not get more.** HH3

In the last 12 months, was this ever true for your household?..... Y N ? [ ]
If YES…
…in which months did this happen?..... J F M A M J J A S O N D [ ]

Now, think just about your household's WILD FOOD…

STATEMENT 7. The SUBSISTENCE food we had JUST DID NOT LAST, and we could not get more.

In the last 12 months, was this ever true for your household?..... Y N ? [ ]
If YES…
…in which months did this happen?..... J F M A M J J A S O N D [ ]

Now, think just about your household's STORE-BOUGHT food…

STATEMENT 8. The STORE-BOUGHT food we had JUST DID NOT LAST, and we could not get more.

In the last 12 months, was this ever true for your household?..... Y N ? [ ]
If YES…
…in which months did this happen?..... J F M A M J J A S O N D [ ]

If any ONE of the STATEMENTS 4, 5, OR 6 was "YES," continue with food security questions on next page. Otherwise, go to next section…

FOOD SECURITY: 201 **PORT GRAHAM: 282**

FOOD SECURITY

HOUSEHOLD ID

If any ONE of the STATEMENTS 4, 5, or 6 on previous page was "YES," continue with food security questions below. Otherwise, go to next section…

In the past 12 months, did you or other adults in your household ever CUT THE SIZE OF YOUR MEALS OR SKIP MEALS because the HH could not get the food that was needed? …… Y N ? AD1

If YES…

…in which months did this happen?..... J F M A M J J A S O N D

In the last 12 months, did you or other adults in your household ever EAT LESS THAN YOU FELT YOU SHOULD because the HH could not get the food that was needed?..... Y N ? AD2

In the last 12 months, were adults in the HH ever HUNGRY BUT DID NOT EAT because there was not enough food?..... Y N ? AD3

In the last 12 months, did adults in the HH LOSE WEIGHT because there was not enough food?..... Y N ? AD4

In the last 12 months, were adults in the HH ever NOT EAT FOR A WHOLE DAY because there was not enough food?..... Y N ? AD5

If YES…

…in which months did this happen?..... J F M A M J J A S O N D

FOOD SECURITY: 201 **PORT GRAHAM: 282**

EMPLOYMENT

HOUSEHOLD ID

The next few pages ask about jobs and income. We ask about these things because we are trying to understand all parts of the community economy. Many people use wages from jobs to support subsistence activities.

Between January 1, 2014 and December 31, 2014 ...

…Did any members of your household earn money from a JOB or from SELF EMPLOYMENT?..... Y N

Starting with the first head of your household, what job or jobs did he or she have last year?

For each member of this household born before 1999, list EACH JOB held last year. For household members who did not have a job, write: RETIRED, UNEMPLOYED, STUDENT, HOMEMAKER, DISABLED, etc..

			INCLUDE EACH PERSON 16 YEARS AND OLDER EVEN IF THEY DID NOT HAVE A JOB					WORK SCHEDULE[2]					
			Person code from page 2	What kind of work did he or she do in this job?	For whom did he or she work in this job?	In the past year, what months did he or she work in this job?		FULL TIME	PART TIME	SHIFT - FULL TIME	ON-CALL, VARIES	SHIFT - PART TIME	In the past year how much did he or she earn in this job?
			(ID #)	*(job title[1])*	*(employer)*	*(circle each month worked)*		*(circle one)*					*gross income[3]*
	1ST JOB					J F M A M J J A S O N D		FT	PT	SF	OC	SP	$ / YR
1	6	910100000		*SOC:*	*SIC:*				*schedule:*				
	2ND JOB					J F M A M J J A S O N D		FT	PT	SF	OC	SP	$ / YR
2	6	910100000		*SOC:*	*SIC:*				*schedule:*				
	3RD JOB					J F M A M J J A S O N D		FT	PT	SF	OC	SP	$ / YR
3	6	910100000		*SOC:*	*SIC:*				*schedule:*				
	4TH JOB					J F M A M J J A S O N D		FT	PT	SF	OC	SP	$ / YR
4	6	910100000		*SOC:*	*SIC:*				*schedule:*				
	5TH JOB					J F M A M J J A S O N D		FT	PT	SF	OC	SP	$ / YR
5	6	910100000		*SOC:*	*SIC:*				*schedule:*				
	6TH JOB					J F M A M J J A S O N D		FT	PT	SF	OC	SP	$ / YR
6	6	910100000		*SOC:*	*SIC:*				*schedule:*				
	7TH JOB					J F M A M J J A S O N D		FT	PT	SF	OC	SP	$ / YR
7	6	910100000		*SOC:*	*SIC:*				*schedule:*				
	8TH JOB					J F M A M J J A S O N D		FT	PT	SF	OC	SP	$ / YR
8	6	910100000		*SOC:*	*SIC:*				*schedule:*				
	9TH JOB					J F M A M J J A S O N D		FT	PT	SF	OC	SP	$ / YR
9	6	910100000		*SOC:*	*SIC:*				*schedule:*				
	10TH JOB					J F M A M J J A S O N D		FT	PT	SF	OC	SP	$ / YR
10	6	910100000		*SOC:*	*SIC:*				*schedule:*				

If a person FISHES COMMERCIALLY or is otherwise SELF-EMPLOYED, list that as a separate job. For job title, enter COMMERCIAL FISHER, CARVER, SEWER, BAKER, etc. Work schedule usually will be ON CALL. For gross income from self-employment, enter revenue MINUS expenses.

If a person does not earn money from any kind of work, enter RETIRED, UNEMPLOYED, DISABLED, STUDENT, or HOMEMAKER or other appropriate description as the job title.

Leave employer, months worked, schedule, and gross income blank.

WORK SCHEDULE

FT *- Fulltime (35+ hr/wk)*
PT *- Parttime (<35 hr/wk)*
SF *- Shift (2wks on/2wks off, etc.)*
SP *- Shift - part time*
OC *- Irregular, on call*
-- -Unemployed

GROSS INCOME is the same as TAXABLE INCOME on a W-2 form. Self-employment, enter revenue - expense

OTHER INCOME

HOUSEHOLD ID

Between January 1, 2014 and December 31, 2014 ...

…Did any members of your household receive a dividend from the Permanent Fund or a native corporation?..... Y N

IF NO, go to the next section on this page

IF YES, continue below…

		Did anyone in your household receive income from _____ in 2014 (circle one)		TOTAL amount all members of your household received from _____ in 2014 (dollars)	
DIVIDENDS	ALASKA PERMANENT FUND DIVIDEND	Y	N	$	/ YR
	32				
	NATIVE CORPORATION DIVIDENDS	Y	N	$	/ YR
	13				

Alaska PFD IN 2014	
1	*PFD = $1,884*
2	*PFDs = $3,768*
3	*PFDs = $5,652*
4	*PFDs = $7,536*
5	*PFDs = $9,420*
6	*PFDs = $11,304*
7	*PFDs = $13,188*
8	*PFDs = $15,072*
9	*PFDs = $16,956*
10	*PFDs = $18,840*
11	*PFDs = $20,724*

Regional corporations	***Dividend***
Chugach Alaska	*$10.00*
Chugach Alaska, settlement trust	*$2.45*
Chugach Alaska, elder	*$500.00*
Chugach Alaska, elder 65 &older	*$1,000.00*
Chugach, Alaska, class C	*$16.50*
Village Corporation(s)	***Dividend***
English Bay Village	*$16.50*

Between January 1, 2014 and December 31, 2014 ...

…Did any members of your household receive OTHER income such as SENIOR BENEFITS or UNEMPLOYMENT?..... Y N

IF NO, go to the next section on this page

IF YES, continue below…

		Received? (circle one)		Total amount? (dollars)	
EMPLOYMENT RELATED	UNEMPLOYMENT	Y	N	$	/ YR
	12				
	WORKERS' COMP	Y	N	$	/ YR
	8				
	SOCIAL SECURITY	Y	N	$	/ YR
	7				
	PENSION & RETIREMENT	Y	N	$	/ YR
	5				
	DISABILITY	Y	N	$	/ YR
	31				
	VETERANS ASSISTANCE	Y	N	$	/ YR
	35				
ENTITLEMENTS	FOOD STAMPS (QUEST CARD)	Y	N	$	/ YR
	11				
	ADULT PUBLIC ASSISTANCE	Y	N	$	/ YR
	3				
	SUPPLIMENTAL SECURITY INCOME (SSI)	Y	N	$	/ YR
	10				
STATE BENEFITS	ENERGY ASSISTANCE	Y	N	$	/ YR
	9				
	ALASKA SENIOR BENEFITS (LONGEVITY)	Y	N	$	/ YR
	6				

		Received? (circle one)		Total amount? (dollars)	
FAMILY & CHILD	TANF (say "tanif", used to be AFDC)	Y	N	$	/ YR
	2				
	CHILD SUPPORT	Y	N	$	/ YR
	15				
	FOSTER CARE	Y	N	$	/ YR
	41				
OTHER	FUEL VOUCHERS	Y	N	$	/ YR
	49				
	MEETING HONORARIA *(not per diem*)*	Y	N	$	/ YR
	50				
	OTHER (describe)	Y	N	$	/ YR
	OTHER (describe)	Y	N	$	/ YR

* per diem covers travel expenses, and is not counted as income.

Scratch paper for calculations

for _____ weeks =
for _____ weeks =

for _____ weeks =
for _____ weeks =

Senior Benefits of $125 per month for 12 months = $1,500 per elder
Senior Benefits of $175 per month for 12 months = $2,100 per elder
Senior Benefits of $250 per month for 12 months = $3,000 per elder

COMMENTS

HOUSEHOLD ID

DO YOU HAVE ANY QUESTIONS, COMMENTS OR CONCERNS?

INTERVIEW SUMMARY: **DON'T FORGET TO FILL IN THE STOP TIME** _____

COMMENTS: 300 **PORT GRAHAM: 282**

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APPENDIX B–CONVERSION FACTORS

The following tables present the conversion factors used in determining how many pounds were harvested of each resource. For instance, if respondents reported harvesting 3 gal of smelt, the quantity would be multiplied by the appropriate conversion factor (in this case 3.25) to show a harvest of 9.75 lb of smelt.

Conversion factors: Nikiski

Resource name	Reported units	Conversion factor
Chum salmon	Individual	5.4760
Chum salmon [CF retention]	Individual	5.4760
Coho salmon	Individual	4.6050
Coho salmon [CF retention]	Individual	4.6050
Chinook salmon	Individual	11.0520
Chinook salmon [CF retention]	Individual	11.0520
Pink salmon	Individual	2.6280
Pink salmon [CF retention]	Individual	2.6280
Sockeye salmon	Individual	4.4844
Sockeye salmon [CF retention]	Individual	4.4844
Landlocked salmon	Individual	1.5000
Unknown salmon	Individual	4.5005
Unknown salmon [CF retention]	Individual	4.5005
Pacific herring	Individual	0.4000
Pacific herring	Gallons	6.0000
Pacific herring [CF retention]	Gallons	6.0000
Pacific herring roe	Gallons	7.0000
Pacific herring roe	Pints	0.8750
Pacific herring sac roe	Gallons	7.0000
Pacific herring sac roe [CF retention]	Gallons	7.0000
Pacific herring spawn on kelp [CF retention]	Gallons	7.0000
Eulachon (hooligan, candlefish)	Gallons	3.2500
Unknown smelt	Gallons	3.2500
Sea bass	Individual	1.0000
Pacific (gray) cod	Individual	3.2000
Pacific (gray) cod [CF retention]	Individual	3.2000
Pacific tomcod	Individual	0.5000
Pacific tomcod	Pounds	1.0000
Walleye pollock (whiting)	Individual	1.4000
Walleye pollock (whiting) [CF retention]	Individual	1.4000
Unknown cod	Individual	0.0000
Eel	Individual	3.6000
Arrowtooth flounder (turbot)	Individual	3.0000
Starry flounder	Individual	3.0000
Unknown flounder	Individual	3.0000
Unknown flounder [CF retention]	Individual	3.0000
Kelp greenling	Individual	1.0000
Lingcod	Individual	4.0000
Lingcod [CF retention]	Individual	4.0000
Unknown greenling	Individual	1.0000
Unknown greenling [CF retention]	Individual	1.0000
Pacific halibut	Individual	18.7656
Pacific halibut	Pounds	1.0000
Pacific halibut [CF retention]	Pounds	1.0000
Black rockfish	Individual	1.5000
Black rockfish	Pounds	1.0000

-continued-

Conversion factors: Nikiski–Page 2 of 8.

Resource name	Reported units	Conversion factor
Black rockfish [CF retention]	Individual	1.5000
Red rockfish	Individual	4.0000
Red rockfish [CF retention]	Individual	4.0000
Yelloweye rockfish	Individual	3.0000
Unknown rockfish	Individual	1.5950
Unknown rockfish [CF retention]	Individual	1.5950
Sablefish (black cod)	Individual	3.1000
Sablefish (black cod) [CF retention]	Individual	3.1000
Unknown Irish lord	Individual	0.5000
Unknown sculpin	Individual	0.5000
Unknown sculpin [CF retention]	Individual	0.5000
Unknown shark	Individual	9.0000
Unknown shark [CF retention]	Individual	9.0000
Skates	Individual	5.0000
Unknown sole	Individual	1.0000
Unknown sole [CF retention]	Individual	1.0000
Wolffish	Individual	0.5000
Dolly Varden	Individual	1.4000
Dolly Varden	Pounds	1.0000
Dolly Varden [CF retention]	Individual	1.4000
Lake trout	Individual	1.4000
Arctic grayling	Individual	0.7000
Northern pike	Individual	3.0000
Unknown sturgeon [CF retention]	Individual	34.0000
Cutthroat trout	Individual	1.4000
Rainbow trout	Individual	1.4000
Steelhead	Individual	1.4000
Unknown whitefishes	Individual	1.7500
Unknown nonsalmon fish	Individual	0.0000
Black bear	Individual	58.0000
Caribou	Individual	150.0000
Deer	Individual	43.2000
Mountain goat	Individual	72.5000
Moose	Individual	540.0000
Dall sheep	Individual	104.0000
Beaver	Individual	8.7500
Coyote	Individual	0.0000
Red fox	Individual	0.0000
Snowshoe hare	Individual	2.0000
North American river (land) otter	Individual	0.0000
Lynx	Individual	4.0000
Marten	Individual	0.0000
Mink	Individual	0.0000
Muskrat	Individual	0.7500
Porcupine	Individual	8.0000
Arctic ground (parka) squirrel	Individual	0.5000

-continued-

Conversion factors: Nikiski–Page 3 of 8.

Resource name	Reported units	Conversion factor
Red (tree) squirrel	Individual	0.5000
Weasel	Individual	0.0000
Gray wolf	Individual	0.0000
Wolverine	Individual	0.0000
Harbor seal	Individual	56.0000
Sea otter	Individual	0.0000
Steller sea lion	Individual	200.0000
Bowhead whale	Individual	0.0000
Bufflehead	Individual	0.4000
Unknown eider	Individual	0.0000
Goldeneye	Individual	0.8000
Harlequin duck	Individual	0.5000
Mallard	Individual	0.9000
Merganser	Individual	0.9000
Long-tailed duck	Individual	0.8000
Northern pintail	Individual	0.8000
Scaup	Individual	0.9000
Black scoter	Individual	0.9000
Surf scoter	Individual	0.9000
White-winged scoter	Individual	0.9000
Northern shoveler	Individual	0.6000
Unknown teal	Individual	0.3000
Wigeon	Individual	0.3000
Unknown ducks	Individual	0.8446
Unknown Canada/cackling geese	Individual	1.2000
White-fronted goose	Individual	2.4000
Swans	Individual	6.0000
Crane	Individual	8.4000
Cormorant	Individual	1.0000
Unknown gull	Individual	1.0000
Black-legged kittiwake	Individual	0.0000
Pacific/arctic loon	Individual	3.0000
Murre	Individual	1.0000
Puffin	Individual	0.5000
Spruce grouse	Individual	0.7000
Sharp-tailed grouse	Individual	0.7000
Ruffed grouse	Individual	0.7000
Unknown grouse	Individual	0.7000
Ptarmigan	Individual	0.7000
Unknown other birds	Individual	0.0000
Unknown duck eggs	Individual	0.1500
Unknown goose eggs	Individual	0.3000
Black oystercatcher eggs	Individual	0.0500
Unknown gull eggs	Individual	0.3000
Unknown gull eggs	Gallons	6.0000
Tern eggs	Individual	0.0500

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Conversion factors: Nikiski–Page 4 of 8.

Resource name	Reported units	Conversion factor
Unknown eggs	Individual	0.0000
Red (large) chitons	Individual	0.5000
Red (large) chitons	Gallons	3.0000
Red (large) chitons	Quarts	0.7500
Black (small) chitons	Individual	0.0313
Black (small) chitons	Gallons	4.0000
Black (small) chitons	Quarts	1.0000
Black (small) chitons	Pints	0.5000
Butter clams	Individual	0.1200
Butter clams	Pounds	1.0000
Butter clams	Gallons	3.0000
Horse clams	Gallons	3.0000
Pacific littleneck clams (steamers)	Individual	0.2500
Pacific littleneck clams (steamers)	Gallons	3.0000
Pacific littleneck clams (steamers)	Quarts	0.7500
Pacific littleneck clams (steamers)	Pints	0.3750
Pacific littleneck clams (steamers) [CF retention]	Gallons	3.0000
Pinkneck clams	Gallons	3.0000
Razor clams	Individual	0.2500
Razor clams	Gallons	3.0000
Razor clams [CF retention]	Gallons	3.0000
Softshell clams	Individual	0.2500
Softshell clams	Gallons	3.0000
Unknown clams	Gallons	3.0000
Cockles	Gallons	3.0000
Cockles	Quarts	0.7500
Dungeness crab	Individual	0.7000
Dungeness crab [CF retention]	Individual	0.7000
Unknown king crab	Individual	2.3000
Unknown king crab [CF retention]	Individual	2.3000
Tanner crab, bairdi	Individual	1.6000
Unknown Tanner crab	Individual	1.6000
Unknown Tanner crab [CF retention]	Individual	1.6000
Unknown crab	Individual	1.6000
Unknown crab	Gallons	1.6000
Geoducks	Individual	0.2500
Geoducks	Gallons	3.0000
Limpets	Gallons	1.5000
Limpets	Quarts	0.3750
Mussels	Gallons	1.5000
Octopus	Individual	4.0000
Octopus [CF retention]	Individual	4.0000
Oyster	Individual	0.2500
Oyster	Gallons	3.0000
Weathervane scallops	Individual	0.0000

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Conversion factors: Nikiski–Page 5 of 8.

Resource name	Reported units	Conversion factor
Weathervane scallops	Gallons	1.0000
Rock scallops	Gallons	1.0000
Sea cucumber	Individual	0.1000
Sea cucumber	Gallons	2.0000
Sea urchin	Individual	0.0420
Sea urchin	Gallons	0.5000
Shrimp	Individual	0.0250
Shrimp	Pounds	1.0000
Shrimp [CF retention]	Pounds	1.0000
Snails	Gallons	1.5000
Snails	Quarts	0.3750
Whelk	Gallons	1.5000
Blueberry	Pounds	1.0000
Blueberry	5 gallon buckets	15.0000
Blueberry	Gallons	4.0000
Blueberry	Quarts	1.0000
Blueberry	Half-pints	0.2500
Lowbush cranberry	Gallons	4.0000
Lowbush cranberry	Quarts	1.0000
Lowbush cranberry	Half-pints	0.2500
Highbush cranberry	Pounds	1.0000
Highbush cranberry	5 gallon buckets	20.0000
Highbush cranberry	Gallons	4.0000
Highbush cranberry	Quarts	1.0000
Highbush cranberry	Pints	0.5000
Highbush cranberry	Half-pints	0.2500
Crowberry	Gallons	4.0000
Crowberry	Half-pints	0.2500
Gooseberry	Gallons	4.0000
Gooseberry	Half-pints	0.2500
Currants	Pounds	1.0000
Currants	Gallons	4.0000
Currants	Quarts	1.0000
Currants	Half-pints	0.2500
Nagoonberry	Individual	0.0100
Nagoonberry	Gallons	4.0000
Nagoonberry	Half-pints	0.2500
Raspberry	Gallons	4.0000
Raspberry	Quarts	1.0000
Raspberry	Half-pints	0.2500
Salmonberry	Pounds	1.0000
Salmonberry	5 gallon buckets	20.0000
Salmonberry	Gallons	4.0000
Salmonberry	Quarts	1.0000
Salmonberry	Pints	0.5000
Salmonberry	Half-pints	0.2500

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Conversion factors: Nikiski–Page 6 of 8.

Resource name	Reported units	Conversion factor
Strawberry	Gallons	4.0000
Strawberry	Quarts	1.0000
Strawberry	Pints	0.5000
Strawberry	Half-pints	0.2500
Twisted stalk berry (watermelon berry)	Individual	0.0100
Twisted stalk berry (watermelon berry)	Gallons	4.0000
Twisted stalk berry (watermelon berry)	Quarts	1.0000
Twisted stalk berry (watermelon berry)	Half-pints	0.2500
Other wild berry	Gallons	4.0000
Other wild berry	Quarts	1.0000
Other wild berry	Pints	0.5000
Other wild berry	Half-pints	0.2500
Beach asparagus	Gallons	1.0000
Beach asparagus	Half-pints	0.0625
Goose tongue	Gallons	1.0000
Goose tongue	Quarts	0.2500
Goose tongue	Half-pints	0.0625
Other beach greens	Gallons	1.0000
Other beach greens	Quarts	0.2500
Devils club	Gallons	1.0000
Devil's club	Quarts	0.2500
Devil's club	Pints	0.1250
Devil's club	Half-pints	0.0625
Fiddlehead ferns	Gallons	1.0000
Fiddlehead ferns	Quarts	0.2500
Fiddlehead ferns	Half-pints	0.0625
Nettle	Gallons	1.0000
Nettle	Plastic shopping bag	2.5000
Nettle	Pints	0.1250
Nettle	Half-pints	0.0625
Hudson's Bay (Labrador) tea	Gallons	1.0000
Indian rice	Gallons	1.0000
Dandelion greens	Gallons	1.0000
Dandelion greens	Quarts	0.2500
Sourdock	Gallons	1.0000
Sourdock	Half-pints	0.0625
Spruce tips	Gallons	1.0000
Spruce tips	Quarts	0.2500
Spruce tips	Pints	0.1250
Spruce tips	Half-pints	0.0625
Wild celery	Pounds	1.0000
Wild celery	Gallons	0.2500
Wild celery	Quarts	1.0000
Wild celery	Pints	0.1250
Wild celery	Half-pints	0.0625
Wild parsley	Gallons	1.0000

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Conversion factors: Nikiski–Page 7 of 8.

Resource name	Reported units	Conversion factor
Wild parsley	Quarts	0.2500
Wild parsley	Half-pints	0.0625
Wild rose hips	Gallons	4.0000
Wild rose hips	Quarts	1.0000
Wild rose hips	Pints	0.5000
Wild rose hips	Half-pints	0.2500
Yarrow	Gallons	1.0000
Yarrow	Quarts	0.2500
Other wild greens	Gallons	1.0000
Other wild greens	Quarts	0.2500
Other wild greens	Pints	0.1250
Unknown mushrooms	Individual	0.0100
Unknown mushrooms	Pounds	1.0000
Unknown mushrooms	5 gallon buckets	5.0000
Unknown mushrooms	Gallons	1.0000
Unknown mushrooms	Quarts	0.2500
Unknown mushrooms	Plastic shopping bag	2.5000
Unknown mushrooms	Pints	0.1250
Unknown mushrooms	Half-pints	0.0625
Fireweed	Gallons	1.0000
Fireweed	Quarts	0.0000
Plantain	Pounds	1.0000
Plantain	Pints	0.1250
Plantain	Half-pints	0.0625
Stinkweed	Gallons	1.0000
Stinkweed	Quarts	0.0000
Stinkweed	Pints	0.1250
Beach greens	Gallons	1.0000
Wild chives	Gallons	1.0000
Wild chives	Pints	0.1250
Wild chives	Half-pints	0.0625
Black seaweed	Pounds	1.0000
Black seaweed	Gallons	4.0000
Black seaweed	Quarts	1.0000
Black seaweed	Half-pints	0.2500
Bull kelp	Gallons	4.0000
Bull kelp	Quarts	1.0000
Bull kelp	Pints	0.5000
Bull kelp	Half-pints	0.2500
Red seaweed	Pounds	1.0000
Red seaweed	Gallons	4.0000
Red seaweed	Half-pints	0.2500
Sea ribbons	Gallons	4.0000
Sea ribbons	Quarts	1.0000
Giant kelp (macropcystis)	Gallons	4.0000
Alaria	Gallons	4.0000

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Conversion factors: Nikiski–Page 8 of 8.

Resource name	Reported units	Conversion factor
Red laver (dulse)	Half-pints	0.2500
Bladder wrack	Gallons	4.0000
Bladder wrack	Quarts	1.0000
Unknown seaweed	Pounds	1.0000
Unknown seaweed	Gallons	4.0000
Unknown seaweed	Quarts	1.0000
Unknown seaweed	Half-pints	0.2500
Wood	Cords	0.0000
Wood (unspecified)	Gallons	0.0000

Source ADF&G Division of Subsistence household surveys, 2015.

Conversion factors: Seldovia

Resource name	Reported units	Conversion factor
Chum salmon	Individual	5.4760
Chum salmon [CF retention]	Individual	5.4760
Coho salmon	Individual	4.6050
Coho salmon [CF retention]	Individual	4.6050
Chinook salmon	Individual	11.0520
Chinook salmon [CF retention]	Individual	11.0520
Pink salmon	Individual	2.6280
Pink salmon [CF retention]	Individual	2.6280
Sockeye salmon	Individual	4.4844
Sockeye salmon [CF retention]	Individual	4.4844
Landlocked salmon	Individual	1.5000
Unknown salmon	Individual	4.5005
Unknown salmon [CF retention]	Individual	4.5005
Pacific herring	Individual	0.4000
Pacific herring	Gallons	6.0000
Pacific herring [CF retention]	Gallons	6.0000
Pacific herring roe	Gallons	7.0000
Pacific herring roe	Pints	0.8750
Pacific herring sac roe	Gallons	7.0000
Pacific herring sac roe [CF retention]	Gallons	7.0000
Pacific herring spawn on kelp [CF retention]	Gallons	7.0000
Eulachon (hooligan, candlefish)	Gallons	3.2500
Unknown smelt	Gallons	3.2500
Sea bass	Individual	1.0000
Pacific (gray) cod	Individual	3.2000
Pacific (gray) cod [CF retention]	Individual	3.2000
Pacific tomcod	Individual	0.5000
Pacific tomcod	Pounds	1.0000
Walleye pollock (whiting)	Individual	1.4000
Walleye pollock (whiting) [CF retention]	Individual	1.4000
Unknown cod	Individual	0.0000
Eel	Individual	3.6000
Arrowtooth flounder (turbot)	Individual	3.0000
Starry flounder	Individual	3.0000
Unknown flounder	Individual	3.0000
Unknown flounder [CF retention]	Individual	3.0000
Kelp greenling	Individual	1.0000
Lingcod	Individual	4.0000
Lingcod [CF retention]	Individual	4.0000
Unknown greenling	Individual	1.0000
Unknown greenling [CF retention]	Individual	1.0000
Pacific halibut	Individual	18.7656
Pacific halibut	Pounds	1.0000
Pacific halibut [CF retention]	Pounds	1.0000
Black rockfish	Individual	1.5000
Black rockfish	Pounds	1.0000

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Conversion factors: Seldovia–Page 2 of 8.

Resource name	Reported units	Conversion factor
Black rockfish [CF retention]	Individual	1.5000
Red rockfish	Individual	4.0000
Red rockfish [CF retention]	Individual	4.0000
Yelloweye rockfish	Individual	3.0000
Unknown rockfish	Individual	1.5950
Unknown rockfish [CF retention]	Individual	1.5950
Sablefish (black cod)	Individual	3.1000
Sablefish (black cod) [CF retention]	Individual	3.1000
Unknown Irish lord	Individual	0.5000
Unknown sculpin	Individual	0.5000
Unknown sculpin [CF retention]	Individual	0.5000
Unknown shark	Individual	9.0000
Unknown shark [CF retention]	Individual	9.0000
Skates	Individual	5.0000
Unknown sole	Individual	1.0000
Unknown sole [CF retention]	Individual	1.0000
Wolffish	Individual	0.5000
Dolly Varden	Individual	1.4000
Dolly Varden	Pounds	1.0000
Dolly Varden [CF retention]	Individual	1.4000
Lake trout	Individual	1.4000
Arctic grayling	Individual	0.7000
Northern pike	Individual	3.0000
Unknown sturgeon [CF retention]	Individual	34.0000
Cutthroat trout	Individual	1.4000
Rainbow trout	Individual	1.4000
Steelhead	Individual	1.4000
Unknown whitefishes	Individual	1.7500
Unknown nonsalmon fish	Individual	0.0000
Black bear	Individual	58.0000
Caribou	Individual	150.0000
Deer	Individual	43.2000
Mountain goat	Individual	72.5000
Moose	Individual	540.0000
Dall sheep	Individual	104.0000
Beaver	Individual	8.7500
Coyote	Individual	0.0000
Red fox	Individual	0.0000
Snowshoe hare	Individual	2.0000
North American river (land) otter	Individual	0.0000
Lynx	Individual	4.0000
Marten	Individual	0.0000
Mink	Individual	0.0000
Muskrat	Individual	0.7500
Porcupine	Individual	8.0000
Arctic ground (parka) squirrel	Individual	0.5000

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Conversion factors: Seldovia–Page 3 of 8.

Resource name	Reported units	Conversion factor
Red (tree) squirrel	Individual	0.5000
Weasel	Individual	0.0000
Gray wolf	Individual	0.0000
Wolverine	Individual	0.0000
Harbor seal	Individual	56.0000
Sea otter	Individual	0.0000
Steller sea lion	Individual	200.0000
Bowhead whale	Individual	0.0000
Bufflehead	Individual	0.4000
Unknown eider	Individual	0.0000
Goldeneye	Individual	0.8000
Harlequin duck	Individual	0.5000
Mallard	Individual	0.9000
Merganser	Individual	0.9000
Long-tailed duck	Individual	0.8000
Northern pintail	Individual	0.8000
Scaup	Individual	0.9000
Black scoter	Individual	0.9000
Surf scoter	Individual	0.9000
White-winged scoter	Individual	0.9000
Northern shoveler	Individual	0.6000
Unknown teal	Individual	0.3000
Wigeon	Individual	0.3000
Unknown ducks	Individual	0.8446
Unknown Canada/cackling geese	Individual	1.2000
White-fronted goose	Individual	2.4000
Swans	Individual	6.0000
Crane	Individual	8.4000
Cormorant	Individual	1.0000
Unknown gull	Individual	1.0000
Black-legged kittiwake	Individual	0.0000
Pacific/arctic loon	Individual	3.0000
Murre	Individual	1.0000
Puffin	Individual	0.5000
Spruce grouse	Individual	0.7000
Sharp-tailed grouse	Individual	0.7000
Ruffed grouse	Individual	0.7000
Unknown grouse	Individual	0.7000
Ptarmigan	Individual	0.7000
Unknown other birds	Individual	0.0000
Unknown duck eggs	Individual	0.1500
Unknown goose eggs	Individual	0.3000
Black oystercatcher eggs	Individual	0.0500
Unknown gull eggs	Individual	0.3000
Unknown gull eggs	Gallons	6.0000
Tern eggs	Individual	0.0500

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Conversion factors: Seldovia–Page 4 of 8.

Resource name	Reported units	Conversion factor
Unknown eggs	Individual	0.0000
Red (large) chitons	Individual	0.5000
Red (large) chitons	Gallons	3.0000
Red (large) chitons	Quarts	0.7500
Black (small) chitons	Individual	0.0313
Black (small) chitons	Gallons	4.0000
Black (small) chitons	Quarts	1.0000
Black (small) chitons	Pints	0.5000
Butter clams	Individual	0.1200
Butter clams	Pounds	1.0000
Butter clams	Gallons	3.0000
Horse clams	Gallons	3.0000
Pacific littleneck clams (steamers)	Individual	0.2500
Pacific littleneck clams (steamers)	Gallons	3.0000
Pacific littleneck clams (steamers)	Quarts	0.7500
Pacific littleneck clams (steamers)	Pints	0.3750
Pacific littleneck clams (steamers) [CF retention]	Gallons	3.0000
Pinkneck clams	Gallons	3.0000
Razor clams	Individual	0.2500
Razor clams	Gallons	3.0000
Razor clams [CF retention]	Gallons	3.0000
Softshell clams	Individual	0.2500
Softshell clams	Gallons	3.0000
Unknown clams	Gallons	3.0000
Cockles	Gallons	3.0000
Cockles	Quarts	0.7500
Dungeness crab	Individual	0.7000
Dungeness crab [CF retention]	Individual	0.7000
Unknown king crab	Individual	2.3000
Unknown king crab [CF retention]	Individual	2.3000
Tanner crab, bairdi	Individual	1.6000
Unknown Tanner crab	Individual	1.6000
Unknown Tanner crab [CF retention]	Individual	1.6000
Unknown crab	Individual	1.6000
Unknown crab	Gallons	1.6000
Geoducks	Individual	0.2500
Geoducks	Gallons	3.0000
Limpets	Gallons	1.5000
Limpets	Quarts	0.3750
Mussels	Gallons	1.5000
Octopus	Individual	4.0000
Octopus [CF retention]	Individual	4.0000
Oyster	Individual	0.2500
Oyster	Gallons	3.0000
Weathervane scallops	Individual	0.0000

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Conversion factors: Seldovia–Page 5 of 8.

Resource name	Reported units	Conversion factor
Weathervane scallops	Gallons	1.0000
Rock scallops	Gallons	1.0000
Sea cucumber	Individual	0.1000
Sea cucumber	Gallons	2.0000
Sea urchin	Individual	0.0420
Sea urchin	Gallons	0.5000
Shrimp	Individual	0.0250
Shrimp	Pounds	1.0000
Shrimp [CF retention]	Pounds	1.0000
Snails	Gallons	1.5000
Snails	Quarts	0.3750
Whelk	Gallons	1.5000
Blueberry	Pounds	1.0000
Blueberry	5 gallon buckets	15.0000
Blueberry	Gallons	4.0000
Blueberry	Quarts	1.0000
Blueberry	Half-pints	0.2500
Lowbush cranberry	Gallons	4.0000
Lowbush cranberry	Quarts	1.0000
Lowbush cranberry	Half-pints	0.2500
Highbush cranberry	Pounds	1.0000
Highbush cranberry	5 gallon buckets	20.0000
Highbush cranberry	Gallons	4.0000
Highbush cranberry	Quarts	1.0000
Highbush cranberry	Pints	0.5000
Highbush cranberry	Half-pints	0.2500
Crowberry	Gallons	4.0000
Crowberry	Half-pints	0.2500
Gooseberry	Gallons	4.0000
Gooseberry	Half-pints	0.2500
Currants	Pounds	1.0000
Currants	Gallons	4.0000
Currants	Quarts	1.0000
Currants	Half-pints	0.2500
Nagoonberry	Individual	0.0100
Nagoonberry	Gallons	4.0000
Nagoonberry	Half-pints	0.2500
Raspberry	Gallons	4.0000
Raspberry	Quarts	1.0000
Raspberry	Half-pints	0.2500
Salmonberry	Pounds	1.0000
Salmonberry	5 gallon buckets	20.0000
Salmonberry	Gallons	4.0000
Salmonberry	Quarts	1.0000
Salmonberry	Pints	0.5000
Salmonberry	Half-pints	0.2500

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Conversion factors: Seldovia–Page 6 of 8.

Resource name	Reported units	Conversion factor
Strawberry	Gallons	4.0000
Strawberry	Quarts	1.0000
Strawberry	Pints	0.5000
Strawberry	Half-pints	0.2500
Twisted stalk berry (watermelon berry)	Individual	0.0100
Twisted stalk berry (watermelon berry)	Gallons	4.0000
Twisted stalk berry (watermelon berry)	Quarts	1.0000
Twisted stalk berry (watermelon berry)	Half-pints	0.2500
Other wild berry	Gallons	4.0000
Other wild berry	Quarts	1.0000
Other wild berry	Pints	0.5000
Other wild berry	Half-pints	0.2500
Beach asparagus	Gallons	1.0000
Beach asparagus	Half-pints	0.0625
Goose tongue	Gallons	1.0000
Goose tongue	Quarts	0.2500
Goose tongue	Half-pints	0.0625
Other beach greens	Gallons	1.0000
Other beach greens	Quarts	0.2500
Devil's club	Gallons	1.0000
Devil's club	Quarts	0.2500
Devil's club	Pints	0.1250
Devil's club	Half-pints	0.0625
Fiddlehead ferns	Gallons	1.0000
Fiddlehead ferns	Quarts	0.2500
Fiddlehead ferns	Half-pints	0.0625
Nettle	Gallons	1.0000
Nettle	Plastic shopping bag	2.5000
Nettle	Pints	0.1250
Nettle	Half-pints	0.0625
Hudson's Bay (Labrador) tea	Gallons	1.0000
Indian rice	Gallons	1.0000
Dandelion greens	Gallons	1.0000
Dandelion greens	Quarts	0.2500
Sourdock	Gallons	1.0000
Sourdock	Half-pints	0.0625
Spruce tips	Gallons	1.0000
Spruce tips	Quarts	0.2500
Spruce tips	Pints	0.1250
Spruce tips	Half-pints	0.0625
Wild celery	Pounds	1.0000
Wild celery	Gallons	0.2500
Wild celery	Quarts	1.0000
Wild celery	Pints	0.1250
Wild celery	Half-pints	0.0625
Wild parsley	Gallons	1.0000

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Conversion factors: Seldovia–Page 7 of 8.

Resource name	Reported units	Conversion factor
Wild parsley	Quarts	0.2500
Wild parsley	Half-pints	0.0625
Wild rose hips	Gallons	4.0000
Wild rose hips	Quarts	1.0000
Wild rose hips	Pints	0.5000
Wild rose hips	Half-pints	0.2500
Yarrow	Gallons	1.0000
Yarrow	Quarts	0.2500
Other wild greens	Gallons	1.0000
Other wild greens	Quarts	0.2500
Other wild greens	Pints	0.1250
Unknown mushrooms	Individual	0.0100
Unknown mushrooms	Pounds	1.0000
Unknown mushrooms	5 gallon buckets	5.0000
Unknown mushrooms	Gallons	1.0000
Unknown mushrooms	Quarts	0.2500
Unknown mushrooms	Plastic shopping bag	2.5000
Unknown mushrooms	Pints	0.1250
Unknown mushrooms	Half-pints	0.0625
Fireweed	Gallons	1.0000
Fireweed	Quarts	0.0000
Plantain	Pounds	1.0000
Plantain	Pints	0.1250
Plantain	Half-pints	0.0625
Stinkweed	Gallons	1.0000
Stinkweed	Quarts	0.0000
Stinkweed	Pints	0.1250
Beach greens	Gallons	1.0000
Wild chives	Gallons	1.0000
Wild chives	Pints	0.1250
Wild chives	Half-pints	0.0625
Black seaweed	Pounds	1.0000
Black seaweed	Gallons	4.0000
Black seaweed	Quarts	1.0000
Black seaweed	Half-pints	0.2500
Bull kelp	Gallons	4.0000
Bull kelp	Quarts	1.0000
Bull kelp	Pints	0.5000
Bull kelp	Half-pints	0.2500
Red seaweed	Pounds	1.0000
Red seaweed	Gallons	4.0000
Red seaweed	Half-pints	0.2500
Sea ribbons	Gallons	4.0000
Sea ribbons	Quarts	1.0000
Giant kelp (macropcystis)	Gallons	4.0000
Alaria	Gallons	4.0000

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Conversion factors: Seldovia–Page 8 of 8.

Resource name	Reported units	Conversion factor
Red laver (dulse)	Half-pints	0.2500
Bladder wrack	Gallons	4.0000
Bladder wrack	Quarts	1.0000
Unknown seaweed	Pounds	1.0000
Unknown seaweed	Gallons	4.0000
Unknown seaweed	Quarts	1.0000
Unknown seaweed	Half-pints	0.2500
Wood	Cords	0.0000
Wood (unspecified)	Gallons	0.0000

Source ADF&G Division of Subsistence household surveys, 2015.

Conversion factors: Nanwalek

Resource name	Reported units	Conversion factor
Chum salmon	Individual	5.4760
Chum salmon [CF retention]	Individual	5.4760
Coho salmon	Individual	4.6050
Coho salmon [CF retention]	Individual	4.6050
Chinook salmon	Individual	11.0520
Chinook salmon [CF retention]	Individual	11.0520
Pink salmon	Individual	2.6280
Pink salmon [CF retention]	Individual	2.6280
Sockeye salmon	Individual	4.4844
Sockeye salmon [CF retention]	Individual	4.4844
Landlocked salmon	Individual	1.5000
Unknown salmon	Individual	3.9866
Unknown salmon [CF retention]	Individual	3.9866
Pacific herring	Individual	0.4000
Pacific herring	Gallons	6.0000
Pacific herring [CF retention]	Gallons	6.0000
Pacific herring roe	Gallons	7.0000
Pacific herring roe	Pints	0.8750
Pacific herring sac roe	Gallons	7.0000
Pacific herring sac roe [CF retention]	Gallons	7.0000
Pacific herring spawn on kelp [CF retention]	Gallons	7.0000
Eulachon (hooligan, candlefish)	Gallons	3.2500
Unknown smelt	Gallons	3.2500
Sea bass	Individual	1.0000
Pacific (gray) cod	Individual	3.2000
Pacific (gray) cod [CF retention]	Individual	3.2000
Pacific tomcod	Individual	0.5000
Pacific tomcod	Pounds	1.0000
Walleye pollock (whiting)	Individual	1.4000
Walleye pollock (whiting) [CF retention]	Individual	1.4000
Unknown cod	Individual	0.7243
Eel	Individual	3.6000
Arrowtooth flounder (turbot)	Individual	3.0000
Starry flounder	Individual	3.0000
Unknown flounder	Individual	3.0000
Unknown flounder [CF retention]	Individual	3.0000
Kelp greenling	Individual	1.0000
Lingcod	Individual	4.0000
Lingcod [CF retention]	Individual	4.0000
Unknown greenling	Individual	1.0000
Unknown greenling [CF retention]	Individual	1.0000
Pacific halibut	Individual	18.7656
Pacific halibut	Pounds	1.0000
Pacific halibut [CF retention]	Pounds	1.0000
Black rockfish	Individual	1.5000
Black rockfish	Pounds	1.0000

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Conversion factors: Nanwalek–Page 2 of 8.

Resource name	Reported units	Conversion factor
Black rockfish [CF retention]	Individual	1.5000
Red rockfish	Individual	4.0000
Red rockfish [CF retention]	Individual	4.0000
Yelloweye rockfish	Individual	3.0000
Unknown rockfish	Individual	3.0000
Unknown rockfish [CF retention]	Individual	3.0000
Sablefish (black cod)	Individual	3.1000
Sablefish (black cod) [CF retention]	Individual	3.1000
Unknown Irish lord	Individual	0.5000
Unknown sculpin	Individual	0.5000
Unknown sculpin [CF retention]	Individual	0.5000
Unknown shark	Individual	9.0000
Unknown shark [CF retention]	Individual	9.0000
Skates	Individual	5.0000
Unknown sole	Individual	1.0000
Unknown sole [CF retention]	Individual	1.0000
Wolffish	Individual	0.5000
Dolly Varden	Individual	1.4000
Dolly Varden	Pounds	1.0000
Dolly Varden [CF retention]	Individual	1.4000
Lake trout	Individual	1.4000
Arctic grayling	Individual	0.7000
Northern pike	Individual	3.0000
Unknown sturgeon [CF retention]	Individual	34.0000
Cutthroat trout	Individual	1.4000
Rainbow trout	Individual	1.4000
Steelhead	Individual	1.4000
Unknown whitefishes	Individual	1.7500
Unknown nonsalmon fish	Individual	1.0770
Black bear	Individual	58.0000
Caribou	Individual	150.0000
Deer	Individual	43.2000
Mountain goat	Individual	72.5000
Moose	Individual	540.0000
Dall sheep	Individual	104.0000
Beaver	Individual	8.7500
Coyote	Individual	0.0000
Red fox	Individual	0.0000
Snowshoe hare	Individual	2.0000
North American river (land) otter	Individual	0.0000
Lynx	Individual	4.0000
Marten	Individual	0.0000
Mink	Individual	0.0000
Muskrat	Individual	0.7500
Porcupine	Individual	8.0000
Arctic ground (parka) squirrel	Individual	0.5000

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Conversion factors: Nanwalek–Page 3 of 8.

Resource name	Reported units	Conversion factor
Red (tree) squirrel	Individual	0.5000
Weasel	Individual	0.0000
Gray wolf	Individual	0.0000
Wolverine	Individual	0.0000
Harbor seal	Individual	56.0000
Sea otter	Individual	0.0000
Steller sea lion	Individual	200.0000
Bowhead whale	Individual	0.0000
Bufflehead	Individual	0.4000
Unknown eider	Individual	0.0000
Goldeneye	Individual	0.8000
Harlequin duck	Individual	0.5000
Mallard	Individual	0.9000
Merganser	Individual	0.9000
Long-tailed duck	Individual	0.8000
Northern pintail	Individual	0.8000
Scaup	Individual	0.9000
Black scoter	Individual	0.9000
Surf scoter	Individual	0.9000
White-winged scoter	Individual	0.9000
Northern shoveler	Individual	0.6000
Unknown teal	Individual	0.3000
Wigeon	Individual	0.3000
Unknown ducks	Individual	0.8537
Unknown Canada/cackling geese	Individual	1.2000
White-fronted goose	Individual	2.4000
Swans	Individual	6.0000
Crane	Individual	8.4000
Cormorant	Individual	1.0000
Unknown gull	Individual	1.0000
Black-legged kittiwake	Individual	0.0000
Pacific/arctic loon	Individual	3.0000
Murre	Individual	1.0000
Puffin	Individual	0.5000
Spruce grouse	Individual	0.7000
Sharp-tailed grouse	Individual	0.7000
Ruffed grouse	Individual	0.7000
Unknown grouse	Individual	0.7000
Ptarmigan	Individual	0.7000
Unknown other birds	Individual	0.0000
Unknown duck eggs	Individual	0.1500
Unknown goose eggs	Individual	0.3000
Black oystercatcher eggs	Individual	0.0500
Unknown gull eggs	Individual	0.3000
Unknown gull eggs	Gallons	6.0000
Tern eggs	Individual	0.0500

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Conversion factors: Nanwalek–Page 4 of 8.

Resource name	Reported units	Conversion factor
Unknown eggs	Individual	0.0000
Red (large) chitons	Individual	0.5000
Red (large) chitons	Gallons	3.0000
Red (large) chitons	Quarts	0.7500
Black (small) chitons	Individual	0.0313
Black (small) chitons	Gallons	4.0000
Black (small) chitons	Quarts	1.0000
Black (small) chitons	Pints	0.5000
Butter clams	Individual	0.1200
Butter clams	Pounds	1.0000
Butter clams	Gallons	3.0000
Horse clams	Gallons	3.0000
Pacific littleneck clams (steamers)	Individual	0.2500
Pacific littleneck clams (steamers)	Gallons	3.0000
Pacific littleneck clams (steamers)	Quarts	0.7500
Pacific littleneck clams (steamers)	Pints	0.3750
Pacific littleneck clams (steamers) [CF retention]	Gallons	3.0000
Pinkneck clams	Gallons	3.0000
Razor clams	Individual	0.2500
Razor clams	Gallons	3.0000
Razor clams [CF retention]	Gallons	3.0000
Softshell clams	Individual	0.2500
Softshell clams	Gallons	3.0000
Unknown clams	Gallons	3.0000
Cockles	Gallons	3.0000
Cockles	Quarts	0.7500
Dungeness crab	Individual	0.7000
Dungeness crab [CF retention]	Individual	0.7000
Unknown king crab	Individual	2.3000
Unknown king crab [CF retention]	Individual	2.3000
Tanner crab, bairdi	Individual	1.6000
Unknown Tanner crab	Individual	1.6000
Unknown Tanner crab [CF retention]	Individual	1.6000
Unknown crab	Individual	0.0000
Unknown crab	Gallons	0.0000
Geoducks	Individual	0.2500
Geoducks	Gallons	3.0000
Limpets	Gallons	1.5000
Limpets	Quarts	0.3750
Mussels	Gallons	1.5000
Octopus	Individual	4.0000
Octopus [CF retention]	Individual	4.0000
Oyster	Individual	0.2500
Oyster	Gallons	3.0000
Weathervane scallops	Individual	0.0000

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Conversion factors: Nanwalek–Page 5 of 8.

Resource name	Reported units	Conversion factor
Weathervane scallops	Gallons	1.0000
Rock scallops	Gallons	1.0000
Sea cucumber	Individual	0.1000
Sea cucumber	Gallons	2.0000
Sea urchin	Individual	0.0420
Sea urchin	Gallons	0.5000
Shrimp	Individual	0.0250
Shrimp	Pounds	1.0000
Shrimp [CF retention]	Pounds	1.0000
Snails	Gallons	1.5000
Snails	Quarts	0.3750
Whelk	Gallons	1.5000
Blueberry	Pounds	1.0000
Blueberry	5 gallon buckets	15.0000
Blueberry	Gallons	4.0000
Blueberry	Quarts	1.0000
Blueberry	Half-pints	0.2500
Lowbush cranberry	Gallons	4.0000
Lowbush cranberry	Quarts	1.0000
Lowbush cranberry	Half-pints	0.2500
Highbush cranberry	Pounds	1.0000
Highbush cranberry	5 gallon buckets	20.0000
Highbush cranberry	Gallons	4.0000
Highbush cranberry	Quarts	1.0000
Highbush cranberry	Pints	0.5000
Highbush cranberry	Half-pints	0.2500
Crowberry	Gallons	4.0000
Crowberry	Half-pints	0.2500
Gooseberry	Gallons	4.0000
Gooseberry	Half-pints	0.2500
Currants	Pounds	1.0000
Currants	Gallons	4.0000
Currants	Quarts	1.0000
Currants	Half-pints	0.2500
Nagoonberry	Individual	0.0100
Nagoonberry	Gallons	4.0000
Nagoonberry	Quarts	1.0000
Nagoonberry	Half-pints	0.2500
Raspberry	Gallons	4.0000
Raspberry	Quarts	1.0000
Raspberry	Half-pints	0.2500
Salmonberry	Pounds	1.0000
Salmonberry	5 gallon buckets	20.0000
Salmonberry	Gallons	4.0000
Salmonberry	Quarts	1.0000
Salmonberry	Pints	0.5000

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Conversion factors: Nanwalek–Page 6 of 8.

Resource name	Reported units	Conversion factor
Salmonberry	Half-pints	0.2500
Strawberry	Gallons	4.0000
Strawberry	Quarts	1.0000
Strawberry	Pints	0.5000
Strawberry	Half-pints	0.2500
Twisted stalk berry (watermelon berry)	Individual	0.0100
Twisted stalk berry (watermelon berry)	Gallons	4.0000
Twisted stalk berry (watermelon berry)	Quarts	1.0000
Twisted stalk berry (watermelon berry)	Half-pints	0.2500
Other wild berry	Gallons	4.0000
Other wild berry	Quarts	1.0000
Other wild berry	Pints	0.5000
Other wild berry	Half-pints	0.2500
Beach asparagus	Gallons	1.0000
Beach asparagus	Half-pints	0.0625
Goose tongue	Gallons	1.0000
Goose tongue	Quarts	0.2500
Goose tongue	Half-pints	0.0625
Wild rhubarb	Gallons	1.0000
Other beach greens	Gallons	1.0000
Other beach greens	Quarts	0.2500
Devil's club	Gallons	1.0000
Devil's club	Quarts	0.2500
Devil's club	Pints	0.1250
Devil's club	Half-pints	0.0625
Fiddlehead ferns	Gallons	1.0000
Fiddlehead ferns	Quarts	0.2500
Fiddlehead ferns	Half-pints	0.0625
Nettle	Gallons	1.0000
Nettle	Quarts	0.2500
Nettle	Plastic shopping bag	2.5000
Nettle	Pints	0.1250
Nettle	Half-pints	0.0625
Hudson's Bay (Labrador) tea	Gallons	1.0000
Indian rice	Gallons	1.0000
Dandelion greens	Gallons	1.0000
Dandelion greens	Quarts	0.2500
Sourdock	Gallons	1.0000
Sourdock	Half-pints	0.0625
Spruce tips	Gallons	1.0000
Spruce tips	Quarts	0.2500
Spruce tips	Pints	0.1250
Spruce tips	Half-pints	0.0625
Willow leaves	Pounds	1.0000
Willow leaves	Gallons	1.0000
Willow leaves	Quarts	0.2500

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Conversion factors: Nanwalek–Page 7 of 8.

Resource name	Reported units	Conversion factor
Wild celery	Pounds	1.0000
Wild celery	Gallons	0.2500
Wild celery	Quarts	1.0000
Wild celery	Pints	0.1250
Wild celery	Half-pints	0.0625
Wild parsley	Gallons	1.0000
Wild parsley	Quarts	0.2500
Wild parsley	Half-pints	0.0625
Wild rose hips	Gallons	4.0000
Wild rose hips	Quarts	1.0000
Wild rose hips	Pints	0.5000
Wild rose hips	Half-pints	0.2500
Yarrow	Gallons	1.0000
Yarrow	Quarts	0.2500
Other wild greens	Gallons	1.0000
Other wild greens	Quarts	0.2500
Other wild greens	Pints	0.1250
Unknown mushrooms	Individual	0.0100
Unknown mushrooms	Pounds	1.0000
Unknown mushrooms	5 gallon buckets	5.0000
Unknown mushrooms	Gallons	1.0000
Unknown mushrooms	Quarts	0.2500
Unknown mushrooms	Plastic shopping bag	2.5000
Unknown mushrooms	Pints	0.1250
Unknown mushrooms	Half-pints	0.0625
Fireweed	Gallons	1.0000
Fireweed	Quarts	0.0000
Plantain	Pounds	1.0000
Plantain	Pints	0.1250
Plantain	Half-pints	0.0625
Stinkweed	Gallons	1.0000
Stinkweed	Quarts	0.0000
Stinkweed	Pints	0.1250
Beach greens	Gallons	1.0000
Wild chives	Gallons	1.0000
Wild chives	Pints	0.1250
Wild chives	Half-pints	0.0625
Black seaweed	Pounds	1.0000
Black seaweed	Gallons	4.0000
Black seaweed	Quarts	1.0000
Black seaweed	Half-pints	0.2500
Bull kelp	Gallons	4.0000
Bull kelp	Quarts	1.0000
Bull kelp	Pints	0.5000
Bull kelp	Half-pints	0.2500
Red seaweed	Pounds	1.0000

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Conversion factors: Nanwalek–Page 8 of 8.

Resource name	Reported units	Conversion factor
Red seaweed	Gallons	4.0000
Red seaweed	Quarts	1.0000
Red seaweed	Half-pints	0.2500
Sea ribbons	Gallons	4.0000
Sea ribbons	Quarts	1.0000
Giant kelp (macropcystis)	Gallons	4.0000
Alaria	Gallons	4.0000
Red laver (dulse)	Half-pints	0.2500
Bladder wrack	Gallons	4.0000
Bladder wrack	Quarts	1.0000
Bladder wrack	Half-pints	0.2500
Unknown seaweed	Pounds	1.0000
Unknown seaweed	Gallons	4.0000
Unknown seaweed	Quarts	1.0000
Unknown seaweed	Half-pints	0.2500
Wood	Cords	0.0000
Wood (unspecified)	Gallons	0.0000

Source ADF&G Division of Subsistence household surveys, 2015.

Conversion factors: Port Graham

Resource name	Reported units	Conversion factor
Chum salmon	Individual	5.4760
Chum salmon [CF retention]	Individual	5.4760
Coho salmon	Individual	4.6050
Coho salmon [CF retention]	Individual	4.6050
Chinook salmon	Individual	11.0520
Chinook salmon [CF retention]	Individual	11.0520
Pink salmon	Individual	2.6280
Pink salmon [CF retention]	Individual	2.6280
Sockeye salmon	Individual	4.4844
Sockeye salmon [CF retention]	Individual	4.4844
Landlocked salmon	Individual	1.5000
Unknown salmon	Individual	4.3302
Unknown salmon [CF retention]	Individual	4.3302
Pacific herring	Individual	0.4000
Pacific herring	Gallons	6.0000
Pacific herring [CF retention]	Gallons	6.0000
Pacific herring roe	Gallons	7.0000
Pacific herring roe	Pints	0.8750
Pacific herring sac roe	Gallons	7.0000
Pacific herring sac roe [CF retention]	Gallons	7.0000
Pacific herring spawn on kelp [CF retention]	Gallons	7.0000
Eulachon (hooligan, candlefish)	Gallons	3.2500
Unknown smelt	Gallons	3.2500
Sea bass	Individual	1.0000
Pacific (gray) cod	Individual	3.2000
Pacific (gray) cod [CF retention]	Individual	3.2000
Pacific tomcod	Individual	0.5000
Pacific tomcod	Pounds	1.0000
Walleye pollock (whiting)	Individual	1.4000
Walleye pollock (whiting) [CF retention]	Individual	1.4000
Unknown cod	Individual	0.5000
Eel	Individual	3.6000
Arrowtooth flounder (turbot)	Individual	3.0000
Starry flounder	Individual	3.0000
Unknown flounder	Individual	3.0000
Unknown flounder [CF retention]	Individual	3.0000
Kelp greenling	Individual	1.0000
Lingcod	Individual	4.0000
Lingcod [CF retention]	Individual	4.0000
Unknown greenling	Individual	1.0000
Unknown greenling [CF retention]	Individual	1.0000
Pacific halibut	Individual	18.7656
Pacific halibut	Pounds	1.0000
Pacific halibut [CF retention]	Pounds	1.0000
Black rockfish	Individual	1.5000
Black rockfish	Pounds	1.0000

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Conversion factors: Port Graham–Page 2 of 8.

Resource name	Reported units	Conversion factor
Black rockfish [CF retention]	Individual	1.5000
Red rockfish	Individual	4.0000
Red rockfish [CF retention]	Individual	4.0000
Yelloweye rockfish	Individual	3.0000
Unknown rockfish	Individual	4.0000
Unknown rockfish [CF retention]	Individual	4.0000
Sablefish (black cod)	Individual	3.1000
Sablefish (black cod) [CF retention]	Individual	3.1000
Unknown Irish lord	Individual	0.5000
Unknown sculpin	Individual	0.5000
Unknown sculpin [CF retention]	Individual	0.5000
Unknown shark	Individual	9.0000
Unknown shark [CF retention]	Individual	9.0000
Skates	Individual	5.0000
Unknown sole	Individual	1.0000
Unknown sole [CF retention]	Individual	1.0000
Wolffish	Individual	0.5000
Dolly Varden	Individual	1.4000
Dolly Varden	Pounds	1.0000
Dolly Varden [CF retention]	Individual	1.4000
Lake trout	Individual	1.4000
Arctic grayling	Individual	0.7000
Northern pike	Individual	3.0000
Unknown sturgeon [CF retention]	Individual	34.0000
Cutthroat trout	Individual	1.4000
Rainbow trout	Individual	1.4000
Steelhead	Individual	1.4000
Unknown whitefishes	Individual	1.7500
Unknown nonsalmon fish	Individual	1.1266
Black bear	Individual	58.0000
Caribou	Individual	150.0000
Deer	Individual	43.2000
Mountain goat	Individual	72.5000
Moose	Individual	540.0000
Dall sheep	Individual	104.0000
Beaver	Individual	8.7500
Coyote	Individual	0.0000
Red fox	Individual	0.0000
Snowshoe hare	Individual	2.0000
North American river (land) otter	Individual	0.0000
Lynx	Individual	4.0000
Marten	Individual	0.0000
Mink	Individual	0.0000
Muskrat	Individual	0.7500
Porcupine	Individual	8.0000
Arctic ground (parka) squirrel	Individual	0.5000

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Conversion factors: Port Graham–Page 3 of 8.

Resource name	Reported units	Conversion factor
Red (tree) squirrel	Individual	0.5000
Weasel	Individual	0.0000
Gray wolf	Individual	0.0000
Wolverine	Individual	0.0000
Harbor seal	Individual	56.0000
Sea otter	Individual	0.0000
Steller sea lion	Individual	200.0000
Bowhead whale	Individual	0.0000
Bufflehead	Individual	0.4000
Unknown eider	Individual	0.0000
Goldeneye	Individual	0.8000
Harlequin duck	Individual	0.5000
Mallard	Individual	0.9000
Merganser	Individual	0.9000
Long-tailed duck	Individual	0.8000
Northern pintail	Individual	0.8000
Scaup	Individual	0.9000
Black scoter	Individual	0.9000
Surf scoter	Individual	0.9000
White-winged scoter	Individual	0.9000
Northern shoveler	Individual	0.6000
Unknown teal	Individual	0.3000
Wigeon	Individual	0.3000
Unknown ducks	Individual	1.2740
Unknown Canada/cackling geese	Individual	1.2000
White-fronted goose	Individual	2.4000
Swans	Individual	6.0000
Crane	Individual	8.4000
Cormorant	Individual	1.0000
Unknown gull	Individual	1.0000
Black-legged kittiwake	Individual	0.0000
Pacific/arctic loon	Individual	3.0000
Murre	Individual	1.0000
Puffin	Individual	0.5000
Spruce grouse	Individual	0.7000
Sharp-tailed grouse	Individual	0.7000
Ruffed grouse	Individual	0.7000
Unknown grouse	Individual	0.7000
Ptarmigan	Individual	0.7000
Unknown other birds	Individual	0.0000
Unknown duck eggs	Individual	0.1500
Unknown goose eggs	Individual	0.3000
Black oystercatcher eggs	Individual	0.0500
Unknown gull eggs	Individual	0.3000
Unknown gull eggs	Gallons	6.0000
Tern eggs	Individual	0.0500

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Conversion factors: Port Graham–Page 4 of 8.

Resource name	Reported units	Conversion factor
Unknown eggs	Individual	0.0000
Red (large) chitons	Individual	0.5000
Red (large) chitons	Gallons	3.0000
Red (large) chitons	Quarts	0.7500
Black (small) chitons	Individual	0.0313
Black (small) chitons	Gallons	4.0000
Black (small) chitons	Quarts	1.0000
Black (small) chitons	Pints	0.5000
Butter clams	Individual	0.1200
Butter clams	Pounds	1.0000
Butter clams	Gallons	3.0000
Horse clams	Gallons	3.0000
Pacific littleneck clams (steamers)	Individual	0.2500
Pacific littleneck clams (steamers)	Gallons	3.0000
Pacific littleneck clams (steamers)	Quarts	0.7500
Pacific littleneck clams (steamers)	Pints	0.3750
Pacific littleneck clams (steamers) [CF retention]	Gallons	3.0000
Pinkneck clams	Gallons	3.0000
Razor clams	Individual	0.2500
Razor clams	Gallons	3.0000
Razor clams [CF retention]	Gallons	3.0000
Softshell clams	Individual	0.2500
Softshell clams	Gallons	3.0000
Unknown clams	Gallons	3.0000
Cockles	Gallons	3.0000
Cockles	Quarts	0.7500
Dungeness crab	Individual	0.7000
Dungeness crab [CF retention]	Individual	0.7000
Unknown king crab	Individual	2.3000
Unknown king crab [CF retention]	Individual	2.3000
Tanner crab, bairdi	Individual	1.6000
Unknown Tanner crab	Individual	1.6000
Unknown Tanner crab [CF retention]	Individual	1.6000
Unknown crab	Individual	0.0000
Unknown crab	Gallons	0.0000
Geoducks	Individual	0.2500
Geoducks	Gallons	3.0000
Limpets	Gallons	1.5000
Limpets	Quarts	0.3750
Mussels	Gallons	1.5000
Octopus	Individual	4.0000
Octopus [CF retention]	Individual	4.0000
Oyster	Individual	0.2500
Oyster	Gallons	3.0000
Weathervane scallops	Individual	0.0000

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Conversion factors: Port Graham–Page 5 of 8.

Resource name	Reported units	Conversion factor
Weathervane scallops	Gallons	1.0000
Rock scallops	Gallons	1.0000
Sea cucumber	Individual	0.1000
Sea cucumber	Gallons	2.0000
Sea urchin	Individual	0.0420
Sea urchin	Gallons	0.5000
Shrimp	Individual	0.0250
Shrimp	Pounds	1.0000
Shrimp [CF retention]	Pounds	1.0000
Snails	Gallons	1.5000
Snails	Quarts	0.3750
Whelk	Gallons	1.5000
Blueberry	Pounds	1.0000
Blueberry	5 gallon buckets	15.0000
Blueberry	Gallons	4.0000
Blueberry	Quarts	1.0000
Blueberry	Half-pints	0.2500
Lowbush cranberry	Gallons	4.0000
Lowbush cranberry	Quarts	1.0000
Lowbush cranberry	Half-pints	0.2500
Highbush cranberry	Pounds	1.0000
Highbush cranberry	5 gallon buckets	20.0000
Highbush cranberry	Gallons	4.0000
Highbush cranberry	Quarts	1.0000
Highbush cranberry	Pints	0.5000
Highbush cranberry	Half-pints	0.2500
Crowberry	Gallons	4.0000
Crowberry	Half-pints	0.2500
Gooseberry	Gallons	4.0000
Gooseberry	Half-pints	0.2500
Currants	Pounds	1.0000
Currants	Gallons	4.0000
Currants	Quarts	1.0000
Currants	Half-pints	0.2500
Nagoonberry	Individual	0.0100
Nagoonberry	Gallons	4.0000
Nagoonberry	Half-pints	0.2500
Raspberry	Gallons	4.0000
Raspberry	Quarts	1.0000
Raspberry	Half-pints	0.2500
Salmonberry	Pounds	1.0000
Salmonberry	5 gallon buckets	20.0000
Salmonberry	Gallons	4.0000
Salmonberry	Quarts	1.0000
Salmonberry	Pints	0.5000
Salmonberry	Half-pints	0.2500

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Conversion factors: Port Graham–Page 6 of 8.

Resource name	Reported units	Conversion factor
Strawberry	Gallons	4.0000
Strawberry	Quarts	1.0000
Strawberry	Pints	0.5000
Strawberry	Half-pints	0.2500
Twisted stalk berry (watermelon berry)	Individual	0.0100
Twisted stalk berry (watermelon berry)	Gallons	4.0000
Twisted stalk berry (watermelon berry)	Quarts	1.0000
Twisted stalk berry (watermelon berry)	Half-pints	0.2500
Other wild berry	Gallons	4.0000
Other wild berry	Quarts	1.0000
Other wild berry	Pints	0.5000
Other wild berry	Half-pints	0.2500
Beach asparagus	Gallons	1.0000
Beach asparagus	Half-pints	0.0625
Goose tongue	Gallons	1.0000
Goose tongue	Quarts	0.2500
Goose tongue	Half-pints	0.0625
Other beach greens	Gallons	1.0000
Other beach greens	Quarts	0.2500
Devils' club	Gallons	1.0000
Devils' club	Quarts	0.2500
Devils' club	Pints	0.1250
Devils' club	Half-pints	0.0625
Fiddlehead ferns	Gallons	1.0000
Fiddlehead ferns	Quarts	0.2500
Fiddlehead ferns	Half-pints	0.0625
Nettle	Gallons	1.0000
Nettle	Plastic shopping bag	2.5000
Nettle	Pints	0.1250
Nettle	Half-pints	0.0625
Hudson's Bay (Labrador) tea	Gallons	1.0000
Indian rice	Gallons	1.0000
Dandelion greens	Gallons	1.0000
Dandelion greens	Quarts	0.2500
Sourdock	Gallons	1.0000
Sourdock	Half-pints	0.0625
Spruce tips	Gallons	1.0000
Spruce tips	Quarts	0.2500
Spruce tips	Pints	0.1250
Spruce tips	Half-pints	0.0625
Wild celery	Pounds	1.0000
Wild celery	Gallons	0.2500
Wild celery	Quarts	1.0000
Wild celery	Pints	0.1250
Wild celery	Half-pints	0.0625
Wild parsley	Gallons	1.0000

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Conversion factors: Port Graham–Page 7 of 8.

Resource name	Reported units	Conversion factor
Wild parsley	Quarts	0.2500
Wild parsley	Half-pints	0.0625
Wild rose hips	Gallons	4.0000
Wild rose hips	Quarts	1.0000
Wild rose hips	Pints	0.5000
Wild rose hips	Half-pints	0.2500
Yarrow	Gallons	1.0000
Yarrow	Quarts	0.2500
Other wild greens	Gallons	1.0000
Other wild greens	Quarts	0.2500
Other wild greens	Pints	0.1250
Unknown mushrooms	Individual	0.0100
Unknown mushrooms	Pounds	1.0000
Unknown mushrooms	5 gallon buckets	5.0000
Unknown mushrooms	Gallons	1.0000
Unknown mushrooms	Quarts	0.2500
Unknown mushrooms	Plastic shopping bag	2.5000
Unknown mushrooms	Pints	0.1250
Unknown mushrooms	Half-pints	0.0625
Fireweed	Gallons	1.0000
Fireweed	Quarts	0.0000
Plantain	Pounds	1.0000
Plantain	Pints	0.1250
Plantain	Half-pints	0.0625
Stinkweed	Gallons	1.0000
Stinkweed	Quarts	0.0000
Stinkweed	Pints	0.1250
Beach greens	Gallons	1.0000
Wild chives	Gallons	1.0000
Wild chives	Pints	0.1250
Wild chives	Half-pints	0.0625
Black seaweed	Pounds	1.0000
Black seaweed	Gallons	4.0000
Black seaweed	Quarts	1.0000
Black seaweed	Half-pints	0.2500
Bull kelp	Gallons	4.0000
Bull kelp	Quarts	1.0000
Bull kelp	Pints	0.5000
Bull kelp	Half-pints	0.2500
Red seaweed	Pounds	1.0000
Red seaweed	Gallons	4.0000
Red seaweed	Half-pints	0.2500
Sea ribbons	Gallons	4.0000
Sea ribbons	Quarts	1.0000
Giant kelp (macropcystis)	Gallons	4.0000
Alaria	Gallons	4.0000

-continued-

Conversion factors: Port Graham–Page 8 of 8.

Resource name	Reported units	Conversion factor
Red laver (dulse)	Half-pints	0.2500
Bladder wrack	Gallons	4.0000
Bladder wrack	Quarts	1.0000
Unknown seaweed	Pounds	1.0000
Unknown seaweed	Gallons	4.0000
Unknown seaweed	Quarts	1.0000
Unknown seaweed	Half-pints	0.2500
Wood	Cords	0.0000
Wood (unspecified)	Gallons	0.0000

Source ADF&G Division of Subsistence household surveys, 2015.

APPENDIX C–PROJECT SUMMARY

The Harvest and Use of Wild Resources in Nikiski, Seldovia, Nanwalek, and Port Graham, Alaska, 2014: An Overview of Study Findings

Background and Methods

The goal of this project was to collect, analyze, and report information about subsistence uses of fish and wildlife in the communities of Nikiski, Seldovia, Nanwalek, and Port Graham in 2014. This report details the results of a household survey administered in the study communities between January and March 2015, for harvests and uses of wild resources by community households during the 2014 calendar year.

This study is part of the effort to collect data about the full range of subsistence harvests and uses, areas of harvest, as well as demographic and economic information to understand the subsistence way of life in all its complexity. The project was funded by Alaska LNG through a reimbursable services agreement with the State Pipeline Coordinator's Office. This study was conducted as part of the effort by the State of Alaska to assess the feasibility of constructing a liquefied natural gas pipeline. This information was collected by research staff of the Division of Subsistence, Alaska Department of Fish and Game.

Findings

The study communities are located on the Kenai Peninsula of Southcentral Alaska, and many residents of each study community relied on local hunting, fishing, and wild food gathering for nutrition and to support their way of life. The study communities exhibited a range of contemporary patterns of wild resource harvests and uses. Based on the findings from the 2014 research, community residents used a variety of resources including: salmon and nonsalmon fish, large land mammals, small land mammals, migratory waterfowl and upland game birds, marine mammals, marine invertebrates, and wild plants and berries.

During the study year, residents of Port Graham, Nanwalek, and Seldovia, which are not connected to the road system, tended to concentrate their harvesting pursuits closer to their communities compared to the distances traveled by Nikiski residents (Figure 1).

For all the communities, the per capita weight of wild food harvests differed by a range of 185 lb when comparing the highest per capita harvest with the lowest per capita harvest. Nikiski had the lowest per capita harvest of wild foods, with residents harvesting 69 lb per capita; the per capita harvest in Seldovia was 138 lb; for Port Graham the per capita harvest was 218 lb; and Nanwalek had the highest per capita harvest weight totaling 253 lb. The average number of resources harvested by households was highest in Nanwalek (12 kinds of resources per household), followed by Seldovia (10), Port Graham (10), and Nikiski (5). Port Graham, Nanwalek, and Seldovia used a wider diversity of wild foods, such as harbor seals, clams, Pacific tomcod, and other locally available marine resources.

There were relatively high participation rates for attempting to gather wild resources at both the individual and household levels in all 4 communities—at least 75% participation or better for each level. Harvest levels, as estimated in pounds usable weight per capita, differed among the communities.

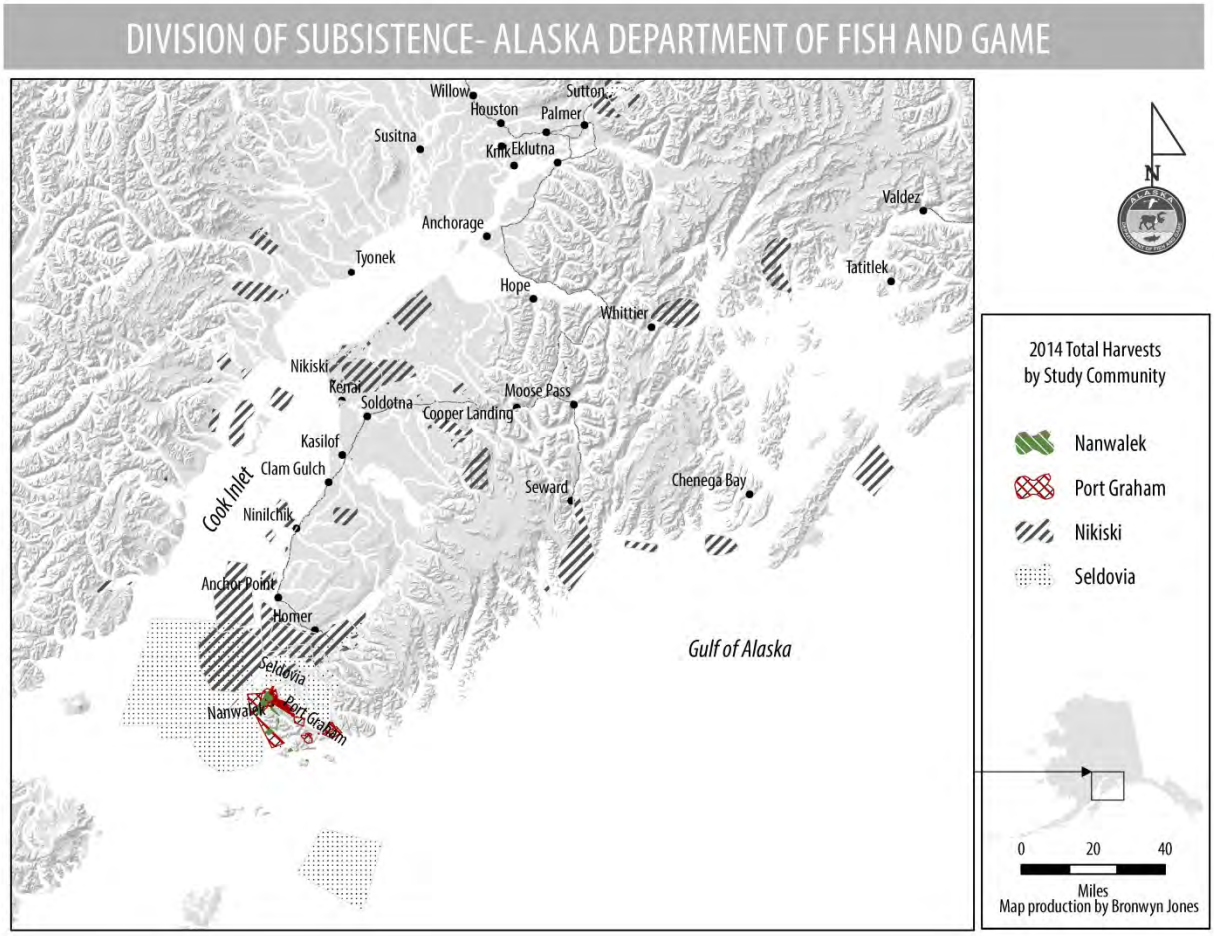

Figure 1.–Map of all search and harvest areas for all resources, study communities, 2014.

This research found that sharing was important to many households during the study year. In addition to their own harvests, most households in each community also received wild resources from other households in their communities as shown by the number of resources given and received.

Although the study found evidence of a long-term pattern of harvest and use of wild resources, many participants reported that their wild resource uses and harvests have changed over their lifetimes as resource abundance fluctuated. Most notably, many community members mentioned changes in salmon and Pacific halibut abundance and size. Many residents expressed the desire to continue to harvest wild resources locally, not only for themselves, but also for future generations.

For More Information

Complete results for this project appear in: *Jones, B. and M. L. Kostick, editors. 2016. The Harvest and Use of Wild Resources in Nikiski, Seldovia, Nanwalek, and Port Graham, Alaska, 2014. Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 420, Anchorage.*

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