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The Harvest and Use of Wild Resources in Selected Communities of the Copper River Basin and East Glenn Highway, Alaska, 2013

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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	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
confidence interval as a percentage	CIP
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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edited by

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ABSTRACT

This report provides updated information about the harvests of fish, wildlife, and wild plant resources by the communities of Glennallen, Gulkana, Lake Louise, Paxson, Tazlina, Tonsina, Mendeltna, Nelchina, and Tolsona. This report details the results of a household survey administered in the study communities between January and April 2014 for harvest and use of wild resources by these communities during calendar year 2013. These communities are located in the Copper River Basin of Southcentral Alaska. During the 2013 study year, many residents of the study communities relied on hunting, fishing, and wild food gathering for nutrition and to support their way of life. They used a variety of resources, including salmon and other fish, large land mammals, small land mammals, migratory waterfowl and upland game birds, and wild plants and berries. This study is part of the effort of the State of Alaska to assess the feasibility of constructing the Susitna-Watana Hydroelectric Project. This information was collected by research staff of the Division of Subsistence, Alaska Department of Fish and Game.

Key words: Subsistence, Copper River Basin, Susitna-Watana Hydroelectric Project, Glennallen, Gulkana, Lake Louise, Paxson, Tazlina, Tonsina, Mendeltna, Nelchina, and Tolsona

1. INTRODUCTION

Sarah M. Hazell, Davin Holen, and David S. Koster

This report provides updated information about the harvests of fish, wildlife, and wild plant resources by 9 communities of the Copper River Basin, Southcentral Alaska: Glennallen (population 384), Gulkana (population 104), Lake Louise (population 27), Paxson (population 32), Tazlina (population 352), Tonsina (population 90), Mendeltna (population 34), Nelchina (population 76), and Tolsona (population 24). This report details the results of a household survey administered in these communities between January and March 2014 for the 2013 study year. Population estimates shown above are based on information collected for the 2013 study year (Table 1-1). U.S. Census Bureau boundaries were followed in this survey to determine study community boundaries; more discussion about community boundaries is provided in this report.

Project Background

This study is part of the effort by the State of Alaska to assess the feasibility of constructing a hydroelectric dam on the Susitna River known as the Susitna-Watana Hydroelectric Project. The project proponent, the Alaska Energy Authority (AEA), is funding the feasibility study through the Railbelt Energy Fund. The feasibility study includes preliminary design work, a data gap analysis of studies conducted for a similar project proposed in the 1980s, and design and implementation of environmental baseline studies to fill identified data gaps.

The proposed energy project consists of the construction of a 735-foot high dam at the Susitna-Watana site and creation of a 42-mile long reservoir with a maximum width of 2 miles.[1] Access to the dam site will be through a road corridor, of which 3 alternatives are being studied, and the project will also include a power transmission line corridor. Facilities to support this project include, but are not limited to, materials sites, disposal sites, camps, solid waste sites, and access roads. The project is anticipated to have a potential generating capacity of 600 megawatts of power.

The potential development of the Susitna-Watana dam necessitates updated baseline information about the full range of wild resource harvests, uses, and areas of harvest, as well as demographic and economic information to understand the role of wild resource harvests in the economy and way of life of community residents in the project area. The communities included in the overall study are located in the Susitna and Copper River basins (Figure 1-1). This report represents the second phase of data collection by the Alaska Department of Fish and Game (ADF&G) Division of Subsistence for the project and focuses on the Copper River Basin communities; the companion report on research conducted for communities in the Susitna River Basin for 2012 has been published in *The Harvest and Use of Wild Resources in Cantwell, Chase, Talkeetna, Trapper Creek, Alexander/Susitna, and Skwentna, Alaska* (Holen et al. 2014). An earlier report, *Watana Hydroelectric Project Subsistence Data Gap Analysis*, which was prepared for AEA by Northern Land Use Research, Inc., identified communities to be potentially affected by the construction of the dam (Simeone et al. 2011). This analysis identified potential gaps in existing data that would be used to inform the National Environmental Policy Act (NEPA) scoping activities conducted as part of the Federal Energy Regulatory Commission (FERC) licensing process for the proposed project. Based on this gap analysis, ADF&G prepared a study plan to update information about the harvests and uses of wild resources for communities closest to the areas that could be affected by the construction and operation of the dam and communities located downriver from the project site. The Copper River Basin communities were included because residents from this area regularly access lands surrounding the potential dam site for hunting caribou, harvesting nonsalmon fish, and collecting berries and plants. Table 1-2 presents a list, including the Linnaean taxonomic names, of resources used by the study communities in 2013.

1. Susitna-Watana project description available at: http://www.susitna-watanahydro.org/project/project-description/.

Table 1-1.–Demographic characteristics, study communities, 2013.

Characteristics	Community								
	Glennallen	Gulkana	Lake Louise	Tazlina	Tonsina	Mendeltna	Paxson	Nelchina	Tolsona
Sampled population	211	91	19	232	53	24	23	47	16
Estimated community population	384	104	27	352	90	34	32	76	24
Household size									
Mean	2.7	3.1	1.9	2.9	2.3	2.4	2.9	2.6	2.0
Minimum	1	1	1	1	1	1	1	1	1
Maximum	9	11	5	7	6	4	5	7	4
Age									
Mean	35.5	34.5	53.3	31.8	41.8	45.6	53.5	39.8	47.2
Minimum[a]	0	1	9	0	0	0	0	0	1
Maximum	84	99	72	91	87	75	78	85	76
Median	34	33	61	28.5	45	53.5	57	39	53
Length of residency									
Total population									
Mean	14.2	20.3	18.6	12.0	16.1	17.2	17.0	18.0	23.1
Minimum[a]	0	0	1	0	0	1	0	0	1
Maximum	64	99	35	64	50	55	60	53	50
Heads of household									
Mean	19.6	29.5	22.1	16.2	20.1	18.8	22.5	23.6	25.8
Minimum[a]	0	0	6	0	0	5	3	0	1
Maximum	64	99	35	64	50	55	60	53	50
Alaska Native									
Estimated households[b]									
Number	10.9	27.3	0.0	50.1	5.1	0.0	0.0	3.2	0.0
Percentage	7.8%	82.8%	0.0%	41.8%	13.0%	0.0%	0.0%	11.1%	0.0%
Estimated population									
Number	68	72	0	138	10	0	0	6	0
Percentage	17.8%	70.0%	0.0%	39.2%	11.3%	0.0%	0.0%	8.5%	0.0%

Source ADF&G Division of Subsistence household surveys, 2014.

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.

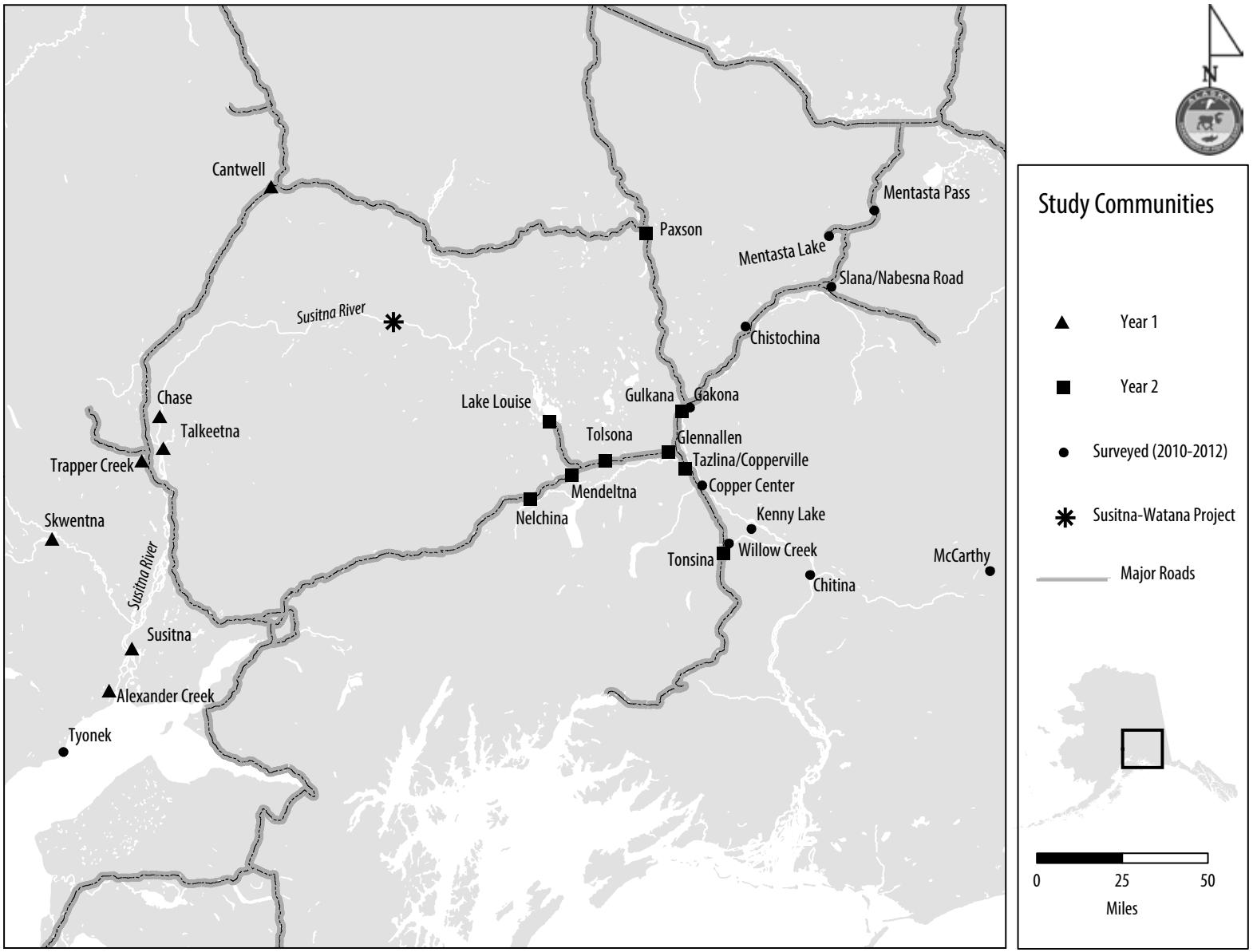

Figure 1-1.–Map of study communities, Susitna River and Copper River basins.

Table 1-2.–Species list, study communities, 2013.

Common name	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 sac roe	*Clupea pallasi*
Pacific herring spawn on kelp	*Clupea pallasi*
Pacific herring roe on hemlock branches	*Clupea pallasi*
Smelt	
Eulachon (hooligan, candlefish)	*Thaleichthys pacificus*
Unknown smelt	
Pacific (gray) cod	*Gadus macrocephalus*
Pacific tomcod	*Microgadus proximus*
Walleye pollock (whiting)	*Theragra chalcogramma*
Unknown cod	
Starry flounder	*Platichthys stellatus*
Unknown flounder	
Lingcod	*Ophiodon elongatus*
Pacific halibut	*Hippoglossus stenolepis*
Arctic lamprey	*Lampetra spp.*
Rockfish	
Black rockfish	*Sebastes melanops*
Yelloweye rockfish	*Sebastes ruberrimus*
Copper rockfish	*Sebastes caurinus*
Unknown rockfish	
Sablefish (black cod)	*Anoplopoma fimbria*
Sculpin	
Salmon shark	*Lamna ditropis*
Burbot	*Lota lota*
Arctic char	*Salvelinus alpinus*
Brook trout	*Salvelinus fontinalis*
Dolly Varden	*Salvelinus malma*
Lake trout	*Salvelinus namaycush*
Arctic grayling	*Thymallus arcticus*
Northern pike	*Esox lucius*
Sheefish	*Stenodus leucichthys*
Longnose sucker	*Catostomus catostomus*
Cutthroat trout	*Oncorhynchus clarkii*
Rainbow trout	*Oncorhynchus mykiss*
Steelhead	
Unknown trout	
Broad whitefish	*Coregonus nasus*
Least cisco	*Coregonus sardinella*
Humpback whitefish	*Coregonus pidschian*

-continued-

Table 1-2.–Page 2 of 4.

Common name	Scientific name
Round whitefish	*Prosopium cylindraceum*
Unknown whitefishes	
Bison	*Bison bison*
Black bear	*Ursus americanus*
Brown bear	*Ursus arctos*
Caribou	*Rangifer tarandus*
Deer	*Odocoileus hemionus*
Mountain goat	*Oreamnos americanus*
Moose	*Alces alces*
Dall sheep	*Ovis dalli*
Beaver	*Castor canadensis*
Coyote	*Canis latrans*
Arctic fox	*Vulpes lagopus*
Red fox	*Vulpes vulpes*
Red fox–cross phase	*Vulpes vulpes*
Red fox–red phase	*Vulpes vulpes*
Snowshoe hare	*Lepus americanus*
North American river (land) otter	*Lontra canadensis*
Lynx	*Lynx canadensis*
Marmot	*Marmota spp.*
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	
Least weasel	*Mustela nivalis*
Gray wolf	*Canis lupus*
Wolverine	*Gulo gulo*
Bufflehead	*Bucephala albeola*
Canvasback	*Aythya valisineria*
King eider	*Somateria spectabilis*
Spectacled eider	*Somateria fischeri*
Gadwall	*Anas strepera*
Goldeneye	*Bucephala spp.*
Mallard	*Anas platyrhynchos*
Merganser	*Mergus spp.*
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*
Green-winged teal	*Anas crecca*

-continued-

Table 1-2.–Page 3 of 4.

Common name	Scientific name
Wigeon	
American wigeon	*Anas americana*
Unknown wigeon	*Anas spp.*
Unknown ducks	
Brant	*Branta bernicla*
Cackling goose	*Branta hutchinsii minima*
Canada goose	*Branta canadensis parvipes*
Unknown Canada/cackling geese	*Branta spp.*
Emperor goose	*Chen canagica*
Snow goose	*Chen caerulescens*
White-fronted goose	*Anser albifrons*
Unknown geese	
Tundra (whistling) swan	*Cygnus columbianus*
Sandhill crane	*Grus canadensis*
Murre	*Uria spp.*
Spruce grouse	*Falcipennis canadensis*
Sharp-tailed grouse	*Tympanuchus phasianellus*
Ruffed grouse	*Bonasa umbellus*
Unknown grouse	
Ptarmigan	*Lagopus spp.*
Unknown ptarmigan	*Lagopus spp.*
Duck eggs	
Unknown duck eggs	
Goose eggs	
Unknown goose eggs	
Gull eggs	
Unknown gull eggs	
Unknown eggs	
Unknown chitons	
Clams	
Butter clams	*Saxidomus gigantea*
Freshwater clams	
Razor clams	*Siliqua spp.*
Unknown clams	
Cockles	
Dungeness crab	*Cancer magister*
King crab	
Unknown king crab	
Tanner crab	*Chionoecetes spp.*
Unknown mussels	*Mytilus spp.*
Octopus	*Octopus vulgaris*
Shrimp	
Squid	*Loligo opalescens*
Unknown marine invertebrates	
Berries	
Blueberry	*Vaccinium uliginosum alpinum*
Lowbush cranberry	*Vaccinum vitis-idaea minus*

-continued-

Table 1-2.–Page 4 of 4.

Common name	Scientific name
Highbush cranberry	*Viburnum edule*
Crowberry	*Empetrum nigrum*
Elderberry	*Sambucus racemosa*
Currants	*Ribes spp.*
Cloudberry	*Rubus chamaemorus*
Nagoonberry	*Rubus arcticus spp.*
Raspberry	*Rubus idaeus*
Salmonberry	*Rubus spectabilis*
Strawberry	*Fragaria virginiana*
Blackberry	*Empetrum nigrum*
Twisted stalk berry (watermelon berry)	*Streptopus amplexifolius*
Other wild berry	
Wild rhubarb	*Polygonum alaskanum*
Eskimo potato	*Hedysarum alpinum*
Devil's club	*Echinopanax horridum*
Fiddlehead ferns	
Hudson's Bay (Labrador) tea	*Ledum palustre*
Dandelion greens	*Taraxacum L.*
Sourdock	*Rumex fenestratus*
Spruce tips	*Picea spp.*
Wild rose hips	*Rosa acicularis*
Yarrow	*Achillea spp.*
Other wild greens	
Unknown mushrooms	
Fireweed	*Epilobium angustifolium*
Plantain	*Plantago major*
Stinkweed	*Artemisia tilesii*
Unknown greens from land	
Bladder wrack	*Fucus Vesiculosus*
Wood	
Bark	
Roots	
Alder	*Alnus spp.*
Wood (unspecified)	
Other wood	

Source ADF&G Division of Subsistence household surveys, 2014.

In order to complete the work in a timely manner, the communities were broken down into a 2-year study plan (see Figure 1-1). As shown in Table 1-3, 2 communities near the Susitna River Basin in Cook Inlet had already been surveyed for another project in 2006 (Stanek et al. 2006). In addition, some Copper River Basin communities were surveyed as part of a joint Division of Subsistence/Wrangell-St. Elias National Park and Preserve (WRST) study series (Kukkonen and Zimpelman 2012; La Vine et al. 2013, 2014). The list of communities researched and updated for this project and the history of studies conducted in other communities is shown in Table 1-3.

This study was a partnership between ADF&G, Stephen R. Braund and Associates (SRB&A), Newfields, LLC (Newfields), the Alaska Department of Health and Social Services (DHSS), and HDR Alaska, Inc. (HDR). NPS also provided support since this project provided information for their priority need of updating comprehensive survey data for WRST resident zone communities. SRB&A provided assistance with surveying the larger communities of Glennallen and Tazlina, as well as Lake Louise. Newfields conducted the health impact assessment (HIA) for the Susitna-Watana study and participated in administering household surveys in Glennallen and Tazlina. HDR provided organizational support for the social science component of the Susitna-Watana study as well as geographic information system (GIS) support. HDR built an Apple iPad[2] application to gather harvest mapping information.

Regulatory Context

The upper Copper River is part of the state Upper Copper/Upper Susitna River and federal Prince William Sound fishery management areas. Within these management areas the Copper River contains 5 subsistence or personal use salmon fisheries managed by state or federal permit programs in the Glennallen Subdistrict, the Chitina Subdistrict, and at Batzulnetas. The state provides subsistence salmon fishing opportunities for all Alaska state residents in the Glennallen Subdistrict upstream of the Chitina-McCarthy Bridge. Under state regulations, salmon fishers may use either fish wheels or dip nets but not both gear types during a fishing season that lasts from June 1 through September 30. The state also manages a personal use dip net salmon fishery in the Chitina Subdistrict downstream from the bridge. State residents may not participate in both the state-managed subsistence fishery and the state-managed personal use salmon fishery during the same season. Federal management regulations provide subsistence fishing opportunities for qualified rural residents only in the Glennallen Subdistrict, the Chitina Subdistrict, and at Batzulnetas. Rural resident salmon fishers may use rod and reel in addition to dip nets and fish wheels all during the same season (May 15–September 30), but may not use them at the same time. Other subsistence and sport fishing opportunities are available for harvesting resident freshwater species and salmon during open season using varying types of legal gear.

Hunting opportunities within the upper Copper River area are provided in 3 different state/federal game management units (GMUs): 11, 12, and 13 (containing subunits 13A, 13B, 13C, 13D, and 13E). Big game hunts are available for bison, black and brown bears, caribou, Dall sheep, moose, mountain goats, gray wolves, and wolverines, as well as hunting and trapping opportunities for small game and furbearers. Some large game hunts are by draw (lottery) for both residents and nonresidents, and other hunts are by general season that require only a harvest ticket or by registration permit for Alaska residents. In addition, under state regulations, there is a community subsistence hunt for both moose and caribou within all of GMUs 11 and 13, and a portion of GMU 12 for moose. Qualified rural residents are also able to hunt on federal lands in the area under federal subsistence regulations.

2. 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 1-3.–History of Susitna River and Copper River drainage communities studied.

	Estimated number of households 2010[a]	1982	1983	1984	1985	1986	1987	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2012	2013
Previous studies																					
Susitna River Basin–Cook Inlet																					
Beluga	10														All						
Tyonek	70		All							MM	MM	MM	MM	MM	All	MM	MM				
Copper River Basin																					
Chistochina	36	All					All		BMW									All			
Chitina	52	All					All		BMW											All	
Copper Center/Silver Springs	167	All					All		BMW										All		
Gakona	86	All					All		BMW											All	
Kenny Lake/Willow Creek	237	All					All													All	
McCarthy	20	All					All													All	
Mentasta Lake	46	All					All												All		
Slana/Nabesna Road	77	All					All												All		
Communities updated for current project																					
Susitna River Basin																					
Chase	18					All														All	
Cantwell	104	All						All	BMW											All	
Skwentna	20				All															All	
Alexander/Susitna	10				All															All	
Talkeetna	449				All															All	
Trapper Creek	225				All															All	
Copper River Basin																					
Glennallen	203	All					All														All
Gulkana	36	All					All		BMW												All
Lake Louise	25	All					All														All
Mendeltna	19	All					All														All
Nelchina	30	All					All														All
Paxson	22	All					All														All
Tazlina/Copperville	111	All					All		BMW												All
Tolsona	18	All					All														All
Tonsina	39	All					All														All

Note The key for the table is:

All = "comprehensive" baseline survey of all resources used for subsistence purposes.

BMW = birds and migratory waterfowl.

MM = marine mammals.

a. *Source* U.S. Census Bureau (2011).

Study Objectives

The project had the following objectives:

A. Design a survey instrument to produce updated comprehensive baseline information for the 2013 study year about hunting, fishing, and gathering and other topics that is compatible with information collected in past household interviews for the study communities.

B. Conduct community scoping meetings.

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

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. Household consumption questions related to the HIA;
    7. WRST-specific participation and fuel usage; and
    8. Location 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*[3] and by the National Science Foundation, Office of Polar Programs in its *Principles for the Conduct of Research in the Arctic*[4], 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.

3. Alaska Federation of Natives. 2013. "Alaska Federation of Natives Guidelines for Research." Alaska Native Knowledge Network. Accessed February 25, 2014. http://www.ankn.uaf.edu/IKS/afnguide.html.
4. National Science Foundation Interagency Social Science Task Force. 2012. "Principles for the Conduct of Research in the Arctic." Accessed February 25, 2014. http://www.nsf.gov/od/opp/arctic/conduct.jsp.

Project Planning

As noted above, AEA funded the Susitna-Watana project feasibility study, which includes a component called "subsistence resources." The purpose of the subsistence component of the overall environmental study is to "document traditional and contemporary subsistence harvest and use and to collect baseline data to facilitate the assessment of potential impacts of the Project construction and operation on subsistence harvest and use in the Project area" (Alaska Energy Authority 2012). The subsistence component of the overall Susitna-Watana study was accomplished through a partnership between ADF&G and HDR, Newfields, DHSS, WRST, and SRB&A (Table 1-4). The ADF&G Subsistence Program Manager for Southern Alaska, Davin Holen, attended several meetings sponsored by AEA in the spring and summer of 2012 to describe the survey to the planning team. These meetings were open to agencies, contractors, Alaska Native tribal organizations, and community representatives. Holen prepared a study design for AEA that was approved and funded in fall 2012. To avoid duplication of efforts for the HIA component of the Susitna-Watana project, ADF&G included a page of HIA questions in the survey after consultation with Newfields and DHSS (see Appendix A). Because of the constricted research schedule, AEA provided funding to HDR to develop a digital data collection application for mapping search and harvest areas. This reduced the time necessary to enter the map data into a GIS program. Mapping will be discussed in more detail below.

Scoping Meetings

In advance of survey administration, Division of Subsistence researchers visited communities to advertise for and hold public meetings about the proposed research project. For this project, division staff traveled to the Copper River Basin on a number of occasions between October and December 2012 (Table 1-5). Several communities had formal scoping meetings while in others community leaders and organizations were consulted. Several communities required more extensive "ground truthing" (visual in-person confirmation) of residences, which is described below. This was the case for Glennallen, where a sample was to be used, therefore the known universe of households needed to be identified to create a sample; ground truthing was necessary as well at several communities on the Glenn Highway to understand the relation of households to the U.S. Census Bureau census designated place (CDP) boundaries (see Figure 1-2).

Glennallen

A team of researchers visited Glennallen in October 2013 to begin ground truthing the number of resident households. Because Glennallen is unincorporated, residential information is not publicly available. Therefore, researchers had to create the sampling universe from a combination of community maps obtained from the WRST and Google Maps. During this ground truthing visit, and in November and early January, researchers posted and re-posted advertisements about the planned Glennallen harvest survey on various community message boards—including at the local ADF&G office, the post office, and the grocery store. Furthermore, project overviews were available at the Glennallen ADF&G office. Information provided indicated the survey would take place January 18–25, 2014.

Gulkana

Robbin La Vine initiated contact with Gulkana and was invited to conduct a project scoping meeting presentation before the Gulkana Village Council on December 16, 2013. Approval was granted in the beginning of April 2014 and the survey effort began 2 weeks later.

Lake Louise

Researchers Bronwyn Jones, Joshua Ream, and Eric Schacht traveled to Lake Louise March 11, 2014. A community scoping meeting was held at the Lake Louise Lodge the evening of March 11 and members from 4 households attended. The survey effort began immediately following the meeting through the next day. ADF&G staff were joined by 3 SRB&A staff: Susan Lukowski, Raena Schraer, and Emily Wood.

Table 1-4.–Project staff.

Task	Name	Organization
Project design and management	Davin Holen	ADF&G Division of Subsistence
Gap analysis	Davin Holen	ADF&G Division of Subsistence
Project lead	Davin Holen	ADF&G Division of Subsistence
SRB&A lead	Stephen R. Braund	Stephen R. Braund & Associates
HDR Alaska, Inc., lead	Tracie Krauthoefer	HDR Alaska, Inc.
Data management lead	David Koster	ADF&G Division of Subsistence
Glennallen research lead	Sarah M. Hazell	ADF&G Division of Subsistence
Gulkana research lead	Robbin La Vine	ADF&G Division of Subsistence
Lake Louise research lead	Joshua Ream	ADF&G Division of Subsistence
Mendeltna research lead	Bronwyn Jones	ADF&G Division of Subsistence
Nelchina research lead	Malla Kukkonen	ADF&G Division of Subsistence
Paxson research lead	James Van Lanen	ADF&G Division of Subsistence
Tazlina research lead	Robbin La Vine	ADF&G Division of Subsistence
Tolsona research lead	Joshua Ream	ADF&G Division of Subsistence
Tonsina research lead	Robbin La Vine	ADF&G Division of Subsistence
Administrative support	Jennifer Bond	ADF&G Division of Subsistence
	Maegan Smith	ADF&G Division of Subsistence
Programmer	Garrett Zimpelman	ADF&G Division of Subsistence
Data entry	Margaret Cunningham	ADF&G Division of Subsistence
	Theresa Quiner	ADF&G Division of Subsistence
	Zayleen Kalalo	ADF&G Division of Subsistence
	Nicholas Jackson	ADF&G Division of Subsistence
	Barbara Dodson	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
Cartography	Davin Holen	ADF&G Division of Subsistence
	Bronwyn Jones	ADF&G Division of Subsistence
	Joshua Ream	ADF&G Division of Subsistence
	Eric Schacht	ADF&G Division of Subsistence
	Dustin Murray	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	Margaret Cunningham	ADF&G Division of Subsistence
	Sarah Evans	ADF&G Division of Subsistence
	Sarah M. Hazell	ADF&G Division of Subsistence
	Hannah Johnson	ADF&G Division of Subsistence
	Brownwyn Jones	ADF&G Division of Subsistence
	Theodore Krieg	ADF&G Division of Subsistence
	Malla Kukkonen	ADF&G Division of Subsistence
	Dustin Murray	ADF&G Division of Subsistence
	Theresa Quiner	ADF&G Division of Subsistence
	Joshua Ream	ADF&G Division of Subsistence
	Eric Schacht	ADF&G Division of Subsistence
	James Van Lanen	ADF&G Division of Subsistence
	Cameron Welch	ADF&G Division of Subsistence
	Kassie Kirk	Newfields, LLC
	Derek Moss	Newfields, LLC
	Emily Benz	Stephen R. Braund & Associates

-continued-

Table 1-4.–Page 2 of 2.

Field research staff, continued	Susan Lukowski	Stephen R. Braund & Associates
	Travis Shinabarger	Stephen R. Braund & Associates
	Raena Schraer	Stephen R. Braund & Associates
	Emily Wood	Stephen R. Braund & Associates
Local research assistants	Cynthia Buchanan	Glennallen
	Betty Goodlataw	Glennallen
	Eric Lutz	Glennallen
	Dale Oja	Glennallen
	Kathy Peter	Glennallen
	Kathy Stratton	Glennallen/Tazlina
	Amber Alexander	Gulkana
	Felicia Ewan	Gulkana
	Samson Frank	Gulkana
	Anthony Delaquito	Lake Louise
	Erin Fingle	Mendeltna
	Teresa Noble	Nelchina
	Stephanie Littleton	Nelchina
	Lee Harper	Paxson
	Claudia Demientieff	Tazlina
	Paul Gardener	Tazlina
	Betty Goodlataw	Tazlina
	Travis Goodlataw	Tazlina
	Kayla Pete	Tazlina
	Shanna Pete	Tazlina
	Kristal Bengtson	Tolsona
	Sarah Dolge	Tonsina
	Sue Moore	Tonsina
	Carla Somerville	Tonsina

Table 1-5.–Community scoping meetings/community consultation, study communities, 2013–2014.

Community	Date	Staff
Glennallen[a]	10/24/13–1/18/14	N/A
Gulkana	12/16/2013	La Vine
Lake Louise	3/11/2014	Jones/Ream/Schacht
Mendeltna[b]	10/23/2013	Hazell/Jones/Kukkonen
Nelchina[b]	10/23/2013	Hazell/Jones/Kukkonen
Paxson	1/21/2014	Van Lanen/Ream
Tazlina	10/2/2013	La Vine
Tolsona[b]	10/2/2013	Hazell/Jones/Kukkonen
Tonsina	11/6/13–3/4/14	La Vine

a. Residents were informed about the survey by advertisements that were posted at the Glennallen ADF&G office, the post office, and the local grocery store during a 3-month period.

b. A combined community meeting was held for Mendeltna, Nelchina, and Tolsona.

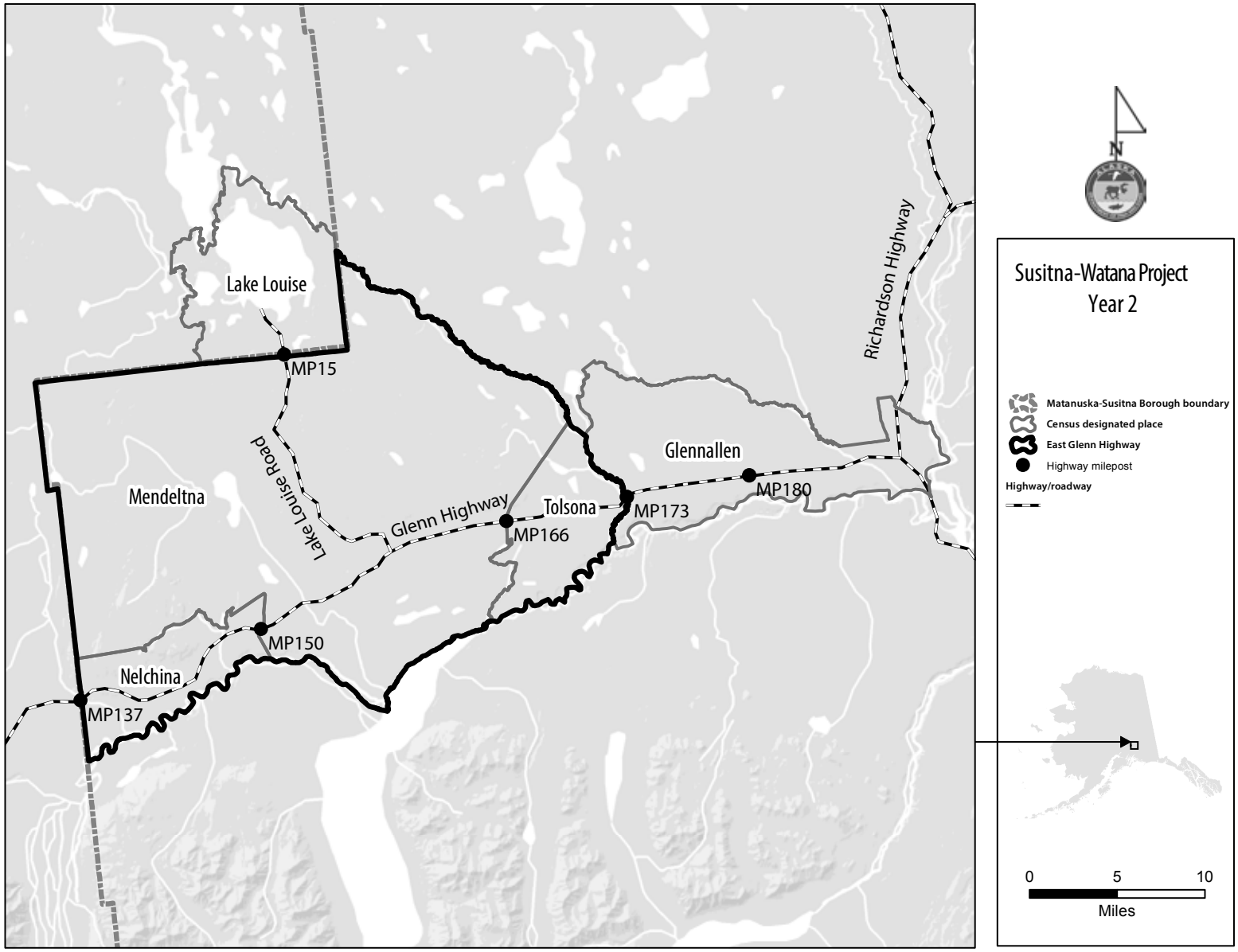

Figure 1-2.–Map of study community boundaries, Glenn Highway communities, 2013.

Paxson

During September 2013 researcher James Van Lanen visited Paxson and consulted with community members about the project. In October 2013 researcher Ream received verbal approval for the project via the unofficial mayor of the community. In December 2013, Ream coordinated with a number of local community members to develop a household list and plan a scoping meeting. Most local residents were informed of the scoping meeting directly through a combination of telephone calls and/or electronic mail. Meier's Lake Roadhouse hosted the scoping meeting on January 21, 2014. Community members held a potluck for the event and a total of 7 community members attended.

Tazlina

La Vine met with the Native Village of Tazlina on October 2, 2013 to discuss the survey effort and received a letter of support the following week. La Vine maintained contact with the Native Village of Tazlina and other non-Native community representatives throughout the following months to coordinate logistics and the development of a community sample.

Tonsina

Tonsina area representatives were briefed about the survey project at the Wrangell-St. Elias National Park Subsistence Resource Commission meeting held in Copper Center on March 4, 2014.

Mendeltna, Nelchina, and Tolsona

Jones contacted the owner of the Mendeltna Lodge and ADF&G Division of Subsistence staff Sarah Hazell, Jones, and Malla Kukkonen, as well as visiting scholar Sean Desjardins, traveled to Mendeltna on October 23, 2013, to host a scoping meeting for community members of Nelchina, Mendeltna, and Tolsona at the Mendeltna Lodge. The meeting was well attended and a total of 14 people from the different communities were present.

Systematic Household Surveys

The primary method for collecting subsistence harvest and use information in this project was a systematic household survey. Following receipt of comments at the scoping meetings where the project was described to residents, ADF&G finalized the survey instrument in December 2013. 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 and with data in the Community Subsistence Information System (CSIS[5]). In addition to the core data collected, there were questions included in this survey that were requested by the WRST and are consistent with the survey questions added to the first 3 years of data collected in the Copper River Basin for a project that was funded by the WRST. Residents were asked if they built, maintained, or moved fish wheels in trying to understand if the respondent was involved in fish wheel activity in any way. In addition, residents were asked if they worked with skins or made handicrafts from locally available natural resources. Other questions that were asked in the previous 3 Copper River Basin reports funded by the WRST and continued here include the use of alternative modes of transportation (excluding highway vehicles and traveling on foot) and motorized equipment such as chain saws and ice augers to harvest wild resources.

Questions were also added to surveys for all Copper River Basin study communities spanning 4 study years regarding the use of wood for home heating. This is in response to observations by division researchers working over the past several years in the Copper River Basin as well as other parts of Alaska, such as Bristol Bay and the Susitna River Basin. There are several programs to install efficient wood stoves in households in response to the high cost of fuel oil for heating.

5. ADF&G CSIS: http://www.adfg.alaska.gov/sb/CSIS/.

Table 1-6.–Sample achievement, study communities, 2013.

Sample information	Community								
	Glennallen	Gulkana	Lake Louise	Tazlina	Tonsina	Mendeltna	Paxson	Nelchina	Tolsona
Number of dwelling units	223	35	23	137	46	14	11	30	14
Interview goal	112	35	23	137	46	14	11	30	14
Households interviewed	77	29	10	79	23	10	8	18	8
Households failed to be contacted	41	3	1	27	12	3	3	9	2
Households declined to be interviewed	14	1	3	14	4	1	0	2	2
Households moved or occupied by nonresident	83	2	9	17	7	0	0	1	2
Total households attempted to be interviewed	132	30	13	93	27	11	8	20	10
Refusal rate	15.4%	3.3%	23.1%	15.1%	14.8%	9.1%	0.0%	10.0%	20.0%
Final estimate of permanent households	140	33	14	120	39	14	11	29	12
Percentage of total households interviewed	55.0%	87.9%	71.4%	65.8%	59.0%	71.4%	72.7%	62.1%	66.7%
Interview weighting factor	1.8	1.1	1.4	1.5	1.7	1.4	1.4	1.6	1.5
Sampled population	211	91	19	232	53	24	23	47	16
Estimated population	383.6	103.6	26.6	352.4	89.9	33.6	31.6	75.7	24.0

Source ADF&G Division of Subsistence household surveys, 2014.

A census strategy was employed for all of the communities except Glennallen. Table 1-6 shows the sampling strategy employed in each of the study communities. Census designated place (CDP) boundaries were used to define the limits of each community. Each community was surveyed as a unique CDP; however, for the communities of Mendeltna, Nelchina, and Tolsona some analysis was combined to preserve anonymity of respondents, among other reasons (for more detailed information see chapter 8 for Mendeltna) (Figure 1-2). Additionally, an attempt was made by the Paxson research team to survey any possible year-round households existing in the corridor of the Richardson Highway from the boundary of the Paxson CDP south to the boundary of the Gulkana CDP, hereafter referred to as Sourdough. Previous research in the Copper River Basin by the division (study years 1982 and 1987) had included Sourdough. During the 1982 survey period, the Paxson CDP did not exist and for sampling purposes the division defined the study community as Paxson-Sourdough, which included households extending from Paxson south to mile 147 of the Richardson Highway. Sampling efforts by the division for 1987, however, divided Paxson and Sourdough into 2 separate communities. For the current study, it was discovered that no year-round households existed in the Sourdough area, and consequently, it was not surveyed.

The objective in Glennallen was to survey 50% of the community's households (112 households) that were identified based on ground truthing efforts. To estimate the number of households, the division obtained U.S. Geological Survey 1:200-scale quadrangle maps that were printed by the WRST that depicted the core of Glennallen, including all structures—both residential and nonresidential buildings. These maps represent areas from Pilcho Drive (known locally as Old Dump Road) at the far eastern section on the Glenn Highway to one-quarter mile north and south of the Glenn Highway junction on the Richardson Highway. Outside this core area, Google Maps of remaining CDP areas were printed and milepost numbers assigned on them to determine exact locations within the CDP. A division researcher labeled and numbered all of the potential and confirmed residential units on the maps. Researchers visited Glennallen in November 2013 and contracted local research assistant Cynthia Buchanan to evaluate all of the structures on the maps and she confirmed which ones were residential. For many of the residential buildings, Buchanan was able to identify which ones were occupied and those that were vacant. While in Glennallen, 4 division researchers checked the remaining units to determine potential occupancy. These efforts established an estimate of 223 potential occupied dwelling units.

During the survey effort in January, ground truthing efforts helped to establish a better estimate of the number of occupied dwellings (e.g., obtaining local information about people/households that had moved out of Glennallen). For each residence that researchers attempted to contact a disposition was applied during the survey process; the disposition categories included:

- Contains residents that are eligible to participate in the survey based on length of residency (survey attempted).
- Nonresident—occupants or owners not domiciled in CDP (e.g., a weekend cabin) (no survey attempted).
- Vacant (no survey attempted).
- Not a dwelling (commercial building or no dwelling exists) (no survey attempted).

For selected households, researchers attempted to contact the household to conduct a survey. If researchers were initially unsuccessful at making contact, the household was contacted a minimum of 3 different occasions. When a reasonable effort was made to survey the household and no contact could be made, this household was assigned a "no contact" disposition and staff attempted to survey the next household on the sample list. An initial list of 100 randomly selected households was provided to the research lead by the division Information Management lead David Koster. Only when this list was exhausted would new households be made available by 20 households at a time. While working in Glennallen, the division learned that the community had suffered a significant decrease in population coinciding with the outmigration of a number of organizations during 2013. The estimated number of households decreased and differed

Table 1-7.–Survey length, study communities, 2013.

Community	Interview length (in minutes)		
	Average	Minimum	Maximum
Glennallen	53	15	139
Gulkana	48	14	109
Lake Louise	39	25	60
Tazlina	59	13	208
Tonsina	73	25	175
Mendeltna	64	17	135
Paxson	100	15	260
Nelchina	48	15	86
Tolsona	54	21	107
Average	60	18	142

Source ADF&G Division of Subsistence household surveys, 2014.

significantly from the initial estimate (Table 1-6). The initial survey goal was 112 households (50%) of 223 households. Due to the significant population decline (discussed in detail in chapter 2 for Glennallen), which was established through ground truthing and survey efforts, the final estimate of resident households in 2013 was 140 (reduced from 223). A total of 77 households were surveyed, which resulted in a slightly higher sample achievement (55%), although fewer households were surveyed than the originally developed goal (112).

For the rest of the communities where a census survey was employed researchers worked with a combination of their LRAs, knowledgeable community members, and tribal administrators to develop a community household list. Each list was refined over the course of survey administration based on new information and subsequent disposition identification of nonresident households that were removed from the list (e.g., households moved). Success rates varied between communities from 88% sample achievement in Gulkana to 59% in Tonsina (Table 1-6). A total of 262 surveys were administered in the Copper River Basin for study year 2013.

The average amount of time, in minutes, to administer the survey in each community is available in Table 1-7. Surveys administered in Lake Louise were the shortest and in Paxson the longest on average. Overall, surveys lasted approximately 60 minutes, which included the standard survey form and a mapping component, which is discussed below.

Mapping Locations of Subsistence Hunting, Fishing, and Gathering

During household interviews, the researchers asked respondents to indicate the locations of their hunting, fishing, and gathering activities during the 2013 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 showing multiple harvests; and lines were used occasionally to depict traplines or trolling on a river. 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 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 iPad. The

point, polygon, or line was drawn on a U.S. Geological Survey topographic relief map displayed on the iPad. The iPad allowed the user to zoom in and out to the appropriate scale, and the ability to document search and harvesting 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. The data were uploaded via Wi-Fi to a server. Data uploads to the 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 and added to an ArcGIS file geodatabase. 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, the data 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 Copper River Basin.

Key Respondent Interviews

While researchers visited study communities they consulted with LRAs, knowledgeable community members, and tribal administrators to identify key respondents to interview. The purpose of the key respondent interviews was to provide additional context for the quantitative data, and 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. Key respondent interviews were semi-structured and directed by a key respondent interview protocol designed by division researchers that has proven successful on other comprehensive survey projects (see Appendix C). Besides gathering qualitative data through the key respondent interview protocol, division researchers 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

Glennallen

Hazell was the research lead for the community of Glennallen. For the survey effort, the following people were involved: division researchers Hazell, Sarah Evans, and Theresa Quiner, and division volunteer Cameron Welch; Derek Moss of Newfields; and SRB&A staff Emily Benz, Lukowski, Travis Shinabarger, Schraer, and Wood. Project staff arrived on January 12, 2014 and trained LRAs Cynthia Buchanan, Betty Goodlataw, Eric Lutz, Dale Oja, Kathy Peter, and Kathy Stratton in the afternoon of the same day (Table 1-4). Survey administration occurred until January 18. Some remaining surveys were left with LRAs Buchanan and Stratton to complete over the ensuing 2 weeks. These surveys were completed by the LRAs and then retrieved by division researcher La Vine. Because of the recent outmigration of a Bible college and other businesses during 2013 from Glennallen, the community population had decreased quite significantly in a short amount of time, which in turn had an effect on the projected sample as described above (see chapter 2 for Glennallen for more details).

Gulkana

The Gulkana survey was conducted April 13–17, 2014. Training occurred Monday, April 14 at the Gulkana Village Council hall and a final household list was drafted and approved by the LRAs. ADF&G staff included La Vine, Kukkonen, and Schacht, and LRAs included Amber Alexander, Felicia Ewan, and Samson Frank

(Table 1-4). All surveys were completed by the end of the week with the exception of 3 no contacts and 1 refusal.

Lake Louise

Jones led the research effort for the community of Lake Louise. The LRA training took place before the scoping meeting that was held on March 11, 2014. The survey effort began in the evening on March 11 following the community scoping meeting. At the time of the survey, residents from Lake Louise were being provided an opportunity to buy fuel at the Lake Louise Lodge every Wednesday. The LRA called all residents to inform households about the survey efforts scheduled take place at the lodge and researchers were able to survey residents when they came to the lodge to purchase fuel on March 12. The survey effort was completed at the end of the day on March 12.

Mendeltna, Nelchina, and Tolsona

As previously mentioned, some analysis for these 3 communities—called the East Glenn Highway communities—was combined so they are discussed here as a group. Five division researchers—Jones, Evans, Margaret Cunningham, Ream, and Kukkonen—along with 1 division college intern, Dustin Murray, and 1 volunteer, Welch, traveled to Nelchina, Mendeltna, and Tolsona on Sunday, January 5, 2014. Researchers were prepared to give a second presentation, in addition to the earlier scoping meeting, for local residents at the Mendeltna Lodge on the evening of the January 5, but, despite local advertisement, no residents arrived at the appointed meeting time.

Prior to the fieldwork commencing, each community lead had recruited 1 to 2 LRAs to assist with the household surveys. The LRA training took place on Monday, January 6, and the survey efforts in all 3 communities began in earnest on Tuesday, January 7. Murray assisted Kukkonen in Nelchina; Jones, Welch, and Evans worked in Mendeltna; and Ream and Cunningham worked in Tolsona. Surveys in Mendeltna were concluded by Thursday, January 9; Tolsona was finished on January 10; and Nelchina was finished on January 11.

Paxson

ADF&G staff members Van Lanen and Ream arrived in Paxson on January 21, 2014. A community scoping meeting was held that evening at the Meier's Lake Roadhouse. Staff conducted comprehensive harvest surveys in the community from January 22–25. Lee Harper acted as the LRA by assisting with contacting community members to set up survey appointments. A trip to Delta Junction was made on January 23 to survey a long-time Paxson household residing seasonally in that community. As a component of the Paxson research, ground truthing was done to determine if any year-round households existed in the Sourdough area. It was determined that no year-round households existed in Sourdough. Two households located along the Denali Highway were not visited because that roadway is not maintained in the winter and conditions were not favorable for navigation and safe travel by snowmachine. One of these households was surveyed by phone following the initial survey effort. No surveys were conducted in-person following the fieldwork effort.

Tazlina

The survey effort for Tazlina began February 2, 2014, with final surveys completed by March 8. A community mapping session was conducted the afternoon of February 2 and the Tazlina household list was finalized in consultation with LRAs and community representatives. LRA training was conducted on February 3 in the Tazlina Tribal Hall. Tazlina was the second largest community of the project and return trips were anticipated to ensure the census sample goal was achieved. ADF&G staff included La Vine, graduate intern Hannah Johnson, division staff Theodore Krieg, and graduate intern Schacht; staff from SRB&A included Lukowski and Shinabarger; and Kassie Kirk from Newfields attended (Table 1-4). Local research assistants

were Claudia Demientieff, Paul Gardener, Betty Goodlataw, Travis Goodlataw, Kayla Pete, Shanna Pete, and Kathy Stratton.

Tonsina

The survey effort in Tonsina took place the week of March 2–7, 2014. Prior to implementing the survey effort, ADF&G staff Van Lanen arrived early to ground truth the community. Van Lanen learned that a small but growing community of 12 households existed south of the Tonsina CDP boundaries but outside the Valdez CDP. On further investigation, only 4 of the 12 households were permanent, year-round residences. After consultation with community members and ADF&G team members, it was determined that these households would be included in the Tonsina study area. LRA training took place March 3 at the Tonsina River Lodge with most surveys completed by March 7. Staff included La Vine, Schacht, and Van Lanen, with assistance from LRAs Kristal Bengston, Sarah Dolge, Sue Moore, and Carla Somerville (Table 1-4).

Data Analysis and Review

Survey Data Entry and Analysis

All data were coded for data entry by division staff; project leads for each community coded all surveys for that community for consistency and for the larger community of Glennallen, Information Management staff member Quiner coded the surveys. 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 website. 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 19. 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).

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

$$H_i = \bar{h}_i S_i \quad (1)$$

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%):

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

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 year-round households in each study community by surveying a census of each community, with the exception of Glennallen where a sampling strategy was employed. For this study, "year-round" was defined as being domiciled in the

community when the surveys took place and for at least 3 months during the study year 2013. Because not all households were interviewed, population estimates for each 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 for each community and other demographic data that are generated from the division's household survey (as of December 31, 2013), and 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 2014). Observed differences in population estimates may be attributed to a variety of reasons, including differing survey methods, seasonal differences in populations, and rapid outmigration events (i.e., when large businesses or institutions leave small communities).

Map Data Entry and Analysis

As discussed above, maps were generated based on data collected using an iPad or on 11x17-inch paper maps. All data were entered on the iPad, whether in the field during interviews 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 researchers from the server and maps showing harvest locations for each species were created by 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 land mammals. To ensure confidentiality, harvest locations for large land mammals are not produced for the report. Maps were reviewed at a community review meeting to ensure accuracy as well identify any data the community would like to keep confidential.

Community Review Meetings

ADF&G staff presented preliminary survey findings and associated search area and harvest maps at a meeting in each community. Table 1-8 shows when a community review meeting occurred in each study community and how many community residents attended. The purposes of the community review meetings were 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 feel are important, and to clarify any issues that researchers encountered during analysis. Following is a description of how the meetings were advertised, where meetings took place, and how many community members attended.

Community review meetings were held in Glennallen, Mendeltna, and Tolsona on August 5, 2014. The local ADF&G office facilitated the Glennallen meeting by posting advertisements on message boards at their office and at the post office and grocery store. A radio announcement also advertised the Glennallen meeting and the community review meetings in Mendeltna and Tolsona. A total of 6 people attended the Glennallen meeting at the Rustic Resort Bed and Breakfast. Jones communicated with a local Mendeltna community leader about the meeting in addition to advertising the meeting on the local radio. Despite advertising efforts, only 1 person attended the meeting. The Tolsona meeting occurred at Tolsona Lodge; to arrange for the meeting, Ream had been in contact with the owner, who disseminated information about the meeting to community members. Members from 4 households attended the meeting.

On the following evening of August 6, 2014, a community data review meeting was conducted in Paxson at Meier's Lake Roadhouse. Ream contacted the roadhouse owners prior to the meeting and they helped to advertise the event by calling members of the community. Ream also made phone calls to some area residents. The meeting was attended by 10 individuals including 4 full-time residents. Attendees generally agreed that the data appeared correct, and they offered additional insights on wildlife and fishery concerns facing their community.

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

Community	Date	Attendance	
		Community residents	Staff
Glennallen	8/5/2014	6	Hazell
Gulkana	10/16/2014	3	Schacht/La Vine
Lake Louise	9/23/2014	22	Ream/Kukkonen
Mendeltna	8/5/2014	1	Jones
Nelchina	9/24/2014	14	Kukkonen/Ream
Paxson	8/6/2014	10	Ream/Welch
Tazlina	10/16/2014	2	Johnson
Tolsona	8/5/2014	5	Ream/Welch
Tonsina	10/15/2014	2	La Vine/Van Lanen

The Lake Louise data review meeting was held at Lake Louise Lodge on September 23, 2014. Ream contacted the owners prior to the meeting and they assisted with advertising the event. A community potluck dinner was held to encourage resident attendance, which was high as a result of the potluck with 22 people attending from Lake Louise, as well as the nearby Susitna and Tyone areas.[6] On the following evening, the community review meeting in Nelchina took place (September 24). Kukkonen had been in contact with the Nelchina LRA Teresa Noble and she assisted with advertising the meeting. ADF&G staff in Glennallen also assisted by posting flyers on message boards at the office, in the local grocery store, and at the post office. A total of 14 people attended the meeting at the Nelchina chapel.

The Tonsina community review meeting was held at Tonsina River Lodge on October 15, 2014. La Vine and Van Lanen organized the time and location of the community review in consultation with several community members and lodge owners. While only 2 members of the community attended the meeting, their local knowledge of the area and its resources was invaluable in evaluating the results of the comprehensive survey. For the meeting in Tazlina, which occurred the following evening on October 16, Johnson organized a paper flier distribution for the homeowner association's mailing list (which includes most of the Tazlina CDP) that advertised the community review meeting and she also arranged for advertisements on 3 local radio stations and on the Tazlina Village Council's Facebook page. Despite widespread advertising, only 2 community members attended the meeting. Also, on the evening of October 16, 2014, the Gulkana community review meeting was held at the local community hall. Schacht communicated with the Gulkana Village Council to organize the meeting; a total of 3 people attended.

Final Report Organization

This report summarizes the results of systematic household surveys and mapping interviews conducted by researchers from the division, Newfields, and SRB&A as well as LRAs, and the report also summarizes resident feedback provided at community review meetings. The findings are organized by study community. Each chapter includes tables and figures that report findings on demographic characteristics, employment characteristics, individual participation in harvesting and processing of wild resources, and characteristics of resource harvests and uses—including the sharing of wild foods—and also harvest and use trends over time.

Because of the large number of maps of hunting, fishing, and gathering areas used by each community in 2013, selected maps are included in individual chapters and the remaining maps are published as Appendix D, "Search and Harvest Area Maps by Community." Additionally, Appendix E contains supplemental tables

6. The communities of Susitna and Tyone were not included in the survey because they are outside the boundary of the Lake Louise CDP. Based on information from Lake Louise community members, it is unlikely that any households from Susitna or Tyone are year-round residences.

that are discussed in the community chapters. The final chapter of the report provides a short, general overview of the harvests and uses of wild resources in the study communities.

The content, in terms of 2013 harvest data, is consistent in each chapter because it is based on the survey instrument; however, there are differences in terms of documenting historical trends because methods have changed over time, such as earlier studies not including a mapping component, and census boundaries have shifted over time as discussed below. Chapters are organized alphabetically, with the exception of the amalgamated East Glenn Highway communities of Mendeltna, Nelchina, and Tolsona, which compose the final report results chapters. This is to provide a method of analysis of historical trends since these communities were analyzed as 1 community on previous surveys for 1982 and 1987 (McMillan and Cuccarese 1988; Stratton and Georgette 1984). Community chapters begin with background information on each community's physical, historical, and contemporary settings followed by demographic, employment and income, and subsistence harvest and use sections.

Comprehensive subsistence harvest surveys that include all of the study communities were conducted for study years 1982 and 1987 (McMillan and Cuccarese 1988; Stratton and Georgette 1984). Differences in the delineation of the communities and sample sizes are discussed in the individual chapters in the sections "Demography" and "Comparing Harvests and Uses in 2013 with Previous Years" with the exception of the East Glenn Highway communities, where changes to community boundaries are described in the Mendeltna results chapter (the first of the 3 communities making up this grouping). While direct comparisons cannot be made because of these differences, overall trends can be assessed to determine if there has been any change over time regarding the harvest of subsistence resources.

It is also possible to compare historical spatial harvest data with the 2013 study year to determine changes in the search and harvest areas for wild food resources over time. For the communities in this report, limited spatial data were collected as part of the 1982 and 1987 study years (McMillan and Cuccarese 1988; Stratton and Georgette 1984). Additionally, during the 1983 and 1984 fieldwork seasons, ADF&G researchers conducted interviews with more than 200 hunters and fishers in 20 communities in or near the Copper River Basin to map areas where hunting, fishing, trapping, and gathering of wild resources occurred between 1964 and 1984 (Stratton and Georgette 1985). This effort produced 2 separate publications by 2 different ADF&G divisions; the Division of Habitat published the maps and the Division of Subsistence published a description of the project and mapping methods. The maps depicting the harvest and use areas used by study community residents during this 20-year span are published in *Alaska Habitat Management Guide Southcentral Region: Reference Maps—Volume 3. Community Use of Fish, Wildlife, and Plants* (Alaska Department of Fish and Game Division of Habitat 1985).[7] Information about the mapping project is available in *Copper Basin Resource Use Map Index and Methodology* (Stratton and Georgette 1985). Changes in the resource harvest and use/search areas by Copper River Basin residents can be discerned through limited comparisons of the maps published in 1985, which depict harvest and use areas for 20 years, and the maps produced from this study, which only reflect search and harvest areas for the study year 2013.

Each chapter concludes with a summary of concerns that residents shared regarding wild resources. These comments were documented during survey administration, key respondent interviews, and at community review meetings.

ADF&G provided a draft report to the Alaska Energy Authority who funded this study, to study partners SRB&A, HDR, Newfields, and DHSS, and to the study communities for their review and comment. After receipt of comments, the report was finalized. ADF&G mailed a short (2-page) summary of the study findings to households in the 9 study communities (Appendix F).

7. A complete index of documents published in 1985 and 1986 as part of *Alaska Habitat Management Guide* is available online: http://www.arlis.org/docs/vol1/C/AHMG/index.html.

2. GLENNALLEN

Sarah M. Hazell

Community Background

Glennallen is a census designated place (CDP) located in the Copper River Basin at the junction of the Glenn and Richardson highways. The Copper River Basin does not have an incorporated borough that provides a local government. This area is characterized by boreal forests and typical subarctic continental climate (Jin and Brewer 2008:28). Glennallen experiences short mild summers, but has high temperatures that can reach 95 °F. Winters are long—lasting between October and April—with low temperatures nearing -65 °F (Jin and Brewer 2008; Reckord 1983a). This area annually averages approximately 11 inches of precipitation—predominately in the form of snowfall (Reckord 1983a). The most prominent geographic feature of this area is the Copper River, which is the most important source for salmon in the area. The Copper River Basin is the traditional homeland of the Ahtna and the area that includes the current community of Glennallen was the traditional territory of the Gulkana-Gakona band, led by *Sday'dinaesi Ghaxen* (Person of Long Point), referring to the leader of a village located near present-day Glennallen (Holen 2002:45).

Glennallen is named after 2 U.S. Army explorers: Capt. Edwin F. Glenn and Lt. Henry Allen (Orth 1971rep.). The contemporary community of Glennallen originated in the 1940s as a camp to support the construction of World War II-era highways, including the Alaska–Canada, the Richardson, and the Glenn highways, which were intended to support military infrastructure (Reckord 1983a; Stratton and Georgette 1984). During that time, SEND International, an evangelical mission, was instrumental in the community's settlement through the building and maintenance of key services like the hospital, a Bible college, and radio station (Stratton and Georgette 1984).

Glennallen is a regional hub where rural residents can access a number of services. Services include a medical center, a post office, a well-stocked and maintained public library, a large grocery store, a hotel and several B&Bs, and a number of gas stations. Tribal, state, and federal agencies maintain offices in the community—for example, there are offices for Ahtna, Inc., ADF&G, and the Bureau of Land Management (BLM).

Demography

The boundaries of the Glennallen survey area for this study follow the current federal CDP boundaries that are demarcated in the west by Glennallen's border with Tolsona at mile 173 on the Glenn Highway to mile 189 to the east, which is the termination of the highway where it meets the Richardson Highway (Figure 2-1). On the Richardson Highway, the northern limit of Glennallen is at mile 117 and the southern border is close to Tazlina at mile 113. Within the survey boundary, a total of 77 households were interviewed of an estimated 140 resident households in Glennallen in 2013 (Table 2-1).

Based on survey results, the estimated population of Glennallen for 2013 was 384 residents (Table 2-2). This number is significantly lower than the 2010 estimate by the U.S. Census Bureau of 483 residents and the 5-year American Community Survey (2008–2012) estimate of 531 residents. The decrease in population corresponds with the relocation during the preceding 3 years of 2 long-time resident organizations: SEND International and Alaska Bible College. The relocation of these organizations resulted in a significant depopulation of Glennallen through the outmigration of a large number of households that had family members employed by the mission and Bible college. As a consequence of the outmigration, the local high school was downgraded in 2013 from a 3A status to a 2A status school, which is based on school enrollment of between 60 and 150 students (3A high schools have enrollment of between 151 and 500 students).

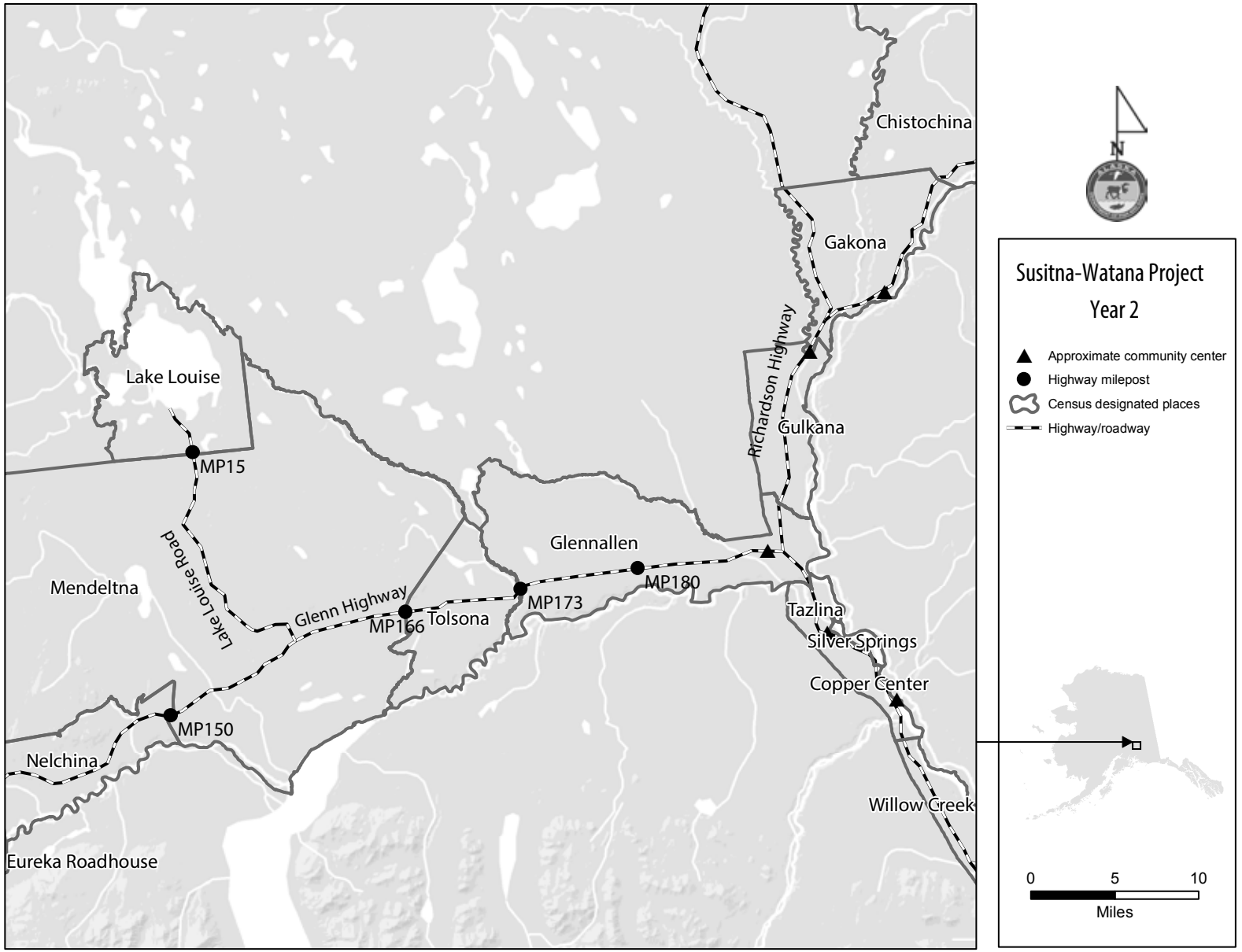

Figure 2-1.–Map of study community and census designated place boundaries.

Table 2-1.–Sample achievement, Glennallen, 2013.

	Glennallen
Number of dwelling units	223
Interview goal	112
Households interviewed	77
Households failed to be contacted	41
Households declined to be interviewed	14
Households moved or occupied by nonresident	83
Total households attempted to be interviewed	132
Refusal rate	15.4%
Final estimate of permanent households	140
Percentage of total households interviewed	55.0%
Interview weighting factor	1.8
Sampled population	211
Estimated population	383.6

Source ADF&G Division of Subsistence household surveys, 2014.

Table 2-2.–Population estimates, Glennallen, 2010 and 2013.

	Census (2010)	5-year American Community Survey (2008–2012)	This study (2013)
Total population			
Households	203	213	140.0
Population	483	531	383.6
Alaska Native			
Population	86	10	68.2
Percentage	17.8%	1.9%	17.8%

Sources U.S. Census Bureau (2011) for 2010 estimate; U.S. Census Bureau for American Community Survey 5-year survey estimate; and ADF&G Division of Subsistence household surveys, 2014, for 2013 estimate.
Note The term "households" means occupied housing units. Alaska Native population data from the American Community Survey and 2010 census come from the category "race alone or in combination with one or more other races."

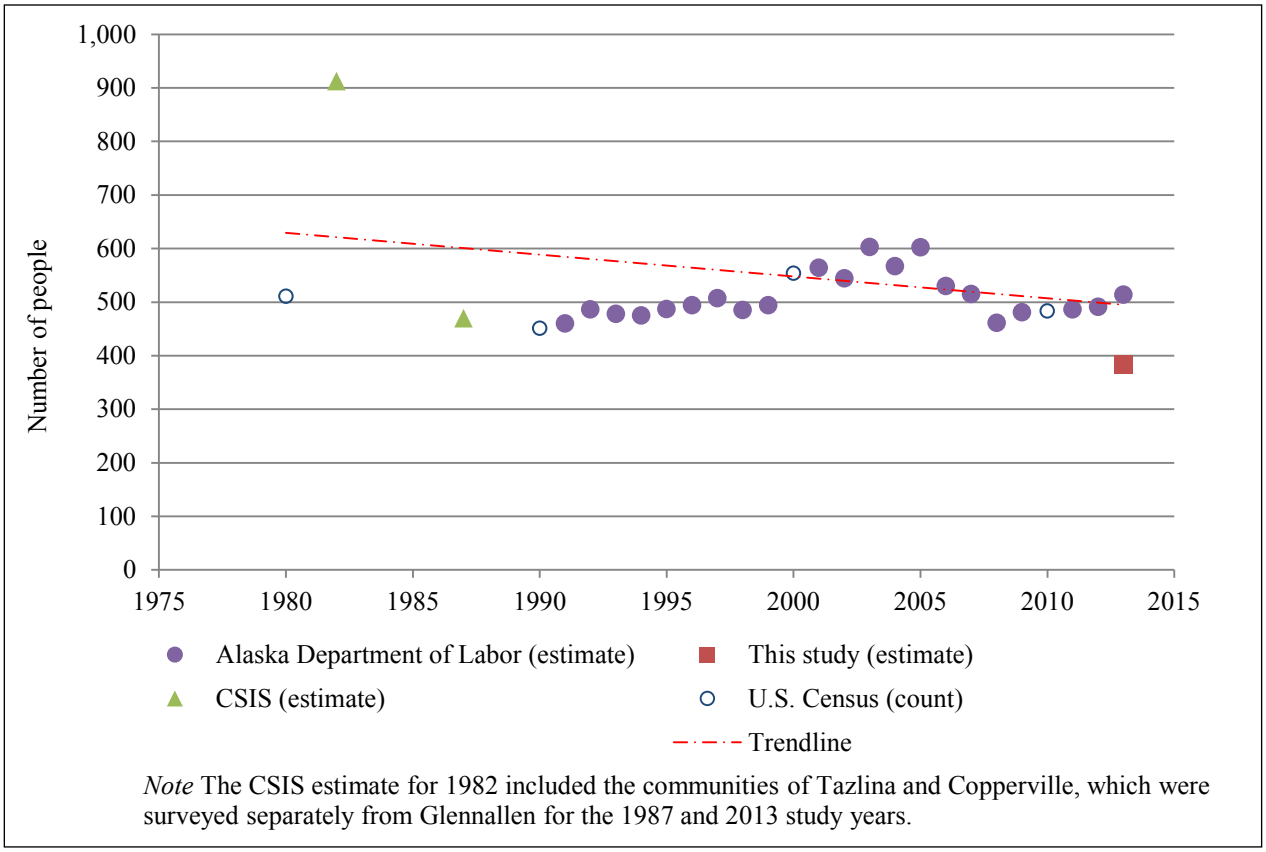

Figure 2-2.–Historical population estimates, Glennallen, 1980–2013.

Two previous fish and wildlife harvest studies that include Glennallen have been conducted: one was directed by the Division of Subsistence and the other was implemented in cooperation with the division (McMillan and Cuccarese 1988; Stratton and Georgette 1984); population estimates from those surveys are included in Figure 2-2, which shows population estimates by various organizations spanning from 1980–2013. The population had remained fairly stable since 1980 with a slight increase in the mid-2000s. During that time, the NPS built a new visitor's center in the vicinity near Copper Center (WRST), which could be responsible for the observed increase in population. Two significant deviations from this trend include the population estimate from this study (explained above) and one for 1982 (912 residents). The 1982 estimate is very high in comparison to all other estimates because the community of Tazlina and the Copperville subdivision were grouped with Glennallen for that survey, thus inflating the population estimate. The division surveyed the communities of Tazlina and Copperville with Glennallen in 1982 because those communities were not part of a CDP at the time of survey so the 1982 survey area was expanded beyond the Glennallen CDP boundary to include those households. The report for the 1987 study indicates a population of 469 for 1987, which is consistent with the general population trend (McMillan and Cuccarese 1988). Boundaries used in this study closely mirror those used for the 1987 study.

In 2013, the estimated Alaska Native population of Glennallen was 68 individuals, or 18% of the population (Table 2-2). The average length of residency by Glennallen residents was 14 years (Table 2-3). Overall, the population profile does not fit traditional or archetype pyramids since there are a low number of young adults residing in Glennallen with a small age cohort spanning 20–29 years old (Table 2-4). Otherwise, most age cohorts have good representation in terms of membership and the ratio of females versus males (Figure 2-3). Importantly, for the growth and maintenance of any population, there are high numbers of

Table 2-3.–Sample and demographic characteristics, Glennallen, 2013.

Characteristics	
Sampled population	211
Estimated community population	384
Household size	
Mean	2.7
Minimum	1
Maximum	9
Age	
Mean	35.5
Minimum[a]	0
Maximum	84
Median	34
Length of residency	
Total population	
Mean	14.2
Minimum[a]	0
Maximum	64
Heads of household	
Mean	19.6
Minimum[a]	0
Maximum	64
Alaska Native	
Estimated households[b]	
Number	10.9
Percentage	7.8%
Estimated population	
Number	68
Percentage	17.8%

Source ADF&G Division of Subsistence household surveys, 2014.

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 2-4.–Population profile, Glennallen, 2013.

	Male			Female			Total		
Age	Number	Percentage	Cumulative percentage	Number	Percentage	Cumulative percentage	Number	Percentage	Cumulative percentage
0–4	14.5	7.6%	7.6%	23.6	12.3%	12.3%	38.2	10.0%	10.0%
5–9	12.7	6.7%	14.3%	21.8	11.3%	23.6%	34.5	9.0%	19.0%
10–14	25.5	13.3%	27.6%	10.9	5.7%	29.2%	36.4	9.5%	28.4%
15–19	14.5	7.6%	35.2%	10.9	5.7%	34.9%	25.5	6.6%	35.1%
20–24	7.3	3.8%	39.0%	7.3	3.8%	38.7%	14.5	3.8%	38.9%
25–29	3.6	1.9%	41.0%	9.1	4.7%	43.4%	12.7	3.3%	42.2%
30–34	12.7	6.7%	47.6%	20.0	10.4%	53.8%	32.7	8.5%	50.7%
35–39	9.1	4.8%	52.4%	5.5	2.8%	56.6%	14.5	3.8%	54.5%
40–44	10.9	5.7%	58.1%	14.5	7.5%	64.2%	25.5	6.6%	61.1%
45–49	14.5	7.6%	65.7%	9.1	4.7%	68.9%	23.6	6.2%	67.3%
50–54	7.3	3.8%	69.5%	12.7	6.6%	75.5%	20.0	5.2%	72.5%
55–59	16.4	8.6%	78.1%	10.9	5.7%	81.1%	27.3	7.1%	79.6%
60–64	10.9	5.7%	83.8%	14.5	7.5%	88.7%	25.5	6.6%	86.3%
65–69	12.7	6.7%	90.5%	12.7	6.6%	95.3%	25.5	6.6%	92.9%
70–74	9.1	4.8%	95.2%	1.8	0.9%	96.2%	10.9	2.8%	95.7%
75–79	7.3	3.8%	99.0%	5.5	2.8%	99.1%	12.7	3.3%	99.1%
80–84	1.8	1.0%	100.0%	1.8	0.9%	100.0%	3.6	0.9%	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	**190.9**	**100.0%**	**100.0%**	**192.7**	**100.0%**	**100.0%**	**383.6**	**100.0%**	**100.0%**

Source ADF&G Division of Subsistence household surveys, 2014.

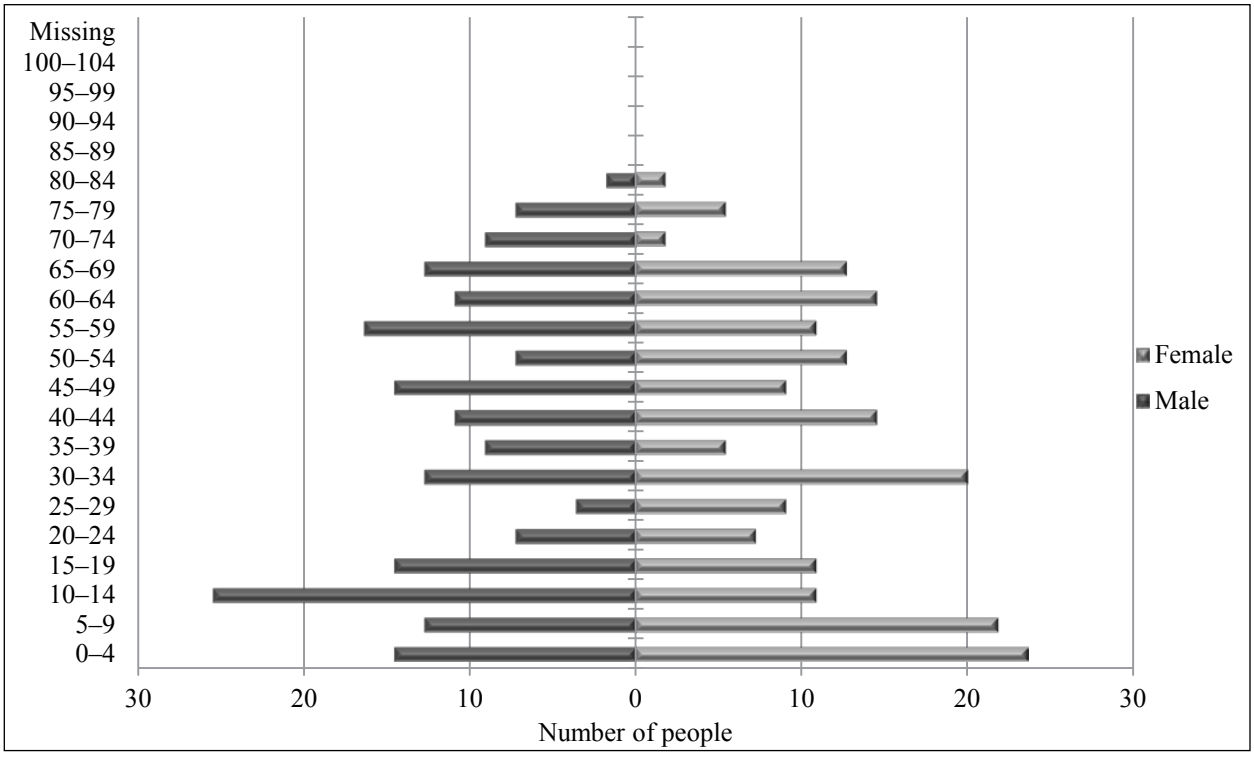

Figure 2-3.–Population profile, Glennallen, 2013.

Table 2-5.–Birthplaces of household heads, Glennallen, 2013.

Birthplace	Percentage
Anchorage	2.5%
Chistochina	0.8%
Copper Center	0.8%
Fairbanks	1.6%
Glennallen	4.1%
Juneau	1.6%
Kenny Lake	0.8%
Ketchikan	0.8%
Mentasta Lake	0.8%
Soldotna	0.8%
Other Alaska	0.8%
Other U.S.	80.3%
Foreign	4.1%

Source ADF&G Division of Subsistence household surveys, 2014.
Note "Birthplace" means the place of residence of the parents of the individual when the individual was born.

children (i.e., residents between 0 and 19 years of age). The relative absence of young adults may be linked to diminished job opportunities related to the recent outmigration of several key organizations.

Most household heads were born in other states (80%) (Table 2-5). For the overall population, 55% were born in other states; an estimated 22% were born while their parents were living in Glennallen (Appendix Table E2-1).

Cash Employment and Monetary Income

The total earned income for Glennallen was $8,171,743, which is significantly higher than other sources of income ($1,097,419) and indicates that residents receive a great portion of their income from the wage economy (Table 2-6). The average household income was $66,208 and the per capita income was $24,161 in 2013. The largest source of other income for the community was Social Security, which contributed a total of $318,134, or a household average of $2,272.

Income earned from providing services represented the highest source of income (34%) with a total of $3,179,011 (Table 2-6), or 39% of wage earnings (Table 2-7). Following the services sector, other important industries contributing to wage earnings were retail trade (15%), transportation, communication, and utilities (11%), and federal government (11%).

In 2013, 86% of adults were employed an average of 39 weeks of the year (Table 2-8). Almost all households had an employed member (138 out of a possible 140 households) and each household had an average of 2.1 jobs.

Table 2-6.–Estimated earned and other income, Glennallen, 2013.

Income source	Number of people	Number of households	Total for community	-/+ 95% CI	Mean per household	Per capita income	Percentage of total community income
Earned income							
Services	98.2	83.6	$3,179,011	$2,088,451 – $4,624,324	$22,707		34.3%
Retail trade	32.7	31.3	$1,182,176	$521,061 – $2,304,552	$8,444		12.8%
Transportation, communication, and utilities	21.8	20.9	$928,857	$363,755 – $1,701,749	$6,635		10.0%
Federal government	16.4	18.8	$921,863	$330,920 – $1,766,891	$6,585		9.9%
Local government, including tribal	30.9	25.1	$836,342	$301,291 – $1,616,251	$5,974		9.0%
State government	20.0	20.9	$541,544	$156,668 – $1,051,409	$3,868		5.8%
Other employment	9.1	10.4	$260,842	$29,942 – $640,023	$1,863		2.8%
Construction	7.3	8.4	$201,159	$17,209 – $499,311	$1,437		2.2%
Agriculture, forestry, and fishing	10.9	12.5	$109,633	$12,407 – $290,606	$783		1.2%
Finance, insurance, and real estate	1.8	2.1	$10,316	$8,683 – $19,230	$74		0.1%
Earned income subtotal	**203.6**	**137.9**	**$8,171,743**	**$6,001,258 – $10,264,987**	**$58,370**	**$21,301**	**88.2%**
Other income							
Social Security		30.9	$318,134	$164,000 – $525,318	$2,272		3.4%
Alaska Permanent Fund dividend		130.9	$308,182	$259,636 – $363,818	$2,201		3.3%
Pension/retirement		21.8	$291,208	$33,778 – $729,469	$2,080		3.1%
Rental income		4.1	$57,534	$98 – $221,053	$411		0.6%
Other		7.3	$51,671	$91 – $141,867	$369		0.6%
Unemployment		10.9	$17,961	$4,667 – $42,092	$128		0.2%
Food stamps		7.3	$17,027	$535 – $53,239	$122		0.2%
Child support		5.5	$16,240	$8,932 – $51,465	$116		0.2%
Native corporation dividend		12.7	$6,608	$605 – $14,635	$47		0.1%
Heating assistance		7.3	$5,711	$818 – $17,452	$41		0.1%
Longevity bonus		1.8	$3,818	$2,100 – $7,636	$27		0.04%
Veterans assistance		1.8	$1,969	$1,083 – $3,938	$14		0.02%
Disability		1.8	$657	$361 – $2,649	$5		0.007%
Dividend/interest		2.3	$378	$208 – $778	$3		0.004%
CITGO fuel voucher		1.8	$213	$117 – $1,242	$2		0.002%
Adult public assistance (OAA, APD)		1.8	$54	$30 – $1,224	$0.39		0.001%
Supplemental Security income		1.8	$54	$30 – $1,224	$0.39		0.001%
TANF (Temporary Assistance for Needy Families)		0.0	$0	$0 – $0	$0		0.0%
Workers' compensation/insurance		0.0	$0	$0 – $0	$0		0.0%
Foster care		0.0	$0	$0 – $0	$0		0.0%
Meeting honoraria		0.0	$0	$0 – $0	$0		0.0%
Other income subtotal		**136.5**	**$1,097,419**	**$731,392 – $1,580,588**	**$7,839**	**$2,861**	**11.8%**
Community income total			**$9,269,162**	**$7,125,920 – $11,377,212**	**$66,208**	**$24,161**	**100.0%**

Source ADF&G Division of Subsistence household surveys, 2014.

Table 2-7.–Employment by industry, Glennallen, 2013.

Industry	Jobs	Households	Individuals	Percentage of wage earnings
Estimated total number	**293.7**	**137.9**	**231.6**	
Federal government	**6.8%**	**13.6%**	**8.0%**	**11.3%**
Executive, administrative, and managerial	2.0%	4.5%	2.7%	6.0%
Natural scientists and mathematicians	0.7%	1.5%	0.9%	1.4%
Marketing and sales occupations	0.7%	1.5%	0.9%	0.4%
Administrative support occupations, including clerical	1.4%	3.0%	1.8%	1.7%
Service occupations	1.4%	3.0%	1.8%	1.6%
Handlers, equipment cleaners, helpers, and laborers	0.7%	1.5%	0.9%	0.2%
State government	**8.2%**	**15.2%**	**9.8%**	**6.6%**
Teachers, librarians, and counselors	0.7%	1.5%	0.9%	0.1%
Administrative support occupations, including clerical	2.0%	4.5%	2.7%	2.4%
Service occupations	1.4%	3.0%	1.8%	1.2%
Agricultural, forestry, and fishing occupations	1.4%	3.0%	1.8%	1.5%
Transportation and material moving occupations	0.7%	1.5%	0.9%	0.3%
Handlers, equipment cleaners, helpers, and laborers	1.4%	3.0%	1.8%	0.2%
Occupation not indicated	0.7%	1.5%	0.9%	0.9%
Local government, including tribal	**11.6%**	**18.2%**	**15.2%**	**10.2%**
Executive, administrative, and managerial	2.0%	3.0%	2.7%	1.9%
Teachers, librarians, and counselors	4.8%	7.6%	6.3%	4.8%
Marketing and sales occupations	0.7%	1.5%	0.9%	0.1%
Administrative support occupations, including clerical	1.4%	3.0%	1.8%	2.3%
Service occupations	1.4%	3.0%	1.8%	1.0%
Handlers, equipment cleaners, helpers, and laborers	1.4%	3.0%	1.8%	0.2%
Agriculture, forestry, and fishing	**4.1%**	**9.1%**	**5.4%**	**1.3%**
Agricultural, forestry, and fishing occupations	3.4%	7.6%	4.5%	1.3%
Handlers, equipment cleaners, helpers, and laborers	0.7%	1.5%	0.9%	0.0%
Construction	**2.7%**	**6.1%**	**3.6%**	**2.5%**
Mechanics and repairers	0.7%	1.5%	0.9%	1.0%
Construction and extractive occupations	0.7%	1.5%	0.9%	0.2%
Handlers, equipment cleaners, helpers, and laborers	1.4%	3.0%	1.8%	1.3%
Transportation, communication, and utilities	**8.2%**	**15.2%**	**10.7%**	**11.4%**
Executive, administrative, and managerial	2.0%	3.0%	2.7%	3.6%
Engineers, surveyors, and architects	0.7%	1.5%	0.9%	1.9%
Technologists and technicians, except health	1.4%	3.0%	1.8%	1.6%
Administrative support occupations, including clerical	0.7%	1.5%	0.9%	1.1%
Transportation and material moving occupations	3.4%	7.6%	4.5%	3.1%
Retail trade	**12.9%**	**22.7%**	**16.1%**	**14.5%**
Executive, administrative, and managerial	5.4%	10.6%	7.1%	9.9%
Marketing and sales occupations	4.1%	9.1%	5.4%	1.8%
Service occupations	1.4%	3.0%	1.8%	0.1%
Mechanics and repairers	0.7%	1.5%	0.9%	1.5%
Handlers, equipment cleaners, helpers, and laborers	1.4%	3.0%	1.8%	1.1%
Finance, insurance and real estate	**0.7%**	**1.5%**	**0.9%**	**0.1%**
Marketing and sales occupations	0.7%	1.5%	0.9%	0.1%

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Table 2-7.–Page 2 of 2.

Industry	Jobs	Households	Individuals	Percentage of wage earnings
Services	**41.5%**	**60.6%**	**48.2%**	**38.9%**
Executive, administrative, and managerial	8.8%	16.7%	10.7%	13.4%
Social scientists, social workers, religious workers, and lawyers	1.4%	3.0%	1.8%	1.3%
Teachers, librarians, and counselors	2.7%	6.1%	3.6%	2.2%
Registered nurses, pharmacists, dietitians, therapists, and physicians assistants	4.8%	9.1%	5.4%	9.3%
Health technologists and technicians	0.7%	1.5%	0.9%	0.9%
Technologists and technicians, except health	0.7%	1.5%	0.9%	0.3%
Marketing and sales occupations	0.7%	1.5%	0.9%	0.2%
Administrative support occupations, including clerical	4.8%	10.6%	6.3%	2.7%
Service occupations	8.8%	18.2%	11.6%	5.4%
Mechanics and repairers	1.4%	3.0%	1.8%	1.4%
Transportation and material moving occupations	1.4%	3.0%	1.8%	0.4%
Handlers, equipment cleaners, helpers, and laborers	4.8%	9.1%	6.3%	0.5%
Occupation not indicated	0.7%	1.5%	0.9%	0.9%
Industry not indicated	**3.4%**	**7.6%**	**4.5%**	**3.2%**
Executive, administrative, and managerial	1.4%	3.0%	1.8%	2.6%
Occupation not indicated	2.0%	4.5%	2.7%	0.6%

Source ADF&G Division of Subsistence household surveys, 2014.

Table 2-8.–Employment characteristics, Glennallen, 2013.

Characteristic	Community Glennallen
All adults	
Number	270.9
Mean weeks employed	33.5
Employed adults	
Number	231.6
Percentage	85.5%
Jobs	
Number	293.7
Mean	1.3
Minimum	1
Maximum	6
Months employed	
Mean	9.1
Minimum	0
Maximum	12
Percentage employed year-round	61.2%
Mean weeks employed	39.2
Households	
Number	140
Employed	
Number	137.9
Percentage	98.5%
Jobs per employed household	
Mean	2.1
Minimum	1
Maximum	8
Employed adults	
Mean	
Employed households	1.7
Total households	1.7
Minimum	1
Maximum	4
Mean person-weeks of employment	42.4

Source ADF&G Division of Subsistence household surveys, 2014.

Levels of Individual Participation in the Harvesting and Processing of Wild Resources

Table 2-9 reports the expanded levels of individual participation in the harvest and processing of wild resources by all Glennallen residents in 2013. Many community members participated in gathering plants and berries (81%) and fishing activities (51%). A fewer number of people were involved in hunting large land mammals (28%), birds (14%), or hunting or trapping small land mammals (7%). In terms of processing wild resources, many residents were involved in processing plants and berries (77%) and fish (54%). Although participation in the hunting of large mammals was relatively low, almost one-half (45%) of Glennallen residents participated in processing large land mammals. A smaller percentage of the community was involved in processing birds (11%) and small land mammals (8%).

The survey included questions about individual participation in wild resource harvest activities such as working with fish wheels, handicrafts, and cooking wild foods. In Glennallen, 15% of residents built[1] fish wheels (Table 2-10). In 2013, 12% of residents sewed skins or cloth and 72% of residents cooked wild foods. According to survey respondents, a number of community members collect diamond willow and other locally available wood to make walking sticks and handicrafts of artwork depicting salmon for gifts and for sale.

Household Resource Harvest and Use Patterns and Sharing of Wild Resources

Table 2-11 summarizes resource harvest and use characteristics for Glennallen in 2013 at the household level. Most households (97%) used wild resources in 2013, while 88% attempted to harvest and 88% harvested resources. The average harvest was 268 lb usable weight per household, or 98 lb per capita. During the study year, community households harvested an average of 6 kinds of resources and used an average of 9 kinds of resources. The maximum number of resources used by any household was 28. In addition, households gave away an average of 3 kinds of resources and 73% of households shared resources with other households. Overall, as many as 134 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.

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 2-4, in the 2013 study year in Glennallen, about 69% of the harvest of wild resources as estimated in usable pounds was harvested by 21% 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 Glennallen and the other study communities.

For the community of Glennallen, researchers learned while conducting the search and harvest mapping component of the survey that highway vehicles were often used to access resources. Additional questions were asked about the use of alternative and motorized modes of transportation and other portable motorized equipment to harvest wild resources. Glennallen households used boats (35%), snowmachines (17%), ATVs (34%), and aircraft (9%) (Figure 2-5). Furthermore, Glennallen residents used a number of different types

1. In Glennallen, when surveys were administered, the question asked of respondents focused on a single activity (e.g.: Did this person build a fish wheel?) while in other study communities respondents were asked whether a person built, maintained, or moved a fish wheel. It is difficult to compare the level of individual participation for fish wheel activity to the other study communities because the limited scope of the question asked in Glennallen might have caused fewer positive responses than if the expanded question had been asked.

Table 2-9.–Individual participation in subsistence harvesting and processing activities, Glennallen, 2013.

Total number of people	**383.6**
Fish	
Fish	
Number	196.4
Percentage	51.2%
Process	
Number	207.4
Percentage	54.1%
Large land mammals	
Hunt	
Number	108.3
Percentage	28.2%
Process	
Number	170.7
Percentage	44.5%
Small land mammals	
Hunt or trap	
Number	27.5
Percentage	7.2%
Process	
Number	29.4
Percentage	7.7%
Birds and eggs	
Hunt/gather	
Number	51.8
Percentage	13.5%
Process	
Number	43.9
Percentage	11.4%
Vegetation	
Gather	
Number	309.2
Percentage	80.6%
Process	
Number	295.8
Percentage	77.1%
Any resource	
Attempt harvest	
Number	310.9
Percentage	81.0%
Process	
Number	305.5
Percentage	79.6%

Source ADF&G Division of Subsistence household surveys, 2014.

Table 2-10.–Household member participation in subsistence craft activities, Glennallen, 2013.

Total number of people	**383.6**
Building, maintaining, or moving fish wheels[a]	
Number	56.6
Percentage	14.8%
Sewing skins or cloth	
Number	45.7
Percentage	11.9%
Cooking wild foods	
Number	275.9
Percentage	71.9%

Source ADF&G Division of Subsistence household surveys, 2014.

a. In Glennallen, when surveys were administered, the question asked of respondents focused on a single activity (e.g.: Did this person build a fish wheel?) while in other study communities respondents were asked whether a person built, maintained, or moved a fish wheel. It is difficult to compare the level of individual participation for fish wheel activity to the other study communities because the limited scope of the question asked in Glennallen might have caused fewer positive responses than if the expanded question had been asked.

Table 2-11.–Resource harvest and use characteristics, Glennallen, 2013.

Characteristic	
Mean number of resources used per household	**8.5**
Minimum	0
Maximum	28
95% confidence limit (±)	10.4%
Median	7
Mean number of resources attempted to harvest per household	**6.8**
Minimum	0
Maximum	25
95% confidence limit (±)	13.4%
Median	6
Mean number of resources harvested per household	**5.5**
Minimum	0
Maximum	21
95% confidence limit (±)	14.0%
Median	4
Mean number of resources received per household	**3.6**
Minimum	0
Maximum	11
95% confidence limit (±)	10.9%
Median	3
Mean number of resources given away per household	**2.7**
Minimum	0
Maximum	12
95% confidence limit (±)	15.8%
Median	2
Household harvest (pounds)	
Minimum	0
Maximum	2,361
Mean	267.5
Median	63
Total harvest weight (lb)	37,447.3
Community per capita harvest (lb)	97.6
Percentage using any resource	97.4%
Percentage attempting to harvest any resource	88.3%
Percentage harvesting any resource	88.3%
Percentage receiving any resource	92.2%
Percentage giving away any resource	72.7%
Number of households in sample	77
Number of resources asked about and identified voluntarily by respondents	134

Source ADF&G Division of Subsistence household surveys, 2014.

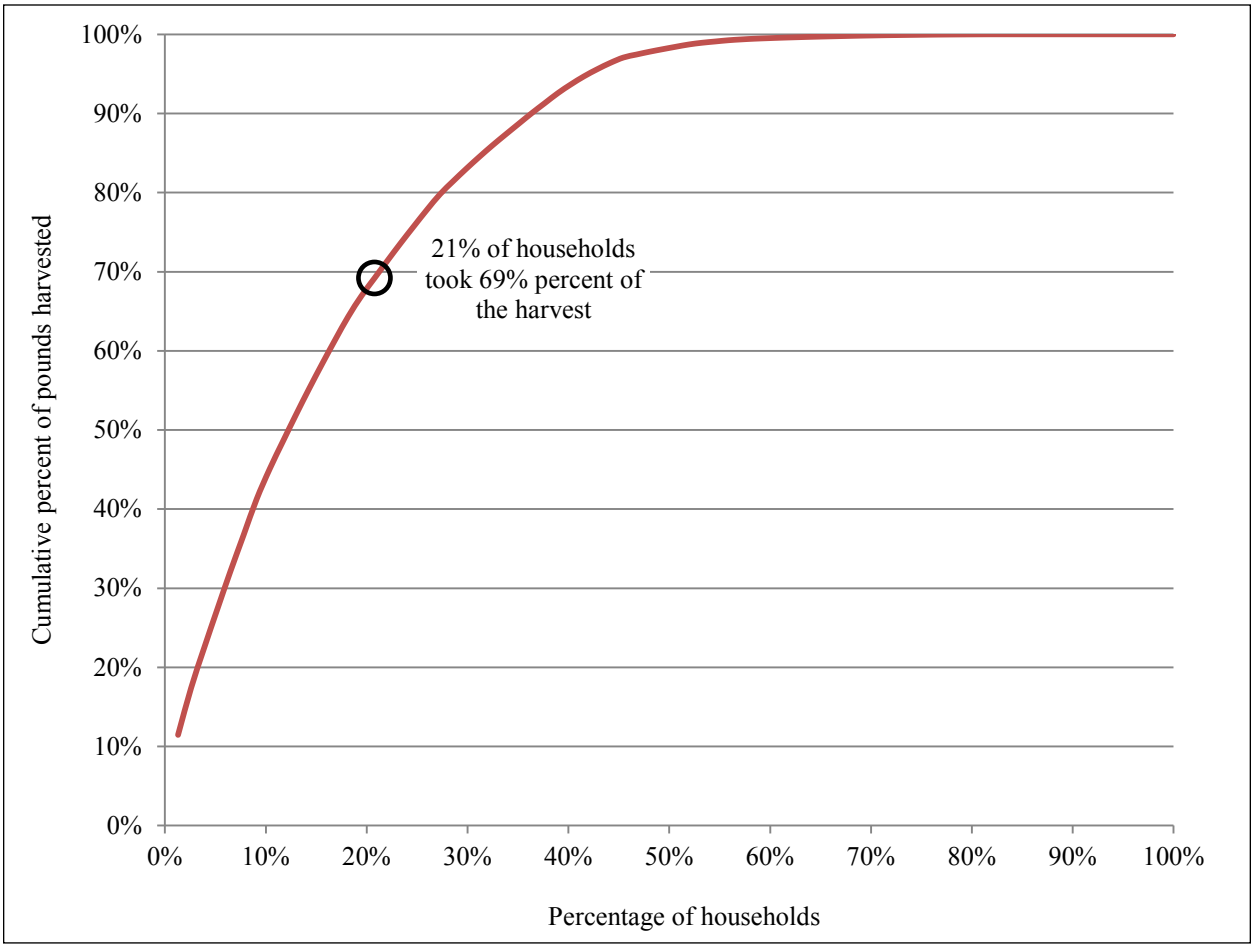

Figure 2-4.–Household specialization, Glennallen, 2013.

of equipment to harvest resources, including: generator (9%), chain saw (62%), ice auger (22%), and winch (12%) (Figure 2-6). Other unspecified portable motorized equipment was used by 9% of households.

Some community members made handicrafts. To manufacture handicrafts, households used bark (5%), antlers (6%), and other natural materials (16%) (quite likely diamond willow or other local types of wood) (Figure 2-7). Wood was also used for heating residences. Wood was not typically used as the only source for heating homes (only 5% of households used wood exclusively for home heating) (Table 2-12). Rather, wood was used in combination with other sources and wood contributed between 1%–99% of home heating for 61% of sampled households. Overall, the estimated average annual cost of home heating was $1,825.

Harvest Quantities and Composition

Table 2-13 reports estimated wild resource harvests and uses by Glennallen residents in 2013 and is organized first by general category and then by species. All edible resources are reported in pounds usable weight (see Appendix C for conversion factors[2]). The "harvest" category includes resources harvested by any member of the surveyed household during the study year. The "use" category includes all 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 firewood, if not purchased, are included because

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

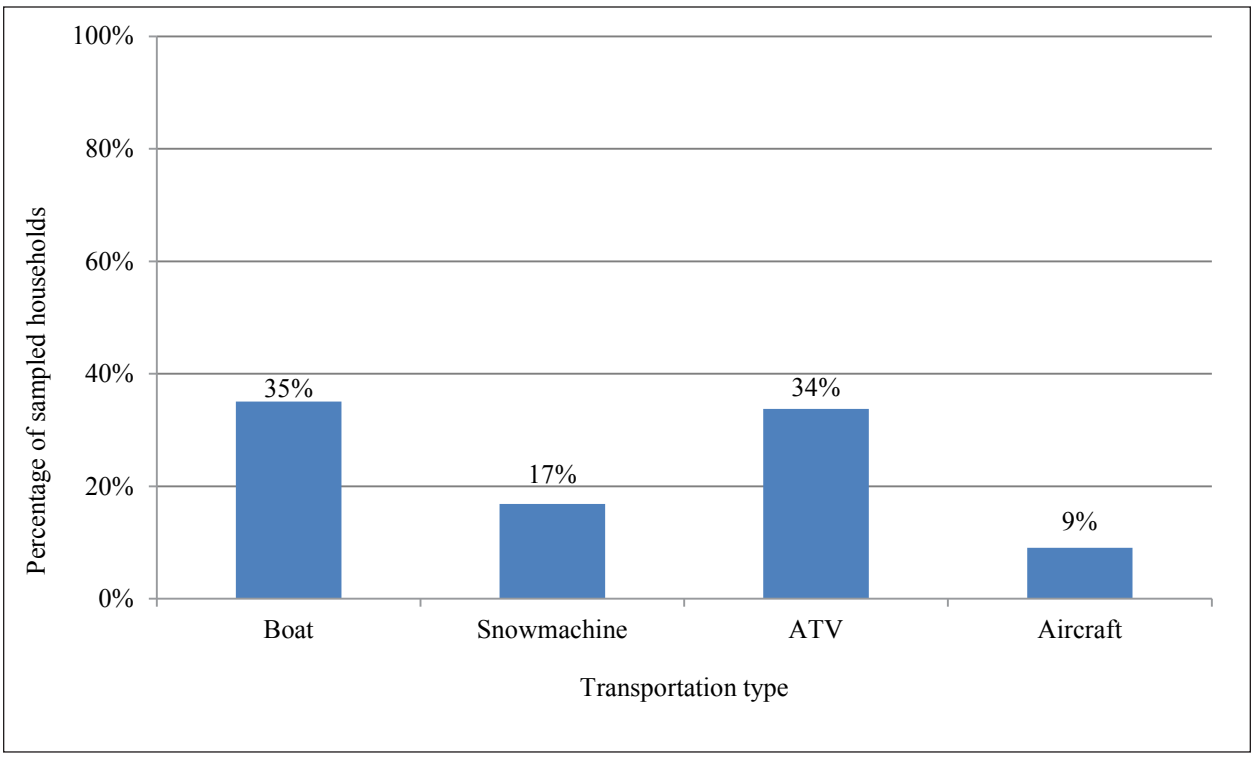

Figure 2-5.–Alternative modes of transportation used by sampled households to access wild resources, Glennallen, 2013.

they are an important part of the subsistence way of life. Differences between harvest and use percentages reflect sharing among households, which results in a wider distribution of wild foods.

The total harvest by Glennallen residents was 37,447 lb in 2013. The composition of the harvest is represented by salmon (59% of the total harvest), followed by large land mammals (29%), vegetation (6%), and nonsalmon fish (5%); additionally, contributing 1% or less of the total harvest were birds and eggs, small land mammals, and marine invertebrates (Figure 2-8). The community harvest by wild resource category in order of most to least was: salmon (21, 858 lb total, or 57 lb per capita), large land mammals (10,909 lb total, or 28 lb per capita), vegetation (2,289 lb total, or 6 lb per capita), and nonsalmon fish (1,936 lb total, or 5 lb per capita) (Table 2-13). The harvests of birds and eggs, small land mammals, and marine invertebrates all contributed less than 1 lb per capita.

Seasonal Round

Glennallen residents harvest wild resources throughout the year and, like most rural Alaska communities, they target specific species at certain seasons of the year following a cyclical harvest pattern. This seasonal harvest pattern is in part defined by seasonal resource availability, and in part by laws, regulations, and land access. A small number of residents from these communities have access to small airplanes or boats and use these modes of transportation to travel to more distant wild resource search and harvest areas. However, the majority of residents' resource search and harvest activities take place within the Copper

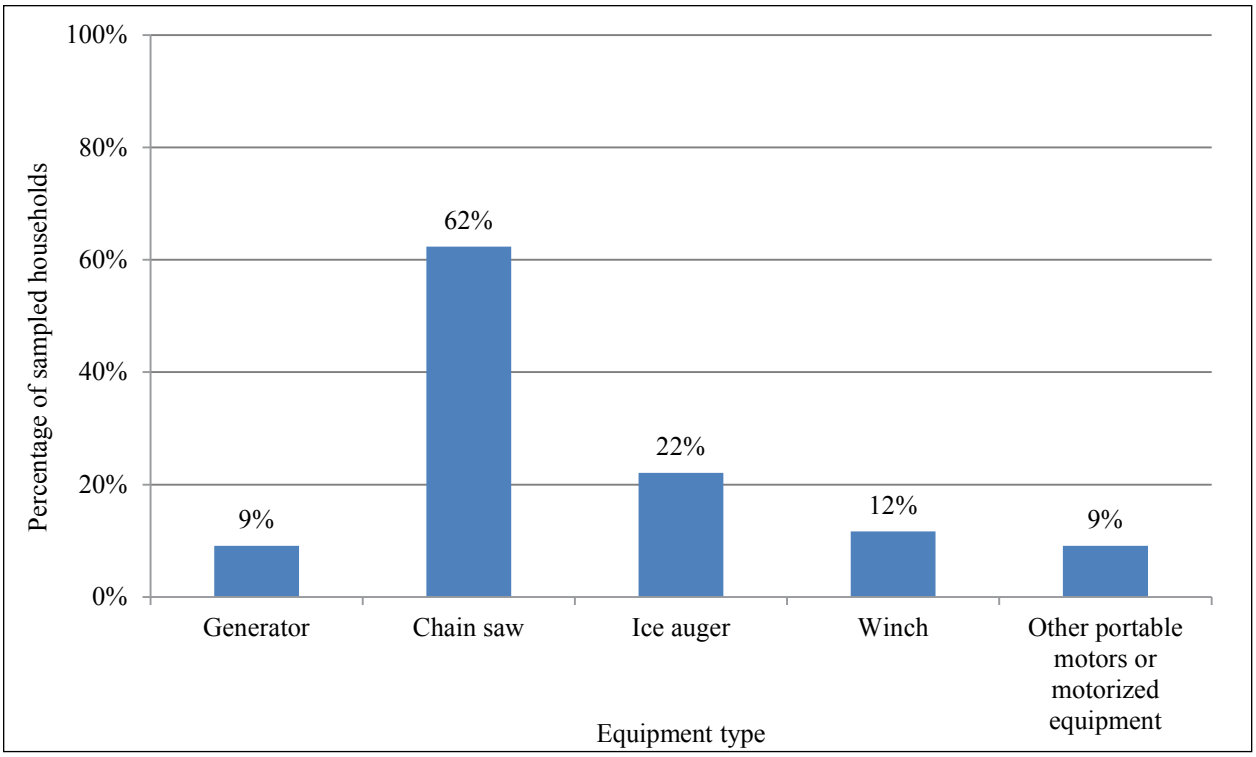

Figure 2-6.–Portable motorized equipment used by sampled households while searching for and harvesting wild resources, Glennallen, 2013.

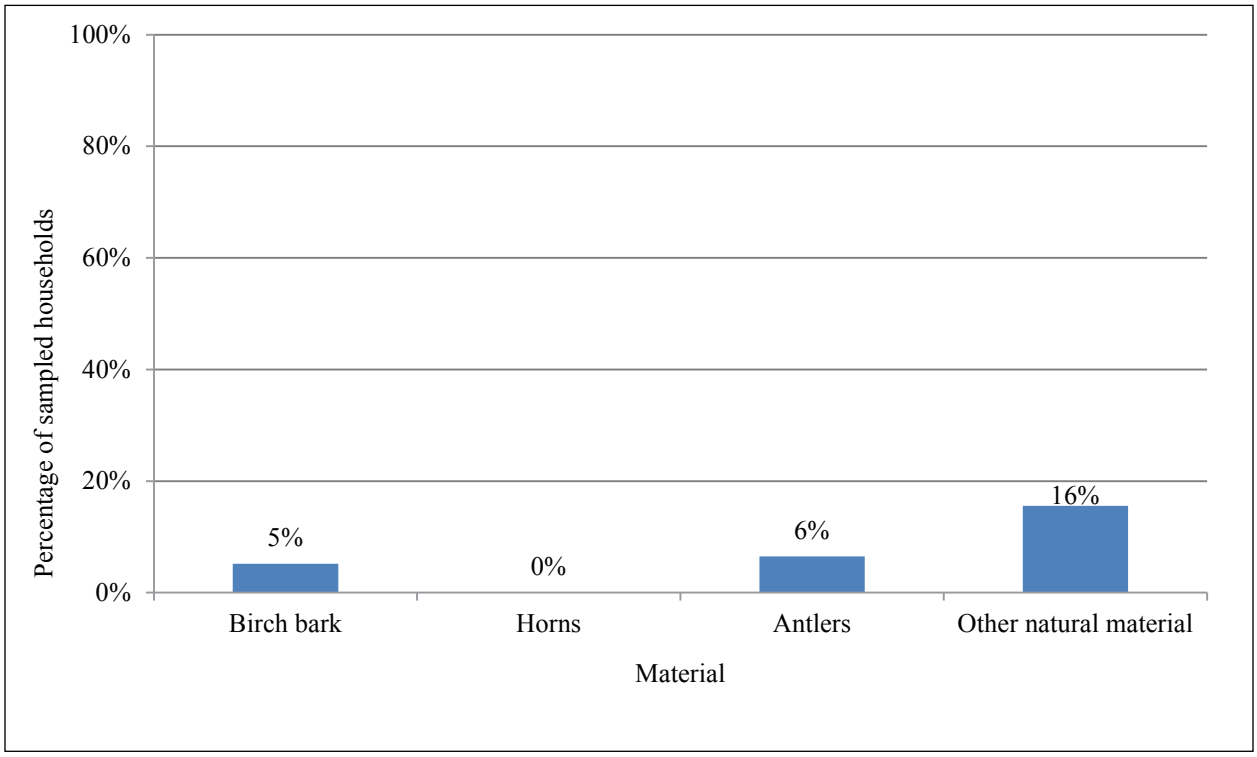

Figure 2-7.–Natural materials used by sampled households for making handicrafts, Glennallen, 2013.

Table 2-12.–Use of firewood for home heating in sampled households, Glennallen, 2013.

Community	Average annual cost of home heating	Household use of wood for home heating as a percentage of total fuel for heating											
		0%		1%–25%		26%–50%		51%–75%		76%–99%		100%	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Glennallen	$1,825	26	33.8%	9	11.7%	8	10.4%	11	14.3%	19	24.7%	4	5.2%

Source ADF&G Division of Subsistence household surveys, 2014.

Table 2-13.–Estimated use and harvests of fish, game, and vegetation resources, Glennallen, 2013.

Resource	Percentage of households: Use %	Attempt %	Harvest %	Receive %	Give %	Harvest weight (lb): Total	Mean per household	Per capita	Harvest amount[a]: Total	Unit	Mean per household	95% confidence limit (±)
All resources	**97.4**	**88.3**	**88.3**	**92.2**	**72.7**	**37,447.3**	**267.5**	**97.6**				**22.7**
Salmon	**84.4**	**53.2**	**45.5**	**63.6**	**44.2**	**21,857.5**	**156.1**	**57.0**				**28.7**
Chum salmon	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Coho salmon	23.4	18.2	14.3	11.7	10.4	1,536.7	11.0	4.0	247.3	ind	1.8	47.5
Chinook salmon	42.9	37.7	29.9	19.5	24.7	2,196.8	15.7	5.7	160.0	ind	1.1	33.3
Pink salmon	9.1	3.9	2.6	6.5	0.0	74.2	0.5	0.2	34.5	ind	0.2	108.8
Sockeye salmon	80.5	51.9	44.2	58.4	42.9	18,049.7	128.9	47.0	3,936.4	ind	28.1	30.2
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	3.9	0.0	0.0	3.9	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Nonsalmon fish	**57.1**	**45.5**	**37.7**	**39.0**	**19.5**	**1,936.0**	**13.8**	**5.0**				**37.1**
Pacific herring	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	ind	0.0	0.0
Unknown smelt	1.3	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Pacific (gray) cod	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Pacific tomcod	1.3	1.3	1.3	0.0	0.0	5.5	0.0	0.0	10.9	ind	0.1	133.6
Unknown cod	2.6	0.0	0.0	2.6	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Starry 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	10.4	5.2	3.9	9.1	1.3	48.0	0.3	0.1	20.0	ind	0.1	80.6
Pacific halibut	37.7	10.4	9.1	28.6	9.1	498.2	3.6	1.3	498.2	lb	3.6	71.3
Arctic lamprey	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Black rockfish	6.5	5.2	5.2	1.3	3.9	223.6	1.6	0.6	149.1	ind	1.1	102.9
Red rockfish	1.3	1.3	1.3	0.0	1.3	136.4	1.0	0.4	34.1	ind	0.2	133.6
Yelloweye rockfish	2.6	2.6	2.6	0.0	1.3	43.2	0.3	0.1	16.4	ind	0.1	94.4
Copper rockfish	1.3	1.3	1.3	0.0	1.3	13.5	0.1	0.0	9.1	ind	0.1	133.6
Unknown rockfish	7.8	2.6	2.6	5.2	1.3	116.4	0.8	0.3	29.1	ind	0.2	93.8
Sablefish (black cod)	1.3	0.0	0.0	1.3	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
Burbot	11.7	7.8	3.9	6.5	1.3	74.2	0.5	0.2	30.9	ind	0.2	98.6
Arctic char	1.3	1.3	1.3	0.0	0.0	7.6	0.1	0.0	10.9	ind	0.1	133.6
Dolly Varden	5.2	7.8	5.2	0.0	0.0	29.8	0.2	0.1	33.2	ind	0.2	84.6
Lake trout	6.5	7.8	6.5	0.0	0.0	116.4	0.8	0.3	58.2	ind	0.4	102.1

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Table 2-13.–Page 2 of 5.

Resource	Percentage of households: Use %	Attempt %	Harvest %	Receive %	Give %	Harvest weight (lb): Total	Mean per household	Per capita	Harvest amount[a]: Total	Unit	Mean per household	95% confidence limit (±)
Nonsalmon fish, continued												
Arctic grayling	24.7	24.7	22.1	5.2	3.9	357.0	2.6	0.9	510.0	ind	3.6	50.7
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
Sheefish	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Longnose sucker	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	15.8	18.2	14.3	2.6	3.9	202.6	1.4	0.5	144.7	ind	1.0	50.2
Unknown trout	1.3	1.3	0.0	1.3	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Broad whitefish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Least cisco	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Humpback whitefish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Round whitefish	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	1.3	1.3	1.3	0.0	1.3	63.6	0.5	0.2	36.4	ind	0.3	133.6
Large land mammals	**81.8**	**46.8**	**22.1**	**67.5**	**35.1**	**10,909.1**	**77.9**	**28.4**				**34.2**
Bison	3.9	1.3	1.3	2.6	1.3	818.2	5.8	2.1	1.8	ind	0.0	133.6
Black bear	7.8	2.6	0.0	5.3	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Brown bear	1.3	0.0	0.0	1.3	1.3	0.0	0.0	0.0	0.0	ind	0.0	0.0
Caribou	58.4	37.7	13.0	39.0	19.5	3,545.5	25.3	9.2	27.3	ind	0.2	44.0
Deer	3.9	0.0	0.0	2.6	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	71.4	40.3	10.4	56.0	23.4	6,545.5	46.8	17.1	14.5	ind	0.1	45.0
Dall sheep	2.6	3.9	0.0	2.6	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Small land mammals	**9.1**	**10.4**	**7.8**	**1.3**	**2.6**	**131.8**	**0.9**	**0.3**				**94.3**
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–cross phase	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–red phase	1.3	1.3	1.3	0.0	1.3	0.0	0.0	0.0	1.8	ind	0.0	133.6
Snowshoe hare	3.9	3.9	2.6	1.3	1.3	90.9	0.6	0.2	45.5	ind	0.3	128.3
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
Marmot	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

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Table 2-13.–Page 3 of 5.

Resource	Percentage of households: Use %	Attempt %	Harvest %	Receive %	Give %	Harvest weight (lb): Total	Mean per household	Per capita	Harvest amount[a]: Total	Unit	Mean per household	95% confidence limit (±)
Small land mammals, continued												
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	2.6	2.6	2.6	0.0	1.3	40.9	0.3	0.1	9.1	ind	0.1	109.8
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	3.9	3.9	3.9	0.0	0.0	0.0	0.0	0.0	47.3	ind	0.3	78.0
Weasel	1.3	1.3	1.3	0.0	1.3	0.0	0.0	0.0	3.6	ind	0.0	133.6
Gray wolf	0.0	1.3	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	**2.6**	**0.0**	**0.0**	**2.6**	**0.0**	**0.0**	**0.0**	**0.0**				**0.0**
Fur seal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Harbor seal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown seal	1.3	0.0	0.0	1.3	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	1.3	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown whale	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	**20.8**	**24.7**	**19.5**	**5.2**	**3.9**	**238.2**	**1.7**	**0.6**				**55.2**
Canvasback	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Spectacled 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	1.3	1.3	1.3	0.0	1.3	5.8	0.0	0.0	7.3	ind	0.1	133.6
Mallard	6.5	5.2	5.2	2.6	2.6	38.2	0.3	0.1	38.2	ind	0.3	83.8
Northern pintail	1.3	1.3	1.3	0.0	1.3	17.5	0.1	0.0	21.8	ind	0.2	133.6
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
Green-winged teal	2.6	1.3	1.3	1.3	1.3	2.2	0.0	0.0	7.3	ind	0.1	133.6
Unknown wigeon	3.9	2.6	2.6	1.3	1.3	21.6	0.2	0.1	30.9	ind	0.2	125.9
Unknown ducks	1.3	1.3	1.3	0.0	1.3	2.5	0.0	0.0	3.6	ind	0.0	133.6
Brant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Cackling goose	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Canada goose	1.3	1.3	1.3	0.0	0.0	6.5	0.0	0.0	5.5	ind	0.0	133.6
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
Emperor goose	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Snow goose	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 2-13.–Page 4 of 5.

Resource	Percentage of households: Use %	Attempt %	Harvest %	Receive %	Give %	Harvest weight (lb): Total	Mean per household	Per capita	Harvest amount[a]: Total	Unit	Mean per household	95% confidence limit (±)
Birds and eggs, continued												
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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Tundra (whistling) swan	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
Spruce grouse	14.3	16.9	14.3	2.6	2.6	86.5	0.6	0.2	123.6	ind	0.9	45.8
Ruffed grouse	1.3	2.6	1.3	0.0	0.0	3.8	0.0	0.0	5.5	ind	0.0	133.6
Unknown ptarmigan	10.4	18.2	9.1	0.0	2.6	53.5	0.4	0.1	76.4	ind	0.5	57.6
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
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 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	**15.6**	**7.8**	**7.8**	**7.8**	**2.6**	**85.9**	**0.6**	**0.2**				**89.7**
Unknown chitons	1.3	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Freshwater 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	5.2	1.3	1.3	2.6	0.0	54.5	0.4	0.1	18.2	gal	0.1	133.6
Dungeness crab	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	lb	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	lb	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	lb	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
Unknown oyster	1.3	1.3	1.3	0.0	0.0	3.9	0.0	0.0	1.3	gal	0.0	133.6
Shrimp	7.8	5.2	5.2	2.6	2.6	27.4	0.2	0.1	27.4	lb	0.2	95.2
Squid	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Unknown marine invertebrates	1.3	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Vegetation	**87.0**	**81.8**	**81.8**	**42.9**	**45.5**	**2,288.9**	**16.3**	**6.0**				**27.0**
Blueberry	75.3	70.1	70.1	24.7	24.7	1,011.8	7.2	2.6	252.9	gal	1.8	25.8
Lowbush cranberry	57.1	51.9	51.9	13.0	18.2	534.9	3.8	1.4	133.7	gal	1.0	32.5
Highbush cranberry	10.4	10.4	10.4	1.3	3.9	150.9	1.1	0.4	37.7	gal	0.3	66.8
Crowberry	7.8	6.5	6.5	2.6	2.6	34.5	0.2	0.1	8.6	gal	0.1	61.8
Elderberry	1.3	1.3	1.3	0.0	0.0	21.8	0.2	0.1	3.6	gal	0.0	133.6
Currants	5.2	5.2	5.2	0.0	1.3	58.2	0.4	0.2	14.5	gal	0.1	77.3
Nagoonberry	5.2	6.5	5.2	0.0	0.0	11.6	0.1	0.0	2.9	gal	0.0	93.3

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Table 2-13.–Page 5 of 5.

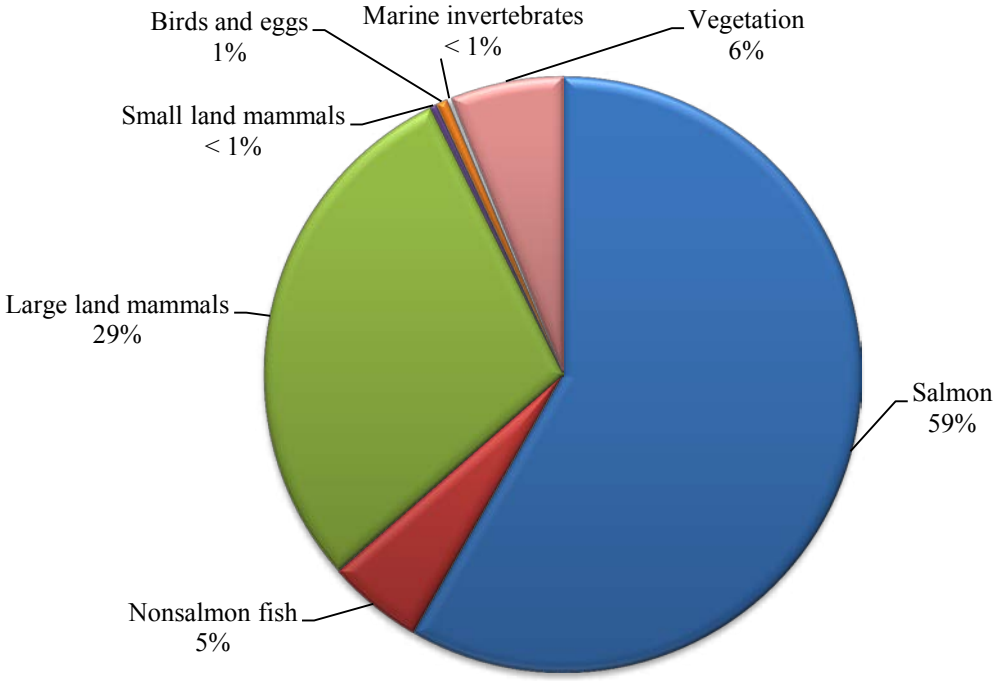
Resource	Percentage of households: Use %	Attempt %	Harvest %	Receive %	Give %	Harvest weight (lb): Total	Mean per household	Per capita	Harvest amount[a]: Total	Unit	Mean per household	95% confidence limit (±)
Vegetation, continued												
Raspberry	26.0	23.4	23.4	6.5	2.6	123.0	0.9	0.3	30.8	gal	0.2	45.0
Salmonberry	5.2	5.2	5.2	2.6	0.0	37.3	0.3	0.1	9.3	gal	0.1	71.8
Strawberry	1.3	1.3	1.3	0.0	0.0	0.9	0.0	0.0	0.2	gal	0.0	133.6
Other wild berry	3.9	2.6	2.6	1.3	1.3	4.5	0.0	0.0	1.1	gal	0.0	109.8
Wild rhubarb	1.3	1.3	1.3	1.3	1.3	36.4	0.3	0.1	36.4	gal	0.3	133.6
Devil's club	1.3	1.3	1.3	0.0	0.0	0.2	0.0	0.0	0.2	gal	0.0	133.6
Hudson's Bay (Labrador) tea	3.9	2.6	2.6	1.3	1.3	2.0	0.0	0.0	2.0	gal	0.0	119.5
Dandelion greens	2.6	2.6	2.6	0.0	1.3	11.1	0.1	0.0	11.1	gal	0.1	130.9
Spruce tips	1.3	1.3	1.3	0.0	0.0	3.6	0.0	0.0	3.6	gal	0.0	133.6
Wild rose hips	14.3	14.3	14.3	0.0	5.2	144.5	1.0	0.4	36.1	gal	0.3	74.0
Yarrow	1.3	1.3	1.3	0.0	0.0	1.8	0.0	0.0	1.8	gal	0.0	133.6
Other wild greens	3.9	3.9	3.9	0.0	2.6	30.1	0.2	0.1	30.1	gal	0.2	103.0
Unknown mushrooms	13.0	11.7	11.7	2.6	5.2	34.3	0.2	0.1	34.3	gal	0.2	61.7
Fireweed	9.1	7.8	7.8	2.6	2.6	31.6	0.2	0.1	31.6	gal	0.2	82.3
Plantain	1.3	1.3	1.3	0.0	0.0	3.6	0.0	0.0	3.6	gal	0.0	133.6
Other wood	61.0	61.0	61.0	11.7	20.8	0.0	0.0	0.0	647.5	cord	4.6	23.7

Source ADF&G Division of Subsistence household surveys, 2013.

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.

a. Summary rows that include incompatible units of measure have been left blank.



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

Figure 2-8.–Composition of harvest by resource category in pounds usable weight, Glennallen, 2013.

River Basin (Figure 2-9). Besides airplanes and boats, motorized vehicles, such as highway vehicles, ATVs, and snowmachines are modes of transportation commonly used by residents.

Nonsalmon freshwater fish are harvested throughout the year near Glennallen and at rivers and streams accessed by local highways and roads. In the spring, residents visit local lakes to ice fish and it is a popular activity on the weekends. Once the ice clears from local lakes and streams residents may target freshwater fish in early May using rod and reel. Many kinds of nonsalmon fish are also harvested during the summer and fall using rod and reel.

For many residents of the Copper River Basin, salmon fishing is the most important activity of the year. Beginning in June, Chinook salmon are the first to arrive in the Copper River watershed, and are followed quickly by sockeye salmon. The majority of community members are actively harvesting salmon species in the Copper River by mid-June and this continues through the coho salmon run lasting into September. Most residents harvest their salmon by fish wheel or dip net. Some residents travel to Valdez for rod and reel fishing for coho salmon and pink salmon later in the season.

Community residents harvest plants, mushrooms, and berries in summer and fall. Blueberries, raspberries, crowberries, and salmonberries begin to ripen in July and are gathered during late summer; likewise highbush and lowbush cranberries are gathered late summer and early fall. Wild mushrooms are harvested throughout the summer into early fall. Harvesting firewood for home heating is an important year-round activity for Glennallen households.

Migratory and upland game birds are harvested at different times throughout the year. Waterfowl are hunted in the spring but are most often harvested in the fall, while upland game birds, such as the different species of ptarmigan and grouse, are locally harvested from early fall through the winter months and are often harvested opportunistically throughout the year while hunting for other resources, such as moose and caribou.

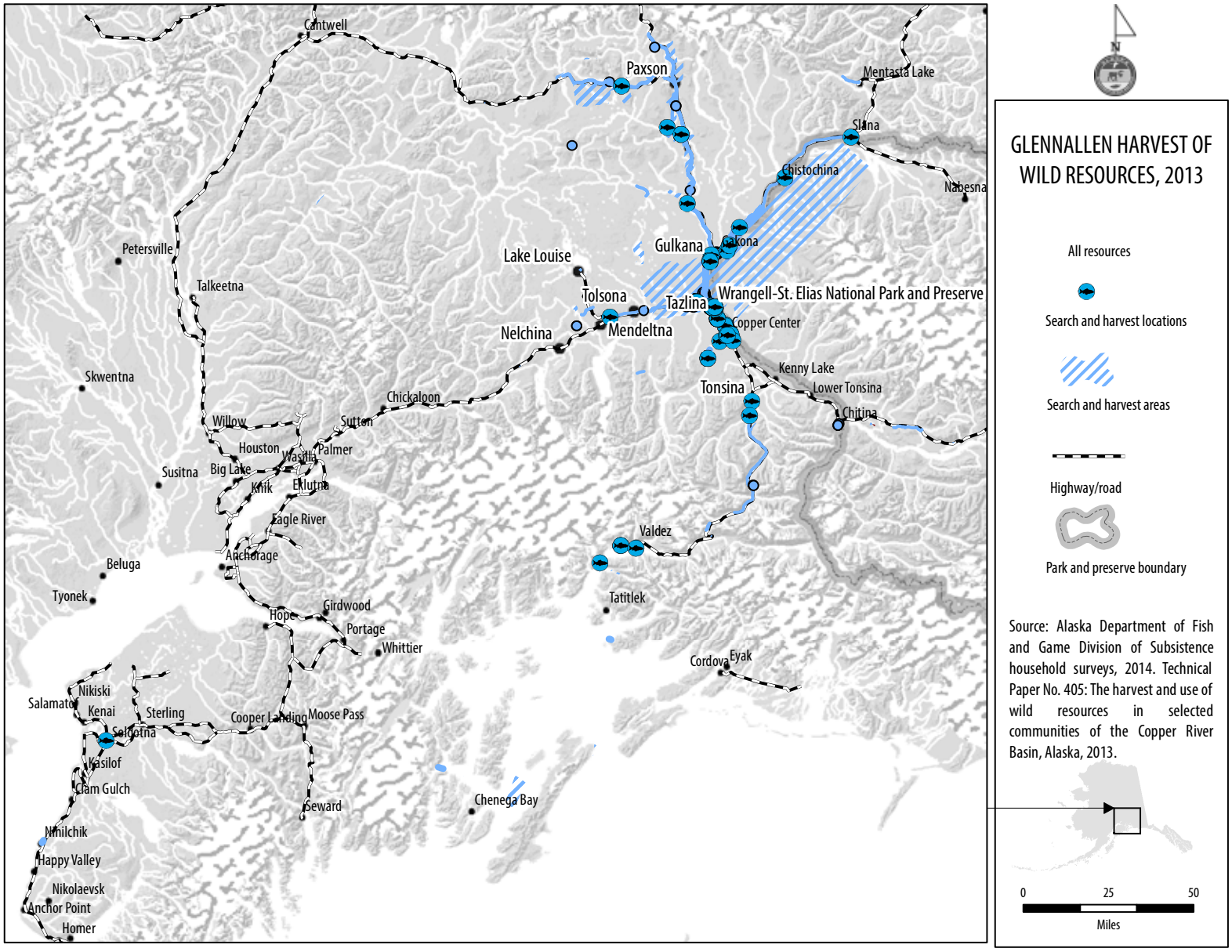


Figure 2-9.–Wild resources search and harvest areas, Glennallen, 2013.

Table 2-14.–Top ranked resources used by households, Glennallen, 2013.

Rank[a]	Resource	Percentage of households using
1.	Sockeye salmon	80.5%
2.	Blueberry	75.3%
3.	Moose	71.4%
4.	Caribou	58.4%
5.	Lowbush cranberry	57.1%
6.	Chinook salmon	42.9%
7.	Pacific halibut	37.7%
8.	Raspberry	26.0%
9.	Arctic grayling	24.7%
10.	Coho salmon	23.4%

Source ADF&G Division of Subsistence household surveys, 2014.
a. Resources used by the same percentage of households share the lowest rank value instead of having sequential rank values.

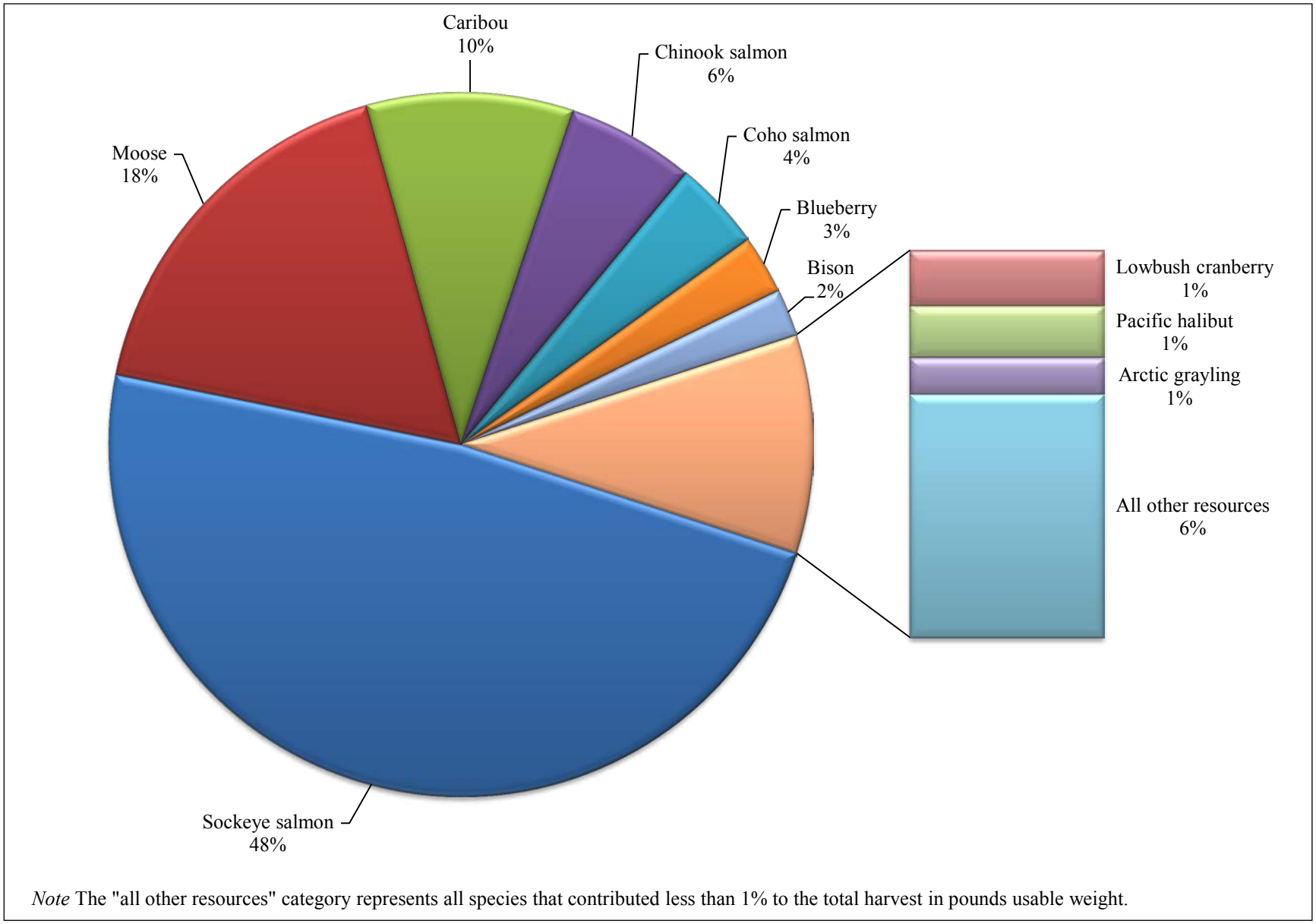
Large land mammal hunting is an important subsistence activity that commences in August. Hunting effort can extend through the late winter depending on the resource and regulations (i.e., caribou). During the study year most of the harvests took place between August and November, peaking in September, and occurred along the Glenn and Richardson highways.

The majority of small land mammals are trapped for their fur during the winter months when snow is on the ground but others are harvested for their meat as well as their fur throughout the year. An average trapping season most commonly extends from November through February depending on the snow conditions and the quality of the fur the trappers are harvesting.

Use and Harvest Characteristics by Resource Category

Table 2-13 presents estimated wild resource harvests and uses by Glennallen households in 2013 and is organized first by general category and then by species. This table also reports the sharing of each resource by percentage of households receiving each resource and the percentage of households giving away each resource. With regard to sharing, large mammals were received by 68% of community households, followed by salmon (64%) and vegetation (43%). In contrast, vegetation was the resource category most given away (46%), with salmon coming in second (44%), and large land mammals being third (35%) (Table 2-13). It is interesting to note that of these 3 categories vegetation made up the least portion of the harvest in pounds usable weight (6% of the total harvest) and yet high levels of both receiving and giving away of vegetation were exhibited by Glennallen households.

Table 2-14 lists the top resources used by Glennallen households and Figure 2-10 depicts the resources with the largest harvests (1% or more of the total harvest composition as estimated in pounds usable weight per person) during the 2013 study year. In terms of total harvest composition, the top ranked resources harvested were sockeye salmon (48%), moose (18%), and caribou (10%). The top ranked resources used were sockeye salmon (81% of households used), blueberries (75%), and moose (71%), with caribou ranking as the fourth most used resource (58% of households). Whereas salmon species and large land mammals provided the bulk of per capita harvests as depicted in Figure 2-10, it is interesting to note that blueberries was ranked as the second most used resource and ranked higher than any large land mammal resource (Table 2-14).



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

Figure 2-10.–Top species harvested by percentage of total harvest in pounds usable weight, Glennallen, 2013.

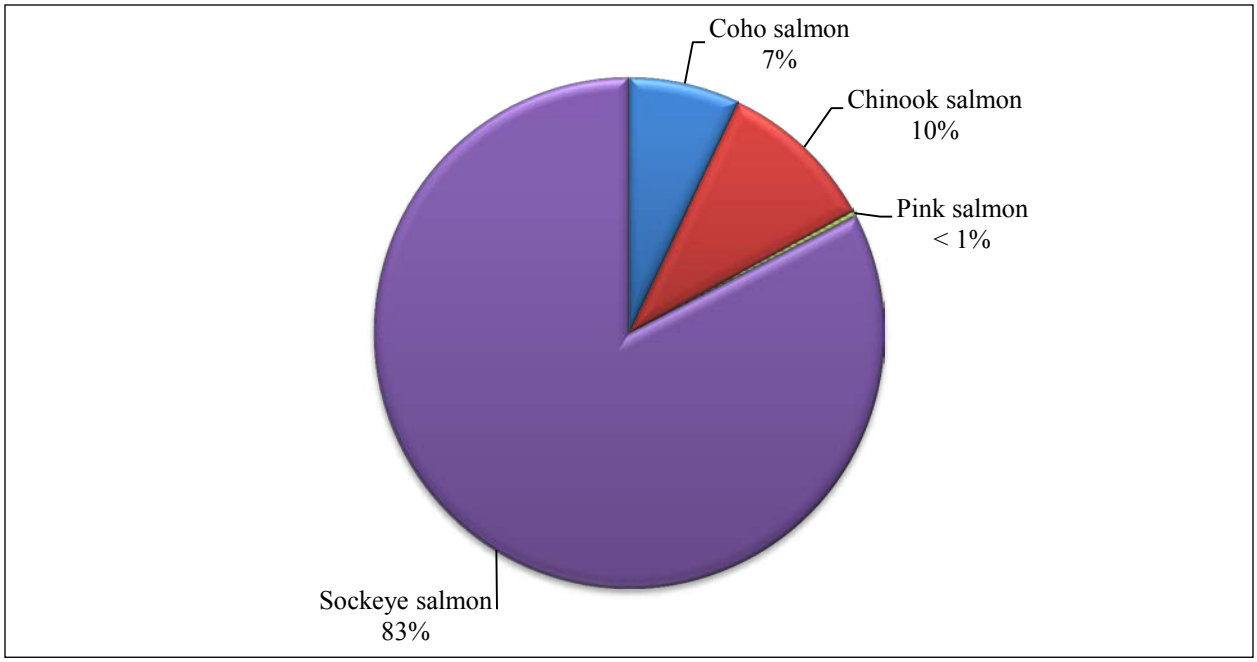


Figure 2-11.–Composition of salmon harvest in pounds usable weight, Glennallen, 2013.

Salmon

The harvest of salmon by Glennallen households, as estimated in usable pounds, was composed of sockeye salmon (83%), Chinook salmon (10%), coho salmon (7%), and pink salmon (less than 1%) (Figure 2-11). The total harvest of salmon in 2013 was 21,858 lb and the per capita harvest of salmon was 57 lb (Table 2-13). Fish wheels operated in the Copper River by Glennallen residents were used to harvest 88% of the salmon harvest in usable weight; sockeye salmon (85% of fish wheel harvest) and Chinook salmon (11% of fish wheel harvest) were the most frequently obtained species with this method (Table 2-15). Residents also used rod and reel gear in the sport fishery to harvest salmon. Coho salmon were mainly harvested by fish wheel (40% of coho salmon harvest weight); however, 38% of the coho salmon harvest was by rod and reel. A much smaller percentage of the sockeye and Chinook salmon harvests were by rod and reel (2% and 4%, respectively). Despite widespread use of salmon in Glennallen (84% of households used salmon), less than one-half of the community harvested salmon (46% of households) (Table 2-13). Many community households received salmon (64%) and gave salmon away (44%), thus accounting for the high use percentage. Sockeye salmon was the most commonly shared type of salmon (43% of households).

Sockeye and Chinook salmon were harvested along the Copper River in the vicinity of Gakona and between Glennallen and Copper Center and also along the Klutina River; additional sockeye salmon fishing occurred in the Kenai River (Figure 2-12). Coho salmon were harvested over a much larger distance from Glennallen to Port Valdez.

Table 2-15.–Estimated percentages of salmon harvested by gear type, resource, and total harvest, Glennallen, 2013.

				Subsistence methods													
		Removed from commercial catch		Gillnet or seine		Fish wheel		Dip net		Other		Subsistence gear, any method		Rod and reel		Any method	
Resource	Percentage base	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
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%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
	Resource	**0.3%**	**0.3%**	**1.0%**	**1.2%**	**88.1%**	**87.9%**	**3.7%**	**3.4%**	**0.4%**	**0.5%**	**93.3%**	**93.1%**	**6.4%**	**6.6%**	**100.0%**	**100.0%**
	Total	**0.3%**	**0.3%**	**1.0%**	**1.2%**	**88.1%**	**87.9%**	**3.7%**	**3.4%**	**0.4%**	**0.5%**	**93.3%**	**93.1%**	**6.4%**	**6.6%**	**100.0%**	**100.0%**
Chum 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%	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%	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%	0.0%	0.0%	0.0%	0.0%	0.0%
Coho salmon	Gear type	0.0%	0.0%	80.0%	84.4%	2.6%	3.2%	0.0%	0.0%	100.0%	100.0%	3.8%	4.7%	33.3%	40.0%	5.6%	7.0%
	Resource	0.0%	0.0%	14.7%	14.7%	40.4%	40.4%	0.0%	0.0%	7.4%	7.4%	62.5%	62.5%	37.5%	37.5%	100.0%	100.0%
	Total	0.0%	0.0%	0.8%	1.0%	2.3%	2.8%	0.0%	0.0%	0.4%	0.5%	3.5%	4.4%	2.1%	2.6%	5.6%	7.0%
Chinook salmon	Gear type	0.0%	0.0%	0.0%	0.0%	4.1%	11.2%	0.0%	0.0%	0.0%	0.0%	3.8%	10.6%	1.3%	3.5%	3.7%	10.1%
	Resource	0.0%	0.0%	0.0%	0.0%	97.7%	97.7%	0.0%	0.0%	0.0%	0.0%	97.7%	97.7%	2.3%	2.3%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	3.6%	9.8%	0.0%	0.0%	0.0%	0.0%	3.6%	9.8%	0.1%	0.2%	3.7%	10.1%
Pink salmon	Gear type	0.0%	0.0%	0.0%	0.0%	0.7%	0.3%	0.0%	0.0%	0.0%	0.0%	0.7%	0.3%	2.6%	1.1%	0.8%	0.3%
	Resource	0.0%	0.0%	0.0%	0.0%	78.9%	78.9%	0.0%	0.0%	0.0%	0.0%	78.9%	78.9%	21.1%	21.1%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.6%	0.3%	0.0%	0.0%	0.0%	0.0%	0.6%	0.3%	0.2%	0.1%	0.8%	0.3%
Sockeye salmon	Gear type	100.0%	100.0%	20.0%	15.6%	92.6%	85.3%	100.0%	100.0%	0.0%	0.0%	91.7%	84.4%	62.7%	55.5%	89.9%	82.6%
	Resource	0.4%	0.4%	0.2%	0.2%	90.8%	90.8%	4.2%	4.2%	0.0%	0.0%	95.2%	95.2%	4.4%	4.4%	100.0%	100.0%
	Total	0.3%	0.3%	0.2%	0.2%	81.6%	75.0%	3.7%	3.4%	0.0%	0.0%	85.6%	78.6%	4.0%	3.7%	89.9%	82.6%
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%	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%	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%	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%	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%	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%	0.0%	0.0%	0.0%	0.0%	0.0%

Source ADF&G Division of Subsistence household surveys, 2014.

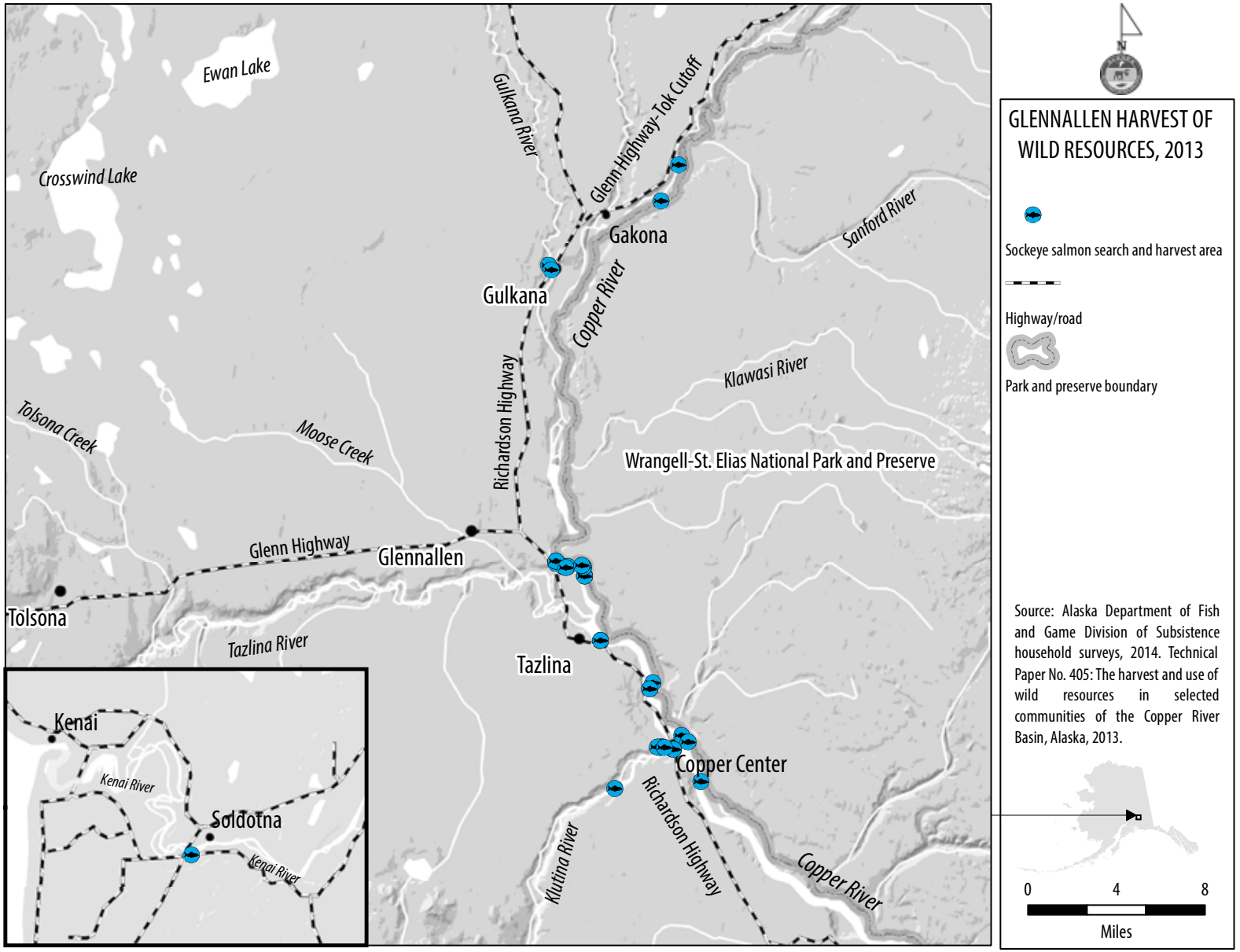


Figure 2-12.–Fishing and harvest locations of sockeye salmon, Glennallen, 2013.

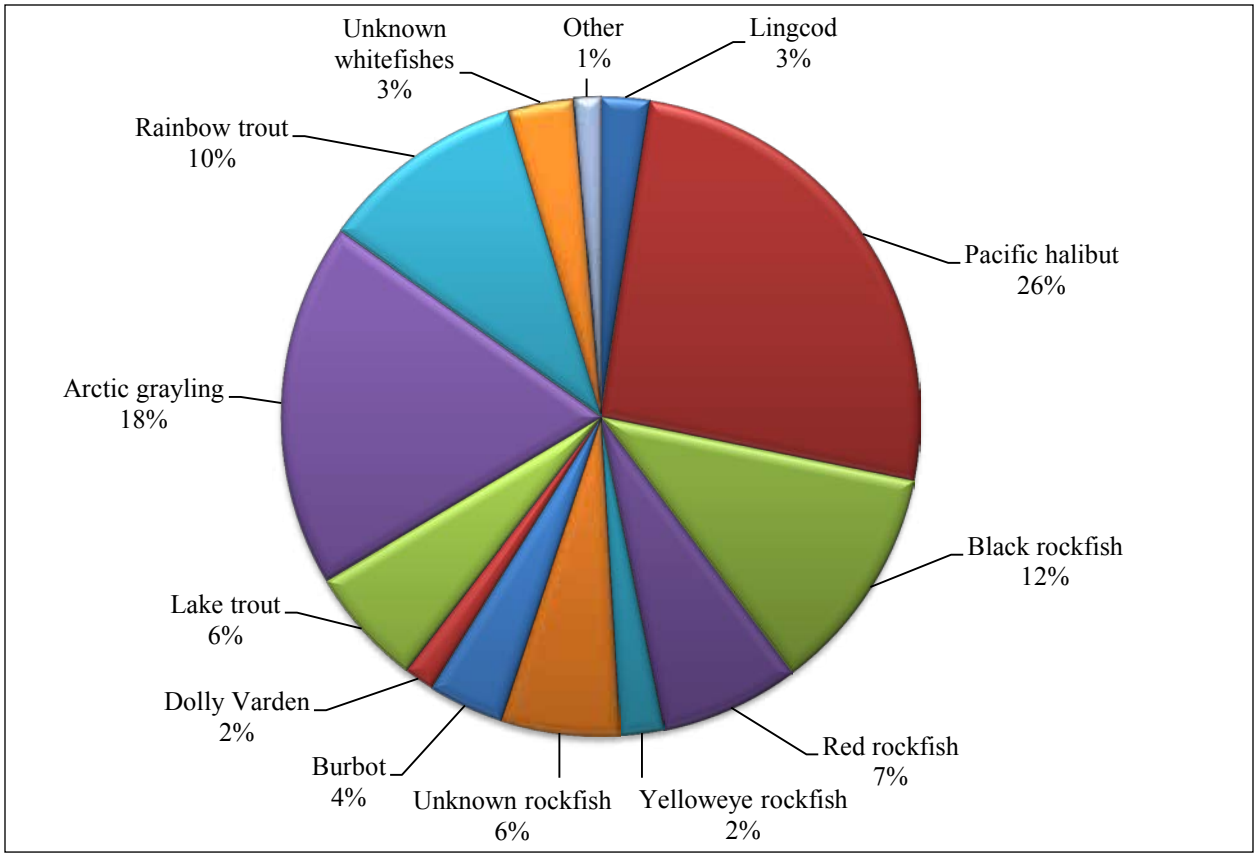


Figure 2-13.–Composition of nonsalmon fish harvest in pounds usable weight, Glennallen, 2013.

Nonsalmon Fish

A variety of saltwater and freshwater nonsalmon fish species were harvested: Pacific halibut (26% of nonsalmon fish harvest), Arctic grayling (18%), and black rockfish (12%) were the most heavily harvested in pounds usable weight (Figure 2-13). Glennallen residents harvested a total of 1,936 lb of nonsalmon fish in 2013 (Table 2-13). The nonsalmon fish harvest is equal to 5 lb per capita, which is less than 10% of the contribution of salmon to the community-wide harvest. Virtually all nonsalmon fish (88% of the harvest weight) were harvested by rod and reel (Table 2-16). However, 100% of the burbot harvest and 42% of the rainbow trout harvest were obtained by ice fishing. Pacific halibut was the most widely received nonsalmon fish with 29% of Glennallen households receiving halibut (Table 2-13).

Saltwater nonsalmon fish were harvested in Prince William Sound. Arctic grayling were harvested in rivers, streams, and lakes along the highway system from Paxson in the north, Slana in the east, and in the direct vicinity of Glennallen (Figure 2-14).

Table 2-16.–Estimated percentages of nonsalmon fish harvested by gear type, resource, and total nonsalmon fish harvest, Glennallen, 2013.

				Subsistence methods											
		Removed from commercial catch		Gillnet or seine		Ice fish		Other		Subsistence gear, any method		Rod and reel		Any method	
Resource	Percentage base	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Nonsalmon fish	**Gear type**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
	Resource	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**5.8%**	**8.4%**	**3.4%**	**3.9%**	**9.3%**	**12.3%**	**90.7%**	**87.7%**	**100.0%**	**100.0%**
	Total	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**5.8%**	**8.4%**	**3.4%**	**3.9%**	**9.3%**	**12.3%**	**90.7%**	**87.7%**	**100.0%**	**100.0%**
Pacific herring	Gear type	0.0%	0.0%	0.0%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	0.0%	0.0%	0.0%
Pacific tomcod	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	0.3%	0.7%	0.3%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	0.7%	0.3%	0.7%	0.3%
Unknown cod	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Starry flounder	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Lingcod	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.4%	2.8%	1.3%	2.5%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	1.3%	2.5%	1.3%	2.5%
Pacific halibut	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	34.5%	29.3%	31.3%	25.7%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	31.3%	25.7%	31.3%	25.7%
Arctic lamprey	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Black rockfish	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	10.3%	13.2%	9.4%	11.6%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	9.4%	11.6%	9.4%	11.6%

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Resource	Percentage base	Removed from commercial catch		Subsistence methods											
				Gillnet or seine		Ice fish		Other		Subsistence gear, any method		Rod and reel		Any method	
		Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Red rockfish	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.4%	8.0%	2.1%	7.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	2.1%	7.0%	2.1%	7.0%
Yelloweye rockfish	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.1%	2.5%	1.0%	2.2%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	1.0%	2.2%	1.0%	2.2%
Copper rockfish	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.8%	0.6%	0.7%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	0.6%	0.7%	0.6%	0.7%
Unknown rockfish	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.0%	6.9%	1.8%	6.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	1.8%	6.0%	1.8%	6.0%
Sablefish (black cod)	Gear type	0.0%	0.0%	0.0%	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%	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%	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%	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%	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%	0.0%	0.0%	0.0%
Burbot	Gear type	0.0%	0.0%	0.0%	0.0%	33.3%	45.8%	0.0%	0.0%	21.0%	31.1%	0.0%	0.0%	1.9%	3.8%
	Resource	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	1.9%	3.8%	0.0%	0.0%	1.9%	3.8%	0.0%	0.0%	1.9%	3.8%
Arctic char	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	0.4%	0.7%	0.4%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	0.7%	0.4%	0.7%	0.4%
Dolly Varden	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.3%	1.8%	2.1%	1.5%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	2.1%	1.5%	2.1%	1.5%
Lake trout	Gear type	0.0%	0.0%	0.0%	0.0%	2.0%	2.2%	0.0%	0.0%	1.2%	1.5%	3.9%	6.6%	3.7%	6.0%
	Resource	0.0%	0.0%	0.0%	0.0%	3.1%	3.1%	0.0%	0.0%	3.1%	3.1%	96.9%	96.9%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.1%	0.2%	0.0%	0.0%	0.1%	0.2%	3.5%	5.8%	3.7%	6.0%
Arctic grayling	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	33.3%	16.7%	12.3%	5.3%	34.1%	20.3%	32.1%	18.4%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.6%	3.6%	3.6%	3.6%	96.4%	96.4%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.1%	0.7%	1.1%	0.7%	30.9%	17.8%	32.1%	18.4%
Northern pike	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Sheefish	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%

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Resource	Percentage base	Removed from commercial catch		Subsistence methods											
				Gillnet or seine		Ice fish		Other		Subsistence gear, any method		Rod and reel		Any method	
		Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Longnose sucker	Gear type	0.0%	0.0%	0.0%	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%	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%	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%	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%	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%	0.0%	0.0%	0.0%
Rainbow trout	Gear type	0.0%	0.0%	0.0%	0.0%	64.7%	51.9%	0.0%	0.0%	40.7%	35.3%	5.9%	7.0%	9.1%	10.5%
	Resource	0.0%	0.0%	0.0%	0.0%	41.5%	41.5%	0.0%	0.0%	41.5%	41.5%	58.5%	58.5%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	3.8%	4.3%	0.0%	0.0%	3.8%	4.3%	5.3%	6.1%	9.1%	10.5%
Unknown trout	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Broad whitefish	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Least cisco	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Humpback whitefish	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Round whitefish	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Unknown whitefishes	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	66.7%	83.3%	24.7%	26.7%	0.0%	0.0%	2.3%	3.3%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.3%	3.3%	2.3%	3.3%	0.0%	0.0%	2.3%	3.3%

Source ADF&G Division of Subsistence household surveys, 2014.

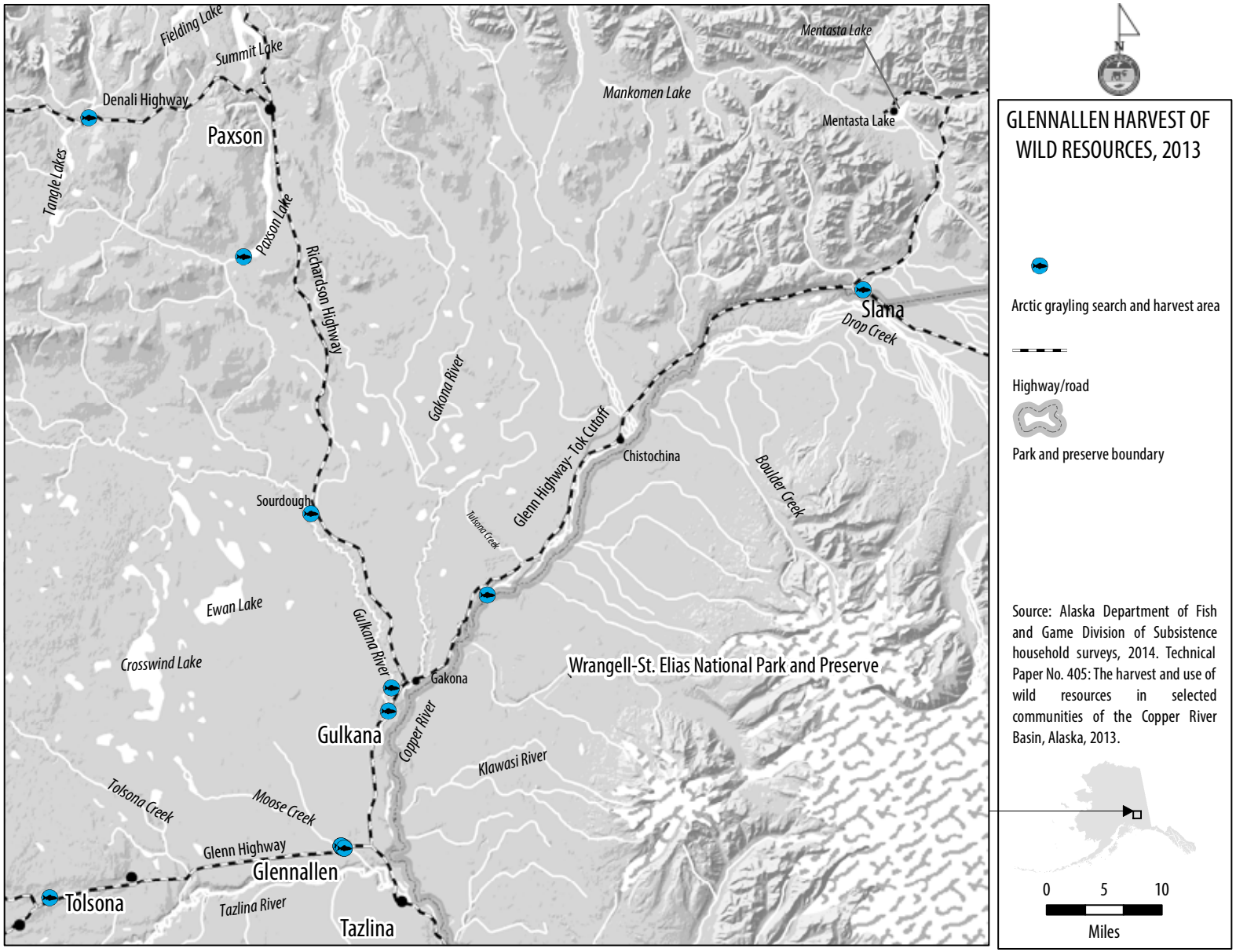

Figure 2-14.–Fishing and harvest locations of Arctic grayling, Glennallen, 2013.

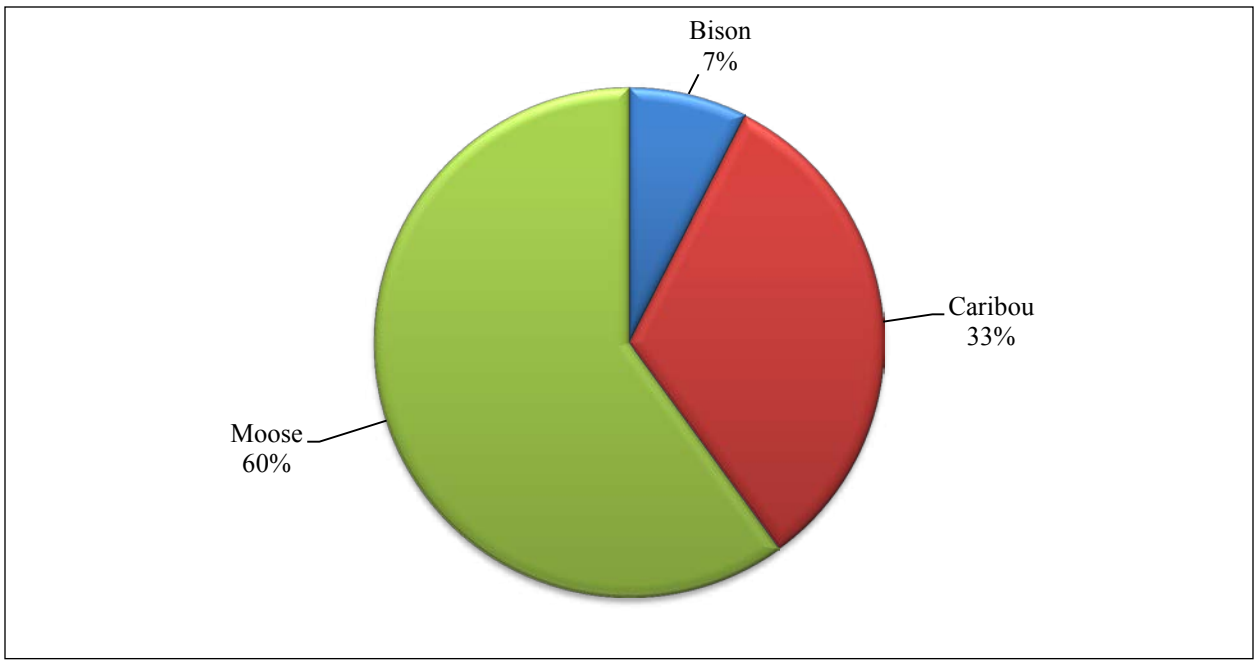

Figure 2-15.–Composition of large land mammal harvest in pounds usable weight, Glennallen, 2013.

Large Land Mammals

Moose (60%), caribou (33%), and bison (7%) characterized the harvest of large land mammals by Glennallen households in 2013 (Figure 2-15). A total of 10,909 lb of large land mammals (usable harvest weight) were harvested with the highest proportion derived from moose (6,546 lb, or 17 lb per capita) (Table 2-13). Because they are smaller than moose, caribou contributed just 3,546 lb to the harvest of large land mammals despite the higher number of individual caribou harvested (27 caribou compared to 15 moose). It is estimated 2 bison were harvested by Glennallen residents. Glennallen is located near 3 of Alaska's bison herds. Bison hunting is extremely popular; more than 15,000 hunters from across Alaska and the rest of the United States, as well as other countries, apply for approximately 100 permits.[3] Consequently, the chances of obtaining a bison permit are relatively small. The bison were harvested in February and moose were harvested in August and September (Table 2-17). The harvest of caribou occurred over a longer period, between September and March.

In general, moose was more commonly used by Glennallen households (71%) and shared (56% receiving and 23% giving away) in comparison to other large mammals (Table 2-13). By a slight margin, however, caribou was harvested by more households of the community (13% compared to 10% of households harvesting moose). Caribou was also widely shared in the community with 39% of households receiving and 20% of households giving away the resource.

Glennallen households often hunted for moose and caribou on the highway system along the Glenn, Richardson, and Denali highways and Glenn Highway–Tok Cutoff (Figure 2-16). Significant search areas for moose are located east of Glenn Highway–Tok Cutoff; these areas were reached by air and using ATVs. Both moose and caribou were hunted off the Denali Highway near Tangle Lakes. Bison were hunted on the east side of the Copper River in the vicinity of Copper Center.

3. Alaska Department of Fish and Game, "Bison Hunting in Alaska: Life History," http://www.adfg.alaska.gov/index.cfm?adfg=bisonhunting.main (accessed September 2014).

Table 2-17.–Estimated large land mammal harvests by month and sex, Glennallen, 2013.

Resource	Estimated harvest by month													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk	**Total**
All large land mammals	**0.0**	**1.8**	**3.6**	**0.0**	**0.0**	**0.0**	**0.0**	**3.6**	**23.6**	**5.5**	**5.5**	**0.0**	**0.0**	**43.6**
Bison	0.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**1.8**
Black bear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Brown bear	0.0	0.0	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	0.0	0.0	3.6	0.0	0.0	0.0	0.0	0.0	12.7	5.5	5.5	0.0	0.0	**27.3**
Caribou, male	0.0	0.0	3.6	0.0	0.0	0.0	0.0	0.0	10.9	5.5	3.6	0.0	0.0	**23.6**
Caribou, female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	1.8	0.0	0.0	**3.6**
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	3.6	10.9	0.0	0.0	0.0	0.0	**14.5**
Moose, bull	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	10.9	0.0	0.0	0.0	0.0	**14.5**
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**
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, 2014.

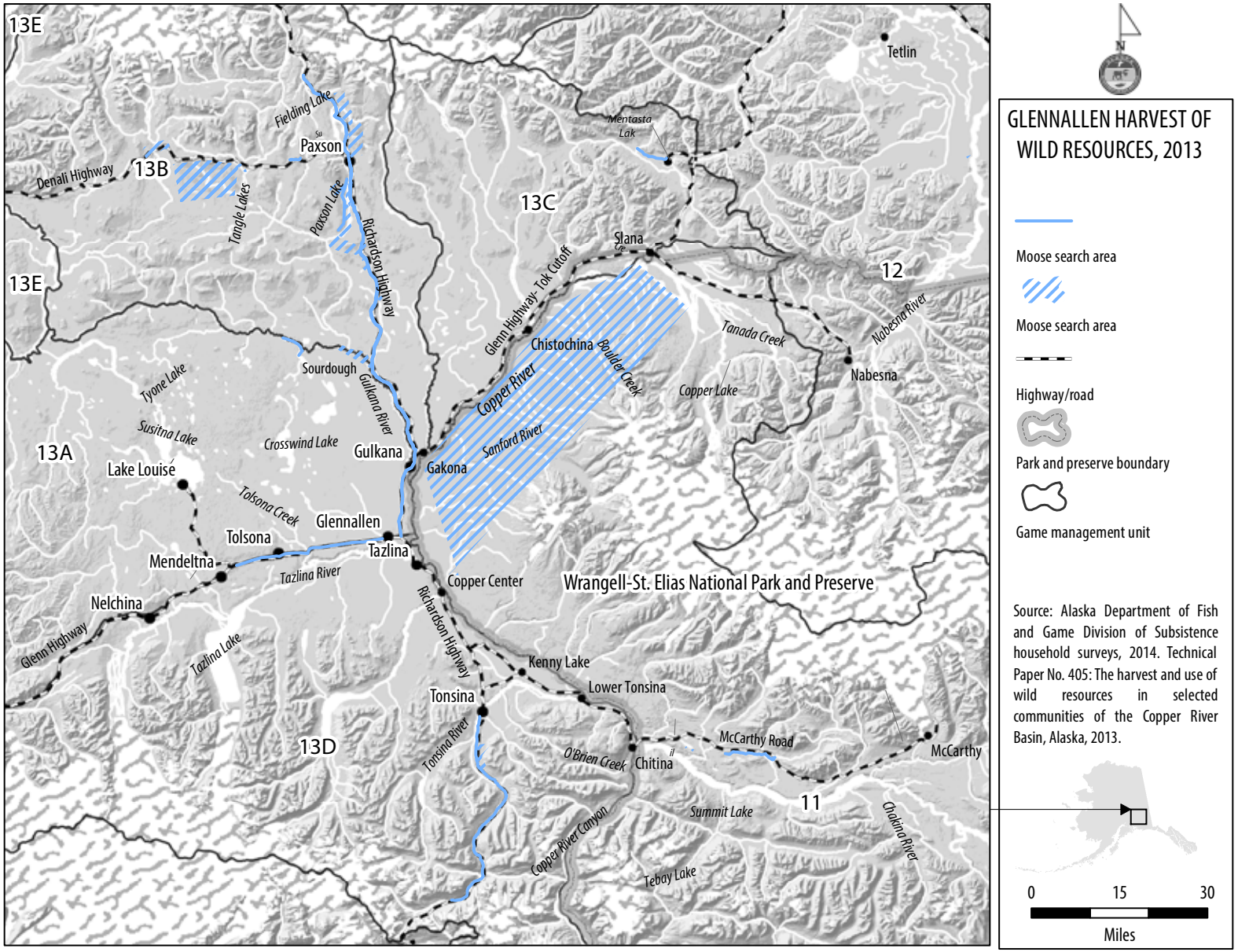

Figure 2-16.–Hunting locations of moose, Glennallen, 2013.

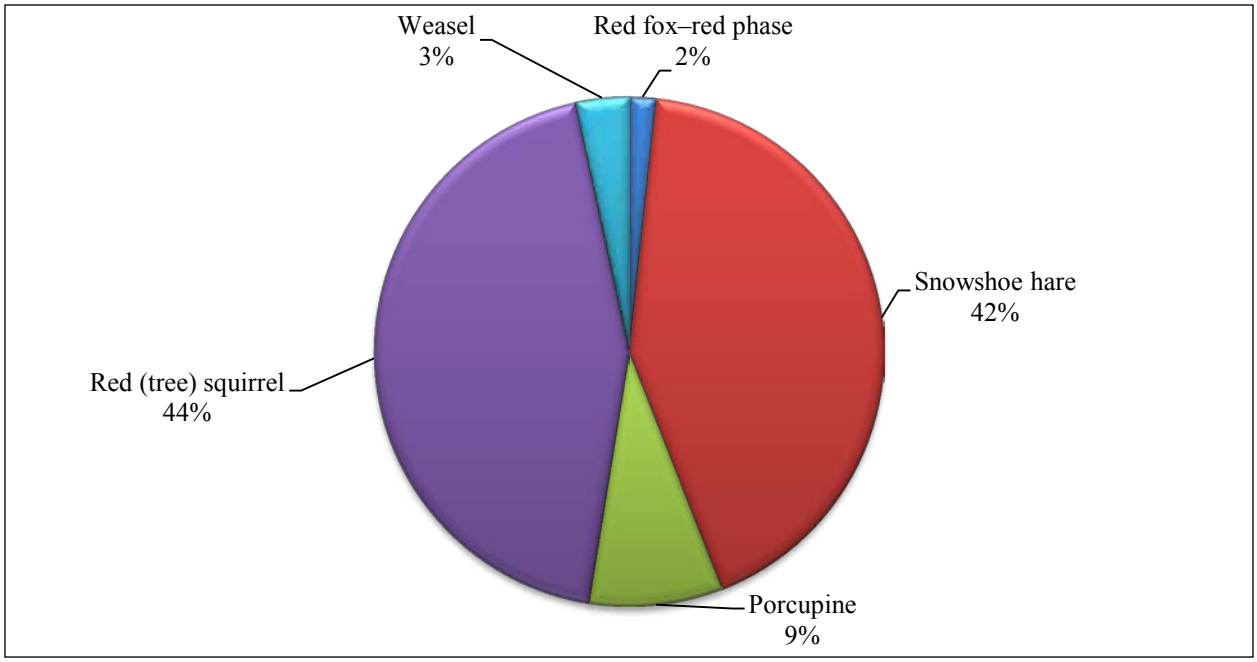

Figure 2-17.–Composition of small land mammal/furbearer harvest by individual animals harvested, Glennallen, 2013.

Small Land Mammals/Furbearers

The harvest of small mammals by Glennallen households, as estimated in numbers of animals, was characterized by red (tree) squirrels (44%), snowshoe hares (42%), porcupines (9%), weasels (3%), and red foxes (2%) (Figure 2-17). Only snowshoe hares and porcupines were consumed by Glennallen residents, and combined contributed less than 1 lb per capita (Figure 2-18; Table 2-13); however, a significant number of red squirrels were harvested for their fur (Figure 2-18). Small land mammal harvests occurred between May and August (Table 2-18). Small mammals were not widely given away or received; less than 5% of community households shared these resources. Small land mammals were hunted or trapped in the vicinity of Glennallen (Figure 2-19).

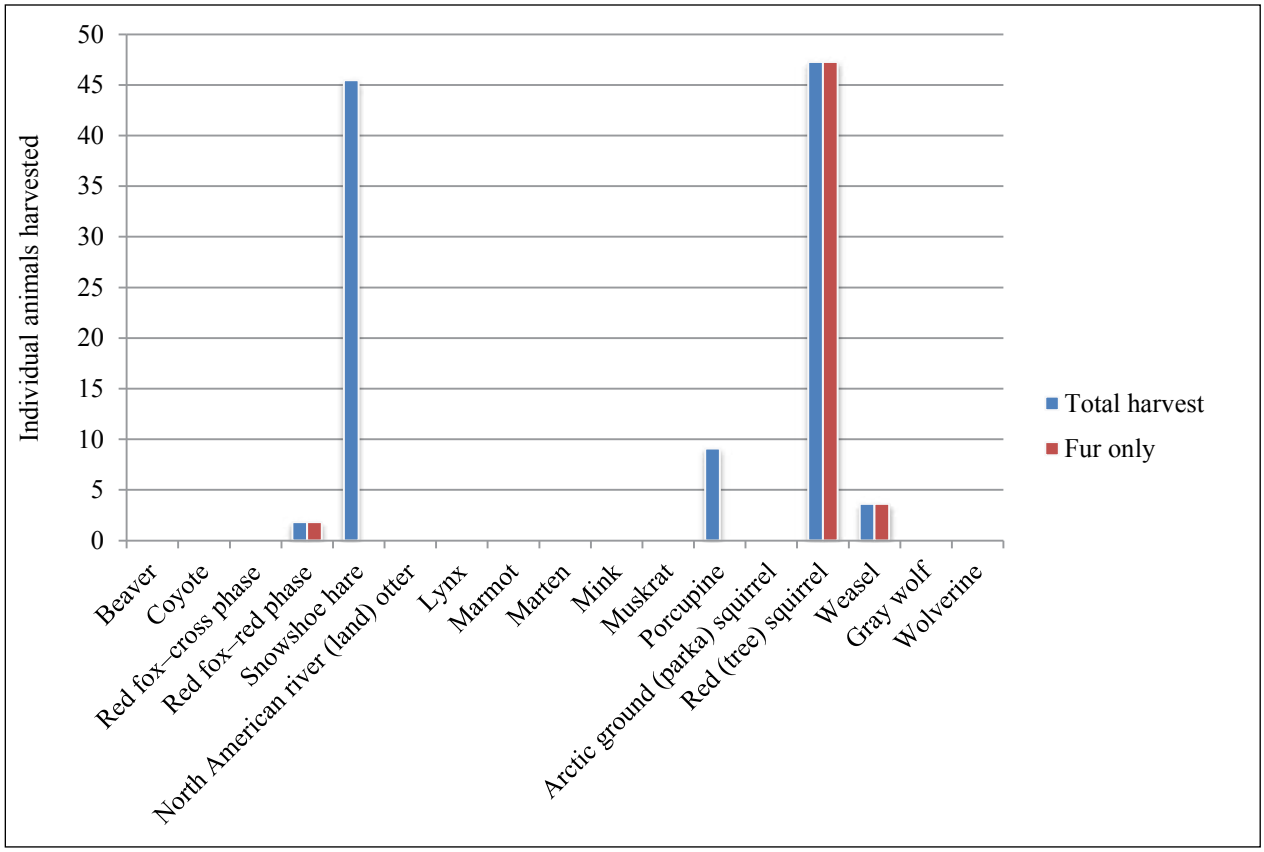

Figure 2-18.–Estimated small land mammal/furbearer harvests for fur and food only, Glennallen, 2013.

Table 2-18.–Estimated small land mammal/furbearer harvests by month, Glennallen, 2013.

Resource	Estimated harvest by month													Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk	
All small land mammals	**0.0**	**0.0**	**0.0**	**0.0**	**1.8**	**29.1**	**10.9**	**3.6**	**0.0**	**0.0**	**0.0**	**0.0**	**61.8**	**107.3**
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–cross phase	0.0	0.0	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–red phase	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	**1.8**
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	45.5	**45.5**
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**
Marmot	0.0	0.0	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	1.8	1.8	1.8	3.6	0.0	0.0	0.0	0.0	0.0	**9.1**
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	27.3	9.1	0.0	0.0	0.0	0.0	0.0	10.9	**47.3**
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	3.6	**3.6**
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, 2014.

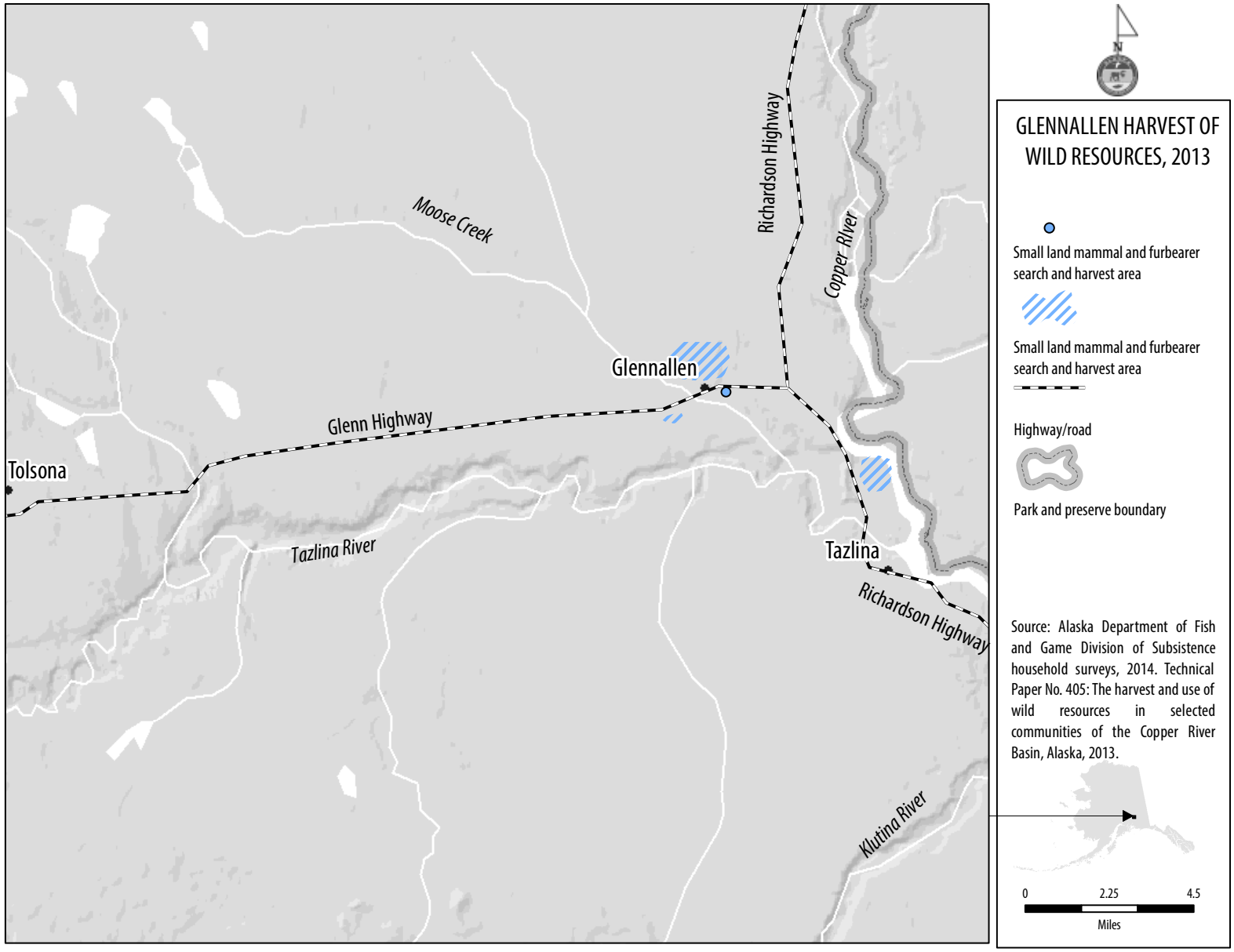

Figure 2-19.–Hunting and trapping locations of small land mammals/furbearers, Glennallen, 2013.

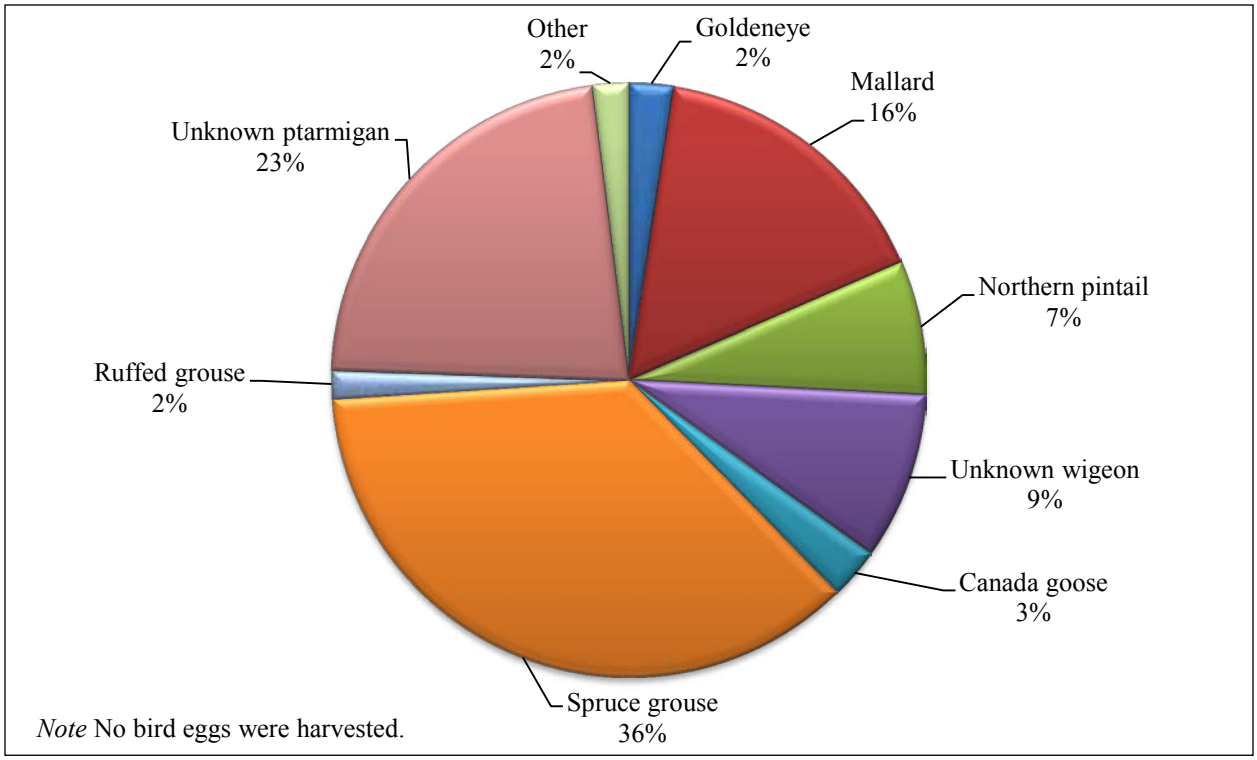

Figure 2-20.–Composition of bird and bird egg harvest in pounds usable weight, Glennallen, 2013.

Birds and Eggs

The harvest of birds composed 238 lb of Glennallen's 2013 harvest (Table 2-13). Upland game birds were the most common birds harvested by Glennallen residents with spruce grouse making up 36% of the bird harvest by weight and unknown ptarmigan composing 23% (Figure 2-20). A variety of migratory waterfowl were also harvested in 2013: mallards (16% of bird harvest), unknown wigeons (9%), and northern pintails (7%) were harvested, as well as others in lesser quantities. No birds were harvested in the summer (Table 2-19). Most birds were harvested in the fall and this included ducks and upland game birds. Birds were rarely shared within the community and no bird eggs were harvested (Table 2-13). Upland game birds were mostly harvested along the Richardson and Denali highways and migratory waterfowl were generally harvested on the Richardson Highway and Glenn Highway–Tok Cutoff (Figure 2-21).

Marine Mammals

No Glennallen households participated in marine mammal hunting in 2013. A few households (1%) received gifts of "unknown seal" (likely seal oil) and bowhead whale.

Table 2-19.–Estimated bird and bird egg harvests by season, Glennallen, 2013.

Resource	Estimated harvest by season					
	Winter	Spring	Summer	Fall	Season unknown	**Total**
All birds	**61.8**	**34.5**	**0.0**	**223.6**	**0.0**	**320.0**
Canvasback	0.0	0.0	0.0	0.0	0.0	**0.0**
Spectacled eider	0.0	0.0	0.0	0.0	0.0	**0.0**
Goldeneye	0.0	7.3	0.0	0.0	0.0	**7.3**
Mallard	0.0	7.3	0.0	30.9	0.0	**38.2**
Northern pintail	0.0	0.0	0.0	21.8	0.0	**21.8**
Black scoter	0.0	0.0	0.0	0.0	0.0	**0.0**
Green-winged teal	0.0	0.0	0.0	7.3	0.0	**7.3**
Unknown wigeon	0.0	0.0	0.0	30.9	0.0	**30.9**
Unknown ducks	0.0	3.6	0.0	0.0	0.0	**3.6**
Brant	0.0	0.0	0.0	0.0	0.0	**0.0**
Cackling goose	0.0	0.0	0.0	0.0	0.0	**0.0**
Canada goose	0.0	5.5	0.0	0.0	0.0	**5.5**
Unknown Canada/cackling geese	0.0	0.0	0.0	0.0	0.0	**0.0**
Emperor goose	0.0	0.0	0.0	0.0	0.0	**0.0**
Snow goose	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**
Tundra (whistling) swan	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**
Spruce grouse	12.7	10.9	0.0	100.0	0.0	**123.6**
Ruffed grouse	0.0	0.0	0.0	5.5	0.0	**5.5**
Unknown ptarmigan	49.1	0.0	0.0	27.3	0.0	**76.4**
Unknown duck eggs	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown goose eggs	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown gull eggs	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown eggs	0.0	0.0	0.0	0.0	0.0	**0.0**

Source ADF&G Division of Subsistence household surveys, 2014.

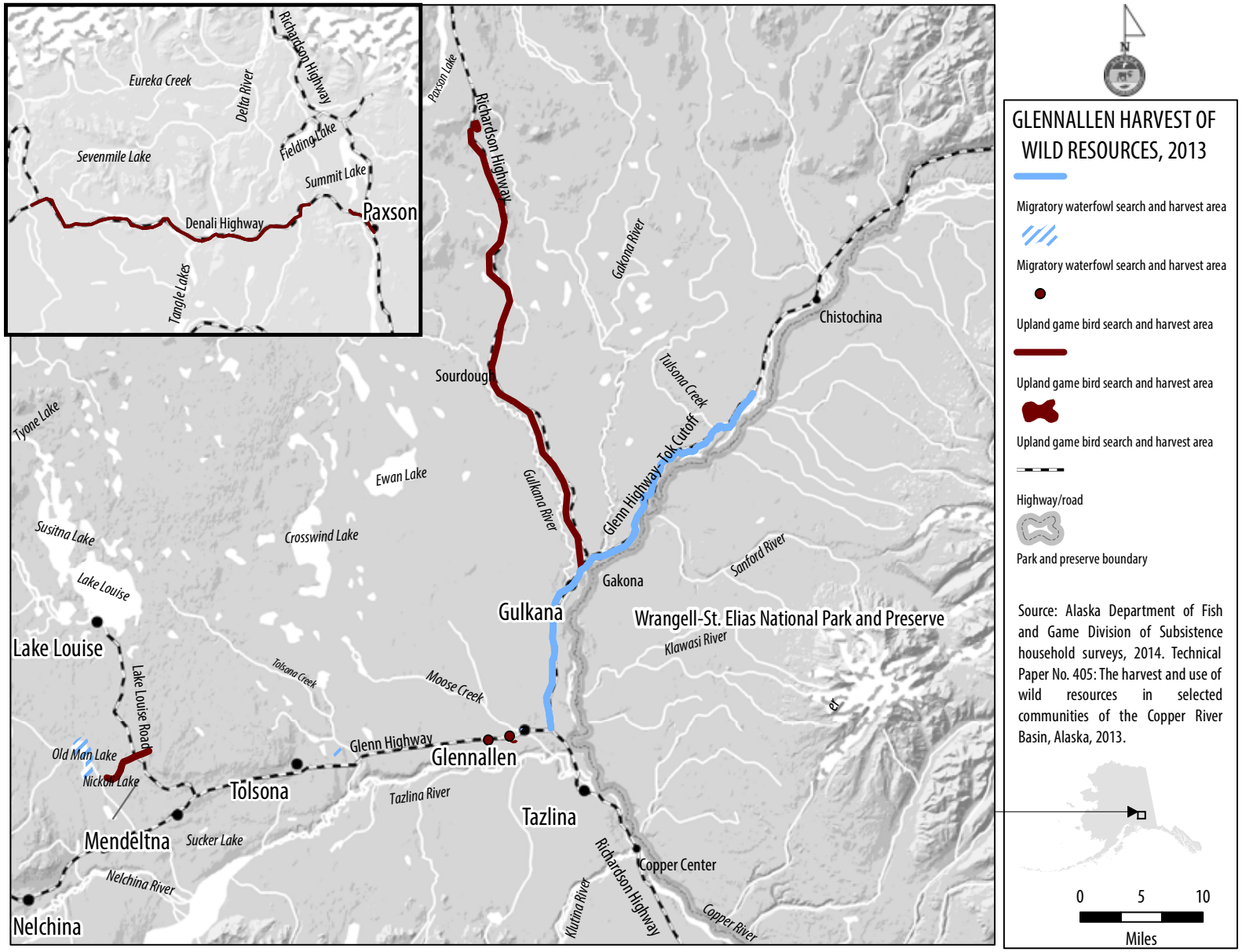

Figure 2-21.–Hunting and harvest locations of migratory waterfowl and upland game birds, Glennallen, 2013.

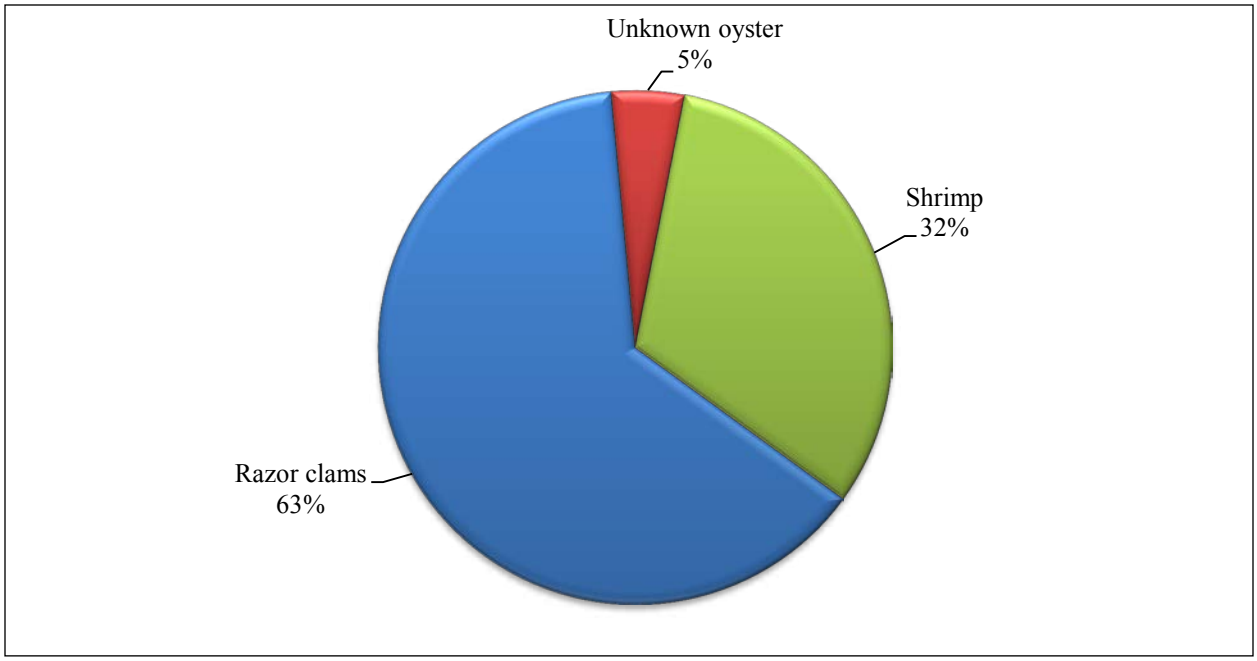

Figure 2-22.–Composition of marine invertebrates harvest in pounds usable weight, Glennallen, 2013.

Marine Invertebrates

Marine invertebrates are not available in the Copper River Basin. The harvest of marine invertebrates by Glennallen residents in 2013 was characterized by razor clams (63%), shrimp (32%), and unknown oysters (5%) (Figure 2-22). Overall, the harvest of marine invertebrates contributed less than 1 lb per capita, or a community total of 86 lb (Table 2-13). Marine invertebrates were not widely shared (8% of households received marine invertebrate resources). Chitons and other unknown marine invertebrates were received and used by 1% of Glennallen households. Marine invertebrates were harvested in Port Valdez, Jack Bay, Prince William Sound, and Ninilchik (Figure 2-23).

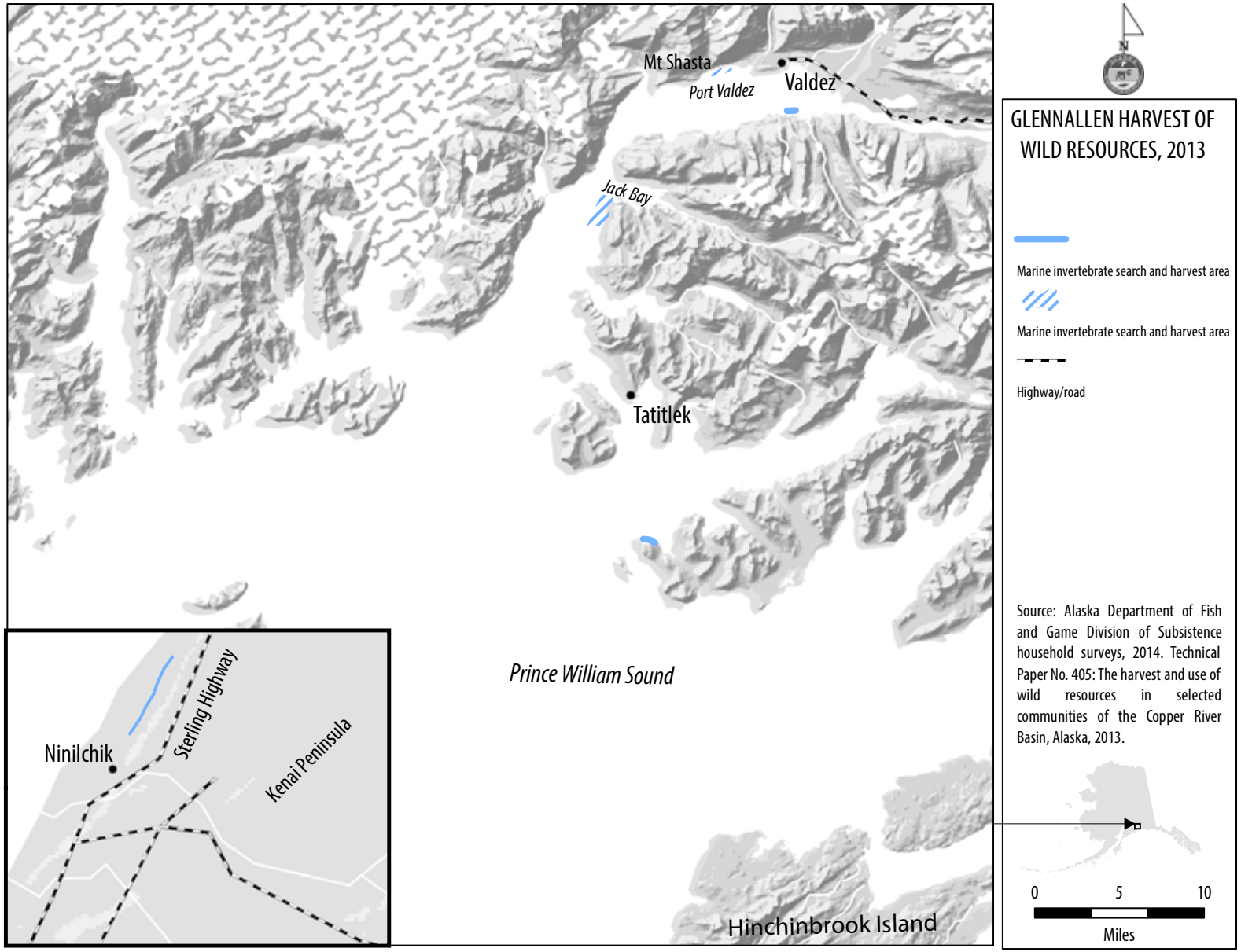

Figure 2-23.–Fishing and harvest locations of marine invertebrates, Glennallen, 2013.

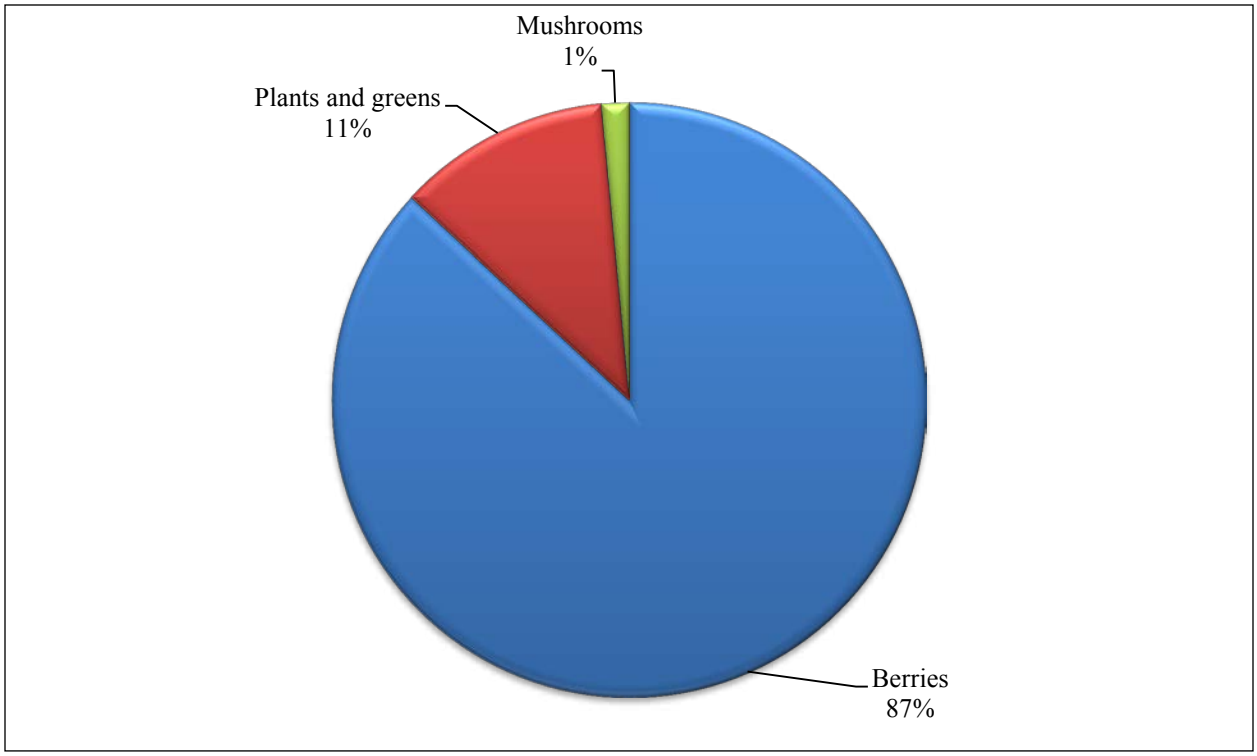

Figure 2-24.–Composition of vegetation harvest by type and pounds usable weight, Glennallen, 2013.

Vegetation

Glennallen's harvest of vegetation was composed of berries (87%), plants and greens (11%), and mushrooms (1%) (Figure 2-24). Vegetation accounted for 6 lb per capita, or 2,289 lb of the total harvest for Glennallen in 2013 (Table 2-13). Almost one-half of the total harvest was from blueberries with 1,012 lb collected. Many other types of berries were harvested including, but not limited to, lowbush cranberries, highbush cranberries, raspberries, currants, salmonberries, and crowberries; with the exception of lowbush cranberries, which had a per capita harvest of 1 lb, harvests of all of these other berries were less than 1 lb per capita. Blueberries were the most widely shared vegetation resource with 25% of Glennallen households giving away and receiving blueberries.

Other non-berry vegetation harvested included wild rose hips (14% of households harvested), mushrooms (12%), and fireweed (8%), but these resources were not widely shared (5% or fewer households receiving or giving away). Many households used and harvested wood (61%). Community members shared wood with 21% of households giving away wood and 12% of households receiving it (Table 2-13).

Berries were harvested near Glennallen and west as far as Lake Louise Road and Mendeltna and as far south as Chitina (Figure 2-25). To the north, berries were mostly harvested along the Richardson and Denali highways with some penetration into neighboring backcountry. Plants were harvested mostly around Glennallen with some harvests occurring in Gakona. Wood was harvested on large tracts of land in and surrounding Glennallen.

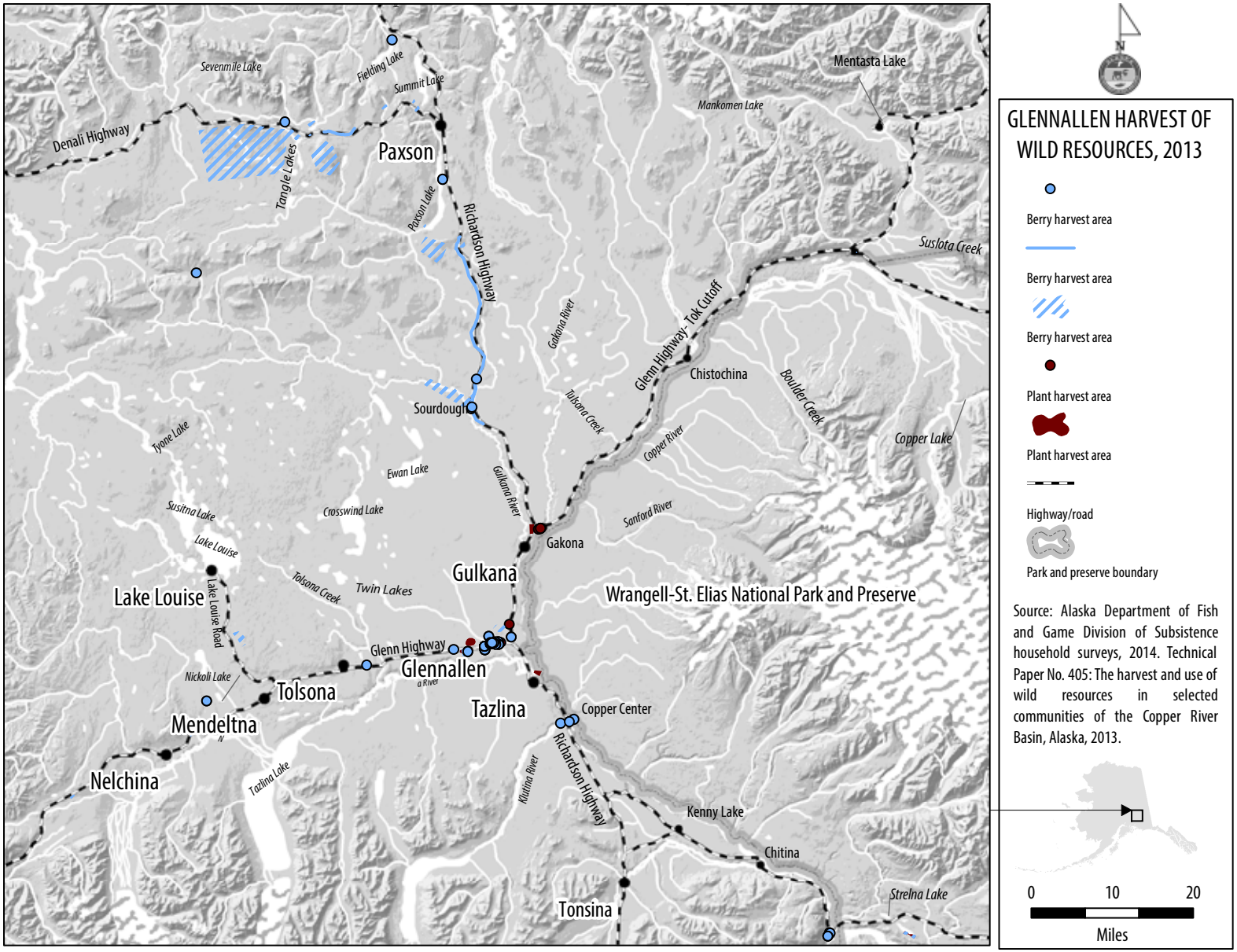

Figure 2-25.–Gathering and harvest locations of berries and plants, greens, and mushrooms, Glennallen, 2013.

Comparing Harvests and Uses in 2013 with Previous Years

Harvest Assessments

For 10 resource categories and for all resources combined, survey respondents were asked to assess whether their uses and harvests in the 2013 study year were less, more, or about the same as other recent years. "Other recent years" was defined as about the last 5 years. Table 2-20 reports the number of valid responses for each category, the number of households that did not respond, and the number of households that did not use a resource category or all resources combined. In Table 2-20, response percentages are based on the number of valid responses for each category to contextualize these assessments within the set of community households that typically use each category.

Figure 2-26 depicts responses to the "less, same, more" assessment question. Households that said they did not ordinarily "use" something are not included within the results. This results in fewer responses for less commonly used categories such as bird eggs or marine mammals, and manifests in the chart as a series of very short colored bars compared to categories such as salmon or vegetation, which are ordinarily used by most households. Some households did not respond to the question.

Taking all resources into consideration, 36% of surveyed Glennallen households reported less use of wild resource in general in 2013 compared to other recent years (Table 2-20). The same amount (36%) of households said they used about the same level of wild resources, and slightly less (28%) said they used more.

Table 2-21 and Table 2-22 depict, by resource category, the reasons Glennallen respondents gave for less or more use, respectively. This was an open-ended question and respondents could provide more than 1 reason for each resource category. Project staff grouped the responses into categories, such as regulations hindering residents from harvesting resources, 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 outside effects on residents' opportunities to engage in hunting, fishing, and gathering activities.

The top reasons reported by Glennallen residents for using less of all wild resources was working/no time followed by family/personal reasons and that less sharing occurred in 2013 (Table 2-21). The principal reason given by community residents for using more of all resources was increased effort followed by increased availability and that they received more resources (Table 2-22).

The resource category having the greatest percentage of households that used the resources and indicate less use in 2013 was nonsalmon fish (Figure 2-26). Valid responses from households indicated that harvesters were too busy or working to fish for nonsalmon fish and that people shared less in 2013 (Table 2-21). The resource category having the greatest percentage of households that used the resources and indicated more use in 2013 was vegetation (Figure 2-26). Top reasons given for increased use were increased effort and increased availability. Some people said 2013 was a good berry year.

The impact to households from not getting enough wild resources is reported in Table 2-23. The impact of not getting enough salmon was noted as minor by 11 households, major by 3 households, and severe by 1 household out of 16 households reporting that they did not get enough salmon. For large land mammals the impact was noted as minor by 16 households, major by 8 households, and severe by 1 household out of a total of 27 households that did not get enough. For all resources 37% of households (out of 74) said that they did not get enough resources in 2013 and of those respondents 48% said that the impact from not getting enough resources was minor while 41% said it was major.

Table 2-20.–Changes in household uses of resources compared to recent years, Glennallen, 2013.

Resource category	Sampled households	Valid responses[a]	Households reporting use: Total households Number	Total households Percentage	Less Number	Less Percentage	Same Number	Same Percentage	More Number	More Percentage	Households not using Number	Households not using Percentage
Any resource	77	77	77	100.0%	53	68.8%	60	77.9%	42	54.5%	77	100.0%
All resources	**77**	**75**	**75**	**97.4%**	**27**	**36.0%**	**27**	**36.0%**	**21**	**28.0%**	**0**	**0.0%**
Salmon	77	77	68	88.3%	22	28.6%	32	41.6%	14	18.2%	9	11.7%
Nonsalmon fish	77	75	56	72.7%	26	34.7%	19	25.3%	11	14.7%	19	25.3%
Large land mammals	77	76	62	80.5%	18	23.7%	30	39.5%	14	18.4%	14	18.4%
Small land mammals	77	75	8	10.4%	2	2.7%	4	5.3%	2	2.7%	67	89.3%
Marine mammals	77	76	2	2.6%	0	0.0%	1	1.3%	1	1.3%	74	97.4%
Migratory waterfowl	77	76	8	10.4%	4	5.3%	3	3.9%	1	1.3%	68	89.5%
Other birds	77	77	23	29.9%	17	22.1%	4	5.2%	2	2.6%	54	70.1%
Bird eggs	77	77	0	0.0%	0	0.0%	0	0.0%	0	0.0%	77	100.0%
Marine invertebrates	77	77	13	16.9%	4	5.2%	6	7.8%	3	3.9%	64	83.1%
Vegetation	77	75	67	87.0%	16	21.3%	27	36.0%	24	32.0%	8	10.7%

Source ADF&G Division of Subsistence household surveys, 2014.

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

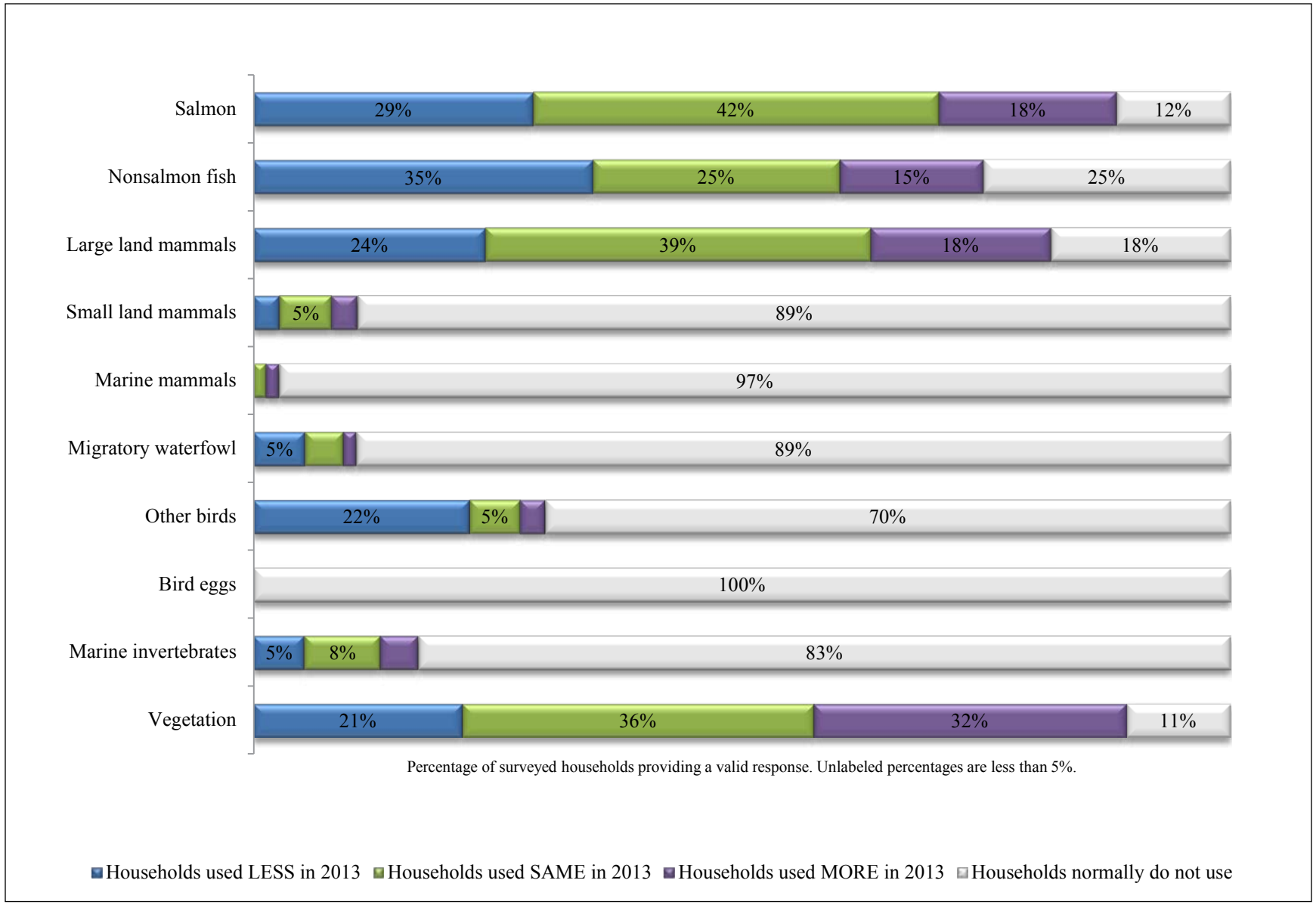

Figure 2-26.–Changes in household uses of resources compared to recent years, Glennallen, 2013.

Table 2-21.–Reasons for less household uses of resources compared to recent years, Glennallen, 2013.

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	77	51	13	25.5%	13	25%	2	3.9%	5	10%	17	33%	10	20%
All resources	**75**	**27**	**7**	**25.9%**	**2**	**7%**	**0**	**0.0%**	**1**	**4%**	**6**	**22%**	**2**	**7%**
Salmon	77	22	3	13.6%	2	9%	0	0.0%	4	18%	4	18%	1	5%
Nonsalmon fish	75	25	5	20.0%	0	0%	0	0.0%	1	4%	7	28%	5	20%
Large land mammals	76	17	1	5.9%	3	18%	1	5.9%	0	0%	6	35%	0	0%
Small land mammals	75	2	0	0.0%	1	50%	0	0.0%	0	0%	0	0%	1	50%
Marine mammals	76	0	0	0.0%	0	0%	0	0.0%	0	0%	0	0%	0	0%
Migratory waterfowl	76	4	0	0.0%	0	0%	0	0.0%	0	0%	0	0%	2	50%
Other birds	77	16	2	12.5%	6	38%	0	0.0%	0	0%	0	0%	4	25%
Bird eggs	77	0	0	0.0%	0	0%	0	0.0%	0	0%	0	0%	0	0%
Marine invertebrates	77	4	0	0.0%	1	25%	1	25.0%	0	0%	1	25%	1	25%
Vegetation	75	16	6	37.5%	0	0%	0	0.0%	0	0%	0	0%	0	0%

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Table 2-21.–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	77	51	10	19.6%	8	15.7%	3	5.9%	15	29.4%	4	7.8%	0	0.0%
All resources	**75**	**27**	**1**	**3.7%**	**4**	**14.8%**	**1**	**4%**	**9**	**33.3%**	**2**	**7.4%**	**0**	**0.0%**
Salmon	77	22	0	0.0%	4	18.2%	0	0%	5	22.7%	1	4.5%	0	0.0%
Nonsalmon fish	75	25	1	4.0%	0	0.0%	0	0%	8	32.0%	1	4.0%	0	0.0%
Large land mammals	76	17	6	35.3%	0	0.0%	0	0%	2	11.8%	1	5.9%	0	0.0%
Small land mammals	75	2	0	0.0%	0	0.0%	0	0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	76	0	0	0.0%	0	0.0%	0	0%	0	0.0%	0	0.0%	0	0.0%
Migratory waterfowl	76	4	0	0.0%	0	0.0%	0	0%	1	25.0%	0	0.0%	0	0.0%
Other birds	77	16	3	18.8%	1	6.3%	1	6%	2	12.5%	0	0.0%	0	0.0%
Bird eggs	77	0	0	0.0%	0	0.0%	0	0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	77	4	0	0.0%	0	0.0%	0	0%	0	0.0%	1	25.0%	0	0.0%
Vegetation	75	16	1	6.3%	2	12.5%	2	13%	5	31.3%	0	0.0%	0	0.0%

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Table 2-21.–Page 2 of 2.

Resource category	Valid responses[a]	Households reporting reasons for less use	Did not get enough		Did not need		Equipment/ fuel expense		Used other resources		Less competition	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	77	51	2	3.9%	12	23.5%	4	7.8%	0	0.0%	0	0.0%
All resources	**75**	**27**	**0**	**0.0%**	**3**	**11.1%**	**1**	**3.7%**	**0**	**0.0%**	**0**	**0.0%**
Salmon	77	22	0	0.0%	6	27.3%	0	0.0%	0	0.0%	0	0.0%
Nonsalmon fish	75	25	1	4.0%	1	4.0%	3	12.0%	0	0.0%	0	0.0%
Large land mammals	76	17	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	75	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	76	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Migratory waterfowl	76	4	1	25.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other birds	77	16	0	0.0%	0	0.0%	1	6.3%	0	0.0%	0	0.0%
Bird eggs	77	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	77	4	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	75	16	0	0.0%	2	12.5%	1	6.3%	0	0.0%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2014.

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

Table 2-22.–Reasons for more household uses of resources compared to recent years, Glennallen, 2013.

Resource category	Valid responses[a]	Households reporting reasons for more use	Increased availability		Used other resources		Favorable weather		Received more		Needed more	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	77	42	9	21.4%	0	0.0%	2	4.8%	17	40.5%	8	19.0%
All resources	**75**	**20**	**5**	**25.0%**	**0**	**0.0%**	**0**	**0.0%**	**5**	**25.0%**	**2**	**10.0%**
Salmon	77	14	2	14.3%	0	0.0%	0	0.0%	5	35.7%	3	21.4%
Nonsalmon fish	75	11	0	0.0%	0	0.0%	0	0.0%	3	27.3%	0	0.0%
Large land mammals	76	14	1	7.1%	0	0.0%	0	0.0%	8	57.1%	2	14.3%
Small land mammals	75	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	76	1	0	0.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%
Migratory waterfowl	76	1	0	0.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%
Other birds	77	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Bird eggs	77	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	77	3	0	0.0%	0	0.0%	0	0.0%	1	33.3%	0	0.0%
Vegetation	75	23	5	21.7%	0	0.0%	2	8.7%	2	8.7%	3	13.0%

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Table 2-22.–Continued.

Resource category	Valid responses[a]	Households reporting reasons for more use	Increased effort		Had more help		Other		Regulations		Traveled farther	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	77	42	16	38.1%	2	4.8%	6	14.3%	1	2.4%	0	0.0%
All resources	**75**	**20**	**6**	**30.0%**	**0**	**0.0%**	**4**	**20.0%**	**1**	**5.0%**	**0**	**0.0%**
Salmon	77	14	2	14.3%	0	0.0%	2	14.3%	0	0.0%	0	0.0%
Nonsalmon fish	75	11	5	45.5%	0	0.0%	2	18.2%	0	0.0%	0	0.0%
Large land mammals	76	14	2	14.3%	0	0.0%	2	14.3%	0	0.0%	0	0.0%
Small land mammals	75	2	1	50.0%	0	0.0%	1	50.0%	0	0.0%	0	0.0%
Marine mammals	76	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Migratory waterfowl	76	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other birds	77	2	1	50.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Bird eggs	77	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	77	3	0	0.0%	0	0.0%	1	33.3%	0	0.0%	0	0.0%
Vegetation	75	23	8	34.8%	2	8.7%	4	17.4%	0	0.0%	0	0.0%

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Table 2-22.–Page 2 of 2.

Resource category	Valid responses[a]	Households reporting reasons for more use	More success		Needed less		Store-bought expense		Got/ fixed equipment		Substituted resources	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	77	42	5	11.9%	1	2.4%	1	2.4%	0	0.0%	2	4.8%
All resources	**75**	**20**	**3**	**15.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**
Salmon	77	14	0	0.0%	1	7.1%	0	0.0%	0	0.0%	1	7.1%
Nonsalmon fish	75	11	1	9.1%	0	0.0%	0	0.0%	0	0.0%	1	9.1%
Large land mammals	76	14	0	0.0%	0	0.0%	1	7.1%	0	0.0%	0	0.0%
Small land mammals	75	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	76	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Migratory waterfowl	76	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other birds	77	2	1	50.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Bird eggs	77	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	77	3	1	33.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	75	23	1	4.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2014.

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

Table 2-23.–Reported impact to households reporting that they did not get enough of a type of resource, Glennallen, 2013.

		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
Salmon	77	66	85.7%	16	24.2%	1	6.3%	0	0.0%	11	68.8%	3	18.8%	1	6.3%
Nonsalmon fish	77	54	70.1%	21	38.9%	0	0.0%	0	0.0%	18	85.7%	3	14.3%	0	0.0%
Marine invertebrates	77	13	16.9%	7	53.8%	0	0.0%	0	0.0%	7	100.0%	0	0.0%	0	0.0%
Large land mammals	77	57	74.0%	27	47.4%	2	7.4%	0	0.0%	16	59.3%	8	29.6%	1	3.7%
Marine mammals	77	2	2.6%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	77	8	10.4%	4	50.0%	0	0.0%	0	0.0%	4	100.0%	0	0.0%	0	0.0%
Migratory waterfowl	77	9	11.7%	4	44.4%	0	0.0%	0	0.0%	4	100.0%	0	0.0%	0	0.0%
Other birds	77	22	28.6%	13	59.1%	0	0.0%	0	0.0%	11	84.6%	1	7.7%	1	7.7%
Bird eggs	77	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	77	67	87.0%	20	29.9%	0	0.0%	0	0.0%	18	90.0%	2	10.0%	0	0.0%
All resources	**77**	**74**	**96.1%**	**27**	**36.5%**	**1**	**3.7%**	**2**	**7.4%**	**13**	**48.1%**	**11**	**40.7%**	**0**	**0.0%**

Source ADF&G Division of Subsistence household surveys, 2014.

a. Does not includes households failing to respond to the question or those households that never used the resource.

Table 2-24.–Comparison of harvest composition, Glennallen, 1982, 1987, and 2013.

	Estimated harvest in pounds usable weight								
	1982			1987			2013		
Resource	Total	Per capita	CIP	Total	Per capita	CIP	Total	Per capita	CIP
All resources	**61,157.0**	**67.0**	**33.0%**	**46,684.0**	**99.5**	**20.0%**	**37,447.3**	**97.6**	**22.7%**
Salmon	27,018.0	29.6		19,136.0	40.8		21,857.5	57.0	
Nonsalmon fish	6,009.0	6.6		6,152.0	13.1		1,936.0	5.0	
Large land mammals	24,345.0	26.7		20,053.0	42.7		10,909.1	28.4	
Small land mammals	912.0	1.0		366.0	0.8		131.8	0.3	
Birds and eggs	484.0	0.5		174.0	0.4		238.2	0.6	
Marine invertebrates	–	–		26.0	0.1		85.9	0.2	
Vegetation	2,389.0	2.6		778.0	1.7		2,288.9	6.0	

Sources For 2013, ADF&G Division of Subsistence household surveys, 2014; for previous study years, ADF&G Division of Subsistence Community Subsistence Information System (CSIS), accessed 2014.

Note "–" indicates no harvest.

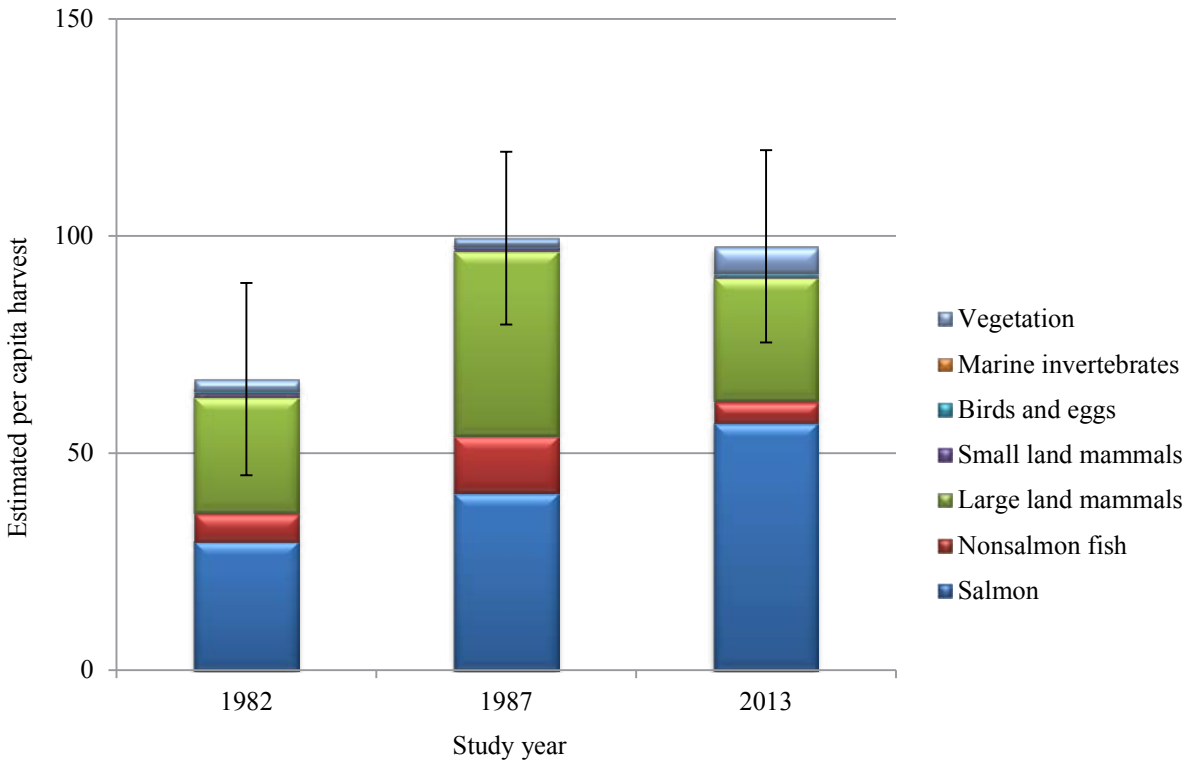
Note The 1982 survey included the communities of Tazlina and Copperville, which were surveyed separately from Glennallen for the 1987 and 2013 study years.

Harvest Data

Changes in the harvest of resources by Glennallen residents can also be discerned through comparisons with findings from other study years. Comprehensive subsistence harvest surveys that include Glennallen were conducted for study years 1982 and 1987 (McMillan and Cuccarese 1988; Stratton and Georgette 1984). As mentioned in the demographic section, Glennallen was grouped with Tazlina and the Copperville subdivision in the 1982 study (Stratton and Georgette 1984:73–74). While direct comparisons cannot be made across the 3 study years because of this sampling difference, overall trends can be assessed to determine if there has been any change over time regarding the harvest of wild resources. Table 2-24 includes harvest information (in per capita values) from the 1982 and 1987 study years and the current year.

Overall, the composition of Glennallen's wild resource harvest has not changed dramatically over the past 30 years. Salmon and large land mammals have always had principal roles in the harvest by residents in this area (Figure 2-27). To a lesser degree, nonsalmon fish and vegetation are also important resources harvested. The 1987 study sample is more comparable to the current study because only the community of Glennallen was surveyed. Comparison of the total per capita harvest indicates a very close relationship between study years; despite a 26-year study gap, both years demonstrate a harvest of approximately 100 lb per person.

Comparing the 1987 and 2013 study years, the importance of nonsalmon fish appears to have diminished over time. However, the change in the nonsalmon fish proportion of the harvest composition could be related to flooding events and local construction that several community members mentioned occurred in 2013. Vegetation as a resource category appears to have increased in significance in 2013 but this could be an isolated event brought about by good berry weather according to residents. Between 1987 and 2013, the large land mammal per capita harvest declined by 14 lb per capita, which may not be fully attributable to the smaller sample size in 2013 compared to 1987.



Note Error bars represent the upper and lower bounds of the 95% confidence interval.
Note The 1982 survey included the communities of Tazlina and Copperville, which were surveyed separately from Glennallen for the 1987 and 2013 study years.

Figure 2-27.–Estimated harvests by pounds per capita and by resource category, Glennallen, 1982, 1987, and 2013.

Current and Historical Harvest Areas

It is possible to compare historical spatial harvest data with the 2013 study year to identify changes in the search and harvest areas for wild food resources over time. For Glennallen, limited spatial data were collected as part of the 1982 and 1987 study years (McMillan and Cuccarese 1988; Stratton and Georgette 1984). Additionally, during the 1983 and 1984 fieldwork seasons, ADF&G researchers conducted interviews with more than 200 hunters and fishers in 20 communities in or near the Copper River Basin to map areas where hunting, fishing, trapping, and gathering of wild resources occurred between 1964 and 1984 (Stratton and Georgette 1985). This effort produced 2 separate publications by 2 different ADF&G divisions; the Division of Habitat published the maps and the Division of Subsistence published a description of the project and mapping methods. The maps depicting the harvest and use areas used by study community residents during this 20-year span are published in *Alaska Habitat Management Guide Southcentral Region: Reference Maps—Volume 3. Community Use of Fish, Wildlife, and Plants* (Alaska Department of Fish and Game Division of Habitat 1985).[4] Information about the mapping project is available in *Copper Basin Resource Use Map Index and Methodology* (Stratton and Georgette 1985). Changes in the resource harvest and use/search areas by Glennallen residents can be discerned through limited comparisons of the maps published in

4. A complete index of documents published in 1985 and 1986 as part of *Alaska Habitat Management Guide* is available online: http://www.arlis.org/docs/vol1/C/AHMG/index.html.

1985, which depict harvest and use areas for 20 years, and the maps produced from this study, which only reflect search and harvest areas for the study year 2013.

The most prominent comparison between the 20-year mapping project and documented harvest areas for the 2013 study year is the change from using the vast areas that were once used by Glennallen residents for hunting mammals—both small and large. In the past, residents traveled west to Chickaloon and Cantwell for moose, caribou, and Dall sheep. In the past, lands that now constitute the Wrangell-St. Elias National Park played a more integral role in the harvest of resources by Glennallen residents; especially for Dall sheep and other large mammals that were hunted along Nabesna Road. Unlike the current study year where small mammals/furbearers were only harvested near the community, Glennallen residents in the past trapped and harvested them from along the Glenn and Richardson highways and Glenn Highway–Tok Cutoff. Furthermore, nonsalmon fish were previously harvested from many lakes and streams to the south of Glennallen. The harvest locations of salmon have remained constant over time.

Local Comments and Concerns

Following is a summary of local observations of wild resource populations and trends that were recorded by researchers during the surveys in Glennallen. Some households did not offer any additional comments or concerns 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.

In general, Glennallen community members valued wild resources and their access to wild resources. Residents were concerned about the expense of obtaining resources, however, and some commented that it is expensive to harvest resources because of the direct costs of equipment and supplies (i.e., snowmachines, ATVs, and gas) and indirect costs such as taking time off from work.

Community members were concerned about the amount of people that visit the area from other Alaska municipalities and other states that were not respectful of the land (i.e., leaving garbage) and the wildlife (i.e., wanton waste of animals). One household suggested that it would be beneficial to have local classes and/or workshops about how to harvest and use wild resources correctly.

Salmon

Many community members said that 2013 was a poor fishing year because of high waters which washed away, moved, or altered fish wheels; fish wheel use is a common method of obtaining fish in this area from the Copper River. Some community members expressed concern about fish wheel permits; specifically some residents believed that subsistence permits, once issued, could only be used for the wheel indicated on the permit.[5]

Some community members were concerned about the health of Chinook salmon and requested that more research be conducted on the Gulkana and Copper rivers' Chinook salmon.

Nonsalmon Fish

Some community members said 2013 was a bad year to obtain nonsalmon fish because of flooding and road construction that obstructed access points.

Large Land Mammals

Some residents are concerned that Dall sheep, moose, and caribou populations are declining. (See also comments on community subsistence hunts, which is provided below.)

5. Note, according to regulations, permit holders are allowed to use other fish wheels, with consent from the owner, and the alternate fish wheel number should be reported under the location column on the daily log of fishing dates and harvest.

Birds

Community members commented on diminished upland game bird sightings, such as spruce grouse, over the past couple of years.

Regulations

Glennallen is located in the Copper River Basin, where lands are managed by a number of tribal, state, and federal agencies. Many residents said that it is very difficult to navigate all of the different regulations, especially because the regulations are constantly changing. For some, this has become an impediment to hunting and fishing.

The recent introduction of the "Copper Basin Moose Community Subsistence Harvest Permit Program"[6] by the Alaska Board of Game has caused some community members concern. Some residents feel that the community hunt should only be available to local residents. The opening of the community hunt to residents from other areas of Alaska has, according to local residents, diminished large land mammal populations and increased competition over resources, which is exacerbated because this area is road-connected and easy to access. Some residents prefer the previous Tier II[7] management system, which provided a harvest quota to those who could show a customary and direct dependence on caribou and moose in GMU 13.

Proposed Development

Some Glennallen residents opposed the development of the Susitna-Watana hydroelectric dam because of the potential effects they believe it would have on wild resources, including the interruption of large mammal migration routes and corresponding feeding and breeding grounds.

On the other hand, a number of community members supported the development of hydroelectric power at the proposed dam site because, in their view, it would create jobs and reduce energy costs.

ACKNOWLEDGMENTS

Division of Subsistence researchers would like to thank the residents of Glennallen for their participation and support of the project. We would also like to thank our exceptional local research assistants: Kathy Stratton, Cynthia Buchanan, Eric Lutz, Betty Goodlataw, Kathy Peter, and Dale Oja. We are also very appreciative to our key respondents who provided significant temporal context to fish and wildlife resource changes over time.

6. Alaska Department of Fish and Game, "Cultural and Subsistence Harvest Permits" http://www.adfg.alaska.gov/index.cfm?adfg=huntlicense.cultural (accessed December 2014).

7. State Tier II hunts are held when there is not enough of a game population with customary and traditional uses to provide a reasonable opportunity for subsistence uses. 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.

3. GULKANA

Eric Schacht

Community Background

The village of Gulkana is located on the east bank of the Gulkana River at its confluence with the Copper River. It lies at mile 127 of the Richardson Highway and is 14 miles north of Glennallen. Although the Gulkana census designated place (CDP) runs along the Richardson Highway south toward Glennallen from the community, most households are located in a central area at the north end of the Gulkana CDP boundary (Figure 2-1). Gulkana is located in the continental climate zone, which is characterized with long, cold winters and relatively warm summers. Temperature extremes range from -65 °F to 91 °F. Annual snowfall averages 47 inches, with 11 inches of precipitation.

The history of Gulkana is similar in many ways to other communities in the Copper River Basin. Located on the Valdez–Fairbanks Trail, the permanent community was founded in 1902 when the U.S. Army Signal Corps established a telegraph station (Stratton and Georgette 1984). A roadhouse, post office, and stage station soon followed. The area was traditionally the territory of the Gulkana-Gakona band led by *C'ecae'e Dene* (Person of the River Mouth), referring to the leader of a village site near the mouth of the Gulkana River (Holen 2002:45; Reckord 1983b). The contact experience for the people living in Gulkana differs significantly from that of their relatives to the south in Copper Center and Chitina. The number of Euro-Americans who came to settle in the immediate vicinity was comparatively small. No railroad or large settlement was established to become a focus for Western culture. As a result, few opportunities for wage labor and other types of wage employment were available in the area near Gulkana. Schools and amenities developed slowly in this area of the Ahtna region and in general the people of Gulkana entered and participated in the Western economy primarily through trapping (Reckord 1983b). Only after 1950 did people begin to spend most winters living in Gulkana and to send their children to school. Previously, most summers had been spent at fish camps around Gulkana and much of each winter was dedicated to trapping.

Originally the historical village was located on the south bank of the river, but when this village was bisected by the construction of the Richardson Highway, the residents moved to the present location. The present village site has only been occupied since the late 1950s (Stratton and Georgette 1984). Requirements for school attendance further supported the settlement of the village in the 1950s and the end of seasonal migration for hunting and fishing activities; settlement also started drawing families from Tyone, Ewan, and Crosswind lakes.

As noted above, today Gulkana is composed of 2 separate sub-communities: a cohesive Native village located a short distance from the highway north of the confluence of the Gulkana and Copper rivers, and a non-Native settlement dispersed along the Richardson Highway between miles 125 and 130. Services in the Gulkana CDP include a landfill, airport, campground, and shooting range. Services offered in Gulkana village include a health clinic and church. Children attend school in neighboring Glennallen.

Demography

According to the federal census, Gulkana CDP had 119 residents in 2010 (Table 3-1). The household survey conducted for 2013 found an estimated Gulkana population of 104 residents, of which 70% (72 residents) were Alaska Native. Figure 3-1 shows the population of the community over time based on U.S. Census Bureau data, Alaska Department of Labor and Workforce Development estimates, and data in the CSIS that are based on Division of Subsistence household surveys. The chart demonstrates a decline in population from 1991 to 2000 with some recent fluctuations and slight rebound in population since 2001. The population increased to a high of 134 in 2011 from its lowest point of 67 residents in 1987.

Table 3-1.–Population estimates, Gulkana, 2010 and 2013.

	Census (2010)	5-year American Community Survey (2008–2012)	This study (2013)
Total population			
Households	36	46	33.0
Population	119	148	103.6
Alaska Native			
Population	91	93	72.5
Percentage	76.5%	62.8%	70.0%

Sources U.S. Census Bureau (2011) for 2010 estimate; U.S. Census Bureau for American Community Survey 5-year survey estimate; and ADF&G Division of Subsistence household surveys, 2014, for 2013 estimate.
Note The term "households" means occupied housing units. Alaska Native population data from the American Community Survey and 2010 census come from the category "race alone or in combination with one or more other races."

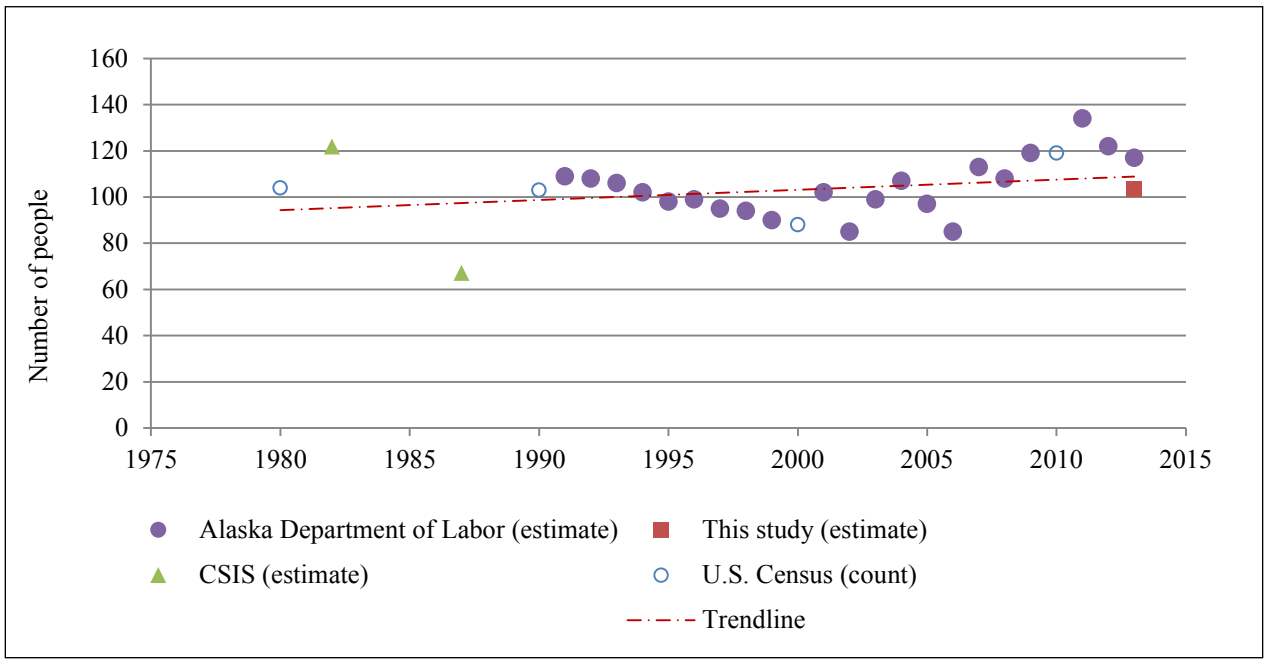


Figure 3-1.–Historical population estimates, Gulkana, 1980–2013.

Table 3-2.–Sample achievement, Gulkana, 2013.

	Gulkana
Number of dwelling units	35
Interview goal	35
Households interviewed	29
Households failed to be contacted	3
Households declined to be interviewed	1
Households moved or occupied by nonresident	2
Total households attempted to be interviewed	30
Refusal rate	3.3%
Final estimate of permanent households	33
Percentage of total households interviewed	87.9%
Interview weighting factor	1.1
Sampled population	91
Estimated population	103.6

Source ADF&G Division of Subsistence household surveys, 2014.

Prior to the study, the Division of Subsistence researchers, in consultation with community officials and other knowledgeable respondents, estimated and confirmed 35 year-round households in Gulkana in 2013 (Table 3-2). Two households were occupied by a nonresident or were vacant, leaving 33 households considered eligible for the survey. Of these, 29 households (88%) were interviewed. The following data are expanded to cover the remaining households not surveyed.

The mean length of residency in Gulkana was 20 years, with the maximum length 99 years (Table 3-3). In general, the population was evenly distributed between males and females. The largest age cohorts of the entire population were females between the ages 30–34 and 10–14, and males between the ages of 10–14 (Table 3-4; Figure 3-2). There were no females represented in the 40–44, 75–84, and older than 89 age ranges. There were no males represented in the 70–74 and 80–94 age ranges. Interestingly there were 2 males between the ages of 95 and 99.

In the Gulkana community, approximately 44% of the household heads were born in various communities across Alaska, with another 34% claiming Gulkana as their place of birth (Table 3-5). Fewer household heads (approximately 17%) were born somewhere else in the United States. Approximately 4% of the household head birthplaces are unknown. Appendix Table E3-1, which represents the birthplaces of the overall population, has similar data to the birthplaces of household heads. These tables indicate strong kinship ties to the community.

Table 3-3.–Sample and demographic characteristics, Gulkana, 2013.

Characteristics	
Sampled population	91
Estimated community population	104
Household size	
Mean	3.1
Minimum	1
Maximum	11
Age	
Mean	34.5
Minimum[a]	1
Maximum	99
Median	33
Length of residency	
Total population	
Mean	20.3
Minimum[a]	0
Maximum	99
Heads of household	
Mean	29.5
Minimum[a]	0
Maximum	99
Alaska Native	
Estimated households[b]	
Number	27.3
Percentage	82.8%
Estimated population	
Number	72.5
Percentage	70.0%

Source ADF&G Division of Subsistence household surveys, 2014.

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 3-4.–Population profile, Gulkana, 2013.

	Male			Female			Total		
Age	Number	Percentage	Cumulative percentage	Number	Percentage	Cumulative percentage	Number	Percentage	Cumulative percentage
0–4	4.6	8.9%	8.9%	2.3	4.4%	4.4%	6.9	6.7%	6.7%
5–9	3.5	6.7%	15.6%	4.6	8.9%	13.3%	8.1	7.8%	14.4%
10–14	6.9	13.3%	28.9%	8.1	15.6%	28.9%	15.0	14.4%	28.9%
15–19	2.3	4.4%	33.3%	2.3	4.4%	33.3%	4.6	4.4%	33.3%
20–24	4.6	8.9%	42.2%	1.2	2.2%	35.6%	5.8	5.6%	38.9%
25–29	3.5	6.7%	48.9%	2.3	4.4%	40.0%	5.8	5.6%	44.4%
30–34	3.5	6.7%	55.6%	9.2	17.8%	57.8%	12.7	12.2%	56.7%
35–39	2.3	4.4%	60.0%	3.5	6.7%	64.4%	5.8	5.6%	62.2%
40–44	4.6	8.9%	68.9%	0.0	0.0%	64.4%	4.6	4.4%	66.7%
45–49	2.3	4.4%	73.3%	4.6	8.9%	73.3%	6.9	6.7%	73.3%
50–54	3.5	6.7%	80.0%	2.3	4.4%	77.8%	5.8	5.6%	78.9%
55–59	3.5	6.7%	86.7%	2.3	4.4%	82.2%	5.8	5.6%	84.4%
60–64	1.2	2.2%	88.9%	2.3	4.4%	86.7%	3.5	3.3%	87.8%
65–69	1.2	2.2%	91.1%	2.3	4.4%	91.1%	3.5	3.3%	91.1%
70–74	0.0	0.0%	91.1%	2.3	4.4%	95.6%	2.3	2.2%	93.3%
75–79	2.3	4.4%	95.6%	0.0	0.0%	95.6%	2.3	2.2%	95.6%
80–84	0.0	0.0%	95.6%	0.0	0.0%	95.6%	0.0	0.0%	95.6%
85–89	0.0	0.0%	95.6%	1.2	2.2%	97.8%	1.2	1.1%	96.7%
90–94	0.0	0.0%	95.6%	0.0	0.0%	97.8%	0.0	0.0%	96.7%
95–99	2.3	4.4%	100.0%	0.0	0.0%	97.8%	2.3	2.2%	98.9%
100–104	0.0	0.0%	100.0%	0.0	0.0%	97.8%	0.0	0.0%	98.9%
Missing	0.0	0.0%	100.0%	1.2	2.2%	100.0%	1.2	1.1%	100.0%
Total	**51.8**	**100.0%**	**100.0%**	**51.8**	**100.0%**	**100.0%**	**103.6**	**100.0%**	**100.0%**

Source ADF&G Division of Subsistence household surveys, 2014.

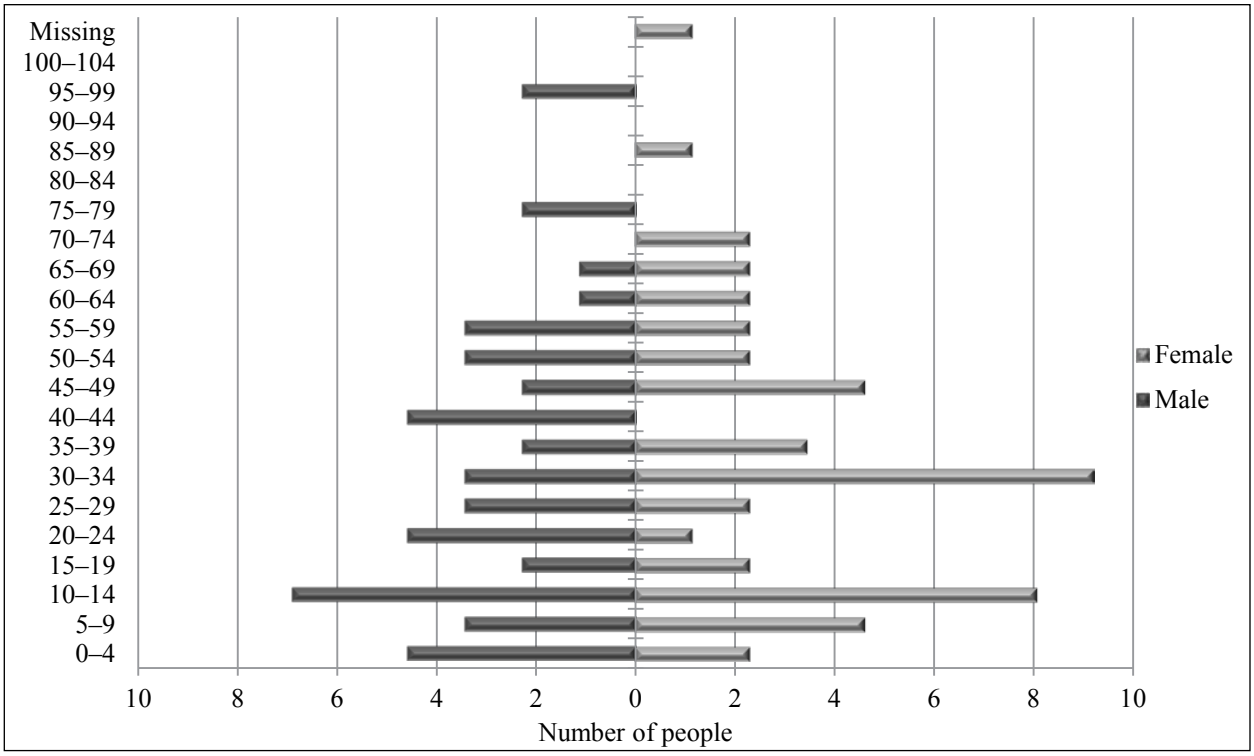


Figure 3-2.–Population profile, Gulkana, 2013.

Table 3-5.–Birthplaces of household heads, Gulkana, 2013.

Birthplace	Percentage
Anchorage	2.1%
Bethel	2.1%
Bristol Bay	2.1%
Copper Center	8.5%
Crosswind Lake	2.1%
Cube Cove	2.1%
Eureka Roadhouse	2.1%
Ewan Lake	2.1%
Fairbanks	4.3%
Gakona	2.1%
Glennallen	2.1%
Gulkana	34.0%
Kodiak City	2.1%
Northway	2.1%
Paxson	2.1%
Pedro Bay	2.1%
Tazlina	2.1%
Valdez	2.1%
Other U.S.	17.0%
Missing	4.3%

Source ADF&G Division of Subsistence household surveys, 2014.
Note "Birthplace" means the place of residence of the parents of the individual when the individual was born.

Cash Employment and Monetary Income

As noted above, Gulkana is located approximately 14 miles from the nearest hub community—Glennallen—and about 191 miles from Anchorage. The Gulkana CDP is a recreation destination for out-of-state visitors and Alaskans alike who use the Richardson Highway Bridge for access to the Gulkana River for fishing and as a take-out location for rafting. Also found within the Gulkana CDP is an airport, located at mile 118 on the Richardson Highway. However, seasonal employment in support of local recreation and tourism has a minimal influence on wage-earning opportunities. Gulkana's monetary economy is closely connected with that of Glennallen. Much of the Gulkana community located on the highway was employed in the Glennallen area, particularly with government agencies. Most of the remaining highway households were self-employed as guides, miners, and small business owners. In contrast, a second group of households who mostly resided in the predominately Ahtna village was generally employed seasonally as laborers on construction projects for either local contractors or the Gulkana village. In addition, a complex in the village, which houses the dental clinic, alcohol treatment center, and low-income apartments, provided additional part-time and full-time positions for local village residents.

Table 3-6 is a summary of the estimated earned income as well as other sources of income for residents of Gulkana in 2013. This table shows that in 2013 earned income accounted for an average of $44,076 per household, or approximately 80% of the total community income, compared to other income sources that accounted for an average of $10,839 per household, or about 20% of the total community income. The greatest contributing earned income sectors were local and tribal government (30% of total community income) and services (23% of total community income). The largest sources of other income were pension/

Table 3-6.–Estimated earned and other income, Gulkana, 2013.

Income source	Number of people	Number of households	Total for community	-/+ 95% CI	Mean per household	Per capita income	Percentage of total community income
Earned income							
Local government, including tribal	20.5	20.8	$541,896	$247,899 – $999,065	$16,421		29.9%
Services	13.7	17.4	$412,216	$179,449 – $844,152	$12,491		22.7%
Construction	1.1	1.7	$138,276	$132,225 – $526,320	$4,190		7.6%
State government	3.4	5.2	$114,769	$14,737 – $326,601	$3,478		6.3%
Agriculture, forestry, and fishing	3.4	5.2	$87,293	$6,679 – $273,102	$2,645		4.8%
Federal government	1.1	1.7	$86,423	$82,369 – $330,734	$2,619		4.8%
Retail trade	2.3	1.7	$30,986	$15,859 – $60,878	$939		1.7%
Mining	2.3	3.5	$29,960	$11,100 – $79,647	$908		1.7%
Other employment	1.1	1.7	$12,675	$12,097 – $48,440	$384		0.7%
Earned income subtotal	**42.1**	**33.0**	**$1,454,495**	**$976,242 – $2,149,949**	**$44,076**	**$14,046**	**80.3%**
Other income							
Pension/retirement		2.3	$109,583	$96,300 – $270,941	$3,321		6.0%
Social Security		5.7	$92,278	$2,318 – $242,786	$2,796		5.1%
Alaska Permanent Fund dividend		28.4	$77,834	$54,279 – $105,486	$2,359		4.3%
Native corporation dividend		21.6	$40,013	$21,810 – $67,330	$1,213		2.2%
Unemployment		5.7	$32,717	$3,983 – $93,107	$991		1.8%
Heating assistance		3.4	$1,899	$423 – $6,065	$58		0.1%
Adult public assistance (OAA, APD)		1.1	$633	$556 – $2,945	$19		0.0%
Supplemental Security income		1.1	$633	$556 – $2,783	$19		0.0%
Food stamps		1.1	$633	$556 – $2,945	$19		0.0%
Longevity bonus		1.1	$633	$556 – $2,945	$19		0.0%
Disability		1.1	$633	$556 – $2,945	$19		0.0%
CITGO fuel voucher		1.1	$197	$173 – $795	$6		0.0%
TANF (Temporary Assistance for Needy Families)		0.0	$0	$0 – $0	$0		0.0%
Workers' compensation/insurance		0.0	$0	$0 – $0	$0		0.0%
Veterans assistance		0.0	$0	$0 – $0	$0		0.0%
Child support		0.0	$0	$0 – $0	$0		0.0%
Other		0.0	$0	$0 – $0	$0		0.0%
Foster care		0.0	$0	$0 – $0	$0		0.0%
Meeting honoraria		0.0	$0	$0 – $0	$0		0.0%
Other income subtotal		**29.6**	**$357,686**	**$170,220 – $676,316**	**$10,839**	**$3,454**	**19.7%**
Community income total			**$1,812,181**	**$1,289,478 – $2,542,092**	**$54,915**	**$17,500**	**100.0%**

Source ADF&G Division of Subsistence household surveys, 2014.

retirement (6% of total community income) and Social Security (5% of total community income) in 2013. The estimated per capita earned income was $17,500.

In 2013, the largest number of jobs (39%) in Gulkana were with the local (including the education system) and tribal government sector (Table 3-7). Other important employment sectors during the study year provided jobs in services (28%); agriculture, forestry, and mining (9%); retail trade (7%); and state government (7%). The income generated by local and tribal government jobs provided the most income by industry category (37% of wage earnings). The income generated by the services sector in Gulkana during 2013 was 28% of the wage income by industry. The remaining wage income by industry category was contributed by jobs for construction (10%); state government (8%); agriculture, forestry, and fishing (6%); federal government (6%); mining (2%); and retail trade (2%).

The study found 69 adults over the working age of 16 in Gulkana in 2013 and the average length of employment during the year was 25 weeks (Table 3-8). Of the 69 working-age adults in Gulkana, the study found an estimated 60, or 86%, were employed. For the employed adults, the mean length of employment was approximately 7 months; 46% of employed adults were employed year-round. On the household level, 33 households (100%) had an adult household member employed at some point during the study year. The average number of jobs during the study year per employed household was 2.3, and on average there were 1.8 employed adults per household.

Table 3-7.–Employment by industry, Gulkana, 2013.

Industry	Jobs	Households	Individuals	Percentage of wage earnings
Estimated total number	**74.3**	**33.0**	**59.7**	
Federal government	**2.2%**	**5.3%**	**2.7%**	**5.9%**
Natural scientists and mathematicians	2.2%	5.3%	2.7%	5.9%
State government	**6.5%**	**15.8%**	**8.1%**	**7.9%**
Executive, administrative, and managerial	2.2%	5.3%	2.7%	5.4%
Service occupations	4.3%	10.5%	5.4%	2.5%
Local government, including tribal	**39.1%**	**63.2%**	**48.6%**	**37.3%**
Executive, administrative, and managerial	2.2%	5.3%	2.7%	5.9%
Teachers, librarians, and counselors	2.2%	5.3%	2.7%	5.1%
Health technologists and technicians	2.2%	5.3%	2.7%	0.5%
Technologists and technicians, except health	2.2%	5.3%	2.7%	2.5%
Administrative support occupations, including clerical	6.5%	15.8%	8.1%	11.2%
Service occupations	4.3%	5.3%	5.4%	0.9%
Transportation and material moving occupations	6.5%	15.8%	8.1%	6.7%
Handlers, equipment cleaners, helpers, and laborers	10.9%	21.1%	13.5%	4.0%
Occupation not indicated	2.2%	5.3%	2.7%	0.5%
Agriculture, forestry, and fishing	**8.7%**	**15.8%**	**8.1%**	**6.0%**
Agricultural, forestry, and fishing occupations	8.7%	15.8%	8.1%	6.0%
Mining	**4.3%**	**10.5%**	**5.4%**	**2.1%**
Construction and extractive occupations	2.2%	5.3%	2.7%	1.3%
Transportation and material moving occupations	2.2%	5.3%	2.7%	0.8%
Construction	**2.2%**	**5.3%**	**2.7%**	**9.5%**
Construction and extractive occupations	2.2%	5.3%	2.7%	9.5%
Retail trade	**6.5%**	**5.3%**	**5.4%**	**2.1%**
Marketing and sales occupations	4.3%	5.3%	5.4%	1.7%
Service occupations	2.2%	5.3%	2.7%	0.5%
Services	**28.3%**	**52.6%**	**32.4%**	**28.3%**
Executive, administrative, and managerial	4.3%	10.5%	5.4%	12.2%
Registered nurses, pharmacists, dietitians, therapists, and physicians assistants	2.2%	5.3%	2.7%	2.3%
Health technologists and technicians	2.2%	5.3%	2.7%	0.6%
Technologists and technicians, except health	2.2%	5.3%	2.7%	2.5%
Administrative support occupations, including clerical	4.3%	10.5%	5.4%	4.1%
Service occupations	8.7%	15.8%	10.8%	5.5%
Handlers, equipment cleaners, helpers, and laborers	4.3%	10.5%	5.4%	1.2%
Industry not indicated	**2.2%**	**5.3%**	**2.7%**	**0.9%**
Technologists and technicians, except health	2.2%	5.3%	2.7%	0.9%

Source ADF&G Division of Subsistence household surveys, 2014.

Table 3-8.–Employment characteristics, Gulkana, 2013.

Characteristic	Community Gulkana
All adults	
Number	69.4
Mean weeks employed	25.4
Employed adults	
Number	59.7
Percentage	86.0%
Jobs	
Number	74.3
Mean	1.2
Minimum	1
Maximum	5
Months employed	
Mean	6.8
Minimum	0
Maximum	12
Percentage employed year-round	45.7%
Mean weeks employed	29.5
Households	
Number	33
Employed	
Number	33.0
Percentage	100.0%
Jobs per employed household	
Mean	2.3
Minimum	1
Maximum	8
Employed adults	
Mean	
Employed households	1.8
Total households	1.8
Minimum	1
Maximum	3
Mean person-weeks of employment	33.0

Source ADF&G Division of Subsistence household surveys, 2014.

Levels of Individual Participation in the Harvesting and Processing of Wild Resources

Table 3-9 reports the expanded levels of individual participation in the harvest and processing of wild resources by all Gulkana residents in 2013. Approximately 78% of residents attempted to harvest resources in 2013. With reference to specific resource categories, 68% of all residents gathered vegetation, 58% fished, 55% hunted for large land mammals, and 30% of residents both hunted for birds and hunted or trapped small land mammals/furbearers. Slightly more residents participated in processing any resource (79%) than attempted to harvest any resource. More residents participated in gathering vegetation than the percentage of residents that processed them (65%). Conversely, more residents processed fish (65%) than attempted to harvest fish. This indicates that there was more of a group effort to process fish once it was harvested and returned to camp or home. For large land mammals, birds, and small land mammals/furbearers, approximately the same percentage of people processed these resources as hunted or trapped them.

The survey included questions about individual participation in wild harvest activities such as working with fish wheels, handicrafts, and cooking wild foods. In Gulkana, 34% of residents built or repaired fish wheels or helped to place or remove a fish wheel (Table 3-10). In 2013, about 20% of residents sewed skins or cloth and 75% of residents cooked wild foods.

Household Resource Harvest and Use Patterns and Sharing of Wild Resources

Table 3-11 summarizes resource harvest and use characteristics for Gulkana in 2013 at the household level. Most households (97%) used wild resources in 2013 and households that attempted to harvest wild resources (79%) were all successful in harvesting at least 1 type of resource. The average harvest was 453 lb usable weight per household, or 144 lb per capita. During the study year, community households harvested an average of 5 kinds of resources and used an average of 10 kinds of resources. The maximum number of resources used by any household was 30. In addition, households gave away an average of 4 kinds of resources and 83% of households shared resources with other households. Overall, as many as 114 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.

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 3-3, in the 2013 study year in Gulkana, about 71% of the harvested wild resources as estimated in usable pounds were harvested by 21% 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 Gulkana and the other study communities.

The survey included questions about residents' use of alternative and motorized modes of transportation to access wild food harvest areas and the use of portable motors. Figure 3-4 shows the percentage of community households that used an alternate means of transportation (besides highway vehicles and foot travel). Approximately 21% of the Gulkana households used an ATV when harvesting wild foods. About 17% of households used snowmachines, 14% used boats, and 7% used aircraft. Forty-one percent of households used a chain saw, 17% used a winch, and both ice augers and generators were used by 7% of households (Figure 3-5).

Figure 3-6 shows the percentage of households that used natural materials for handicrafts; 3% used antlers and 3% used horns. More significantly, 7% of households used other natural materials, most of which

Table 3-9.–Individual participation in subsistence harvesting and processing activities, Gulkana, 2013.

Total number of people	**103.6**
Fish	
Fish	
Number	60.3
Percentage	58.2%
Process	
Number	67.1
Percentage	64.8%
Large land mammals	
Hunt	
Number	56.9
Percentage	54.9%
Process	
Number	55.8
Percentage	53.8%
Small land mammals	
Hunt or trap	
Number	30.7
Percentage	29.7%
Process	
Number	28.4
Percentage	27.5%
Birds and eggs	
Hunt/gather	
Number	30.7
Percentage	29.7%
Process	
Number	31.9
Percentage	30.8%
Vegetation	
Gather	
Number	70.6
Percentage	68.1%
Process	
Number	67.1
Percentage	64.8%
Any resource	
Attempt harvest	
Number	80.8
Percentage	78.0%
Process	
Number	81.9
Percentage	79.1%

Source ADF&G Division of Subsistence household surveys, 2014.

Table 3-10.–Household member participation in subsistence craft activities, Gulkana, 2013.

Total number of people	**103.6**
Building, maintaining, or moving fish wheels	
Number	35.3
Percentage	34.1%
Sewing skins or cloth	
Number	20.5
Percentage	19.8%
Cooking wild foods	
Number	77.4
Percentage	74.7%

Source ADF&G Division of Subsistence household surveys, 2014.

Table 3-11.–Resource harvest and use characteristics, Gulkana, 2013.

Characteristic	
Mean number of resources used per household	**9.7**
Minimum	0
Maximum	30
95% confidence limit (±)	8.9%
Median	8
Mean number of resources attempted to harvest per household	**5.5**
Minimum	0
Maximum	25
95% confidence limit (±)	14.7%
Median	4
Mean number of resources harvested per household	**4.7**
Minimum	0
Maximum	25
95% confidence limit (±)	16.3%
Median	3
Mean number of resources received per household	**5.9**
Minimum	0
Maximum	14
95% confidence limit (±)	8.5%
Median	5
Mean number of resources given away per household	**4.3**
Minimum	0
Maximum	23
95% confidence limit (±)	15.1%
Median	3
Household harvest (pounds)	
Minimum	0
Maximum	2,641
Mean	452.5
Median	55
Total harvest weight (lb)	14,932.7
Community per capita harvest (lb)	144.2
Percentage using any resource	96.6%
Percentage attempting to harvest any resource	79.3%
Percentage harvesting any resource	79.3%
Percentage receiving any resource	96.6%
Percentage giving away any resource	82.8%
Number of households in sample	29
Number of resources asked about and identified voluntarily by respondents	114

Source ADF&G Division of Subsistence household surveys, 2014.

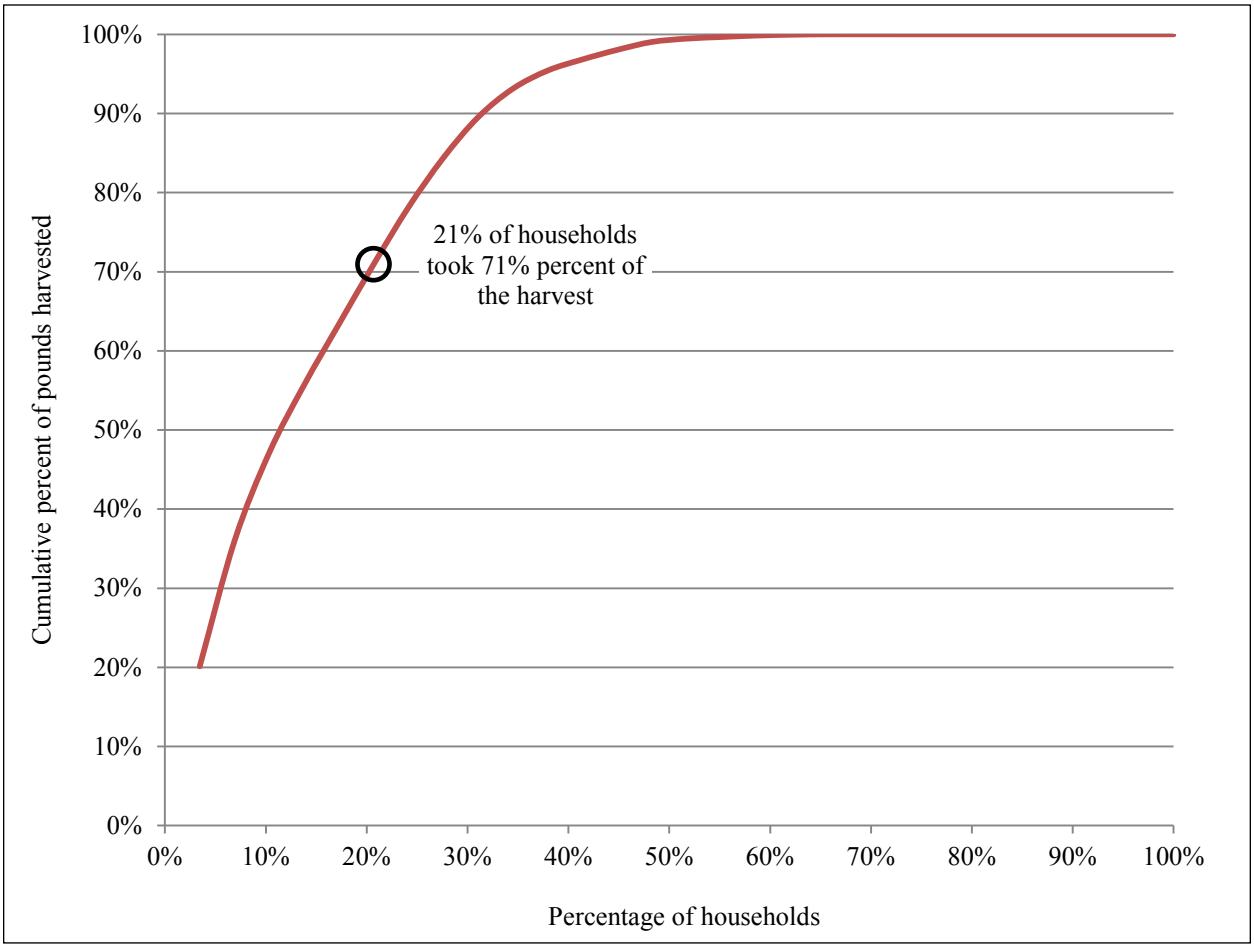


Figure 3-3.–Household specialization, Gulkana, 2013.

were fur, skins, and porcupine quills. In Gulkana, approximately 65% of the households used some wood for heating homes and the average annual cost of home heating in the 2013 study year was $2,563 (Table 3-12). The 35% of households reporting no use of firewood to heat their homes were primarily in village apartments that had heat provided by the Gulkana village wood biomass boiler.

Harvest Quantities and Composition

Table 3-13 reports estimated wild resource harvests and uses by Gulkana residents in 2013 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[1]). The "harvest" category includes resources harvested by any member of the surveyed household during the study year. The "use" category includes all 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 firewood, if not purchased, are included because they are an important part of the subsistence way of life. Differences between harvest and use percentages reflect sharing among households, which results in a wider distribution of wild foods.

The total estimated edible harvest for all fish, wildlife, and wild plant resources during 2013 for Gulkana was 14,933 lb, or 144 lb per capita (Table 3-13). Salmon provided the majority (63%, or 9,494 lb, providing

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

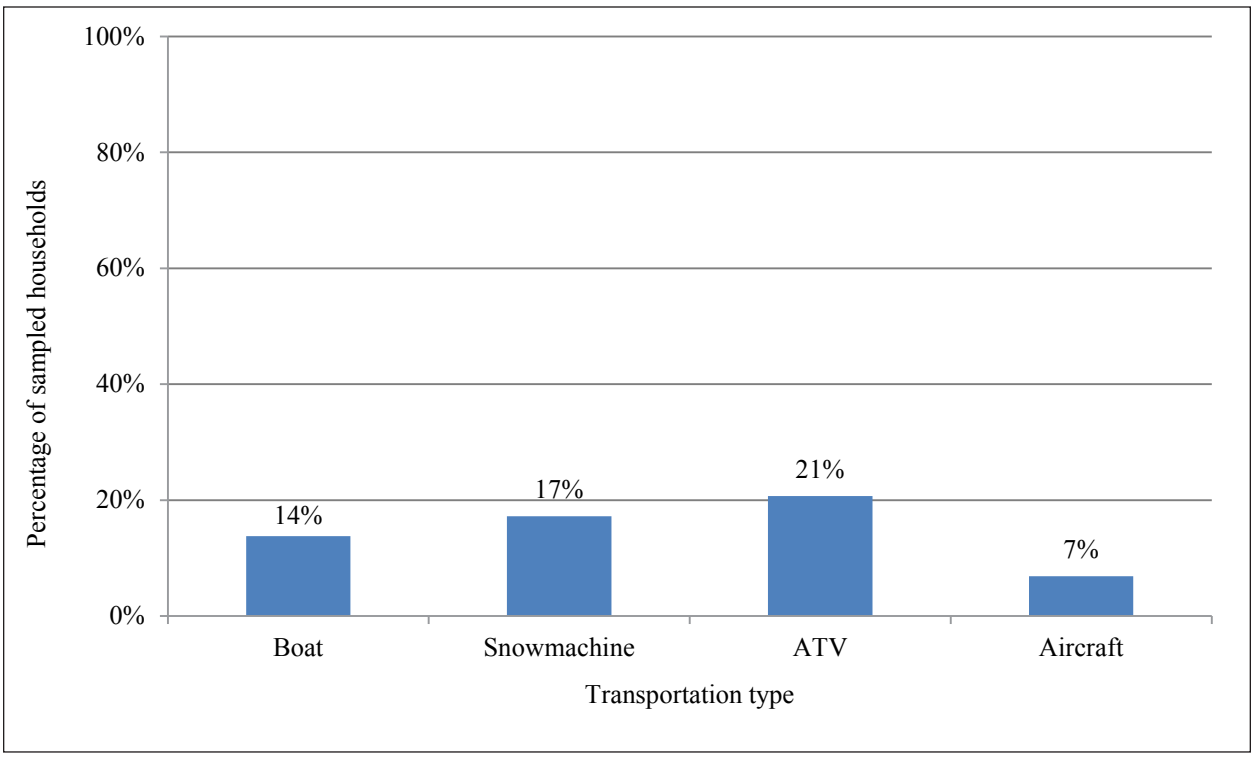


Figure 3-4.–Alternative modes of transportation used by sampled households to access wild resources, Gulkana, 2013.

92 lb per capita) of the total pounds of harvested wild resources (Figure 3-7; Table 3-13). The remaining composition of the total harvest included large land mammals, which provided 22% (3,239 lb, or 31 lb per capita); nonsalmon fish, which provided 10% (1,526 lb, or 15 lb per capita); vegetation, which provided 3% (419 lb, or 4 lb per capita); small land mammals, which provided 1% (143 lb, or 1 lb per capita); and birds and eggs, which also provided 1% (112 lb, or 1 lb per capita). The remaining resource categories used (marine invertebrates and marine mammals) were only received by community members and therefore not a part of the total harvest.

Seasonal Round

Residents of Gulkana harvest a wide variety of species throughout the year and like most rural Alaska communities they often target specific species during certain seasons of the year, following a cyclical harvest pattern that is in part defined by seasonal availability, and in part by laws, regulations, and land access. Many Gulkana subsistence harvest activities occur in the middle to upper Copper River drainage where most of the critical resources can be found, but residents also travel up the Richardson Highway to the Denali Highway in pursuit of moose, caribou, plants and berries, and birds (Figure 3-8). Residents will travel even farther for deep-sea fishing opportunities occurring primarily out of Valdez.

While harvest activities are ongoing throughout the year, this discussion begins with the most harvested resource in the community—salmon. In early June, Chinook salmon are the first salmon to arrive in the Copper River watershed, followed quickly by sockeye salmon. Salmon fishing starts in earnest by mid-

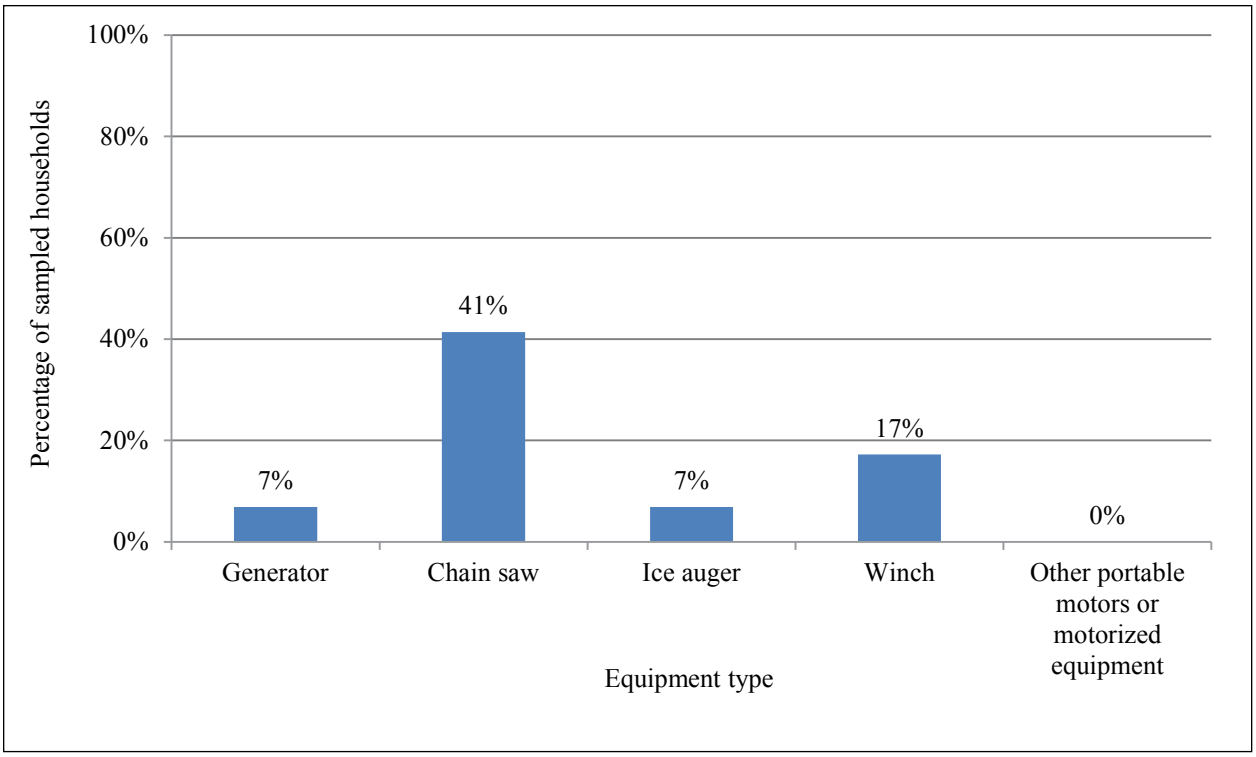


Figure 3-5.–Portable motorized equipment used by sampled households while searching for and harvesting wild resources, Gulkana, 2013.

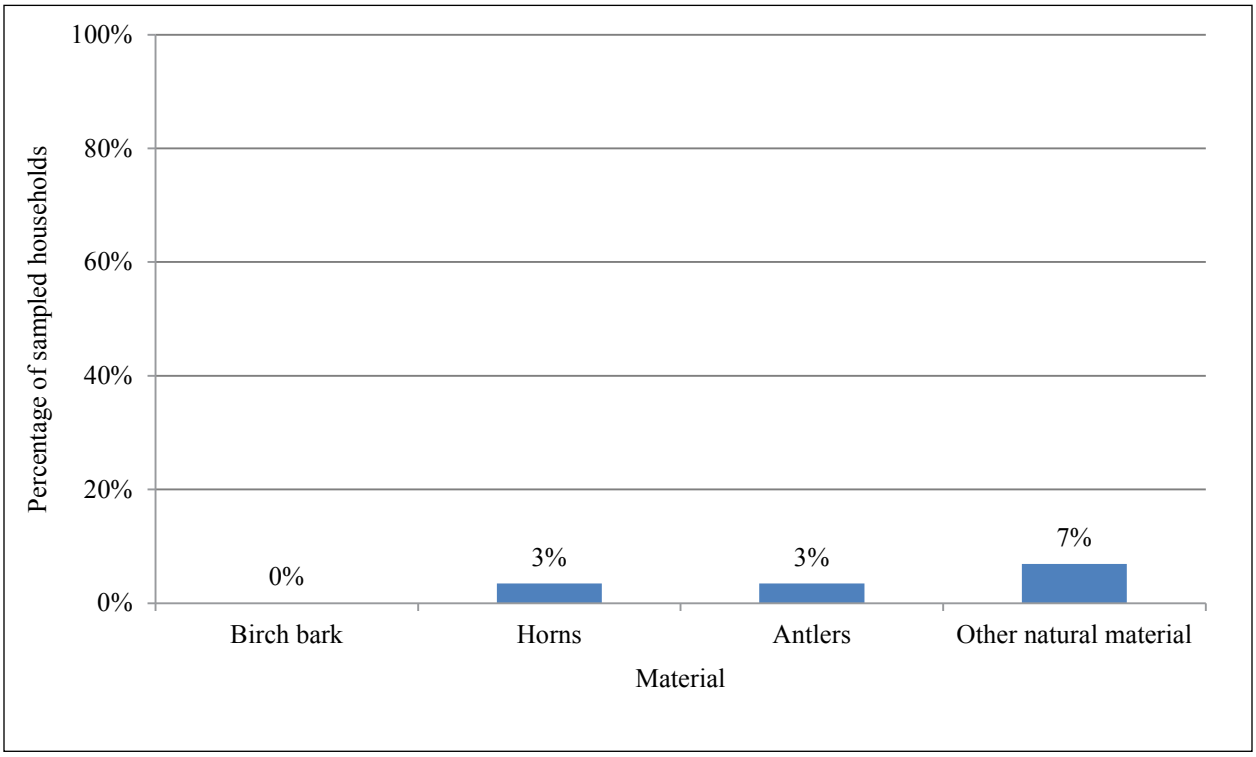


Figure 3-6.–Natural materials used by sampled households for making handicrafts, Gulkana, 2013.

Table 3-12.–Use of firewood for home heating in sampled households, Gulkana, 2013.

Community	Average annual cost of home heating	Household use of wood for home heating as a percentage of total fuel for heating											
		0%		1%–25%		26%–50%		51%–75%		76%–99%		100%	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Gulkana	$2,563	10	34.5%	5	17.2%	8	27.6%	1	3.4%	3	10.3%	2	6.9%

Source ADF&G Division of Subsistence household surveys, 2014.

Table 3-13.–Estimated use and harvests of fish, game, and vegetation resources, Gulkana, 2013.

Resource	Percentage of households: Use %	Attempt %	Harvest %	Receive %	Give %	Harvest weight (lb): Total	Mean per household	Per capita	Harvest amount[a]: Total	Unit	Mean per household	95% confidence limit (±)
All resources	**96.6**	**79.3**	**79.3**	**96.6**	**82.8**	**14,932.7**	**452.5**	**144.2**				**20.1**
Salmon	**89.7**	**44.8**	**44.8**	**75.9**	**65.5**	**9,494.4**	**287.7**	**91.7**				**21.5**
Chum salmon	3.4	0.0	0.0	3.4	3.4	0.0	0.0	0.0	0.0	ind	0.0	0.0
Coho salmon	27.6	3.4	3.4	24.1	17.2	84.9	2.6	0.8	13.7	ind	0.4	71.3
Chinook salmon	65.5	37.9	34.5	51.7	31.0	1,763.8	53.4	17.0	128.5	ind	3.9	30.0
Pink salmon	3.4	3.4	3.4	0.0	3.4	366.8	11.1	3.5	170.7	ind	5.2	71.3
Sockeye salmon	82.8	44.8	44.8	58.6	55.2	7,278.9	220.6	70.3	1,587.4	ind	48.1	21.1
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	6.9	0.0	0.0	6.9	3.4	0.0	0.0	0.0	0.0	ind	0.0	0.0
Nonsalmon fish	**69.0**	**34.5**	**34.5**	**62.1**	**34.5**	**1,525.6**	**46.2**	**14.7**				**42.3**
Pacific herring	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	ind	0.0	0.0
Eulachon (hooligan, candlefish)	3.4	0.0	0.0	3.4	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
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	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Lingcod	13.8	3.4	3.4	10.3	3.4	13.7	0.4	0.1	5.7	ind	0.2	71.3
Pacific halibut	51.7	6.9	6.9	44.8	10.3	375.5	11.4	3.6	375.5	lb	11.4	50.7
Arctic lamprey	3.4	0.0	0.0	3.4	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown rockfish	10.3	3.4	3.4	6.9	3.4	91.0	2.8	0.9	22.8	ind	0.7	71.3
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
Burbot	6.9	3.4	3.4	3.4	3.4	136.6	4.1	1.3	56.9	ind	1.7	71.3
Dolly Varden	3.4	3.4	3.4	0.0	3.4	41.0	1.2	0.4	45.5	ind	1.4	71.3
Lake trout	3.4	3.4	3.4	0.0	3.4	68.3	2.1	0.7	34.1	ind	1.0	71.3
Arctic grayling	55.2	27.6	27.6	41.4	27.6	219.1	6.6	2.1	312.9	ind	9.5	25.1
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
Longnose sucker	3.4	3.4	0.0	3.4	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	13.8	13.8	10.3	3.4	3.4	68.5	2.1	0.7	48.9	ind	1.5	46.3
Unknown trout	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 3-13.–Page 2 of 4.

Resource	Percentage of households: Use %	Attempt %	Harvest %	Receive %	Give %	Harvest weight (lb): Total	Mean per household	Per capita	Harvest amount[a]: Total	Unit	Mean per household	95% confidence limit (±)
Nonsalmon fish, continued												
Broad whitefish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Least cisco	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Humpback whitefish	3.4	3.4	3.4	0.0	3.4	398.3	12.1	3.8	227.6	ind	6.9	71.3
Round whitefish	13.8	3.4	3.4	10.3	3.4	113.8	3.4	1.1	113.8	ind	3.4	71.3
Unknown whitefishes	13.8	3.4	0.0	13.8	3.4	0.0	0.0	0.0	0.0	ind	0.0	0.0
Large land mammals	**89.7**	**51.7**	**20.7**	**79.3**	**41.4**	**3,238.6**	**98.1**	**31.3**				**27.5**
Bison	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Black bear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Brown bear	3.4	3.4	3.4	0.0	3.4	160.4	4.9	1.5	1.1	ind	0.0	71.3
Caribou	48.3	13.8	6.9	44.8	20.7	443.8	13.4	4.3	3.4	ind	0.1	52.4
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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Moose	89.7	51.7	17.2	79.3	27.6	2,560.3	77.6	24.7	5.7	ind	0.2	29.5
Dall sheep	10.3	6.9	3.4	6.9	6.9	74.0	2.2	0.7	1.1	ind	0.0	71.3
Small land mammals	**37.9**	**27.6**	**20.7**	**17.2**	**13.8**	**143.4**	**4.3**	**1.4**				**38.8**
Beaver	13.8	13.8	10.3	3.4	7.1	37.8	1.1	0.4	7.1	ind	0.2	65.6
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–cross phase	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–red phase	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	10.3	10.3	10.3	0.0	6.9	61.4	1.9	0.6	30.7	ind	0.9	42.0
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	3.4	3.4	3.4	0.0	0.0	0.0	0.0	0.0	2.3	ind	0.1	71.3
Marmot	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	20.7	13.8	13.8	6.9	10.3	22.5	0.7	0.2	19.3	ind	0.6	45.2
Porcupine	24.1	17.2	10.3	13.8	3.6	15.9	0.5	0.2	3.5	ind	0.1	51.5
Arctic ground (parka) squirrel	3.4	3.4	3.4	0.0	0.0	5.7	0.2	0.1	11.4	ind	0.3	71.3
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
Least 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

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Table 3-13.–Page 3 of 4.

Resource	Percentage of households: Use %	Attempt %	Harvest %	Receive %	Give %	Harvest weight (lb): Total	Mean per household	Per capita	Harvest amount[a]: Total	Unit	Mean per household	95% confidence limit (±)
Marine mammals	**20.7**	**0.0**	**0.0**	**20.7**	**6.9**	**0.0**	**0.0**	**0.0**				**0.0**
Fur seal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Harbor seal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown seal	6.9	0.0	0.0	6.9	3.4	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
Unknown whale	17.2	0.0	0.0	17.2	6.9	0.0	0.0	0.0	0.0	ind	0.0	0.0
Birds and eggs	**34.5**	**20.7**	**17.2**	**17.2**	**13.8**	**111.9**	**3.4**	**1.1**				**53.7**
Canvasback	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Spectacled 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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Mallard	10.3	3.4	3.4	6.9	3.4	9.1	0.3	0.1	9.1	ind	0.3	71.3
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
Black scoter	3.4	0.0	0.0	3.4	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Green-winged 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 ducks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Brant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Cackling goose	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Canada 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 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
Emperor goose	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Snow goose	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Tundra (whistling) swan	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
Spruce grouse	17.2	13.8	10.3	6.9	10.3	20.7	0.6	0.2	29.6	ind	0.9	56.0
Ruffed grouse	6.9	6.9	6.9	0.0	6.9	8.0	0.2	0.1	11.4	ind	0.3	49.5
Unknown ptarmigan	17.2	13.8	13.8	3.4	10.3	74.1	2.2	0.7	105.8	ind	3.2	61.3
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
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 eggs	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 3-13.–Page 4 of 4.

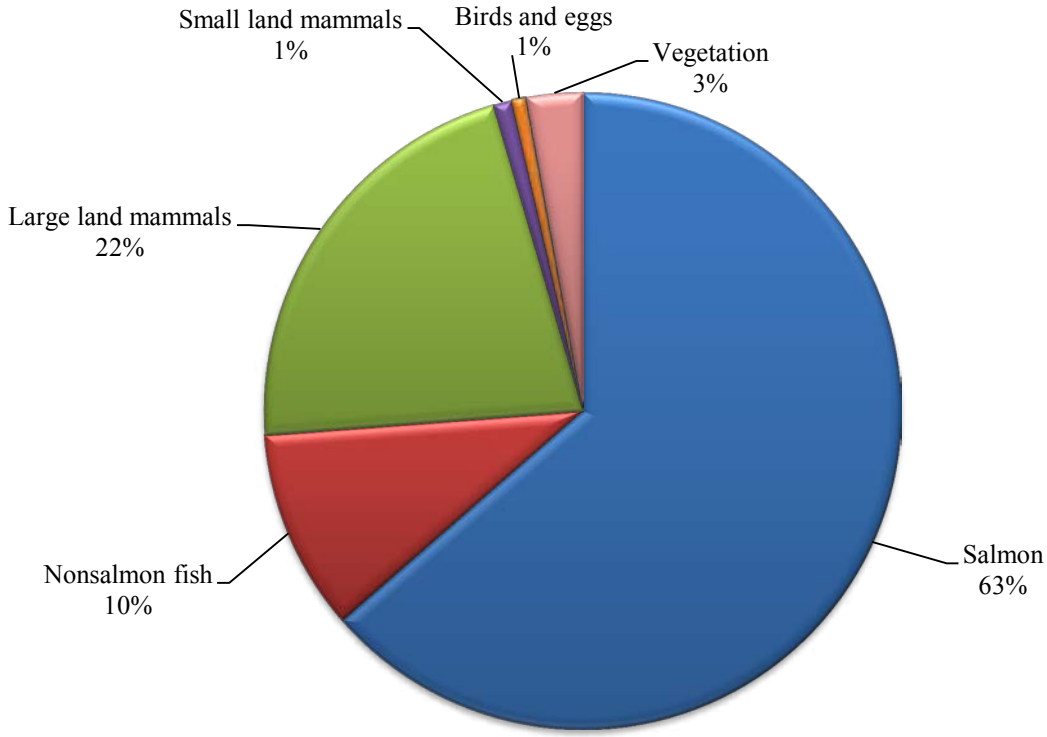
Resource	Percentage of households: Use %	Attempt %	Harvest %	Receive %	Give %	Harvest weight (lb): Total	Mean per household	Per capita	Harvest amount[a]: Total	Unit	Mean per household	95% confidence limit (±)
Marine invertebrates	**6.9**	**0.0**	**0.0**	**6.9**	**0.0**	**0.0**	**0.0**	**0.0**				**0.0**
Freshwater 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	3.4	0.0	0.0	3.4	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Dungeness crab	3.4	0.0	0.0	3.4	0.0	0.0	0.0	0.0	0.0	lb	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	lb	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	lb	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
Shrimp	3.4	0.0	0.0	3.4	0.0	0.0	0.0	0.0	0.0	lb	0.0	0.0
Squid	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Vegetation	**89.7**	**79.3**	**79.3**	**51.7**	**51.7**	**418.9**	**12.7**	**4.0**				**21.0**
Blueberry	75.9	55.2	55.2	37.9	24.1	210.1	6.4	2.0	52.5	gal	1.6	18.9
Lowbush cranberry	20.7	10.3	10.3	10.3	6.9	31.9	1.0	0.3	8.0	gal	0.2	39.9
Highbush cranberry	34.5	24.1	24.1	17.2	10.3	54.6	1.7	0.5	13.7	gal	0.4	43.6
Crowberry	3.4	3.4	3.4	0.0	0.0	0.6	0.0	0.0	0.1	gal	0.0	71.3
Raspberry	17.2	17.2	17.2	3.4	13.8	45.5	1.4	0.4	11.4	gal	0.3	33.3
Salmonberry	3.4	3.4	3.4	0.0	3.4	4.6	0.1	0.0	1.1	gal	0.0	71.3
Other wild berry	3.4	0.0	0.0	3.4	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Hudson's Bay (Labrador) tea	6.9	6.9	6.9	0.0	6.9	5.7	0.2	0.1	5.7	gal	0.2	50.6
Wild rose hips	3.4	3.4	3.4	0.0	3.4	54.6	1.7	0.5	13.7	gal	0.4	71.3
Other wild greens	3.4	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Unknown mushrooms	6.9	6.9	6.9	0.0	6.9	10.8	0.3	0.1	10.8	gal	0.3	51.3
Stinkweed	3.4	3.4	3.4	0.0	3.4	0.6	0.0	0.0	0.6	gal	0.0	71.3
Bark	3.4	3.4	3.4	0.0	3.4	0.0	0.0	0.0	0.6	gal	0.0	71.3
Roots	3.4	3.4	0.0	0.0	3.4	0.0	0.0	0.0	0.0	qt	0.0	0.0
Other wood	55.2	44.8	44.8	17.2	27.6	0.0	0.0	0.0	89.9	cord	2.7	24.2

Source ADF&G Division of Subsistence household surveys, 2014.

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.

a. Summary rows that include incompatible units of measure have been left blank.



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

Figure 3-7.–Composition of harvest by resource category in pounds usable weight, Gulkana, 2013.

June and continues through the coho run lasting into September. Most residents harvest their salmon by fish wheel. Some residents may travel to Valdez for rod and reel fishing for coho and pink salmon later in the season.

Nonsalmon freshwater fish are harvested all throughout the year and across a large area extending from Chitina to as far north as the Slana area along Glenn Highway–Tok Cutoff. For some families, freshwater fish precedes salmon as the first resource harvested for the summer season. Once the ice clears from local lakes and streams, residents may target freshwater fish as early as May using rod and reel. Harvest locations for this type of fishing include the Gulkana River, Moose Creek, and Pippen Lake. Many kinds of nonsalmon fish are also harvested during the fall, winter, and spring months by jigging through the ice and spear fishing.

Large land mammal hunting is an important fall activity that starts in August; depending on the resource and regulations, hunting effort can stretch through November with some opportunities existing for a spring harvest. During the study year most of the harvests took place between August and October with much of the effort taking place along the Richardson and Denali highways.

The majority of small land mammals are trapped for their fur during the winter months when snow is on the ground but others are harvested for their meat as well as their fur all throughout the year. An average trapping season most commonly extends from November through February depending on the snow conditions and the quality of the fur the trappers are harvesting.

Migratory birds and upland game birds are both harvested at different times throughout the year. Waterfowl are hunted in the spring but are most often harvested in the fall, while upland game birds are harvested opportunistically throughout the year while hunting for other resources.

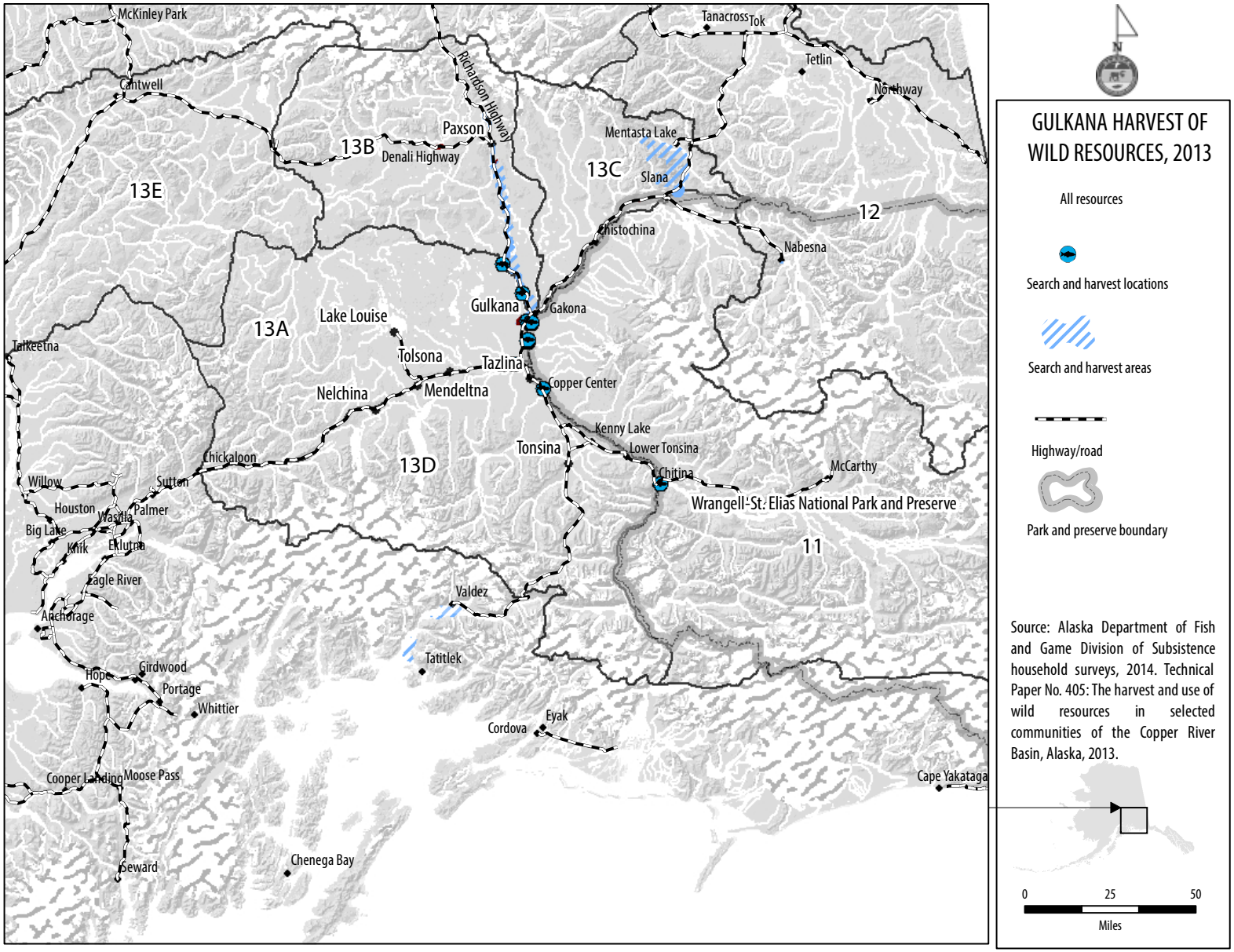


Figure 3-8.–Wild resources search and harvest areas, Gulkana, 2013.

Gulkana residents harvest plants, mushrooms, and berries during spring, summer, and fall. For example, stinkweed or wormwood is sought during the spring; mushrooms, rose hips, and yarrow are sought during the summer; blueberries, raspberries, currants, and salmonberries are gathered during late summer; and highbush and lowbush cranberries are gathered during fall. Harvesting firewood for home heating is an important year-round activity for Gulkana residents.

Use and Harvest Characteristics by Resource Category

Estimates of sharing indicate that 97% of Gulkana households received wild resources from other households and 83% of households gave resources away (Table 3-13). Salmon, large land mammals, and vegetation were the most commonly shared resources. Salmon were used by 90% of households, were given away by 66% of households, and received by 76% of households. Large land mammals were used by 90% of households, were given away by 41%, and received by 79% of households. Vegetation was used by 90% and vegetation resources were given away and received by 52% of households.

Figure 3-9 depicts the resources with the largest harvests (1% or more of the total harvest composition as estimated in pounds usable weight per person), by Gulkana households during the 2013 study year and Table 3-14 lists the top resources used by Gulkana households. Sockeye salmon made the largest contribution to Gulkana's 2013 wild resource harvest (49%), followed by moose (17%),Chinook salmon (12%), and caribou (3%) (Figure 3-9). Of all the available resources, moose was the most used by Gulkana residents (used by 90% of households), followed by sockeye salmon (83%), blueberries (76%), Chinook salmon (66%), Arctic grayling (55%), and Pacific halibut (52%). Of note, fish species were 6 of the top 10 most harvested resources (sockeye salmon, Chinook salmon, humpback whitefish, pink salmon, Pacific halibut, and Arctic grayling), but only 4 of these species made the most used list (sockeye salmon, Chinook salmon, Arctic grayling, and Pacific halibut). Pacific halibut contributed nearly the same amount to the community harvest as pink salmon (both at 4 lb per capita); however, Pacific halibut were used in more households (52% of households used halibut) than pink salmon (3% of households used pink salmon), which did not make the list of most used resources. This greater level of use is due in part to a sharing network for Pacific halibut.

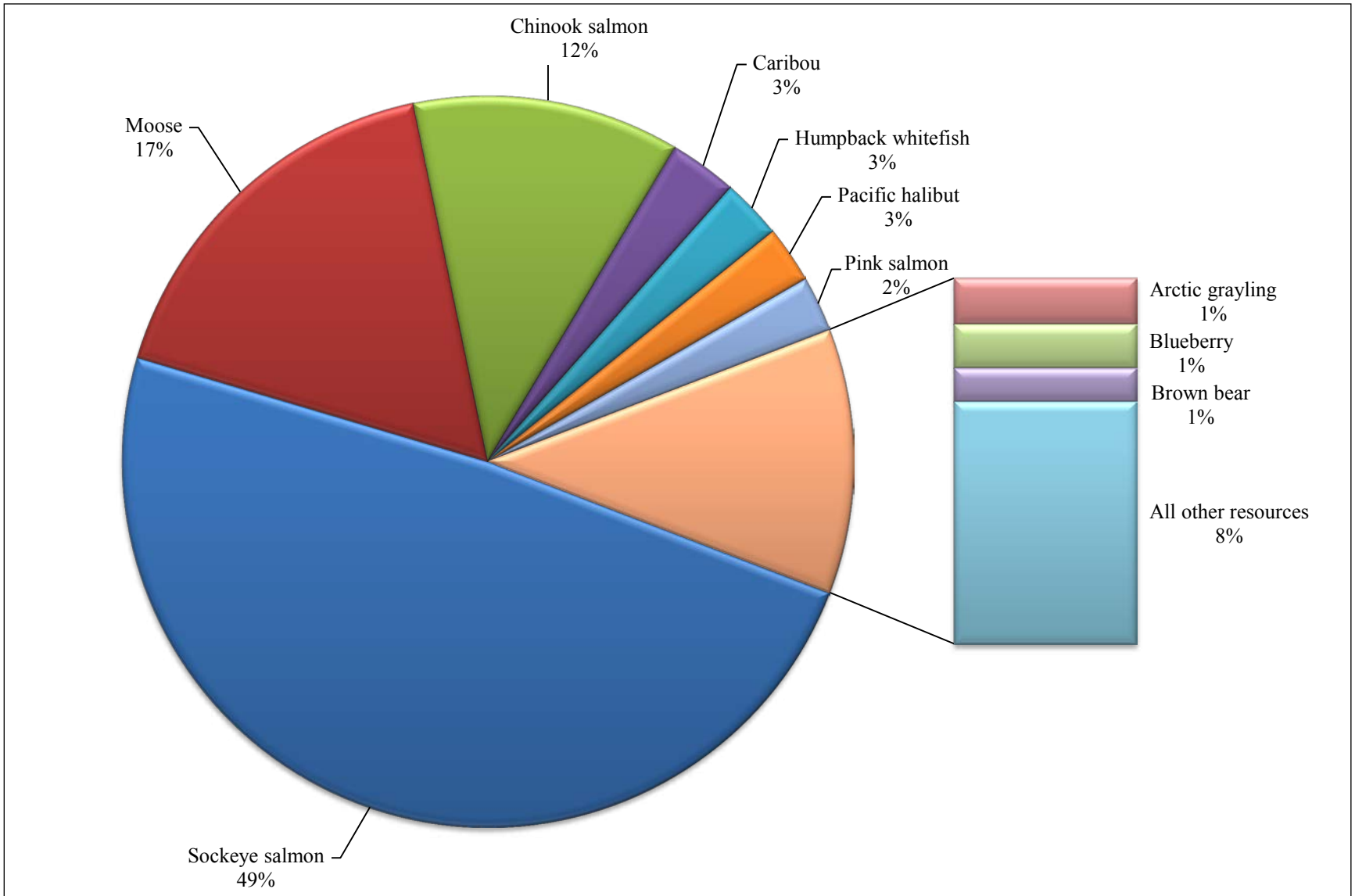
Salmon

For Gulkana residents, salmon composed 63% of the wild resource harvest in pounds usable weight in 2013 (Figure 3-7). The composition of the salmon harvest was as follows: 77% sockeye salmon (7,279 lb, or 70 lb per capita); 18% Chinook salmon (1,764 lb, or 17 lb per capita); 4% pink salmon (367 lb, or 4 lb per capita); and 1% coho salmon (85 lb, or 1 lb per capita) (Figure 3-10; Table 3-13).

In 2013, Gulkana households harvested a majority (91% of pounds usable weight) of their salmon with fish wheels; the remaining harvest was largely harvested with rod and reel (6% of pounds usable weight) (Table 3-15). In addition, a smaller amount of salmon (2% of usable weight) was taken with dip nets. The species of salmon harvested with fish wheels were sockeye and Chinook salmon. In comparison, all the coho and pink salmon harvested by Gulkana households in 2013 were taken with rod and reel.

Sockeye salmon, Chinook salmon, and coho salmon were the primary salmon species used by Gulkana residents in 2013 (Table 3-13). During 2013, 83% of households used sockeye salmon, 66% of households used Chinook salmon, and 28% of households used coho salmon. While the pink salmon harvest (367 lb) was more than the coho salmon harvest (85 lb), more households used coho salmon while only approximately 3% of households harvested and used pink salmon.

During the 2013 study year, Gulkana residents reported harvesting sockeye salmon in the Copper River east of the village of Gulkana, east of the Gulkana airport, southeast of Tazlina, northeast of Copper Center, and near the confluence of the Chitina and Copper rivers (Figure 3-11). Chinook salmon were reportedly harvested in the same locations as sockeye salmon except for the reported harvest near the confluence of the Chitina and Copper rivers. Coho and pink salmon were harvested by rod and reel in the Valdez inlet area.



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

Figure 3-9.–Top species harvested by percentage of total harvest in pounds usable weight, Gulkana, 2013.

Table 3-14.–Top ranked resources used by households, Gulkana, 2013.

Rank[a]	Resource	Percentage of households using
1.	Moose	89.7%
2.	Sockeye salmon	82.8%
3.	Blueberry	75.9%
4.	Chinook salmon	65.5%
5.	Arctic grayling	55.2%
6.	Pacific halibut	51.7%
7.	Caribou	48.3%
8.	Highbush cranberry	34.5%
9.	Coho salmon	27.6%
10.	Porcupine	24.1%

Source ADF&G Division of Subsistence household surveys, 2014.
a. Resources used by the same percentage of households share the lowest rank value instead of having sequential rank values.

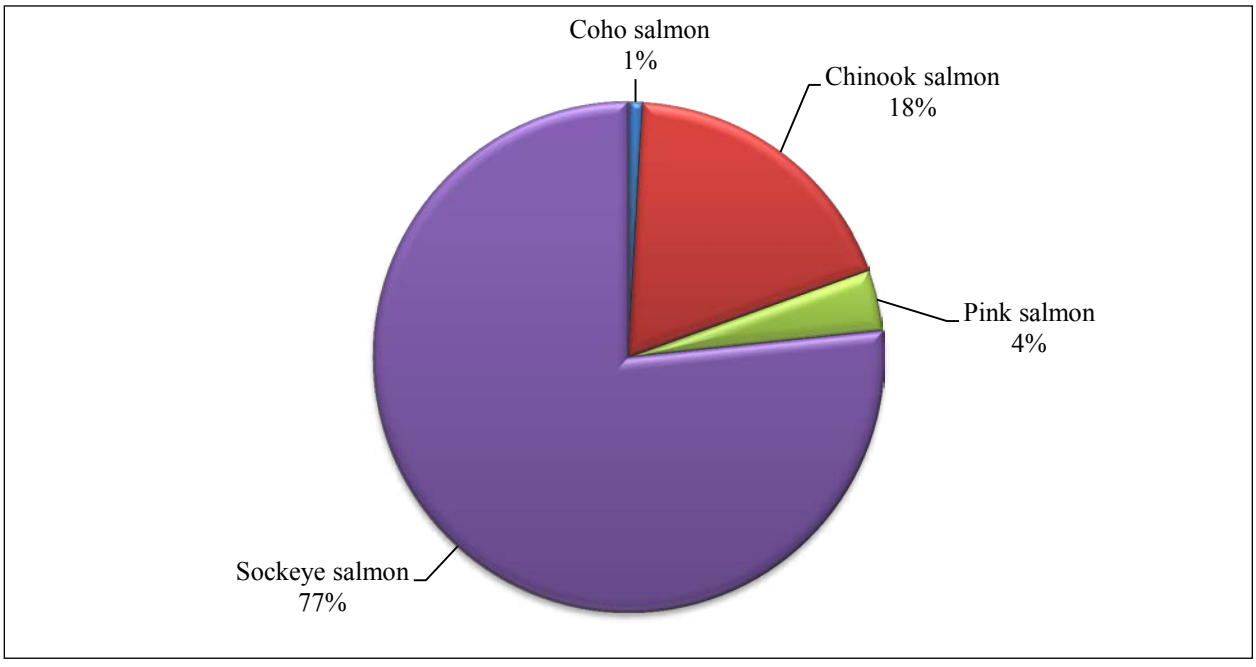


Figure 3-10.–Composition of salmon harvest in pounds usable weight, Gulkana, 2013.

Table 3-15.–Estimated percentages of salmon harvested by gear type, resource, and total harvest, Gulkana, 2013.

				Subsistence methods													
		Removed from commercial catch		Gillnet or seine		Fish wheel		Dip net		Other		Subsistence gear, any method		Rod and reel		Any method	
Resource	Percentage base	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Salmon	**Gear type**	**100.0%**	**100.0%**	**0.0%**	**0.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**0.0%**	**0.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
	Resource	**1.8%**	**1.6%**	**0.0%**	**0.0%**	**85.9%**	**90.7%**	**1.9%**	**2.0%**	**0.0%**	**0.0%**	**87.8%**	**92.7%**	**10.4%**	**5.6%**	**100.0%**	**100.0%**
	Total	**1.8%**	**1.6%**	**0.0%**	**0.0%**	**85.9%**	**90.7%**	**1.9%**	**2.0%**	**0.0%**	**0.0%**	**87.8%**	**92.7%**	**10.4%**	**5.6%**	**100.0%**	**100.0%**
Chum 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%	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%	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%	0.0%	0.0%	0.0%	0.0%	0.0%
Coho 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%	0.0%	6.9%	15.8%	0.7%	0.9%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	0.0%	0.7%	0.9%	0.7%	0.9%
Chinook salmon	Gear type	0.0%	0.0%	0.0%	0.0%	7.6%	19.7%	6.5%	17.1%	0.0%	0.0%	7.6%	19.7%	1.2%	6.0%	6.8%	18.6%
	Resource	0.0%	0.0%	0.0%	0.0%	96.3%	96.3%	1.8%	1.8%	0.0%	0.0%	98.2%	98.2%	1.8%	1.8%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	6.5%	17.9%	0.1%	0.3%	0.0%	0.0%	6.6%	18.2%	0.1%	0.3%	6.8%	18.6%
Pink 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%	0.0%	86.2%	68.4%	9.0%	3.9%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	0.0%	9.0%	3.9%	9.0%	3.9%
Sockeye salmon	Gear type	100.0%	100.0%	0.0%	0.0%	92.4%	80.3%	93.5%	82.9%	0.0%	0.0%	92.4%	80.3%	5.7%	9.7%	83.5%	76.7%
	Resource	2.2%	2.2%	0.0%	0.0%	95.0%	95.0%	2.2%	2.2%	0.0%	0.0%	97.1%	97.1%	0.7%	0.7%	100.0%	100.0%
	Total	1.8%	1.6%	0.0%	0.0%	79.3%	72.8%	1.8%	1.6%	0.0%	0.0%	81.1%	74.5%	0.6%	0.5%	83.5%	76.7%
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%	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%	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%	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%	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%	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%	0.0%	0.0%	0.0%	0.0%	0.0%

Source ADF&G Division of Subsistence household surveys, 2014.

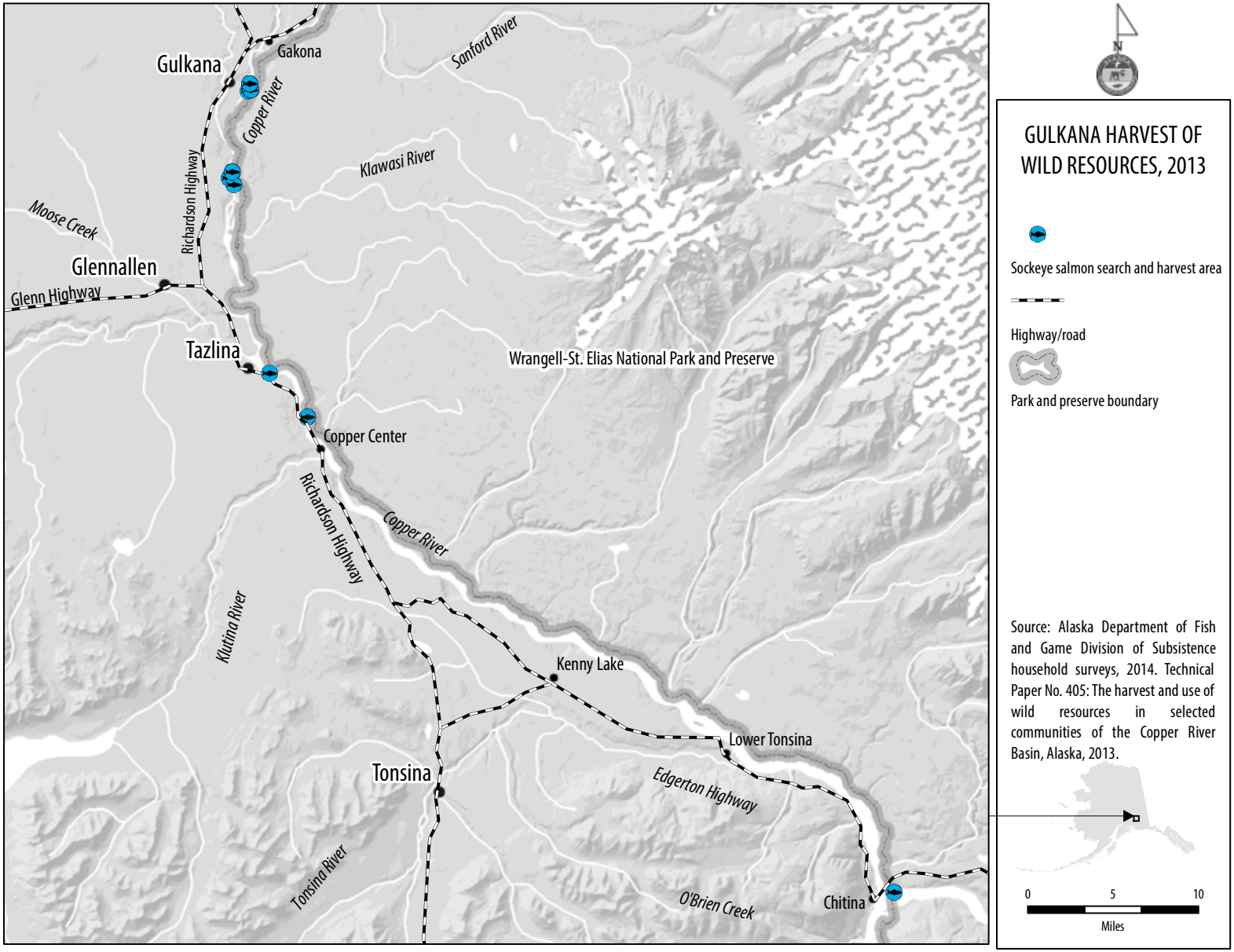


Figure 3-11.–Fishing and harvest locations of sockeye salmon, Gulkana, 2013.

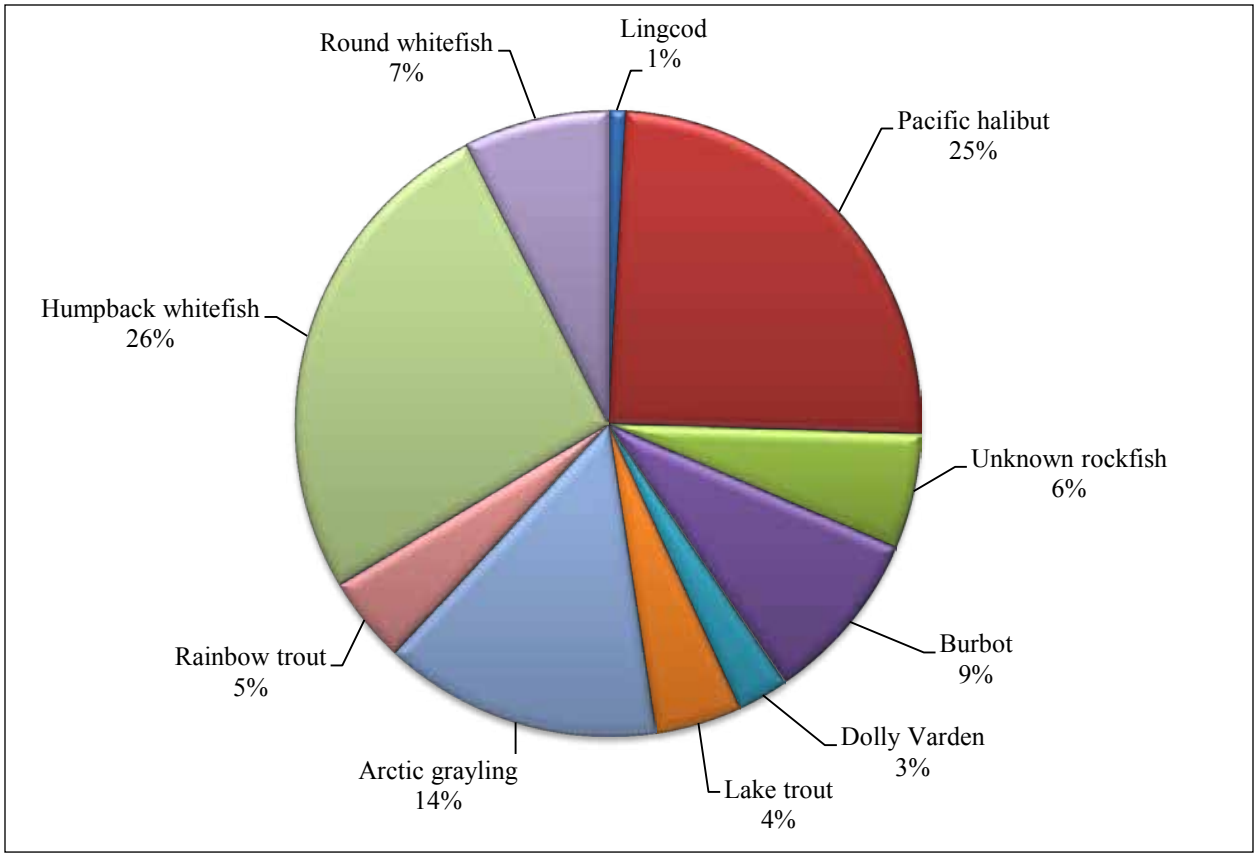


Figure 3-12.–Composition of nonsalmon fish harvest in pounds usable weight, Gulkana, 2013.

Nonsalmon Fish

In 2013, Gulkana residents harvested an estimated total of 1,526 lb, or 15 lb per capita, of nonsalmon fish (Table 3-13). Nonsalmon fish composed 10% of the wild resource harvest in pounds in 2013 (Figure 3-7). In terms of total pounds and percentages harvested, most of the nonsalmon fish harvest was humpback whitefish (398 lb, or 4 lb per capita), Pacific halibut (376 lb, or 4 lb per capita), Arctic grayling (219 lb, or 2 lb per capita), burbot (137 lb, or 1 lb per capita), and round whitefish (114 lb, or 1 lb per capita); combined these 5 species composed 81% of the nonsalmon fish harvest (Table 3-13; Figure 3-12). The remaining composition of nonsalmon harvests by Gulkana residents included unknown rockfish (6%), rainbow trout (5%), lake trout (4%), Dolly Varden (3%), and lingcod (1%).

Table 3-16 lists the percentage of the number and pounds of each nonsalmon fish species harvested by Gulkana residents in 2013 by gear type. Gulkana residents harvested most of their nonsalmon fish with rod and reel (57% of usable weight). Other harvests of nonsalmon fish were accomplished by spearfishing for species such as humpback and round whitefishes (100% of harvests for those species) and by jigging through the ice for species such as burbot and rainbow trout (9% of the rainbow trout usable weight harvested).

During 2013, 69% of Gulkana households used nonsalmon fish, 35% harvested nonsalmon fish, 35% shared nonsalmon fish, and 62% received nonsalmon fish (Table 3-13). As noted, above Pacific halibut was the primary nonsalmon fish shared with an estimated 45% of Gulkana households receiving halibut from other households.

During the 2013 study year, Gulkana respondents reported harvesting humpback and round whitefishes near the confluence of Suslota Creek and Slana River (Figure 3-13). Arctic grayling were reportedly harvested in the Gulkana River and in Moose Creek near Glennallen. In addition, Gulkana residents traveled to Valdez to

Table 3-16.–Estimated percentages of nonsalmon fish harvested by gear type, resource, and total nonsalmon fish harvest, Gulkana, 2013.

				Subsistence methods											
		Removed from commercial catch		Gillnet or seine		Ice fish		Other		Subsistence gear, any method		Rod and reel		Any method	
Resource	Percentage base	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Nonsalmon fish	**Gear type**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
	Resource	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**4.9%**	**9.4%**	**27.4%**	**33.6%**	**32.4%**	**42.9%**	**67.6%**	**57.1%**	**100.0%**	**100.0%**
	Total	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**4.9%**	**9.4%**	**27.4%**	**33.6%**	**32.4%**	**42.9%**	**67.6%**	**57.1%**	**100.0%**	**100.0%**
Pacific herring	Gear type	0.0%	0.0%	0.0%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	0.0%	0.0%	0.0%
Pacific tomcod	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Starry flounder	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Lingcod	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	1.6%	0.5%	0.9%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	0.5%	0.9%	0.5%	0.9%
Pacific halibut	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	44.7%	43.1%	30.2%	24.6%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	30.2%	24.6%	30.2%	24.6%
Arctic lamprey	Gear type	0.0%	0.0%	0.0%	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%	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%	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%	0.0%	0.0%	2.7%	10.5%	1.8%	6.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	1.8%	6.0%	1.8%	6.0%

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Table 3-16.–Page 2 of 3.

Resource	Percentage base	Removed from commercial catch		Subsistence methods											
				Gillnet or seine		Ice fish		Other		Subsistence gear, any method		Rod and reel		Any method	
		Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Unknown sculpin	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Burbot	Gear type	0.0%	0.0%	0.0%	0.0%	92.6%	95.5%	0.0%	0.0%	14.1%	20.8%	0.0%	0.0%	4.6%	9.0%
	Resource	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	4.6%	9.0%	0.0%	0.0%	4.6%	9.0%	0.0%	0.0%	4.6%	9.0%
Dolly Varden	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.4%	4.7%	3.7%	2.7%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	3.7%	2.7%	3.7%	2.7%
Lake trout	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.1%	7.8%	2.7%	4.5%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	2.7%	4.5%	2.7%	4.5%
Arctic grayling	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	37.2%	25.2%	25.2%	14.4%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	25.2%	14.4%	25.2%	14.4%
Northern pike	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Longnose sucker	Gear type	0.0%	0.0%	0.0%	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%	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%	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%	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%	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%	0.0%	0.0%	0.0%
Rainbow trout	Gear type	0.0%	0.0%	0.0%	0.0%	7.4%	4.5%	0.0%	0.0%	1.1%	1.0%	5.3%	7.1%	3.9%	4.5%
	Resource	0.0%	0.0%	0.0%	0.0%	9.3%	9.3%	0.0%	0.0%	9.3%	9.3%	90.7%	90.7%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.4%	0.4%	0.0%	0.0%	0.4%	0.4%	3.6%	4.1%	3.9%	4.5%
Unknown trout	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Broad whitefish	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Least cisco	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Humpback whitefish	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	66.7%	77.8%	56.5%	60.8%	0.0%	0.0%	18.3%	26.1%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	18.3%	26.1%	18.3%	26.1%	0.0%	0.0%	18.3%	26.1%

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Table 3-16.–Page 3 of 3.

Resource	Percentage base	Removed from commercial catch		Subsistence methods											
				Gillnet or seine		Ice fish		Other		Subsistence gear, any method		Rod and reel		Any method	
		Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Round whitefish	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	33.3%	22.2%	28.2%	17.4%	0.0%	0.0%	9.1%	7.5%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	9.1%	7.5%	9.1%	7.5%	0.0%	0.0%	9.1%	7.5%
Unknown whitefishes	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%

Source ADF&G Division of Subsistence household surveys, 2014.

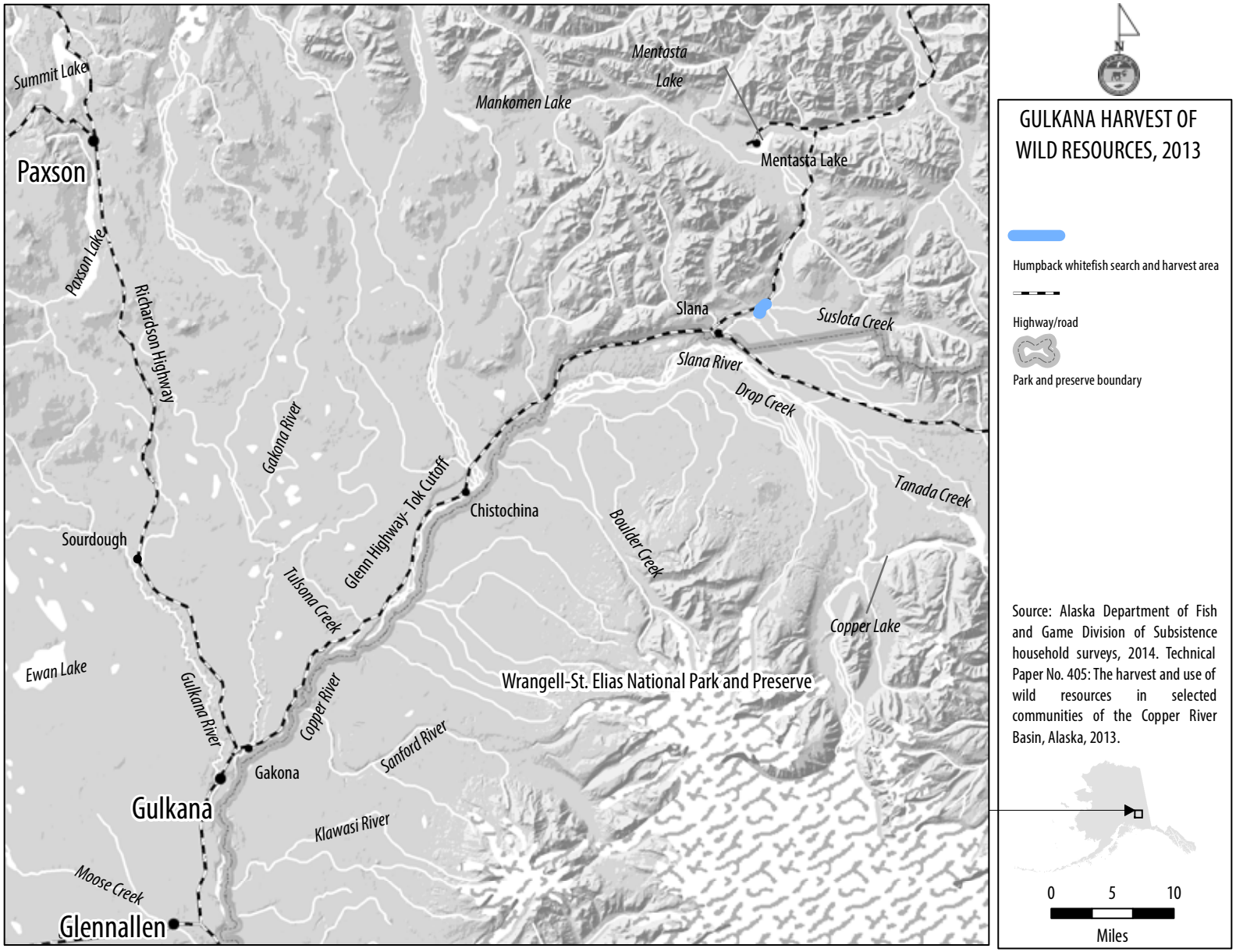


Figure 3-13.–Fishing and harvest locations of humpback whitefish, Gulkana, 2013.

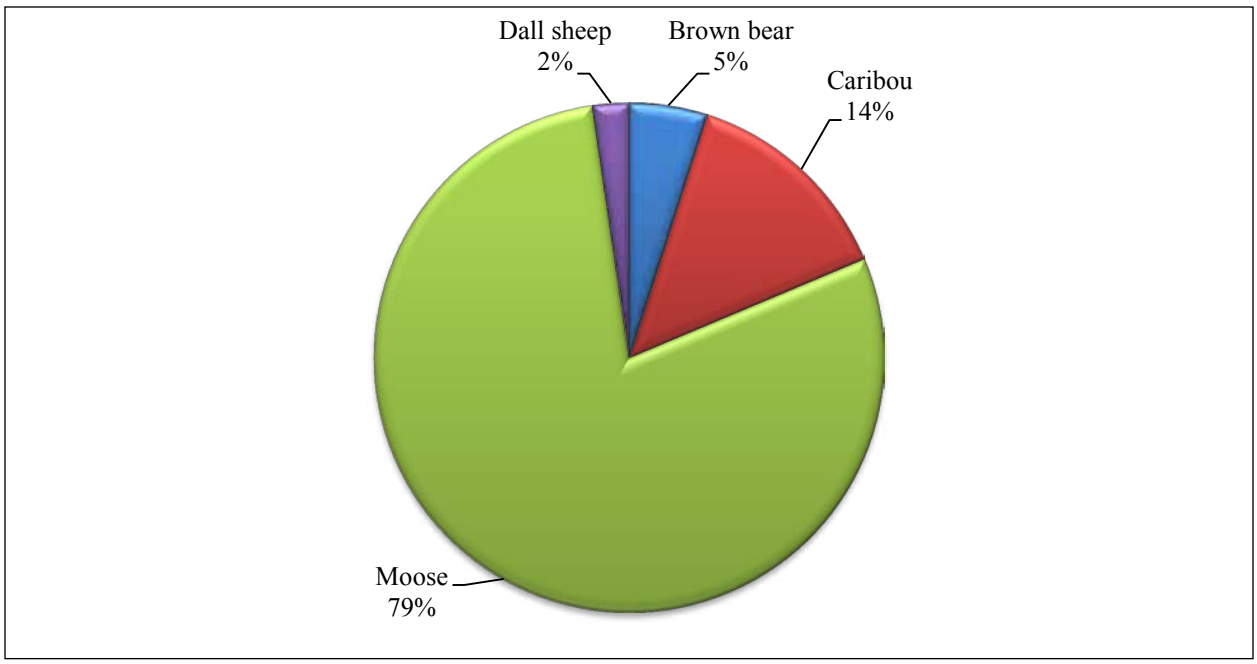


Figure 3-14.–Composition of large land mammal harvest in pounds usable weight, Gulkana, 2013.

harvest Pacific halibut, lingcod, and unknown rockfish along with coho salmon and pink salmon, mentioned previously, in Prince William Sound.

Large Land Mammals

In 2013, large land mammals, predominately moose, made up 22% of the total Gulkana wild resource harvest by weight (Figure 3-7). Moose, caribou, brown bears, and Dall sheep made up the composition of the large land mammal harvest for the community (Figure 3-14). Moose provided 79% of the usable pounds of large land mammals harvested by Gulkana households. Moose were used by 90% of Gulkana households (52% of households hunted moose and 17% of community households were successful harvesters) (Table 3-13). According to the study, the majority of the successful moose hunting took place during August and September. An estimated 3 moose were harvested in August, 1 in September, and 1 moose was harvested during an unknown month (Table 3-17). Moose were received almost twice as much compared to caribou among Gulkana households (79% of households received moose from other households and in comparison 45% received caribou) (Table 3-13). This may point to the fact that moose are larger animals so there is more usable meat to share and that it is common for hunters to cooperatively hunt and share the harvest among their family and community members. In addition, few caribou were harvested—3 caribou compared to an estimated 5–6 moose.

In 2013, caribou made up 14% of the usable harvest of large land mammals for Gulkana households (Table 3-13; Figure 3-14). An estimated 2 caribou were harvested by Gulkana households in November and 1 was harvested in an unknown month (Table 3-17). Many Gulkana households that hunt caribou reported a lack of opportunity to harvest the migrating Nelchina herd as it crossed the Richardson Highway. In 2013, the lack of opportunity stemmed from the yearly quota of 2,500 Nelchina caribou being reached in the fall season (season ends September 20), which resulted in the winter season not opening. As a general rule, the Nelchina herd migrates across the Richardson Highway around the third week of October and the state and federal winter hunts are opened during this time. Because there was no winter season in regulatory year 2013, hunters missed the opportunity to hunt during the period when caribou were actively crossing the Richardson Highway.

Table 3-17.–Estimated large land mammal harvests by month and sex, Gulkana, 2013.

Resource	Estimated harvest by month													Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk	
All large land mammals	**0.0**	**0.0**	**0.0**	**1.1**	**0.0**	**0.0**	**0.0**	**3.4**	**2.3**	**0.0**	**2.3**	**0.0**	**2.3**	**11.4**
Bison	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Black bear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Brown bear	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**1.1**
Caribou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	0.0	1.1	**3.4**
Caribou, male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	0.0	0.0	**2.3**
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**
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	3.4	1.1	0.0	0.0	0.0	1.1	**5.7**
Moose, bull	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.4	1.1	0.0	0.0	0.0	0.0	**4.6**
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**
Dall sheep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	**1.1**

Source ADF&G Division of Subsistence household surveys, 2014.

During the 2013 study year, Gulkana households harvested an estimated 1 brown bear, which made up 5% of the usable harvest of large land mammals (Table 3-13; Figure 3-14). Brown bears were used by only 3% of households (Table 3-13). The single brown bear was harvested in April (Table 3-17).

In 2013, Gulkana households harvested approximately 1 Dall sheep, which made up 2% of the usable harvest of large land mammals (Table 3-13; Figure 3-14). Dall sheep were used by 10% of Gulkana households (Table 3-13). The single Dall sheep was harvested in September (Table 3-17).

During the 2013 study year, Gulkana households reported searching for moose west of Gulkana village as well as along the Richardson Highway in between Gulkana village and Paxson (Figure 3-15). In addition, moose were sought and harvests occurred along the Denali Highway west of Paxson. Residents of Gulkana traveled in search of caribou along the Richardson Highway between Sourdough and Paxson. Brown bears were hunted north of Gakona village within the Gakona River drainage. Dall sheep were hunted in the mountains north and west of Slana.

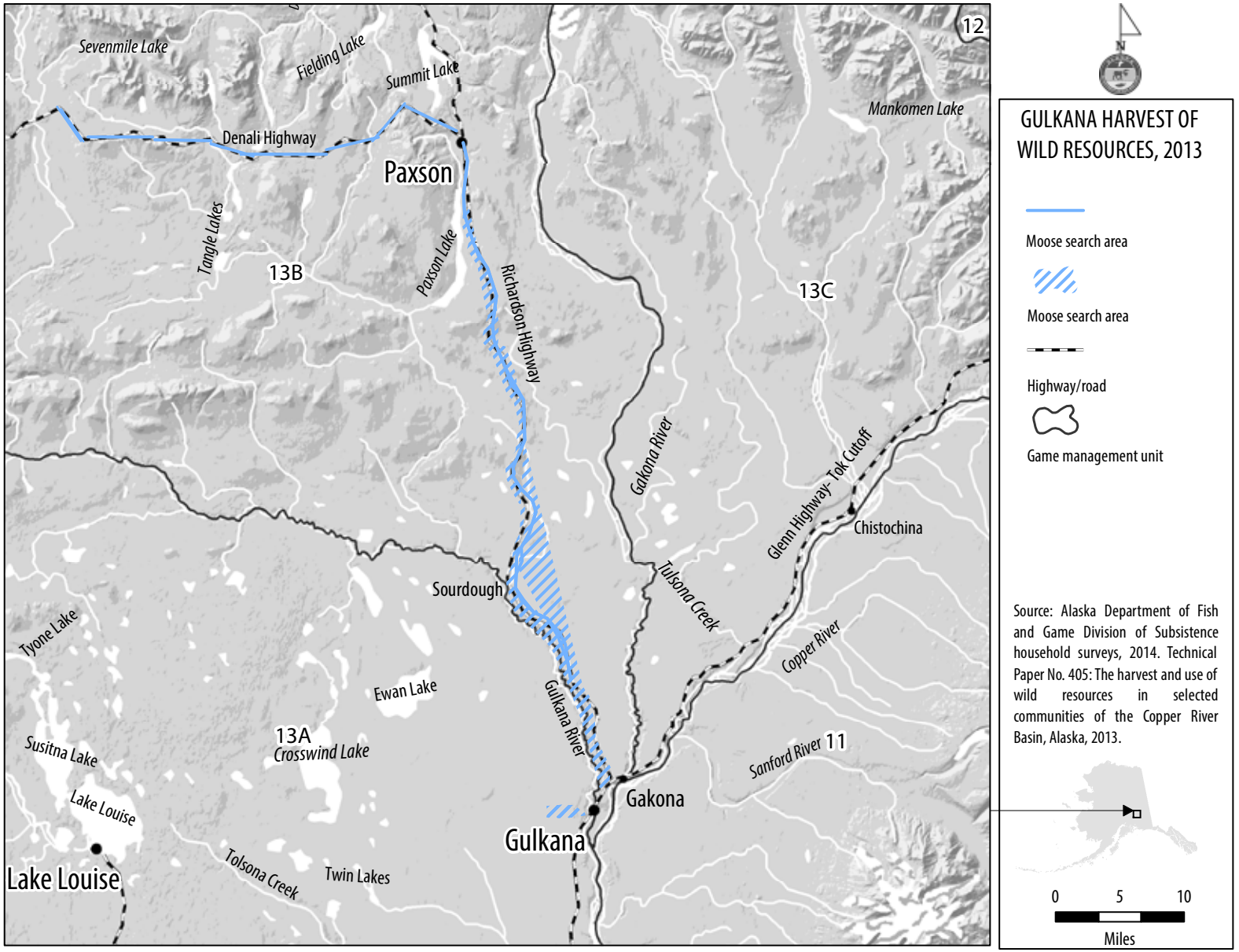


Figure 3-15.–Hunting locations of moose, Gulkana, 2013.

Table 3-18.–Estimated small land mammal/furbearer harvests by month, Gulkana, 2013.

Resource	Estimated harvest by month													Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk	
All small land mammals	**2.3**	**2.4**	**6.8**	**5.9**	**5.7**	**0.0**	**0.0**	**2.3**	**19.4**	**22.8**	**6.8**	**0.0**	**0.0**	**74.3**
Beaver	0.0	2.4	0.0	4.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**7.1**
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–cross phase	0.0	0.0	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–red phase	0.0	0.0	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	2.3	9.1	13.7	5.7	0.0	0.0	**30.7**
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	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**2.3**
Marmot	0.0	0.0	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	6.8	1.1	5.7	0.0	0.0	0.0	2.3	2.3	1.1	0.0	0.0	**19.3**
Porcupine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	1.2	0.0	0.0	0.0	**3.5**
Arctic ground (parka) squirrel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.7	5.7	0.0	0.0	0.0	**11.4**
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**
Least 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, 2014.

Small Land Mammals/Furbearers

The harvest and use of small land mammals is a traditional activity for Gulkana residents; harvests are made to gather both food and fur. There are a handful of active trappers among Gulkana residents today and some households actively pursue small land mammals primarily for food, particularly snowshoe hares.

As listed in Table 3-13, the total harvest of small land mammals by Gulkana residents in 2013 for food was 143 lb (1 lb per capita). The harvest of small land mammals composed approximately 1% of Gulkana's total harvest of wild food resources in 2013 (Figure 3-7). Gulkana's small land mammal food harvest came from snowshoe hares (61 lb), beavers (38 lb), muskrats (23 lb), porcupines (16 lb), and Arctic ground squirrels (6 lb) (Table 3-13); these species were harvested mostly in the colder months, including January through May and August through November (Table 3-18). The composition of the small land mammal harvest by individual animals harvested, including species harvested for both food and fur, was made up of snowshoe hares (41%), muskrats (26%), Arctic ground squirrels (15%), beavers (10%), porcupines (5%), and lynx (3%) (Figure 3-16). Furbearers such as lynx were harvested—mostly for sale in the fur market—along with a portion of the beavers and muskrats harvested (Figure 3-17).

The search and harvest areas for small land mammals in 2013 included areas along Richardson Highway between the Glenn Highway–Tok Cutoff and Paxson (Figure 3-18). Additional search and harvest areas for small land mammals went undocumented and/or respondents declined to designate such areas.

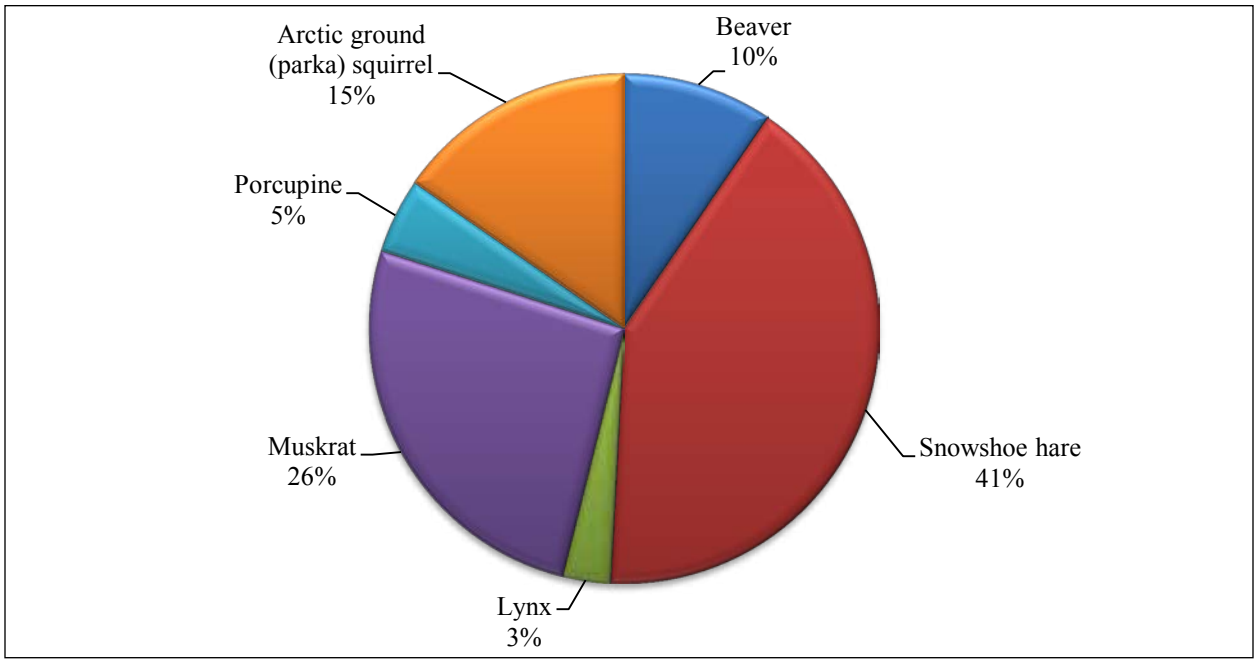


Figure 3-16.–Composition of small land mammal/furbearer harvest by individual animals harvested, Gulkana, 2013.

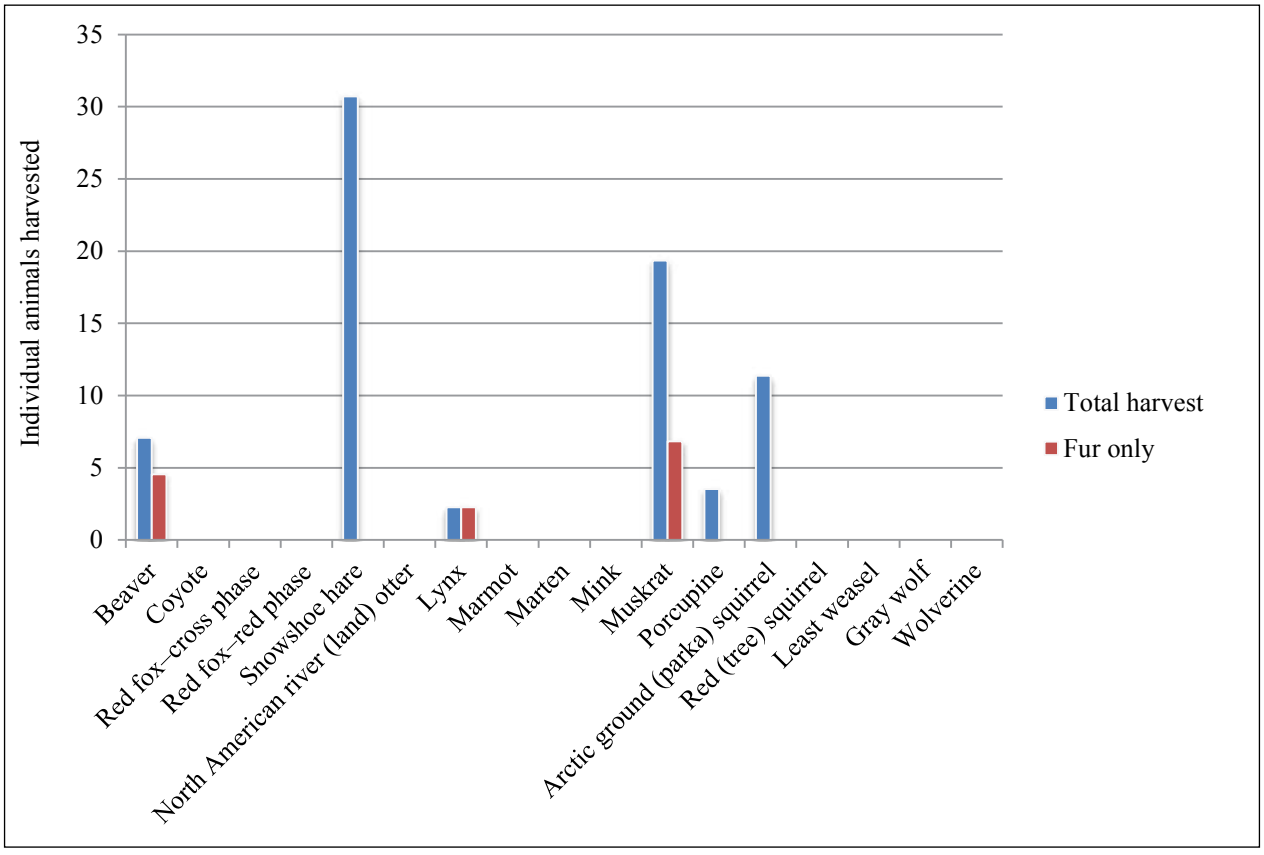


Figure 3-17.–Estimated small land mammal/furbearer harvests for fur and food only, Gulkana, 2013.

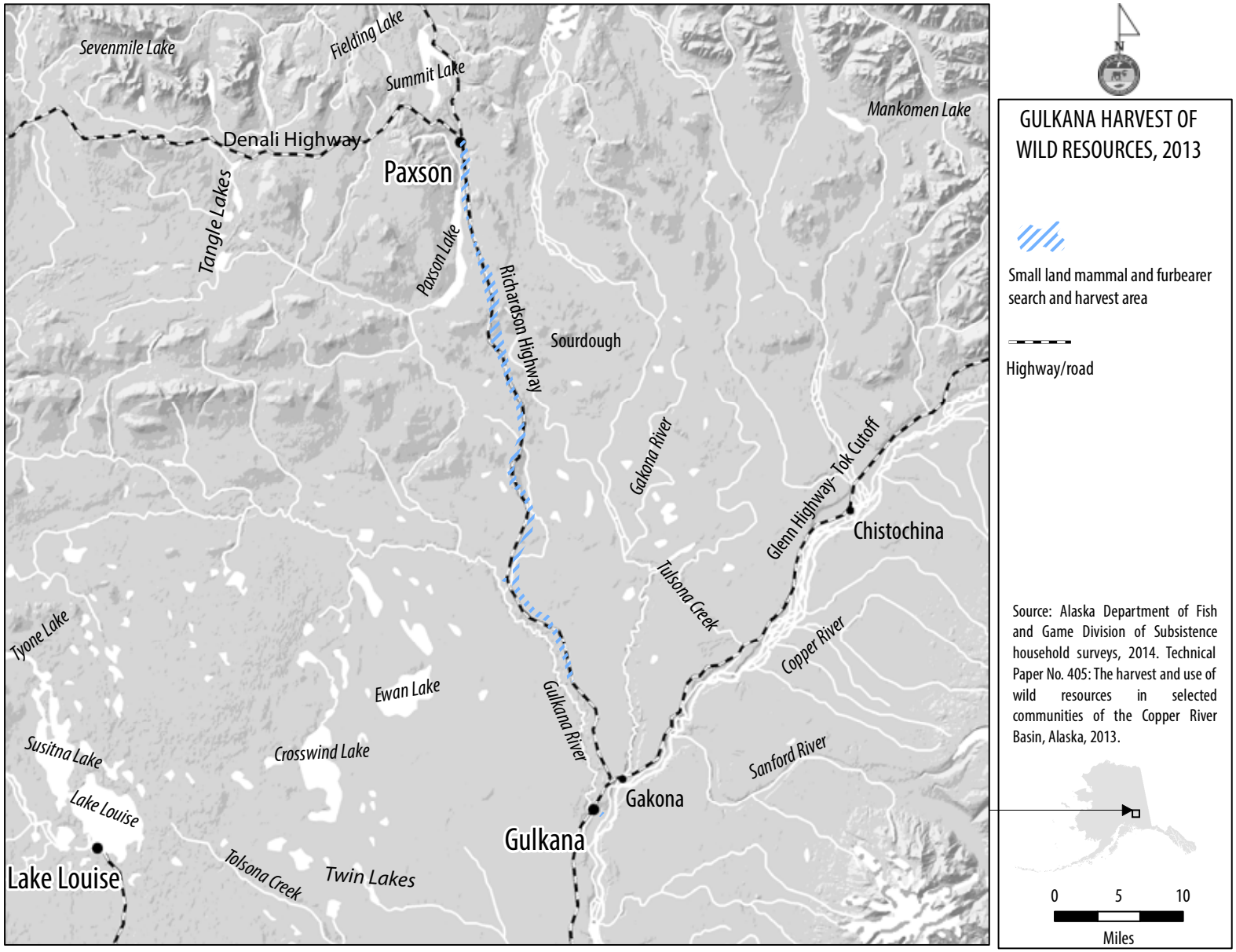
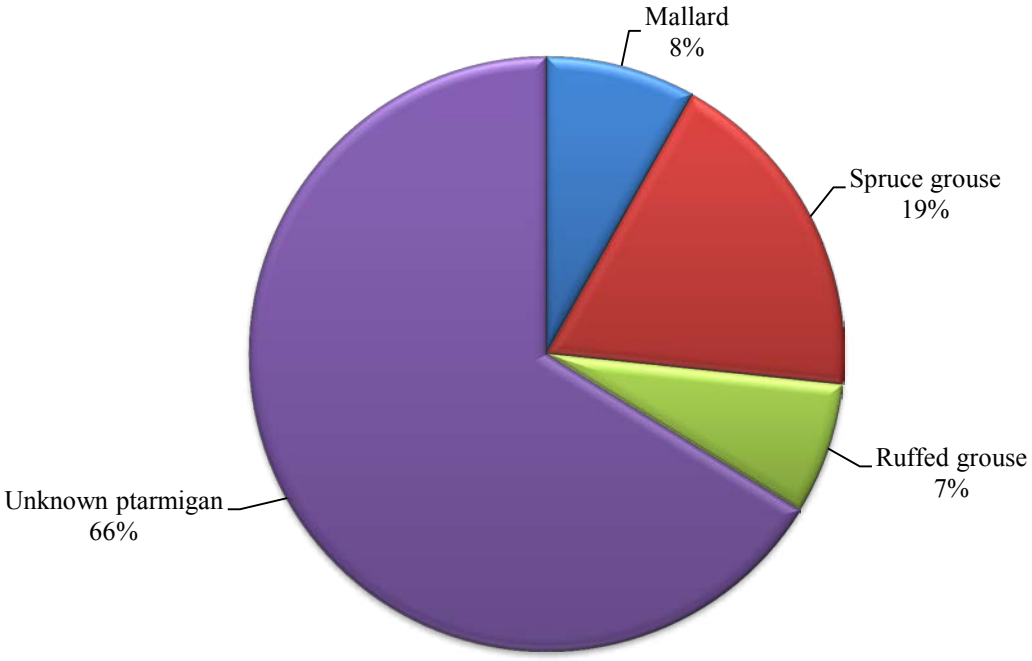


Figure 3-18.–Hunting and trapping locations of small land mammals/furbearers, Gulkana, 2013.



Note No bird eggs were harvested.

Figure 3-19.–Composition of bird and bird egg harvest in pounds usable weight, Gulkana, 2013.

Birds and Eggs

Birds were used by 35% of Gulkana households (Table 3-13). The total harvest of upland game birds, which includes grouses and ptarmigan, was approximately 103 lb, or 1 lb per capita. Upland game birds composed 92% of the total bird harvest (Figure 3-19). The total estimated harvest of migratory birds—all of which were mallard ducks—composed 8% of the bird harvest. No bird eggs were harvested or used by Gulkana households in 2013 (Table 3-13).

Unknown ptarmigan accounted for most of the bird harvest by the community (74 lb), followed by spruce grouse (21 lb), mallards (9 lb), and ruffed grouse (8 lb) (Table 3-13). These birds were harvested primarily in the spring and fall months (Table 3-19).

In 2013, Gulkana residents harvested upland birds in several spots along the Richardson Highway between Gulkana and Paxson and north of Paxson near Summit Lake (Figure 3-20). Migratory bird search and harvest areas were not documented in maps.

Marine Mammals

As listed in Table 3-13, Gulkana households did not harvest or attempt to harvest marine mammals in 2013. However, approximately 21% of households used and received marine mammals. Marine mammals were received by Gulkana households from households located outside of Gulkana and they were shared by 7% of households within the community. The species of marine mammals that were received and used included unknown seal (most likely seal oil) and unknown whale.

Table 3-19.–Estimated bird and bird egg harvests by season, Gulkana, 2013.

Resource	Estimated harvest by season					
	Winter	Spring	Summer	Fall	Season unknown	**Total**
All birds	**1.1**	**60.3**	**2.3**	**92.2**	**0.0**	**155.9**
Canvasback	0.0	0.0	0.0	0.0	0.0	**0.0**
Spectacled 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**
Mallard	0.0	0.0	0.0	9.1	0.0	**9.1**
Northern pintail	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**
Green-winged teal	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown ducks	0.0	0.0	0.0	0.0	0.0	**0.0**
Brant	0.0	0.0	0.0	0.0	0.0	**0.0**
Cackling goose	0.0	0.0	0.0	0.0	0.0	**0.0**
Canada goose	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**
Emperor goose	0.0	0.0	0.0	0.0	0.0	**0.0**
Snow goose	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**
Tundra (whistling) swan	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**
Spruce grouse	0.0	11.4	1.1	17.1	0.0	**29.6**
Ruffed grouse	0.0	3.4	0.0	8.0	0.0	**11.4**
Unknown ptarmigan	1.1	45.5	1.1	58.0	0.0	**105.8**
Unknown duck eggs	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown goose eggs	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown gull eggs	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown eggs	0.0	0.0	0.0	0.0	0.0	**0.0**

Source ADF&G Division of Subsistence household surveys, 2014.

Marine Invertebrates

As listed in Table 3-13, Gulkana households did not harvest or attempt to harvest marine invertebrates in 2013. However, approximately 7% of households used and received marine invertebrates. Three species of marine invertebrates received by Gulkana households from households located outside of Gulkana included razor clams, Dungeness crab, and shrimp.

Vegetation

The majority (90%) of households in Gulkana used vegetation during the 2013 study year (Table 3-13). Harvested edible vegetation consisted of a total of 419 lb, or 4 lb per capita. The primary harvest of edible vegetation was composed of berries (83%), followed by plants and greens (14%), and mushrooms (3%) (Figure 3-21).

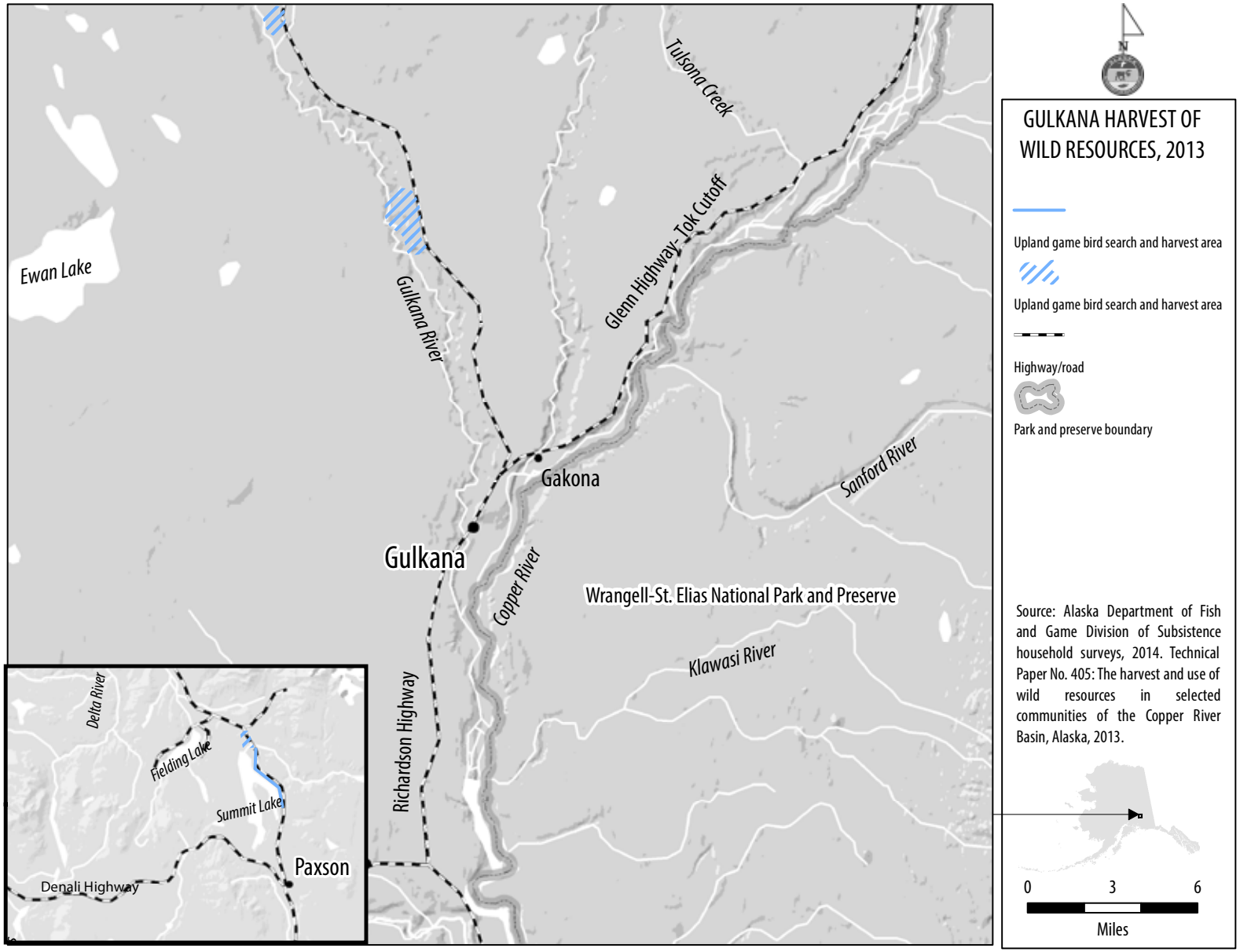


Figure 3-20.–Hunting and harvest locations of upland game birds, Gulkana, 2013.

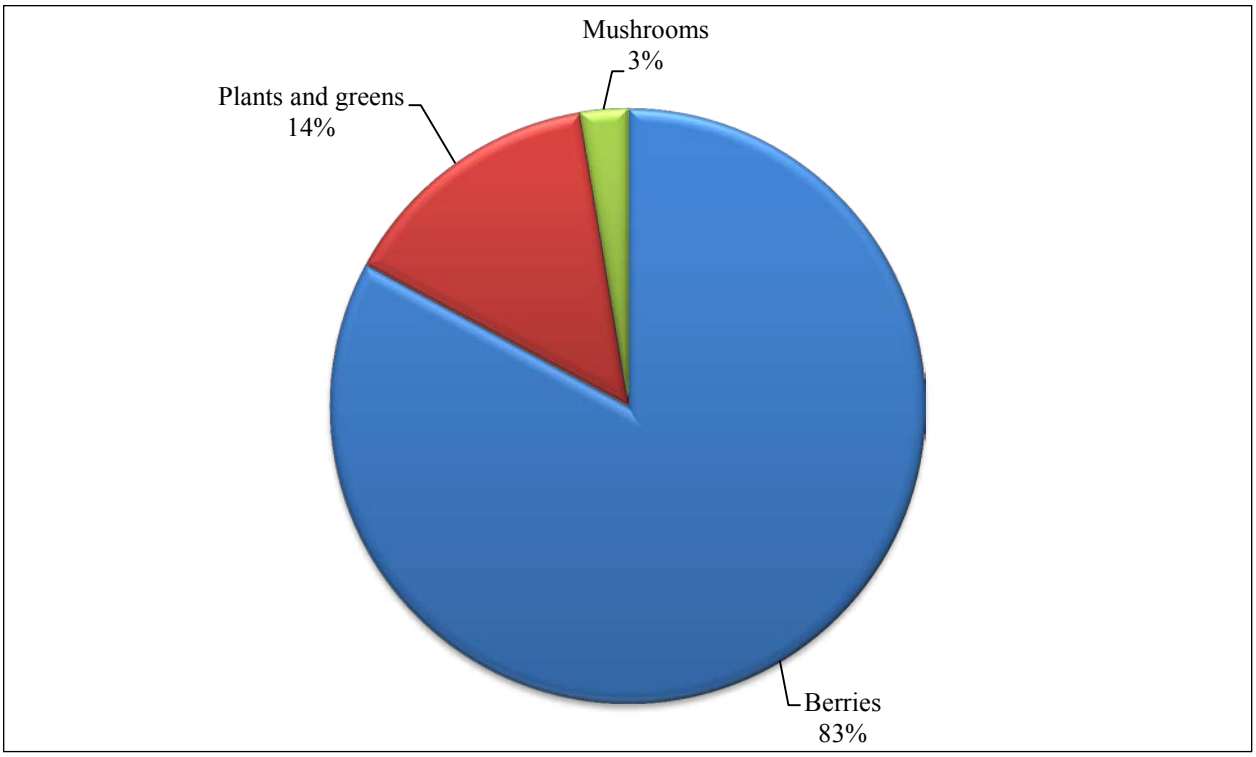


Figure 3-21.–Composition of vegetation harvest by type and pounds usable weight, Gulkana, 2013.

In 2013, 7 different kinds of berries were used and 6 were harvested by Gulkana households (Table 3-13). The largest portion of the berry harvest came from blueberries (210 lb); highbush cranberries (55 lb); raspberries (46 lb); and lowbush cranberries (32 lb). Blueberries were received by 38% and shared by 24% of households; highbush cranberries were received by 17% and shared by 10% of households; raspberries were received by 3% and shared by 14% of households; and lowbush cranberries were received by 10% and shared by 7% of households. Additionally, 3% of households received and used other wild berries.

During the 2013 study year, 6 different kinds of plants and greens were used (including bark and roots) and 4 kinds were harvested by Gulkana households; 3 kinds contributed to the harvest weight (61 lb) (Table 3-13). The largest portion of the plants and greens harvest came from wild rose hips (55 lb). In addition, unknown mushroom species were harvested and used in 2013 by Gulkana households. The harvest of the unknown mushrooms was 11 lb and the harvest was shared by 7% of households.

This study also collected information on the harvest of wood, but a usable harvest weight is not calculated. Wood is often considered an important resource and can play a critical role in the seasonal round of communities. As mentioned in previous sections, firewood is also often an important source of fuel for heating homes. Table 3-13 includes "other wood," which consists of all wood harvested for firewood, handicrafts, smoke houses, and other purposes.

Fifty-five percent of Gulkana households used and 45% harvested other wood in 2013 (Table 3-13). A total of approximately 90 cords of wood were harvested by the community as a whole. This harvest of wood does not include wood that was purchased or harvested commercially to be sold.

Berries were harvested in and around Gulkana village, west of the village, north of the junction between the Glenn Highway–Tok Cutoff along the Richardson Highway, east of Paxson Lake, and east of Tangle Lakes on the Denali Highway (Figure 3-22). Firewood was harvested primarily around Gulkana village. There are no data on the search and harvest areas for plants, greens, and mushrooms.

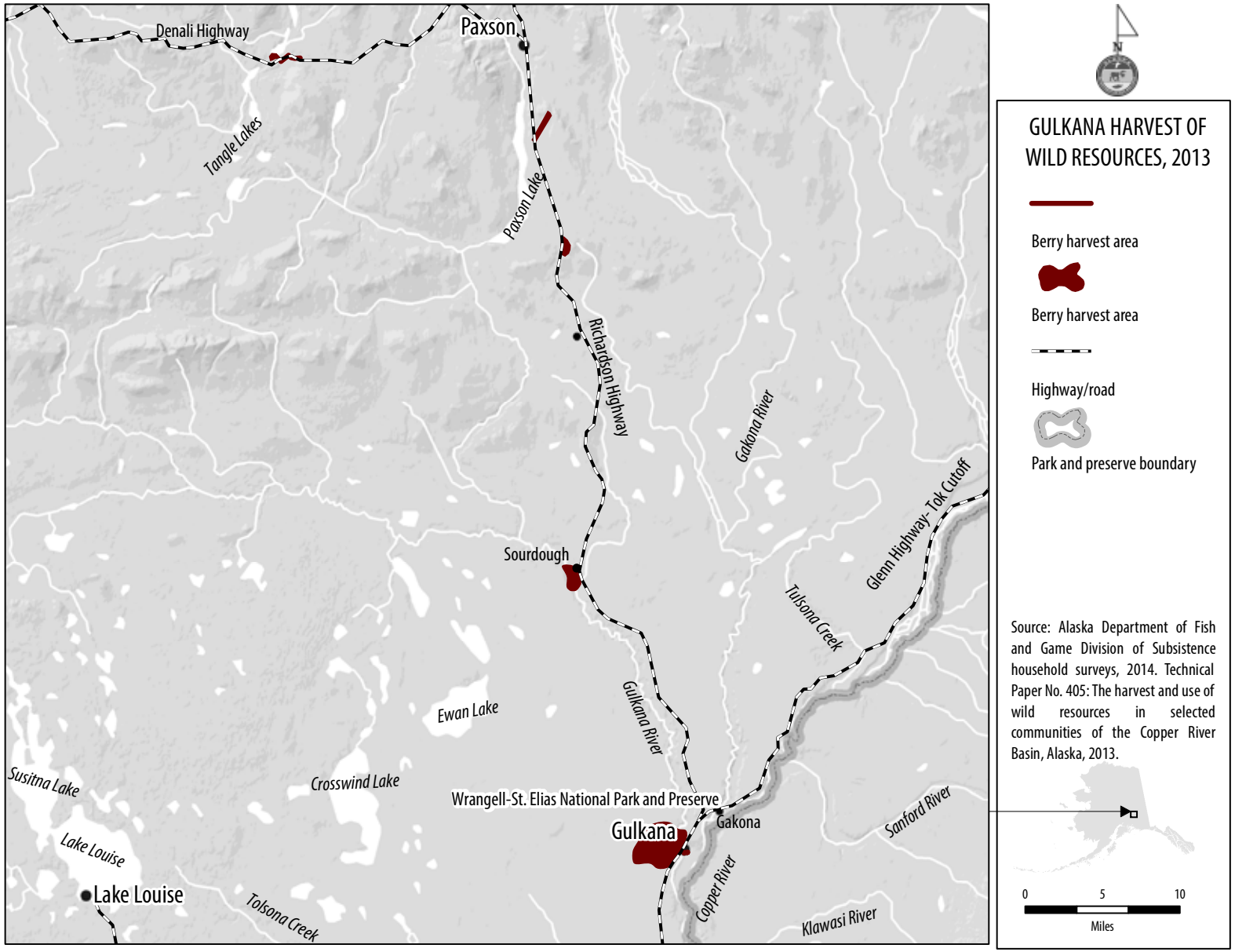


Figure 3-22.–Gathering and harvest locations of berries and plants, greens, and mushrooms, Gulkana, 2013.

Comparing Harvests and Uses in 2013 with Previous Years

Harvest Assessments

For 10 resource categories and for all resources combined, survey respondents were asked to assess whether their uses and harvests in the 2013 study year were less, more, or about the same as other recent years. "Other recent years" was defined as about the last 5 years. Table 3-20 reports the number of valid responses for each category, the number of households that did not respond, and the number of households that did not use a resource category or all resources combined. In Table 3-20, response percentages are based on the number of valid responses for each category to contextualize these assessments within the set of community households that typically use each category.

Figure 3-23 depicts responses to the "less, same, more" assessment question. Households that said they did not ordinarily "use" something are not included within the results. This results in fewer responses for less commonly used categories such as bird eggs or marine invertebrates, and manifests in the chart as a very short set of colored bars (or none in the case of bird eggs) compared to categories such as salmon or large land mammals, which are ordinarily used by most households. Some households did not respond to the question.

Taking all resources into consideration, a little more than one-half of Gulkana households, 52%, said they used less wild resources in general over the previous 12 months compared to recent years (Table 3-20). A smaller number, 26% of households, said they used about the same amount, and 22% said they used more. Of note 48% of households reported that they used less salmon and large land mammals during the study year and 38% reported less use of vegetation and small land mammals.

Table 3-21 and Table 3-22 depict, by resource category, the reasons Gulkana respondents gave for less or more use, respectively. This was an open-ended question and respondents could provide more than 1 reason for each resource category. Project staff grouped the responses into categories, such as regulations hindering residents from harvesting resources, 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 outside effects on residents' opportunities to engage in hunting, fishing, and gathering activities.

Of the surveyed households that provided assessments for less use of any resources during the 2013 study year, the reasons most cited were fewer resources available (45%), less sharing (36%), working/no time (32%), weather/environment (32%), and unsuccessful efforts (28%) (Table 3-21). Weather/environment was the main reason cited for less use of salmon (43% of responding households). Resources being less available was the main reason cited for less use of large land mammals (29% of responding households) and small land mammals (64% of responding households). Of those households that reported their use of any resource was more during the study year as compared to recent years (17 households of 29), 71% cited more sharing (received more) as the main reason for more use of any resource (Table 3-22).

The impact to households from not getting enough wild resources is reported in Table 3-23. Salmon and large land mammals were among the resources noted in Figure 3-23 that households used less. The impact from not getting enough salmon was noted as minor by 7 households and major by 4 households out of 12 households reporting that they did not get enough salmon. For large land mammals the impact was noted as minor by 7 households and major by 8 households out of 15 that did not get enough. For all resources 62% of households (out of 26) said that they did not get enough resources in 2013 and of those respondents 50% said that the impact from not getting enough resources was major.

Table 3-20.–Changes in household uses of resources compared to recent years, Gulkana, 2013.

Resource category	Sampled households	Valid responses[a]	Households reporting use: Total households Number	Total households Percentage	Less Number	Less Percentage	Same Number	Same Percentage	More Number	More Percentage	Households not using Number	Households not using Percentage
Any resource	29	29	29	100.0%	22	75.9%	24	82.8%	17	58.6%	29	100.0%
All resources	**29**	**27**	**27**	**93.1%**	**14**	**51.9%**	**7**	**25.9%**	**6**	**22.2%**	**0**	**0.0%**
Salmon	29	29	29	100.0%	14	48.3%	10	34.5%	5	17.2%	0	0.0%
Nonsalmon fish	29	28	21	72.4%	6	21.4%	10	35.7%	5	17.9%	7	25.0%
Large land mammals	29	29	26	89.7%	14	48.3%	7	24.1%	5	17.2%	3	10.3%
Small land mammals	29	29	13	44.8%	11	37.9%	1	3.4%	1	3.4%	16	55.2%
Marine mammals	29	29	6	20.7%	2	6.9%	3	10.3%	1	3.4%	23	79.3%
Migratory waterfowl	29	27	5	17.2%	3	11.1%	2	7.4%	0	0.0%	22	81.5%
Other birds	29	29	9	31.0%	5	17.2%	4	13.8%	0	0.0%	20	69.0%
Bird eggs	29	29	0	0.0%	0	0.0%	0	0.0%	0	0.0%	29	100.0%
Marine invertebrates	29	29	2	6.9%	0	0.0%	1	3.4%	1	3.4%	27	93.1%
Vegetation	29	29	26	89.7%	11	37.9%	10	34.5%	5	17.2%	3	10.3%

Source ADF&G Division of Subsistence household surveys, 2014.

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

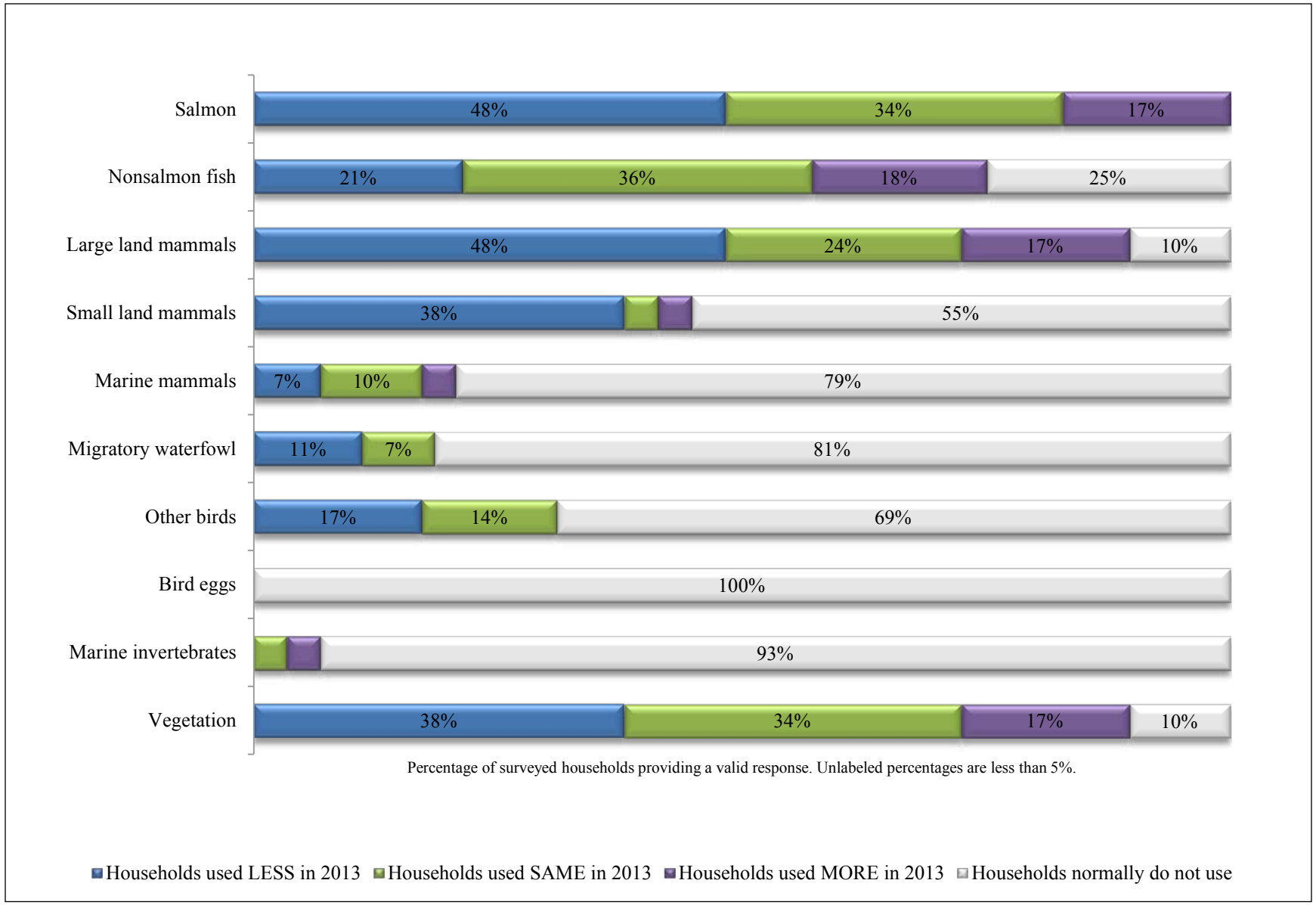


Figure 3-23.–Changes in household uses of resources compared to recent years, Gulkana, 2013.

Table 3-21.–Reasons for less household uses of resources compared to recent years, Gulkana, 2013.

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	29	22	3	13.6%	10	45%	1	4.5%	5	23%	8	36%	7	32%
All resources	**27**	**14**	**1**	**7.1%**	**4**	**29%**	**0**	**0.0%**	**1**	**7%**	**2**	**14%**	**4**	**29%**
Salmon	29	14	0	0.0%	1	7%	0	0.0%	4	29%	4	29%	1	7%
Nonsalmon fish	28	6	1	16.7%	1	17%	0	0.0%	1	17%	1	17%	1	17%
Large land mammals	29	14	0	0.0%	4	29%	0	0.0%	0	0%	2	14%	2	14%
Small land mammals	29	11	0	0.0%	7	64%	1	9.1%	0	0%	0	0%	1	9%
Marine mammals	29	2	0	0.0%	0	0%	0	0.0%	0	0%	2	100%	0	0%
Migratory waterfowl	27	3	0	0.0%	1	33%	0	0.0%	0	0%	0	0%	1	33%
Other birds	29	5	0	0.0%	4	80%	0	0.0%	0	0%	0	0%	0	0%
Bird eggs	29	0	0	0.0%	0	0%	0	0.0%	0	0%	0	0%	0	0%
Marine invertebrates	29	0	0	0.0%	0	0%	0	0.0%	0	0%	0	0%	0	0%
Vegetation	29	11	2	18.2%	1	9%	0	0.0%	0	0%	1	9%	5	45%

-continued-

Table 3-21.–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	29	22	6	27.3%	7	31.8%	0	0.0%	7	31.8%	0	0.0%	2	9.1%
All resources	**27**	**14**	**1**	**7.1%**	**2**	**14.3%**	**0**	**0%**	**3**	**21.4%**	**0**	**0.0%**	**0**	**0.0%**
Salmon	29	14	1	7.1%	6	42.9%	0	0%	3	21.4%	0	0.0%	0	0.0%
Nonsalmon fish	28	6	1	16.7%	0	0.0%	0	0%	1	16.7%	0	0.0%	0	0.0%
Large land mammals	29	14	2	14.3%	1	7.1%	0	0%	1	7.1%	0	0.0%	1	7.1%
Small land mammals	29	11	2	18.2%	2	18.2%	0	0%	1	9.1%	0	0.0%	1	9.1%
Marine mammals	29	2	0	0.0%	0	0.0%	0	0%	0	0.0%	0	0.0%	0	0.0%
Migratory waterfowl	27	3	0	0.0%	1	33.3%	0	0%	1	33.3%	0	0.0%	0	0.0%
Other birds	29	5	0	0.0%	1	20.0%	0	0%	1	20.0%	0	0.0%	0	0.0%
Bird eggs	29	0	0	0.0%	0	0.0%	0	0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	29	0	0	0.0%	0	0.0%	0	0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	29	11	0	0.0%	0	0.0%	0	0%	3	27.3%	0	0.0%	0	0.0%

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Table 3-21.–Page 2 of 2.

Resource category	Valid responses[a]	Households reporting reasons for less use	Did not get enough		Did not need		Equipment/ fuel expense		Used other resources		Less competition	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	29	22	1	4.5%	4	18.2%	2	9.1%	1	4.5%	2	9.1%
All resources	**27**	**14**	**0**	**0.0%**	**1**	**7.1%**	**1**	**7.1%**	**0**	**0.0%**	**1**	**7.1%**
Salmon	29	14	0	0.0%	1	7.1%	0	0.0%	0	0.0%	0	0.0%
Nonsalmon fish	28	6	0	0.0%	1	16.7%	0	0.0%	0	0.0%	0	0.0%
Large land mammals	29	14	1	7.1%	2	14.3%	0	0.0%	1	7.1%	1	7.1%
Small land mammals	29	11	0	0.0%	0	0.0%	1	9.1%	0	0.0%	0	0.0%
Marine mammals	29	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Migratory waterfowl	27	3	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other birds	29	5	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Bird eggs	29	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	29	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	29	11	0	0.0%	1	9.1%	1	9.1%	0	0.0%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2014.

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

Table 3-22.–Reasons for more household uses of resources compared to recent years, Gulkana, 2013.

Resource category	Valid responses[a]	Households reporting reasons for more use	Increased availability		Used other resources		Favorable weather		Received more		Needed more	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	29	17	2	11.8%	0	0.0%	0	0.0%	12	70.6%	2	11.8%
All resources	**27**	**6**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**4**	**66.7%**	**0**	**0.0%**
Salmon	29	5	1	20.0%	0	0.0%	0	0.0%	3	60.0%	0	0.0%
Nonsalmon fish	28	5	0	0.0%	0	0.0%	0	0.0%	3	60.0%	1	20.0%
Large land mammals	29	5	1	20.0%	0	0.0%	0	0.0%	5	100.0%	0	0.0%
Small land mammals	29	1	0	0.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%
Marine mammals	29	1	0	0.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%
Migratory waterfowl	27	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other birds	29	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Bird eggs	29	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	29	1	0	0.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%
Vegetation	29	5	0	0.0%	0	0.0%	0	0.0%	1	20.0%	1	20.0%

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Table 3-22.–Continued.

Resource category	Valid responses[a]	Households reporting reasons for more use	Increased effort		Had more help		Other		Regulations		Traveled farther	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	29	17	3	17.6%	2	11.8%	0	0.0%	0	0.0%	0	0.0%
All resources	**27**	**6**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**
Salmon	29	5	1	20.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Nonsalmon fish	28	5	1	20.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Large land mammals	29	5	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	29	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	29	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Migratory waterfowl	27	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other birds	29	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Bird eggs	29	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	29	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	29	5	2	40.0%	2	40.0%	0	0.0%	0	0.0%	0	0.0%

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Table 3-22.–Page 2 of 2.

Resource category	Valid responses[a]	Households reporting reasons for more use	More success		Needed less		Store-bought expense		Got/ fixed equipment		Substituted resources	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	29	17	1	5.9%	1	5.9%	0	0.0%	1	5.9%	0	0.0%
All resources	**27**	**6**	**1**	**16.7%**	**1**	**16.7%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**
Salmon	29	5	0	0.0%	0	0.0%	0	0.0%	1	20.0%	0	0.0%
Nonsalmon fish	28	5	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Large land mammals	29	5	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	29	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	29	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Migratory waterfowl	27	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other birds	29	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Bird eggs	29	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	29	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	29	5	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2014.

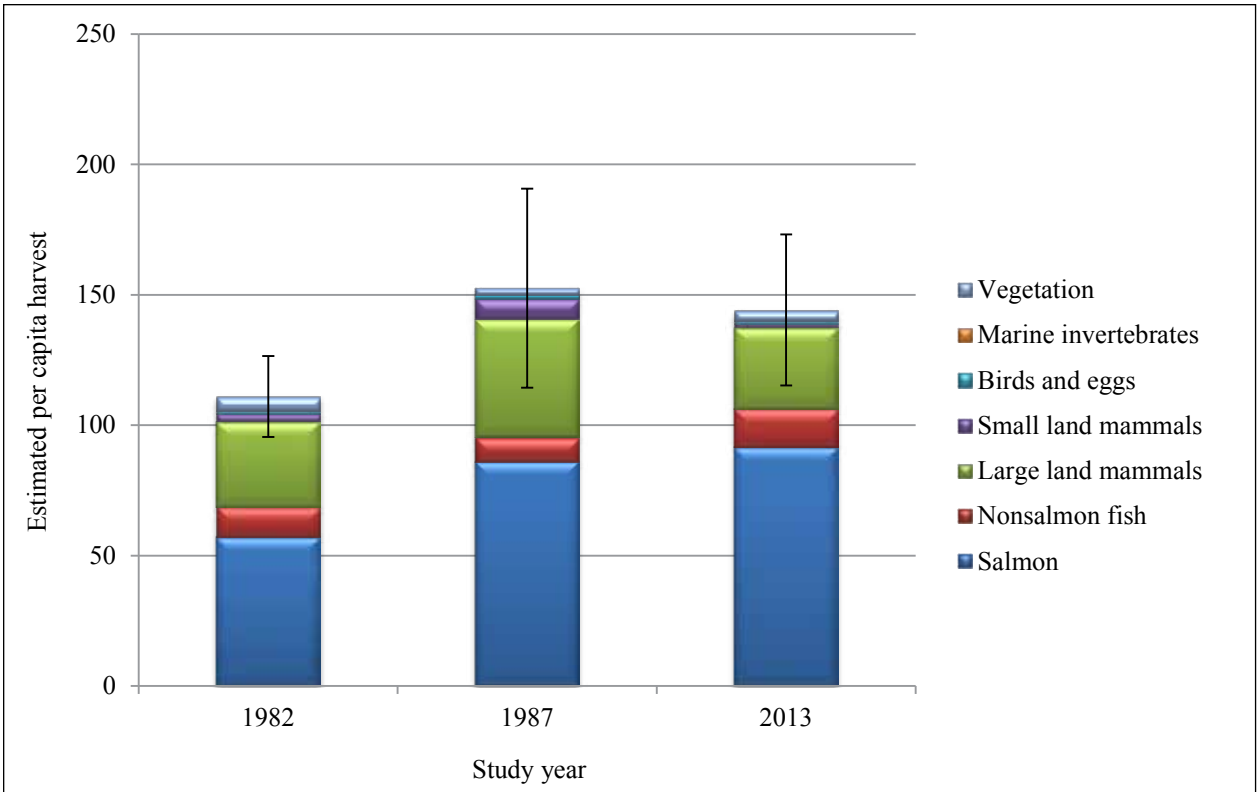
a. Valid responses do not include households that did not provide any response and households reporting never use.

Table 3-23.–Reported impact to households reporting that they did not get enough of a type of resource, Gulkana, 2013.

		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
Salmon	29	29	100.0%	12	41.4%	1	8.3%	0	0.0%	7	58.3%	4	33.3%	0	0.0%
Nonsalmon fish	29	21	72.4%	2	9.5%	0	0.0%	0	0.0%	1	50.0%	1	50.0%	0	0.0%
Marine invertebrates	29	2	6.9%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Large land mammals	29	26	89.7%	15	57.7%	0	0.0%	0	0.0%	7	46.7%	8	53.3%	0	0.0%
Marine mammals	29	6	20.7%	1	16.7%	0	0.0%	0	0.0%	1	100.0%	0	0.0%	0	0.0%
Small land mammals	29	13	44.8%	8	61.5%	0	0.0%	0	0.0%	6	75.0%	2	25.0%	0	0.0%
Migratory waterfowl	29	6	20.7%	1	16.7%	0	0.0%	0	0.0%	1	100.0%	0	0.0%	0	0.0%
Other birds	29	9	31.0%	4	44.4%	0	0.0%	0	0.0%	3	75.0%	1	25.0%	0	0.0%
Bird eggs	29	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	29	25	86.2%	12	48.0%	0	0.0%	0	0.0%	7	58.3%	5	41.7%	0	0.0%
All resources	**29**	**26**	**89.7%**	**16**	**61.5%**	**0**	**0.0%**	**0**	**0.0%**	**7**	**43.8%**	**8**	**50.0%**	**1**	**6.3%**

Source ADF&G Division of Subsistence household surveys, 2014.

a. Does not includes households failing to respond to the question or those households that never used the resource.



Note Error bars represent the upper and lower bounds of the 95% confidence interval.

Figure 3-24.–Estimated harvests by pounds per capita and by resource category, Gulkana, 1982, 1987, and 2013.

Harvest Data

Changes in the harvest of resources by Gulkana residents can also be discerned through comparisons with findings from other study years. Comprehensive subsistence harvest surveys were conducted in Gulkana for the 1982 study year (spanning June 1982 through May 1983) and 1987 study year (spanning June 1987 through May 1988) (McMillan and Cuccarese 1988; Stratton and Georgette 1984). Figure 3-24 and Table 3-24 highlights the per capita harvest of resource categories for all 3 study years (1982, 1987, and 2013).

Gulkana experienced the most notable fluctuation in per capita harvests between study years 1982 and 1987. In 1982, the per capita harvest of wild resources by Gulkana households was 111 lb (Table 3-24). In 1987, the harvest increased by 42 lb to a high of 153 lb per capita. In 2013, the per capita harvest of wild resources decreased slightly by 9 lb to 144 lb per capita. The majority of the change from study year to study year can be tracked through the changes in per capita salmon and large land mammal harvests, but harvest trends for other resources contributed to the overall per capita fluctuation as well, which is discussed below.

Salmon per capita harvests increased most significantly between 1982 and 1987 (57 lb per capita to 86 lb per capita) then increased slightly again between 1987 and 2013 to 92 lb per capita (a 6 lb per capita increase). Between 1982 and 1987 there was a 12 lb increase in the per capita harvest of large land mammals (from 33 lb to 45 lb per capita) then a 14 lb decline between 1987 and 2013 to 31 lb per capita. Nonsalmon fish harvests followed a different trajectory than salmon and large land mammal per capita harvests—the 1987 per capita value was less than the 1982 per capita value. The nonsalmon fish per capita harvest decreased from 1982 to 1987 from 12 lb to 9 lb per capita and then increased in 2013 to 15 lb per capita; this value was approximately 3 lb more than the 1982 per capita harvest. The small land mammal per capita harvest

Table 3-24.–Comparison of harvest composition, Gulkana, 1982, 1987, and 2013.

	Estimated harvest in pounds usable weight								
	1982			1987			2013		
Resource	Total	Per capita	CIP	Total	Per capita	CIP	Total	Per capita	CIP
All resources	**13,524.0**	**111.0**	**14.0%**	**10,237.0**	**152.6**	**25.0%**	**14,932.7**	**144.2**	**20.1%**
Salmon	6,971.0	57.2		5,777.0	86.1		9,494.4	91.7	
Nonsalmon fish	1,408.0	11.6		629.0	9.4		1,525.6	14.7	
Large land mammals	3,996.0	32.8		3,036.0	45.3		3,238.6	31.3	
Small land mammals	352.0	2.9		527.0	7.9		143.4	1.4	
Birds and eggs	138.0	1.1		92.0	1.4		111.9	1.1	
Marine invertebrates	–	–		–	–		–	–	
Vegetation	659.0	5.4		176.0	2.6		418.9	4.0	

Sources For 2013, ADF&G Division of Subsistence household surveys, 2014; for previous study years, ADF&G Division of Subsistence Community Subsistence Information System (CSIS), accessed 2014.

Note "–" indicates no harvest.

increased from 3 lb per capita in 1982 to 8 lb in 1987 and then decreased to 1 lb per capita in 2013. Birds and eggs and vegetation per capita harvests stayed relatively constant for the 3 study years.

Current and Historical Harvest Areas

During the 1983 and 1984 fieldwork seasons, ADF&G researchers conducted interviews with more than 200 hunters and fishers in 20 communities in or near the Copper River Basin to map areas where hunting, fishing, trapping, and gathering of wild resources occurred between 1964 and 1984 (Stratton and Georgette 1985). This effort produced 2 separate publications by 2 different ADF&G divisions; the Division of Habitat published the maps and the Division of Subsistence published a description of the project and mapping methods. The maps depicting the harvest and use areas used by study community residents during this 20-year span are published in *Alaska Habitat Management Guide Southcentral Region: Reference Maps—Volume 3. Community Use of Fish, Wildlife, and Plants* (Alaska Department of Fish and Game Division of Habitat 1985).[2] Information about the mapping project is available in *Copper Basin Resource Use Map Index and Methodology* (Stratton and Georgette 1985). A total of 8 harvest and use (referred to in this report as "search") maps were produced that show activities for Gulkana residents for 1964–1984. These maps cover harvest and use areas for select large land mammal species (moose, caribou, and Dall sheep), waterfowl, furbearers (small land mammals), fish (salmon and freshwater fish), and vegetation. Absent from these maps are harvest and use areas for upland game birds, and black and brown bears. Changes in the resource harvest and use/search areas by Gulkana area residents can be discerned through limited comparisons of the maps published in 1985, which depict harvest and use areas for 20 years, and the maps produced from this study, which only reflect search and harvest areas for the study year 2013.

While there are some similarities between the harvest and use/search areas in the historical and the 2013 maps, there also are noticeable differences. In the historical maps, the harvest and use areas cover a wide expanse of land in the middle and upper Copper River watershed, but also follow along a number of tributaries to the Gulkana River on both the east and west sides of the Richardson Highway, along the Glenn Highway–Tok Cutoff, Nabesna Road, and north of McCarthy Road on the western slope of Mount Wrangell. During the study year 2013, the harvest and search areas were more concentrated along the Richardson and Denali highways and reached farther south—as far as Valdez—in comparison to the historical maps. At the same time, the Nabesna Road was not as much of an important harvest and search area for a variety of resources for Gulkana households in 2013 in comparison to the apparent trend shown in the historical harvest and use maps.

2. A complete index of documents published in 1985 and 1986 as part of *Alaska Habitat Management Guide* is available online: http://www.arlis.org/docs/vol1/C/AHMG/index.html.

With regard to specific species, the most noticeable differences between the harvest and use/search areas shown in the 2 map sets were visible with moose, caribou, Dall sheep, small land mammals/furbearers, and nonsalmon fish. The first noticeable difference is that the historical maps depict caribou harvest and use areas along the Glenn Highway–Tok Cutoff and Nabesna Road; in 2013, nonsalmon fish were the only resource Gulkana residents reported to have searched for and harvested in those areas. In the historical maps, the harvest and use areas for moose extended substantially farther south toward Valdez along the Richardson Highway, along the Glenn Highway–Tok Cutoff and Nabesna Road, north and south of Chitina, and north and east of the confluence of the Chitina and Copper rivers. Another important observation is that the historical maps, which demonstrated harvest patterns prior to the formation of WRST in 1980, illustrate harvest and use areas for moose extending deeper into the area of the park than those of this study; the 2013 maps show no search areas within WRST boundaries. Similar change has taken place with Dall sheep use/search areas; in the historical maps Gulkana residents reported using 4 remote areas off of the road system in the area of WRST and in the mountains west of Chitina. In the 2013 map there is only 1 Dall sheep search area, which was located north of Slana.

As for small land mammals/furbearers, there were several large harvest and use areas off the road system in the vicinity of Lake Louise and Crosswind, Tyone, and Ewan Lakes. In 2013, the harvest and search areas for small land mammal harvests were reduced primarily to the road system; primarily along the Richardson Highway north of the Glenn Highway–Tok Cutoff. The 2013 study found Gulkana residents' nonsalmon fish harvest and search areas were similar to those depicted in the historical maps. For both sets of harvest and use/search area maps, Gulkana residents reported fishing both at the confluence of the Gulkana and Copper rivers and north of the confluence on the Gulkana River, along the Glenn Highway and its intersection with Moose Creek, and along the Slana River along the Glenn Highway–Tok Cutoff. In the historical maps, Gulkana residents reported traveling off the road system in search of nonsalmon fish. Residents visited lake systems west of Gulkana village and east of Lake Louise.

As shown in the historical maps, Gulkana residents reported harvest and use areas for salmon that were substantially more concentrated in the vicinity of Gulkana. Harvest and use locations included areas just north of the Glenn Highway–Tok Cutoff and Richardson Highway junction north to Paxson. In 2013, the harvest and search areas for salmon were similar to those depicted in the historical maps with additional locations, which included areas north and south of Copper Center, near the confluence of the Chitina and Copper rivers, and in the Valdez Port/Prince William Sound area.

According to the 2013 study, Gulkana residents harvested vegetation in areas east and west of the village and north of the village along the Richardson and Denali highways. The harvest and search areas were primarily on the road system; in some areas along the Richardson Highway they extend off the highway. Both the historical and 2013 maps show vegetation harvest and use/search areas very close to the community, along McCarthy Road, and near the intersection of the Richardson and Denali highways. In addition, both map sets depict harvest and use/search area patterns that show that Gulkana residents likely harvest vegetation resources while looking for other wild resources such as large land mammals or nonsalmon fish.

Local Comments and Concerns

Following is a summary of local observations of wild resource populations and trends that were recorded by researchers during the surveys in Gulkana. Some households did not offer any additional comments or concerns 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

Most households commented on the flooding of the Copper River in 2013, as well as drastic changes in temperature and late precipitation. A couple of families talked about how their fish wheels were destroyed in the flood. Other respondents discussed how the channels in the river were altered and they had to move

their fish wheels and camps because their previous location was no longer at a main channel or a good place to harvest salmon on the Copper River.

Large Land Mammals

Many residents of Gulkana commented that the mild fall weather impacted their harvest opportunity of moose. According to 1 local hunter, the bulls hide in higher elevations until cows go into estrus. Due to the mild temperatures, cow moose went into estrus late and bulls did not become active until later in the fall. This impacted the harvest opportunity for many local hunters. One hunter suggested possible solutions that included longer open harvest seasons.

Nearly every household that was surveyed mentioned the increasing hunting pressure that large land mammals experience in the fall. Several local hunters said that while stalking a moose they encountered other hunters competing for the kill. Others talked about the increased traffic and prevalence of hunters in the area around hunting season. One elder hunter in particular noted that the pressure from hunters impacts the migration of caribou. He hypothesized that the increasing use of snowmachines north of Eureka altered the herd's migration in 2013.

Many Gulkana households also commented on the warmer weather and its influence on caribou migration during the study year. Several households talked about caribou herds crossing highways in unusual locations and the increased amount of road-killed animals as a result. Comments also noted the high mortality of caribou calves due to the late snow and cold temperatures in May 2013.

Lastly, most hunters in Gulkana households spoke of cultural hunting practices including respecting the animal (e.g., not bragging about hunting), using the entire animal (e.g., making moose head soup), sharing certain parts of the animal with elders and others, efficiency in harvest (e.g., "Shoot once and only when you have to"), harvesting "any bull" moose, and teaching children to hunt.

Small Land Mammals/Furbearers

A number of households commented about the decline in small land mammal trapping due to disinterest in the trade and a lack of animals. In addition, the households that searched for and harvested snowshoe hares said that the population was down and had been for a while. One elder head of household suggested that there should be more research on the cycle of the snowshoe hare population because it has been down for more than 7 years.

Vegetation

Several households commented on the hot and dry summer influencing berry harvests. In particular, they complained that the weather negatively influenced the production of blueberries.

Other

Most Gulkana residents that were surveyed commented about the weather and its influence on the previous year's harvest. The Copper River Basin had unseasonably warm weather in March and early April but it turned colder in late April and early May. This region also received a substantial amount of snow in early to mid-May. Late spring and summer in the basin were reportedly hot and dry. This warm weather lead to considerable snowmelt in higher elevations, which increased water levels in rivers. Fall was characterized as mild and winter arrived late.

Many participating households expressed concern about the mapping process and requests for specific locations and were reluctant to share harvest area details. This was partly because community hunting and fishing areas are accessible via the road system and many state residents living in the nonsubsistence areas of Fairbanks, Anchorage, and the Matanuska–Susitna Valley communities come to recreate, fish, and hunt

in the Copper River Basin. Some local respondents see the opportunity for nonlocal residents to harvest fish and game in their community's area as placing greater burden on the local resources and increasing competition for successful harvests. Some Gulkana residents feared that mapped resource use areas would serve as a guide to productive hunting and fishing spots in the region.

Lastly, several households commented on the negative influence regulations have on their opportunity to harvest fish and game in the Copper River Basin. For example, they said, the Copper Basin community subsistence harvest program was shut down by emergency order in 2013 because urban hunters took too many "any bulls" from the quota in GMU 13A. One elder resident commented that the Gulkana community normally gets around 10 moose a year and last year they only harvested 6.

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4. LAKE LOUISE

Joshua T. Ream

Community Background

The unincorporated community of Lake Louise is located in the Copper River Basin of Alaska and is approximately 18 miles north of the Glenn Highway.[1] It is 32 miles northwest of Glennallen and lies on the westernmost border of the Matanuska–Susitna (Mat–Su) Borough. Lake Louise Road begins at mile 159.8 of the Glenn Highway. The community sits on the southwest edge of the lake and is accessible via paved road or by plane. There is a state-owned gravel airstrip and float plane site as well as 2 private airstrips. Other nearby communities to the south include Nelchina, Mendeltna, and Tolsona—together those 3 communities are referred to as East Glenn Highway in this report.

Lake Louise is on the western edge of what was historically Ahtna Athabascan territory. Several archaeological sites are located in the area and some are thought to be 3,000 to 4,000 years old (Stratton and Georgette 1984). Lake Louise was originally named "*Sasnuu' Bene*" in Ahtna, meaning "sand island lake" (Kari and Tuttle 2005). Ahtna villages existed in the 1800s on the northern shore of Lake Louise and at the outlet of Tyone Lake (de Laguna and McClellan 1981; Stratton and Georgette 1984), but they are no longer in existence.

Lake Louise was later named "Adah" after the girlfriend of an early explorer to the region—Lt. Joseph C. Castner.[2] The first published account of the modern name is from 1889 when it was named by Capt. E.F. Glenn of the U.S. Geological Survey, in honor of his wife (Glenn 1900). Land disposals conducted by the U.S. Bureau of Land Management in the 1940s initiated homesteading for many residents. Lake Louise Road was originally built in 1953 to provide access to U.S. Air Force and Army recreation areas (Stratton and Georgette 1984). The area was later designated as a state recreation area. It has become a popular location for boating and fishing, which in turn has led to the construction of many homes that are used seasonally, as well as facilities catering to visitors.

In addition to 2 state-run campgrounds, there are 5 businesses offering lodging and food in the community, and all but 1 of these sell gas and propane. One of the businesses includes a general store and offers mechanical repairs while another includes a package liquor store. Lodges have individual wells and septic systems, but most homes haul or filter lake water and use outhouses. Generators and solar cells are used for electricity in the community, and the Mat–Su Borough operates a waste transfer station nearby.

Lake Louise residents are organized as the Lake Louise Community Non-Profit Corporation. The nearest medical clinic to Lake Louise is in Glennallen, and major hospitals are located in Palmer and Anchorage.[3] Emergency health services are provided by local residents organized as the Lake Louise First Responders. There are no schools in Lake Louise and students are either home-schooled or they commute to Glennallen. Public safety is managed by the Palmer and Mat-Su West Alaska State Trooper posts. There is no village public safety officer or nearby Alaska State Trooper post.

The lake itself is fed by small streams and precipitation runoff. It drains into Lake Susitna, which itself drains into Lake Tyone, followed by the Tyone River, the Susitna River, and finally Cook Inlet. Lake Louise is surrounded by boreal forest and relatively flat lands to rolling hills in the immediate area. It has an Interior

1. Alaska Department of Commerce, Community, and Economic Development (ADCCED) Division of Community and Regional Affairs, Juneau. n.d. "Alaska Community Database Online: Community Information." Accessed August 2014. http://commerce.alaska.gov/cra/DCRAExternal/community/Details/2d4016fb-5349-4acd-be15-f86a91216bc1
2. Lake Louise Community. n.d. "Lake Louise Community: About Us." Accessed August 2014. http://www.lakelouisecommunity.info/About_Us.html
3. Lake Louise Community. n.d. "Lake Louise Community: About Us." Accessed August 2014. http://www.lakelouisecommunity.info/About_Us.html

Table 4-1.–Population estimates, Lake Louise, 2010 and 2013.

	Census (2010)	5-year American Community Survey (2008–2012)	This study (2013)
Total population			
Households	25	7	14.0
Population	46	34	26.6
Alaska Native			
Population	1	7	0.0
Percentage	2.2%	20.6%	0.0%

Sources U.S. Census Bureau (2011) for 2010 estimate; U.S. Census Bureau for American Community Survey 5-year survey estimate; and ADF&G Division of Subsistence household surveys, 2014, for 2013 estimate.
Note The term "households" means occupied housing units. Alaska Native population data from the American Community Survey and 2010 census come from the category "race alone or in combination with one or more other races."

Alaska climate and temperature range from -9 °F to 34 °F in January and from 38 °F to 62 °F in July.[4] Annual precipitation is approximately 17 inches.

Demography

This study found an estimated population for Lake Louise in 2013 of 27 individuals, represented by 14 households (Table 4-1). This is much lower than the 2010 U.S. Census Bureau estimate of 46 individuals represented by 25 households, and the American Community Survey 5-year (2008–2012) average estimate of 34 individuals[5] represented by 7 households. The reasons for these 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 (2013) and self-identification as a full-time resident. There are many recreational cabins in the Lake Louise area, and it is possible that some of the owners and occupants of these reported Lake Louise as their home during the other studies. The division's 1982 study also found that the majority of cabins in the area are used for weekend or seasonal recreational activities (Stratton and Georgette 1984). For all 3 study years for which subsistence harvest surveys were completed in Lake Louise (1982, 1987, and 2013), the division found fewer individuals than is suggested by the trendline on Figure 4-1, which includes estimates from the Alaska Department of Labor and counts from the U.S. Census Bureau (Figure 4-1).

Of the 14 qualifying households found in 2013, 10 were successfully surveyed resulting in a sample achievement of 71% (Table 4-2). Three households declined to participate and 1 household could not be contacted. The average size of Lake Louise households was 2 individuals; no households contained Alaska Native residents (Table 4-3). The overall population of Lake Louise has declined slightly since 1982, the study year of the first division survey (Figure 4-1).

4. Alaska Department of Commerce, Community, and Economic Development (ADCCED) Division of Community and Regional Affairs, Juneau. n.d. "Alaska Community Database Online: Community Information." Accessed August 2014. Accessed August 2014. http://commerce.alaska.gov/cra/DCRAExternal/community/Details/2d4016fb-5349-4acd-be15-f86a91216bc1

5. The American Community Survey 5-year average had a margin of error of ±49 for the population.*

* American Community Survey. 2012. "Table DP05: ACS Demographic and Housing Estimates, 2008–2012 American Community Survey 5-Year Estimates." Accessed December 2014. http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_12_5YR_DP05&prodType=table

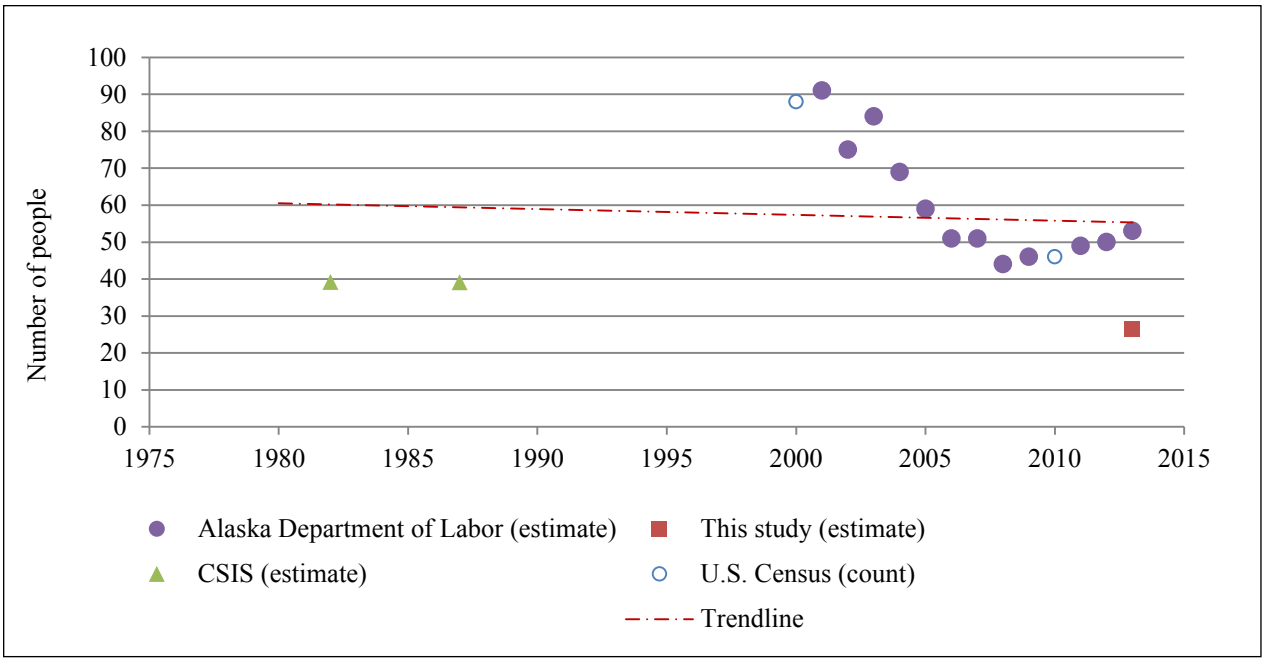

Figure 4-1.–Historical population estimates, Lake Louise, 1982–2013.

Table 4-2.–Sample achievement, Lake Louise, 2013.

	Lake Louise
Number of dwelling units	23
Interview goal	23
Households interviewed	10
Households failed to be contacted	1
Households declined to be interviewed	3
Households moved or occupied by nonresident	9
Total households attempted to be interviewed	13
Refusal rate	23.1%
Final estimate of permanent households	14
Percentage of total households interviewed	71.4%
Interview weighting factor	1.4
Sampled population	19
Estimated population	26.6

Source ADF&G Division of Subsistence household surveys, 2014.

Table 4-3.–Sample and demographic characteristics, Lake Louise, 2013.

Characteristics	
Sampled population	19
Estimated community population	27
Household size	
Mean	1.9
Minimum	1
Maximum	5
Age	
Mean	53.3
Minimum[a]	9
Maximum	72
Median	61
Length of residency	
Total population	
Mean	18.6
Minimum[a]	1
Maximum	35
Heads of household	
Mean	22.1
Minimum[a]	6
Maximum	35
Alaska Native	
Estimated households[b]	
Number	0.0
Percentage	0.0%
Estimated population	
Number	0
Percentage	0.0%

Source ADF&G Division of Subsistence household surveys, 2014.
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.

This study found the average age of Lake Louise residents to be 53 years old with the youngest individual being 9 years old and the oldest individual being 72 years old (Table 4-3). The largest age cohorts were both males and females between the ages of 60–64, representing 53% of the population (Table 4-4). All adult residents were between the ages of 45 and 74 and these individuals were relatively evenly distributed between males and females (Figure 4-2). There were also several male children between the ages of 5 and 19 in the community; the survey estimated that there was no one in their 20s or 30s.

No Lake Louise household heads reported having parents that were living in the Lake Louise area when they were born (Table 4-5), and this is also true for all other residents of the community (Appendix Table E4-1). Only 7% of household heads reported that their parents were living in Alaska when they were born; 87% reported that their parents were living elsewhere in the United States and 7% reported that their parents

Table 4-4.–Population profile, Lake Louise, 2013.

	Male			Female			Total		
Age	Number	Percentage	Cumulative percentage	Number	Percentage	Cumulative percentage	Number	Percentage	Cumulative percentage
0–4	0.0	0.0%	0.0%	0.0	0.0%	0.0%	0.0	0.0%	0.0%
5–9	1.4	9.1%	9.1%	0.0	0.0%	0.0%	1.4	5.3%	5.3%
10–14	1.4	9.1%	18.2%	0.0	0.0%	0.0%	1.4	5.3%	10.5%
15–19	1.4	9.1%	27.3%	0.0	0.0%	0.0%	1.4	5.3%	15.8%
20–24	0.0	0.0%	27.3%	0.0	0.0%	0.0%	0.0	0.0%	15.8%
25–29	0.0	0.0%	27.3%	0.0	0.0%	0.0%	0.0	0.0%	15.8%
30–34	0.0	0.0%	27.3%	0.0	0.0%	0.0%	0.0	0.0%	15.8%
35–39	0.0	0.0%	27.3%	0.0	0.0%	0.0%	0.0	0.0%	15.8%
40–44	0.0	0.0%	27.3%	0.0	0.0%	0.0%	0.0	0.0%	15.8%
45–49	0.0	0.0%	27.3%	1.4	12.5%	12.5%	1.4	5.3%	21.1%
50–54	1.4	9.1%	36.4%	1.4	12.5%	25.0%	2.8	10.5%	31.6%
55–59	0.0	0.0%	36.4%	0.0	0.0%	25.0%	0.0	0.0%	31.6%
60–64	7.0	45.5%	81.8%	7.0	62.5%	87.5%	14.0	52.6%	84.2%
65–69	2.8	18.2%	100.0%	0.0	0.0%	87.5%	2.8	10.5%	94.7%
70–74	0.0	0.0%	100.0%	1.4	12.5%	100.0%	1.4	5.3%	100.0%
75–79	0.0	0.0%	100.0%	0.0	0.0%	100.0%	0.0	0.0%	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	**15.4**	**100.0%**	**100.0%**	**11.2**	**100.0%**	**100.0%**	**26.6**	**100.0%**	**100.0%**

Source ADF&G Division of Subsistence household surveys, 2014.

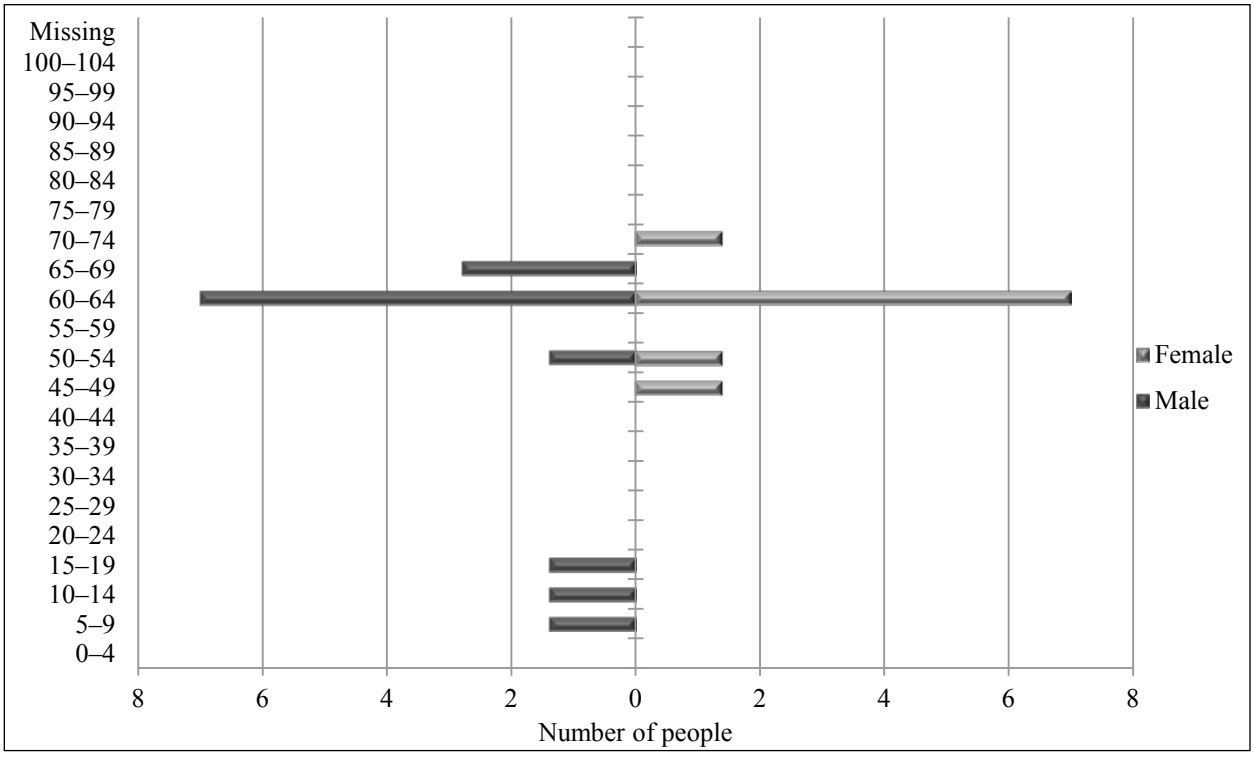

Figure 4-2.–Population profile, Lake Louise, 2013.

Table 4-5.–Birthplaces of household heads, Lake Louise, 2013.

Birthplace	Percentage
Palmer	6.7%
Other U.S.	86.7%
Foreign	6.7%

Source ADF&G Division of Subsistence household surveys, 2014.
Note "Birthplace" means the place of residence of the parents of the individual when the individual was born.

were living in a foreign country (Table 4-4). Considering all residents combined, 21% reported having parents that were living in Alaska when they were born (Appendix Table E4-1).

Cash Employment and Monetary Income

The total income for the community of Lake Louise in 2013 was $1,556,516 (Table 4-6). This total comprises both earned income ($979,600; 63% of the total) and other income ($575,916; 37% of the total). For Lake Louise, approximately 70% of the other income was composed of pension/retirement pay, and this made up approximately 26% of the total community income (Table 4-6).

The mean household income for Lake Louise in 2013 was $111,180 and the per capita income was $58,516 (Table 4-6). In Lake Louise, 50% of the earned income came from the services industry, 37% from mining, and 12% from finance, insurance, and real estate jobs (Table 4-7). Considering earned income and other income combined, services made up 32% of the total community income, followed by mining (24%) and finance, insurance, and real estate (8%) (Table 4-6). Service jobs made up 67% of the jobs in the community; executive, administrative, and managerial jobs in the services industry composed 50% of wage earnings (Table 4-7). Mining jobs and finance, insurance, and real estate jobs each made up 17% of jobs in the community.

All adults age 16 or older in Lake Louise were employed in 2013 (Table 4-8). The mean duration of employment was 3.5 months for each employed individual and 29% of employed adults were employed year-round. The average number of jobs that each employed individual held in 2013 was 1.2. The mean number of jobs held by members of each employed household was 2.

Levels of Individual Participation in the Harvesting and Processing of Wild Resources

Table 4-9 reports the expanded levels of individual participation in the harvest and processing of wild resources by all Lake Louise residents in 2013. Everyone in the community participated in harvesting some resource and nearly everyone (95%) participated in processing some resource. Interestingly, all community members participated in gathering vegetation, and 95% participated in processing vegetation.

For fish, specifically, 79% of Lake Louise residents fished, and 84% assisted in processing fish. For large land mammals, 53% of residents hunted for these species, but only 11% assisted with processing meat from successful harvests. Relatively few individuals participated in harvesting small land mammals in 2013—11%. The percentage of individuals processing small land mammals was slightly higher—16%. For birds and eggs, 37% of individuals participated in both harvesting and processing these species.

Table 4-6.–Estimated earned and other income, Lake Louise, 2013.

Income source	Number of people	Number of households	Total for community	-/+ 95% CI	Mean per household	Per capita income	Percentage of total community income
Earned income							
Services	5.6	9.3	$493,798	$4,051 – $1,598,345	$35,271		31.7%
Mining	1.4	4.7	$365,851	$185,371 – $1,097,003	$26,132		23.5%
Finance, insurance, and real estate	1.4	4.7	$119,951	$61,787 – $336,000	$8,568		7.7%
Earned income subtotal	**7.0**	**14.0**	**$979,600**	**$512,400 – $3,084,600**	**$69,971**	**$36,827**	**62.9%**
Other income							
Pension/retirement		7.0	$401,333	$117,600 – $764,400	$28,667		25.8%
Social Security		4.2	$130,517	$1,433 – $393,750	$9,323		8.4%
Alaska Permanent Fund dividend		14.0	$22,680	$15,120 – $32,760	$1,620		1.5%
Disability		1.4	$19,600	$14,000 – $39,200	$1,400		1.3%
Veterans assistance		1.4	$2,786	$1,990 – $12,971	$199		0.2%
TANF (Temporary Assistance for Needy Families)		0.0	$0	$0 – $0	$0		0.0%
Adult public assistance (UAA, APD)		0.0	$0	$0 – $0	$0		0.0%
Supplemental Security income		0.0	$0	$0 – $0	$0		0.0%
Food stamps		0.0	$0	$0 – $0	$0		0.0%
Longevity bonus		0.0	$0	$0 – $0	$0		0.0%
Heating assistance		0.0	$0	$0 – $0	$0		0.0%
Workers' compensation/insurance		0.0	$0	$0 – $0	$0		0.0%
Unemployment		0.0	$0	$0 – $0	$0		0.0%
Native corporation dividend		0.0	$0	$0 – $0	$0		0.0%
Child support		0.0	$0	$0 – $0	$0		0.0%
Other		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		**14.0**	**$576,916**	**$248,229 – $920,703**	**$41,208**	**$21,689**	**37.1%**
Community income total			**$1,556,516**	**$1,160,629 – $3,375,933**	**$111,180**	**$58,516**	**100.0%**

Source ADF&G Division of Subsistence household surveys, 2014.

Table 4-7.–Employment by industry, Lake Louise, 2013.

Industry	Jobs	Households	Individuals	Percentage of wage earnings
Estimated total number	**28.6**	**14.0**	**23.8**	
Mining	**16.7%**	**33.3%**	**20.0%**	**37.3%**
Natural scientists and mathematicians	16.7%	33.3%	20.0%	37.3%
Finance, insurance and real estate	**16.7%**	**33.3%**	**20.0%**	**12.2%**
Administrative support occupations, including clerical	16.7%	33.3%	20.0%	12.2%
Services	**66.7%**	**66.7%**	**80.0%**	**50.4%**
Executive, administrative, and managerial	33.3%	33.3%	40.0%	49.6%
Service occupations	33.3%	66.7%	40.0%	0.8%

Source ADF&G Division of Subsistence household surveys, 2014.

Table 4-8.–Employment characteristics, Lake Louise, 2013.

Characteristic	Community Lake Louise
All adults	
Number	23.8
Mean weeks employed	15.3
Employed adults	
Number	23.8
Percentage	100.0%
Jobs	
Number	28.6
Mean	1.2
Minimum	1
Maximum	2
Months employed	
Mean	3.5
Minimum	12
Maximum	12
Percentage employed year-round	29.4%
Mean weeks employed	15.3
Households	
Number	14
Employed	
Number	14.0
Percentage	100.0%
Jobs per employed household	
Mean	2.0
Minimum	1
Maximum	4
Employed adults	
Mean	
Employed households	1.7
Total households	1.7
Minimum	1
Maximum	3
Mean person-weeks of employment	15.6

Source ADF&G Division of Subsistence household surveys, 2014.

Table 4-9.–Individual participation in subsistence harvesting and processing activities, Lake Louise, 2013.

Total number of people	**26.6**
Fish	
Fish	
Number	21.0
Percentage	78.9%
Process	
Number	22.4
Percentage	84.2%
Large land mammals	
Hunt	
Number	14.0
Percentage	52.6%
Process	
Number	2.8
Percentage	10.5%
Small land mammals	
Hunt or trap	
Number	2.8
Percentage	10.5%
Process	
Number	4.2
Percentage	15.8%
Birds and eggs	
Hunt/gather	
Number	9.8
Percentage	36.8%
Process	
Number	9.8
Percentage	36.8%
Vegetation	
Gather	
Number	26.6
Percentage	100.0%
Process	
Number	25.2
Percentage	94.7%
Any resource	
Attempt harvest	
Number	26.6
Percentage	100.0%
Process	
Number	25.2
Percentage	94.7%

Source ADF&G Division of Subsistence household surveys, 2014.

Table 4-10.–Household member participation in subsistence craft activities, Lake Louise, 2013.

Total number of people	**26.6**
Building, maintaining, or moving fish wheels	
Number	0.0
Percentage	0.0%
Sewing skins or cloth	
Number	0.0
Percentage	0.0%
Cooking wild foods	
Number	22.4
Percentage	84.2%

Source ADF&G Division of Subsistence household surveys, 2014.

The survey included questions about individual participation in wild resource harvest activities such as working with fish wheels, handicrafts, and cooking wild foods. In Lake Louise, no residents worked with fish wheels, no residents sewed skins or cloth, and 84% of residents cooked wild foods (Table 4-10).

Household Resource Harvest and Use Patterns and Sharing of Wild Resources

Table 4-11 summarizes resource harvest and use characteristics for Lake Louise in 2013 at the household level. The average harvest was 139 lb usable weight per household, or 73 lb per capita. During the study year, community households harvested an average of 7 kinds of resources and used an average of 10 kinds of resources. The maximum number of resources used by any household was 23. In addition, households gave away an average of 2 kinds of resources and 70% of households shared resources with other households. Overall, as many as 120 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.

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 4-3, in the 2013 study year in Lake Louise, about 74% of the harvests of wild resources as estimated in usable pounds were harvested by 30% 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 Lake Louise and the other study communities.

The survey included questions about residents' use of alternative and motorized modes of transportation to access wild food harvest areas and the use of portable motors. Figure 4-4 demonstrates the percentage of community households that used an alternate means of transportation (in addition to or aside from using cars, trucks, or traveling on foot). Approximately 70% of the Lake Louise households used a boat or a snowmachine when harvesting wild foods. About 60% of households used ATVs. No households used an airplane or a dog sled when harvesting wild resources. Seventy percent of households used a generator, 60% used a chain saw, 50% used an ice auger, 30% used a winch, and 10% used other portable motors or motorized equipment (Figure 4-5).

Table 4-11.–Resource harvest and use characteristics, Lake Louise, 2013.

Characteristic	
Mean number of resources used per household	**10.1**
Minimum	2
Maximum	23
95% confidence limit (±)	21.3%
Median	10
Mean number of resources attempted to harvest per household	**8.4**
Minimum	1
Maximum	20
95% confidence limit (±)	24.9%
Median	9
Mean number of resources harvested per household	**6.6**
Minimum	1
Maximum	16
95% confidence limit (±)	26.1%
Median	7
Mean number of resources received per household	**3.9**
Minimum	1
Maximum	8
95% confidence limit (±)	21.9%
Median	3.5
Mean number of resources given away per household	**1.6**
Minimum	0
Maximum	7
95% confidence limit (±)	49.4%
Median	1
Household harvest (pounds)	
Minimum	2
Maximum	604
Mean	138.7
Median	68
Total harvest weight (lb)	1,942.1
Community per capita harvest (lb)	73.0
Percentage using any resource	100.0%
Percentage attempting to harvest any resource	100.0%
Percentage harvesting any resource	100.0%
Percentage receiving any resource	100.0%
Percentage giving away any resource	70.0%
Number of households in sample	10
Number of resources asked about and identified voluntarily by respondents	120

Source ADF&G Division of Subsistence household surveys, 2014.

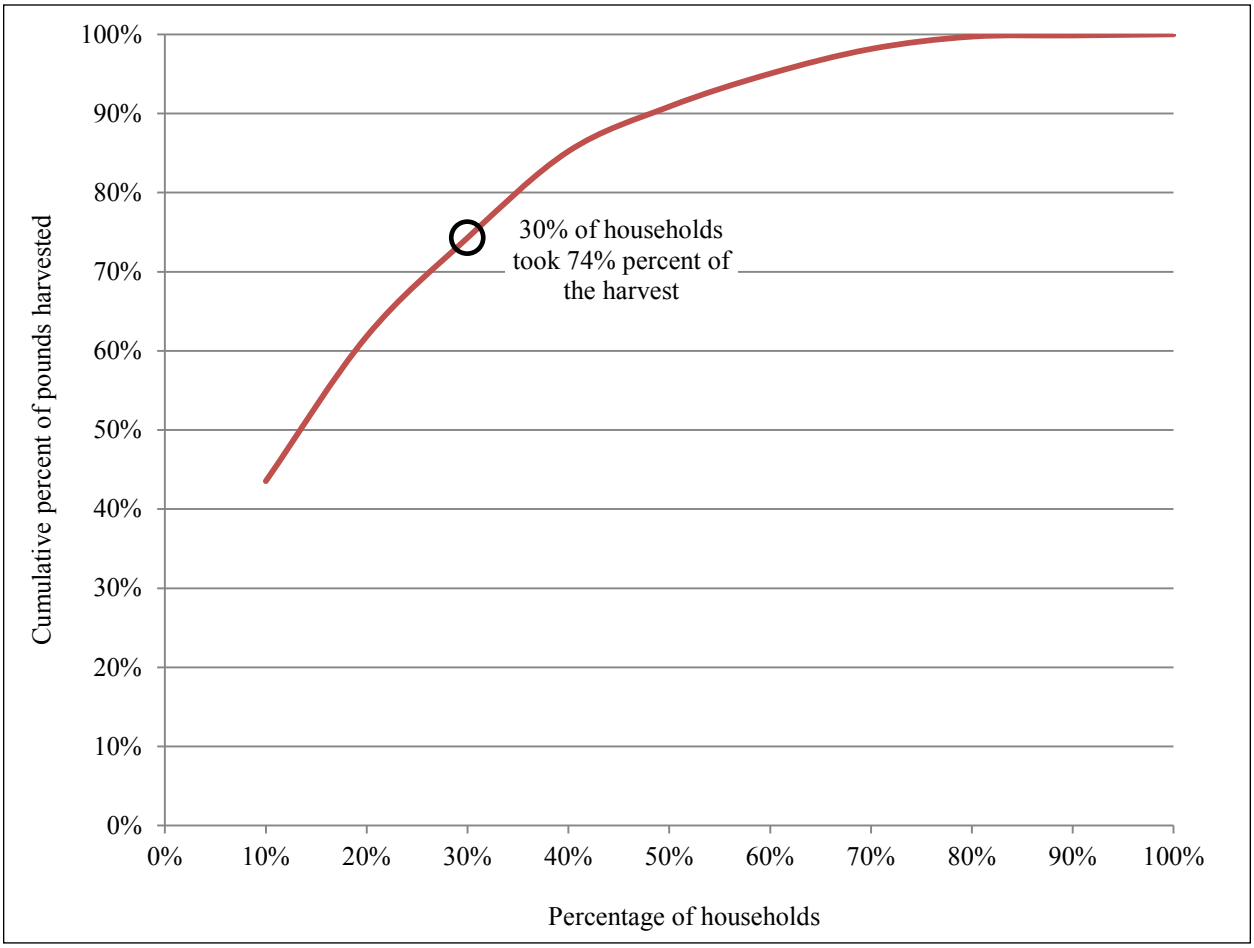

Figure 4-3.–Household specialization, Lake Louise, 2013.

Figure 4-6 demonstrates the percentage of households that used natural materials for handicrafts: 40% used antlers, 20% used horns, and 10% used bark. Significantly, 10% of households used other natural materials, most of which were fur, skins, and diamond willow.

Firewood is very important for heating homes in many rural communities. Lake Louise residents reported an average annual cost of heating their homes of $1,060 (Table 4-12). Thirty percent of households reported that 26–50% of their home heating was from firewood, 10% reported 51–75% of their home heating came from firewood, and 20% reported that 76–99% of their home heating came from firewood. Though 40% of households reported that 0% of their household heat came from firewood, the remaining 60% of households reported that greater than 25% of their household heat came from firewood.

Harvest Quantities and Composition

Table 4-13 reports estimated wild resource harvests and uses by Lake Louise residents in 2013 and is organized first by general category and then by species. All edible resources are reported in pounds usable weight (see Appendix C for conversion factors[6]). The "harvest" category includes resources harvested by any member of the surveyed household during the study year. The "use" category includes all 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.

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.

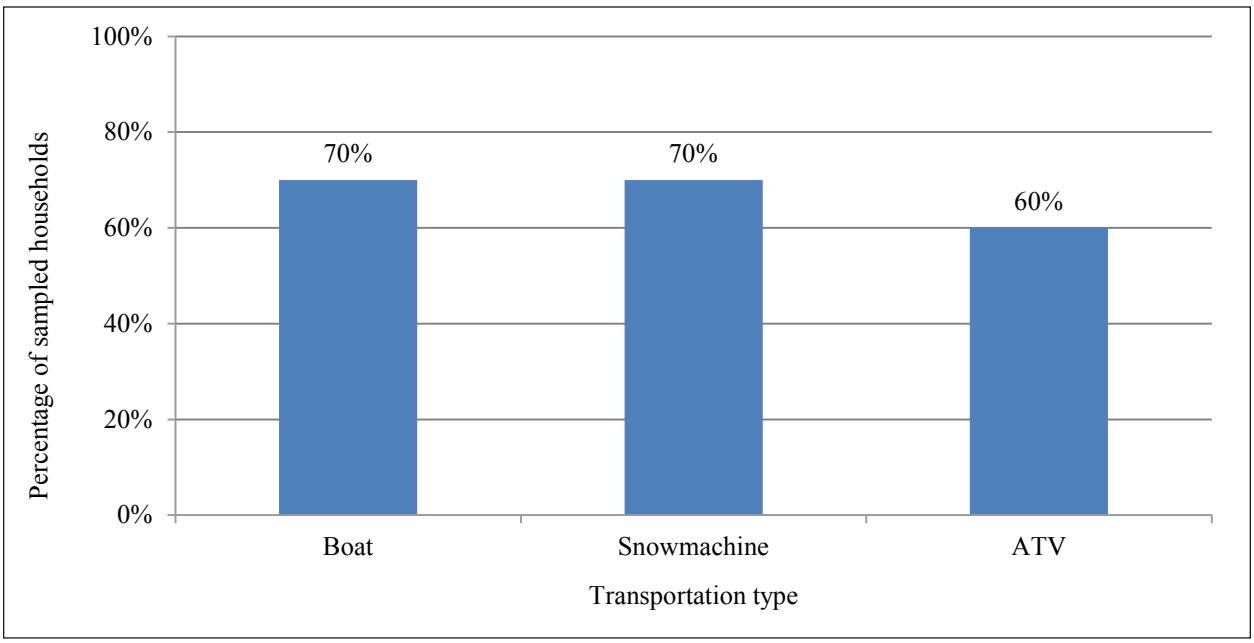

Figure 4-4.–Alternative modes of transportation used by sampled households to access wild resources, Lake Louise, 2013.

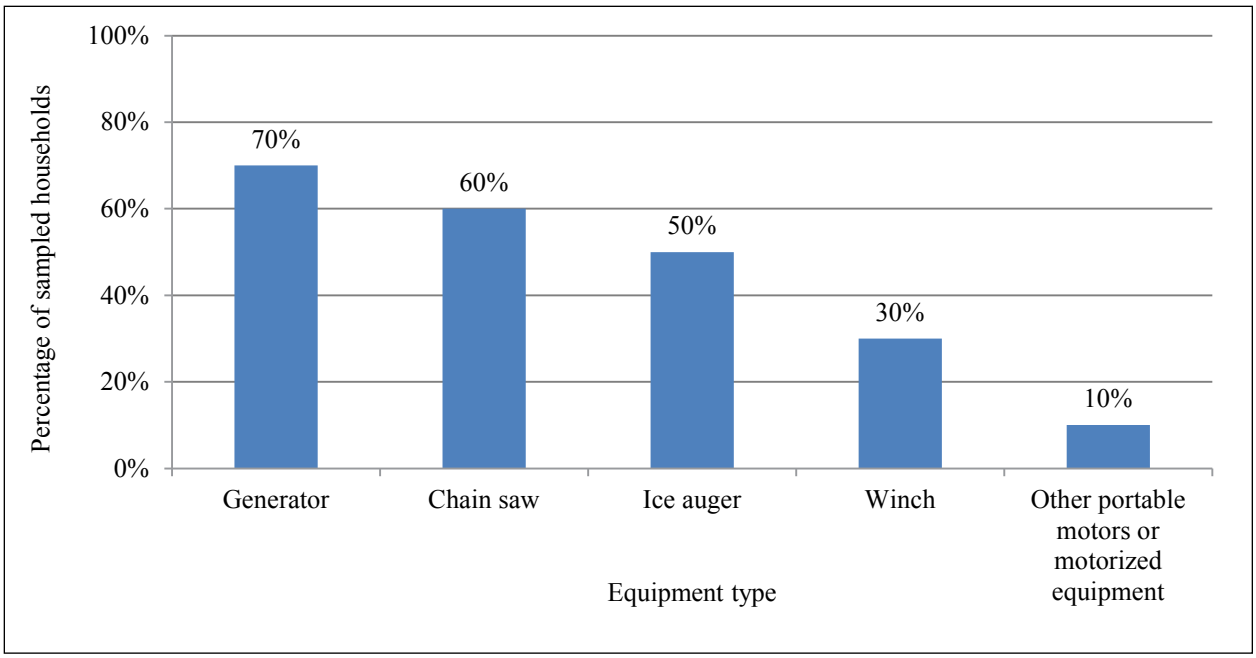

Figure 4-5.–Portable motorized equipment used by sampled households while searching for and harvesting wild resources, Lake Louise, 2013.

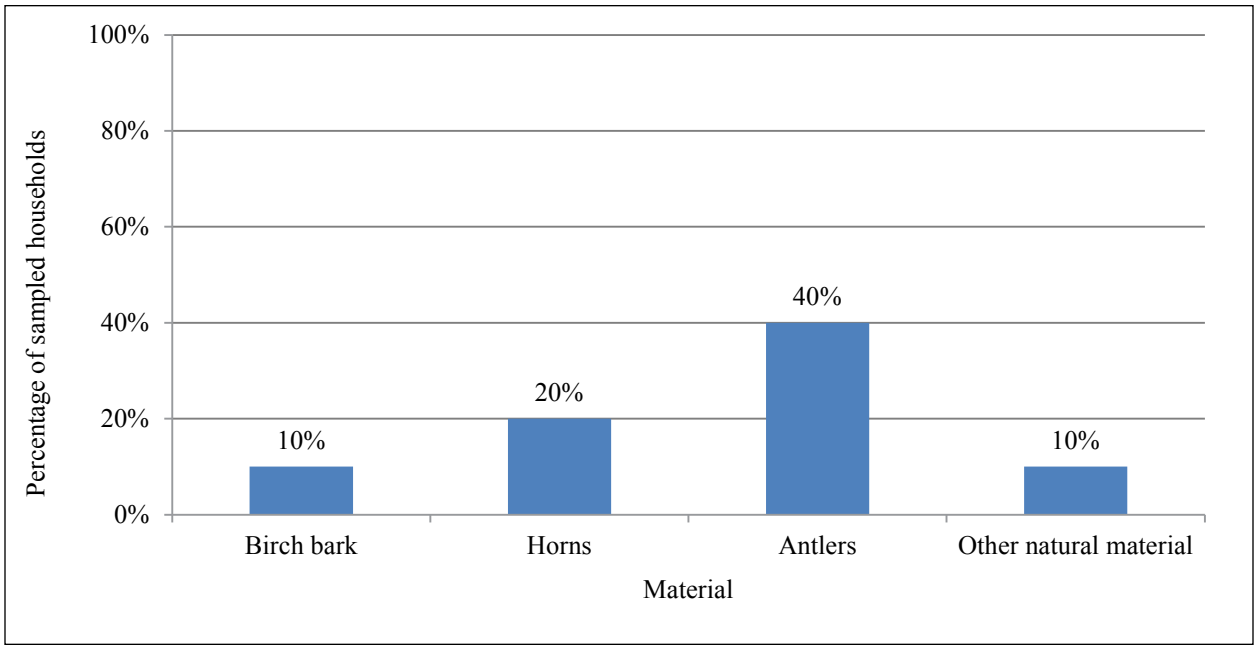

Figure 4-6.–Natural materials used by sampled households for making handicrafts, Lake Louise, 2013.

Purchased foods are not included but resources such as firewood are included because they are an important part of the subsistence way of life. Differences between harvest and use percentages reflect sharing among households, which results in a wider distribution of wild foods.

The total harvest for Lake Louise in 2013 as recorded in pounds usable weight was 1,942 lb (Table 4-13). This equals a total harvest of approximately 139 lb per household and 73 lb per capita for all resources combined. Large land mammals made up the greatest proportion of this harvest, 42% of the total harvest (Figure 4-7), and approximately 31 lb of large land mammals were harvested per capita (Table 4-13). Nonsalmon fish were also a significant proportion of the total harvest, representing 29%, followed by vegetation (14%), salmon (12%), birds and eggs (2%) and small land mammals (1%) (Figure 4-7). The per capita harvest of vegetation, salmon, and birds and eggs was 11 lb, 9 lb, and 1 lb, respectively. A per capita harvest of only 0.3 lb of small land mammals was estimated. It is interesting that salmon ranked only fourth in the overall composition of harvest but this is likely due to the distance that must be traveled to access this resource in comparison to that of other study communities.

Seasonal Round

Lake Louise residents harvest wild food resources throughout the year. Like many rural 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 Lake Louise, most residents harvested wild foods primarily within the community or in other parts of the Copper River Basin (Figure 4-8), except some households traveled occasionally for marine resources like Pacific halibut and rockfish in Prince William Sound. Boats, highway vehicles, ATVs, and snowmachines 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 early spring of the year when ice fishing for burbot and trout is undertaken. One household also catches whitefishes with a net at this time. Once much of the snow has melted and ice break-up has occurred on

Table 4-12.–Use of firewood for home heating in sampled households, Lake Louise, 2013.

Community	Average annual cost of home heating	Household use of wood for home heating as a percentage of total fuel for heating											
		0%		1%–25%		26%–50%		51%–75%		76%–99%		100%	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Lake Louise	$1,060	4	40.0%	0	0.0%	3	30.0%	1	10.0%	2	20.0%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2014.

Table 4-13.–Estimated use and harvests of fish, game, and vegetation resources, Lake Louise, 2013.

Resource	Percentage of households: Use %	Attempt %	Harvest %	Receive %	Give %	Harvest weight (lb): Total	Mean per household	Per capita	Harvest amount[a]: Total	Unit	Mean per household	95% confidence limit (±)
All resources	**100.0**	**100.0**	**100.0**	**100.0**	**70.0**	**1,942.1**	**138.7**	**73.0**				**50.4**
Salmon	**90.0**	**40.0**	**40.0**	**80.0**	**30.0**	**236.8**	**16.9**	**8.9**				**66.8**
Chum salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Coho salmon	20.0	10.0	10.0	10.0	0.0	17.4	1.2	0.7	2.8	ind	0.2	120.9
Chinook salmon	30.0	0.0	0.0	30.0	10.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Pink salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Sockeye salmon	90.0	30.0	30.0	80.0	20.0	205.4	14.7	7.7	44.8	ind	3.2	76.6
Landlocked salmon	10.0	10.0	10.0	0.0	0.0	14.0	1.0	0.5	14.0	ind	1.0	120.9
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	**90.0**	**70.0**	**70.0**	**70.0**	**20.0**	**570.6**	**40.8**	**21.5**				**52.9**
Pacific herring	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	ind	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
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	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Lingcod	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	40.0	10.0	10.0	30.0	0.0	154.0	11.0	5.8	154.0	lb	11.0	120.9
Arctic lamprey	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Black rockfish	10.0	10.0	10.0	0.0	0.0	21.0	1.5	0.8	14.0	ind	1.0	120.9
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
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
Burbot	60.0	50.0	50.0	50.0	0.0	127.7	9.1	4.8	53.2	ind	3.8	50.4
Arctic char	10.0	10.0	10.0	0.0	0.0	2.0	0.1	0.1	2.8	ind	0.2	120.9
Dolly Varden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Lake trout	30.0	20.0	20.0	10.0	0.0	19.6	1.4	0.7	9.8	ind	0.7	103.2
Arctic grayling	50.0	50.0	50.0	0.0	10.0	144.1	10.3	5.4	205.8	ind	14.7	96.8
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
Sheefish	0.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Longnose sucker	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

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Table 4-13.–Page 2 of 5.

Resource	Percentage of households: Use %	Attempt %	Harvest %	Receive %	Give %	Harvest weight (lb): Total	Mean per household	Per capita	Harvest amount[a]: Total	Unit	Mean per household	95% confidence limit (±)
Nonsalmon fish, continued												
Rainbow trout	20.0	20.0	20.0	0.0	0.0	27.4	2.0	1.0	19.6	ind	1.4	84.6
Unknown trout	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Broad whitefish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Least cisco	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Humpback whitefish	10.0	10.0	10.0	0.0	0.0	4.9	0.4	0.2	2.8	ind	0.2	120.9
Round whitefish	10.0	10.0	10.0	0.0	10.0	70.0	5.0	2.6	70.0	ind	5.0	120.9
Unknown whitefishes	10.0	0.0	0.0	10.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Large land mammals	**70.0**	**70.0**	**10.0**	**60.0**	**20.0**	**812.0**	**58.0**	**30.5**				**120.9**
Bison	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Black bear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Brown bear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Caribou	50.0	70.0	10.0	20.0	10.0	182.0	13.0	6.8	1.4	ind	0.1	120.9
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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Moose	70.0	50.0	10.0	60.0	20.0	630.0	45.0	23.7	1.4	ind	0.1	120.9
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	**10.0**	**20.0**	**10.0**	**0.0**	**0.0**	**8.4**	**0.6**	**0.3**				**120.9**
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–cross phase	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–red phase	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	10.0	20.0	10.0	0.0	0.0	8.4	0.6	0.3	4.2	ind	0.3	120.9
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
Marmot	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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

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Table 4-13.–Page 3 of 5.

Resource	Percentage of households: Use %	Attempt %	Harvest %	Receive %	Give %	Harvest weight (lb): Total	Mean per household	Per capita	Harvest amount[a]: Total	Unit	Mean per household	95% confidence limit (±)
Small land mammals, continued												
Least 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	**20.0**	**0.0**	**0.0**	**20.0**	**0.0**	**0.0**	**0.0**	**0.0**				**0.0**
Fur seal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Harbor seal	10.0	0.0	0.0	10.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown seal	0.0	0.0	0.0	0.0	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
Walrus	10.0	0.0	0.0	10.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Beluga whale	10.0	0.0	0.0	10.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Bowhead whale	10.0	0.0	0.0	10.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown whale	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	**40.0**	**50.0**	**40.0**	**10.0**	**0.0**	**33.2**	**2.4**	**1.2**				**80.5**
Canvasback	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
King eider	10.0	0.0	0.0	10.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Spectacled 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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Mallard	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
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
Green-winged 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 ducks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Brant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Cackling goose	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Canada 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 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
Emperor goose	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Snow goose	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	0.0	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 4-13.–Page 4 of 5.

Resource	Percentage of households: Use %	Attempt %	Harvest %	Receive %	Give %	Harvest weight (lb): Total	Mean per household	Per capita	Harvest amount[a]: Total	Unit	Mean per household	95% confidence limit (±)
Birds and eggs, continued												
Tundra (whistling) swan	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
Spruce grouse	30.0	40.0	30.0	0.0	0.0	10.8	0.8	0.4	15.4	ind	1.1	70.4
Sharp-tailed grouse	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Ruffed grouse	0.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown grouse	10.0	10.0	10.0	0.0	0.0	2.8	0.2	0.1	5.6	ind	0.4	120.9
Unknown ptarmigan	10.0	30.0	10.0	0.0	0.0	19.6	1.4	0.7	28.0	ind	2.0	120.9
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
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 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	**40.0**	**10.0**	**10.0**	**30.0**	**0.0**	**1.1**	**0.1**	**0.0**				**120.9**
Freshwater 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	20.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Dungeness crab	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	lb	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	lb	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	lb	0.0	0.0
Unknown mussels	10.0	10.0	10.0	0.0	0.0	1.1	0.1	0.0	0.7	gal	0.1	120.9
Octopus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Shrimp	10.0	0.0	0.0	10.0	0.0	0.0	0.0	0.0	0.0	lb	0.0	0.0
Squid	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Vegetation	**100.0**	**100.0**	**100.0**	**10.0**	**30.0**	**280.0**	**20.0**	**10.5**				**44.1**
Blueberry	100.0	100.0	100.0	0.0	30.0	176.4	12.6	6.6	44.1	gal	3.2	52.8
Lowbush cranberry	60.0	60.0	60.0	0.0	0.0	28.0	2.0	1.1	7.0	gal	0.5	36.1
Highbush cranberry	30.0	30.0	30.0	0.0	10.0	8.5	0.6	0.3	2.1	gal	0.2	80.2
Crowberry	10.0	10.0	10.0	0.0	0.0	2.8	0.2	0.1	0.7	gal	0.1	120.9
Raspberry	10.0	10.0	10.0	0.0	0.0	56.0	4.0	2.1	14.0	gal	1.0	120.9
Salmonberry	20.0	20.0	20.0	0.0	10.0	4.2	0.3	0.2	1.1	gal	0.1	86.0
Other wild berry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Hudson's Bay (Labrador) tea	10.0	10.0	10.0	0.0	10.0	0.7	0.1	0.0	0.7	gal	0.1	120.9

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Table 4-13.–Page 5 of 5.

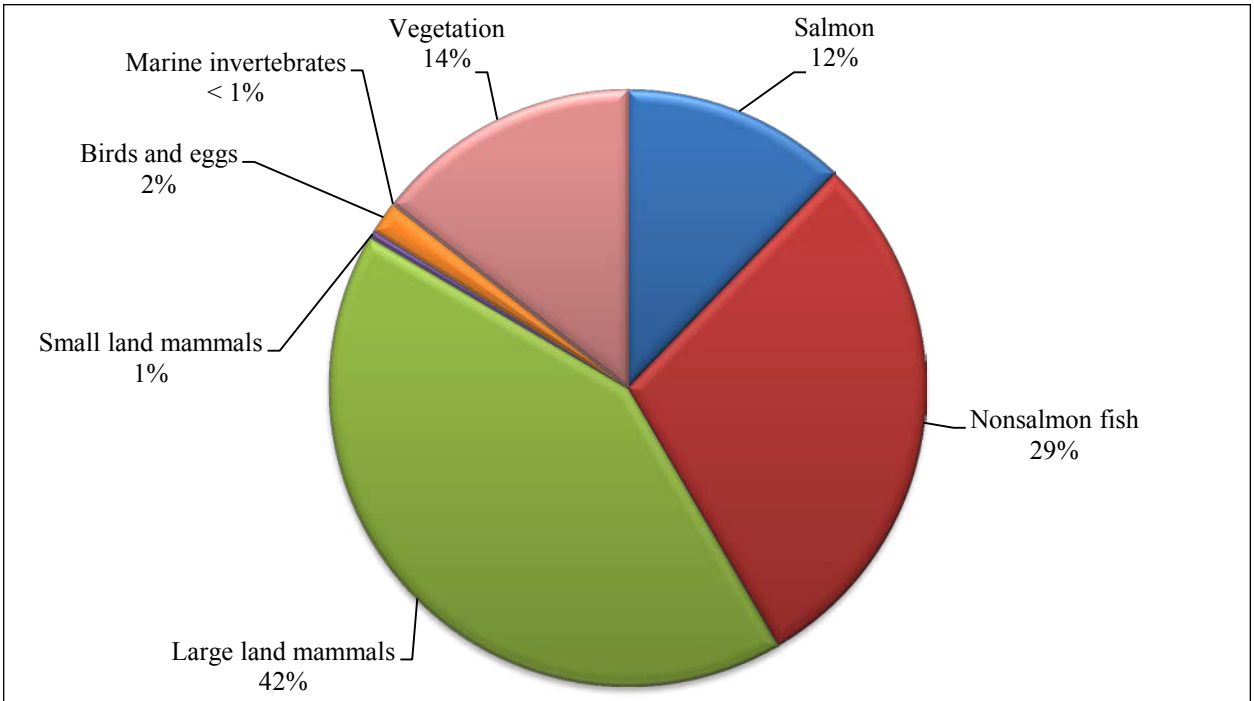
Resource	Percentage of households: Use %	Attempt %	Harvest %	Receive %	Give %	Harvest weight (lb): Total	Mean per household	Per capita	Harvest amount[a]: Total	Unit	Mean per household	95% confidence limit (±)
Vegetation, continued												
Wild rose hips	10.0	10.0	10.0	0.0	10.0	2.8	0.2	0.1	0.7	gal	0.1	120.9
Other wild greens	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Unknown mushrooms	30.0	20.0	20.0	10.0	10.0	0.6	0.0	0.0	0.6	gal	0.0	114.7
Other wood	60.0	60.0	60.0	0.0	0.0	0.0	0.0	0.0	28.0	cord	2.0	41.3

Source ADF&G Division of Subsistence household surveys, 2014.

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.

a. Summary rows that include incompatible units of measure have been left blank.



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

Figure 4-7.–Composition of harvest by resource category in pounds usable weight, Lake Louise, 2013.

local lakes, rod and reel fishing takes place from shore on smaller ponds and often from a boat on Lake Louise itself. 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 May and early June for sockeye salmon fishing. Residents travel to distant areas to access salmon; in the case of sockeye salmon, harvests from the Kenai River by 1 household in 2013 were opportunistic and fishing occurred while traveling for other purposes. The harvest of both salmon and nonsalmon fish often continues throughout the summer months as regulations permit. Nonsalmon fish are particularly important to the community, and given the dependency of the local economy on tourism, the activity is often promoted during the summer.

As berries begin to ripen later in the summer, many Lake Louise residents make an effort to harvest these, especially blueberries and cranberries. Many individuals that 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. Regulations also allow the hunting of an antlerless moose in October and March, and those residents that were unsuccessful in the earlier hunt sometimes take advantage of the additional opportunity. Caribou are also hunted in August and September under subsistence regulations, but they are also sought throughout much of the winter under general permit regulations.

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.

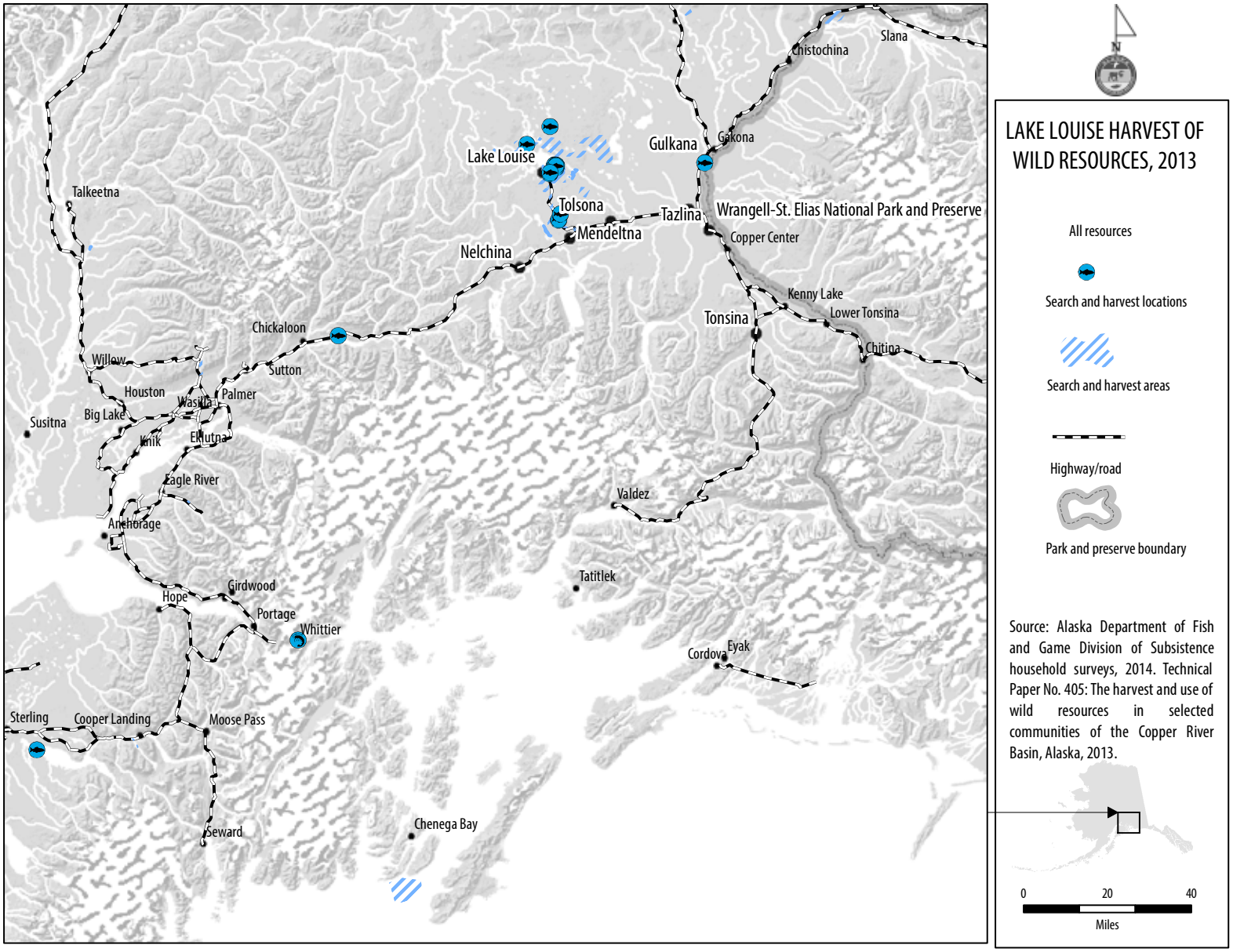


Figure 4-8.–Wild resources search and harvest areas, Lake Louise, 2013.

Table 4-14.–Top ranked resources used by households, Lake Louise, 2013.

Rank[a]	Resource	Percentage of households using
1.	Blueberry	100.0%
2.	Sockeye salmon	90.0%
3.	Moose	70.0%
4.	Burbot	60.0%
4.	Lowbush cranberry	60.0%
6.	Arctic grayling	50.0%
6.	Caribou	50.0%
8.	Pacific halibut	40.0%
9.	Chinook salmon	30.0%
9.	Lake trout	30.0%

Source ADF&G Division of Subsistence household surveys, 2014.
a. Resources used by the same percentage of households share the lowest rank value instead of having sequential rank values.

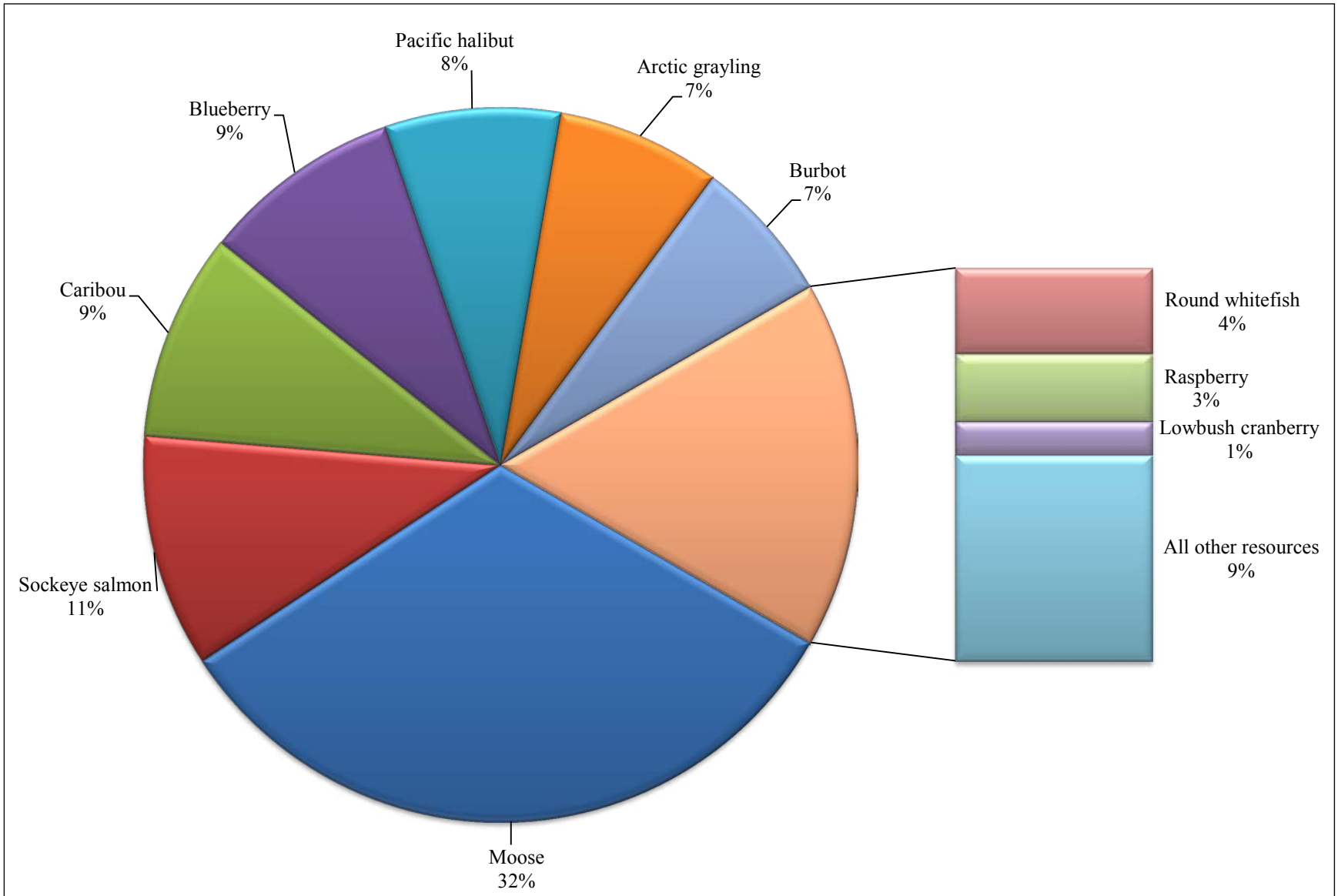
Use and Harvest Characteristics by Resource Category

Table 4-13 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 Lake Louise residents in 2013. All households received at least 1 resource in 2013, and 70% of households gave away at least 1 resource.

Salmon was the resource category most frequently received by Lake Louise households in 2013 (Table 4-13). An estimated 80% of community households received salmon in 2013; this was followed by receipt of nonsalmon fish (70% of households) and receipt of large land mammals (60% of households). Interestingly, there was no reported attempt to harvest marine mammals, but 20% of households received 1 or more marine mammal species. Salmon and vegetation were the resource categories most frequently given away by households (30% of households gave away resources from each category). Twenty percent of households gave away nonsalmon fish and 20% gave away large land mammals. No households gave away marine mammals, birds and eggs, small land mammals, or marine invertebrates.

Table 4-14 lists the top resources used by Lake Louise households during the 2013 study year. Interestingly blueberries were used by every household in the community. Use of blueberries was followed closely by use of sockeye salmon (90% of households) and moose (70% of households). Importantly, 4 species of nonsalmon fish received a top use rank, including burbot (60% of households), Arctic grayling (50% of households), Pacific halibut (40% of households), and lake trout (30% of households).

Figure 4-9 depicts the resources with the largest harvests. Importantly, the number of households using a resource is not always directly proportional to the top resources harvested by pounds usable weight. For instance, burbot and Arctic grayling each contributed about 7% to the overall harvest even though those species were both used by a large proportion of households (Figure 4-9; Table 4-14). This suggests that certain resources are important to households despite being harvested in relatively small quantities. Also, while 4 nonsalmon fish species contributed higher ranked percentages of pounds usable weight to the total harvest, the species do not coincide with those that were used by the most households; round whitefish contributed 4% of the overall harvest but was not used by enough households to be included in the list of top used resources. The species that made up the largest percentage of the harvest in pounds usable weight were moose (32%), sockeye salmon (11%), and caribou (9%).



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

Figure 4-9.–Top species harvested by percentage of total harvest in pounds usable weight, Lake Louise, 2013.

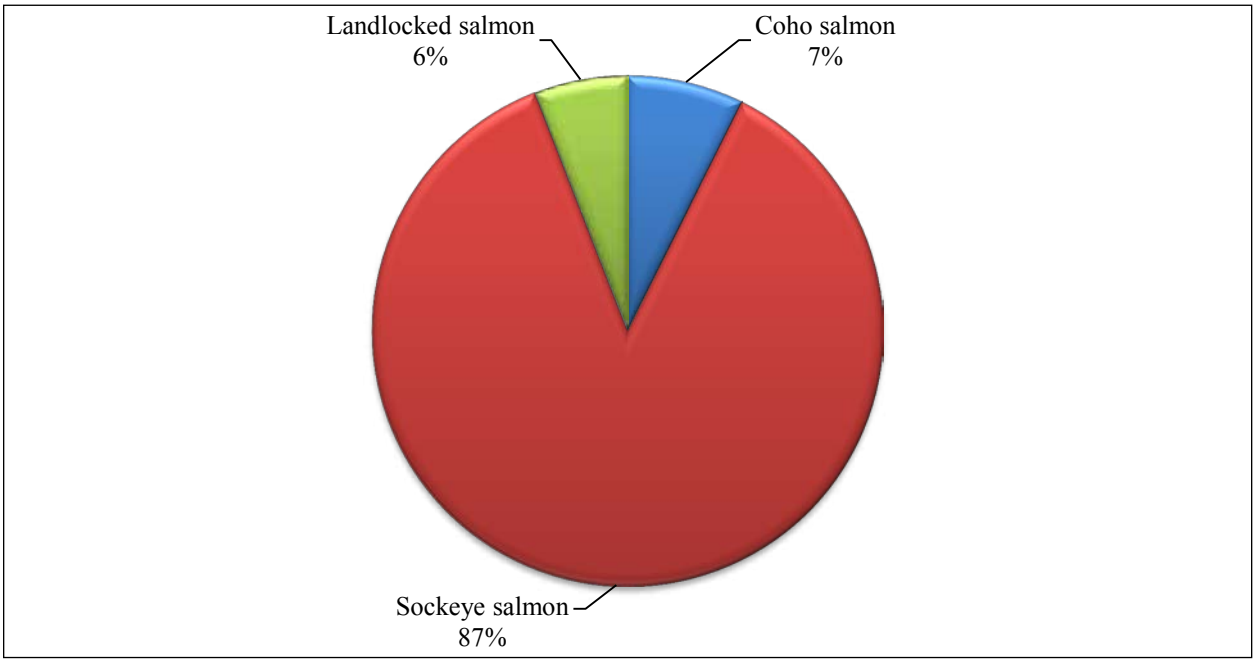


Figure 4-10.–Composition of salmon harvest in pounds usable weight, Lake Louise, 2013.

Salmon

In 2013, the community of Lake Louise harvested a total of 237 lb of salmon, or 9 lb of salmon per capita (Table 4-13). Of the total harvest of salmon, 87% was sockeye salmon, followed by coho salmon (7%), and landlocked salmon (6%) (Figure 4-10). The per capita harvest of sockeye salmon, coho salmon, and landlocked salmon was 8 lb, 1 lb, and less than 1 lb, respectively (Table 4-13). All salmon harvested in 2013 were caught using rod and reel (Table 4-15).

Sockeye salmon were used by 90% of Lake Louise households in 2013, but only 30% of households attempted to harvest this species; of those 30%, all were successful in harvesting sockeye salmon (Table 4-13). Only 20% of households used coho salmon and only 10% of households used landlocked salmon. Of the 10% of households that attempted to harvest both coho salmon and landlocked salmon, all were successful. Interestingly, 30% of households used Chinook salmon but no households attempted to harvest this species.

Sharing of salmon was common in this community in 2013. Eighty percent of households received sockeye salmon and 20% gave this resource away (Table 4-13). Chinook salmon was the only other species given away, even though it was not harvested by community households. Coho salmon were received by 10% of Lake Louise households.

The search and harvest areas for the 3 salmon species harvested by Lake Louise households are represented spatially within this report. The sockeye salmon map is included here and the maps for coho salmon and landlocked salmon fishing and harvest locations can be found in Appendix D. In 2013, sockeye salmon were harvested from 3 main areas (Figure 4-11). The first and most prominent search and harvest area was in the Gulkana River near the community of Gulkana—just north of this river's confluence with the Copper River. The second search and harvest area for the species was in the Kenai River immediately downstream of Skilak Lake. The third search and harvest area was along a stretch of Montana Creek in the Susitna River Basin.

The coho salmon search and harvest areas were in the marine waters of Prince William Sound. This area was south of Elrington and Latouche islands and west of Montague Island. Search and harvest areas for

Table 4-15.–Estimated percentages of salmon harvested by gear type, resource, and total harvest, Lake Louise, 2013.

Resource	Percentage base	Removed from commercial catch		Subsistence methods										Rod and reel		Any method	
				Gillnet or seine		Fish wheel		Dip net		Other		Subsistence gear, any method					
		Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
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%**	**0.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
	Resource	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**100.0%**	**100.0%**	**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%**	**0.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
Chum 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%	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%	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%	0.0%	0.0%	0.0%	0.0%	0.0%
Coho 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%	0.0%	4.5%	7.3%	4.5%	7.3%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	0.0%	4.5%	7.3%	4.5%	7.3%
Chinook 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%	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%	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%	0.0%	0.0%	0.0%	0.0%	0.0%
Pink 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%	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%	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%	0.0%	0.0%	0.0%	0.0%	0.0%
Sockeye 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%	0.0%	72.7%	86.7%	72.7%	86.7%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	0.0%	72.7%	86.7%	72.7%	86.7%
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%	0.0%	22.7%	5.9%	22.7%	5.9%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	0.0%	22.7%	5.9%	22.7%	5.9%
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%	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%	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%	0.0%	0.0%	0.0%	0.0%	0.0%

Source ADF&G Division of Subsistence household surveys, 2014.

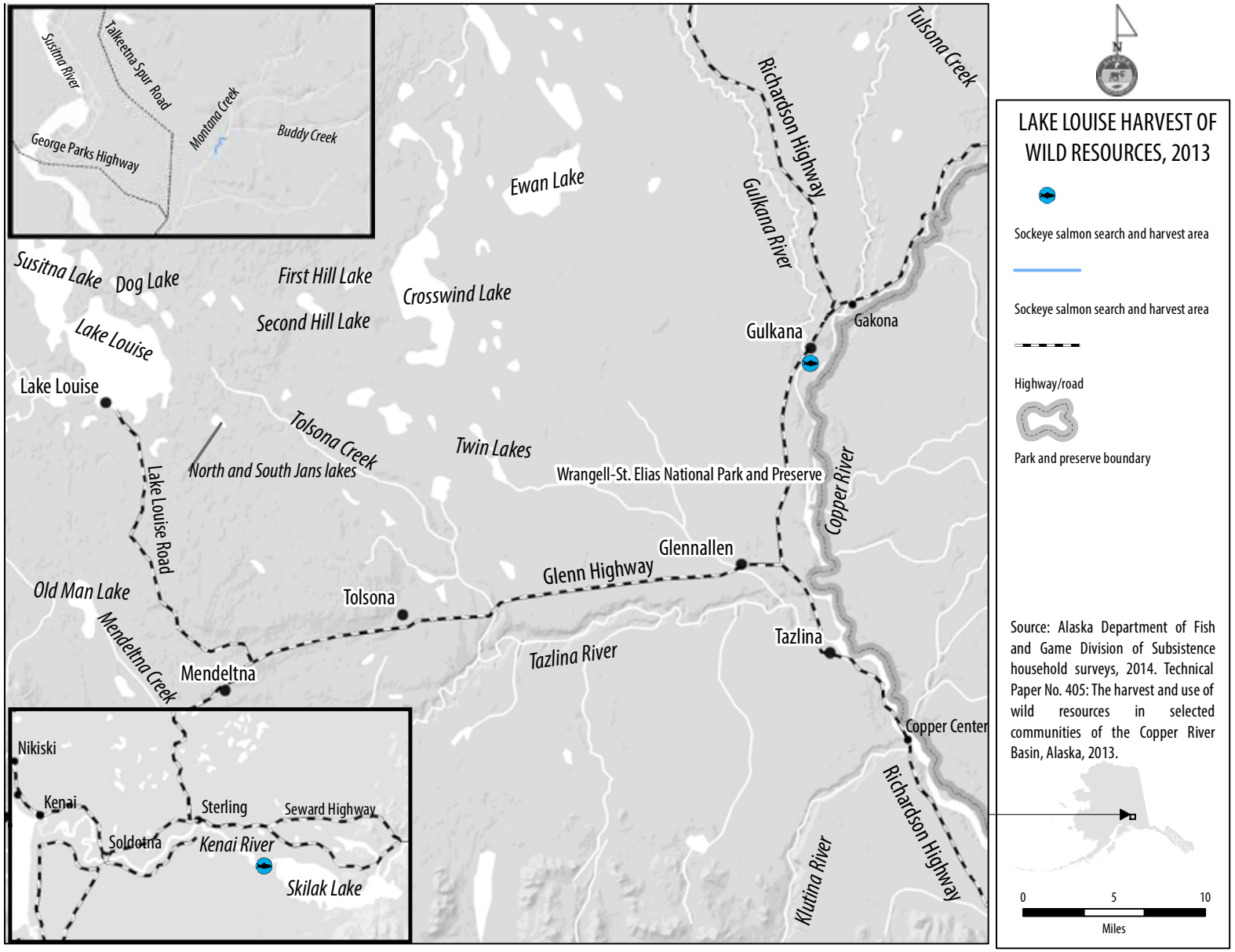


Figure 4-11.–Fishing and harvest locations of sockeye salmon, Lake Louise, 2013.

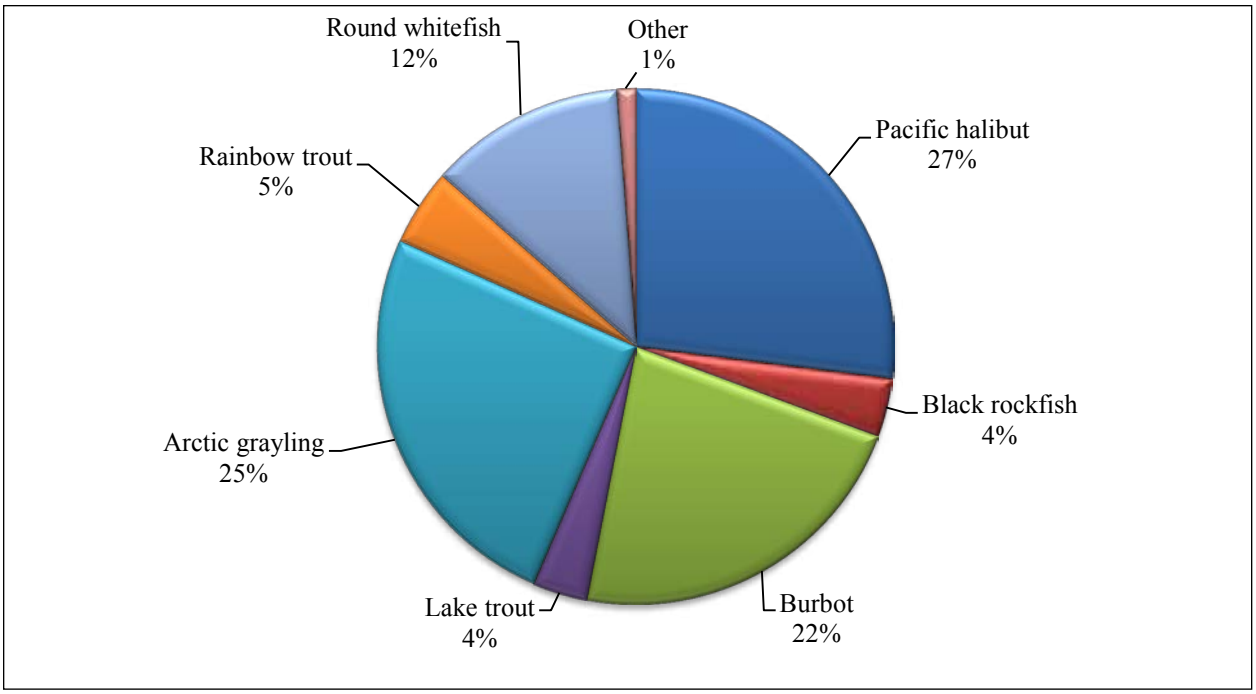


Figure 4-12.–Composition of nonsalmon fish harvest in pounds usable weight, Lake Louise, 2013.

landlocked salmon were only reported in Bonnie Lake along the Glenn Highway near the community of Chickaloon.

Nonsalmon Fish

Nonsalmon fish appear to be an important resource for Lake Louise since they make up 29% of the overall harvest and nonsalmon fish is the second most harvested resource category (Figure 4-7). A total of approximately 571 lb of nonsalmon fish were harvested in Lake Louise in 2013, equating to a per capita harvest of 22 lb (Table 4-13). This harvest comprises a variety of species with no one species composing a majority of the nonsalmon fish harvest (Figure 4-12). Pacific halibut, Arctic grayling, and burbot represented the greatest proportions of the nonsalmon fish harvest (27%, 25%, and 22%, respectively). Round whitefish made up 12% of the nonsalmon fish harvest followed by rainbow trout (5%), lake trout and black rockfish (each at 4%), and other nonsalmon fish (1%). All households that attempted to harvest individual species of nonsalmon fish were successful, except for the 10% of households that attempted unsuccessfully to harvest sheefish (Table 4-13).

Burbot and Arctic grayling may be particularly important to the community because they are available locally in freshwater systems; these 2 species were used by a 60% and 50% of households, respectively (Table 4-13). Fifty percent of households attempted to harvest and were successful at harvesting burbot and Arctic grayling. Sharing was minimal for Arctic grayling; 10% of households gave away this species.

A total of 154 lb of Pacific halibut was harvested by only 10% of community households (Table 4-13). Given that no households gave away this resource, the 30% of households that received this resource likely obtained it from households outside of the community. While Pacific halibut made up the greatest percentage of the nonsalmon harvest in 2013 (Figure 4-12), the distribution of this harvest was minimal.

Whitefishes were shared and used minimally in the community. Humpback whitefish, round whitefish, and unknown whitefishes were each used by 10% of the community households (Table 4-13). Ten percent of households gave away round whitefish and 10% of households received unknown whitefishes. With regard

Table 4-16.–Estimated percentages of nonsalmon fish harvested by gear type, resource, and total nonsalmon fish harvest, Lake Louise, 2013.

				Subsistence methods											
		Removed from commercial catch		Gillnet or seine		Ice fish		Other		Subsistence gear, any method		Rod and reel		Any method	
Resource	Percentage base	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Nonsalmon fish	**Gear type**	**0.0%**	**0.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**0.0%**	**0.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
	Resource	**0.0%**	**0.0%**	**13.7%**	**13.1%**	**12.4%**	**24.6%**	**0.0%**	**0.0%**	**26.1%**	**37.7%**	**73.9%**	**62.3%**	**100.0%**	**100.0%**
	Total	**0.0%**	**0.0%**	**13.7%**	**13.1%**	**12.4%**	**24.6%**	**0.0%**	**0.0%**	**26.1%**	**37.7%**	**73.9%**	**62.3%**	**100.0%**	**100.0%**
Pacific herring	Gear type	0.0%	0.0%	0.0%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	0.0%	0.0%	0.0%
Pacific tomcod	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Starry flounder	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Lingcod	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Pacific halibut	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	39.1%	43.3%	28.9%	27.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	28.9%	27.0%	28.9%	27.0%
Arctic lamprey	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Black rockfish	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.6%	5.9%	2.6%	3.7%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	2.6%	3.7%	2.6%	3.7%
Unknown rockfish	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%

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Table 4-16.–Page 2 of 3.

Resource	Percentage base	Removed from commercial catch		Subsistence methods: Gillnet or seine		Ice fish		Other		Subsistence gear, any method		Rod and reel		Any method	
		Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Unknown sculpin	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Burbot	Gear type	0.0%	0.0%	0.0%	0.0%	80.9%	90.9%	0.0%	0.0%	38.4%	59.3%	0.0%	0.0%	10.0%	22.4%
	Resource	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	10.0%	22.4%	0.0%	0.0%	10.0%	22.4%	0.0%	0.0%	10.0%	22.4%
Arctic char	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	0.6%	0.5%	0.3%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	0.5%	0.3%	0.5%	0.3%
Dolly Varden	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Lake trout	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.5%	5.5%	1.8%	3.4%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	1.8%	3.4%	1.8%	3.4%
Arctic grayling	Gear type	0.0%	0.0%	0.0%	0.0%	10.6%	3.5%	0.0%	0.0%	5.1%	2.3%	50.5%	39.2%	38.7%	25.2%
	Resource	0.0%	0.0%	0.0%	0.0%	3.4%	3.4%	0.0%	0.0%	3.4%	3.4%	96.6%	96.6%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	1.3%	0.9%	0.0%	0.0%	1.3%	0.9%	37.4%	24.4%	38.7%	25.2%
Northern pike	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Sheefish	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Longnose sucker	Gear type	0.0%	0.0%	0.0%	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%	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%	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%	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%	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%	0.0%	0.0%	0.0%
Rainbow trout	Gear type	0.0%	0.0%	0.0%	0.0%	8.5%	5.6%	0.0%	0.0%	4.0%	3.6%	3.6%	5.5%	3.7%	4.8%
	Resource	0.0%	0.0%	0.0%	0.0%	28.6%	28.6%	0.0%	0.0%	28.6%	28.6%	71.4%	71.4%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	1.1%	1.4%	0.0%	0.0%	1.1%	1.4%	2.6%	3.4%	3.7%	4.8%
Unknown trout	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Broad whitefish	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%

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Table 4-16.–Page 3 of 3.

Resource	Percentage base	Removed from commercial catch		Subsistence methods											
				Gillnet or seine		Ice fish		Other		Subsistence gear, any method		Rod and reel		Any method	
		Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Least cisco	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Humpback whitefish	Gear type	0.0%	0.0%	3.8%	6.5%	0.0%	0.0%	0.0%	0.0%	2.0%	2.3%	0.0%	0.0%	0.5%	0.9%
	Resource	0.0%	0.0%	100.0%	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.5%	0.9%	0.0%	0.0%	0.0%	0.0%	0.5%	0.9%	0.0%	0.0%	0.5%	0.9%
Round whitefish	Gear type	0.0%	0.0%	96.2%	93.5%	0.0%	0.0%	0.0%	0.0%	50.5%	32.5%	0.0%	0.0%	13.2%	12.3%
	Resource	0.0%	0.0%	100.0%	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	13.2%	12.3%	0.0%	0.0%	0.0%	0.0%	13.2%	12.3%	0.0%	0.0%	13.2%	12.3%
Unknown whitefishes	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%

Source ADF&G Division of Subsistence household surveys, 2014.

to the other nonsalmon fish species used, no households gave away black rockfish, rainbow trout, lake trout, or Arctic char, and just 10% of households received lake trout.

Nonsalmon fish were harvested using a variety of gear types. Pacific halibut, black rockfish, lake trout, and Arctic char were harvested entirely with rod and reel (Table 4-16). Humpback whitefish and round whitefish were harvested entirely with gillnets or seines, and all burbot harvested were caught while ice fishing. Arctic grayling and rainbow trout were harvested with both ice fishing gear and by rod and reel, though most of the Arctic grayling harvest (97%) was with rod and reel. Seventy-one percent of the rainbow trout harvest was by rod and reel.

The search and harvest areas for nonsalmon fish harvested by Lake Louise households are represented spatially within this report. The Arctic grayling and burbot fishing and harvest location maps are included here and the maps for all other nonsalmon species can be found in Appendix D. All freshwater fish species were harvested near the community of Lake Louise in 2013, and all marine nonsalmon fish (Pacific halibut and black rockfish) were harvested in Prince William Sound. The search and harvest areas for Pacific halibut and black rockfish were identical and included an area of Prince William Sound south of Elrington and Latouche islands and to the west of Montague Island.

Arctic grayling search and harvest areas included the southern end of Lake Louise, the northwestern end of Susitna Lake, a small pond along Lake Louise Road, a stretch of Mendeltna Creek upstream of Nickoli Lake, and a stretch of Tolsona Creek near its headwaters (Figure 4-13). Burbot search and harvest areas included the southern end of Lake Louise and a small unnamed lake just south of Lake Louise (Figure 4-14). Burbot were also sought from Bell Lake, Dog Lake, and 2 unnamed lakes to the north of Lake Louise and to the east of Susitna Lake.

The search and harvest areas for rainbow trout in 2013 included Round Lake and Old Road Lake. These are small bodies of water to the east of Lake Louise Road near milepost 5. Rainbow trout were also sought in North Jans and South Jans lakes located to the southeast of Lake Louise. Lake trout were only sought from the southwestern portion of Lake Louise, and Arctic char were only sought along a stretch of Mendeltna Creek located north of Nickoli Lake. The search and harvest area for both humpback whitefish and round whitefish was the southeastern portion of Lake Louise.

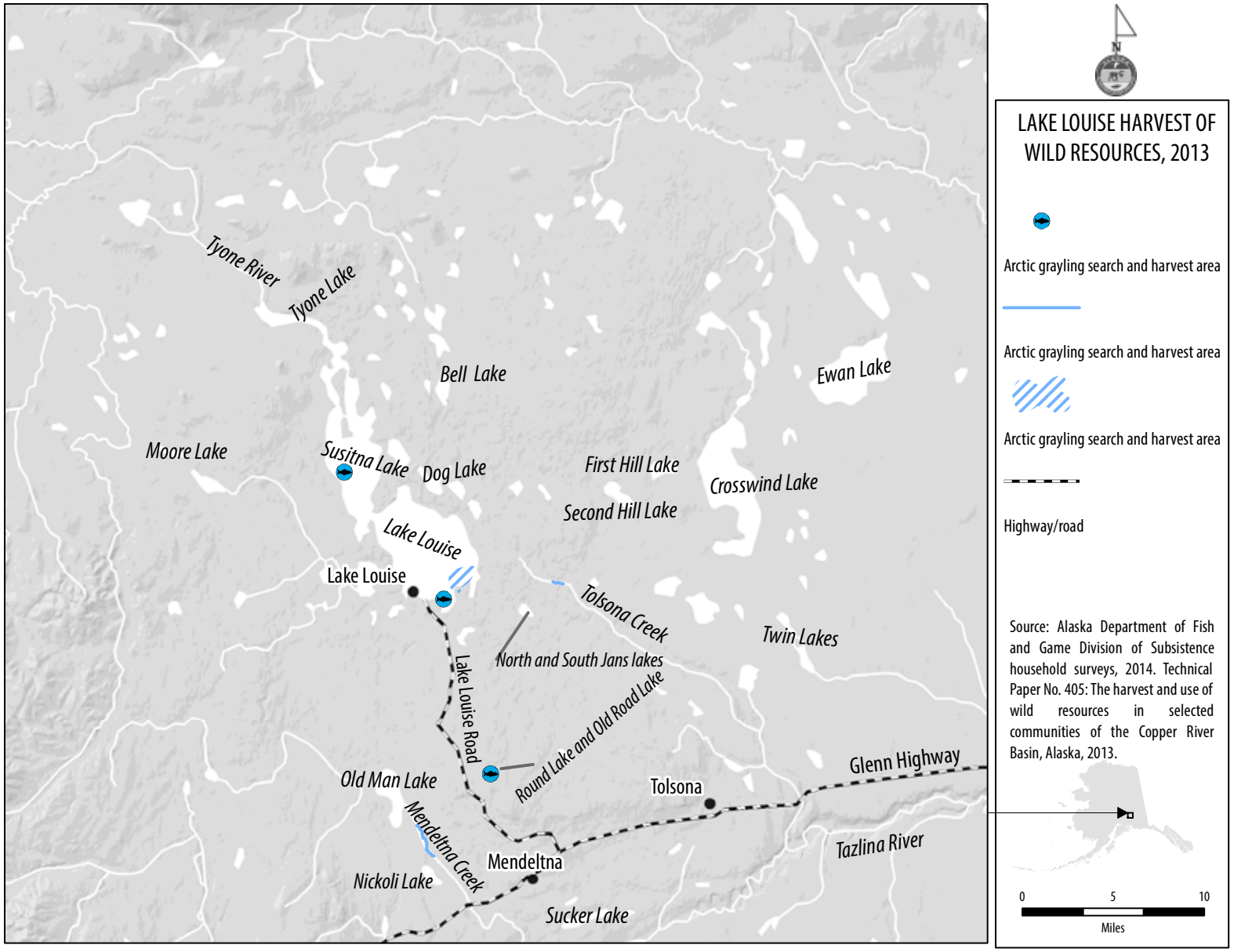


Figure 4-13.–Fishing and harvest locations of Arctic grayling, Lake Louise, 2013.

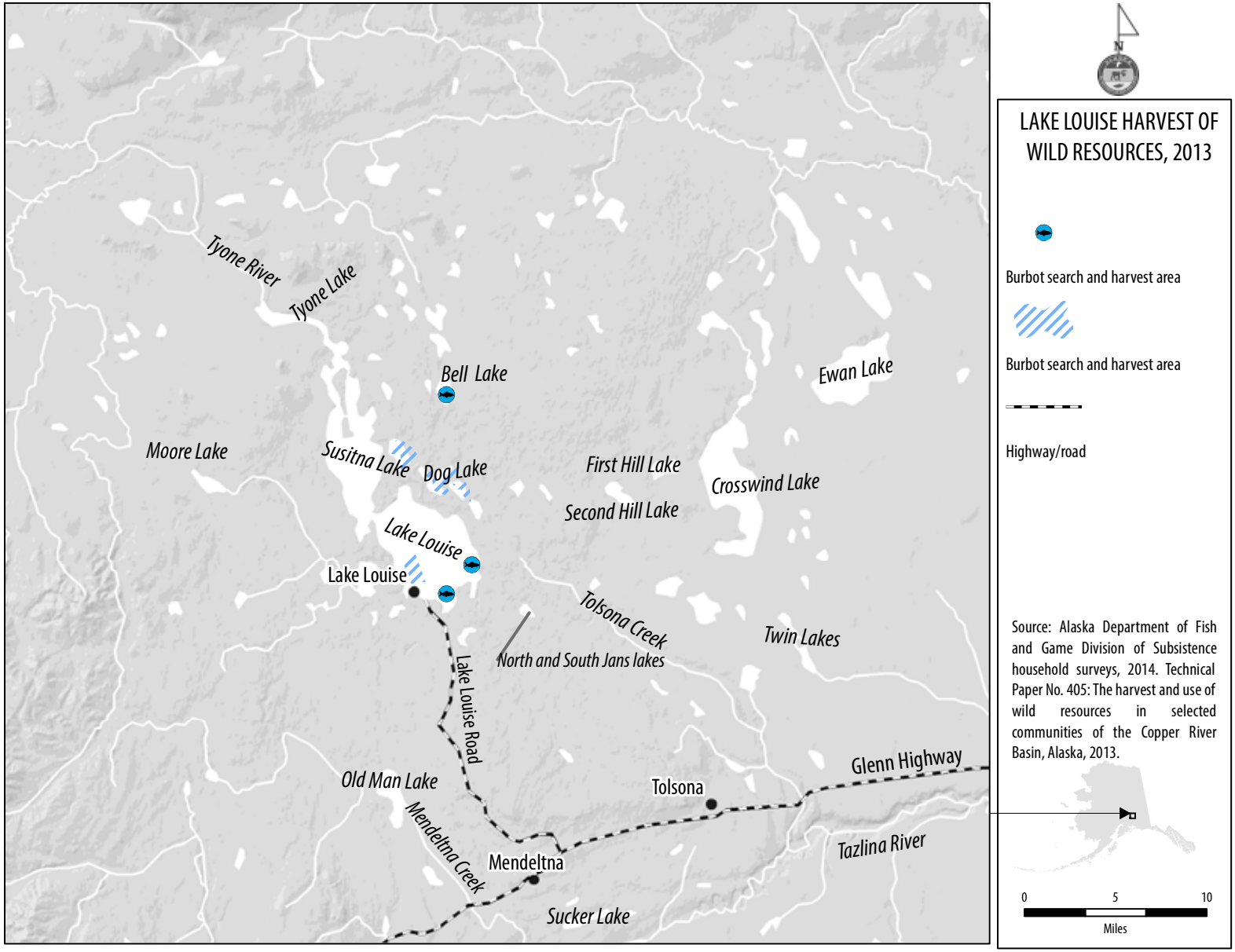


Figure 4-14.–Fishing and harvest locations of burbot, Lake Louise, 2013.

Large Land Mammals

Two species of large land mammals were harvested by Lake Louise households in 2013—moose and caribou (Table 4-13). Combined, the large land mammal harvest for the community was 812 lb, or 31 lb per capita. Moose made up 78% of the large land mammal harvest, while caribou made up 22% (Figure 4-15). Interestingly, approximately 1 animal of each of these species were harvested in 2013, but moose provide a larger quantity of usable meat and raw materials per animal. Both animals were harvested in September, and both were male (Table 4-17).

Seventy percent of households used moose in 2013 (Table 4-13). Fifty percent of community households hunted for moose and only 10% of community households were successful. A total of 630 lb of moose was harvested, equaling 24 lb per capita. Moose was shared widely within the community with 60% of households having received this resource and 20% of households having given this resource away. This shows that moose that was received was further distributed to other households.

Fifty percent of households used caribou in 2013. Seventy percent of households attempted to harvest caribou, which was 20% more households than how many attempted to harvest moose. Only 10% of Lake Louise households successfully harvested a caribou. Sharing of caribou was less frequent than that of moose with 20% of households having received this resource and 10% having given this resource away.

Moose and caribou search areas included several locations throughout the Copper River Basin in 2013. Moose were sought along the Lake Louise Road, primarily to the west of the road, in Game Management Unit (GMU) 13A (Figure 4-16). They were also sought in a small area to the west of the Gakona River and east of the Richardson Highway in GMU 13B. Caribou were sought in the same areas as moose, with the addition of a relatively large area to the south of Lake Louise in GMU 13A.

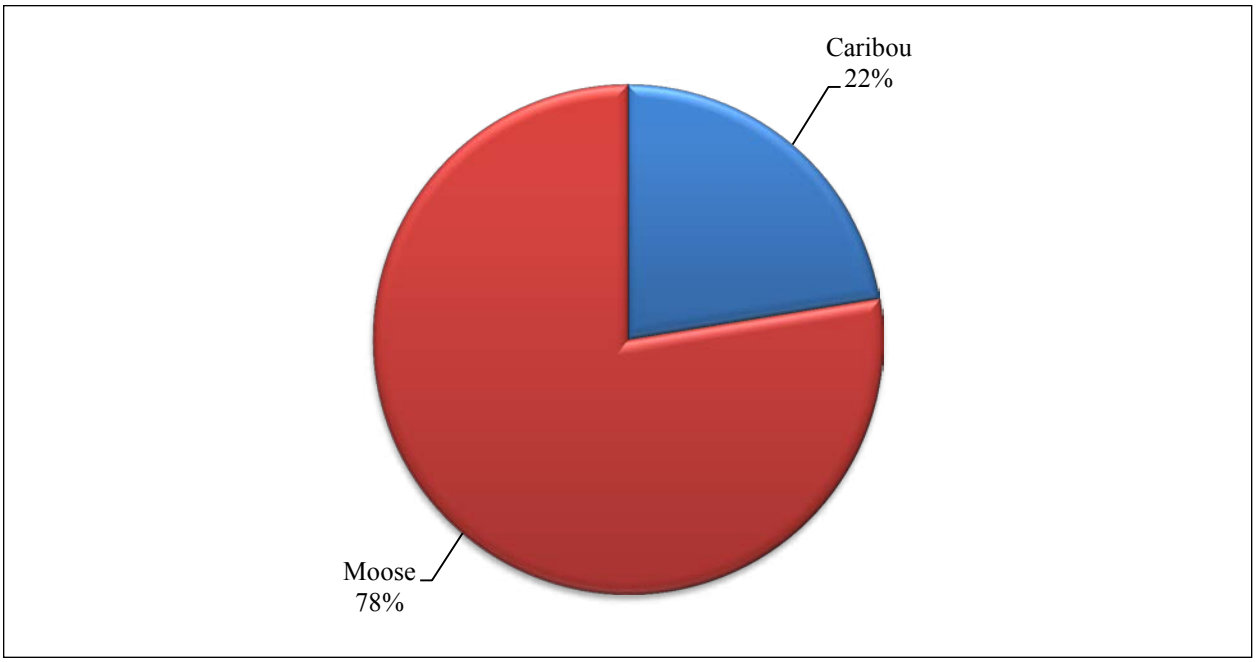


Figure 4-15.–Composition of large land mammal harvest in pounds usable weight, Lake Louise, 2013.

Table 4-17.–Estimated large land mammal harvests by month and sex, Lake Louise, 2013.

Resource	Estimated harvest by month													
	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**	**2.8**	**0.0**	**0.0**	**0.0**	**0.0**	**2.8**
Bison	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Black bear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Brown bear	0.0	0.0	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0	0.0	0.0	**1.4**
Caribou, male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0	0.0	0.0	**1.4**
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**
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	0.0	0.0	0.0	**1.4**
Moose, bull	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0	0.0	0.0	**1.4**
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**
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, 2014.

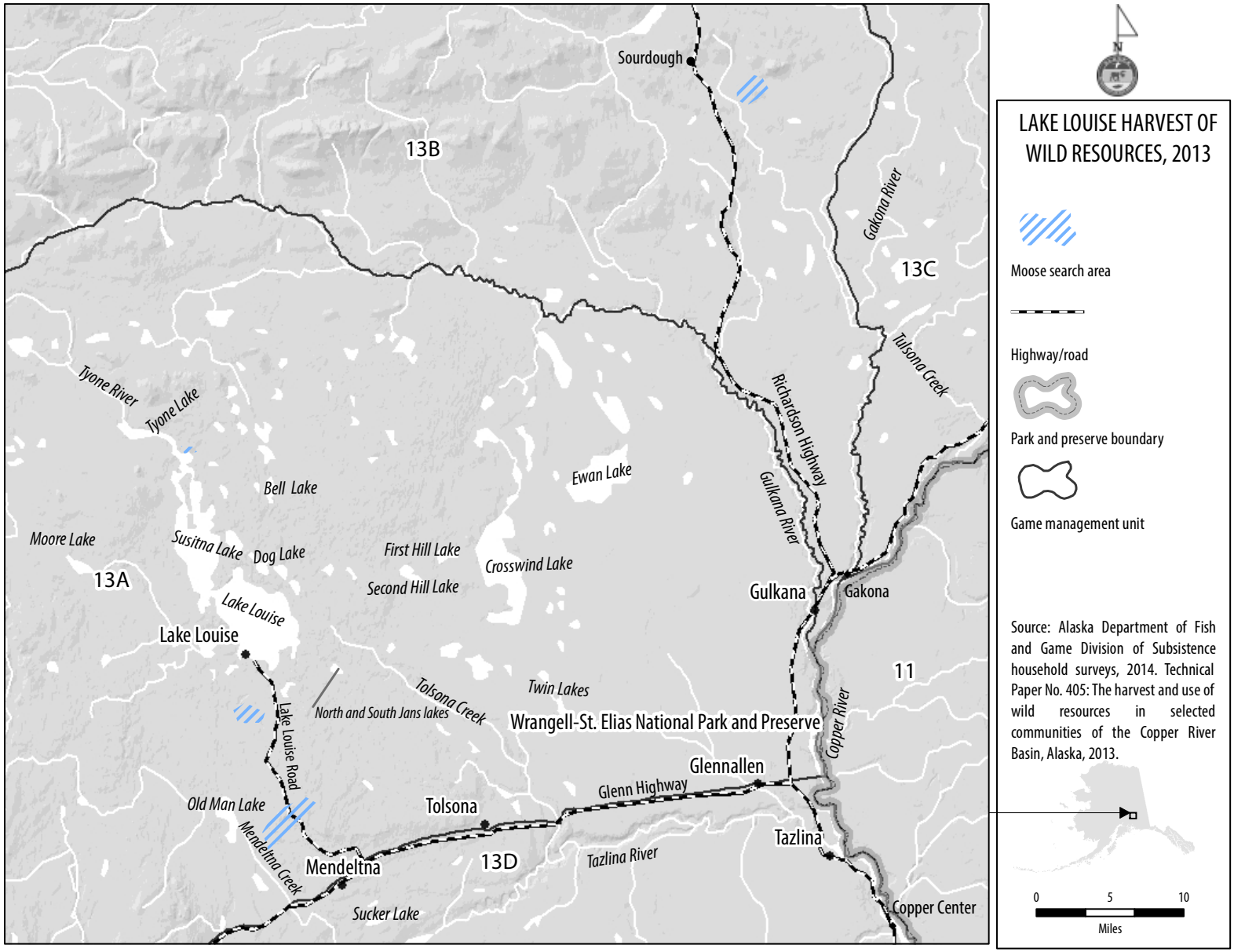


Figure 4-16.–Hunting locations of moose, Lake Louise, 2013.

Table 4-18.–Estimated small land mammal/furbearer harvests by month, Lake Louise, 2013.

Resource	Estimated harvest by month													Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk	
All small land mammals	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**1.4**	**2.8**	**0.0**	**4.2**
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–cross phase	0.0	0.0	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–red phase	0.0	0.0	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	1.4	2.8	0.0	**4.2**
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**
Marmot	0.0	0.0	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	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	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**
Least 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, 2014.

Small Land Mammals/Furbearers

Small land mammals were not frequently used or harvested by Lake Louise households in 2013. Only 10% of households used small land mammals, and snowshoe hare was the single species used (Table 4-13). Twenty percent of households attempted to harvest snowshoe hares, but only 10% were successful. No household reported receiving or giving away any species of small land mammal.

Approximately 4 snowshoe hares were harvested in 2013 equating to approximately 8 lb usable weight harvested (less than 1 lb per capita). All of these animals were harvested between November and December (Table 4-18).

The search and harvest areas for snowshoe hares included the entire length of the Lake Louise Road. This species was also sought from a larger area around the community of Lake Louise and along the southernmost shore of the lake (Figure 4-17).

Birds and Eggs

Birds and eggs as a category was used by 40% of Lake Louise households in 2013, but this was made up entirely of birds and no eggs were harvested (Table 4-13). Four species of birds were used including king eider, spruce grouse, unspecified types of grouse, and ptarmigan. The king eiders were used by 10% of households and this was a received, not harvested, resource. No household gave away king eiders and no sharing occurred for any other bird species in 2013.

Thirty percent of households used spruce grouse; 10% of households used either other grouse or ptarmigan. While 40% of households attempted to harvest spruce grouse, only 30% of community households were successful. For ptarmigan, 30% of households attempted to harvest this resource, but only 10% of community households were successful.

Upland game birds made up the entirety of the bird harvest in Lake Louise since no waterfowl were harvested (Table 4-13). Ptarmigan made up 59% of the bird harvest, followed by spruce grouse (33%),

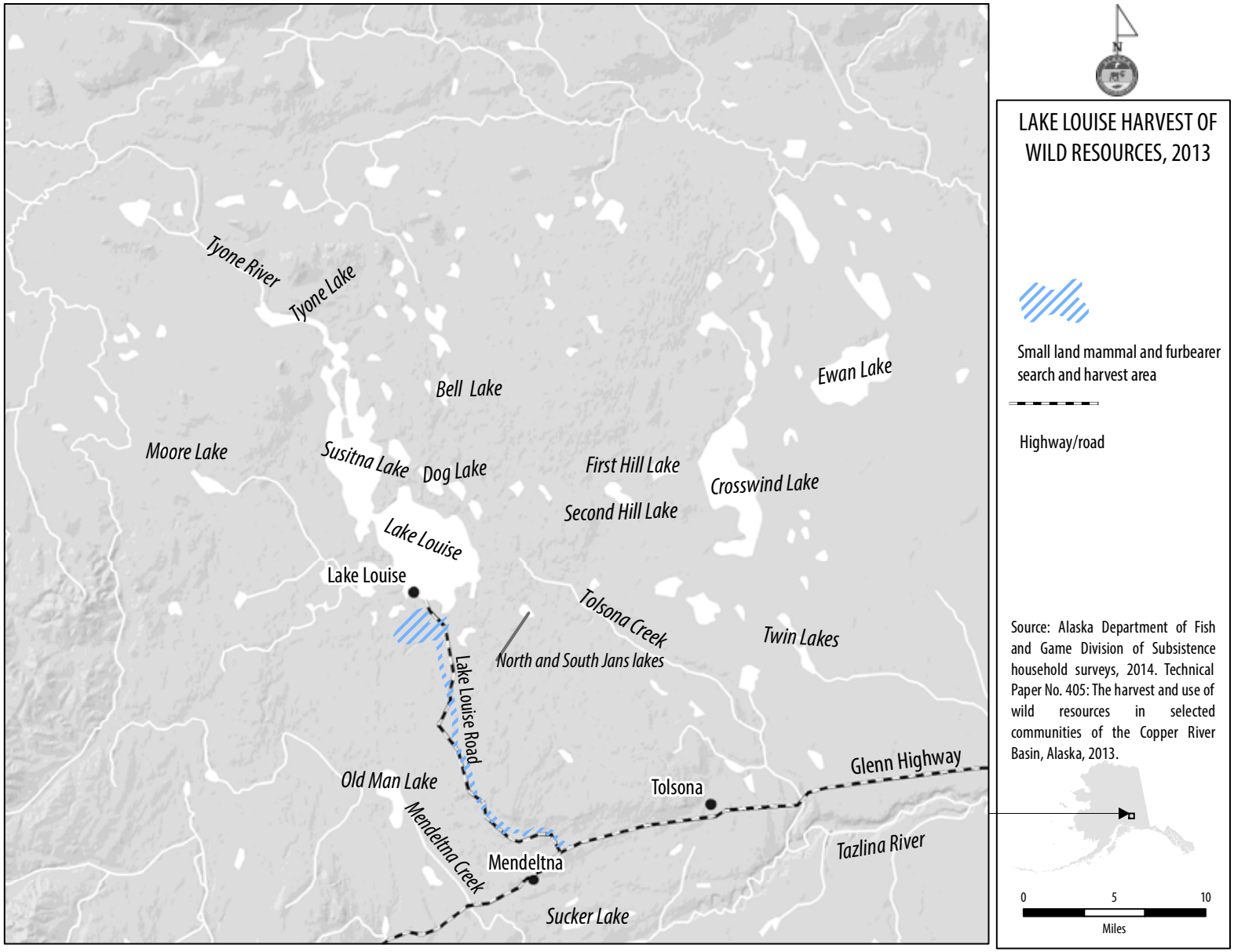
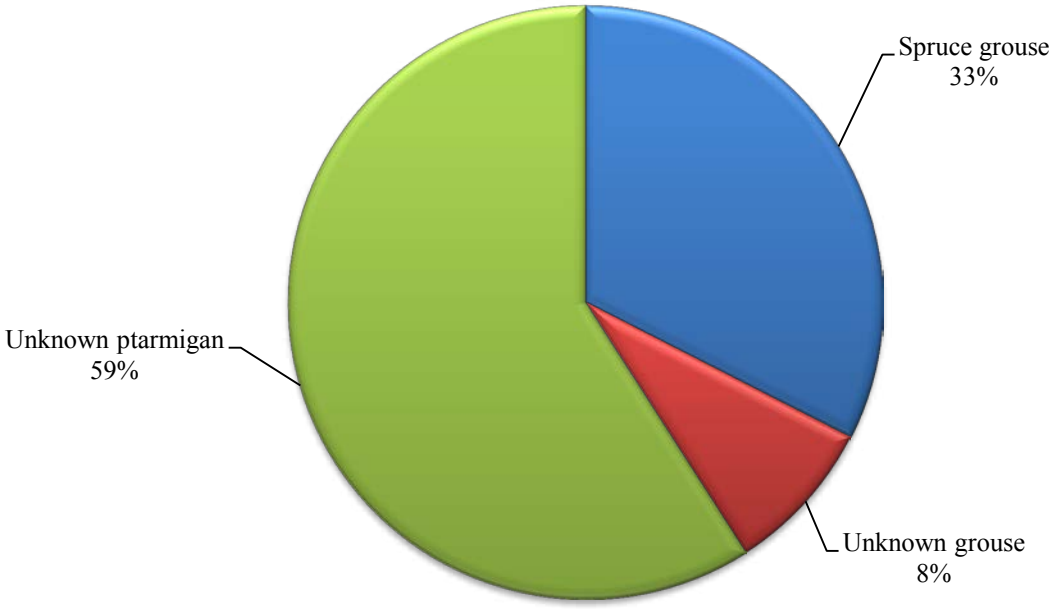


Figure 4-17.–Hunting and trapping locations of small land mammals/furbearers, Lake Louise, 2013.



Note No bird eggs were harvested.

Figure 4-18.–Composition of bird and bird egg harvest in pounds usable weight, Lake Louise, 2013.

and other grouse (8%) (Figure 4-18). For ptarmigan, spruce grouse, and other grouse, the per capita usable weight was less than 1 lb for each of the 3 species of birds harvested by Lake Louise households (Table 4-13).

Most birds (74%) were harvested during the winter months (Table 4-19). Only spruce grouse were harvested in the fall, though 18% of these birds were harvested in the winter. All ptarmigan and other grouse were harvested in the winter.

Upland game birds were sought from a relatively large area surround the community of Lake Louise—usually opportunistically while traveling for other purposes. The search and harvest areas include the entirety of Lake Louise Road and a larger area near the community of Lake Louise and along the southernmost edge of the lake (Figure 4-19). They were sought in an area between Lake Louise Road and Mendeltna Creek, from the western edge of Susitna Lake west to Moore Lake, from the eastern shore of Susitna Lake eastbound to Second Hill Lake, and in a large are between Second Hill Lake and Crosswind Lake. Additionally, these species were sought in a small area between North Jans and South Jans lakes and Tolsona Creek.

Marine Mammals

In spite of being located far from marine mammal habitat, 20% of Lake Louise households used marine mammals in 2013 (Table 4-13). All of the marine mammals were received by these households and no household hunted marine mammals. The species received include harbor seals, walrus, beluga whale, and bowhead whale. No marine mammals were given away by Lake Louise households.

Marine Invertebrates

Marine invertebrates were used by 40% of Lake Louise households in 2013 (Table 4-13). Razor clams were used by 20% of households, and unknown mussels and shrimp were each used by 10% of households. Only unknown mussels were actively harvested and by only 10% of households, all of which were successful.

Table 4-19.–Estimated bird and bird egg harvests by season, Lake Louise, 2013.

Resource	Estimated harvest by season					
	Winter	Spring	Summer	Fall	Season unknown	**Total**
All birds	**36.4**	**0.0**	**0.0**	**12.6**	**0.0**	**49.0**
Canvasback	0.0	0.0	0.0	0.0	0.0	**0.0**
King eider	0.0	0.0	0.0	0.0	0.0	**0.0**
Spectacled 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**
Mallard	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**
Black scoter	0.0	0.0	0.0	0.0	0.0	**0.0**
Green-winged teal	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown ducks	0.0	0.0	0.0	0.0	0.0	**0.0**
Brant	0.0	0.0	0.0	0.0	0.0	**0.0**
Cackling goose	0.0	0.0	0.0	0.0	0.0	**0.0**
Canada goose	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**
Emperor goose	0.0	0.0	0.0	0.0	0.0	**0.0**
Snow goose	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**
Tundra (whistling) swan	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**
Spruce grouse	2.8	0.0	0.0	12.6	0.0	**15.4**
Sharp-tailed grouse	0.0	0.0	0.0	0.0	0.0	**0.0**
Ruffed grouse	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown grouse	5.6	0.0	0.0	0.0	0.0	**5.6**
Unknown ptarmigan	28.0	0.0	0.0	0.0	0.0	**28.0**
Unknown duck eggs	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown goose eggs	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown gull eggs	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown eggs	0.0	0.0	0.0	0.0	0.0	**0.0**

Source ADF&G Division of Subsistence household surveys, 2014.

These mussels were sought and harvested near Whittier in Prince William Sound (Figure 4-20). Razor clams and shrimp were received by 20% and 10% of households, respectively, and no marine invertebrates were given away in the study year.

Vegetation

Vegetation was used by all Lake Louise households in 2013 (Table 4-13). All households that attempted to harvest individual species were successful. The vast majority of the harvest in this category was composed of berries (99%) (Figure 4-21). Plants and greens made up only 1% of the harvest for this category, and while mushrooms were harvested by 20% of households, the proportion of this harvest was negligible (Figure 4-21; Table 4-13).

Six species of berries were reportedly used by Lake Louise households (Table 4-13). Blueberries were used and harvested by all households. Sixty percent of households used and harvested lowbush cranberries, 30% used and harvested highbush cranberries, 20% used and harvested salmonberries, and 10% used and

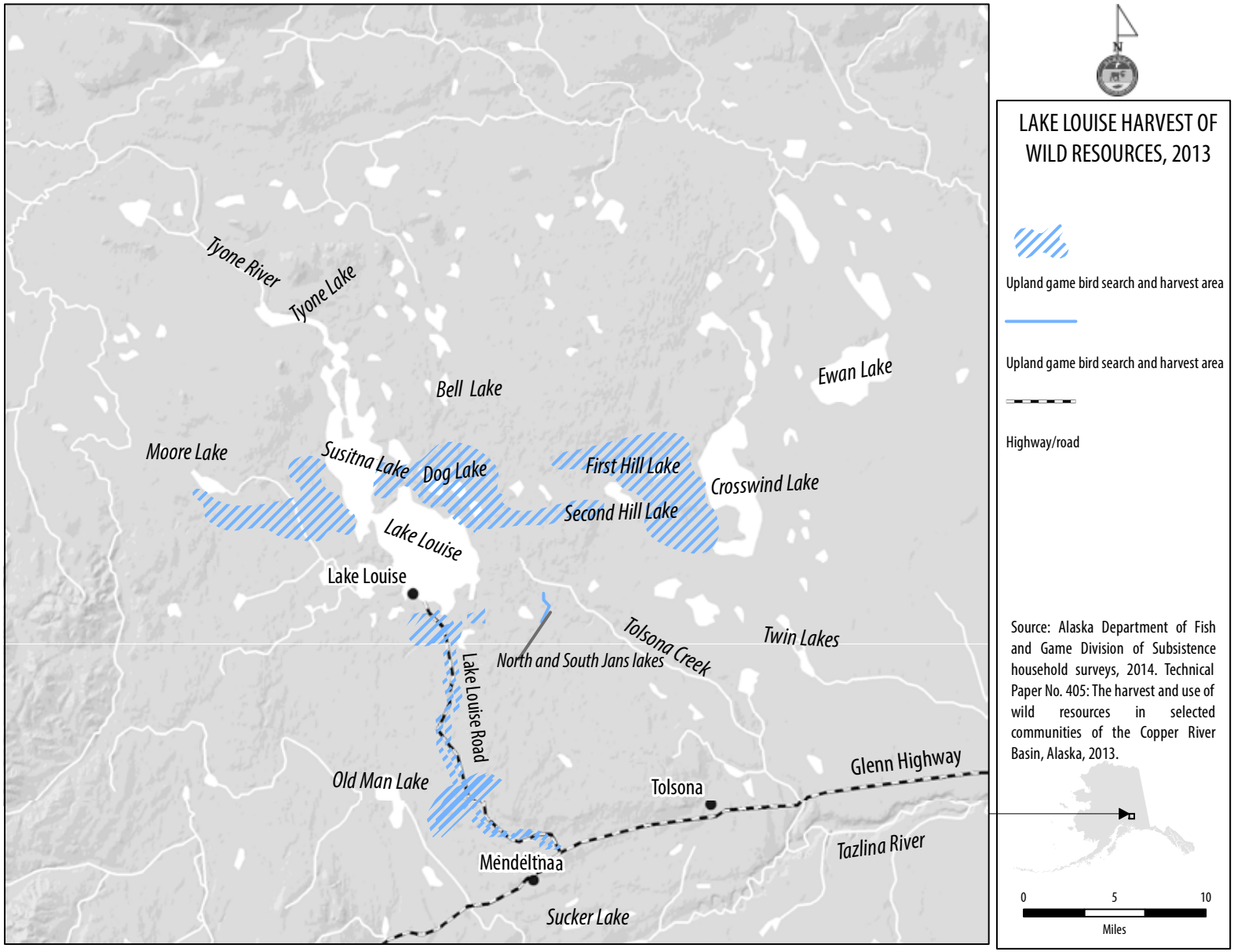


Figure 4-19.–Hunting and harvest locations of upland game birds, Lake Louise, 2013.

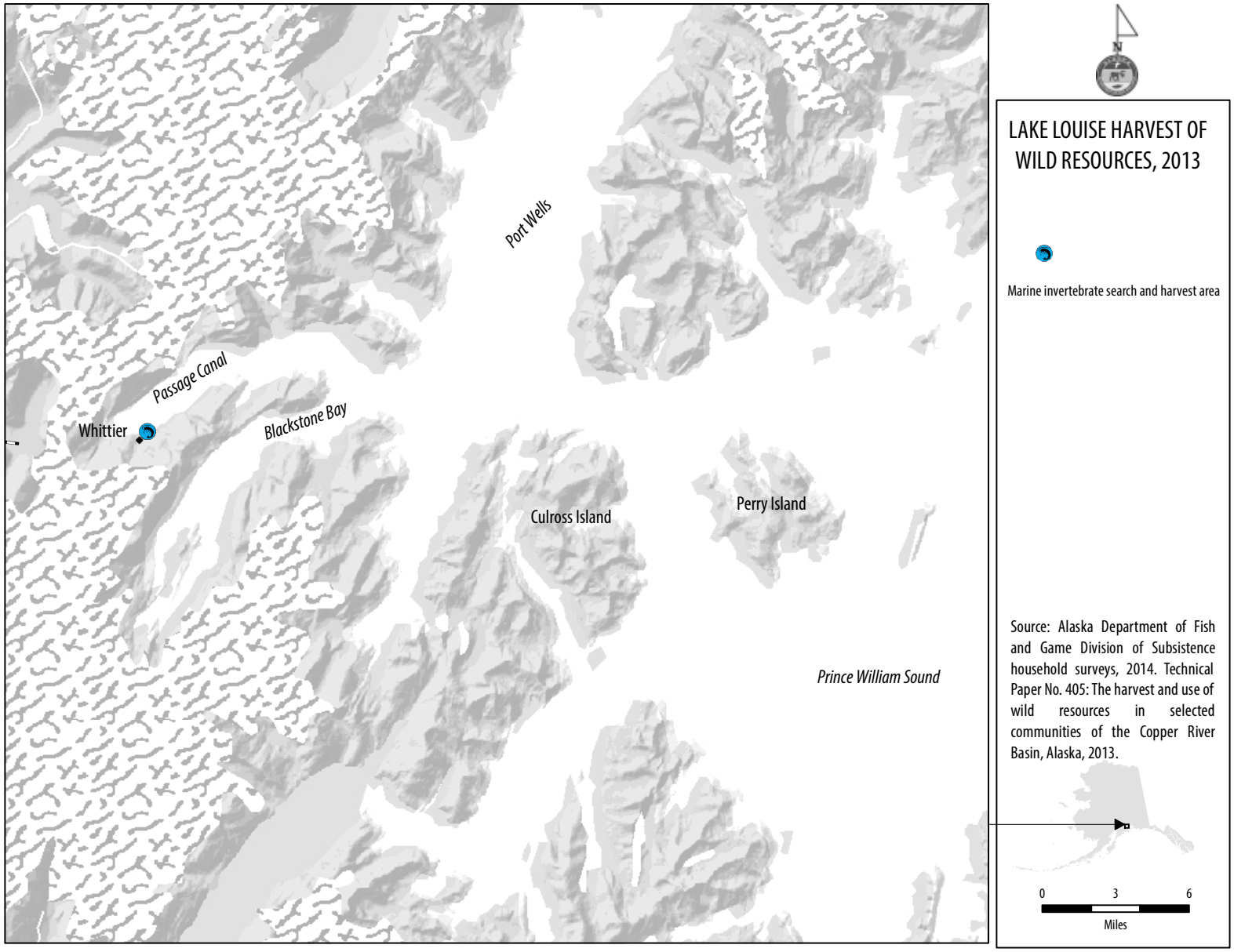


Figure 4-20.–Fishing and harvest locations of marine invertebrates, Lake Louise, 2013.

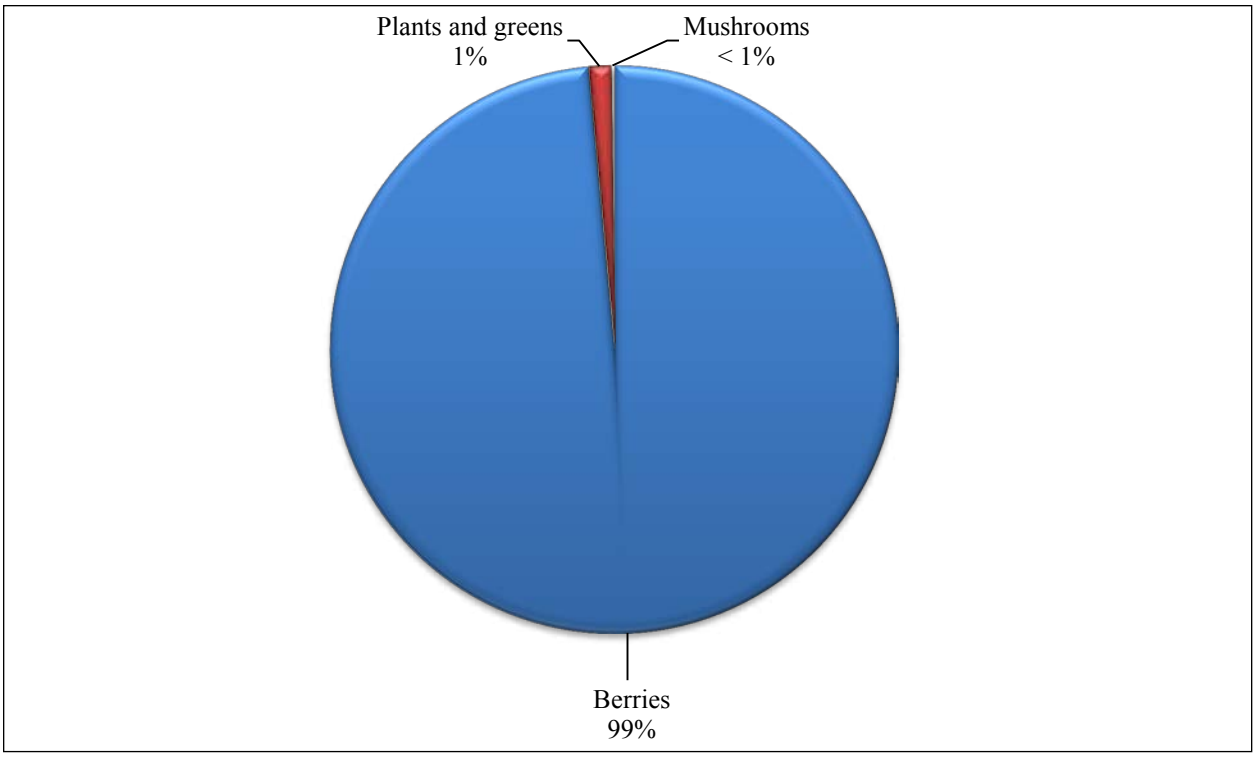


Figure 4-21.–Composition of vegetation harvest by type and pounds usable weight, Lake Louise, 2013.

harvested both crowberries and raspberries. A total of 69 gal of berries were harvested by the community. The per capita harvest of blueberries was 7 lb; of raspberries it was 2 lb, and of lowbush cranberries it was 1 lb. The per capita harvest for highbush cranberries, crowberries, and salmonberries was less than 1 lb each.

Sharing of berries and berry products was minimal in Lake Louise. Thirty percent of households gave away blueberries, and 10% of households gave away highbush cranberries and salmonberries. No other type of berry was given away and no species of berry was received by any household.

Plants were used and shared far less frequently than berries. Ten percent of households used and harvested Hudson's Bay (Labrador) tea and wild rose hips. Both of these resources were given away by 10% of households, but none of these kinds of plants were received by Lake Louise households. A total of 4 lb of plants were harvested by Lake Louise residents.

Unknown mushrooms were used by 30% of Lake Louise households. Of the 20% of community households that attempted to harvest unknown mushrooms all were successful. Mushrooms were both received and given away by 10% of Lake Louise households. It should be noted that "unknown mushrooms" means that researchers did not record the species, not that those residents who harvested the mushrooms did not differentiate the type of mushrooms collected.

This study also collected information on the harvest of wood, but the harvest amount is not included in estimated usable harvest weight calculations. Wood is often considered an important resource and can play a critical role in the seasonal round of communities. As mentioned in previous sections, firewood is also often an important source of fuel for heating homes. In Table 4-13, "other wood" includes all wood harvested for firewood, handicrafts, smoke houses, and other purposes.

Sixty percent of Lake Louise households used and harvested other wood in 2013. No households received or gave away other wood. A total estimated 28 cords of firewood were harvested by the community as a whole. This harvest of wood does not include wood that was purchased or harvested commercially.

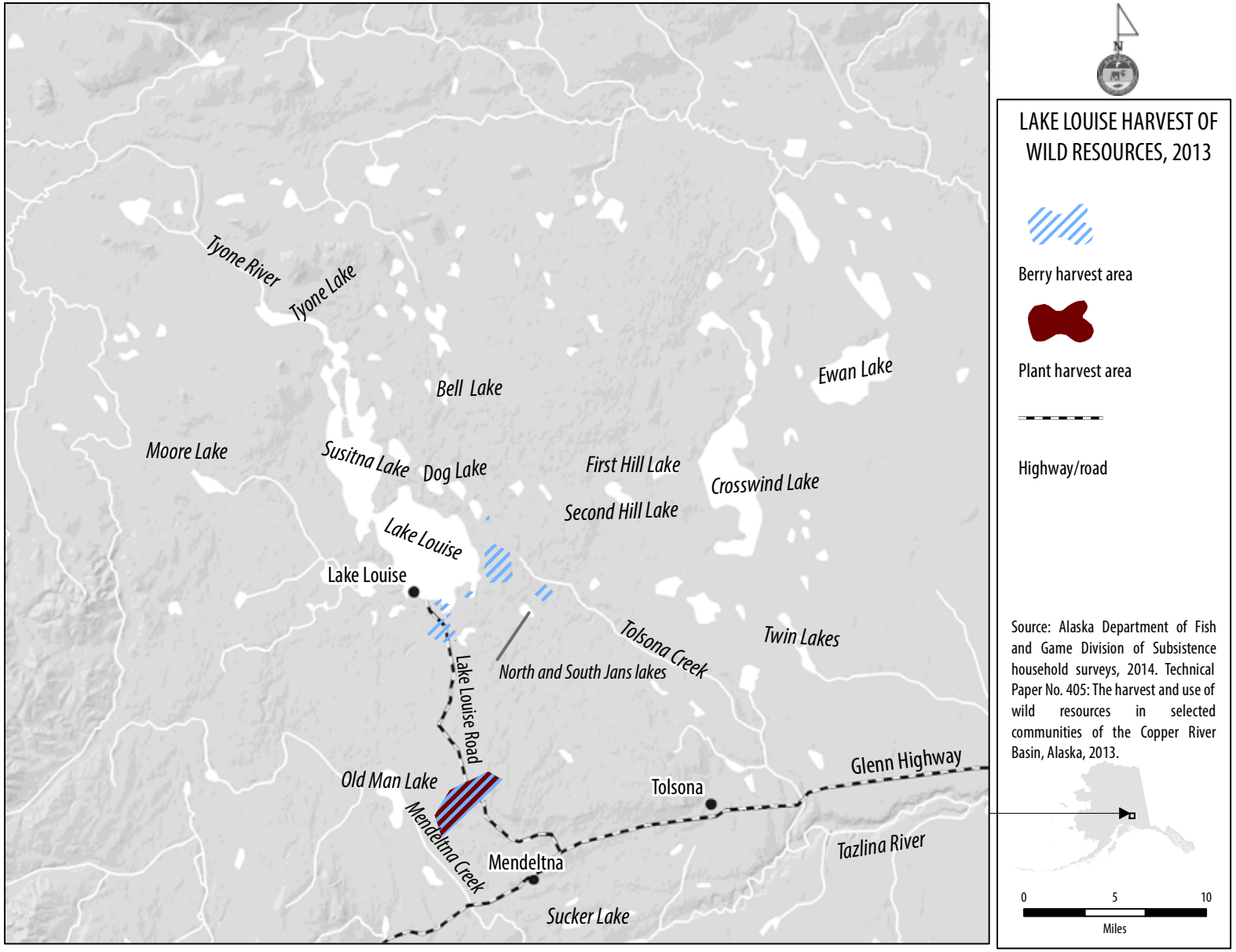


Figure 4-22.–Gathering and harvest locations of berries and plants, greens, and mushrooms, Lake Louise, 2013.

Vegetation was harvested from several areas near the Lake Louise community. Plants and berries were harvested within an area between Lake Louise Road and Mendeltna Creek, near the community of Lake Louise proper, in an area to the east of Lake Louise, and in a small area between North Jans Lake and Tolsona Creek (Figure 4-22). Other wood was harvested between Lake Louise Road and Mendeltna Creek, near the southeast corner of Lake Louise, between South Jans Lake and Tolsona Creek, and in an area to the southeast of South Jans Lake.

Comparing Harvests and Uses in 2013 with Previous Years

Harvest Assessments

For 10 resource categories and for all resources combined, survey respondents were asked to assess whether their uses and harvests in the 2013 study year were less, more, or about the same as other recent years. "Other recent years" was defined as about the last 5 years. Table 4-20 reports the number of valid responses for each category, the number of households that did not respond, and the number of households that did not use a resource category or all resources combined. In Table 4-20, response percentages are based on the number of valid responses for each category to contextualize these assessments within the set of community households that typically use each category.

Figure 4-23 depicts responses to the "less, same, more" assessment question. Households that said they did not ordinarily "use" something are not included within the results. This results in fewer responses for less commonly used categories such as birds and eggs and also small land mammals, which manifests in the chart as a very short set of colored bars compared to categories such as large land mammals and vegetation, which are ordinarily used by most households. Some households did not respond to the question.

Taking all the resource categories into consideration, most households (70%) said they used less subsistence resources in general over the previous 12 months compared to recent years (Table 4-20). A smaller number, 30% of all households, said they used about the same amount, and no households said they used more. Three main reasons were reported for why households used less subsistence resources in 2013, including that the resources were less available, that their attempts to harvest resources were unsuccessful, and that they were working or didn't have time to harvest resources (Table 4-21). Each of these reasons was listed by 43% of households giving valid responses. Other less frequently reported reasons included family and personal issues, and small or diseased animals; each reason was listed by a single household.

The resource category with the greatest percentage of households (60%) reporting less use of the associated resources in 2013 was large land mammals (Table 4-20). A variety of reasons were given by individual households for harvesting and using less of these resources, and the only reasons that were listed by 2 households were family or personal reasons and that their harvest attempt was unsuccessful. Other reasons included less resource availability, working/no time, and "other reasons" (Table 4-21). Considering each category, the only additional reasons for less use that were reported by multiple households were less resource availability for small land mammals and lack of effort and working/no time in relation to the harvest and use of vegetation.

Salmon and nonsalmon fish were each reportedly used more in 2013 by 2 households (Table 4-20). One household reported that they used more salmon because they received more and another reported that they used more salmon because they needed more (Table 4-22). Only 1 household reported a reason for using more nonsalmon fish; they had greater harvest success. Large land mammals, other birds, and vegetation were reportedly used more in 2013 by 1 household each (Table 4-20). Large land mammals were used more by 1 household because they received more, whereas the reason for using more other birds and vegetation was greater harvest success (Table 4-22).

The impact to households from not getting enough wild resources is reported in Table 4-23. The impact of not getting enough nonsalmon fish was noted as minor to all 4 households that reported not getting enough nonsalmon fish. For large land mammals the impact was noted as minor by 2 households and major by 2

Table 4-20.–Changes in household uses of resources compared to recent years, Lake Louise, 2013.

Resource category	Sampled households	Valid responses[a]	Households reporting use: Total households Number	Total households Percentage	Less Number	Less Percentage	Same Number	Same Percentage	More Number	More Percentage	Households not using Number	Households not using Percentage
Any resource	10	10	10	100.0%	8	80.0%	8	80.0%	4	40.0%	10	100.0%
All resources	**10**	**10**	**10**	**100.0%**	**7**	**70.0%**	**3**	**30.0%**	**0**	**0.0%**	**0**	**0.0%**
Salmon	10	10	9	90.0%	3	30.0%	4	40.0%	2	20.0%	1	10.0%
Nonsalmon fish	10	10	10	100.0%	4	40.0%	4	40.0%	2	20.0%	0	0.0%
Large land mammals	10	10	10	100.0%	6	60.0%	3	30.0%	1	10.0%	0	0.0%
Small land mammals	10	10	2	20.0%	2	20.0%	0	0.0%	0	0.0%	8	80.0%
Marine mammals	10	10	2	20.0%	1	10.0%	1	10.0%	0	0.0%	8	80.0%
Migratory waterfowl	10	9	1	10.0%	1	11.1%	0	0.0%	0	0.0%	8	88.9%
Other birds	10	10	6	60.0%	3	30.0%	2	20.0%	1	10.0%	4	40.0%
Bird eggs	10	10	0	0.0%	0	0.0%	0	0.0%	0	0.0%	10	100.0%
Marine invertebrates	10	10	4	40.0%	2	20.0%	2	20.0%	0	0.0%	6	60.0%
Vegetation	10	10	10	100.0%	5	50.0%	4	40.0%	1	10.0%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2014.

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

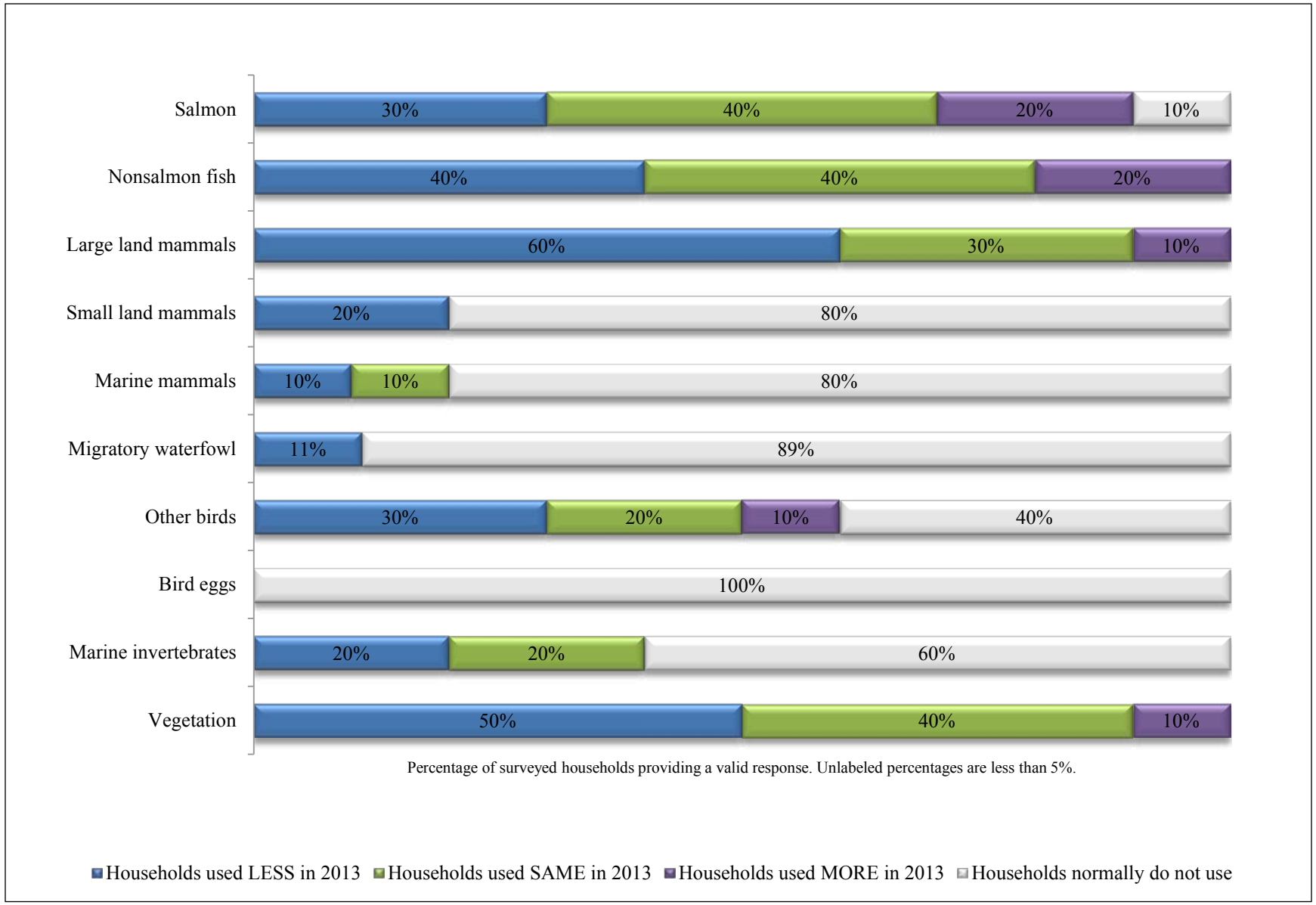


Figure 4-23.–Changes in household uses of resources compared to recent years, Lake Louise, 2013.

Table 4-21.–Reasons for less household uses of resources compared to recent years, Lake Louise, 2013.

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	10	8	2	25.0%	4	50%	0	0.0%	0	0%	3	38%	2	25%
All resources	**10**	7	**1**	**14.3%**	**3**	**43%**	**0**	**0.0%**	**0**	**0%**	**0**	**0%**	**0**	**0%**
Salmon	10	3	1	33.3%	0	0%	0	0.0%	0	0%	1	33%	0	0%
Nonsalmon fish	10	4	1	25.0%	0	0%	0	0.0%	0	0%	1	25%	0	0%
Large land mammals	10	6	2	33.3%	1	17%	0	0.0%	0	0%	0	0%	0	0%
Small land mammals	10	2	0	0.0%	2	100%	0	0.0%	0	0%	0	0%	0	0%
Marine mammals	10	1	0	0.0%	0	0%	0	0.0%	0	0%	1	100%	0	0%
Migratory waterfowl	9	1	0	0.0%	0	0%	0	0.0%	0	0%	0	0%	0	0%
Other birds	10	2	0	0.0%	1	50%	0	0.0%	0	0%	0	0%	0	0%
Bird eggs	10	0	0	0.0%	0	0%	0	0.0%	0	0%	0	0%	0	0%
Marine invertebrates	10	2	1	50.0%	1	50%	0	0.0%	0	0%	0	0%	0	0%
Vegetation	10	5	1	20.0%	0	0%	0	0.0%	0	0%	0	0%	2	40%

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Table 4-21.–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	10	8	5	62.5%	1	12.5%	1	12.5%	5	62.5%	0	0.0%	1	12.5%
All resources	**10**	7	**3**	**42.9%**	**0**	**0.0%**	**0**	**0%**	**3**	**42.9%**	**0**	**0.0%**	1	**14.3%**
Salmon	10	3	0	0.0%	0	0.0%	1	33%	0	0.0%	0	0.0%	0	0.0%
Nonsalmon fish	10	4	0	0.0%	0	0.0%	0	0%	1	25.0%	0	0.0%	0	0.0%
Large land mammals	10	6	2	33.3%	0	0.0%	1	17%	1	16.7%	0	0.0%	0	0.0%
Small land mammals	10	2	0	0.0%	0	0.0%	0	0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	10	1	0	0.0%	0	0.0%	0	0%	0	0.0%	0	0.0%	0	0.0%
Migratory waterfowl	9	1	0	0.0%	0	0.0%	0	0%	1	100.0%	0	0.0%	0	0.0%
Other birds	10	2	0	0.0%	0	0.0%	0	0%	1	50.0%	0	0.0%	0	0.0%
Bird eggs	10	0	0	0.0%	0	0.0%	0	0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	10	2	0	0.0%	0	0.0%	0	0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	10	5	0	0.0%	1	20.0%	0	0%	3	60.0%	0	0.0%	0	0.0%

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Table 4-21.–Page 2 of 2.

Resource category	Valid responses[a]	Households reporting reasons for less use	Did not get enough		Did not need		Equipment/ fuel expense		Used other resources		Less competition	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	10	8	0	0.0%	1	12.5%	0	0.0%	0	0.0%	0	0.0%
All resources	**10**	7	0	**0.0%**	0	**0.0%**	0	**0.0%**	0	**0.0%**	0	**0.0%**
Salmon	10	3	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Nonsalmon fish	10	4	0	0.0%	1	25.0%	0	0.0%	0	0.0%	0	0.0%
Large land mammals	10	6	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	10	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	10	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Migratory waterfowl	9	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other birds	10	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Bird eggs	10	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	10	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	10	5	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2014.

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

Table 4-22.–Reasons for more household uses of resources compared to recent years, Lake Louise, 2013.

Resource category	Valid responses[a]	Households reporting reasons for more use	Increased availability		Used other resources		Favorable weather		Received more		Needed more	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	10	3	0	0.0%	0	0.0%	0	0.0%	2	66.7%	1	33.3%
All resources	**10**	**0**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**
Salmon	10	2	0	0.0%	0	0.0%	0	0.0%	1	50.0%	1	50.0%
Nonsalmon fish	10	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Large land mammals	10	1	0	0.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%
Small land mammals	10	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	10	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Migratory waterfowl	9	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other birds	10	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Bird eggs	10	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	10	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	10	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

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Table 4-22.–Continued.

Resource category	Valid responses[a]	Households reporting reasons for more use	Increased effort		Had more help		Other		Regulations		Traveled farther	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	10	3	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
All resources	**10**	**0**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**
Salmon	10	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Nonsalmon fish	10	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Large land mammals	10	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	10	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	10	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Migratory waterfowl	9	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other birds	10	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Bird eggs	10	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	10	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	10	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

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Table 4-22.–Page 2 of 2.

Resource category	Valid responses[a]	Households reporting reasons for more use	More success		Needed less		Store-bought expense		Got/ fixed equipment		Substituted resources	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	10	3	2	66.7%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
All resources	**10**	**0**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**
Salmon	10	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Nonsalmon fish	10	1	1	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Large land mammals	10	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	10	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	10	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Migratory waterfowl	9	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other birds	10	1	1	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Bird eggs	10	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	10	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	10	1	1	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2014.

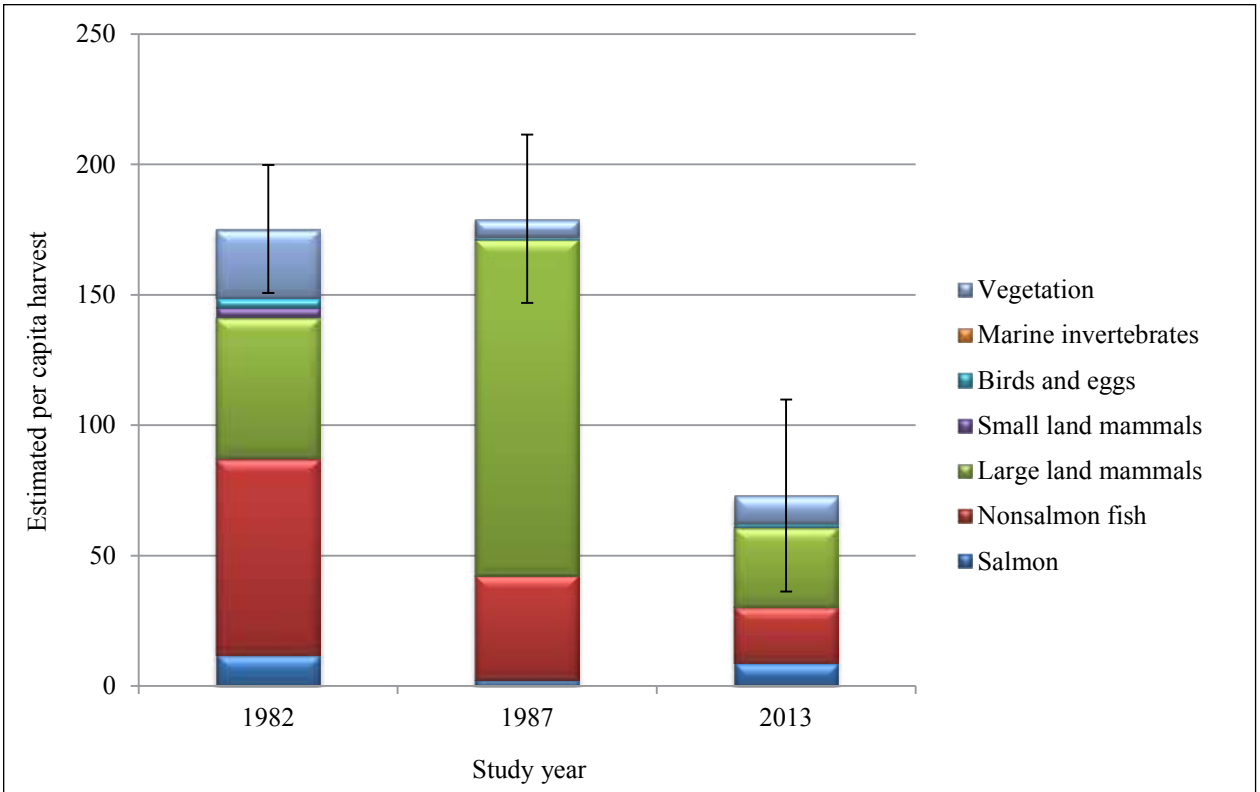
a. Valid responses do not include households that did not provide any response and households reporting never use.

Table 4-23.–Reported impact to households reporting that they did not get enough of a type of resource, Lake Louise, 2013.

		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
Salmon	10	9	90.0%	2	22.2%	0	0.0%	0	0.0%	1	50.0%	1	50.0%	0	0.0%
Nonsalmon fish	10	10	100.0%	4	40.0%	0	0.0%	0	0.0%	4	100.0%	0	0.0%	0	0.0%
Marine invertebrates	10	4	40.0%	2	50.0%	0	0.0%	0	0.0%	2	100.0%	0	0.0%	0	0.0%
Large land mammals	10	9	90.0%	5	55.6%	1	20.0%	0	0.0%	2	40.0%	2	40.0%	0	0.0%
Marine mammals	10	2	20.0%	2	100.0%	0	0.0%	0	0.0%	2	100.0%	0	0.0%	0	0.0%
Small land mammals	10	2	20.0%	1	50.0%	0	0.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%
Migratory waterfowl	10	1	10.0%	1	100.0%	0	0.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%
Other birds	10	5	50.0%	2	40.0%	0	0.0%	0	0.0%	1	50.0%	1	50.0%	0	0.0%
Bird eggs	10	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	10	10	100.0%	4	40.0%	0	0.0%	0	0.0%	3	75.0%	1	25.0%	0	0.0%
All resources	**10**	**10**	**100.0%**	**4**	**40.0%**	**0**	**0.0%**	**0**	**0.0%**	**2**	**50.0%**	**2**	**50.0%**	**0**	**0.0%**

Source ADF&G Division of Subsistence household surveys, 2014.

a. Does not includes households failing to respond to the question or those households that never used the resource.



Note Error bars represent the upper and lower bounds of the 95% confidence interval.

Figure 4-24.–Estimated harvests by pounds per capita and by resource category, Lake Louise, 1982, 1987, and 2013.

households out of a total of 5 households reporting not having enough. For all resources 40% of households (out of 10 households) said that they did not get enough resources in 2013 and of those respondents 50% said that the impact from not getting enough resources was minor while another 50% said it was major.

Harvest Data

Changes in the harvest of resources by Lake Louise residents can also be discerned through comparisons with findings from other study years. Comprehensive subsistence harvest surveys were conducted in Lake Louise for study year 1982 (Stratton and Georgette 1984) and for study year 1987 (McMillan and Cuccarese 1988).

The per capita harvest of wild foods by residents of Lake Louise has declined significantly over time (Figure 4-24). In 1982, the per capita harvest of wild foods was 175 lb and by 1987 this value was up slightly to 179 lb. Between 1987 and 2013, the per capita harvest of wild foods dropped to 73 lb (Table 4-24), which was a decrease of 59%. Much of this decline is represented by a decline in the harvest of large land mammals and nonsalmon fish, even though these categories make up the largest percentage of the overall 2013 harvest, as they had in the 2 previous study years (Figure 4-24).

The per capita large land mammal harvest can fluctuate substantially in a small community with a change in harvest of a single moose. In 1982, 2 moose were reportedly harvested equaling a per capita harvest[7] of 29

7. Per capita harvests for study years 1982 and 1987 were calculated based on the estimated community population recorded in the CSIS.

Table 4-24.–Comparison of harvest composition, Lake Louise, 1982, 1987, and 2013.

	Estimated harvest in pounds usable weight								
	1982			1987			2013		
Resource	Total	Per capita	CIP	Total	Per capita	CIP	Total	Per capita	CIP
All resources	**6,873.0**	**175.2**	**14.0%**	**7,009.0**	**179.2**	**18.0%**	**1,942.1**	**73.0**	**50.4%**
Salmon	469.0	12.0		87.0	2.2		236.8	8.9	
Nonsalmon fish	2,963.0	75.5		1,569.0	40.1		570.6	21.5	
Large land mammals	2,116.0	53.9		5,043.0	128.9		812.0	30.5	
Small land mammals	145.0	3.7		–	–		8.4	0.3	
Birds and eggs	156.0	4.0		42.0	1.1		33.2	1.2	
Marine invertebrates	–	–		–	–		1.1	0.0	
Vegetation	1,025.0	26.1		268.0	6.9		280.0	10.5	

Sources For 2013, ADF&G Division of Subsistence household surveys, 2014; for previous study years, ADF&G Division of Subsistence Community Subsistence Information System (CSIS), accessed 2014.

Note "–" indicates no harvest.

lb for that species (CSIS). In 1987, an estimated 6 moose were harvested, increasing the per capita harvest of moose to 65 lb (CSIS). In 2013, 1 moose was reported harvested, equating to a per capita harvest of only 24 lb (Table 4-13). This trend of animal harvests was also the case for caribou, though caribou contribute far less meat per animal than moose. In 1982, an estimated 6 caribou were harvested in the community, in 1987 this was up to an estimated 13 caribou, and by 2013 there was only 1 caribou harvested (CSIS; Table 4-13).

Other large land mammals were harvested in previous study years that were not harvested in 2013. In 1982 this included a single brown bear and a single deer accounting for a per capita harvest of 4 lb and 1 lb, respectively (CSIS). In 1987 a single bison was harvested, a single black bear, and 3 deer, accounting for a per capita harvest of 13 lb, 4 lb, and 4 lb, respectively (CSIS). Each of these harvests contributes to the greater proportion of harvest contributed by large land mammals in previous study years than in 2013 (Figure 4-24).

The proportion that nonsalmon fish contribute to the overall harvest of Lake Louise has been steadily declining over time (Figure 4-24). The per capita harvest of these fish has also declined over time (Table 4-24). The per capita nonsalmon fish harvest in 1982 was 76 lb, in 1987 it was 40 lb, and in 2013 it was only 22 lb (CSIS; Table 4-13). The per capita harvest of whitefishes represents the greatest decline over time. The whitefishes per capita harvest in 1982 was 31 lb, in 1987 it was 13 lb, and by 2013 it was only 3 lb. In 1982, whitefishes contributed more to household harvests than any other wild resource (Stratton and Georgette 1984:62).

The 1982 per capita harvest of char (including both Arctic char and lake trout) was 12 lb, in 1987 it was down to 9 lb, and by 2013 it was down to less than 1 lb (CSIS; Table 4-13). Interestingly, in 1982, lake trout was reported as "a favorite among local residents," and they were harvested by all but 1 of surveyed households (Stratton and Georgette 1984:64). In 2013 they were used by only 30% of households and harvested by only 20% of households (Table 4-13).

A per capita harvest for burbot of 19 lb was estimated in 1982, 14 lb in 1987, and only 5 lb in 2013 (CSIS; Table 4-13). Burbot represented the second greatest per capita harvest of a nonsalmon fish in 1982, surpassed only by whitefishes, and the greatest per capita harvest among nonsalmon fish in 1987. Despite substantial declines in the harvest of most nonsalmon fish over time, the per capita harvest of Pacific halibut and rockfish have increased slightly since the 1980s, likely due to increased use of motorized transport to get to marine resources.

For the 3 study years in which data are available, salmon have never made up a substantial proportion of the overall harvest of wild foods in Lake Louise (Figure 4-24). This is likely due to the distance that must be traveled to access salmon since they are not available locally near the community. In 1982, the per capita harvest of salmon was 12 lb, in 1987 it was down to only 2 lb, and by 2013 it had risen to 9 lb (CSIS; Table

4-13). The 1982 Chinook salmon per capita harvest was 6 lb, but harvests of this species have not been reported since. The per capita harvest of sockeye salmon in 1982 was 3 lb, in 1987 it was 2 lb, and by 2013 it had risen to 8 lb. Sockeye salmon was the only salmon species harvested in 1987. The per capita coho salmon harvest declined slightly between 1982 and 2013, but no coho salmon were reportedly harvested in 1987. No pink salmon and no chum salmon were harvested in any of the 3 study years.

Small land mammal harvests can be problematic to compare across study years since many species are not consumed and thus do not have a calculated per capita weight. Three species of small land mammals were harvested in 1982 that were presumed to have been eaten (snowshoe hares, lynx, and muskrats), equating to a per capita edible harvest weight of 4 lb (CSIS). No species of small land mammals were harvested in 1987 that were presumed to have been eaten. In 2013, snowshoe hares were the only small land mammals harvested and they were eaten, equating to less than 1 lb per capita.

Considering the harvest of all small land mammals in Lake Louise over time, including those used for fur only, harvests have declined substantially. In 1982, 10 species were harvested—including coyote, fox, snowshoe hare, river otter, lynx, marten, mink, muskrat, weasel, and gray wolf. In 1987, only 5 species of small land mammals were harvested including fox, marten, mink, weasel, and gray wolf. Snowshoe hares were the only small land mammals harvested in 2013. Harvests of snowshoe hares declined substantially since 1982; in 1982, a total of 62 individual snowshoe hares were harvested, in 1987 no hares were harvested, and in 2013, only 4 snowshoe hares were harvested. The decline in small land mammal harvests is likely due to a dramatic drop in trapping participation. In 1982, 3 households trapped for small land mammals and the household heads reported being self-employed as "trappers" (Stratton and Georgette 1984:65). In 2013, no Lake Louise resident reported trapping of any kind.

Birds and eggs have not made up a substantial portion of the overall harvest of wild foods in Lake Louise in the 3 study years for which data are available (Figure 4-24). Egg harvests were not estimated in 1982, 1987, or 2013 (CSIS; Table 4-13). The per capita bird harvest in 1982 was 4 lb. This dropped to 1 lb per capita in 1987 and remained about the same in 2013. The only study year in which migratory birds were harvested was 1982. The migratory bird harvest in that year was made up entirely of ducks, representing 61% of the overall bird harvest in that year and equaling a per capita harvest weight of 2 lb. The 1982 report indicates that a greater percentage of households (46%) in Lake Louise harvested ducks than in any other community in that study (Stratton and Georgette 1984:65). The per capita upland game bird harvest between study years has only fluctuated slightly. In 1982 the per capita harvest of these species was 2 lb, in 1987 it was less than 1 lb, and in 2013 it was 1 lb.

Vegetation has played a relatively important role in the overall harvest of subsistence foods over time in Lake Louise. As a proportion of the total per capita harvest weight in 1982, 1987, and 2013, vegetation was the third most harvested resource category in all years (Figure 4-24). In 1982 the per capita vegetation harvest was 26 lb, in 1987 it was only 7 lb, and by 2013 it had risen to 11 lb (Table 4-24). In 1982, 1987, and 2013, berries made up 91%, 70%, and 99% of the vegetation harvest, respectively (CSIS; Figure 4-21). The per capita harvest of plants, greens, and mushrooms declined from 2.4 lb in 1982, to 2.1 lb in 1987, to only 0.1 lb in 2013.

Current and Historical Harvest Areas

It is possible to compare historical spatial harvest data with the 2013 study year to determine changes in the search and harvest areas for wild food resources over time. For Lake Louise, limited spatial data were collected as part of the 1982 or 1987 study years (McMillan and Cuccarese 1988; Stratton and Georgette 1984). Additionally, during the 1983 and 1984 fieldwork seasons, ADF&G researchers conducted interviews with more than 200 hunters and fishers in 20 communities in or near the Copper River Basin to map areas where hunting, fishing, trapping, and gathering of wild resources occurred between 1964 and 1984 (Stratton and Georgette 1985). This effort produced 2 separate publications by 2 different ADF&G divisions; the Division of Habitat published the maps and the Division of Subsistence published a description of the project and mapping methods. The maps depicting the harvest and use areas used by study community

residents during this 20-year span are published in *Alaska Habitat Management Guide Southcentral Region: Reference Maps—Volume 3. Community Use of Fish, Wildlife, and Plants* (Alaska Department of Fish and Game Division of Habitat 1985).[8] Information about the mapping project is available in *Copper Basin Resource Use Map Index and Methodology* (Stratton and Georgette 1985). Changes in the resource harvest and use/search areas by Lake Louise residents can be discerned through limited comparisons of the maps published in 1985, which depict harvest and use areas for 20 years, and the maps produced from this study, which only reflect search and harvest areas for the study year 2012.

Search and harvest areas for many wild resources appear to have changed significantly for Lake Louise residents since the 1964–1984 time period. In most cases, search and harvest areas have contracted. Reasons for this contraction may include an increase in the cost of fuel, a decrease in reliance on wild foods, a decrease in hunting/fishing/trapping participation, and an increase in locally available commercial food products.

Large land mammal search and harvest areas have experienced perhaps the greatest contraction since the 1964–1984 time period of any wild food category. From 1964–1974, Lake Louise residents sought moose within a large area stretching from the Glenn Highway to the south and to the Susitna River in the north. This area included land from Mendeltna Creek to Tolsona Creek, the entire perimeter of Lake Louise, Susitna Lake, and Tyone Lake, and along the Tyone River corridor to the Susitna River. Moose were also sought along the west fork of the Gulkana River and in Moose Creek and Keg Creek near the Alphabet Hills. Caribou were sought in these same areas from 1964–1984, with the addition of another area along the south shore of the Susitna River near Stephan Lake and Fog Creek, and to the northeast near the middle fork of the Gulkana River. In 2013, the search and harvest areas for both moose and caribou were restricted to 2 small areas near Lake Louise Road.

While no Dall sheep were harvested in 1982, 1987, or 2013, this species was sought over a large area in between 1964–1984. Respondents sought Dall sheep in the Chugach Mountains near Tazlina Lake and Klutina Lake. They also sought sheep in the Wrangell Mountains from McCarthy east to the Canada border. No sheep hunting occurred in 2013.

Nonsalmon fish were also sought and harvested from a much greater area between 1964–1984. The historical spatial data do not differentiate search and harvest areas for individual species, only for the nonsalmon fish category. From 1964–1984, residents sought nonsalmon fish from the entirety of Lake Louise, Little Lake Louise, Susitna Lake, and Tyone Lake. Other lakes that were fished to the east of Lake Louise include North Jans Lake, South Jans Lake, Dog Lake, Bell Lake, Crosswind Lake, and Ewan Lake. Households also fished the Gulkana River from Sourdough north to Paxson Lake, the middle fork of the Gulkana River from its mouth west to Tangle Lakes, Tebay Lakes to the southeast of Chitina, and Sucker Lake and St. Ann Lake south of the Glenn Highway near Mendeltna. In 2013 nonsalmon fishing was restricted to lakes situated within about 20 mi from the community. Mendeltna Creek, Round Lake, and Old Road Lake were fished in 2013, but not in 1964–1984.

The text of the technical paper for the 1982 study year (Stratton and Georgette 1984) reports that the harvest of rainbow trout was primarily from the Jans lakes area in that year. Rainbow trout were also harvested in Jans lakes in 2013, as well as in Old Road Lake and Round Lake. All 3 of 4 of these lakes have been stocked with rainbow trout since the early 1980s.[9]

Salmon was only sought from a small area in the Gulkana River and a small area in the Kenai River in 2013. Between 1964–1984, however, salmon were sought in the Gulkana River from the community of Gulkana north to Sourdough. They were also sought in creeks along Tazlina Lake, St. Anne Creek, and the Klutina River. King salmon were sought in 1982 from the Tazlina Lake creeks by a few households with airplanes, and 3 households dipnet for salmon at Chitina in 1982, which did not occur in 2013 (Stratton and Georgette 1984).

8. A complete index of documents published in 1985 and 1986 as part of *Alaska Habitat Management Guide* is available online: http://www.arlis.org/docs/vol1/C/AHMG/index.html.

9. Alaska Department of Fish and Game Division of Sport Fish, Juneau, 2014. "Alaska Lake Database (ALDAT)." Accessed August 2014. http://www.adfg.alaska.gov/index.cfm?adfg=fishingSportStockingHatcheries.lakesdatabase

As mentioned previously, the hunting and trapping of small land mammals has declined significantly since the 1964–1984 period. Historically, small land mammals were sought along a large area from the Glenn Highway to the Susitna River in the northwest to Ewan Lake to the northeast. These species were also sought along the west fork of the Gulkana River, between Tazlina Lake and Klutina Lake to the south, and near Hudson Lake. In 2013, only snowshoe hares were sought along Lake Louise Road.

Spatial data for upland game bird search and harvest areas do not exist for the 1964–1984 period, but information is available for waterfowl hunting and harvest areas. Waterfowl were sought throughout Lake Louise, Susitna Lake, Tyone Lake, and Old Man Lake in those years. No waterfowl hunting occurred in 2013.

Vegetation was sought near Lake Louise, Susitna Lake, Tyone Lake, and Lake Louise Road between 1964–1984. In 2013, vegetation was sought within much smaller areas along the Lake Louise Road, near the community of Lake Louise, and near Dog Lake. A small area between North Jans Lake and Tolsona Creek was included in 2013 but not in the historic data.

Local Comments and Concerns

Following is a summary of local observations of wild resource populations and trends that were recorded during the surveys in Lake Louise. Some households did not offer any additional comments or concerns 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

Few people in the community of Lake Louise mentioned concerns regarding salmon. One household stated that they think subsistence fishing regulations are sometimes too liberal because, in their view, there is a lot of waste and freezer-burned salmon that gets thrown away, although at least 1 household avoided harvesting Chinook (king) salmon in 2013 because of statewide declines of this species. Several households mentioned concerns for freshwater fish, particularly burbot in Lake Louise. They stated that burbot declined substantially since the 1980s when the species was severely overharvested. One resident recalled seeing a pick-up truck bed full of burbot leaving the community during those years. Another household was concerned that the Susitna-Watana dam project would hinder burbot movements in the area and lead to a greater decline in this species. Several households present at the community review meeting indicated that burbot are gradually rebounding in Lake Louise.

As with several other communities in the region, a common concern and complaint of residents pertains to ADFG's stocking of local lakes with nonsalmon fish. While stocked lakes near Lake Louise are regularly fished by Lake Louise residents, some households question how lakes are selected or rejected from the stocking program. One household suggested that ADF&G should seek greater input from local residents that fish in the stocked lakes. A key respondent noted that local lakes are receiving greater fishing pressure from both local and visiting fishermen, particularly in Old Road Lake, Round Lake, Peanut Lake, Forty Foot Lake, Crater Lake, and Forgotten Lake. He suggested that many more lakes in the area should be stocked, especially with rainbow trout, and that this would help to limit existing pressure on lakes that are currently overfished.

During the community review meeting, 2 households mentioned concern regarding subsistence whitefish fishing with nets in Lake Louise. In the spring 2014, non-local fishermen were observed fishing for whitefishes with nets that exceeded the maximum allowable length. One household would like to see the subsistence whitefish fishery restricted to the winter months when nets are placed under the ice. This household also suggested that nets not be used in the channel between Lake Louise and Susitna Lake, nor during periods when lake trout are spawning. This household would also like to see increased patrolling by fish and game enforcement to discourage illegal harvest activities.

Large Land Mammals

A key respondent noted that moose and caribou are essential subsistence foods for Lake Louise residents. The most frequently cited concern pertaining to large land mammals was the pressure on local moose and caribou populations by non-local Alaska resident hunters. Several households expressed concern that urban hunters from Anchorage, Wasilla, and Palmer are taking advantage of hunting regulations and outcompeting local residents.

One household mentioned a decline in moose populations over the past several years, especially in proximity to Lake Louise. This household stated that residents often need to travel farther to get a moose, and that this additional time and expense has created a difficulty for the community. A key respondent in the community suggested that one reason for moose movements from the area is increased ATV traffic and use. They noted that more people are using bigger and better side-by-side ATVs, especially non-local hunters. These ATVs are also said to be having a negative impact on local trails.

Three households at the community review meeting asked that it be acknowledged that they are firmly against the community subsistence hunt[10] for moose in GMUs 13, 12, and portions of 11 that is open to all Alaska residents. They indicated that the local moose populations cannot support that level of hunting pressure. These households strongly support federal hunting that provides rural preference, but they also indicated that accessing federal lands is often difficult and that boundaries are hard to find. One of these households also mentioned concern regarding illegally harvested moose and those killed by vehicle collisions. This household appreciates the distribution of moose killed by these means, but suggested that greater hunter education and greater emphasis on hunting moose in proximity to the road would alleviate the situation.

A key respondent observed that the Nelchina caribou herd seems to have gotten larger based on observations of trails and feces. He said that the herd appears to be about the size that he remembers from the mid-1990s. He also noted that the winter of 2013 was somewhat unusual because the herd failed to migrate and was present throughout the winter in the Lake Louise area. One household mentioned that the caribou hunting opportunity should be provided only through drawing permits. Another household present at the community review meeting indicated that bears are causing significant caribou calf mortality in the area.

Small Land Mammals/Furbearers

Few observations of small land mammals were made by Lake Louise residents during this survey effort. A key respondent noted that snowshoe hares severely declined in recent years and that he only saw 1 hare throughout the entire winter. He indicated that this is part of natural cycle and that he expects hares to increase in the area in the near future. This same resident actively avoided harvesting snowshoe hares in 2013 because of the species population status locally.

A key respondent also noted an unusual observation of a muskrat near Army Point on Lake Louise in 2013. The muskrat was found dead on the shore but apparently had 2 fully developed heads. No photographic evidence was available. The respondent suggested that this malformation may have been caused by chemicals associated with the dumping of military waste in the lake several decades prior. The observation was cause for alarm, and he actively avoids harvesting resources in the Army Point area because of this. No other residents reported animal malformations.

Birds and Eggs

No residents of Lake Louise expressed concerns regarding the harvest of birds and eggs. One resident noted that waterfowl seemed to travel between lakes more frequently in 2013, and also that there seemed to have

10. Information about the "Copper Basin Moose Community Subsistence Harvest Permit Program," is available online: Alaska Department of Fish and Game website, "Cultural and Subsistence Harvest Permits" http://www.adfg.alaska.gov/index.cfm?adfg=huntlicense.cultural (accessed December 2014).

been a recent decrease in the local owl population. Another resident indicated that his household actively avoids harvesting sharp-tailed grouse because they want to see the local population increase.

Vegetation

Berries were mentioned by several households as an important subsistence food item for Lake Louise households. A key respondent noted a major increase in local salmonberry plant populations; he had not seen such an abundance of berries in the last decade. This individual also noted that deciduous trees seem to be more common as compared to conifers locally as in the past, but that sapling spruce seemed prevalent in 2013.

Susitna-Watana Dam

Three households in Lake Louise mentioned concerns regarding the proposed Susitna-Watana dam project. Two of these households indicated that the energy is not needed and can be acquired from other sources and one noted that if the dam is installed, local residents should reap the benefits of the power to offset the cost of fuel purchased in Glennallen. Respondents noted concerns about increased access to the area due to the installation of new access roads, that the dam would prevent normal migrations of nonsalmon fish, and that the resulting reservoir would cause an increase in Lake Louise water levels, causing concern for homeowners with structures close to the water.

ACKNOWLEDGMENTS

We would like to thank the residents of Lake Louise for their participation and support of this project. We would also like to thank the Delaquito family for helping us to organize and implement this project in the Lake Louise community. We are also very appreciative of our local research assistant Anthony Delaquito and our key respondents that provided significant context to wildlife resource changes over time.

5. PAXSON

James M. Van Lanen

Community Background

At 63˚ latitude, the Paxson census designated place (CDP) is approximately 318 square miles in size. The core area of the community lies south of the Alaska Range and within the upper reaches of the Gulkana River watershed. The geography consists of a mix of subarctic Interior Alaska boreal forest composed of birch and spruce and mountainous upland terrain of alders, willows, dwarf birch, sphagnum moss, and blueberries. Moose, caribou, black bears, brown bears, wolves, ptarmigan, grouse, trout, Arctic grayling, and a number of small land mammals are common in this area.

Most of the 11 year-round permanent households identified within the CDP during this study are located along Paxson Lake and at mile 185 of the Richardson Highway at its intersection with the Denali Highway, which is 57 miles north of Gulkana (Figure 1-1). A few residences occur along the Denali Highway near the Tangle River, at Meirs Lake, and at Summit Lake. Aside from the year-round permanent households identified during this study, the Paxson CDP contains numerous seasonal-use dwellings.

The Paxson CDP is home to the Tangle Lakes Archaeological District (TLAD), managed by the Bureau of Land Management and the State of Alaska Department of Natural Resources. The TLAD is listed under the National Register of Historic Places and contains more than 600 archaeological sites that document a record of more than 10,000 years of hunting by Alaska Natives in the area (West 1984). Nineteenth century Ahtna Athabascan use of the region has also been documented through archaeological work on the Tangle River and at Paxson Lake, which is the site of a former Ahtna winter village (Ketz 1983; Reckord 1983a).

The modern Paxson community originated in the early 20th century as a roadhouse along the 360-mile trail from Valdez to Fairbanks, which, in 1913, became the Richardson Highway (King 2005). In 1957 the Denali Highway, with its eastern end beginning in Paxson, was opened to provide visitor access to Denali National Park, which is approximately 100 miles to the west. In the 1970s, the Trans-Alaska pipeline was built paralleling the Richardson Highway through the Paxson CDP. Throughout most of the 20th century a roadhouse called the Paxson Lodge operated in the Paxson CDP at the junction of the Denali and Richardson highways. The lodge closed its doors in 2013 due to low visitor traffic and high energy costs in the winter.[1] A roadhouse has operated at the Sourdough location since 1903 (King 2005).

Today the Paxson CDP remains unincorporated and outside the boundaries of any state borough. Paxson has no government offices, schools, or stores. For basic services and supplies Paxson residents travel 71 miles to Glennallen, 81 miles to Delta Junction, or 177 miles to Fairbanks. There is an Alaska Department of Transportation road maintenance camp in operation, located at approximately mile 186 of the Richardson Highway, or just north of the Richardson Highway's junction with the Denali Highway. Five separate Paxson households operate lodging businesses within the CDP.

Demography

According to the federal census, Paxson CDP had 40 residents in 2010 (Table 5-1). The household survey conducted for 2013 for Paxson CDP and Sourdough[2] found an estimated population of 32 residents, of which none were Alaska Native. Figure 5-1 shows the population of the community over time based on U.S.

1. Dermot Cole, "Paxson Lodge Closes," *Alaska Dispatch*, December 20, 2013. http://www.adn.com/article/20131220/paxson-lodge-closes

2. As mentioned in "Chapter 1: Introduction," previous studies by the Division of Subsistence included the community of Sourdough, which is along the Richardson Highway from the boundary of the Paxson CDP south to the boundary of the Gulkana CDP. To help with efforts to compare survey results for study year 2013 with previous study years, this survey effort was designed to include year-round residences in Sourdough, but there were none in 2013.

Table 5-1.–Population estimates, Paxson, 2010 and 2013.

	Census (2010)	5-year American Community Survey (2008–2012)	This study (2013)
Total population			
Households	22	6	11.0
Population	40	18	31.6
Alaska Native			
Population	1	0	0.0
Percentage	2.5%	0.0%	0.0%

Sources U.S. Census Bureau (2011) for 2010 estimate; U.S. Census Bureau for American Community Survey 5-year survey estimate; and ADF&G Division of Subsistence household surveys, 2014, for 2013 estimate.
Note The term "households" means occupied housing units. Alaska Native population data from the American Community Survey and 2010 census come from the category "race alone or in combination with one or more other races."

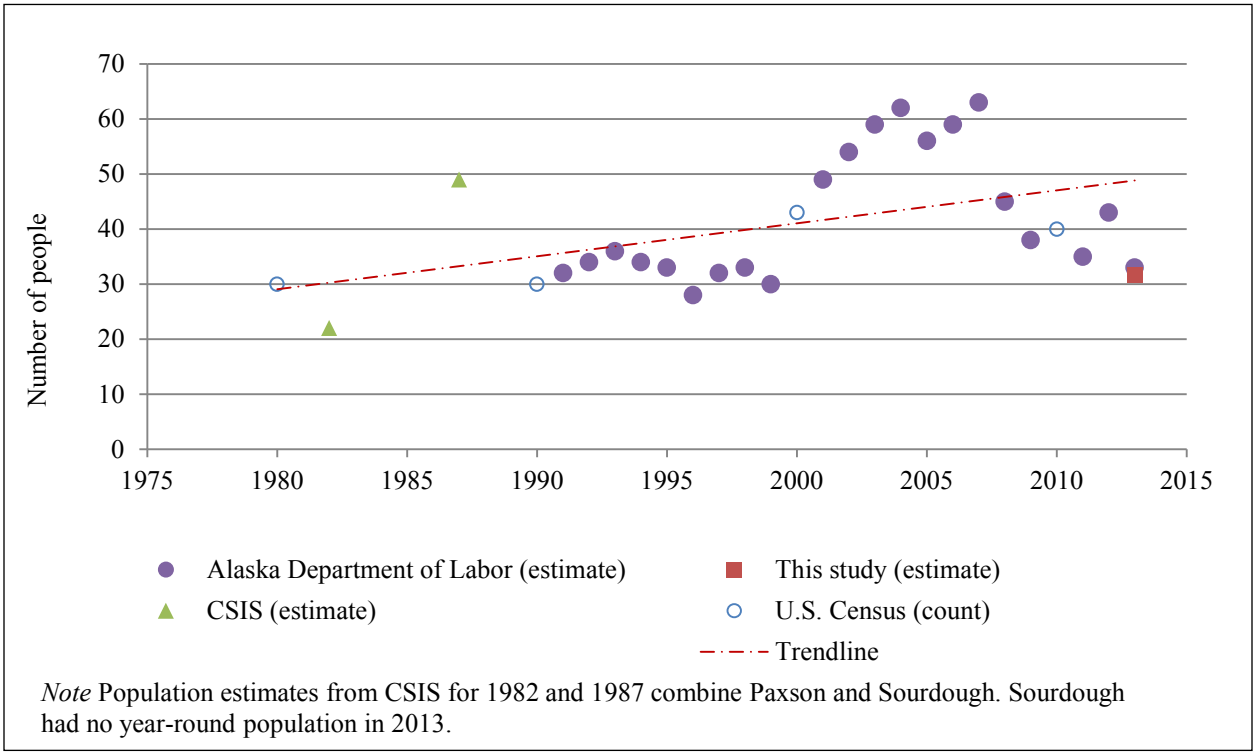
Census Bureau data, Alaska Department of Labor and Workforce Development estimates, and Division of Subsistence estimates recorded in the CSIS. The chart shows that from 1999 to 2007 the population of Paxson increased from 30 to 63 but from 2007 to 2013 declined by almost half, to 32 residents. The population has been fairly consistent since 2008 and this study found a population consistent with estimates by the U.S. Census Bureau and the Alaska Department of Labor and Workforce Development.

Prior to the study, Division of Subsistence researchers consulted with community members to obtain an estimate of the number of year-round households within Paxson and Sourdough. Community members reported there were 11 year-round households in Paxson and no current households in Sourdough; the survey confirmed this (Table 5-2). Of these, 8 households (73%) were interviewed. The mean number of years of residency in Paxson was 17 years, with the maximum length of residence being 60 years (Table 5-3). On average, households consisted of 3 people and the average age of Paxson residents in 2013 was 54 years old. The largest age cohort for males was the 65–69 age range and for females it was the 55–59 age range (Table 5-4; Figure 5-2). Only females were represented in the age cohorts spanning ages 0–19, 35–39, and 45–54. Only males were represented in age cohorts spanning ages 65–74. There were no male residents younger than 55 years of age. There were no residents of either gender older than 79 years of age.

Of the Paxson household heads interviewed, 7% were born in Alaska (Table 5-5). Most (93%) of the household heads were born in other U.S. states. Of those born in Alaska, all were born in Anchorage and none were born in Paxson. For the Paxson population overall, the majority (approximately 70%) of the community residents were born somewhere else in the United States (Appendix Table E5-1). Of local birthplace communities, 8% of Paxson residents claimed Paxson as their birthplace, 4% cited Delta Junction, and 13% cited Anchorage as their birthplace.

Cash Employment and Monetary Income

Table 5-6 is a summary of the estimated earned income as well as other sources of income for residents of Paxson in 2013. This table shows that in 2013 earned income accounted for an average of $41,123 per household, or 79% of the total community income, compared to other income sources that accounted for an average of $10,748 per household, or 21% of the total community income. The per capita income of the community was $18,042 in 2013. The largest source of other income was Social Security, which accounted for 12% of the total community income in 2013, followed by Alaska Permanent Fund dividends, which accounted for 4% of the total community income in 2013.



Note Population estimates from CSIS for 1982 and 1987 combine Paxson and Sourdough. Sourdough had no year-round population in 2013.

Figure 5-1.–Historical population estimates, Paxson, 1980–2013.

Table 5-2.–Sample achievement, Paxson, 2013.

	Paxson
Number of dwelling units	11
Interview goal	11
Households interviewed	8
Households failed to be contacted	3
Households declined to be interviewed	0
Households moved or occupied by nonresident	0
Total households attempted to be interviewed	8
Refusal rate	0.0%
Final estimate of permanent households	11
Percentage of total households interviewed	72.7%
Interview weighting factor	1.4
Sampled population	23
Estimated population	31.6

Source ADF&G Division of Subsistence household surveys, 2014.

Table 5-3.–Sample and demographic characteristics, Paxson, 2013.

Characteristics	
Sampled population	23
Estimated community population	32
Household size	
Mean	2.9
Minimum	1
Maximum	5
Age	
Mean	53.5
Minimum[a]	0
Maximum	78
Median	57
Length of residency	
Total population	
Mean	17.0
Minimum[a]	0
Maximum	60
Heads of household	
Mean	22.5
Minimum[a]	3
Maximum	60
Alaska Native	
Estimated households[b]	
Number	0.0
Percentage	0.0%
Estimated population	
Number	0.0%
Percentage	0.0%

Source ADF&G Division of Subsistence household surveys, 2014.

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 5-4.–Population profile, Paxson, 2013.

	Male			Female			Total		
Age	Number	Percentage	Cumulative percentage	Number	Percentage	Cumulative percentage	Number	Percentage	Cumulative percentage
0–4	0.0	0.0%	0.0%	1.4	7.7%	7.7%	1.4	4.3%	4.3%
5–9	0.0	0.0%	0.0%	1.4	7.7%	15.4%	1.4	4.3%	8.7%
10–14	0.0	0.0%	0.0%	1.4	7.7%	23.1%	1.4	4.3%	13.0%
15–19	0.0	0.0%	0.0%	1.4	7.7%	30.8%	1.4	4.3%	17.4%
20–24	0.0	0.0%	0.0%	0.0	0.0%	30.8%	0.0	0.0%	17.4%
25–29	0.0	0.0%	0.0%	0.0	0.0%	30.8%	0.0	0.0%	17.4%
30–34	0.0	0.0%	0.0%	0.0	0.0%	30.8%	0.0	0.0%	17.4%
35–39	0.0	0.0%	0.0%	1.4	7.7%	38.5%	1.4	4.3%	21.7%
40–44	0.0	0.0%	0.0%	0.0	0.0%	38.5%	0.0	0.0%	21.7%
45–49	0.0	0.0%	0.0%	1.4	7.7%	46.2%	1.4	4.3%	26.1%
50–54	0.0	0.0%	0.0%	1.4	7.7%	53.8%	1.4	4.3%	30.4%
55–59	2.8	20.0%	20.0%	4.1	23.1%	76.9%	6.9	21.7%	52.2%
60–64	1.4	10.0%	30.0%	1.4	7.7%	84.6%	2.8	8.7%	60.9%
65–69	4.1	30.0%	60.0%	0.0	0.0%	84.6%	4.1	13.0%	73.9%
70–74	2.8	20.0%	80.0%	0.0	0.0%	84.6%	2.8	8.7%	82.6%
75–79	2.8	20.0%	100.0%	2.8	15.4%	100.0%	5.5	17.4%	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	**13.8**	**100.0%**	**100.0%**	**17.9**	**100.0%**	**100.0%**	**31.6**	**100.0%**	**100.0%**

Source ADF&G Division of Subsistence household surveys, 2014.

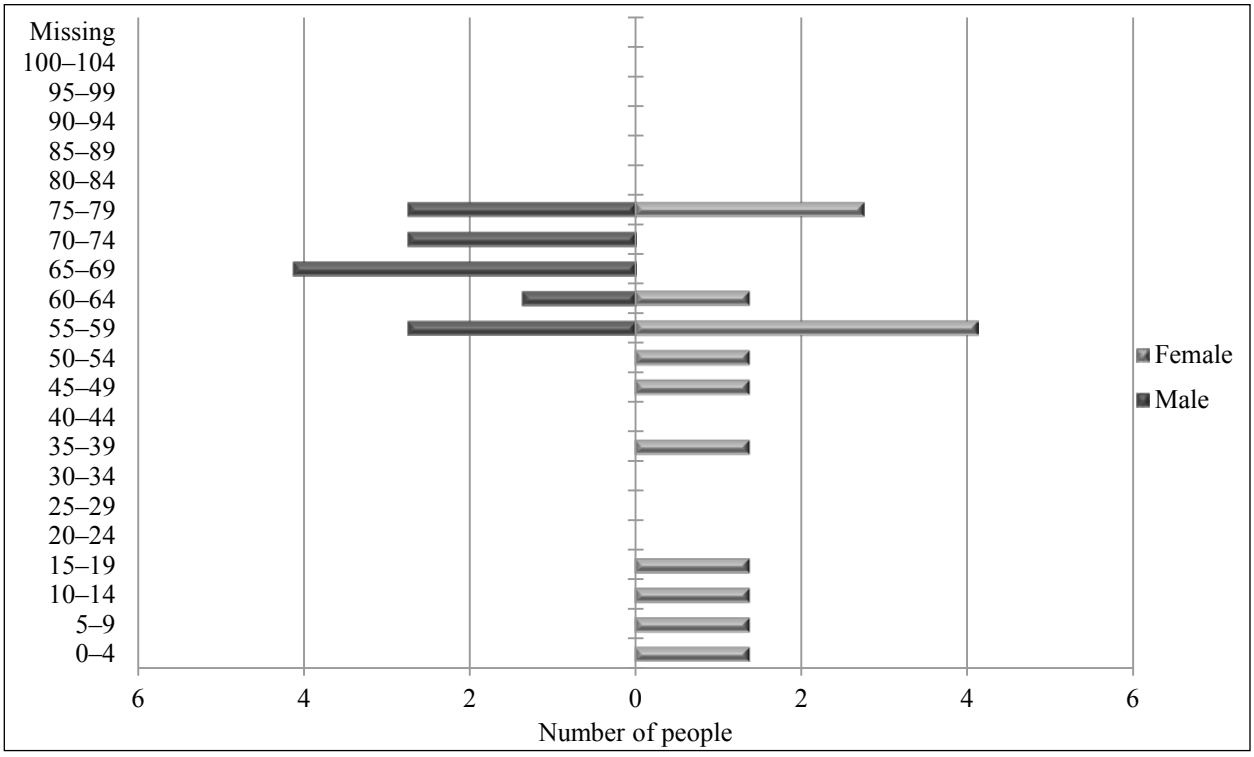


Figure 5-2.–Population profile, Paxson, 2013.

Table 5-5.–Birthplaces of household heads, Paxson, 2013.

Birthplace	Percentage
Anchorage	7.1%
Other U.S.	92.9%

Source ADF&G Division of Subsistence household surveys, 2014.
Note "Birthplace" means the place of residence of the parents of the individual when the individual was born.

Table 5-6.–Estimated earned and other income, Paxson, 2013.

Income source	Number of people	Number of households	Total for community	-/+ 95% CI	Mean per household	Per capita income	Percentage of total community income
Earned income							
Services	15.1	8.3	$195,511	$0 – $875,673	$17,774		34.3%
State government	1.4	1.4	$99,881	$80,442 – $160,105	$9,080		17.5%
Agriculture, forestry, and fishing	1.4	1.4	$59,529	$0 – $303,416	$5,412		10.4%
Construction	1.4	1.4	$47,872	$0 – $138,507	$4,352		8.4%
Other employment	1.4	1.4	$22,235	$0 – $88,952	$2,021		3.9%
Manufacturing	1.4	1.4	$22,235	$0 – $88,952	$2,021		3.9%
Transportation, communication, and utilities	1.4	1.4	$5,087	$0 – $9,446	$462		0.9%
Earned income subtotal	**17.9**	**11.0**	**$452,350**	**$0 – $1,984,492**	**$41,123**	**$14,304**	**79.3%**
Other income							
Social Security		2.8	$70,538	$51,300 – $177,238	$6,413		12.4%
Alaska Permanent Fund dividend		11.0	$23,513	$16,088 – $27,225	$2,138		4.1%
Pension/retirement		1.4	$18,288	$13,300 – $36,575	$1,663		3.2%
Longevity bonus		1.4	$4,125	$3,000 – $8,250	$375		0.7%
Gifts		1.7	$1,760	$1,280 – $3,520	$160		0.3%
TANF (Temporary Assistance for Needy Families		0.0	$0	$0 – $0	$0		0.0%
Adult public assistance (OAA, APD)		0.0	$0	$0 – $0	$0		0.0%
Supplemental Security income		0.0	$0	$0 – $0	$0		0.0%
Food stamps		0.0	$0	$0 – $0	$0		0.0%
Heating assistance		0.0	$0	$0 – $0	$0		0.0%
Workers' compensation/insurance		0.0	$0	$0 – $0	$0		0.0%
Unemployment		0.0	$0	$0 – $0	$0		0.0%
Disability		0.0	$0	$0 – $0	$0		0.0%
Veterans assistance		0.0	$0	$0 – $0	$0		0.0%
Native corporation dividend		0.0	$0	$0 – $0	$0		0.0%
Child support		0.0	$0	$0 – $0	$0		0.0%
Other		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		**11.0**	**$118,223**	**$24,475 – $276,128**	**$10,748**	**$3,738**	**20.7%**
Community income total			**$570,573**	**$60,088 – $2,120,259**	**$51,870**	**$18,042**	**100.0%**

Source ADF&G Division of Subsistence household surveys, 2014.

Table 5-7.–Employment by industry, Paxson, 2013.

Industry	Jobs	Households	Individuals	Percentage of wage earnings
Estimated total number	**31.8**	**11.0**	**18.8**	
State government	**4.5%**	**12.5%**	**7.7%**	**22.1%**
Transportation and material moving occupations	4.5%	12.5%	7.7%	22.1%
Agriculture, forestry, and fishing	**9.1%**	**12.5%**	**7.7%**	**13.2%**
Agricultural, forestry, and fishing occupations	9.1%	12.5%	7.7%	13.2%
Construction	**9.1%**	**12.5%**	**7.7%**	**10.6%**
Construction and extractive occupations	9.1%	12.5%	7.7%	10.6%
Manufacturing	**4.5%**	**12.5%**	**7.7%**	**4.9%**
Writers, artists, entertainers, and athletes	4.5%	12.5%	7.7%	4.9%
Transportation, communication, and utilities	**4.5%**	**12.5%**	**7.7%**	**1.1%**
Executive, administrative, and managerial	4.5%	12.5%	7.7%	1.1%
Services	**63.6%**	**75.0%**	**84.6%**	**43.2%**
Executive, administrative, and managerial	40.9%	62.5%	69.2%	16.4%
Teachers, librarians, and counselors	4.5%	12.5%	7.7%	4.9%
Service occupations	18.2%	12.5%	7.7%	21.9%
Industry not indicated	**4.5%**	**12.5%**	**7.7%**	**4.9%**
Marketing and sales occupations	4.5%	12.5%	7.7%	4.9%

Source ADF&G Division of Subsistence household surveys, 2014.

In 2013, most (64%) of the jobs in Paxson were in the services sector (Table 5-7). Other important employment sectors during the study year were agriculture, forestry, and fishing (9% of jobs) and construction (9% of jobs).

In 2013, 68% of the adults of working age (16 and older) at Paxson were employed at some point during the study year (Table 5-8). Of these employed adults, 59% were employed year-round. On average in 2013, 100% of households contained at least 1 adult who was employed. The mean number of jobs per employed household was 2.9.

Levels of Individual Participation in the Harvesting and Processing of Wild Resources

Table 5-9 reports the expanded levels of individual participation in the harvesting and processing of wild resources by Paxson residents in 2013. Approximately 61% of residents attempted to harvest resources and processed resources in 2013. With reference to specific resource categories, 60% of all residents gathered plants and berries, 57% fished, 48% hunted for large land mammals, 22% hunted for birds, and 17% hunted or trapped for small land mammals. The level of participation in processing plants and berries was the same (60% of residents). The level of participation in processing fish was 57%. Large land mammals were processed by 57% of Paxson residents, indicating that other residents help to process the meat once a successful hunter returns to camp or home. Additionally, 22% of residents participated in processing birds (the same proportion of residents as hunted birds) and 13% of residents participated in furbearer processing.

The survey included questions about individual participation in wild resource harvest activities such as working with fish wheels, handicrafts, and cooking wild foods. In Paxson, no residents worked with fish wheels. In 2013, 4% of residents sewed skins, and 65% of residents cooked wild foods (Table 5-10).

Table 5-8.–Employment characteristics, Paxson, 2013.

Characteristic	Community Paxson
All adults	
Number	27.5
Mean weeks employed	27.1
Employed adults	
Number	18.8
Percentage	68.4%
Jobs	
Number	31.8
Mean	1.7
Minimum	1
Maximum	9
Months employed	
Mean	9.1
Minimum	3
Maximum	12
Percentage employed year-round	58.5%
Mean weeks employed	39.6
Households	
Number	11
Employed	
Number	11.0
Percentage	100.0%
Jobs per employed household	
Mean	2.9
Minimum	1
Maximum	11
Employed adults	
Mean	
Employed households	1.7
Total households	1.7
Minimum	1
Maximum	3
Mean person-weeks of employment	45.5

Source ADF&G Division of Subsistence household surveys, 2014.

Table 5-9.–Individual participation in subsistence harvesting and processing activities, Paxson, 2013.

Total number of people	**31.6**
Fish	
Fish	
Number	17.9
Percentage	56.5%
Process	
Number	17.9
Percentage	56.5%
Large land mammals	
Hunt	
Number	15.1
Percentage	47.8%
Process	
Number	17.9
Percentage	56.5%
Small land mammals	
Hunt or trap	
Number	5.5
Percentage	17.4%
Process	
Number	4.1
Percentage	13.0%
Birds and eggs	
Hunt/gather	
Number	6.9
Percentage	21.7%
Process	
Number	6.9
Percentage	21.7%
Vegetation	
Gather	
Number	19.0
Percentage	60.0%
Process	
Number	19.0
Percentage	60.0%
Any resource	
Attempt harvest	
Number	19.3
Percentage	60.9%
Process	
Number	19.3
Percentage	60.9%

Source ADF&G Division of Subsistence household surveys, 2014.

Table 5-10.–Household member participation in subsistence craft activities, Paxson, 2013.

Total number of people	**31.6**
Building, maintaining, or moving fish wheels	
Number	0.0
Percentage	0.0%
Sewing skins or cloth	
Number	1.4
Percentage	4.3%
Cooking wild foods	
Number	20.6
Percentage	65.2%

Source ADF&G Division of Subsistence household surveys, 2014.

Household Resource Harvest and Use Patterns and Sharing of Wild Resources

Table 5-11 summarizes resource harvest and use characteristics for Paxson in 2013 at the household level. All households (100%) used wild resources in 2013 and 88% of households attempted to harvest and harvested resources. The average harvest was 615 lb usable weight per household, or 214 lb per capita. During the study year, households harvested an average of 10 kinds of resources and used an average of 12 kinds of resources. The maximum number of resources used by any household was 40. In addition, households gave away an average of 4 kinds of resources and 75% of households shared resources with other households. Resources were received by 100% of households. Overall, as many as 114 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.

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 5-3, in the 2013 study year in Paxson, about 72% of the harvests of wild resources as estimated in usable pounds were harvested by 38% 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 Paxson and the other study communities.

The survey included questions about residents' use of alternative and motorized modes of transportation to access wild food harvest areas and the use of portable motors. In order to participate in resource harvesting activities most Paxson residents relied on motorized transportation such as motor-powered boats, ATVs, and snowmachines for access to harvest areas; in the case of Paxson, dog sleds were another kind of alternative transportation used. Figure 5-4 demonstrates the percentage of community households that used an alternate means of transportation (in addition to or aside from using cars, trucks, or traveling on foot). Approximately 63% of Paxson households used a boat when harvesting wild foods. Similarly, about 63% of households used ATVs. Snowmachines were used by 38% of households and 13% used a dog sled when harvesting wild resources.

Some Paxson residents used portable motorized equipment when participating in resource harvest activities. For example, chain saws were used to harvest and process wood for use in home heating. Chain saws, generators, and winches were each used by 13% of households and 38% of Paxson households used an ice auger (Figure 5-5).

Table 5-11.–Resource harvest and use characteristics, Paxson, 2013.

Characteristic	
Mean number of resources used per household	**11.8**
Minimum	1
Maximum	40
95% confidence limit (±)	45.9%
Median	9
Mean number of resources attempted to harvest per household	**11.4**
Minimum	0
Maximum	40
95% confidence limit (±)	47.7%
Median	9.5
Mean number of resources harvested per household	**9.8**
Minimum	0
Maximum	40
95% confidence limit (±)	56.8%
Median	7
Mean number of resources received per household	**2.6**
Minimum	1
Maximum	9
95% confidence limit (±)	45.3%
Median	1.5
Mean number of resources given away per household	**4.4**
Minimum	0
Maximum	20
95% confidence limit (±)	65.3%
Median	3
Household harvest (pounds)	
Minimum	0
Maximum	2,178
Mean	615.3
Median	483
Total harvest weight (lb)	6,767.9
Community per capita harvest (lb)	214.0
Percentage using any resource	100.0%
Percentage attempting to harvest any resource	87.5%
Percentage harvesting any resource	87.5%
Percentage receiving any resource	100.0%
Percentage giving away any resource	75.0%
Number of households in sample	8
Number of resources asked about and identified voluntarily by respondents	114

Source ADF&G Division of Subsistence household surveys, 2014.

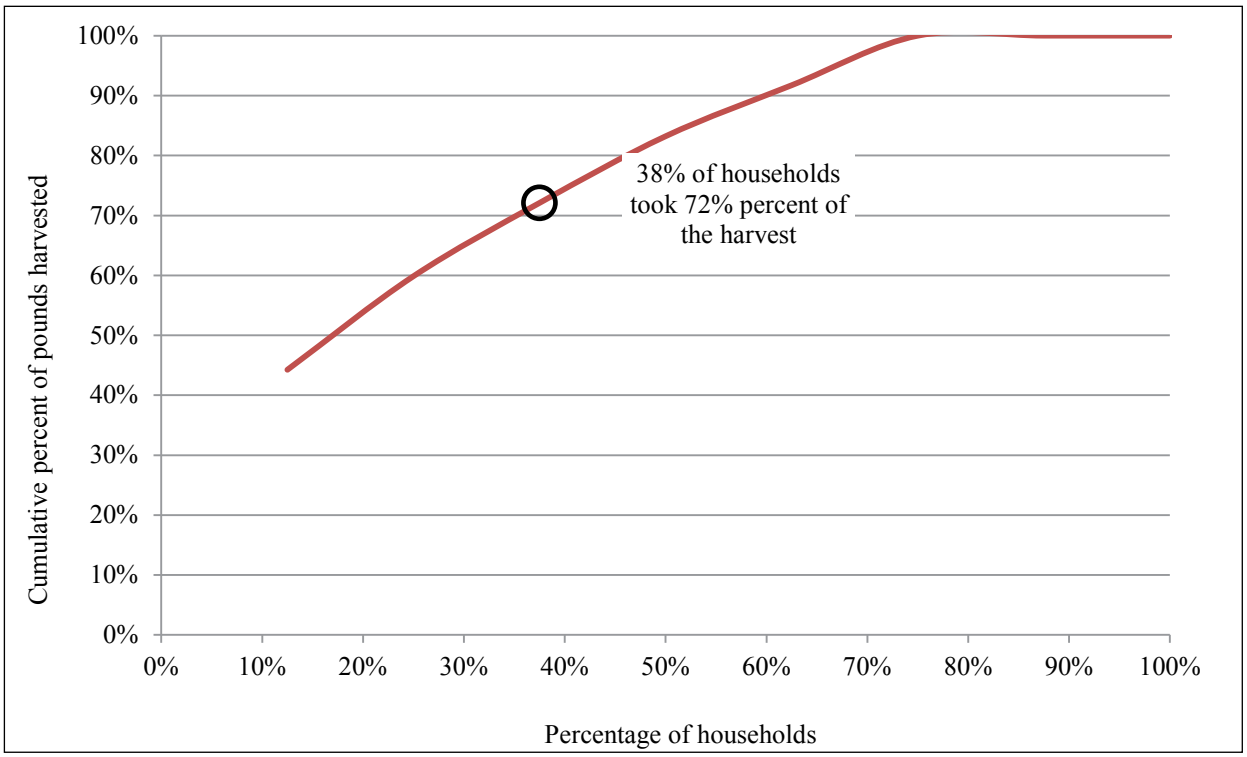


Figure 5-3.–Household specialization, Paxson, 2013.

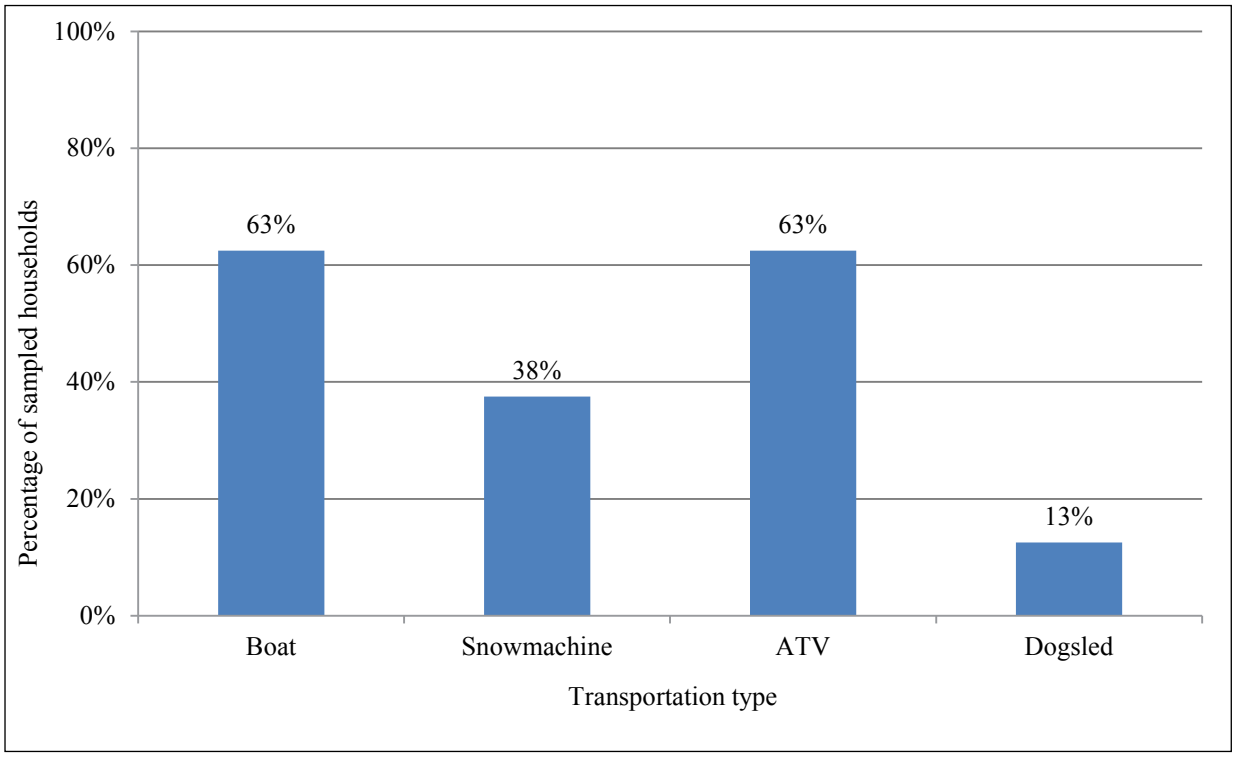


Figure 5-4.–Alternative modes of transportation used by sampled households to access wild resources, Paxson, 2013.

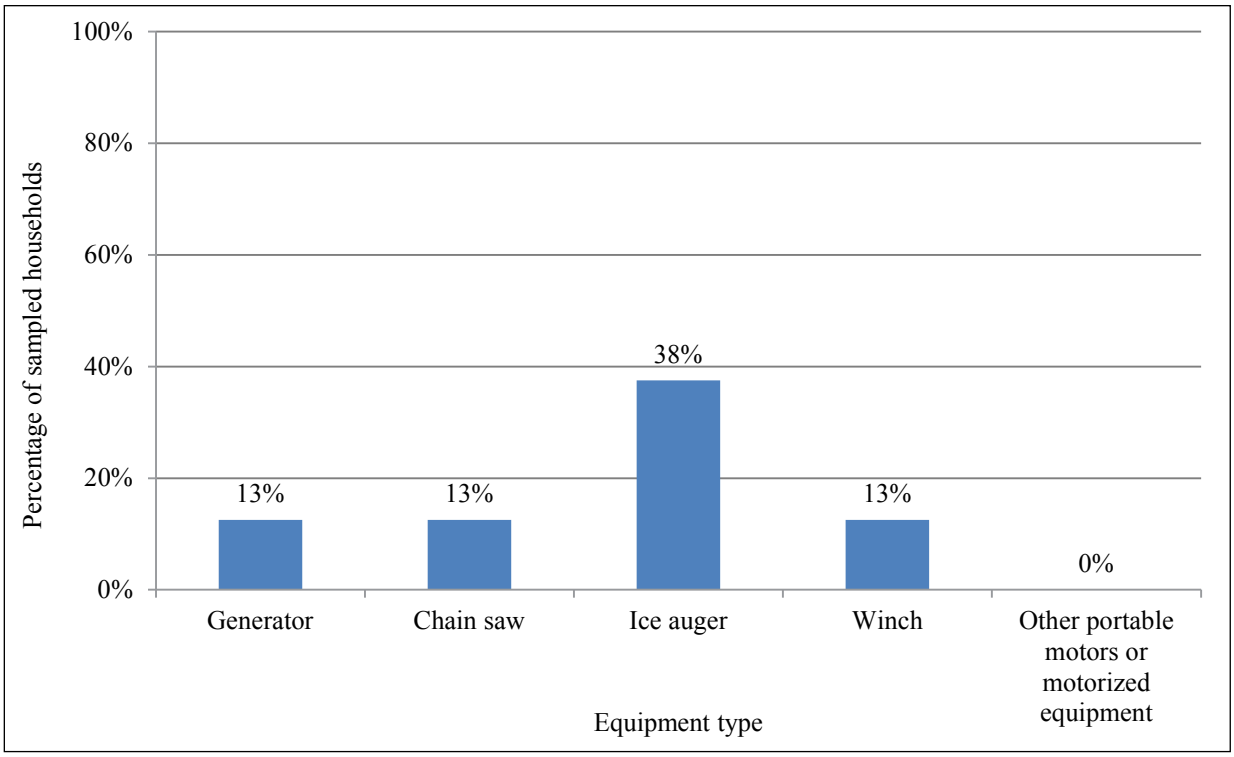


Figure 5-5.–Portable motorized equipment used by sampled households while searching for and harvesting wild resources, Paxson, 2013.

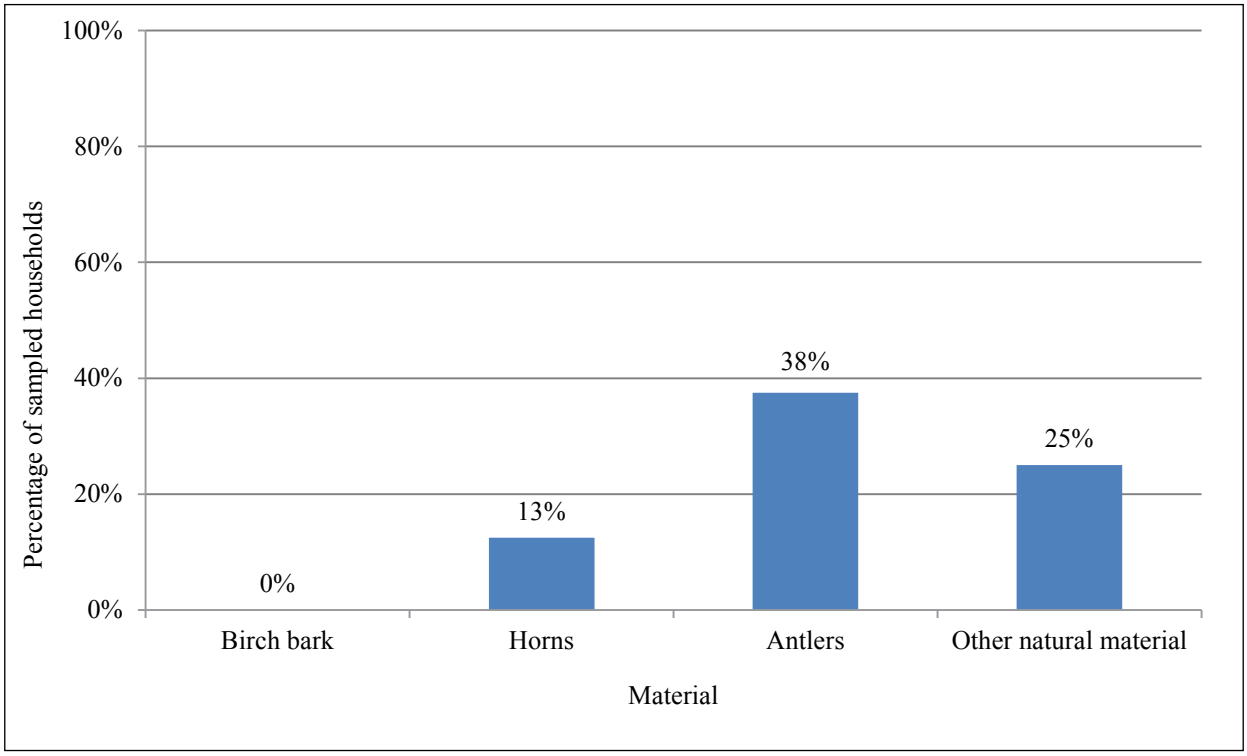


Figure 5-6.–Natural materials used by sampled households for making handicrafts, Paxson, 2013.

Table 5-12.–Use of firewood for home heating in sampled households, Paxson, 2013.

Community	Average annual cost of home heating	Household use of wood for home heating as a percentage of total fuel for heating											
		0%		1%–25%		26%–50%		51%–75%		76%–99%		100%	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Paxson	$2,545	5	62.5%	1	12.5%	0	0.0%	0	0.0%	2	25.0%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2014.

Figure 5-6 demonstrates the percentage of households that used natural materials for handicrafts; 38% used antlers, 13% used horns, and 25% of households used other raw natural materials, most of which were fur and skins.

During the winter months most Paxson households rely on oil stoves to for home heating. Only 3 of the 8 surveyed households in Paxson reported using firewood for home heating in 2013 (Table 5-12).

Harvest Quantities and Composition

Table 5-13 reports estimated wild resource harvests and uses by Paxson residents in 2013 and is organized first by general category and then by species. All edible resources are reported in pounds usable weight (see Appendix C for conversion factors[3]). The "harvest" category includes resources harvested by any member of the surveyed household during the study year. The "use" category includes all 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 firewood are included because they are an important part of the subsistence way of life. Differences between harvest and use percentages reflect sharing among households, which results in a wider distribution of wild foods.

The total estimated harvest for all fish, wildlife, and wild plant resources during 2013 for Paxson was 6,768 lb, or 214 lb per capita (Table 5-13). Large land mammals provided the majority (39%) of the total harvest (2,668 lb, or 84 lb per capita) (Figure 5-7; Table 5-13). Salmon and nonsalmon fish combined composed 46% (97 lb per capita) of the harvest in 2013, which is more than large land mammals, but when considered separately salmon contributed the second most pounds usable weight to the community harvest (27%, or 1,801 lb) and nonsalmon fish was the third most harvested resource category (19%, or 1,279 lb). Small land mammals provided 7% (462 lb, or 15 lb per capita), vegetation provided 6% (391 lb, or 12 lb per capita), birds provided 2% (142 lb, or 5 lb per capita), and marine invertebrates provided less than 1% (26 lb, less than 1 lb per capita) of the total harvest.

Seasonal Round

Harvest survey data and key respondent interview information tell the story of a seasonal round of fishing, hunting, and gathering activities followed by Paxson residents where a variety of species are harvested throughout the year. In spring, summer, fall, and winter, Paxson residents harvest resources along the road corridors of the Richardson and Denali highways, along ATV trails connected to the main road system, and within adjacent rivers and lakes, including the Maclaren, Gulkana, and Copper rivers, Upper Tangle Lake, Round Tangle Lake, Long Tangle Lake, and Summit and Paxson lakes, Port Valdez, and Prince William Sound (Figure 5-8). Residents use ATVs, motorized boats suitable for travel on waterways, snowmachines, and dog sleds to reach their hunting, fishing, and gathering areas.

During early spring some Paxson residents trap beavers around Paxson Lake. Following spring breakup and into the summer months salmon are caught in the Copper River and in Port Valdez. Sockeye salmon are caught during June and July in the Copper River by dip net under personal use fishing regulations. Coho salmon are caught during August in Port Valdez by rod and reel under sport fishing regulations. Also, a Paxson resident catches sockeye salmon, Chinook salmon, and coho salmon in Bristol Bay by removing fish from a commercial catch for household use in Paxson. Salmon retained from the commercial fishery are caught by gillnet. This resident also harvests some Chinook salmon in Bristol Bay by rod and reel under sport fishing regulations.

During spring and summer nonsalmon fish are caught in the Round Tangle Lake, Long Tangle Lake, Maclaren River, Boulder Creek, Paxson Lake, and Prince William Sound. Lake trout are caught during May, June, July, and August in Long Tangle Lake, Summit Lake, Paxson Lake, and Boulder Creek by rod

3. 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 5-13.–Estimated use and harvests of fish, game, and vegetation resources, Paxson, 2013.

Resource	Percentage of households: Use %	Attempt %	Harvest %	Receive %	Give %	Harvest weight (lb): Total	Mean per household	Per capita	Harvest amount[a]: Total	Unit	Mean per household	95% confidence limit (±)
All resources	**100.0**	**87.5**	**87.5**	**100.0**	**75.0**	**6,767.9**	**615.3**	**214.0**				**48.8**
Salmon	**100.0**	**62.5**	**62.5**	**62.5**	**62.5**	**1,801.0**	**163.7**	**56.9**				**45.0**
Chum salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Coho salmon	62.5	62.5	62.5	12.5	50.0	786.2	71.5	24.9	126.5	ind	11.5	46.9
Chinook salmon	37.5	25.0	25.0	12.5	25.0	132.2	12.0	4.2	9.6	ind	0.9	90.2
Pink salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Sockeye salmon	87.5	37.5	37.5	62.5	37.5	882.7	80.2	27.9	192.5	ind	17.5	63.6
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	**75.0**	**75.0**	**75.0**	**37.5**	**37.5**	**1,278.5**	**116.2**	**40.4**				**85.9**
Pacific herring	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	ind	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
Pacific (gray) cod	12.5	12.5	12.5	0.0	12.5	68.8	6.3	2.2	17.2	ind	1.6	123.5
Pacific tomcod	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Lingcod	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	62.5	37.5	25.0	37.5	25.0	293.4	26.7	9.3	293.4	lb	26.7	81.1
Arctic lamprey	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	25.0	25.0	12.5	12.5	0.0	27.5	2.5	0.9	6.9	ind	0.6	123.5
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
Burbot	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	25.0	25.0	25.0	0.0	12.5	14.9	1.4	0.5	16.5	ind	1.5	102.0
Lake trout	75.0	75.0	75.0	0.0	12.5	137.5	12.5	4.3	68.8	ind	6.3	56.1
Arctic grayling	62.5	62.5	62.5	0.0	12.5	132.8	12.1	4.2	189.8	ind	17.3	86.4
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
Longnose sucker	12.5	12.5	12.5	0.0	0.0	192.5	17.5	6.1	275.0	ind	25.0	123.5
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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown trout	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Broad whitefish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Least cisco	25.0	25.0	25.0	0.0	0.0	170.5	15.5	5.4	426.3	ind	38.8	119.0

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Table 5-13.–Page 2 of 4.

Resource	Percentage of households: Use %	Attempt %	Harvest %	Receive %	Give %	Harvest weight (lb): Total	Mean per household	Per capita	Harvest amount[a]: Total	Unit	Mean per household	95% confidence limit (±)
Nonsalmon fish, continued												
Humpback whitefish	12.5	12.5	12.5	0.0	0.0	240.6	21.9	7.6	137.5	ind	12.5	123.5
Round whitefish	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	**75.0**	**75.0**	**62.5**	**50.0**	**50.0**	**2,667.5**	**242.5**	**84.3**				**44.3**
Bison	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Black bear	0.0	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Brown bear	0.0	25.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Caribou	50.0	75.0	50.0	12.5	37.5	1,430.0	130.0	45.2	11.0	ind	1.0	61.7
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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Moose	50.0	75.0	25.0	37.5	25.0	1,237.5	112.5	39.1	2.8	ind	0.3	80.8
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	**12.5**	**25.0**	**12.5**	**0.0**	**12.5**	**462.0**	**42.0**	**14.6**				**123.5**
Beaver	12.5	12.5	12.5	0.0	12.5	350.6	31.9	11.1	23.4	ind	2.1	123.5
Coyote	12.5	12.5	12.5	0.0	0.0	0.0	0.0	0.0	6.9	ind	0.6	123.5
Red fox–cross phase	12.5	12.5	12.5	0.0	0.0	0.0	0.0	0.0	4.1	ind	0.4	123.5
Red fox–red phase	12.5	12.5	12.5	0.0	0.0	0.0	0.0	0.0	27.5	ind	2.5	123.5
Snowshoe hare	12.5	25.0	12.5	0.0	0.0	13.8	1.3	0.4	6.9	ind	0.6	123.5
North American river (land) otter	12.5	12.5	12.5	0.0	0.0	0.0	0.0	0.0	4.1	ind	0.4	123.5
Lynx	12.5	12.5	12.5	0.0	12.5	11.0	1.0	0.3	2.8	ind	0.3	123.5
Marmot	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Marten	12.5	12.5	12.5	0.0	0.0	0.0	0.0	0.0	20.6	ind	1.9	123.5
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	12.5	12.5	12.5	0.0	0.0	86.6	7.9	2.7	48.1	ind	4.4	123.5
Porcupine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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
Least 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	12.5	12.5	12.5	0.0	0.0	0.0	0.0	0.0	1.4	ind	0.1	123.5

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Table 5-13.–Page 3 of 4.

Resource	Percentage of households: Use %	Attempt %	Harvest %	Receive %	Give %	Harvest weight (lb): Total	Mean per household	Per capita	Harvest amount[a]: Total	Unit	Mean per household	95% confidence limit (±)
Marine mammals	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	0.0				**0.0**
Fur seal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Harbor seal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown seal	0.0	0.0	0.0	0.0	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
Unknown whale	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	**25.0**	**25.0**	**25.0**	**12.5**	**12.5**	**142.3**	**12.9**	**4.5**				**110.7**
Canvasback	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Spectacled 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	12.5	12.5	12.5	0.0	12.5	11.0	1.0	0.3	13.8	ind	1.3	123.5
Mallard	25.0	12.5	12.5	12.5	12.5	13.8	1.3	0.4	13.8	ind	1.3	123.5
Northern pintail	25.0	12.5	12.5	12.5	0.0	11.0	1.0	0.3	13.8	ind	1.3	123.5
Unknown scaup	12.5	12.5	12.5	0.0	0.0	24.8	2.3	0.8	27.5	ind	2.5	123.5
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
White-winged scoter	12.5	12.5	12.5	0.0	12.5	9.9	0.9	0.3	11.0	ind	1.0	123.5
Northern shoveler	25.0	12.5	12.5	12.5	0.0	4.1	0.4	0.1	6.9	ind	0.6	123.5
Green-winged teal	12.5	12.5	12.5	0.0	12.5	6.2	0.6	0.2	20.6	ind	1.9	123.5
American wigeon	12.5	12.5	12.5	0.0	12.5	19.3	1.8	0.6	27.5	ind	2.5	123.5
Unknown ducks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Brant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Cackling goose	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Canada 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 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
Emperor goose	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Snow goose	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Tundra (whistling) swan	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
Spruce grouse	12.5	12.5	12.5	0.0	0.0	11.6	1.1	0.4	16.5	ind	1.5	123.5
Sharp-tailed grouse	12.5	12.5	12.5	0.0	12.5	14.4	1.3	0.5	20.6	ind	1.9	123.5
Ruffed grouse	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 5-13.–Page 4 of 4.

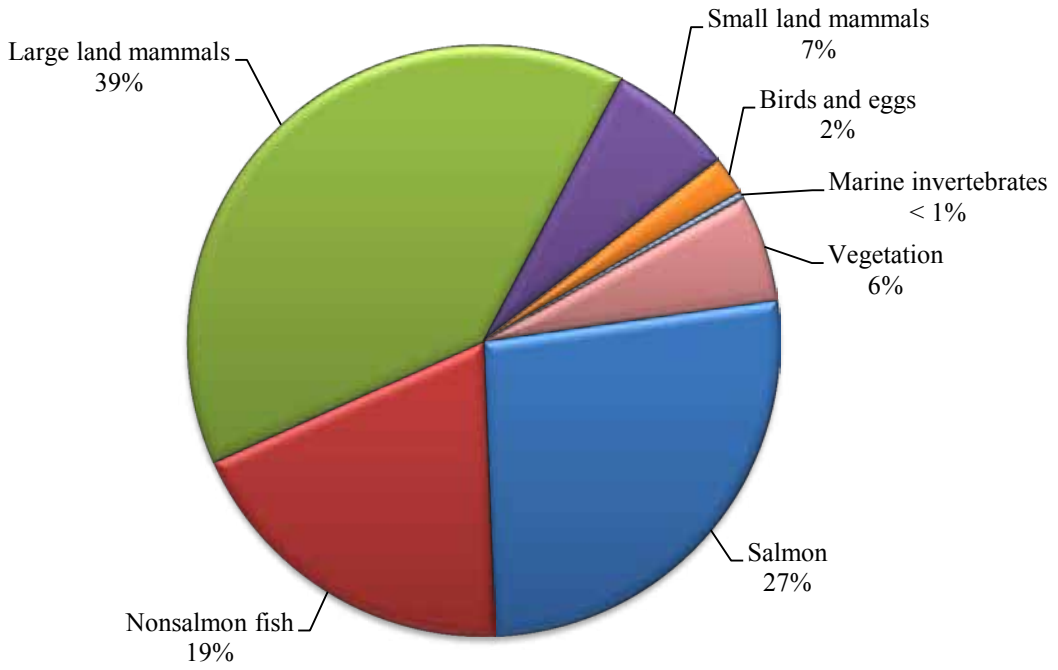
Resource	Percentage of households: Use %	Attempt %	Harvest %	Receive %	Give %	Harvest weight (lb): Total	Mean per household	Per capita	Harvest amount[a]: Total	Unit	Mean per household	95% confidence limit (±)
Birds and eggs, continued												
Unknown ptarmigan	25.0	25.0	25.0	0.0	12.5	16.4	1.5	0.5	23.4	ind	2.1	107.8
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
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 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	**37.5**	**12.5**	**12.5**	**25.0**	**12.5**	**25.8**	**2.3**	**0.8**				**123.5**
Freshwater 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	25.0	12.5	12.5	12.5	12.5	25.8	2.3	0.8	8.6	gal	0.8	123.5
Dungeness crab	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	lb	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	lb	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	lb	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
Shrimp	12.5	0.0	0.0	12.5	0.0	0.0	0.0	0.0	0.0	lb	0.0	0.0
Squid	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**	**87.5**	**87.5**	**12.5**	**50.0**	**390.8**	**35.5**	**12.4**				**58.7**
Blueberry	87.5	87.5	87.5	14.3	57.1	322.1	29.3	10.2	80.5	gal	7.3	52.7
Lowbush cranberry	37.5	37.5	37.5	0.0	12.5	9.6	0.9	0.3	2.4	gal	0.2	72.7
Highbush cranberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Raspberry	25.0	25.0	25.0	0.0	0.0	11.0	1.0	0.3	2.8	gal	0.3	80.8
Other wild berry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
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
Dandelion greens	12.5	12.5	12.5	0.0	0.0	1.4	0.1	0.0	1.4	gal	0.1	123.5
Wormwood	12.5	12.5	12.5	0.0	0.0	2.8	0.3	0.1	2.8	gal	0.3	123.5
Unknown mushrooms	0.0	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Fireweed	12.5	12.5	12.5	0.0	0.0	44.0	4.0	1.4	44.0	gal	4.0	123.5
Firewood	37.5	37.5	37.5	0.0	0.0	0.0	0.0	0.0	14.9	cord	1.4	112.8

Source ADF&G Division of Subsistence household surveys, 2014.

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.

a. Summary rows that include incompatible units of measure have been left blank.



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

Figure 5-7.–Composition of harvest by resource category in pounds usable weight, Paxson, 2013.

and reel under sport fishing regulations. Arctic grayling are caught during May, June, July, and August in Round Tangle Lake, Long Tangle Lake, Paxson Lake, and Boulder Creek by rod and reel under sport fishing regulations. Pacific halibut, Pacific cod, and rockfish are caught in Prince William Sound by rod and reel under sport fishing regulations.

Summer is the time for berry picking and plant gathering. During July and August, Paxson residents harvest blueberries, lowbush cranberries, raspberries, dandelion greens, wormwood, and fireweed along the Denali Highway.

Fall is the season when Paxson residents most actively pursue subsistence activities. During August and September, moose, caribou, black bears, and brown bears are hunted. Caribou and bears are pursued in nearly identical areas accessed from the Denali Highway; the most significant difference between bear and caribou search areas is that caribou are sought more extensively in the Landmark Gap Lake area. Moose hunting occurs at intervals along the Denali Highway, in the Upper Tangle Lake, Dickey Lake, and the Maclaren River and Boulder Creek watersheds, but also east of the Richardson Highway and along the shores of Paxson Lake.

During late fall and early winter Paxson residents harvest ducks, grouse, ptarmigan, whitefishes, longnose suckers, beavers, coyotes, foxes, snowshoe hares, muskrats, and martens. During October ducks are harvested at Paxson Lake and in the Maclaren River and Boulder Creek watersheds north of the Denali Highway. During September, October, and November grouse are sought on the eastern shore of Paxson Lake and ptarmigan are sought along the Denali Highway from Paxson westward to the Maclaren River. During October humpback whitefish, least cisco, and longnose suckers are harvested in the Maclaren River by fish spear under sport fishing regulations. Least cisco and longnose suckers are also harvested in Upper Tangle Lake and Round Tangle Lake at this time. Fall small land mammal hunting and trapping for beavers, coyotes, foxes, snowshoe hares, muskrats, and martens occur in an area extending from the western shore of Paxson Lake to the Excelsior Creek drainage toward the east. In 2013, Paxson residents harvested ducks at

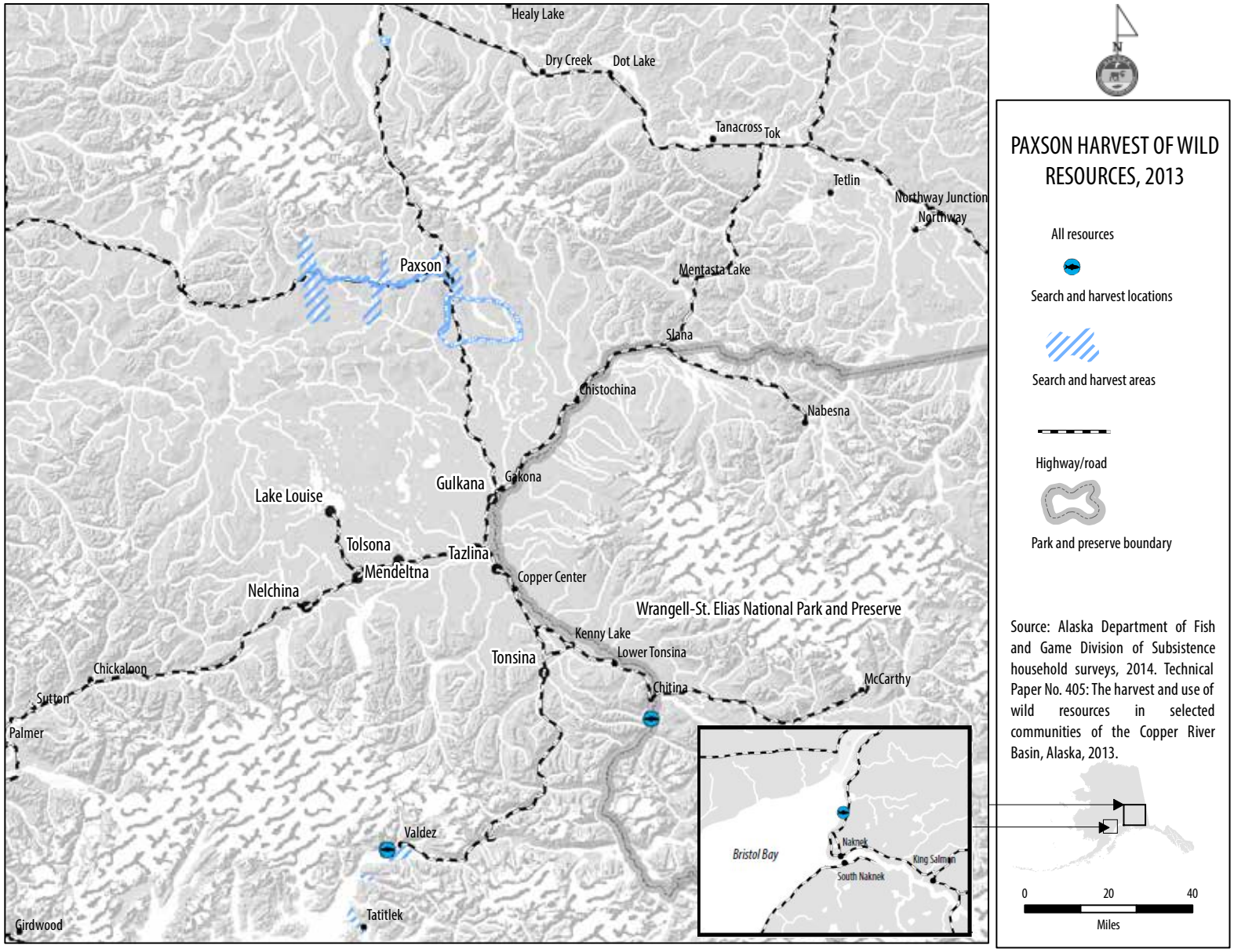


Figure 5-8.–Wild resources search and harvest areas, Paxson, 2013.

Table 5-14.–Top ranked resources used by households, Paxson, 2013.

Rank[a]	Resource	Percentage of households using
1.	Sockeye salmon	87.5%
1.	Blueberry	87.5%
3.	Lake trout	75.0%
4.	Coho salmon	62.5%
4.	Pacific halibut	62.5%
4.	Arctic grayling	62.5%
7.	Caribou	50.0%
7.	Moose	50.0%
9.	Chinook salmon	37.5%
9.	Lowbush cranberry	37.5%

Source ADF&G Division of Subsistence household surveys, 2014.
a. Resources used by the same percentage of households share the lowest rank value instead of having sequential rank values.

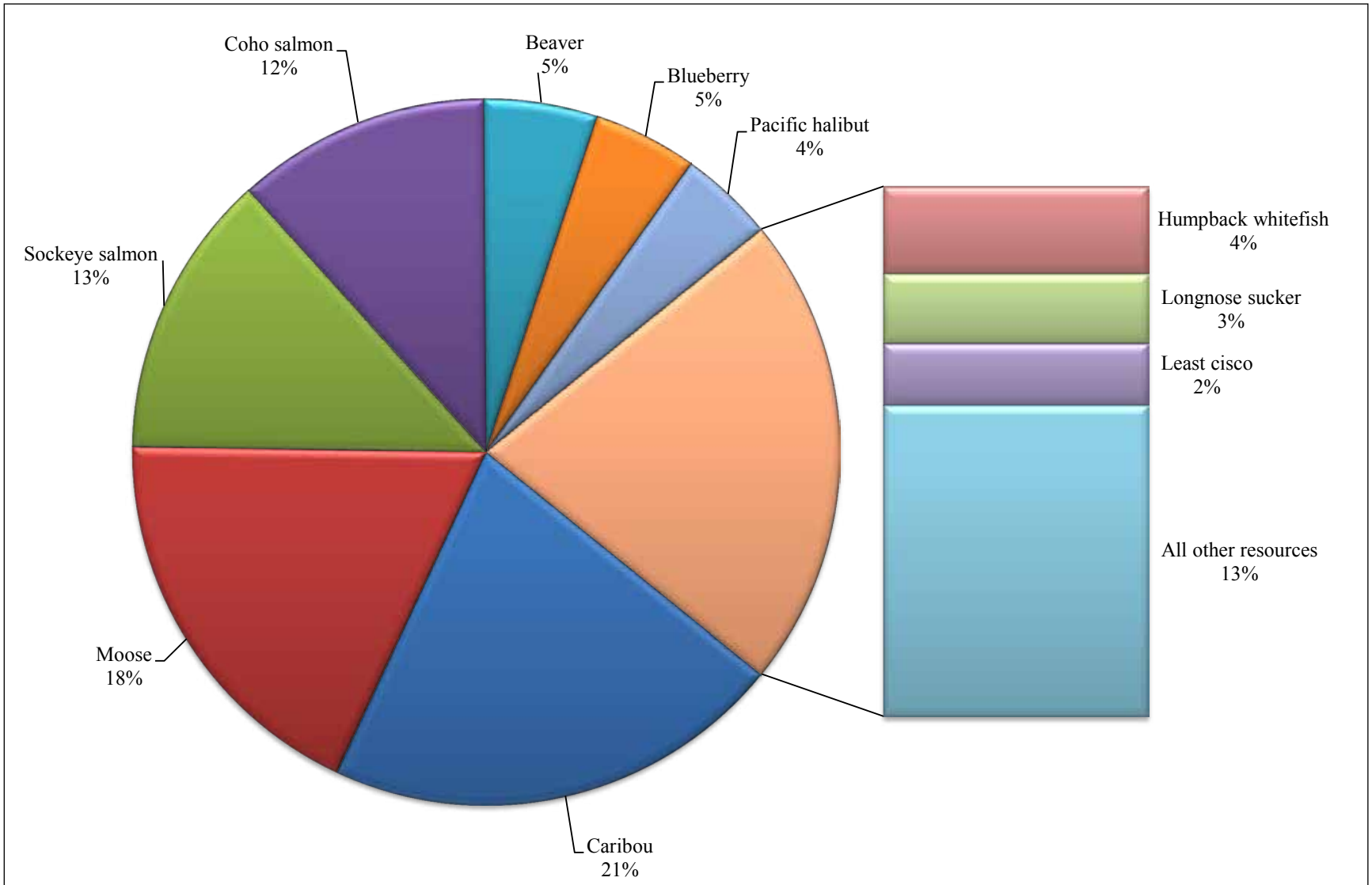
Paxson Lake and in the Maclaren River watershed north of the Denali Highway. Ptarmigan were harvested along the Denali Highway from Paxson in the east to the Maclaren River in the west and grouse were harvested along the eastern shore of Paxson Lake.

During winter some Paxson residents continue hunting caribou, ptarmigan, and snowshoe hares. Ice fishing for lake trout and Dolly Varden is also pursued during the winter months as well as trapping for foxes, North American river otters, lynx, martens, muskrats, coyotes, and wolverines.

Use and Harvest Characteristics by Resource Category

Estimates of sharing indicated that 100% of Paxson households received wild resources from other households and 75% of households gave resources away (Table 5-13). Salmon, large land mammals, and vegetation were the most commonly shared resources. Salmon were used by 100% of households, were given away by 63% of households, and were received by 63% of households. Large land mammals were used by 75% of households, were given away by 50% of households, and were received by 50% of households. Vegetation was used by 88% of households, was given away by 50% of households, and was received by 13% of households. As a result of the way resources were shared within the community, salmon use surpassed nonsalmon fish, large land mammal, and vegetation use despite the harvest rates of those resources being the same or higher than salmon.

Table 5-14 lists the top resources used by Paxson households and Figure 5-9 depicts the most harvested resources, by per capita harvest, by Paxson households during the 2013 study year. Caribou made the largest contribution to Paxson's 2013 wild resource harvest (21% of total harvest), followed by moose (18%), sockeye salmon (13%), coho salmon (12%), beavers (5%) blueberries (5%), and Pacific halibut (4%) (Figure 5-9). Of all the available resources, sockeye salmon and blueberries were the most used by Paxson residents (both used by 88% of households), followed by lake trout (used by 75% of households), coho salmon, Pacific halibut, and Arctic grayling (each used by 63% of households), and caribou and moose (each used by 50% of households) (Table 5-14). Despite being among the top ranked resources used, the amounts of lake trout, Arctic grayling, Chinook salmon, and lowbush cranberries harvested individually contributed approximately 2% or less of Paxson's total 2013 wild resource harvest.



Note The "all other resources" category represents all species that contributed less than 2.5% to the total harvest weight.

Figure 5-9.–Top species harvested by percentage of total harvest in pounds usable weight, Paxson, 2013.

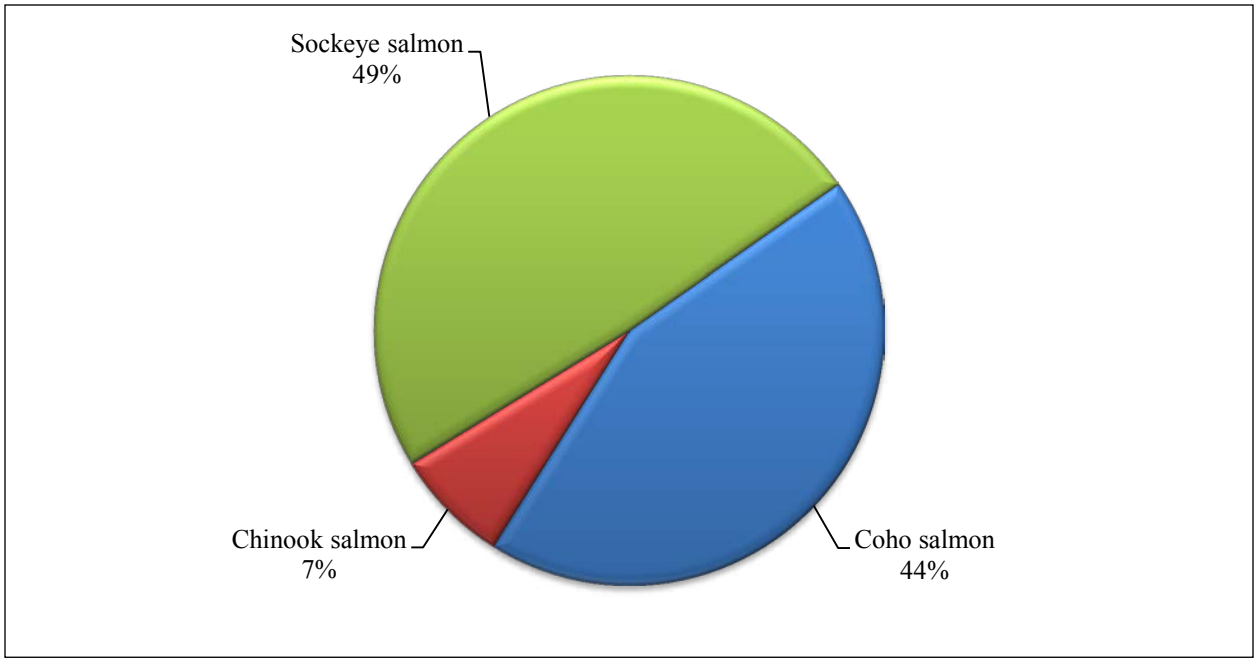


Figure 5-10.–Composition of salmon harvest in pounds usable weight, Paxson, 2013.

Salmon

For Paxson, salmon composed 27% of the wild resource harvest in pounds usable weight in 2013 (1,801 lb, or 57 lb per capita) (Figure 5-7; Table 5-13). The composition of the salmon harvest was as follows: 49% sockeye salmon (883 lb, or 28 lb per capita); 44% coho salmon (786 lb, or 25 lb per capita); and 7% Chinook salmon (132 lb, or 4 lb per capita) (Figure 5-10: Table 5-13).

During 2013, 100% of Paxson households used salmon, 63% harvested salmon, 63% shared salmon, and 63% reported receiving salmon (Table 5-13). Sockeye salmon, coho salmon, and Chinook salmon were the 3 salmon species used by Paxson residents. During 2013, 88% of households used sockeye salmon, 63% of households used coho salmon, and 38% of households used Chinook salmon.

The majority of the salmon harvest effort by Paxson households was directed toward coho salmon. Of the 63% of households that attempted to harvest coho salmon all were successful (Table 5-13). Similarly, all 38% of the households that attempted to harvest sockeye salmon and all 25% of the households that attempted to harvest Chinook salmon were successful. Some of the households that harvested salmon shared their catch with other Paxson households, especially sockeye salmon (63% of households received sockeye salmon); 13% of households received coho salmon and Chinook salmon.

In 2013, rod and reel gear was used to harvest an estimated 31% of the salmon harvest weight, dip nets were used to harvest about 28% of the salmon harvest weight, 23% of the salmon harvest weight was removed from commercial catch, and gillnets were used to harvest about 19% of the salmon harvest weight during the study year (Table 5-15).

During the 2013 study year, Paxson respondents reported harvesting sockeye salmon in the Copper River (Figure 5-11). Paxson residents are relatively close to the Copper River personal use dip net fishery, which is where they harvest most of their sockeye salmon. Most of the coho salmon were harvested in Port Valdez and in Bristol Bay. Coho salmon are most often caught using rod and reel gear. Paxson residents removed sockeye salmon, coho salmon, and Chinook salmon for personal use from commercial catch and also harvested sockeye salmon in Bristol Bay.

Table 5-15.–Estimated percentages of salmon harvested by gear type, resource, and total harvest, Paxson, 2013.

				Subsistence methods													
		Removed from commercial catch		Gillnet or seine		Fish wheel		Dip net		Other		Subsistence gear, any method		Rod and reel		Any method	
Resource	Percentage base	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Salmon	**Gear type**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**0.0%**	**0.0%**	**100.0%**	**100.0%**	**0.0%**	**0.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
	Resource	**23.4%**	**22.6%**	**17.2%**	**18.8%**	**0.0%**	**0.0%**	**33.5%**	**28.0%**	**0.0%**	**0.0%**	**50.6%**	**46.8%**	**25.9%**	**30.6%**	**100.0%**	**100.0%**
	Total	**23.4%**	**22.6%**	**17.2%**	**18.8%**	**0.0%**	**0.0%**	**33.5%**	**28.0%**	**0.0%**	**0.0%**	**50.6%**	**46.8%**	**25.9%**	**30.6%**	**100.0%**	**100.0%**
Chum 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%	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%	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%	0.0%	0.0%	0.0%	0.0%	0.0%
Coho salmon	Gear type	3.6%	4.2%	73.2%	75.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	24.8%	30.4%	96.8%	93.1%	38.5%	43.7%
	Resource	2.2%	2.2%	32.6%	32.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	32.6%	32.6%	65.2%	65.2%	100.0%	100.0%
	Total	0.8%	0.9%	12.6%	14.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	12.6%	14.2%	25.1%	28.5%	38.5%	43.7%
Chinook salmon	Gear type	7.1%	18.5%	2.4%	5.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	2.2%	3.2%	6.9%	2.9%	7.3%
	Resource	57.1%	57.1%	14.3%	14.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	14.3%	14.3%	28.6%	28.6%	100.0%	100.0%
	Total	1.7%	4.2%	0.4%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	1.0%	0.8%	2.1%	2.9%	7.3%
Pink 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%	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%	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%	0.0%	0.0%	0.0%	0.0%	0.0%
Sockeye salmon	Gear type	89.3%	77.3%	24.4%	18.6%	0.0%	0.0%	100.0%	100.0%	0.0%	0.0%	74.4%	67.3%	0.0%	0.0%	58.6%	49.0%
	Resource	35.7%	35.7%	7.1%	7.1%	0.0%	0.0%	57.1%	57.1%	0.0%	0.0%	64.3%	64.3%	0.0%	0.0%	100.0%	100.0%
	Total	20.9%	17.5%	4.2%	3.5%	0.0%	0.0%	33.5%	28.0%	0.0%	0.0%	37.7%	31.5%	0.0%	0.0%	58.6%	49.0%
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%	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%	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%	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%	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%	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%	0.0%	0.0%	0.0%	0.0%	0.0%

Source ADF&G Division of Subsistence household surveys, 2014.

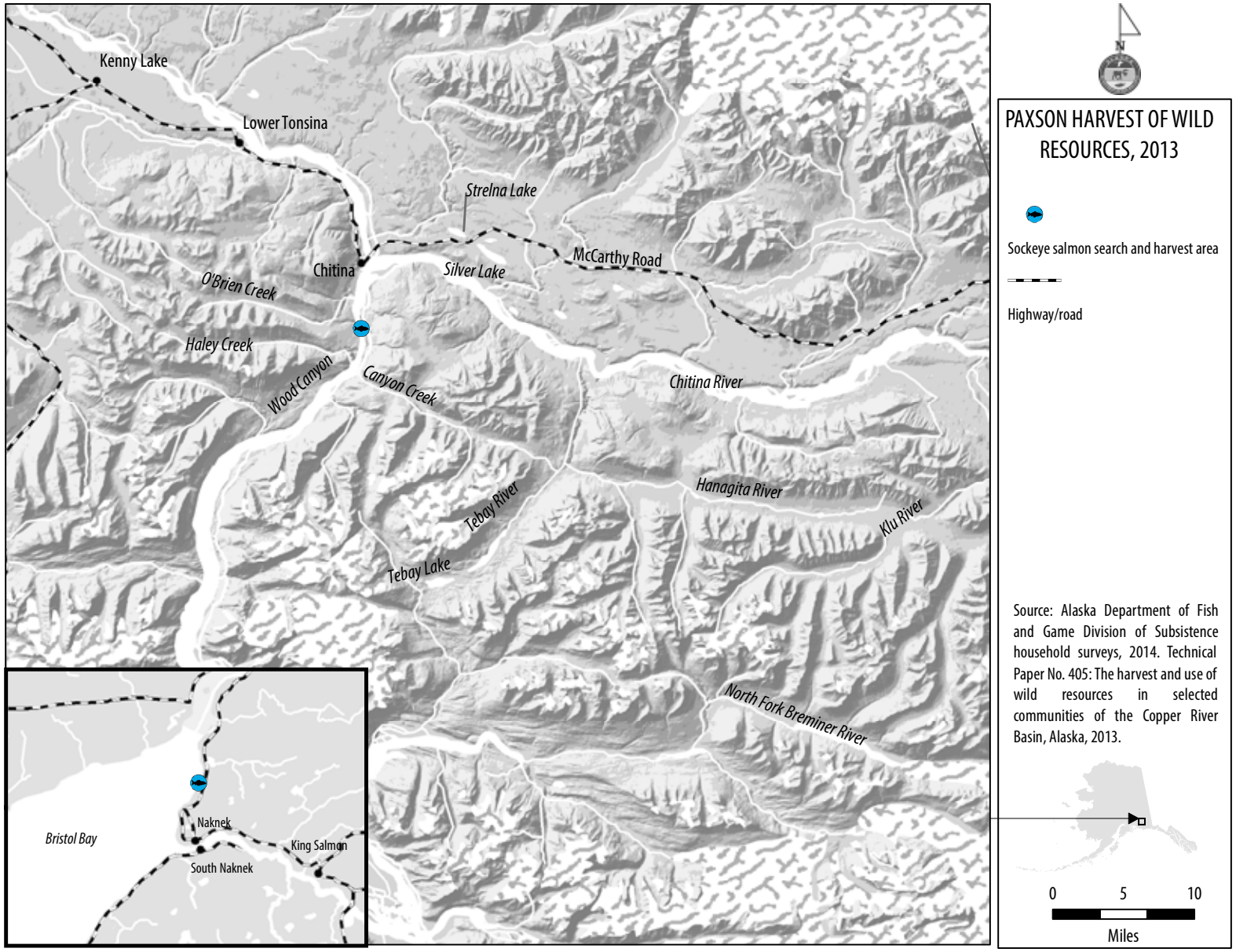


Figure 5-11.–Fishing and harvest locations of sockeye salmon, Paxson, 2013.

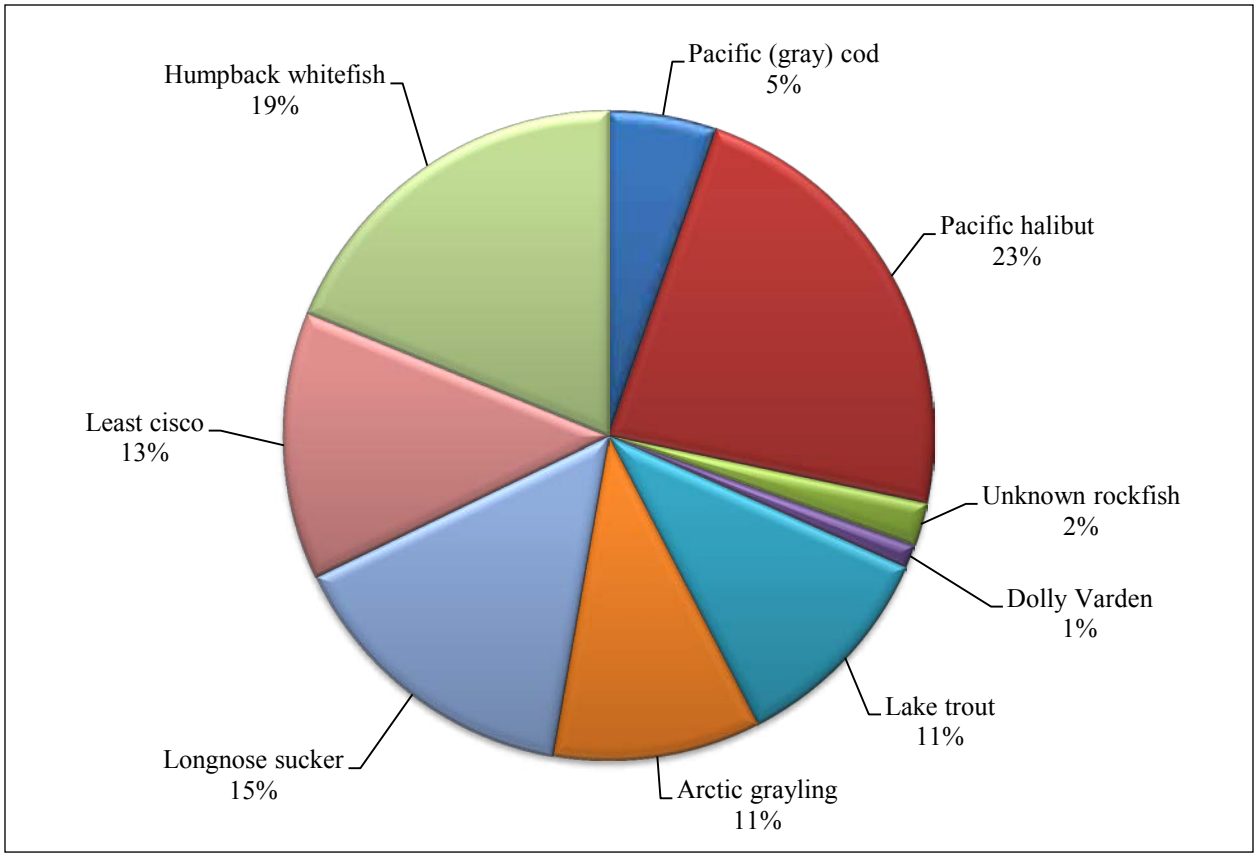


Figure 5-12.–Composition of nonsalmon fish harvest in pounds usable weight, Paxson, 2013.

Nonsalmon Fish

In 2013, Paxson residents harvested an estimated total of 1,279 lb, or 40 lb per capita, of nonsalmon fish (Table 5-13). Nonsalmon fish composed 19% of the wild resource harvest in pounds in 2013 (Figure 5-7). In terms of total pounds and percentages harvested, most of the nonsalmon fish harvest was Pacific halibut (293 lb, or 9 lb per capita), followed by humpback whitefish (241 lb, or 8 lb per capita), longnose sucker (193 lb, or 6 lb per capita), least cisco (171 lb, or 5 lb per capita), lake trout (138 lb, or 4 lb per capita), and Arctic grayling (133 lb, or 4 lb per capita); combined, these species composed 92% of the nonsalmon fish harvest[4] (Table 5-13; Figure 5-12). Paxson residents also harvested Pacific cod, rockfish, and Dolly Varden.

During 2013, 75% of Paxson households used and harvested nonsalmon fish and 38% of households shared and received nonsalmon fish. Pacific halibut, harvested non-locally, was the primary nonsalmon fish shared, with 38% of Paxson households having received halibut from other households.

Table 5-16 lists the number and pounds of each nonsalmon fish species harvested by Paxson residents in 2013 in percentages by gear type. Paxson residents harvested most of their nonsalmon fish with rod and reel (50% of usable weight) and by fish spear (47% of usable weight). Some of the harvest of lake trout (20%) and all of the harvest of Dolly Varden was accomplished by jigging through the ice.

During the 2013 study year, Paxson respondents reported harvesting humpback whitefish, least cisco, and longnose suckers in the Maclaren River. Longnose suckers were also harvested in the Tangle River. Lake trout were harvested in Boulder Creek, Round Tangle Lake, Long Tangle Lake, Summit Lake, and Paxson Lake (Figure 5-13). Arctic grayling were harvested in Boulder Creek, Round Tangle Lake, Long Tangle

4. A portion of Paxson's 2013 nonsalmon harvest was not used for human consumption. Most of the reported least cisco harvest and all of the reported longnose sucker harvest were used for dog food.

Table 5-16.–Estimated percentages of nonsalmon fish harvested by gear type, resource, and total nonsalmon fish harvest, Paxson, 2013.

				Subsistence methods											
		Removed from commercial catch		Gillnet or seine		Ice fish		Other		Subsistence gear, any method		Rod and reel		Any method	
Resource	Percentage base	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Nonsalmon fish	**Gear type**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
	Resource	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**2.1%**	**3.3%**	**58.6%**	**47.2%**	**60.7%**	**50.5%**	**39.3%**	**49.5%**	**100.0%**	**100.0%**
	Total	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**2.1%**	**3.3%**	**58.6%**	**47.2%**	**60.7%**	**50.5%**	**39.3%**	**49.5%**	**100.0%**	**100.0%**
Pacific herring	Gear type	0.0%	0.0%	0.0%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	0.0%	0.0%	3.1%	10.9%	1.2%	5.4%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	1.2%	5.4%	1.2%	5.4%
Pacific tomcod	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Starry flounder	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Lingcod	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Pacific halibut	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	52.2%	46.4%	20.5%	23.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	20.5%	23.0%	20.5%	23.0%
Arctic lamprey	Gear type	0.0%	0.0%	0.0%	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%	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%	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%	0.0%	0.0%	1.2%	4.3%	0.5%	2.2%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	0.5%	2.2%	0.5%	2.2%
Unknown sculpin	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%

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Table 5-16.–Page 2 of 3.

Resource	Percentage base	Removed from commercial catch		Subsistence methods											
				Gillnet or seine		Ice fish		Other		Subsistence gear, any method		Rod and reel		Any method	
		Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Burbot	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Dolly Varden	Gear type	0.0%	0.0%	0.0%	0.0%	54.5%	35.1%	0.0%	0.0%	1.9%	2.3%	0.0%	0.0%	1.2%	1.2%
	Resource	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	1.2%	1.2%	0.0%	0.0%	1.2%	1.2%	0.0%	0.0%	1.2%	1.2%
Lake trout	Gear type	0.0%	0.0%	0.0%	0.0%	45.5%	64.9%	0.0%	0.0%	1.6%	4.3%	9.8%	17.4%	4.8%	10.8%
	Resource	0.0%	0.0%	0.0%	0.0%	20.0%	20.0%	0.0%	0.0%	20.0%	20.0%	80.0%	80.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	1.0%	2.2%	0.0%	0.0%	1.0%	2.2%	3.8%	8.6%	4.8%	10.8%
Arctic grayling	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	33.7%	21.0%	13.3%	10.4%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	13.3%	10.4%	13.3%	10.4%
Northern pike	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Longnose sucker	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	32.8%	31.9%	31.6%	29.8%	0.0%	0.0%	19.2%	15.1%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	19.2%	15.1%	19.2%	15.1%	0.0%	0.0%	19.2%	15.1%
Cutthroat trout	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Rainbow trout	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Unknown trout	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Broad whitefish	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Least cisco	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	50.8%	28.2%	49.1%	26.4%	0.0%	0.0%	29.8%	13.3%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	29.8%	13.3%	29.8%	13.3%	0.0%	0.0%	29.8%	13.3%
Humpback whitefish	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	16.4%	39.9%	15.8%	37.2%	0.0%	0.0%	9.6%	18.8%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	9.6%	18.8%	9.6%	18.8%	0.0%	0.0%	9.6%	18.8%
Round whitefish	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%

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Table 5-16.–Page 3 of 3.

Resource	Percentage base	Removed from commercial catch		Subsistence methods											
				Gillnet or seine		Ice fish		Other		Subsistence gear, any method		Rod and reel		Any method	
		Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Unknown whitefishes	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%

Source ADF&G Division of Subsistence household surveys, 2014.

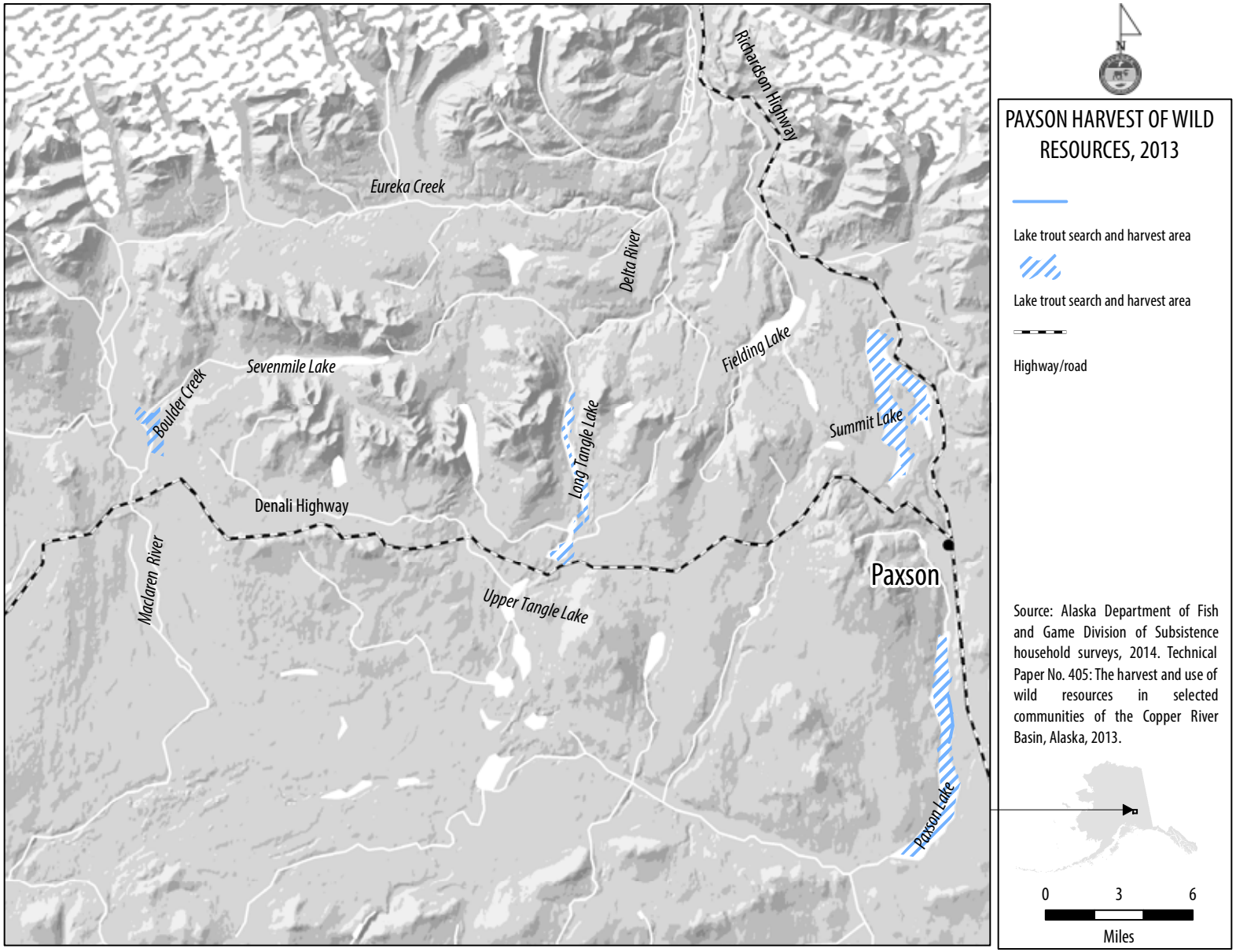


Figure 5-13.–Fishing and harvest locations of lake trout, Paxson, 2013.

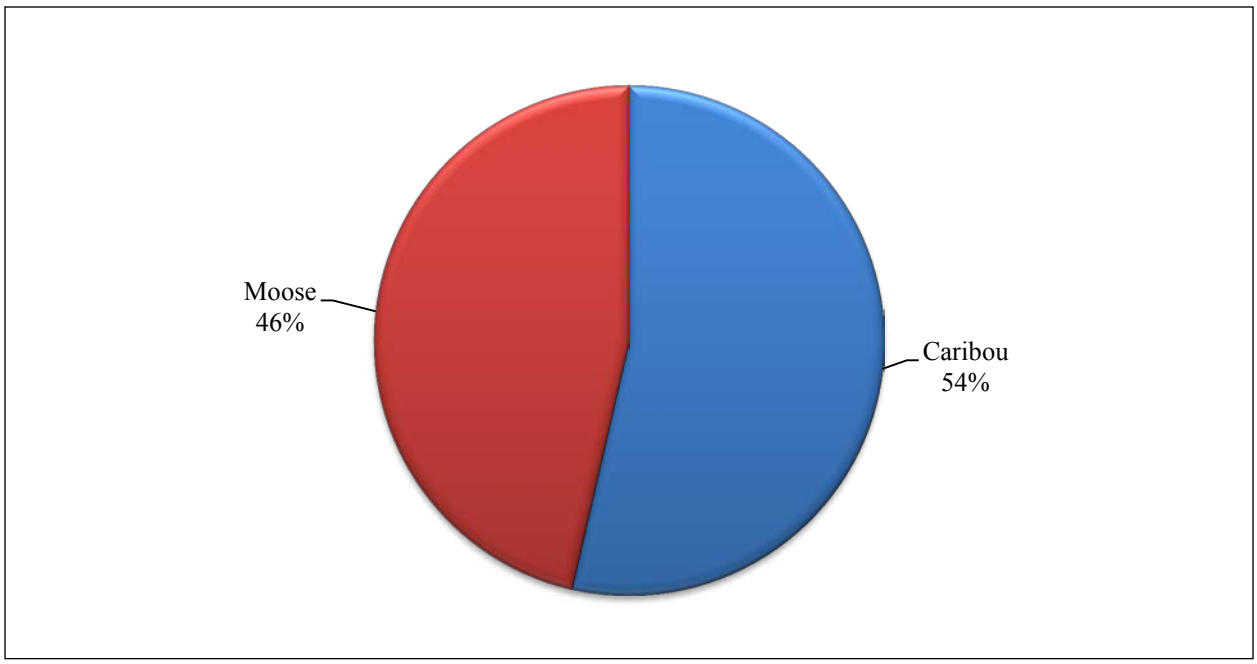


Figure 5-14.–Composition of large land mammal harvest in pounds usable weight, Paxson, 2013.

Lake, and Paxson Lake. Dolly Varden were harvested in Boulder Creek. Paxson residents traveled to Prince William Sound to harvest Pacific halibut, Pacific cod, and rockfish in Jack Bay and Tatitlek Narrows.

Large Land Mammals

In 2013, large land mammals made up 39% of the total Paxson wild resource harvest by weight (2,668 lb, or 84 lb per capita) (Figure 5-7; Table 5-13). Moose and caribou made up the composition of large land mammal harvest for the community (Figure 5-14). Caribou provided 54% (1,430 lb) of the usable pounds of large land mammals harvested by Paxson households and moose provided 46% (1,238 lb).

Caribou was used by 50% of Paxson households (75% hunted caribou and 50% of Paxson households were successful harvesters) (Table 5-13). According to the study, the majority of the successful caribou hunting took place during fall. In September 2013, 8 caribou were harvested; one caribou was harvested in August 2013; an additional caribou was harvested in March 2013 (Table 5-17). Caribou was shared among Paxson households and Paxson households shared caribou with other communities (36% of households gave caribou away and 13% of Paxson households received caribou from other households).

Moose was also used by 50% of Paxson households (75% hunted moose and 25% of Paxson households were successful harvesters) (Table 5-13). According to the study, all of the successful moose hunting took place during September 2013, during which Paxson households harvested 3 moose (Table 5-17). Moose was shared among Paxson households (25% of households gave moose away and 38% of households received moose from other households).

In 2013, 13% of Paxson households attempted to harvest black bears and 25% attempted to harvest brown bears (Table 5-13). No Paxson hunters were successful in harvesting bears in 2013.

During the 2013 study year, Paxson households reported hunting caribou along the Denali Highway from Paxson in the east to Crazy Notch in the west, within the Maclaren River watershed, around Long Tangle Lake, Round Tangle Lake, Upper Tangle Lake, Tangle Lakes, Dickey Lake, and along the southern and western shores of Summit Lake (Figure 5-15). Residents hunted moose along the Richardson Highway, around Gunn Lake, Fish Creek, Upper Fish Lake, Lower Fish Lake, Wolverine Mountain, Summit Lake,

Table 5-17.–Estimated large land mammal harvests by month and sex, Paxson, 2013.

Resource	Estimated harvest by month													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk	**Total**
All large land mammals	**0.0**	**0.0**	**1.4**	**0.0**	**0.0**	**0.0**	**0.0**	**1.4**	**11.0**	**0.0**	**0.0**	**0.0**	**0.0**	**13.8**
Bison	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Black bear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Brown bear	0.0	0.0	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	0.0	0.0	1.4	0.0	0.0	0.0	0.0	1.4	8.3	0.0	0.0	0.0	0.0	**11.0**
Caribou, male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	8.3	0.0	0.0	0.0	0.0	**9.6**
Caribou, female	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**1.4**
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	2.8	0.0	0.0	0.0	0.0	**2.8**
Moose, bull	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	0.0	0.0	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**
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, 2014.

Upper Tangle Lake, Tangle Lakes, Dickey Lake, and within the upper watershed of the Maclaren River. Both black bears and brown bears were hunted along the Denali Highway from Paxson in the east to Crazy Notch in the west, around Long Tangle Lake, Round Tangle Lake, Upper Tangle Lake, Tangle Lakes, Dickey Lake, and brown bears were hunted for on the eastern shore of Paxson Lake.

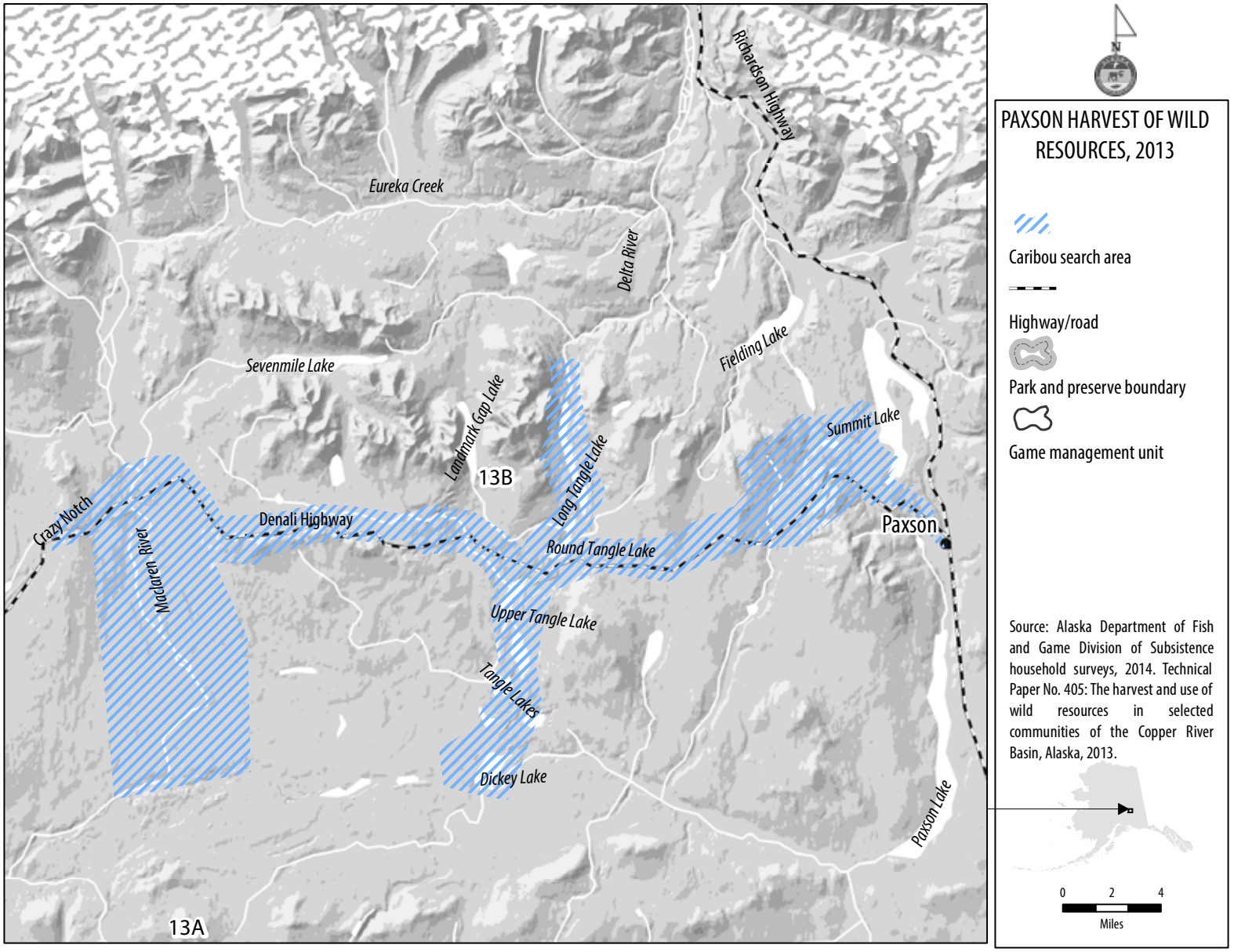


Figure 5-15.–Hunting locations of caribou, Paxson, 2013.

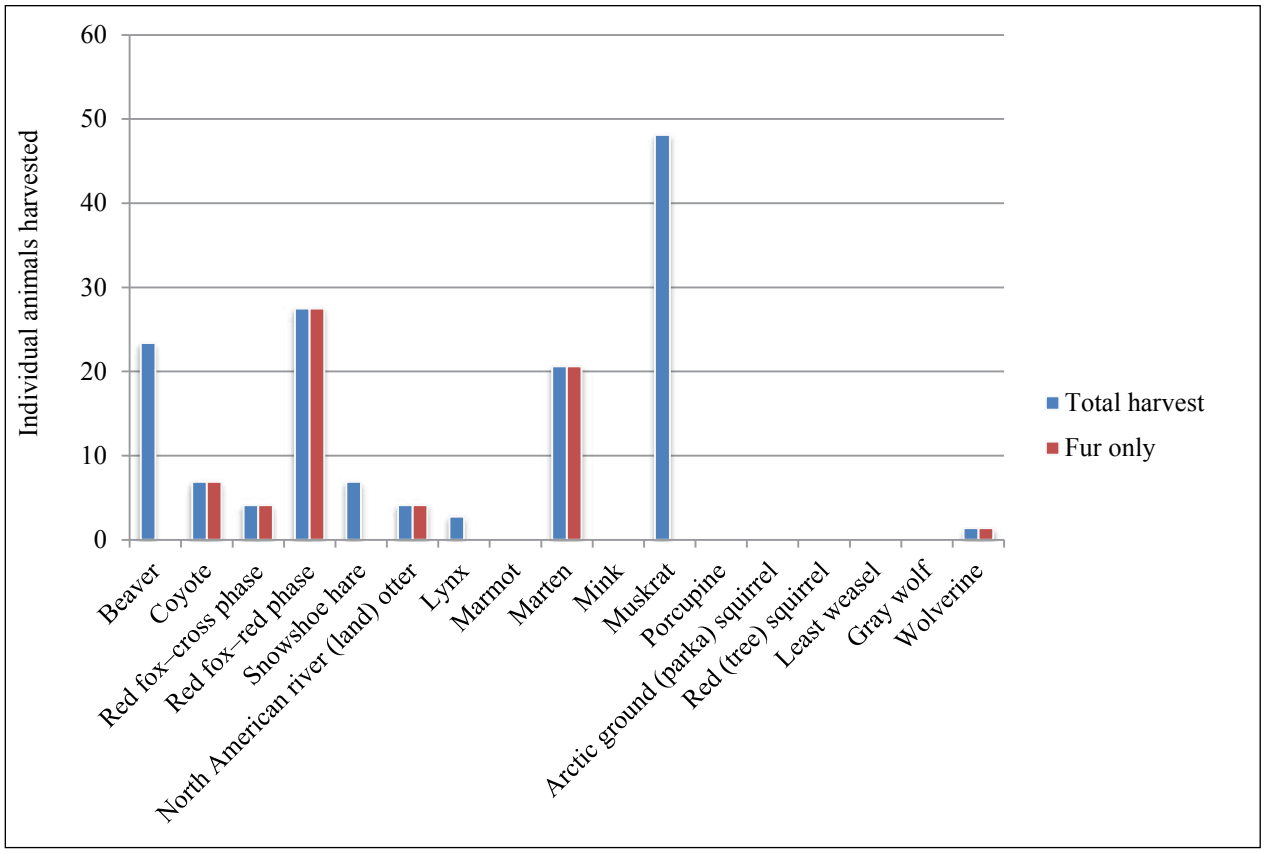


Figure 5-16.–Estimated small land mammal/furbearer harvests for fur and food only, Paxson, 2013.

Small Land Mammals/Furbearers

As listed in Table 5-13, the total harvest of small land mammals by Paxson residents in 2013 for food was 462 lb (15 lb per capita). The harvest of small land mammals composed approximately 7% of Paxson's total harvest of wild food resources in 2013 (Figure 5-7). Paxson's small land mammal food harvest consisted of beavers (351 lb), muskrats (87 lb), snowshoe hares (14 lb), and lynx (11 lb) (Table 5-13); all of these species were used for both food and fur (Figure 5-16). These species also made up 56% of the total harvest of individual small land mammals (Figure 5-17). Other furbearers such as coyotes, red foxes, river otters, martens, and wolverines were also harvested—mostly for sale in the fur market (Figure 5-16).

Beavers were harvested in September, October, and April; muskrats were harvested in October and February; snowshoe hares were harvested in November and December; lynx, river otters, and a wolverine were harvested during December; coyotes were harvested during December and January; and red foxes and martens were only harvested during November (Table 5-18). Because fur is at its prime during the coldest months of the year, most (93%) of the furbearer harvests occurred from October through February.

The search and harvest areas for small land mammals and furbearers in 2013 occurred in an area extending from the western shore of Paxson Lake to the Excelsior Creek drainage toward the west (Figure 5-18).

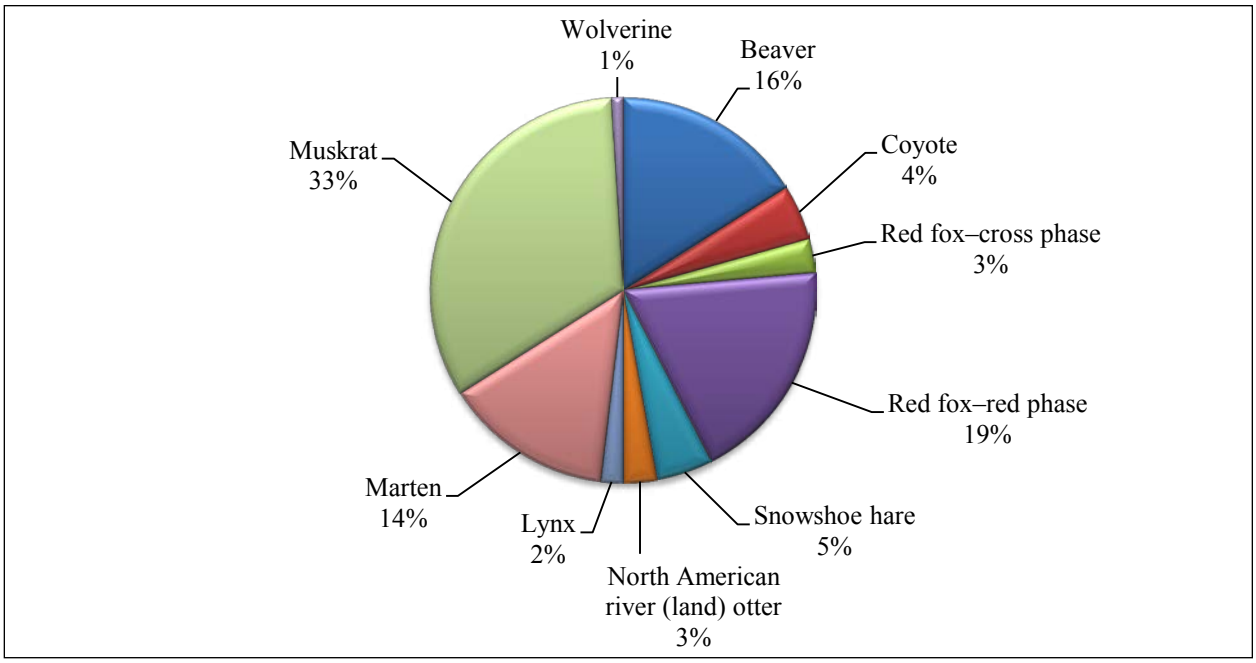


Figure 5-17.–Composition of small land mammal/furbearer harvest by individual animals harvested, Paxson, 2013.

Table 5-18.–Estimated small land mammal/furbearer harvests by month, Paxson, 2013.

	Estimated harvest by month													
Resource	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk	**Total**
All small land mammals	**2.8**	**6.9**	**0.0**	**2.8**	**0.0**	**0.0**	**0.0**	**0.0**	**6.9**	**55.0**	**56.4**	**15.1**	**0.0**	**145.8**
Beaver	0.0	0.0	0.0	2.8	0.0	0.0	0.0	0.0	6.9	13.8	0.0	0.0	0.0	**23.4**
Coyote	2.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.1	0.0	**6.9**
Red fox–cross phase	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.1	0.0	0.0	**4.1**
Red fox–red phase	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	27.5	0.0	0.0	**27.5**
Snowshoe hare	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.1	2.8	0.0	**6.9**
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	4.1	0.0	**4.1**
Lynx	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	0.0	**2.8**
Marmot	0.0	0.0	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	20.6	0.0	0.0	**20.6**
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	6.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	41.3	0.0	0.0	0.0	**48.1**
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	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	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**
Least 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	1.4	0.0	**1.4**

Source ADF&G Division of Subsistence household surveys, 2014.

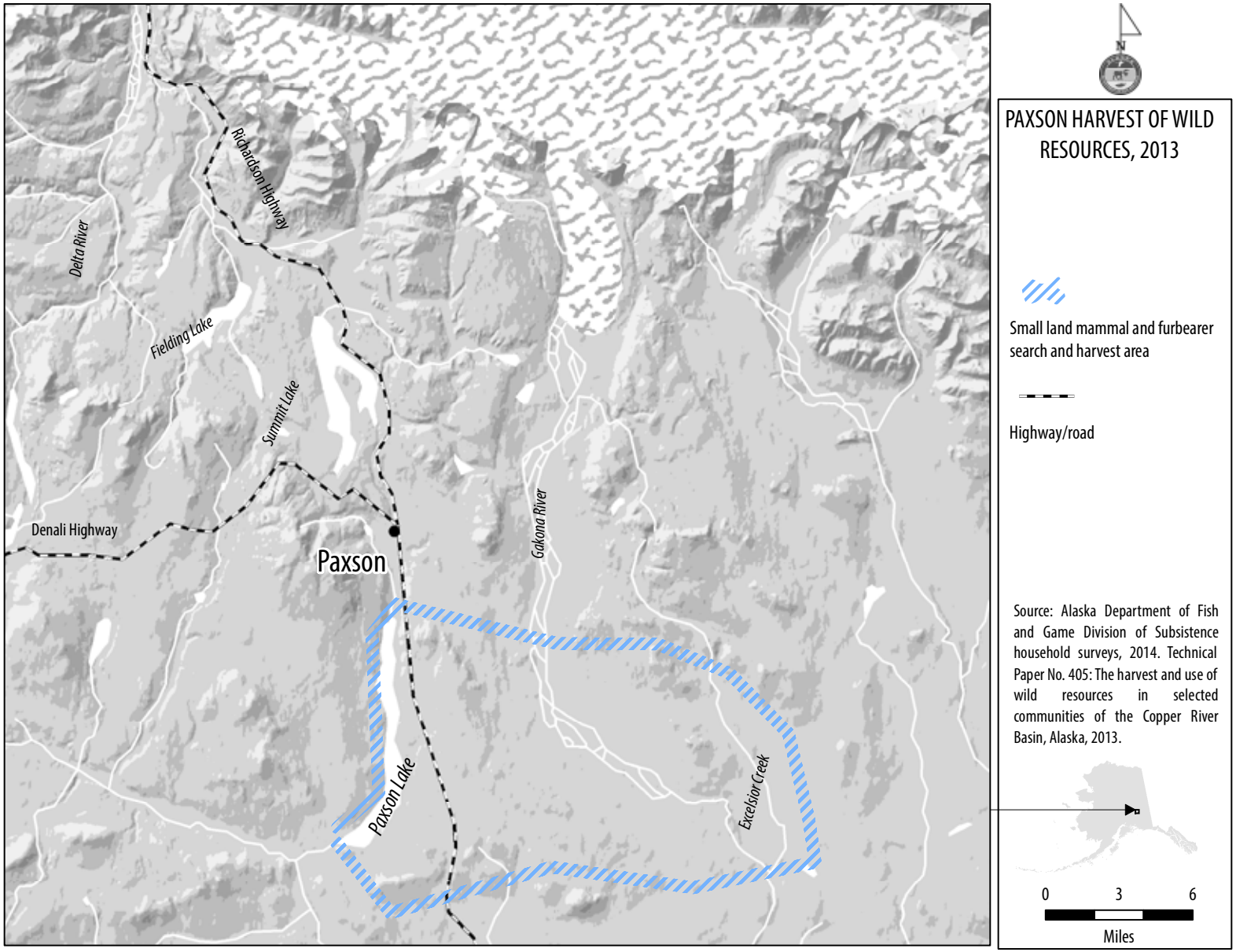
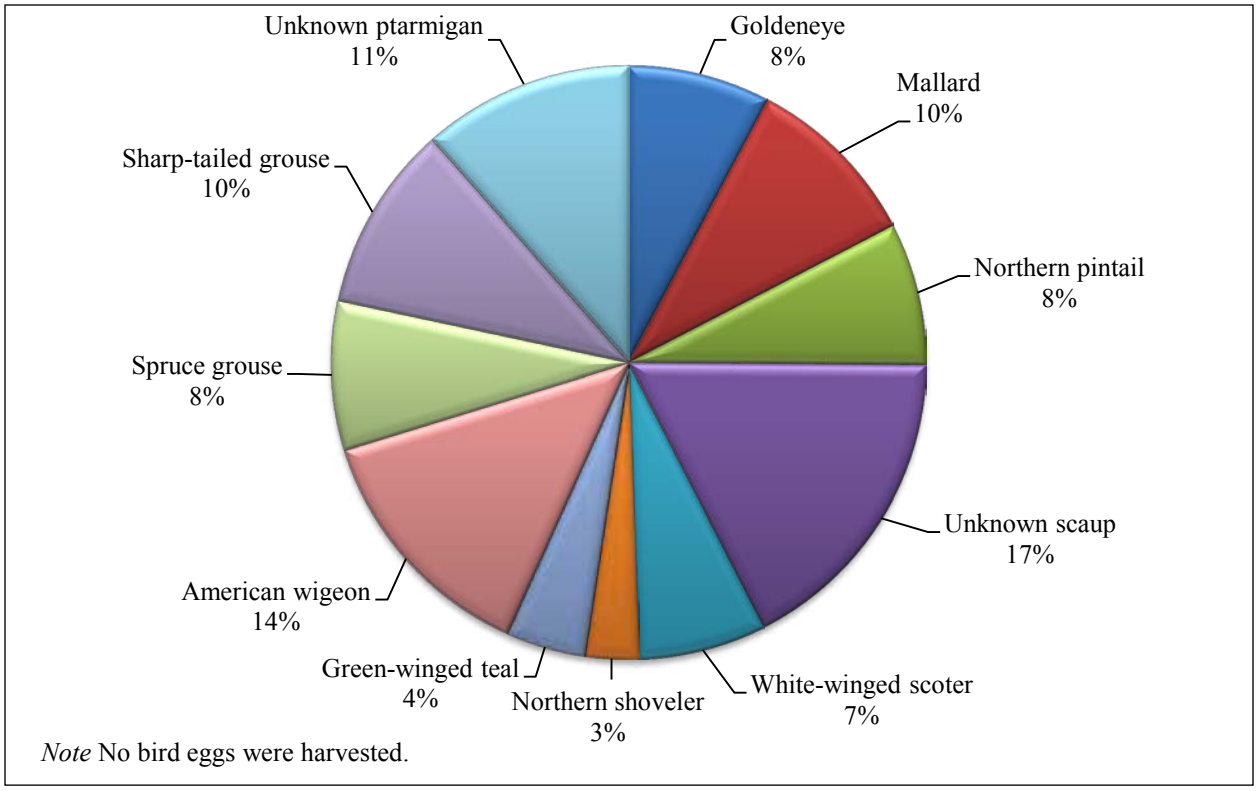


Figure 5-18.–Hunting and trapping locations of small land mammals/furbearers, Paxson, 2013.



Note No bird eggs were harvested.

Figure 5-19.–Composition of bird and bird egg harvest in pounds usable weight, Paxson, 2013.

Birds and Eggs

Birds were harvested and used by 25% of Paxson households (Table 5-13). Migratory birds composed 71% of the total bird harvest (Figure 5-19). The total harvest of migratory birds was an estimated 100 lb, or 3 lb per capita (Table 5-13). The total harvest of upland game birds, which includes grouse and ptarmigan, was 42 lb, or a little more than 1 lb per capita.

Ducks made up the entirety of Paxson's migratory bird harvest in 2013. Scaups accounted for most of the bird harvest by the community (25 lb) followed by American wigeons and mallards, which provided 19 lb and 14 lb, respectively. Other duck species harvested by Paxson residents included goldeneye, northern pintail, white-winged scoter, northern shoveler, and green-winged teal. Upland bird harvests consisted of ptarmigan (16 lb), sharp-tailed grouse (14 lb), and spruce grouse (12 lb); the per capita harvest of each species was approximately one-half pound.

Most bird hunting by Paxson residents occurs during the fall (Table 5-19). In 2013, Paxson residents harvested ducks at Paxson Lake and in the Maclaren River and Boulder Creek watersheds north of the Denali Highway (Figure 5-20). Ptarmigan were harvested along the Denali Highway from Paxson in the east to the Maclaren River in the west and grouse were harvested along the eastern shore of Paxson Lake.

Marine Invertebrates

As listed in Table 5-13, the total harvest of marine invertebrates by Paxson residents in 2013 was made up of an estimated 9 gal of razor clams (26 lb usable weight). The harvest of marine invertebrates totaled less than 1% of the total wild food harvest in 2013 (Figure 5-7). Marine invertebrates were used by 38% of households and harvested by 13% of households. Shrimp were received and used by 13% of Paxson households (Table 5-13).

Table 5-19.–Estimated bird and bird egg harvests by season, Paxson, 2013.

Resource	Estimated harvest by season					
	Winter	Spring	Summer	Fall	Season unknown	**Total**
All birds	**17.9**	**0.0**	**0.0**	**177.4**	**0.0**	**195.3**
Canvasback	0.0	0.0	0.0	0.0	0.0	**0.0**
Spectacled eider	0.0	0.0	0.0	0.0	0.0	**0.0**
Goldeneye	0.0	0.0	0.0	13.8	0.0	**13.8**
Mallard	0.0	0.0	0.0	13.8	0.0	**13.8**
Northern pintail	0.0	0.0	0.0	13.8	0.0	**13.8**
Unknown scaup	0.0	0.0	0.0	27.5	0.0	**27.5**
Black scoter	0.0	0.0	0.0	0.0	0.0	**0.0**
White-winged scoter	0.0	0.0	0.0	11.0	0.0	**11.0**
Northern shoveler	0.0	0.0	0.0	6.9	0.0	**6.9**
Green-winged teal	0.0	0.0	0.0	20.6	0.0	**20.6**
American wigeon	0.0	0.0	0.0	27.5	0.0	**27.5**
Unknown ducks	0.0	0.0	0.0	0.0	0.0	**0.0**
Brant	0.0	0.0	0.0	0.0	0.0	**0.0**
Cackling goose	0.0	0.0	0.0	0.0	0.0	**0.0**
Canada goose	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**
Emperor goose	0.0	0.0	0.0	0.0	0.0	**0.0**
Snow goose	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**
Tundra (whistling) swan	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**
Spruce grouse	0.0	0.0	0.0	16.5	0.0	**16.5**
Sharp-tailed grouse	11.0	0.0	0.0	9.6	0.0	**20.6**
Ruffed grouse	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown ptarmigan	6.9	0.0	0.0	16.5	0.0	**23.4**
Unknown duck eggs	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown goose eggs	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown gull eggs	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown eggs	0.0	0.0	0.0	0.0	0.0	**0.0**

Source ADF&G Division of Subsistence household surveys, 2014.

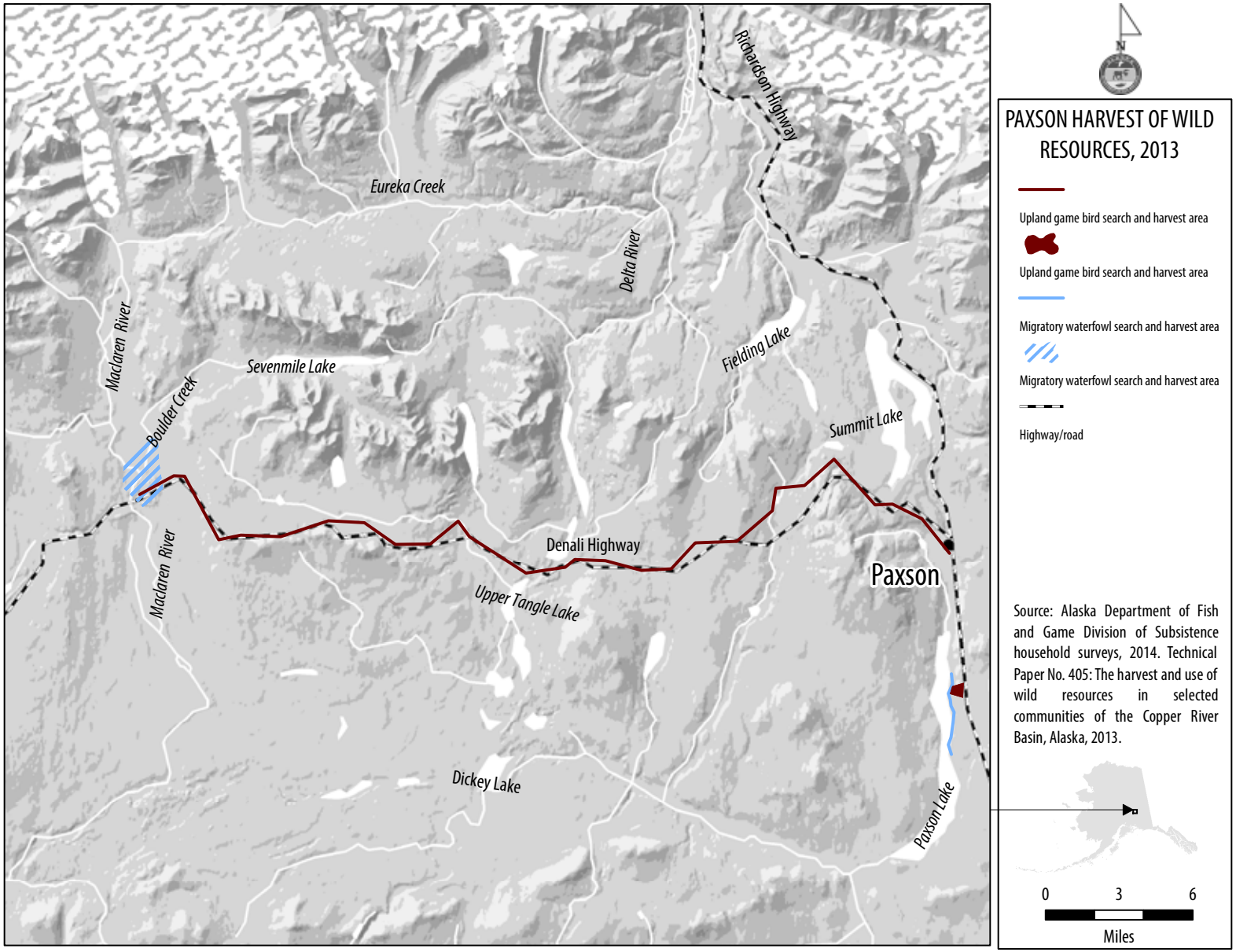


Figure 5-20.–Hunting and harvest locations of migratory waterfowl and upland game birds, Paxson, 2013.

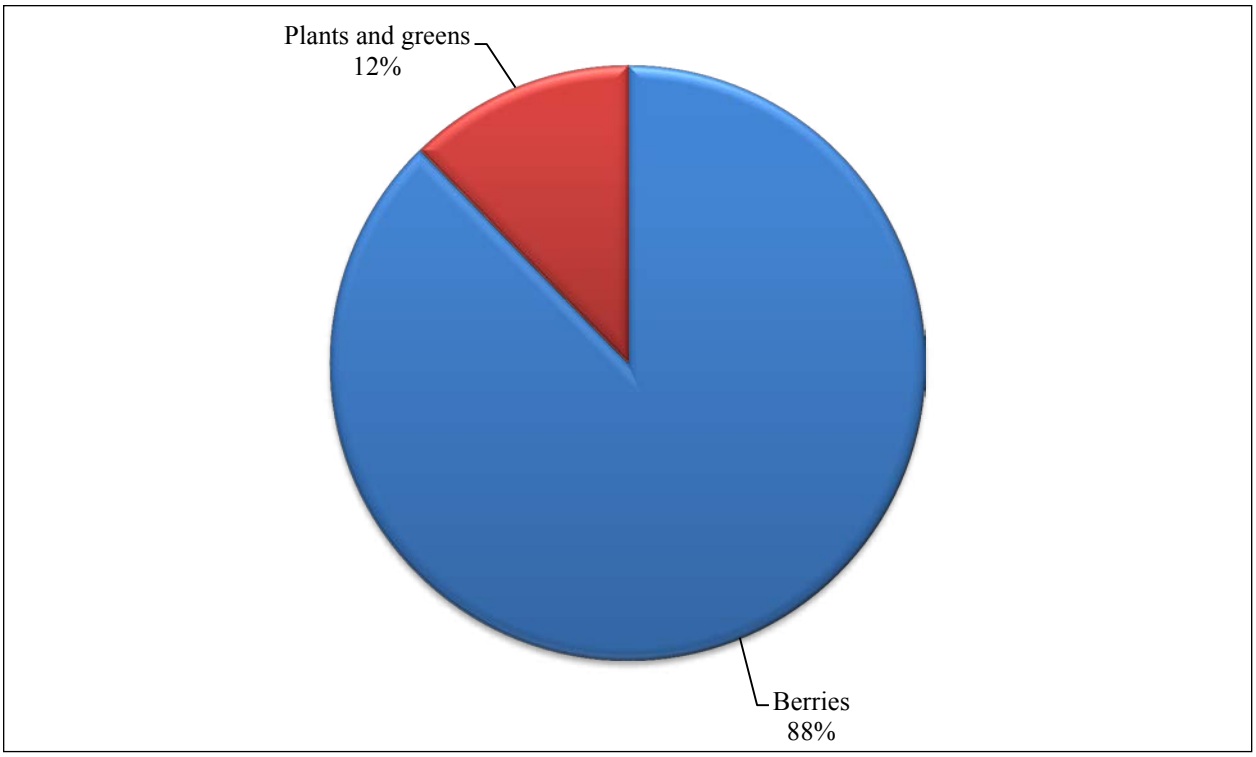


Figure 5-21.–Composition of vegetation harvest by type and pounds usable weight, Paxson, 2013.

Vegetation

The majority (88%) of households in Paxson harvested and used vegetation during the 2013 study year (Table 5-13). In 2013, Paxson residents harvested 391 lb, or 12 lb per capita, of edible vegetation. Edible vegetation consisted of blueberries, lowbush cranberries, raspberries, dandelion greens, wormwood, and fireweed. Berries composed 88% of the vegetation harvest in pounds usable weight and were harvested and used by 88% of households; plants and greens composed 12% of the vegetation harvest and were harvested and used by 13% percent of households (Figure 5-21; Table 5-13). Paxson residents also harvested 15 cords of firewood for home heating in 2013 (Table 5-13).

Berries were harvested along the Denali Highway near Little Swede Lake and around the radio tower north and to the east of Paxson Lake (Figure 5-22). Plants and greens were harvested on the eastern shore of Summit Lake.

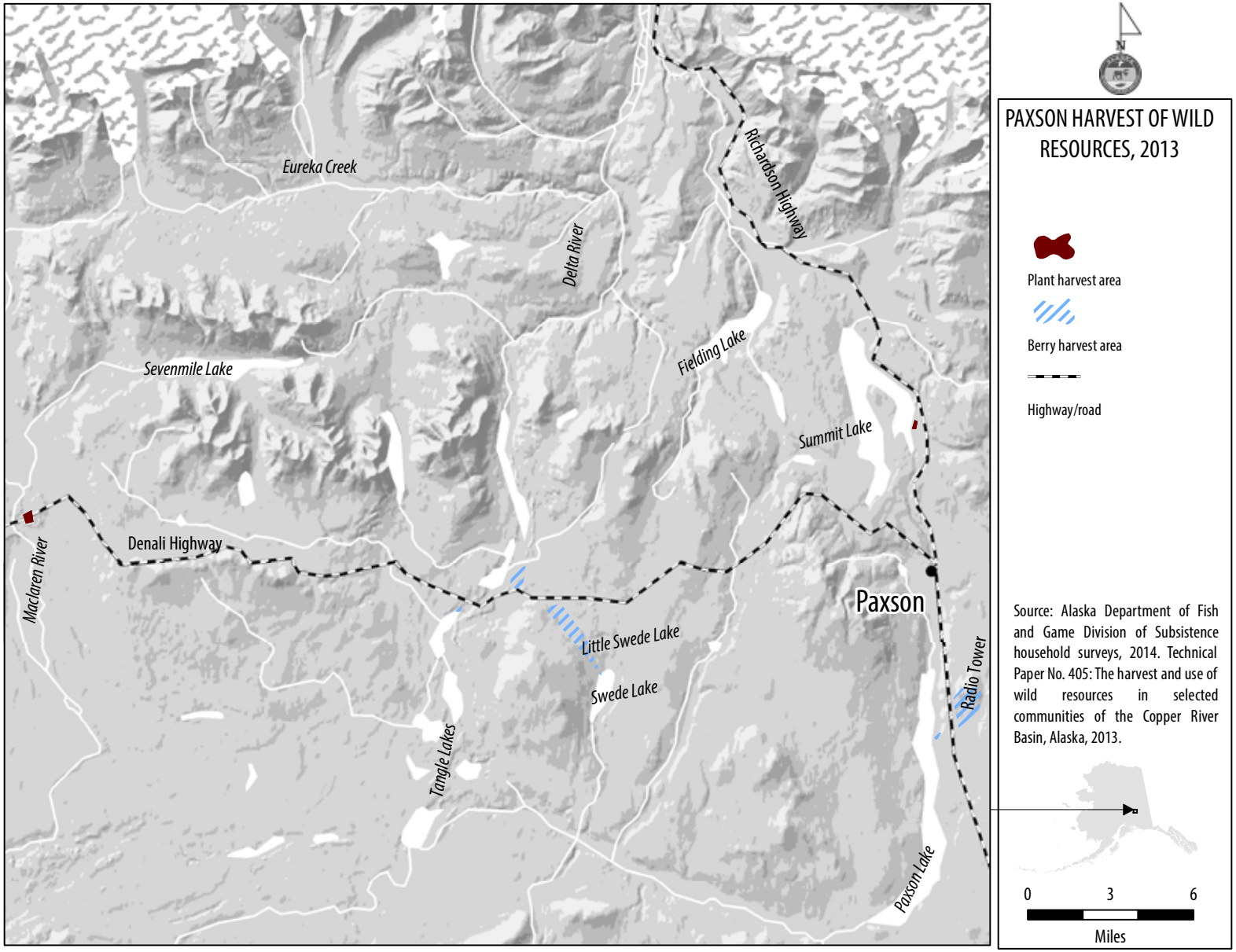


Figure 5-22.–Gathering and harvest locations of berries and plants, greens, and mushrooms, Paxson, 2013.

Comparing Harvests and Uses in 2013 with Previous Years

Harvest Assessments

For 10 resource categories and for all resources combined, survey respondents were asked to assess whether their uses and harvests in the 2013 study year were less, more, or about the same as other recent years. "Other recent years" was defined as about the last 5 years. Table 5-20 reports the number of valid responses for each category, the number of households that did not respond, and the number of households that did not use a resource category or all resources combined. In Table 5-20, response percentages are based on the number of valid responses for each category to contextualize these assessments within the set of community households that typically use each category.

Figure 5-23 depicts responses to the "less, same, more" assessment question. Households that said they did not ordinarily "use" something are not included within the results. This results in fewer responses for less commonly used categories, such as small mammals or marine mammals, and manifests in the chart as a very short series of colored bars (or no colored bars at all) compared to categories such as salmon or vegetation, which are ordinarily used by most households. Some households did not respond to the question.

Taking all the resource categories into consideration, 63% Paxson households said they used the same amounts of wild resources in general over the previous 12 months compared to recent years (Table 5-20). A smaller number, 38% of all households, said they used less wild resources in 2013 compared to recent years. No households said they used more. Paxson households reported that use levels of upland game birds, such as grouse and ptarmigan, had changed more than any other resource category (Figure 5-23). One-half of the households with valid responses (50%) reported using less upland game birds during the previous 12 months compared to recent years (Table 5-20). Paxson households reported that use levels of nonsalmon fish and large land mammals, 2 major resource categories, had also declined significantly (38% of households said they used less nonsalmon fish and less large land mammals during 2013). Moreover, use levels of salmon, small land mammals, migratory waterfowl, and vegetation were all reported to have declined by 25%.

Table 5-21 depicts the reasons Paxson respondents gave for lower levels of use by resource category. This was an open-ended question, and respondents could provide more than 1 reason for each resource category. Project staff grouped the responses into categories, such as regulations hindering residents from harvesting resources, 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 outside effects on residents' opportunities to engage in hunting, fishing, and gathering activities.

Of the surveyed households that provided assessments of lowered use in the 2013 survey, the reasons most cited for less use of wild resources overall were that resources were less available, lack of effort, unsuccessful harvest efforts, working/no time, regulation interference, and small/diseased animals (33% each). Lack of equipment, lack of effort, weather/environment, and working/no time were the main reasons cited for less use of salmon and family/personal reasons, resources were less available, travel distance being too far, unsuccessful efforts, and small/diseased animals were the primary reasons given for less use of large land mammals. With regard to reasons for more use of any resource in 2013, increased effort was the most cited reason (67% of households providing a valid response) (Table 5-22). Reasons for more use were given only for the categories upland game birds, marine invertebrates, and vegetation.

The impact to households from not getting enough wild resources is reported in Table 5-23. The most notable impacts were for salmon and large land mammals. For salmon, 3 households reported that the impact of not getting enough salmon in 2013 was severe. For large land mammals the impact was noted as minor by 1 household, major by 1 household, and severe for 1 household. For all resources, 3 households said that they did not get enough resources in 2013 and the impact from not getting enough resources with evenly split between minor, major, and severe (1 household each).

Table 5-20.–Changes in household uses of resources compared to recent years, Paxson, 2013.

Resource category	Sampled households	Valid responses[a]	Households reporting use: Total households Number	Total households Percentage	Less Number	Less Percentage	Same Number	Same Percentage	More Number	More Percentage	Households not using Number	Households not using Percentage
Any resource	8	8	8	100.0%	7	87.5%	7	87.5%	3	37.5%	8	100.0%
All resources	**8**	**8**	**8**	**100.0%**	**3**	**37.5%**	**5**	**62.5%**	**0**	**0.0%**	**0**	**0.0%**
Salmon	8	8	8	100.0%	2	25.0%	5	62.5%	1	12.5%	0	0.0%
Nonsalmon fish	8	8	7	87.5%	3	37.5%	4	50.0%	0	0.0%	1	12.5%
Large land mammals	8	8	6	75.0%	3	37.5%	3	37.5%	0	0.0%	2	25.0%
Small land mammals	8	8	2	25.0%	2	25.0%	0	0.0%	0	0.0%	6	75.0%
Marine mammals	8	8	0	0.0%	0	0.0%	0	0.0%	0	0.0%	8	100.0%
Migratory waterfowl	8	8	4	50.0%	2	25.0%	2	25.0%	0	0.0%	4	50.0%
Other birds	8	8	6	75.0%	4	50.0%	1	12.5%	1	12.5%	2	25.0%
Bird eggs	8	8	0	0.0%	0	0.0%	0	0.0%	0	0.0%	8	100.0%
Marine invertebrates	8	8	3	37.5%	0	0.0%	2	25.0%	1	12.5%	5	62.5%
Vegetation	8	8	8	100.0%	2	25.0%	5	62.5%	1	12.5%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2014.

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

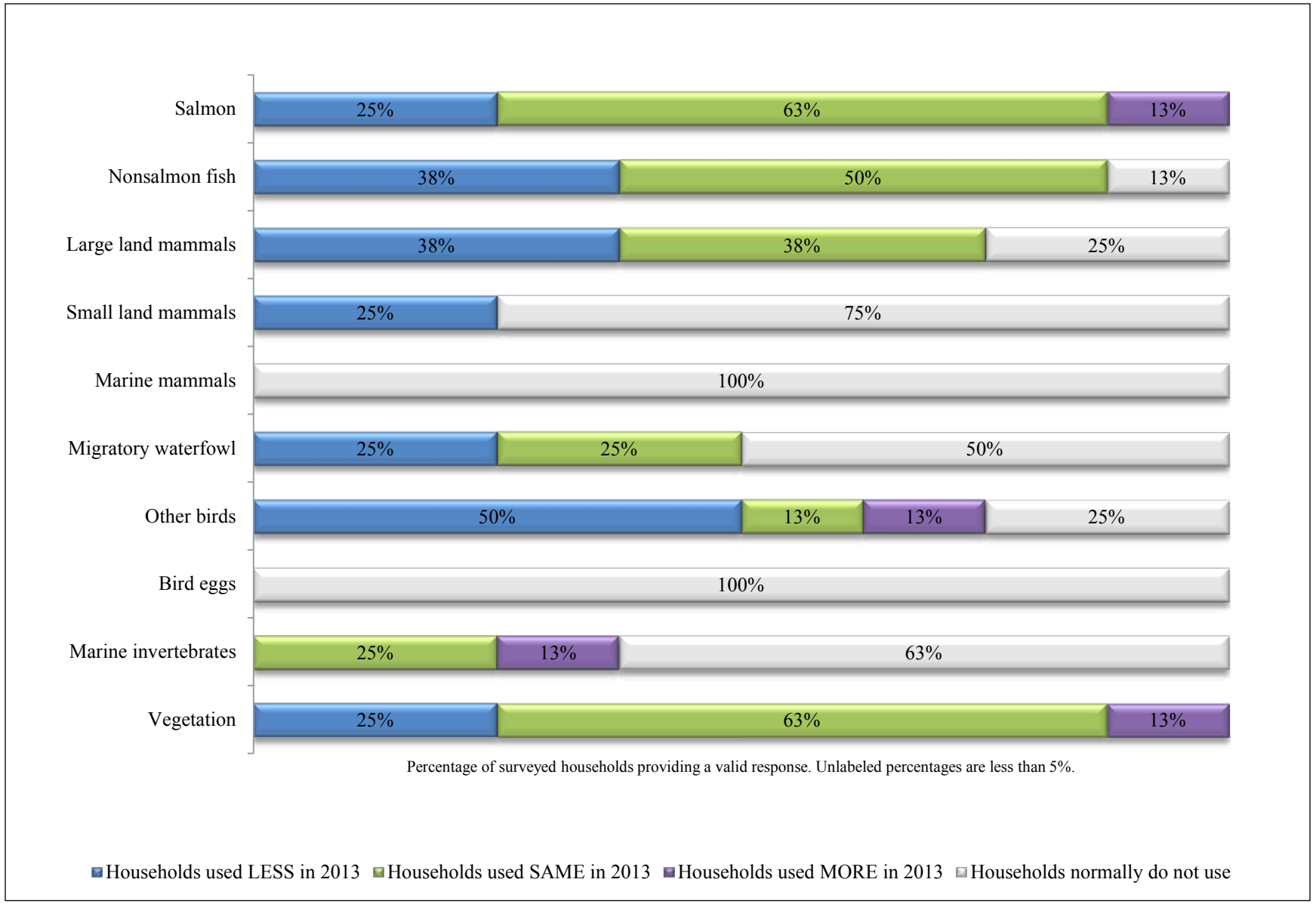


Figure 5-23.–Changes in household uses of resources compared to recent years, Paxson, 2013.

Table 5-21.–Reasons for less household uses of resources compared to recent years, Paxson, 2013.

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	8	7	1	14.3%	2	29%	1	14.3%	1	14%	0	0%	4	57%
All resources	**8**	**3**	**0**	**0.0%**	**1**	**33%**	**0**	**0.0%**	**0**	**0%**	**0**	**0%**	**1**	**33%**
Salmon	8	2	0	0.0%	0	0%	0	0.0%	1	50%	0	0%	1	50%
Nonsalmon fish	8	2	0	0.0%	0	0%	0	0.0%	0	0%	0	0%	2	100%
Large land mammals	8	3	1	33.3%	1	33%	1	33.3%	0	0%	0	0%	0	0%
Small land mammals	8	2	0	0.0%	2	100%	0	0.0%	0	0%	0	0%	1	50%
Marine mammals	8	0	0	0.0%	0	0%	0	0.0%	0	0%	0	0%	0	0%
Migratory waterfowl	8	2	1	50.0%	0	0%	0	0.0%	0	0%	0	0%	0	0%
Other birds	8	4	1	25.0%	0	0%	0	0.0%	0	0%	0	0%	1	25%
Bird eggs	8	0	0	0.0%	0	0%	0	0.0%	0	0%	0	0%	0	0%
Marine invertebrates	8	0	0	0.0%	0	0%	0	0.0%	0	0%	0	0%	0	0%
Vegetation	8	2	0	0.0%	0	0%	0	0.0%	0	0%	0	0%	1	50%

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Table 5-21.–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	8	7	1	14.3%	3	42.9%	0	0.0%	3	42.9%	2	28.6%	1	14.3%
All resources	**8**	**3**	**1**	**33.3%**	**0**	**0.0%**	**0**	**0%**	**1**	**33.3%**	**1**	**33.3%**	**1**	**33.3%**
Salmon	8	2	0	0.0%	1	50.0%	0	0%	1	50.0%	0	0.0%	0	0.0%
Nonsalmon fish	8	2	0	0.0%	1	50.0%	0	0%	1	50.0%	0	0.0%	0	0.0%
Large land mammals	8	3	1	33.3%	0	0.0%	0	0%	0	0.0%	0	0.0%	1	33.3%
Small land mammals	8	2	0	0.0%	0	0.0%	0	0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	8	0	0	0.0%	0	0.0%	0	0%	0	0.0%	0	0.0%	0	0.0%
Migratory waterfowl	8	2	0	0.0%	0	0.0%	0	0%	1	50.0%	0	0.0%	0	0.0%
Other birds	8	4	0	0.0%	0	0.0%	0	0%	1	25.0%	1	25.0%	0	0.0%
Bird eggs	8	0	0	0.0%	0	0.0%	0	0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	8	0	0	0.0%	0	0.0%	0	0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	8	2	0	0.0%	1	50.0%	0	0%	2	100.0%	0	0.0%	0	0.0%

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Table 5-21.–Page 2 of 2.

Resource category	Valid responses[a]	Households reporting reasons for less use	Did not get enough		Did not need		Equipment/ fuel expense		Used other resources		Less competition	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	8	7	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
All resources	**8**	**3**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**
Salmon	8	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Nonsalmon fish	8	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Large land mammals	8	3	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	8	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	8	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Migratory waterfowl	8	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other birds	8	4	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Bird eggs	8	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	8	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	8	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2014.

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

Table 5-22.–Reasons for more household uses of resources compared to recent years, Paxson, 2013.

Resource category	Valid responses[a]	Households reporting reasons for more use	Increased availability		Used other resources		Favorable weather		Received more		Needed more	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	8	3	1	33.3%	0	0.0%	0	0.0%	0	0.0%	1	33.3%
All resources	**8**	**0**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**
Salmon	8	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Nonsalmon fish	8	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Large land mammals	8	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	8	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	8	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Migratory waterfowl	8	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other birds	8	1	1	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Bird eggs	8	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	8	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	8	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	100.0%

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Table 5-22.–Continued.

Resource category	Valid responses[a]	Households reporting reasons for more use	Increased effort		Had more help		Other		Regulations		Traveled farther	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	8	3	2	66.7%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
All resources	**8**	**0**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**
Salmon	8	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Nonsalmon fish	8	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Large land mammals	8	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	8	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	8	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Migratory waterfowl	8	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other birds	8	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Bird eggs	8	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	8	1	1	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	8	1	1	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

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Table 5-22.–Page 2 of 2.

Resource category	Valid responses[a]	Households reporting reasons for more use	More success		Needed less		Store-bought expense		Got/ fixed equipment		Substituted resources	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	8	3	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
All resources	**8**	**0**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**
Salmon	8	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Nonsalmon fish	8	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Large land mammals	8	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	8	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	8	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Migratory waterfowl	8	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other birds	8	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Bird eggs	8	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	8	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	8	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2014.

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

Table 5-23.–Reported impact to households reporting that they did not get enough of a type of resource, Paxson, 2013.

		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
Salmon	8	8	100.0%	3	37.5%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	3	100.0%
Nonsalmon fish	8	7	87.5%	1	14.3%	0	0.0%	0	0.0%	1	100.0%	0	0.0%	0	0.0%
Marine invertebrates	8	2	25.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Large land mammals	8	6	75.0%	3	50.0%	0	0.0%	0	0.0%	1	33.3%	1	33.3%	1	33.3%
Marine mammals	8	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	8	2	25.0%	2	100.0%	0	0.0%	0	0.0%	1	50.0%	1	50.0%	0	0.0%
Migratory waterfowl	8	4	50.0%	2	50.0%	0	0.0%	0	0.0%	2	100.0%	0	0.0%	0	0.0%
Other birds	8	6	75.0%	3	50.0%	0	0.0%	0	0.0%	3	100.0%	0	0.0%	0	0.0%
Bird eggs	8	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	8	8	100.0%	3	37.5%	0	0.0%	0	0.0%	2	66.7%	1	33.3%	0	0.0%
All resources	**8**	**8**	**100.0%**	**3**	**37.5%**	**0**	**0.0%**	**0**	**0.0%**	**1**	**33.3%**	**1**	**33.3%**	**1**	**33.3%**

Source ADF&G Division of Subsistence household surveys, 2014.

a. Does not includes households failing to respond to the question or those households that never used the resource.

Table 5-24.–Comparison of harvest composition, Paxson, 1982, 1987, and 2013.

	Estimated harvest in pounds usable weight								
	1982			1987			2013		
Resource	Total	Per capita	CIP	Total	Per capita	CIP	Total	Per capita	CIP
All resources	**6,822.0**	**124.0**	**49.0%**	**14,251.0**	**221.2**	**57.8%**	**6,767.9**	**214.0**	**48.8%**
Salmon	1,047.0	19.0		2,153.0	33.4		1,801.0	56.9	
Nonsalmon fish	1,622.0	29.5		3,274.0	50.8		1,278.5	40.4	
Large land mammals	3,058.0	55.6		6,837.0	106.1		2,667.5	84.3	
Small land mammals	147.0	2.7		1,004.0	15.6		462.0	14.6	
Birds and eggs	519.0	9.4		666.0	10.3		142.3	4.5	
Marine invertebrates	–	–		–	–		25.8	0.8	
Vegetation	429.0	7.8		315.0	4.9		390.8	12.4	

Sources For 2013, ADF&G Division of Subsistence household surveys, 2014; for previous study years, ADF&G Division of Subsistence Community Subsistence Information System (CSIS), accessed 2014.

Note "–" indicates no harvest.

Harvest Data

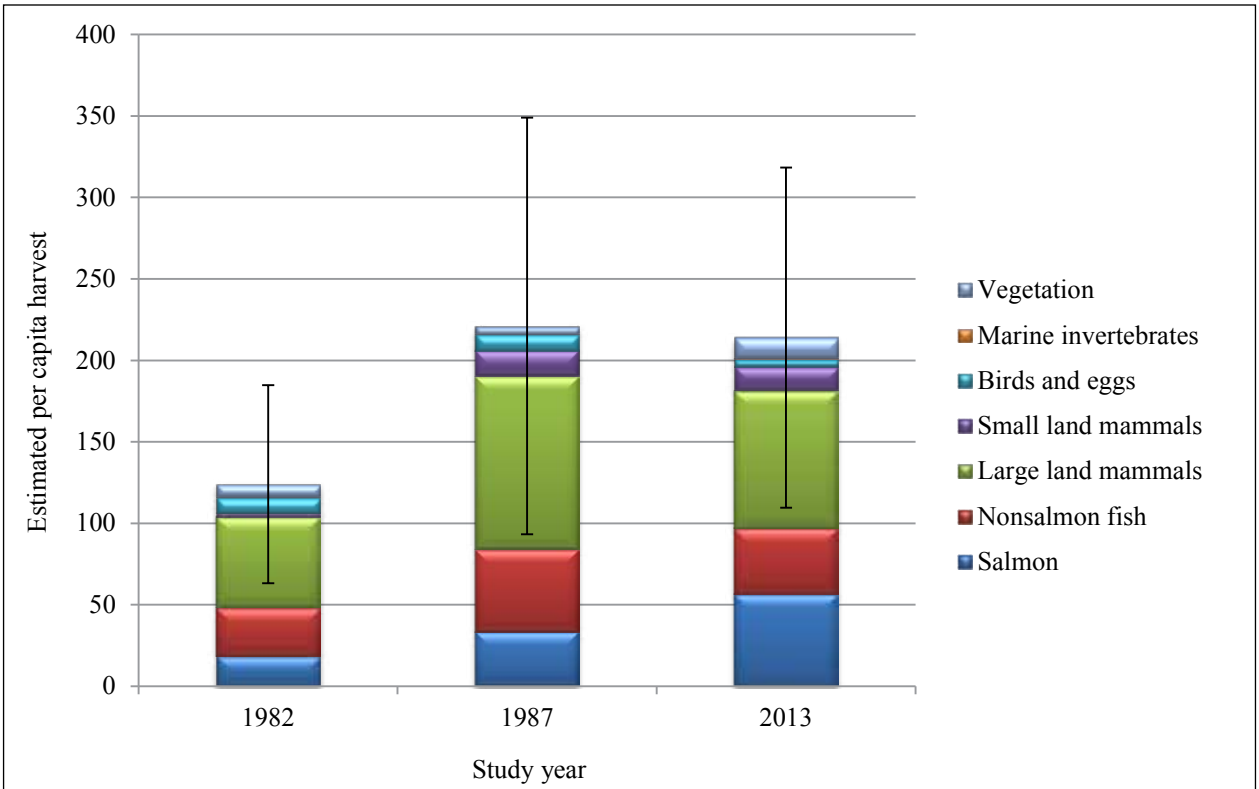
Changes in the harvest of resources by Paxson residents can also be discerned through comparisons with findings from previous study years. Comprehensive subsistence harvest surveys were conducted in Paxson–Sourdough for study year 1982 (Stratton and Georgette 1984) and Paxson and Sourdough for study year 1987 (CSIS).[5] A comparison of the 1982, 1987, and 2013 harvests for the Paxson area shows fluctuations in per capita subsistence resource harvests by community residents over the 31-year period from 1982 to 2013. In 1982, Paxson–Sourdough residents harvested 124 lb of wild resources per capita and in 1987 Paxson and Sourdough harvested a combined amount 221 lb of wild resources per capita (Stratton and Georgette 1984); CSIS). The harvest in 2013 (214 lb per capita) was comparable with the 1987 per capita harvest (Table 5-24).

The composition of harvests by resource category also shifted somewhat. Figure 5-24 summarizes what percentage of the harvest each major resource category contributed to the total annual per capita harvest for the 3 comprehensive study years of 1982, 1987, and 2013. The composition of the harvest has changed over time and is shown in Figure 5-24. The per capita harvest was similar between the 1987 and 2013 surveys. Salmon increased in terms of composition between the 2 study years and large land mammals declined slightly. Nonsalmon fish also declined slightly between the 2 study years. Although a small component of the overall harvest, berries and plants increased in the overall composition from 1987 to 2013.

Current and Historical Harvest Areas

It is possible to compare historical spatial harvest data with the 2013 study year to determine changes in the search and harvest areas for wild food resources over time. During the 1983 and 1984 fieldwork seasons, ADF&G researchers conducted interviews with more than 200 hunters and fishers in 20 communities in or near the Copper River Basin to map areas where hunting, fishing, trapping, and gathering of wild resources occurred between 1964 and 1984 (Stratton and Georgette 1985). This effort produced 2 separate publications by 2 different ADF&G divisions; the Division of Habitat published the maps and the Division of Subsistence published a description of the project and mapping methods. The maps depicting the harvest and use areas used by study community residents during this 20-year span are published in *Alaska Habitat Management Guide Southcentral Region: Reference Maps—Volume 3. Community Use of Fish, Wildlife, and Plants*

5. During the 1982 survey period the Paxson CDP did not exist; therefore, for sampling purposes, the Division of Subsistence defined the study community as Paxson–Sourdough, which included households extending from Paxson south to mile 147 of the Richardson Highway. Sampling efforts by the division in 1987, however, divided Paxson and Sourdough into 2 separate communities. In 2013 the division's research team attempted to include the community of Sourdough in the study sample with the households located in Paxson CDP, but there were no longer any permanent year-round residents in the Sourdough community. For historical comparisons of the division's research, 1987 data documented individually for Paxson and Sourdough were combined to reflect the sampled study areas of 1982 and 2013.



Note Error bars represent the upper and lower bounds of the 95% confidence interval.

Figure 5-24.–Estimated harvests by pounds per capita and by resource category, Paxson, 1982, 1987, and 2013.

(Alaska Department of Fish and Game Division of Habitat 1985).[6] Information about the mapping project is available in *Copper Basin Resource Use Map Index and Methodology* (Stratton and Georgette 1985). A total of 6 harvest and use (referred to in this report as "search") maps were produced that show activities for Paxson–Sourdough area residents for 1964–1984. These maps cover harvest and use areas for select large land mammal species (moose, caribou, and Dall sheep), waterfowl, furbearers (small land mammals), fish (salmon and freshwater fish), and vegetation. Absent from these maps are harvest and use areas for upland game birds, and black and brown bears. Changes in the resource harvest and use/search areas by Paxson area residents can be discerned through limited comparisons of the maps published in 1985, which depict harvest and use areas for 20 years, and the maps produced from this study, which only reflect search and harvest areas for the study year 2013. The 2013 research provides the first known subsistence harvest mapping data available for the Paxson community for a single year.

While there are many similarities between the harvest and use/search areas in the historical and the 2013 maps, there also are noticeable differences. In the historical maps, the harvest and use areas cover a wide expanse of land in the Copper River Basin and Copper River tributaries—including the Chitina, Tonsina, Klutina, Gulkana, and Gakona rivers, the remote country north and south of the Denali Highway, and west and east of the Richardson Highway. Additionally, the harvest and use areas follow a long expanse of the Richardson Highway, north through Isabell Pass into the Delta River watershed and south to Gakona Junction. The 2013 harvest and search area maps did not include this extent of geographic area.

6. A complete index of documents published in 1985 and 1986 as part of *Alaska Habitat Management Guide* is available online: http://www.arlis.org/docs/vol1/C/AHMG/index.html.

With regard to specific species, there are noticeable differences in the harvest and use/search areas in the 2 map sets for moose, caribou, Dall sheep, salmon, nonsalmon fish, small land mammals, and vegetation. The first difference is that the extent of caribou harvest and use areas depicted in the historical maps is much greater than the areas depicted in the 2013 maps. In the historical maps, the caribou search area included Squaw Creek and Alfred Creek near Eureka on the Glenn Highway, covered a large extent of the Amphitheater Mountains, and reached west into the upper Gakona River and upper Chistochina River watersheds. In 2013, no caribou were reportedly sought by Paxson residents in an area of this extent.

The difference in harvest and use/search areas for moose when comparing the 2013 study year to the historical maps is similar to the differences for caribou. Historically moose were also sought over a large extent of the Amphitheater Mountains and west into the upper Gakona River and upper Chistochina River watersheds. Additionally the historical maps show that Paxson–Sourdough residents pursued a road hunt strategy along the Richardson Highway from Paxson south to Gakona Junction and that moose were sought all along the Gakona River corridor and in a large area extending south from the Denali Highway from the Maclaren River to the west slope of Paxson Mountain. For the 2013 study, the area where residents focused their moose search areas was similar, but much reduced in size and extent from the area documented for 1964–1984.

There were no Dall sheep search areas or hunting activities documented for the 2013 study year. Yet the historical maps depict Dall sheep harvest and use areas north of Paxson in the Alaska Range and on the Nabesna Road in the Wrangell Mountains. The historical maps document Dall sheep hunting activities in the Alaska Range by Paxson–Sourdough residents on Rainbow Ridge, Cantwell Glacier, Eel Glacier, Little Gold Creek, Jarvis Creek, Riley Creek, upper Bear Creek, Morningstar Creek, McCumber Creek, St. Antony Pass, and the Jagged Boulder Plateau. In the Wrangell Mountains, Paxson–Sourdough residents formerly used the Jacksina River watershed and the areas surrounding Sheep Lake and Grizzly Lake for Dall sheep hunting.

Similarly, for small land mammals and furbearers, the historical harvest and use maps are more expansive and included McCallum Creek located north of Paxson, an area within the Twelvemile Creek watershed, and the many small lakes near the headwaters of Spring Creek (east of Hogan Hill). These areas were not documented as harvest and search areas for small land mammals on the 2013 maps. Regarding waterfowl, the only change for 2013 was that Paxson residents did not report hunting for migratory birds near Sourdough but did report doing so during 1964–1984.

The historical maps show that Paxson residents reported some salmon harvest and use/search areas similar to those of the 2013 study year. However, one difference between the map sets is that the entire Gakona River is documented as a historical salmon fishing area on the 1964–1984 maps and was not reported as a salmon harvest and search area for 2013. Another difference between the map sets is that the 2013 salmon harvest areas include Port Valdez and Bristol Bay; these locations were not reported for 1964–1984.

While Paxson residents continue to use many of the nonsalmon fish harvest and use areas documented for 1964–1984, the 2013 study found that Paxson residents' nonsalmon fish harvest areas have diminished when compared to the areas shown in the historical maps for Paxson–Sourdough. From 1964–1984, Paxson–Sourdough residents fished for nonsalmon fish at multiple lakes in the region southwest of what is now the Paxson CDP, including Fish Lake, Deep Lake, Bog Lake, Ewan Lake, Crosswinds Lake, the Tyone River, Lake Louise, and Old Man Lake. From 1964–1984, Paxson residents also fished for nonsalmon fish at Swede Lake, Little Swede Lake, Sevenmile Lake, Swampy Lakes, Fielding Lake, Two Bit Lake, and Manokonen Lake. None of these lakes or rivers were reported as being used by Paxson residents in 2013.

Lastly, historical maps depict some harvest and use areas for vegetation during 1964–1984 that were not reported as harvest and search areas for vegetation in 2013. These include an area along the Glenn Highway–Tok Cutoff east of Gakona, the area surrounding Sourdough, and the area around Hogan Hill south of Paxson and east of the Richardson Highway.

Local Comments and Concerns

Following is a summary of local observations of wild resource populations and trends that were recorded during the surveys in Paxson. Some households did not offer any additional comments or concerns 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 and nonsalmon fish are important traditional wild resources used by Paxson residents for subsistence—especially sockeye salmon, coho salmon, lake trout, and Arctic grayling. Some Paxson residents travel to Prince William Sound to harvest marine fishes—primarily Pacific halibut, but also Pacific cod and rockfish. Additionally some residents use whitefishes for subsistence.

Paxson residents commonly harvest nonsalmon fish for subsistence uses by rod and reel methods under sport fishing regulations. Some Paxson residents expressed concern about what they see as a limited ability to harvest lake trout and rainbow trout under current sport fishing regulations. Most Paxson residents put forth considerable annual effort to harvest lake trout during the summer months and community members reported that the lakes inside the Paxson CDP have excellent lake trout fishing. However, as a conservation measure current sport fishing regulations stipulate that from April 16–October 31 only unbaited, single-hook, artificial lures may be used to harvest fish inside of all waters within the Gulkana River drainage. Some Paxson residents expressed concern that these regulations are too strict and unnecessary. These residents believe that disallowing the use of bait to harvest lake trout during summer limits their ability to obtain the harvesting goals for lake trout. A resident explained that it can sometimes be difficult to harvest lake trout under current regulations:

> When you've not been capturing [any lake trout] for 6 days it's real tempting [to use bait]. Whoever closed this water to bait should be thrown out. There is no reason for it. We bring it up at every one of our advisory meetings.

Additionally, Paxson residents expressed concern that current regulations, which require release of all rainbow trout caught in the area, are an unnecessary burden. Several residents expressed a desire to change the catch-and-release-only regulation and obtain an ability to retain rainbow trout caught in the Gulkana River.

Today, sockeye salmon and coho salmon are the primary salmon species sought by the community. In the past, Paxson residents made greater use of Chinook salmon for subsistence purposes that were caught using rod and reel methods, but harvest and use of this species has declined in tandem with declines in Chinook salmon abundance and resulting regulatory restrictions in the Copper River and Gulkana River rod and reel sport fisheries, which were both traditional Chinook salmon harvest areas for the community. Today most Paxson residents obtain their salmon by dip net in the Copper River sockeye salmon personal use fishery. In the past Paxson residents also used fish wheels to harvest sockeye salmon on the Copper River but residents explained that no one in the community currently operates a fish wheel.

Large Land Mammals

Alongside fish, moose and caribou are the most important wild resources for Paxson residents. To obtain moose and caribou, most Paxson residents rely on obtaining federal subsistence moose and caribou permits for GMU 13. These hunts allow federally qualified permit holders to hunt on federal lands within GMU 13 for 1 antlered bull moose from August 1–September 20 and for 1 bull caribou from August 1–September 20 and October 21–March 31 (within subunits 13A and 13B federal permit holders are allowed to harvest caribou of either sex). Some residents also participate in the various large land mammal hunting opportunities available on state land in GMU 13, which include a state general season moose hunt occurring August 20–September 20 (1 bull with spike-fork or 50-in antlers or antlers with 4 or more brow tines on at least 1 side),

a state registration caribou hunt occurring August 20–September 20 and October 21–March 31 (1 caribou), and, if successfully drawn, 1 of the 4 state caribou permits available by drawing for areas inside of GMU 13, which occurs August 20–September 20 and October 21–March 31 (1 caribou). During 2013 no Paxson residents participated in the state community subsistence moose or caribou hunts available in GMU 13.

Paxson residents expressed various concerns about their ability to obtain moose and caribou for subsistence in their traditional harvest and use areas. Paxson residents' greatest concern is the large numbers of non-local hunters that come to the Paxson area annually to hunt for moose and caribou in GMU 13, particularly around the Denali Highway area. A Paxson resident explained:

> The Denali Highway has become progressively busy with more and more hunters over the years. Crowding is a big problem. There is often nowhere to park for hunting. It is overrun with people … makes it much tougher for local people to find game.

Indeed, because of easy access to the area for residents of Alaska's urban communities, particularly Anchorage, Fairbanks, Palmer, and Wasilla, thousands of hunters attempt to harvest moose and caribou in GMU 13 annually. From the 10 most recently concluded regulatory years (2004–2013) the average number of caribou hunters that hunted in GMU 13 per regulatory year was 3,036 and the average number of moose hunters was 2,623 (WinfoNet[7]).

As a result of this large number of non-local hunters using the area, Paxson residents also expressed frustration that most of the large game resources harvested in the region end up not being consumed locally but instead are consumed in other distant communities. "Most of the meat that comes out of this area leaves this area. There are lots of caribou and moose killed in this area, but it's not eaten in this area. It is taken somewhere else," explained one Paxson resident. Paxson residents also believe that many of the hunters that frequent the region prioritize trophy hunting versus hunting for food. "There are too many people that come from too far away, just because they can ride a 4-wheeler. I don't think 90% of them need the meat in the first place. They just want to kill something. They don't care, they are all horn hunters," said one Paxson resident. Another Paxson resident said:

> Either we need to restrict urban hunters or only allow them to come up every 2 or 3 years … . They come up here all the way from Homer. It's too damn accessible. They come up here with a $100,000 motor home and 6 4-wheelers.

Excessive use of costly motorized equipment by GMU 13 moose and caribou hunters was a continuous theme addressed in the comments provided by Paxson residents. For example, a Paxson resident explained:

> ATV use is out of control in the Denali Highway area. There is just too much motorized access. Local subsistence hunters cannot compete with those people that come into this area with lots of equipment like motorhomes and 4-wheelers or 6-wheelers.

Paxson residents also expressed concern that excessive off-highway motorized vehicle use in the area is creating negative impacts on wildlife behavior and habitat. "People on ATVs are pushing the game animals further and further back from the road," said one Paxson resident. Residents also said that excessive illegal motorized vehicle use off of designated trails is resulting in land erosion and the destruction of wildlife habitat. Residents observed that caribou migration patterns in the area are becoming abnormal and suggested that excessive off-highway motorized vehicle use may be one cause. Additionally, when caribou hunting opens during winter, hunters often use snowmachines for transport into the area and a Paxson resident expressed concern that snowmachine hunting tactics result in large numbers of caribou "being run to death" in the snow. Paxson residents also said that airboat use for hunting access on the many shallow rivers in the area is creating similar negative impacts to wildlife and hunting opportunities for local residents. While Paxson residents are not completely opposed to motorized use in the area, community members believe that it is imperative for future sustainability of wildlife populations and habitat health in the region that motorized use is better managed and restricted to a larger degree than it is now.

7. ADF&G, WinfoNet: http://winfonet.alaska.gov/ (accessed September 11, 2014).

Other community concerns are the state-managed Copper Basin community subsistence moose and caribou hunts (CSH). Some Paxson residents are opposed to the CSH particularly because it provides an opportunity for non-local hunters to harvest moose and caribou beginning on August 10, which is 10 days prior to the opening of the state general season hunt on August 20—a situation which leaves hunters hunting in the general season at a disadvantage. Because they believe that the CSH is both socially and ecologically unsustainable, rather than forming their own CSH group, Paxson residents have chosen to boycott participation in the CSH. "They should get rid of the community hunt, it is a disaster," said one resident.

Paxson residents raised several other issues they see as having negative ecological impacts in the area and concomitantly, negative impacts on their ability to live a subsistence way of life. Another concern for Paxson residents are observations that use of the region by military aircraft may be having a negative impact on caribou and Dall sheep populations. Residents suggested that sonic booms from these aircraft are disturbing caribou and possibly changing their migration patterns.

Some Paxson residents also believe that bear predation on moose populations in the area is a major contributor to observed population declines. As a result of these observations some residents desire increased measures of bear control.[8] In contrast, some residents expressed disillusionment with the reduction of the wolf populations in the area as a result of the state's ongoing wolf management program in GMU 13. Increased wolf predation was documented as a factor leading to declines in the GMU 13 moose population beginning in the early 1990s. In 2000, ADF&G implemented an active wolf management program in the region that successfully reduced wolf numbers and led to a 46% increase in moose count numbers in GMU 13 from 2001–2009 (Tobey and Schwanke 2010:158). ADF&G noted that the intensive management program was the primary reason for the increase in moose survival rates (Tobey and Schwanke 2010:158). Despite the success of the wolf control program in helping to increase moose numbers, several Paxson residents expressed distaste for an observed absence of wolves from the area and cited the state's wolf management program as an unnatural manipulation of the local ecosystem implemented solely to meet an increasing demand for moose hunting opportunities by non-local urban hunters.

Lastly, during discussions about large land mammals, Paxson residents often brought up the state-administered Paxson Closed Area (PCA), an area inside GMU 13B closed to the taking of large game under state regulations but recently opened (2014) for the taking of large game by federal permittees on federal lands within the PCA. The PCA is very near most Paxson households and consists of the eastern drainage of the Gulkana River lying west of the Richardson Highway and the western drainage of the Gulkana River between the Denali Highway and the north end of Paxson Lake where the Gulkana River enters Paxson Lake. According to local residents the PCA predates statehood, dating to around 1958, and was created to protect migrating caribou from overharvest by hunters as the caribou travel inside a narrow corridor, and to provide a wildlife viewing area adjacent to the junction of the Richardson and Denali highways. Some Paxson residents expressed opposition to the PCA and others expressed support for the PCA. Some residents strongly oppose the recent opening of the PCA for large game hunting by federal permittees. These residents stated that closure of large game hunting in the PCA is vital to the protection of migrating caribou, moose, and brown bears in the area. Some of the residents who are in support of the PCA recommended that ADF&G improve the signage on the Denali Highway that denotes the PCA and that large land mammal hunting is closed to state permittees because currently the signage is difficult to see and because the brown color of the signs can be confused with signs of the same color that denote areas open to federal permittees in the region.

8. Ongoing research by ADF&G continues to show high neonatal moose calf losses due to bear predation in GMU 13. Based on available research, liberalized hunting regulations have been in effect for brown bears in GMU 13 since the mid-1990s in an attempt to substantially reduce the population of brown bears and increase moose calf survival unit-wide (Tobey and Schwanke 2010).

Birds

Bird hunting for both upland game birds and migratory waterfowl is an important subsistence activity for Paxson residents. Some community members expressed concern that ptarmigan are being overharvested by non-local hunters in GMU 13. These residents also expressed concern that some ptarmigan hunters using GMU 13 had been hunting for sport only and had failed to follow salvage requirements thus leaving the harvested birds to waste. Residents are particularly concerned about high levels of ptarmigan overharvest that occurs by snowmachine-riding hunters during spring. Residents recommended that snowmachine use for ptarmigan hunting be restricted along the Denali Highway. Residents also recommended that ADF&G reduce the daily bag limit for ptarmigan in GMU 13E from 10 per day to 5 per day and extend the season an additional month from the current March 31 closure to an April 30 closure. Residents believe that the reduced bag limit would help conserve the ptarmigan population during the winter and spring months while the extended season would provide a longer subsistence hunting opportunity for local residents. Regarding migratory waterfowl, some residents expressed concerns about seagull predation on duck eggs and chicks in the area. Residents have observed that seagull predation is having a negative impact on duck reproduction.

ACKNOWLEDGMENTS

ADF&G Division of Subsistence would like to thank local research assistant Lee Harper for his valuable help in facilitating the Paxson portion of this research.

6. TAZLINA

Hannah Johnson

Community Background

For this study the community defined as Tazlina used the 2010 census boundaries, which consist of the communities of Tazlina and Copperville, including the subdivisions of Aspen Valley, Tazlina Terrace, and Copper Valley School Road. Tazlina is located on the Richardson Highway beginning approximately 5 miles south of the junction with the Glenn Highway for about 3 miles along the highway. The use of the 2010 census designated place (CDP) boundaries most closely represents the boundaries used in the ADF&G study for 1987 (McMillan and Cuccarese 1988). The Tazlina CDP area is intersected by the Copper and Tazlina rivers.

The landscape of the area is characterized by lowland spruce–hardwood and river ecosystems that support a diversity of plants and animals.[1] Elders of the Tazlina community noted that the area used to be open fields (Stickwan 2006). Today, the ecology is dominated by spruce trees and willow and alder brush. Similar to other Interior communities, Tazlina experiences cold winters with extreme temperatures reaching -74 °F and fairly warm summers with temperatures into the 90s °F.[2] The community is named after the Ahtna name for the Tazlina River, *Tezdlende* (swiftwater) (Kari 2007).

Tazlina falls within the traditional territory of the Ahtna Athabascans and was a popular summer fish camp settlement. The majority of Alaska Natives in the community trace their ancestry to the Tazlina River and Dry Creek bands of Ahtna (Reckord 1983b). One elder noted that it was the creation of a military airstrip in Dry Creek that forced her family to settle permanently in Tazlina (Pete 2001). The more recent history of Tazlina and its surrounding subdivisions is grounded in the boom–bust town cycle. Each of the economic boom events caused varying degrees of population growth and an influx of goods and services. Much of the current non-Native population resulted from the discovery of copper and subsequent mining activity at Kennecott and Nabesna in the late 19th and early 20th centuries, the building of roads and runways during World War II, and the building of the Trans-Alaska Pipeline through the area in the 1970s. When the Glenn Highway was constructed following the United States' entry into World War II in the 1940s, people relocated from communities, such as Dry Creek, to settlements along the road, such as at Tazlina; a population inflow also occurred (Pete 2001). However, most of this population was settled temporarily and after the end of the war Alaska experienced a large outmigration of military personnel. A second population boom in the Copper River Basin in the 1970s was connected to pipeline construction and maintenance, as well as baby boomers born to those who settled in the area following the war. The trans-Alaska pipeline population influx is still influencing the Copper River Basin (Sandberg 2013). More residents settled in the community of Tazlina when affordable housing was built in the community in the 1990s.

Tazlina is a road-based community with no concentrated community center, except perhaps the Native Village of Tazlina Community Hall and the Tazlina Trading Post (a gas station and general store). In 2013 other local businesses in the area included a wholesale bread distributor, 2 bed-and-breakfast establishments, a freight service, an auto repair service, and an RV park. Many of these businesses rely on tourism. The Alaska Department of Transportation and Public Facilities, and the Alaska Department of Natural Resources divisions of Forestry and Parks and Outdoor Recreation each have offices in Tazlina. Copper Valley Development Association, Copper River Native Association, and the Copper Valley Housing

1. Alaska Department of Commerce, Community, and Economic Development (ADCCED) Division of Community and Regional Affairs, Juneau. n.d. "Alaska Community Database Online: Community Information." Accessed August 2014. http://commerce.alaska.gov/cra/DCRAExternal/community/Details/b3f326df-0113-4610-b54a-81a371a4a8e3

2. Alaska Department of Commerce, Community, and Economic Development (ADCCED) Division of Community and Regional Affairs, Juneau. n.d. "Alaska Community Database Online: Community Information." Accessed August 2014. http://commerce.alaska.gov/cra/DCRAExternal/community/Details/b3f326df-0113-4610-b54a-81a371a4a8e3

Table 6-1.–Population estimates, Tazlina, 2010 and 2013.

	Census (2010)	5-year American Community Survey (2008–2012)	This study (2013)
Total population			
Households	111	152	120.0
Population	297	299	352.4
Alaska Native			
Population	132	78	138.2
Percentage	44.4%	26.1%	39.2%

Sources U.S. Census Bureau (2011) for 2010 estimate; U.S. Census Bureau for American Community Survey 5-year survey estimate; and ADF&G Division of Subsistence household surveys, 2014, for 2013 estimate.
Note The term "households" means occupied housing units. Alaska Native population data from the American Community Survey and 2010 census come from the category "race alone or in combination with one or more other races."

Authority are located within Tazlina. Local governing bodies include the Native Village of Tazlina and the Association of Tazlina Residents (a homeowners' association).[3]

The Copper Valley Mission School, a boarding school, opened in 1956 and operated in Tazlina for 15 years before it was closed in 1971. In 1976 the school building caught fire and partially burnt down, leaving behind hazardous material in the center of a residential area.[4] Since then, students in Tazlina have attended school (grades K–12) in Glennallen. Glennallen also has a Prince William Community College campus.

Heating fuel is delivered by Crowley Petroleum Distribution and makes up the bulk of the heating methods used (74%)[5] in the community. Electricity is provided through the Copper Valley Electric Association. Both of these service providers are based out of Glennallen. Non-bulk gasoline and diesel are provided by the Tazlina Trading Post or gas stations in Glennallen.

Houses in the area are fully plumbed. Houses are mostly equipped with their own wells and are hooked up to septic systems. Some people haul water from Copper Center Safe Water or have it trucked in from Glennallen.[6]

Demography

The 2013 study documented a slightly larger population (352) for Tazlina than the 2010 federal census and the American Community Survey's 5-year average population estimate (Table 6-1). This difference could be due to different sampling methods (such as how residency is determined or method of contact). These differences could also be due to factors such as work rotations, such as those available in the oil

3. Copper River Valley Development Association, Inc., Tazlina. 2013. "Copper River Regional Energy Plan." Accessed October 2014. http://www.coppervalley.org/wwd-Energy
4. Alaska Department of Environmental Conservation Division of Spill Prevention and Response, Juneau. n.d. "Contaminated Sites Database: Tazlina Copper Valley School, Cleanup Chronology." Accessed October 2014. http://dec.alaska.gov/Applications/SPAR/CCReports/Site_Report.aspx?Hazard_ID=25429
5. Copper Valley Development Association, Inc., Tazlina. 2013. "Copper River Regional Energy Plan." Page 72. Accessed October 2014. http://www.coppervalley.org/wwd-Energy
6. Copper Valley Development Association, Inc., Tazlina. 2013. "Copper River Regional Energy Plan." Accessed October 2014. http://www.coppervalley.org/wwd-Energy

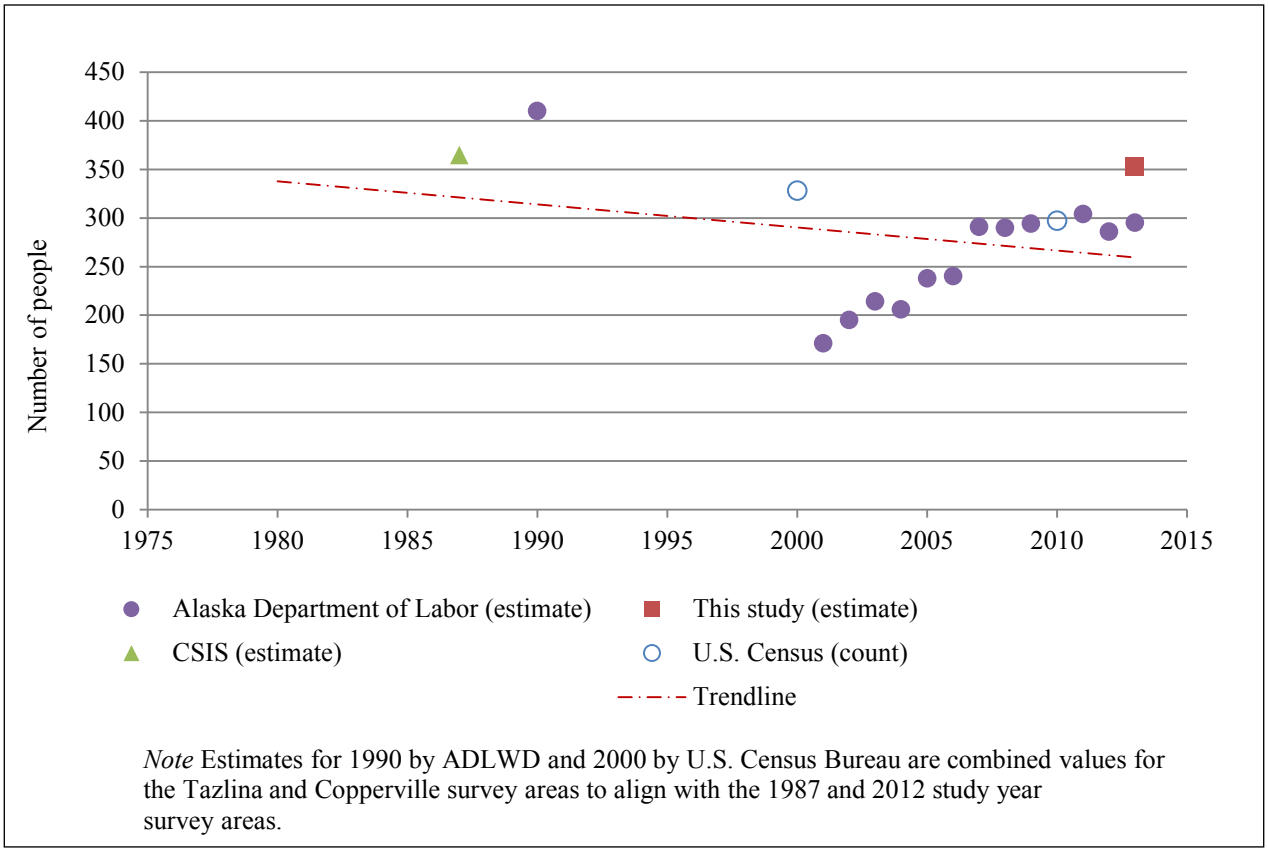


Figure 6-1.–Historical population estimates, Tazlina, 1987–2013.

industry, and monthly fluctuations in seasonal residence; seasonal occupation affects residents' availability to participate in surveys.

Earlier population estimates are either incomparable due to differing survey area boundaries (Stratton and Georgette 1984) or inaccurate[7] due to survey methods (Alaska Department of Labor 1991). For instance, the 1982 ADF&G study grouped the Tazlina and Copperville subdivisions with Glennallen. At that time, Tazlina and Copperville were not part of a CDP so it was necessary for ADF&G to expand the Glennallen community boundaries to include the Tazlina area households. However, this makes it difficult to flush out demographic estimates for the Tazlina area at the time. Because of this, the historical population estimate data in Figure 6-1 have been assembled to best reflect the 1987 and 2013 (current Tazlina CDP boundary) study areas, which are equivalent. This includes combining the Alaska Department of Labor and Workforce Development (ADLWD) population estimates for Copperville CDP and Tazlina CDP in 1990 (Alaska Department of Labor 1991) and combining the estimates for these CDPs for the 2000 census.[8] As the trendline projects, population growth began to stabilize after falling slightly in the 1990s, continuing into the 2000s (Figure 6-1).

The 2013 study surveyed 79 households (66%) out of an estimated 120 (Table 6-2). The mean number of people per household was 3 with an average age of 32 (Table 6-3). The average length of residency in the community for heads of households was 16 years, but it is important to note that many people reported having been in the Copper River Basin for much longer. The average length of residency for the

7. The U.S. Census Bureau noted the following about the 1980 census population estimate for Tazlina: "Tazlina was erroneously placed on the 1980 map at the 1990 location of Mendeltna CDP" (Alaska Department of Labor 1991).
8. Note that for the 2010 census that there was no separate Copperville CDP; the 2010 census area for Tazlina CDP combined both the CDPs for Tazlina and Copperville that were used for the 2000 census.

Table 6-2.–Sample achievement, Tazlina, 2013.

	Tazlina
Number of dwelling units	137
Interview goal	137
Households interviewed	79
Households failed to be contacted	27
Households declined to be interviewed	14
Households moved or occupied by nonresident	17
Total households attempted to be interviewed	93
Refusal rate	15.1%
Final estimate of permanent households	120
Percentage of total households interviewed	65.8%
Interview weighting factor	1.5
Sampled population	232
Estimated population	352.4

Source ADF&G Division of Subsistence household surveys, 2014.

total population is 12 years. This average is impacted by the large population of younger people in the community. Approximately 36% of Tazlina residents are under the age of 20 (Table 6-4).

Overall the number of males in the community exceeded females by approximately 18; the community gender profile was split with 53% males and 47% females (Table 6-4). The 2 largest age groups that contribute to this average comprise the 2 youngest age brackets (0–4 and 5–9) (Figure 6-2). Approximately 24% of heads of household were born either in Tazlina or in communities nearby on the Richardson or Glenn highways and Glenn Highway–Tok Cutoff and 40% were born in Alaska (Table 6-5). However, when looking at the community in its entirety rather than just the heads of household, 60% of the residents were born in the Copper River Basin area, with 18% being directly from the Tazlina area (Appendix Table E6-1). This shows a relatively steady population of locally-born residents (or a low population turnover) when compared to the state average. The ADLWD estimated that in 2010, only 39% of Alaskans were born in the state (Hunsinger et al. 2012).

This community also has a large Alaska Native population (39%) (Table 6-3). When speaking to community residents, a clear distinction is often made that Tazlina is considered to be the Native village while Copperville is the non-Native village. Despite these 2 communities being a stone's throw away from one another and both being inhabited by Native and non-Native people alike, the perception of separation is strong enough to warrant mention. Recent restrictions preventing non-Ahtna people from accessing Ahtna-owned lands has seemed to further this division in some non-Ahtna residents' opinion.

Table 6-3.–Sample and demographic characteristics, Tazlina, 2013.

Characteristics	
Sampled population	232
Estimated community population	352
Household size	
Mean	2.9
Minimum	1
Maximum	7
Age	
Mean	31.8
Minimum[a]	0
Maximum	91
Median	28.5
Length of residency	
Total population	
Mean	12.0
Minimum[a]	0
Maximum	64
Heads of household	
Mean	16.2
Minimum[a]	0
Maximum	64
Alaska Native	
Estimated households[b]	
Number	50.1
Percentage	41.8%
Estimated population	
Number	138
Percentage	39.2%

Source ADF&G Division of Subsistence household surveys, 2014.

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 6-4.–Population profile, Tazlina, 2013.

	Male			Female			Total		
Age	Number	Percentage	Cumulative percentage	Number	Percentage	Cumulative percentage	Number	Percentage	Cumulative percentage
0–4	19.7	10.7%	10.7%	13.7	8.2%	8.2%	33.4	9.5%	9.5%
5–9	18.2	9.8%	20.5%	18.2	10.9%	19.1%	36.5	10.3%	19.8%
10–14	18.2	9.8%	30.3%	12.2	7.3%	26.4%	30.4	8.6%	28.4%
15–19	15.2	8.2%	38.5%	10.6	6.4%	32.7%	25.8	7.3%	35.8%
20–24	13.7	7.4%	45.9%	13.7	8.2%	40.9%	27.3	7.8%	43.5%
25–29	13.7	7.4%	53.3%	13.7	8.2%	49.1%	27.3	7.8%	51.3%
30–34	9.1	4.9%	58.2%	7.6	4.5%	53.6%	16.7	4.7%	56.0%
35–39	10.6	5.7%	63.9%	10.6	6.4%	60.0%	21.3	6.0%	62.1%
40–44	16.7	9.0%	73.0%	12.2	7.3%	67.3%	28.9	8.2%	70.3%
45–49	9.1	4.9%	77.9%	12.2	7.3%	74.5%	21.3	6.0%	76.3%
50–54	10.6	5.7%	83.6%	16.7	10.0%	84.5%	27.3	7.8%	84.1%
55–59	9.1	4.9%	88.5%	9.1	5.5%	90.0%	18.2	5.2%	89.2%
60–64	6.1	3.3%	91.8%	3.0	1.8%	91.8%	9.1	2.6%	91.8%
65–69	6.1	3.3%	95.1%	3.0	1.8%	93.6%	9.1	2.6%	94.4%
70–74	1.5	0.8%	95.9%	1.5	0.9%	94.5%	3.0	0.9%	95.3%
75–79	1.5	0.8%	96.7%	6.1	3.6%	98.2%	7.6	2.2%	97.4%
80–84	1.5	0.8%	97.5%	1.5	0.9%	99.1%	3.0	0.9%	98.3%
85–89	3.0	1.6%	99.2%	1.5	0.9%	100.0%	4.6	1.3%	99.6%
90–94	1.5	0.8%	100.0%	0.0	0.0%	100.0%	1.5	0.4%	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	**185.3**	**100.0%**	**100.0%**	**167.1**	**100.0%**	**100.0%**	**352.4**	**100.0%**	**100.0%**

Source ADF&G Division of Subsistence household surveys, 2014.

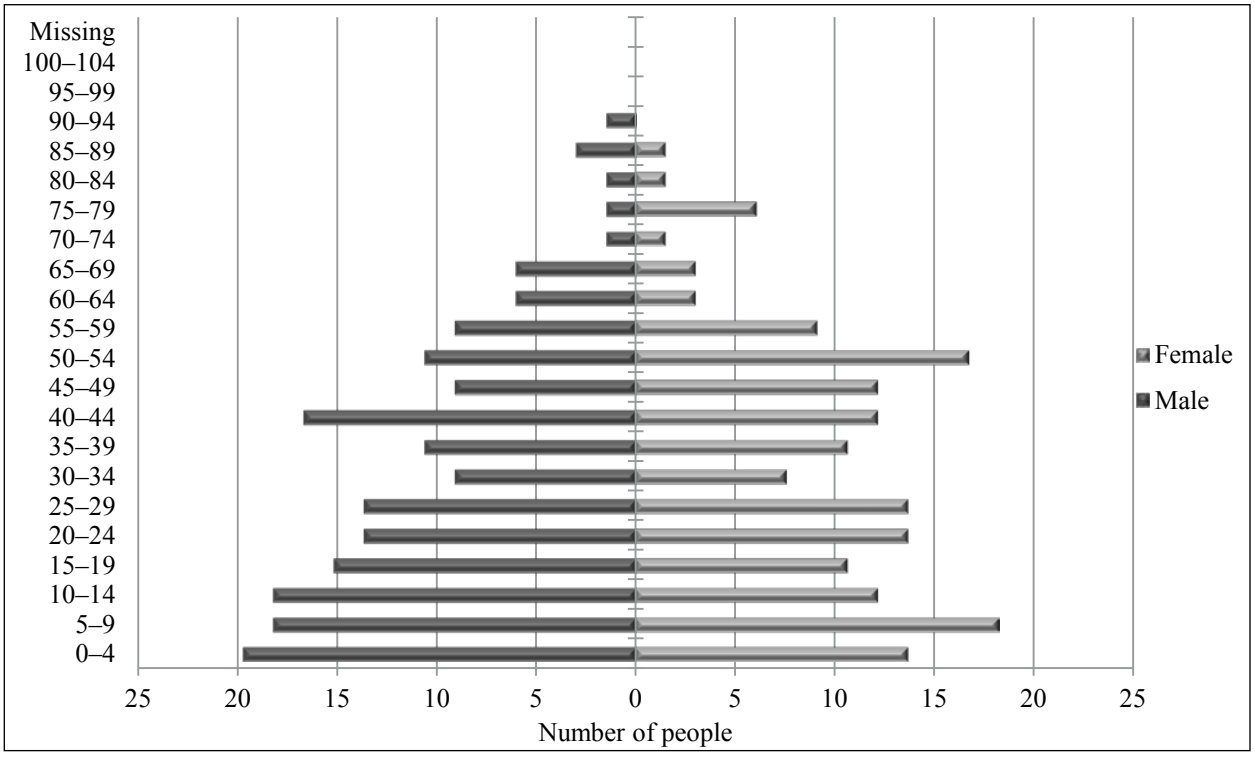


Figure 6-2.–Population profile, Tazlina, 2013.

Table 6-5.–Birthplaces of household heads, Tazlina, 2013.

Birthplace	Percentage
Anchorage	6.2%
Aniak	0.8%
Atka	0.8%
Chistochina	1.5%
Chitina	3.1%
Chuathbaluk	0.8%
Copper Center	5.4%
Cordova	0.8%
Crooked Creek	0.8%
Fairbanks	1.5%
Glennallen	2.3%
Kenai	0.8%
Kenny Lake	1.5%
Mendeltna	0.8%
Mentasta Lake	3.1%
Nuiqsut	0.8%
Sanak	0.8%
Slana	0.8%
Tazlina	5.4%
Tok	0.8%
Tolsona	0.8%
Wrangell	0.8%
Other U.S.	59.2%
Foreign	0.8%

Source ADF&G Division of Subsistence household surveys, 2014.
Note "Birthplace" means the place of residence of the parents of the individual when the individual was born.

Cash Employment and Monetary Income

Tazlina's economy is mixed: many people depend on a combination of earned income, non-earned income, and subsistence. The community has some economic opportunity and services, but still relies on the nearby Copper River supply "hub" of Glennallen.[9]

Table 6-6 is a summary of the estimated sources of income for residents of Tazlina in 2013. The total community income for the 2013 study year was $8,093,961, of which 90% was earned income from employment. During the study year the average household total income was approximately $67,450, of which earned income accounted for an average of $60,406 per household. Table 6-6 shows the per capita income for the Tazlina area ($22,968), which was considerably lower (less than one-half) than the per capita income for the state of Alaska ($50,150).[10]

The services industry includes positions for personal caretakers, food and beverage services, or security, and accounted for 35% of all jobs in the community (Table 6-7). The second largest job sector in 2013 was government work (including federal, state, and local government jobs). Positions with local government

9. Alaska Department of Commerce, Community, and Economic Development (ADCCED) Division of Community and Regional Affairs, Juneau. n.d. "Alaska Community Database Online: Community Information." Accessed August 2014. http://commerce.state.ak.us/cra/DCRAExternal/community/Details/f817207e-7c46-44c2-ae89-1ff22eda3f09.
10. U.S. Department of Commerce, Bureau of Economic Analysis. 2014. "Per Capita Personal Income." Accessed August 2014. http://www.bea.gov/REGIONAL/bearfacts/action.cfm?geoType=3&fips=02000&areatype=02000

Table 6-6.–Estimated earned and other income, Tazlina, 2013.

Income source	Number of people	Number of households	Total for community	-/+ 95% CI	Mean per household	Per capita income	Percentage of total community income
Earned income							
Services	71.4	58.3	$2,261,491	$1,354,054 – $3,290,713	$18,845.76		27.9%
State government	27.3	25.0	$1,234,358	$503,760 – $1,984,443	$10,286.32		15.3%
Construction	13.7	13.3	$816,796	$280,288 – $1,714,310	$6,806.63		10.1%
Federal government	12.2	13.3	$630,813	$203,735 – $1,191,279	$5,256.78		7.8%
Local government, including tribal	25.8	21.7	$565,448	$202,875 – $1,040,201	$4,712.06		7.0%
Transportation, communication, and utilities	10.6	11.7	$558,085	$122,723 – $1,127,983	$4,650.71		6.9%
Retail trade	21.3	20.0	$346,775	$88,327 – $721,894	$2,889.79		4.3%
Agriculture, forestry, and fishing	6.1	6.7	$290,641	$77,688 – $1,005,402	$2,422.01		3.6%
Mining	4.6	5.0	$222,020	$32,633 – $572,087	$1,850.17		2.7%
Other employment	3.0	3.3	$174,814	$68,709 – $477,432	$1,456.78		2.2%
Finance, insurance, and real estate	3.0	3.3	$133,334	$33,426 – $382,515	$1,111.12		1.6%
Wholesale trade	1.5	1.7	$10,451	$4,206 – $24,781	$87.10		0.1%
Manufacturing	3.0	3.3	$3,655	$726 – $10,664	$30.46		0.0%
Earned income subtotal	**174.7**	**116.7**	**$7,248,681**	**$5,447,959 – $8,774,032**	**$60,406**	**$20,569**	**89.6%**
Other income							
Alaska Permanent Fund dividend		110.9	$266,494	$231,231 – $307,169	$2,221		3.3%
Social Security		19.7	$178,865	$73,760 – $327,771	$1,491		2.2%
Native corporation dividend		47.1	$109,389	$26,177 – $319,919	$912		1.4%
Pension/retirement		10.6	$67,816	$2,500 – $191,684	$565		0.8%
Food stamps		10.6	$53,169	$15,385 – $109,415	$443		0.7%
Workers' compensation/insurance		1.5	$42,532	$28,000 – $85,063	$354		0.5%
Disability		6.1	$38,585	$818 – $95,631	$322		0.5%
Veterans assistance		6.1	$27,111	$2,351 – $79,443	$226		0.3%
Unemployment		13.7	$26,595	$4,865 – $59,840	$222		0.3%
Child support		4.6	$10,481	$456 – $37,367	$87		0.1%
Rental income		2.9	$8,571	$543 – $28,571	$71		0.1%
Heating assistance		7.6	$5,766	$1,231 – $14,053	$48		0.1%
Adult public assistance (OAA, APD)		1.5	$5,468	$3,600 – $10,937	$46		0.1%
Foster care		1.5	$3,646	$2,400 – $7,291	$30		0.0%
Meeting honoraria		1.5	$608	$400 – $1,215	$5		0.0%
Supplemental Security income		1.5	$185	$122 – $966	$2		0.0%
TANF (Temporary Assistance for Needy		0.0	$0	$0 – $0	$0		0.0%
Longevity bonus		0.0	$0	$0 $0	$0		0.0%
Other		0.0	$0	$0 $0	$0		0.0%
CITGO fuel voucher		0.0	$0	$0 $0	$0		0.0%
Other income subtotal		**114.6**	**$845,279**	**$5,447,959 – $8,774,032**	**$7,044**	**$2,399**	**10.4%**
Community income total			**$8,093,961**	**$6,221,242 – $9,597,248**	**$67,450**	**$22,968**	**100.0%**

Source ADF&G Division of Subsistence household surveys, 2014.

Table 6-7.–Employment by industry, Tazlina, 2013.

Industry	Jobs	Households	Individuals	Percentage of wage earnings
Estimated total number	**253.3**	**116.7**	**206.6**	
Federal government	**5.7%**	**11.4%**	**7.0%**	**8.7%**
Executive, administrative, and managerial	0.7%	1.4%	0.9%	1.5%
Natural scientists and mathematicians	0.7%	1.4%	0.9%	1.2%
Social scientists, social workers, religious workers, and lawyers	0.7%	1.4%	0.9%	1.3%
Teachers, librarians, and counselors	0.7%	1.4%	0.9%	1.4%
Administrative support occupations, including clerical	0.7%	1.4%	0.9%	1.1%
Service occupations	1.4%	2.9%	1.7%	0.6%
Mechanics and repairers	0.7%	1.4%	0.9%	1.5%
State government	**12.8%**	**21.4%**	**15.7%**	**17.0%**
Executive, administrative, and managerial	1.4%	2.9%	1.7%	2.0%
Engineers, surveyors, and architects	0.7%	1.4%	0.9%	0.2%
Natural scientists and mathematicians	1.4%	1.4%	1.7%	2.6%
Technologists and technicians, except health	0.7%	1.4%	0.9%	1.2%
Service occupations	3.5%	7.1%	4.3%	5.3%
Mechanics and repairers	0.7%	1.4%	0.9%	1.1%
Transportation and material moving occupations	2.1%	2.9%	2.6%	2.8%
Handlers, equipment cleaners, helpers, and laborers	0.7%	1.4%	0.9%	0.5%
Occupation not indicated	1.4%	2.9%	1.7%	1.3%
Local government, including tribal	**13.5%**	**18.6%**	**14.8%**	**7.8%**
Executive, administrative, and managerial	2.8%	2.9%	1.7%	2.2%
Teachers, librarians, and counselors	3.5%	7.1%	4.3%	2.6%
Health technologists and technicians	0.7%	1.4%	0.9%	1.0%
Technologists and technicians, except health	0.7%	1.4%	0.9%	0.2%
Administrative support occupations, including clerical	1.4%	2.9%	1.7%	1.0%
Service occupations	2.1%	4.3%	2.6%	0.7%
Handlers, equipment cleaners, helpers, and laborers	2.1%	2.9%	2.6%	0.1%
Agriculture, forestry, and fishing	**2.8%**	**5.7%**	**3.5%**	**4.0%**
Agricultural, forestry, and fishing occupations	2.8%	5.7%	3.5%	4.0%
Mining	**2.1%**	**4.3%**	**2.6%**	**3.1%**
Service occupations	0.7%	1.4%	0.9%	0.5%
Transportation and material moving occupations	1.4%	2.9%	1.7%	2.6%
Construction	**7.1%**	**11.4%**	**7.8%**	**11.3%**
Executive, administrative, and managerial	0.7%	1.4%	0.9%	4.0%
Mechanics and repairers	0.7%	1.4%	0.9%	1.1%
Construction and extractive occupations	3.5%	7.1%	4.3%	4.7%
Handlers, equipment cleaners, helpers, and laborers	2.1%	2.9%	2.6%	1.4%
Manufacturing	**1.4%**	**2.9%**	**1.7%**	**0.1%**
Writers, artists, entertainers, and athletes	1.4%	2.9%	1.7%	0.1%
Transportation, communication, and utilities	**5.0%**	**10.0%**	**6.1%**	**7.7%**
Executive, administrative, and managerial	0.7%	1.4%	0.9%	1.2%
Engineers, surveyors, and architects	0.7%	1.4%	0.9%	0.4%
Marketing and sales occupations	1.4%	2.9%	1.7%	1.1%
Mechanics and repairers	0.7%	1.4%	0.9%	1.1%
Construction and extractive occupations	0.7%	1.4%	0.9%	2.6%
Transportation and material moving occupations	0.7%	1.4%	0.9%	1.2%

-continued-

Table 6-7.–Page 2 of 2.

Industry	Jobs	Households	Individuals	Percentage of wage earnings
Wholesale trade	**0.7%**	**1.4%**	**0.9%**	**0.1%**
Writers, artists, entertainers, and athletes	0.7%	1.4%	0.9%	0.1%
Retail trade	**11.3%**	**17.1%**	**12.2%**	**4.8%**
Executive, administrative, and managerial	0.7%	1.4%	0.9%	1.2%
Marketing and sales occupations	3.5%	7.1%	4.3%	0.9%
Administrative support occupations, including clerical	0.7%	1.4%	0.9%	0.7%
Service occupations	3.5%	7.1%	4.3%	1.7%
Agricultural, forestry, and fishing occupations	1.4%	1.4%	1.7%	0.1%
Handlers, equipment cleaners, helpers, and laborers	0.7%	1.4%	0.9%	0.1%
Occupation not indicated	0.7%	1.4%	0.9%	0.2%
Finance, insurance and real estate	**1.4%**	**2.9%**	**1.7%**	**1.8%**
Executive, administrative, and managerial	0.7%	1.4%	0.9%	1.2%
Administrative support occupations, including clerical	0.7%	1.4%	0.9%	0.6%
Services	**34.8%**	**50.0%**	**40.9%**	**31.2%**
Executive, administrative, and managerial	7.8%	14.3%	9.6%	12.3%
Teachers, librarians, and counselors	0.7%	1.4%	0.9%	0.0%
Registered nurses, pharmacists, dietitians, therapists, and physicians assistants	2.8%	5.7%	3.5%	2.3%
Health technologists and technicians	2.8%	5.7%	3.5%	3.1%
Marketing and sales occupations	0.7%	1.4%	0.9%	0.1%
Administrative support occupations, including clerical	1.4%	2.9%	1.7%	0.2%
Service occupations	9.9%	14.3%	12.2%	5.6%
Mechanics and repairers	2.1%	4.3%	2.6%	2.4%
Production working occupations	0.7%	1.4%	0.9%	0.1%
Transportation and material moving occupations	3.5%	7.1%	4.3%	4.4%
Handlers, equipment cleaners, helpers, and laborers	1.4%	2.9%	1.7%	0.5%
Occupation not indicated	0.7%	1.4%	0.9%	0.1%
Industry not indicated	**1.4%**	**2.9%**	**1.7%**	**2.4%**
Executive, administrative, and managerial	1.4%	2.9%	1.7%	2.4%

Source ADF&G Division of Subsistence household surveys, 2014.

agencies made up 14% of all jobs, state government positions provided 13% of community jobs, and federal government positions provided 6% of jobs; combined, government employment composed 33% of total jobs in Tazlina. The services industry and combined government positions composed 31% and 34% of earned income, respectively. Another large contributor to earned income was the construction industry (11% of earned income).

Other income sources included Alaska Permanent Fund dividends, Social Security benefits, Native corporation dividends, unemployment benefits, and other assistance program benefits. Combined, Alaska Permanent Fund dividends, Social Security, and Native corporation dividends provided 7% of the total community income (Table 6-6). Remaining types of other income sources each provided less than 1% of the total community income.

Tazlina's unemployment rate was 9% in 2013, which is low compared to most of the other communities in the Copper River valley. However, 37% of Tazlina's residents described themselves as not being a part of the labor force.[11] Eighty-four percent of working-age adults (age 16 or older) in Tazlina were employed in 2013 (Table 6-8). The mean duration of employment was 9 months for each employed individual and 58% of employed adults were employed year-round. The average number of jobs that each employed individual held in 2013 was 1.2. Total jobs averaged 2.1 for employed households.

11. Copper River Valley Development Association, Inc., Tazlina. 2013. "Copper River Regional Energy Plan." Accessed October 2014. http://www.coppervalley.org/wwd-Energy

Table 6-8.–Employment characteristics, Tazlina, 2013.

Characteristic	Community Tazlina
All adults	
Number	246.1
Mean weeks employed	30.8
Employed adults	
Number	206.6
Percentage	83.9%
Jobs	
Number	253.3
Mean	1.2
Minimum	1
Maximum	3
Months employed	
Mean	8.5
Minimum	1
Maximum	12
Percentage employed year-round	58.1%
Mean weeks employed	36.7
Households	
Number	120
Employed	
Number	116.7
Percentage	97.2%
Jobs per employed household	
Mean	2.1
Minimum	1
Maximum	7
Employed adults	
Mean	
Employed households	1.8
Total households	1.7
Minimum	1
Maximum	4
Mean person-weeks of employment	42.7

Source ADF&G Division of Subsistence household surveys, 2014.

Levels of Individual Participation in the Harvesting and Processing of Wild Resources

Table 6-9 reports the expanded levels of individual participation in the harvesting and processing of wild resources by all Tazlina residents in 2013. Approximately 89% of all residents participated in harvesting wild resources while 88% participated in processing wild resources. Vegetation had the highest levels of harvesting (79%) and processing (78%) involvement; this high level of participation is reflected in the high amount of use of vegetation by community households. The resource category with the second highest harvesting and processing participation was fish: 70% of people said they participated in harvesting fish, while 73% processed fish. Forty-four percent of the population harvested large land mammals and about 43% processed these resources. Small land mammals and birds and eggs both had roughly 20% of individuals harvesting and processing these resources.

The survey included questions about individual participation in wild harvest activities such as working with fish wheels, handicrafts, and cooking wild foods. In Tazlina, 30% of residents built or repaired fish wheels or placed them in the river; this participation rate corresponds to the high level of salmon harvesting that occurs by fish wheel. In 2013, 10% of residents sewed skins or cloth and 68% of residents cooked wild foods (Table 6-10).

Household Resource Harvest and Use Patterns and Sharing of Wild Resources

Table 6-11 summarizes resource harvest and use characteristics for Tazlina in 2013 at the household level. Most households (99%) used wild resources in 2013, while 96% attempted to harvest and 95% harvested resources. The average harvest was 441 lb usable weight per household, or 150 lb per capita. During the study year, community households harvested an average of 7 kinds of resources and used an average of 10 kinds of resources. The maximum number of resources used by any household was 36. In addition, households gave away an average of 4 kinds of resources and 89% of households shared resources with other households. Overall, as many as 129 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.

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 6-3, in the 2013 study year in Tazlina, 70% of the harvest of wild resources as estimated in usable pounds was 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 Tazlina and the other study communities.

The survey included questions about residents' use of alternative and motorized modes of transportation to access wild food harvest areas and the use of portable motors. Figure 6-4 demonstrates the percentage of community households that used an alternate motorized means of transportation (in addition to or aside from using cars, trucks, or traveling on foot). Approximately 51% of the Tazlina households used ATVs when harvesting wild foods. About 38% of households used boats, 32% used snow machines, and 5% used aircraft. Many residents noted that being on the road system they were able to travel using highway vehicles. The use of portable motors was important for Tazlina; 70% of households that responded used a chain saw, 32% used a winch, 24% used an ice auger, 25% used generators, and 11% used other portable motorized equipment (Figure 6-5).

Table 6-9.–Individual participation in subsistence harvesting and processing activities, Tazlina, 2013.

Total number of people	**352.4**
Fish	
Fish	
Number	247.6
Percentage	70.3%
Process	
Number	258.2
Percentage	73.3%
Large land mammals	
Hunt	
Number	154.9
Percentage	44.0%
Process	
Number	150.4
Percentage	42.7%
Small land mammals	
Hunt or trap	
Number	68.4
Percentage	19.4%
Process	
Number	62.3
Percentage	17.7%
Birds and eggs	
Hunt/gather	
Number	80.5
Percentage	22.8%
Process	
Number	75.9
Percentage	21.6%
Vegetation	
Gather	
Number	278.2
Percentage	78.9%
Process	
Number	275.1
Percentage	78.1%
Any resource	
Attempt harvest	
Number	312.9
Percentage	88.8%
Process	
Number	308.4
Percentage	87.5%

Source ADF&G Division of Subsistence household surveys, 2014.

Table 6-10.–Household member participation in subsistence craft activities, Tazlina, 2013.

Total number of people	**352.4**
Building, maintaining, or moving fish wheels	
Number	104.0
Percentage	29.5%
Sewing skins or cloth	
Number	35.7
Percentage	10.1%
Cooking wild foods	
Number	240.6
Percentage	68.3%

Source ADF&G Division of Subsistence household surveys, 2014.

Figure 6-6 demonstrates the percentage of households that used natural materials for handicrafts; of the households that responded to this question 18% used antlers, 3% used horns, and 5% used bark. Significantly, 22% of households used other raw natural materials, most of which were fur and skins.

Wood was one of the community's top harvested resources. This is in large part because 64% of households supplemented or fully heated their homes with wood (Table 6-12). Fifty-eight percent of households used wood for more than 25% of their home's heat; the importance of wood used to heat homes and its unavailability was heavily commented upon by survey respondents.

Harvest Quantities and Composition

Table 6-13 reports estimated wild resource harvests and uses by Tazlina residents in 2013 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]). The "harvest" category includes resources harvested by any member of the surveyed household during 2013. The "use" category includes all 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 collected firewood are included because they are an important part of the subsistence way of life. Differences between harvest and use percentages reflect sharing among households, which results in a wider distribution of wild foods.

In 2013, residents of Tazlina harvested an estimated total of 52,880 lb, or 150 lb per capita, of wild resources (Table 6-13). In terms of pounds harvested, salmon constituted the largest portion (68%) of the community harvest totaling 35,994 lb, or 102 lb per capita (Figure 6-7; Table 6-13). Large land mammals contributed the second highest most usable weight to the 2013 harvest and made up 20% of the harvest (Figure 6-7). The community harvested approximately 10,741 lb of large land mammals, or 31 lb per capita (Table 6-13). Nonsalmon fish contributed 7% of the harvest (3,410 lb total, or 10 lb per capita) (Figure 6-7; Table 6-13). Vegetation made up 3% of the harvest with a total of 1,814 lb, or 5 lb per capita, harvested. Marine invertebrates and birds and eggs both made up approximately 1% of the total harvest. The remaining small land mammal harvests made up less than 1% of the total usable weight harvested.

Seasonal Round

Tazlina seasonal rounds are largely shaped by regulation, permit access, and availability of resources. In addition to ice fishing, spring marks the end of the commercial trapping season and presents another

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 6-11.–Resource harvest and use characteristics, Tazlina, 2013.

Characteristic	
Mean number of resources used per household	**10.0**
Minimum	0
Maximum	36
95% confidence limit (±)	8.3%
Median	9
Mean number of resources attempted to harvest per household	**8.5**
Minimum	0
Maximum	36
95% confidence limit (±)	9.9%
Median	8
Mean number of resources harvested per household	**7.0**
Minimum	0
Maximum	35
95% confidence limit (±)	10.6%
Median	6
Mean number of resources received per household	**4.1**
Minimum	0
Maximum	15
95% confidence limit (±)	9.5%
Median	4
Mean number of resources given away per household	**3.9**
Minimum	0
Maximum	15
95% confidence limit (±)	11.2%
Median	3
Household harvest (pounds)	
Minimum	0
Maximum	2,227
Mean	440.7
Median	266
Total harvest weight (lb)	52,880.3
Community per capita harvest (lb)	150.1
Percentage using any resource	98.7%
Percentage attempting to harvest any resource	96.2%
Percentage harvesting any resource	94.9%
Percentage receiving any resource	92.4%
Percentage giving away any resource	88.6%
Number of households in sample	79
Number of resources asked about and identified voluntarily by respondents	129

Source ADF&G Division of Subsistence household surveys, 2014.

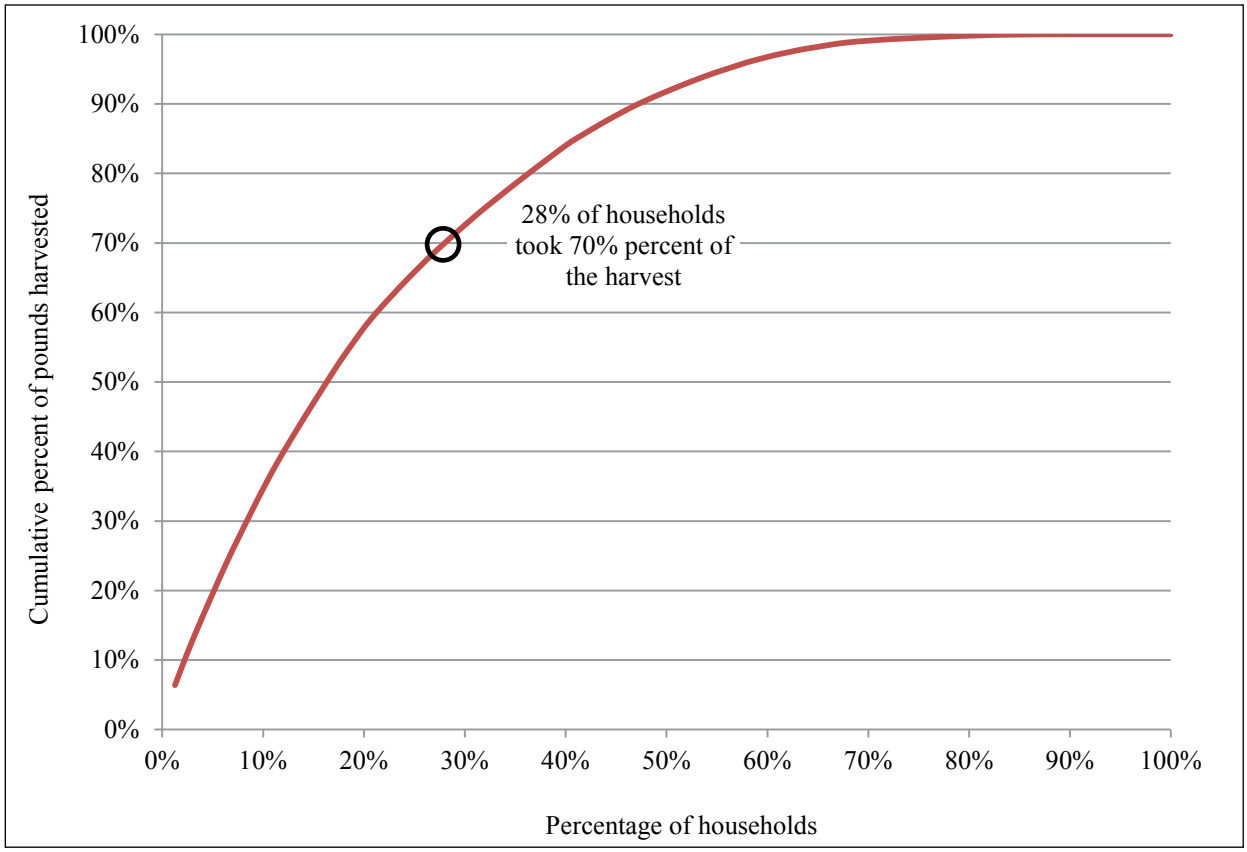


Figure 6-3.–Household specialization, Tazlina, 2013.

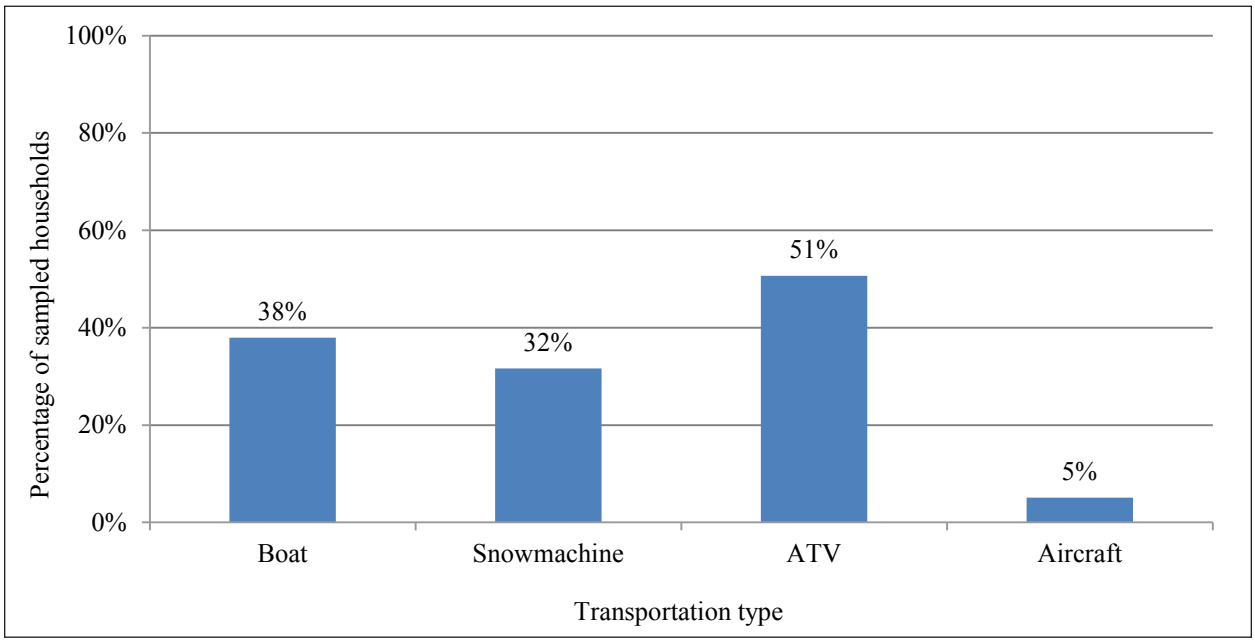


Figure 6-4.–Alternative modes of transportation used by sampled households to access wild resources, Tazlina, 2013.

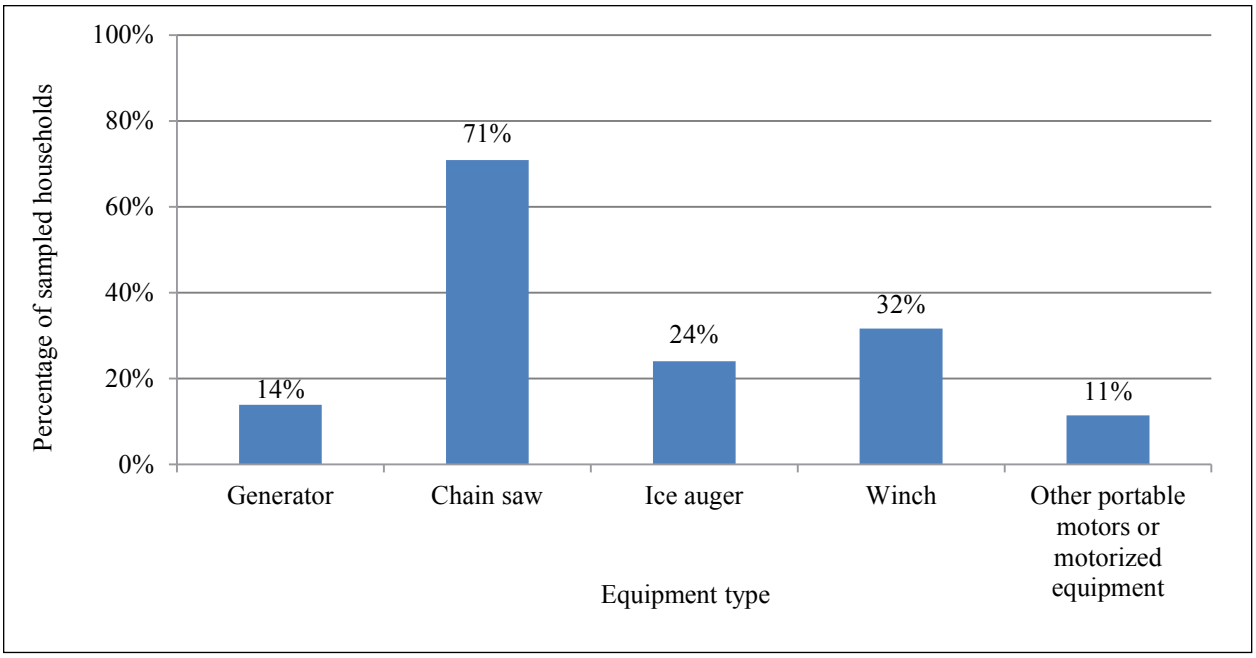


Figure 6-5.–Portable motorized equipment used by sampled households while searching for and harvesting wild resources, Tazlina, 2013.

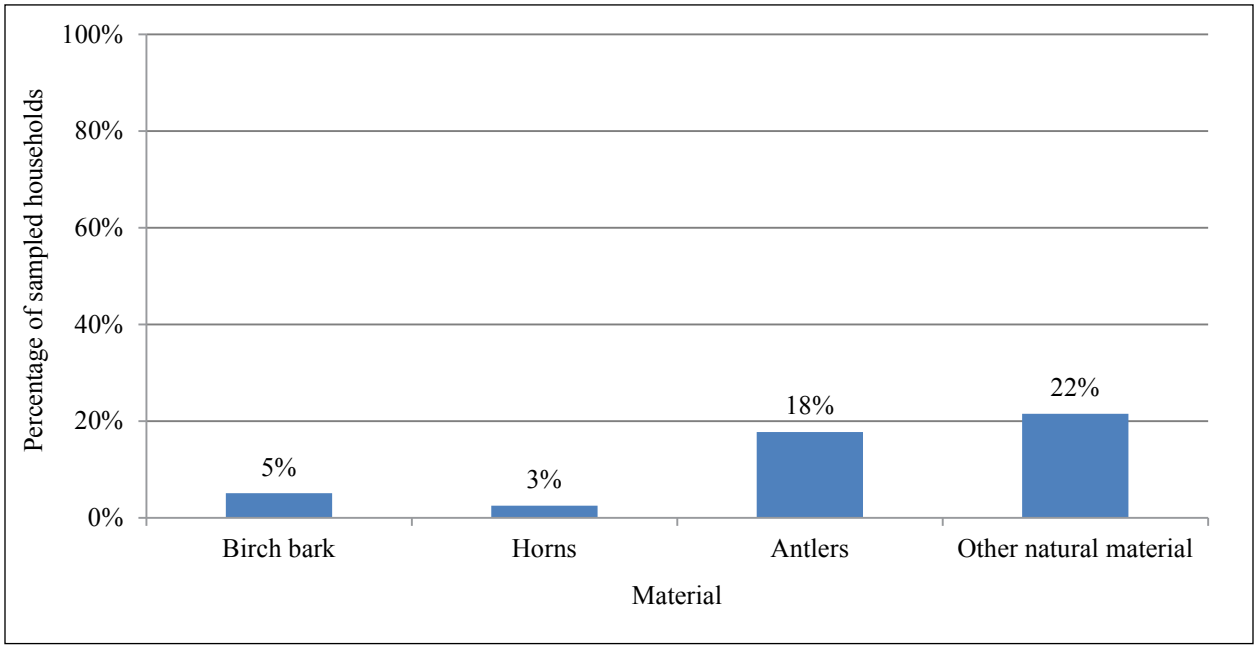


Figure 6-6.–Natural materials used by sampled households for making handicrafts, Tazlina, 2013.

Table 6-12.–Use of firewood for home heating in sampled households, Tazlina, 2013.

Community	Average annual cost of home heating	Household use of wood for home heating as a percentage of total fuel for heating											
		0%		1%–25%		26%–50%		51%–75%		76%–99%		100%	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Tazlina	$2,062	28	35.4%	5	6.3%	14	17.7%	10	12.7%	15	19.0%	7	8.9%

Source ADF&G Division of Subsistence household surveys, 2014.

Table 6-13.–Estimated use and harvests of fish, game, and vegetation resources, Tazlina, 2013.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount[a]			95% confidence limit (±)
	Use %	Attempt %	Harvest %	Receive %	Give %	Total	Mean per household	Per capita	Total	Unit	Mean per household	
All resources	**98.7**	**96.2**	**94.9**	**92.4**	**88.6**	**52,880.3**	**440.7**	**150.1**				**14.6**
Salmon	**92.4**	**73.4**	**70.9**	**60.8**	**67.1**	**35,993.8**	**299.9**	**102.1**				**17.2**
Chum salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Coho salmon	21.5	21.5	17.7	6.3	13.9	2,001.3	16.7	5.7	322.0	ind	2.7	58.7
Chinook salmon	57.0	50.6	45.6	29.1	41.8	4,192.0	34.9	11.9	305.3	ind	2.5	28.0
Pink salmon	5.1	5.1	5.1	0.0	3.8	502.6	4.2	1.4	233.9	ind	1.9	78.9
Sockeye salmon	92.4	69.6	69.6	58.2	60.8	29,297.8	244.1	83.1	6,388.9	ind	53.2	17.6
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	**68.4**	**54.4**	**53.2**	**53.2**	**41.8**	**3,409.5**	**28.4**	**9.7**				**27.3**
Pacific herring	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	ind	0.0	0.0
Pacific herring roe on hemlock branches	1.3	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Eulachon (hooligan, candlefish)	2.5	1.3	1.3	1.3	1.3	2.5	0.0	0.0	0.8	gal	0.0	116.4
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
Pacific (gray) cod	2.5	0.0	0.0	1.3	1.3	0.0	0.0	0.0	0.0	ind	0.0	0.0
Pacific tomcod	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	1.3	1.3	1.3	0.0	0.0	13.7	0.1	0.0	4.6	ind	0.0	116.4
Lingcod	8.9	8.9	7.6	1.3	7.6	153.7	1.3	0.4	64.1	ind	0.5	81.9
Pacific halibut	49.4	17.7	15.2	38.0	24.1	1,253.8	10.4	3.6	1,253.8	lb	10.4	52.6
Arctic lamprey	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	13.9	10.1	10.1	5.1	3.8	387.7	3.2	1.1	96.9	ind	0.8	64.2
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
Burbot	20.3	16.5	16.5	10.1	5.1	324.5	2.7	0.9	135.2	ind	1.1	39.2
Dolly Varden	5.1	6.3	5.1	2.5	3.8	79.3	0.7	0.2	88.1	ind	0.7	68.5
Lake trout	6.3	6.3	6.3	0.0	0.0	127.6	1.1	0.4	63.8	ind	0.5	84.9
Arctic grayling	30.4	25.3	25.3	7.6	7.6	265.8	2.2	0.8	379.7	ind	3.2	29.4
Northern pike	1.3	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Sheefish	1.3	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0

-continued-

Table 6-13.–Page 2 of 5.

Resource	Percentage of households: Use %	Attempt %	Harvest %	Receive %	Give %	Harvest weight (lb): Total	Mean per household	Per capita	Harvest amount[a]: Total	Unit	Mean per household	95% confidence limit (±)
Nonsalmon fish, continued												
Longnose sucker	1.3	1.3	1.3	0.0	0.0	31.9	0.3	0.1	45.6	ind	0.4	116.4
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	16.5	16.5	16.5	0.0	5.1	219.0	1.8	0.6	156.5	ind	1.3	37.8
Steelhead	2.5	2.5	2.5	0.0	0.0	51.0	0.4	0.1	12.2	ind	0.1	81.8
Unknown trout	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Broad whitefish	3.8	3.8	3.8	3.8	1.3	218.7	1.8	0.6	54.7	ind	0.5	74.2
Least cisco	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Humpback whitefish	5.1	3.8	3.8	2.5	1.3	63.8	0.5	0.2	36.5	ind	0.3	70.5
Round whitefish	1.3	1.3	1.3	0.0	0.0	30.4	0.3	0.1	30.4	ind	0.3	116.4
Unknown whitefishes	5.1	2.5	2.5	3.8	2.5	186.1	1.6	0.5	106.3	ind	0.9	82.6
Large land mammals	**88.6**	**65.8**	**25.3**	**77.2**	**40.5**	**10,740.8**	**89.5**	**30.5**				**27.9**
Bison	5.1	3.8	1.3	5.1	2.5	683.5	5.7	1.9	1.5	ind	0.0	116.4
Black bear	12.7	10.1	6.3	7.6	2.5	440.5	3.7	1.3	7.6	ind	0.1	50.7
Brown bear	2.5	3.8	1.3	1.3	0.0	214.2	1.8	0.6	1.5	ind	0.0	116.4
Caribou	55.7	48.1	12.7	39.2	20.3	2,369.6	19.7	6.7	18.2	ind	0.2	36.7
Deer	3.8	0.0	0.0	3.8	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	77.2	62.0	11.4	69.6	30.4	6,835.4	57.0	19.4	15.2	ind	0.1	38.4
Dall sheep	5.1	3.8	2.5	1.3	1.3	197.5	1.6	0.6	3.0	ind	0.0	81.8
Small land mammals	**26.6**	**20.3**	**19.0**	**12.7**	**7.6**	**113.3**	**0.9**	**0.3**				**49.1**
Beaver	7.6	6.3	5.1	2.5	2.5	22.8	0.2	0.1	38.0	ind	0.3	116.4
Coyote	5.1	6.3	5.1	0.0	1.3	0.0	0.0	0.0	47.1	ind	0.4	101.6
Red fox–cross phase	3.8	3.8	3.8	0.0	0.0	0.0	0.0	0.0	13.7	ind	0.1	68.8
Red fox–red phase	7.6	7.6	7.6	0.0	0.0	0.0	0.0	0.0	42.5	ind	0.4	65.6
Snowshoe hare	3.8	3.8	3.8	0.0	0.0	51.6	0.4	0.1	25.8	ind	0.2	77.1
North American river (land) otter	2.5	3.8	2.5	1.3	1.3	0.0	0.0	0.0	12.2	ind	0.1	84.3
Lynx	6.3	6.3	6.3	0.0	0.0	6.1	0.1	0.0	38.0	ind	0.3	116.4
Marmot	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Marten	6.3	6.3	6.3	0.0	0.0	0.0	0.0	0.0	57.7	ind	0.5	63.3
Mink	2.5	2.5	2.5	0.0	0.0	0.0	0.0	0.0	3.0	ind	0.0	81.8
Muskrat	6.3	3.8	3.8	2.5	1.3	5.5	0.0	0.0	6.1	ind	0.1	81.8
Porcupine	12.7	6.3	5.1	10.1	3.8	27.3	0.2	0.1	6.1	ind	0.1	57.1

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Table 6-13.–Page 3 of 5.

Resource	Percentage of households: Use %	Attempt %	Harvest %	Receive %	Give %	Harvest weight (lb): Total	Mean per household	Per capita	Harvest amount[a]: Total	Unit	Mean per household	95% confidence limit (±)
Small land mammals, continued												
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
Least weasel	5.1	5.1	5.1	0.0	0.0	0.0	0.0	0.0	36.5	ind	0.3	67.7
Gray wolf	3.8	6.3	3.8	0.0	0.0	0.0	0.0	0.0	15.2	ind	0.1	78.3
Wolverine	2.5	3.8	2.5	0.0	0.0	0.0	0.0	0.0	10.6	ind	0.1	89.1
Marine mammals	**7.6**	**0.0**	**0.0**	**7.6**	**0.0**	**0.0**	**0.0**	**0.0**				**0.0**
Fur seal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Harbor seal	1.3	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown seal	3.8	0.0	0.0	3.8	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
Unknown whale	5.1	0.0	0.0	5.1	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Birds and eggs	**43.0**	**44.3**	**39.2**	**10.1**	**15.2**	**362.6**	**3.0**	**1.0**				**27.9**
Canvasback	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Spectacled 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	1.3	1.3	1.3	0.0	0.0	12.2	0.1	0.0	15.2	ind	0.1	116.4
Mallard	10.1	11.4	8.9	2.6	3.8	44.1	0.4	0.1	44.1	ind	0.4	53.0
Unknown merganser	1.3	1.3	1.3	0.0	0.0	2.7	0.0	0.0	3.0	ind	0.0	116.4
Northern pintail	2.5	3.8	2.5	0.0	1.3	10.9	0.1	0.0	13.7	ind	0.1	104.1
Black scoter	1.3	1.3	1.3	1.3	1.3	8.2	0.1	0.0	9.1	ind	0.1	116.4
Northern shoveler	1.3	1.3	1.3	0.0	1.3	5.5	0.0	0.0	9.1	ind	0.1	116.4
Green-winged teal	1.3	2.5	1.3	0.0	0.0	0.9	0.0	0.0	3.0	ind	0.0	116.4
Unknown wigeon	1.3	2.5	1.3	0.0	0.0	2.1	0.0	0.0	3.0	ind	0.0	116.4
Unknown ducks	7.6	3.8	3.8	3.8	2.5	11.7	0.1	0.0	16.7	ind	0.1	66.9
Brant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Cackling goose	2.5	2.5	1.3	1.3	0.0	1.8	0.0	0.0	1.5	ind	0.0	116.4
Canada goose	1.3	2.5	1.3	0.0	1.3	14.6	0.1	0.0	12.2	ind	0.1	116.4
Unknown Canada/ cackling geese	1.3	1.3	1.3	0.0	1.3	3.6	0.0	0.0	3.0	ind	0.0	116.4
Emperor goose	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Snow goose	1.3	1.3	1.3	0.0	0.0	9.1	0.1	0.0	3.0	ind	0.0	116.4
White-fronted goose	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0

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Table 6-13.–Page 4 of 5.

Resource	Percentage of households: Use %	Attempt %	Harvest %	Receive %	Give %	Harvest weight (lb): Total	Mean per household	Per capita	Harvest amount[a]: Total	Unit	Mean per household	95% confidence limit (±)
Birds and eggs, continued												
Unknown geese	1.3	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Tundra (whistling) swan	1.3	1.3	1.3	0.0	1.3	18.2	0.2	0.1	3.0	ind	0.0	116.4
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
Spruce grouse	19.0	21.5	19.0	1.3	5.1	111.6	0.9	0.3	159.5	ind	1.3	31.7
Sharp-tailed grouse	2.5	2.5	2.5	0.0	0.0	10.6	0.1	0.0	15.2	ind	0.1	83.4
Ruffed grouse	3.8	5.1	3.8	1.3	1.3	9.6	0.1	0.0	13.7	ind	0.1	73.6
Unknown ptarmigan	22.8	29.1	21.5	1.3	5.1	85.1	0.7	0.2	121.5	ind	1.0	35.0
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
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 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	**16.5**	**7.6**	**7.6**	**12.7**	**6.3**	**446.4**	**3.7**	**1.3**				**76.4**
Freshwater clams	1.3	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Razor clams	3.8	2.5	2.5	2.5	0.0	296.2	2.5	0.8	98.7	gal	0.8	107.7
Dungeness crab	2.5	0.0	0.0	2.5	0.0	0.0	0.0	0.0	0.0	lb	0.0	0.0
Unknown king crab	2.5	0.0	0.0	2.5	1.3	0.0	0.0	0.0	0.0	lb	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	lb	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
Shrimp	12.7	5.1	5.1	10.1	5.1	150.2	1.3	0.4	150.2	lb	1.3	84.1
Squid	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Vegetation	**93.7**	**87.3**	**87.3**	**36.7**	**46.8**	**1,813.9**	**15.1**	**5.1**				**17.2**
Blueberry	74.7	70.9	70.9	15.2	31.6	994.2	8.3	2.8	248.6	gal	2.1	20.2
Lowbush cranberry	44.3	38.0	38.0	8.9	22.8	432.3	3.6	1.2	108.1	gal	0.9	29.0
Highbush cranberry	11.4	11.4	11.4	1.3	5.1	57.7	0.5	0.2	14.4	gal	0.1	57.9
Crowberry	8.9	8.9	8.9	0.0	3.8	47.8	0.4	0.1	12.0	gal	0.1	54.4
Currants	2.5	2.5	2.5	0.0	2.5	7.6	0.1	0.0	1.9	gal	0.0	83.4
Raspberry	34.2	32.9	32.9	8.9	6.3	163.1	1.4	0.5	40.8	gal	0.3	31.5
Cloudberry	3.8	3.8	3.8	0.0	0.0	7.8	0.1	0.0	2.0	gal	0.0	92.8
Salmonberry	2.5	0.0	0.0	2.5	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Twisted stalk berry (watermelon berry)	1.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Other wild berry	3.8	2.5	2.5	1.3	0.0	9.1	0.1	0.0	2.3	gal	0.0	86.3

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Table 6-13.–Page 5 of 5.

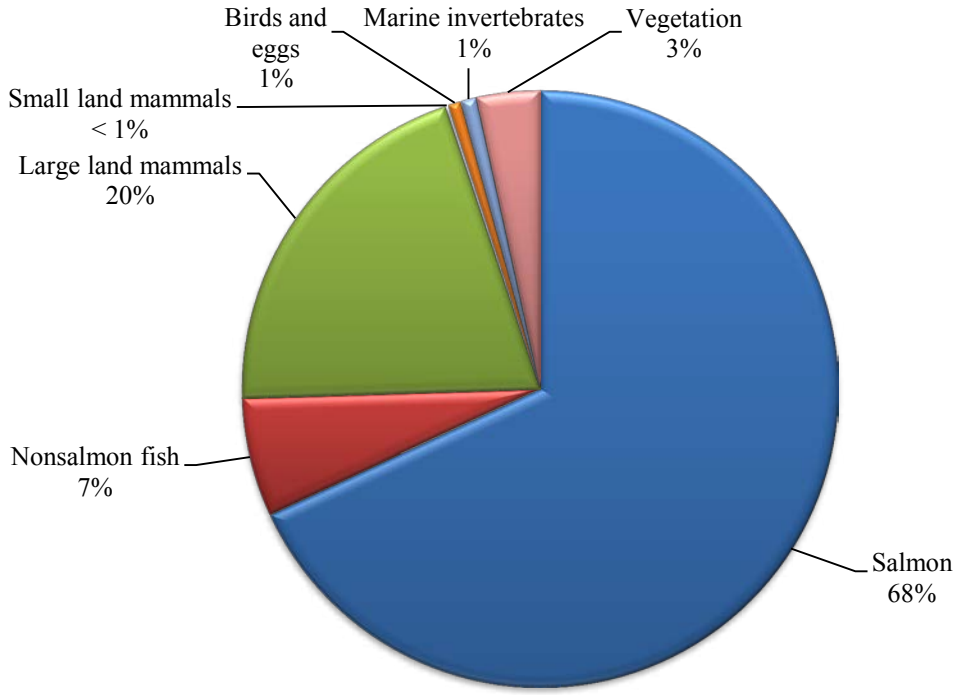
Resource	Percentage of households: Use %	Attempt %	Harvest %	Receive %	Give %	Harvest weight (lb): Total	Mean per household	Per capita	Harvest amount[a]: Total	Unit	Mean per household	95% confidence limit (±)
Vegetation, continued												
Wild rhubarb	2.5	2.5	2.5	0.0	2.5	0.4	0.0	0.0	0.4	gal	0.0	58.6
Eskimo potato	1.3	2.5	1.3	0.0	1.3	1.1	0.0	0.0	0.3	gal	0.0	116.4
Devils club	1.3	1.3	1.3	0.0	0.0	0.8	0.0	0.0	0.8	gal	0.0	116.4
Hudson's Bay (Labrador) tea	2.5	2.5	2.5	1.3	0.0	21.3	0.2	0.1	21.3	gal	0.2	108.3
Wild rose hips	5.1	5.1	5.1	0.0	1.3	21.3	0.2	0.1	5.3	gal	0.0	68.8
Yarrow	2.5	2.5	2.5	0.0	1.3	1.9	0.0	0.0	1.9	gal	0.0	95.7
Other wild greens	6.3	5.1	5.1	1.3	1.3	7.7	0.1	0.0	7.7	gal	0.1	75.6
Unknown mushrooms	10.1	11.4	8.9	2.5	1.3	21.2	0.2	0.1	21.2	gal	0.2	85.6
Plantain	1.3	1.3	1.3	0.0	0.0	0.4	0.0	0.0	0.4	gal	0.0	116.4
Stinkweed	3.8	3.8	3.8	1.3	1.3	18.3	0.2	0.1	18.3	gal	0.2	98.1
Bark	2.5	2.5	0.0	0.0	2.5	0.0	0.0	0.0	0.0	gal	0.0	0.0
Roots	1.3	1.3	0.0	0.0	1.3	0.0	0.0	0.0	0.0	qt	0.0	0.0
Other wood	60.8	58.2	58.2	6.3	24.1	0.0	0.0	0.0	438.2	cord	3.7	17.3

Source ADF&G Division of Subsistence household surveys, 2014.

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.

a. Summary rows that include incompatible units of measure have been left blank.



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

Figure 6-7.–Composition of harvest by resource category in pounds usable weight, Tazlina, 2013.

opportunity to harvest migratory waterfowl passing through on their way north. Spring is a popular time for bears to be taken. Summertime is dominated by salmon harvesting activity. Chinook salmon are an important resource in the spring, with sockeye salmon making up a larger part of the harvest occurring throughout the summer with coho salmon making important contribution in the fall. Nonsalmon fish, including marine fish, are most heavily harvested in the summer; fishing continues until before freeze-up. Harvesting of small land mammals for food purposes happens in the summer and is mostly opportune hunting activity with some trapping efforts.

Fall is an important and productive harvest time for people in the Tazlina area. The season is dominated by large land mammal hunting (mainly moose and caribou). This is largely due to the regulated time periods during which moose and caribou can be taken in game management unit (GMU) 13 (which is the predominantly used GMU in the area) (Figure 6-8). Sheep hunting also occurs in the fall. Fall bird hunting is popular. Migratory waterfowl pass through the area heading south and the spruce grouse and ptarmigan season is open. Late summer and fall are also opportune times for berry harvesting.

Winter is a less productive time to harvest resources because of extreme temperatures and less resource availability. Traplines are maintained throughout the winter, but only a small portion of households participate in trapping. During the winter, the bison hunt is also open, although the odds against drawing a bison permit are very high and Alaska residents are only eligible every 10 years. Some caribou are also taken in the winter hunt. Ice fishing (mainly for burbot or lake and rainbow trout) also occurs during winter, but much of the ice fishing happens in the early spring before breakup. Harvesting wood for heat occurs year-round.

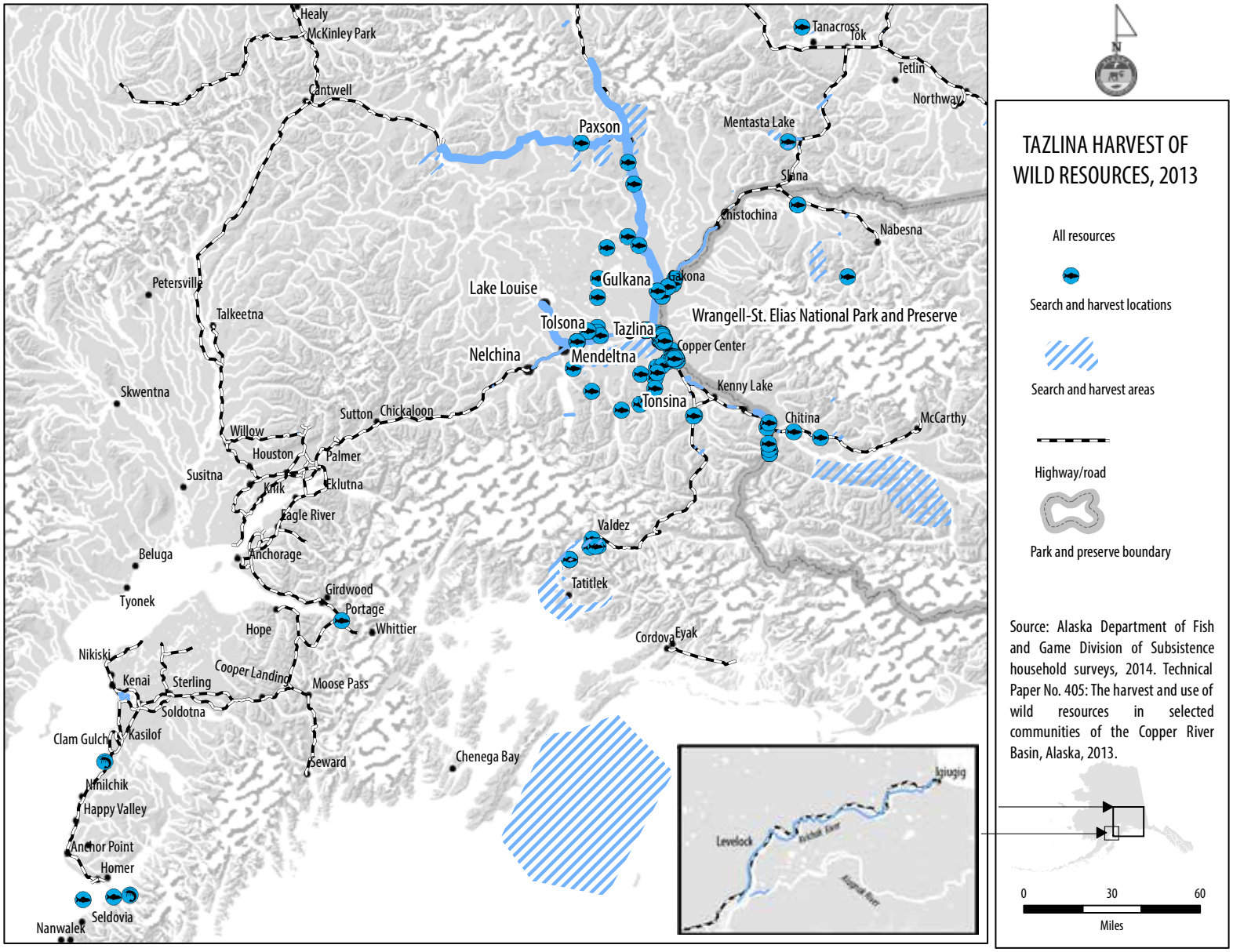


Figure 6-8.–Wild resources search and harvest areas, Tazlina, 2013.

Table 6-14.–Top ranked resources used by households, Tazlina, 2013.

Rank[a]	Resource	Percentage of households using
1.	Sockeye salmon	92.4%
2.	Moose	77.2%
3.	Blueberry	74.7%
4.	Chinook salmon	57.0%
5.	Caribou	55.7%
6.	Pacific halibut	49.4%
7.	Lowbush cranberry	44.3%
8.	Raspberry	34.2%
9.	Arctic grayling	30.4%
10.	Unknown ptarmigan	22.8%

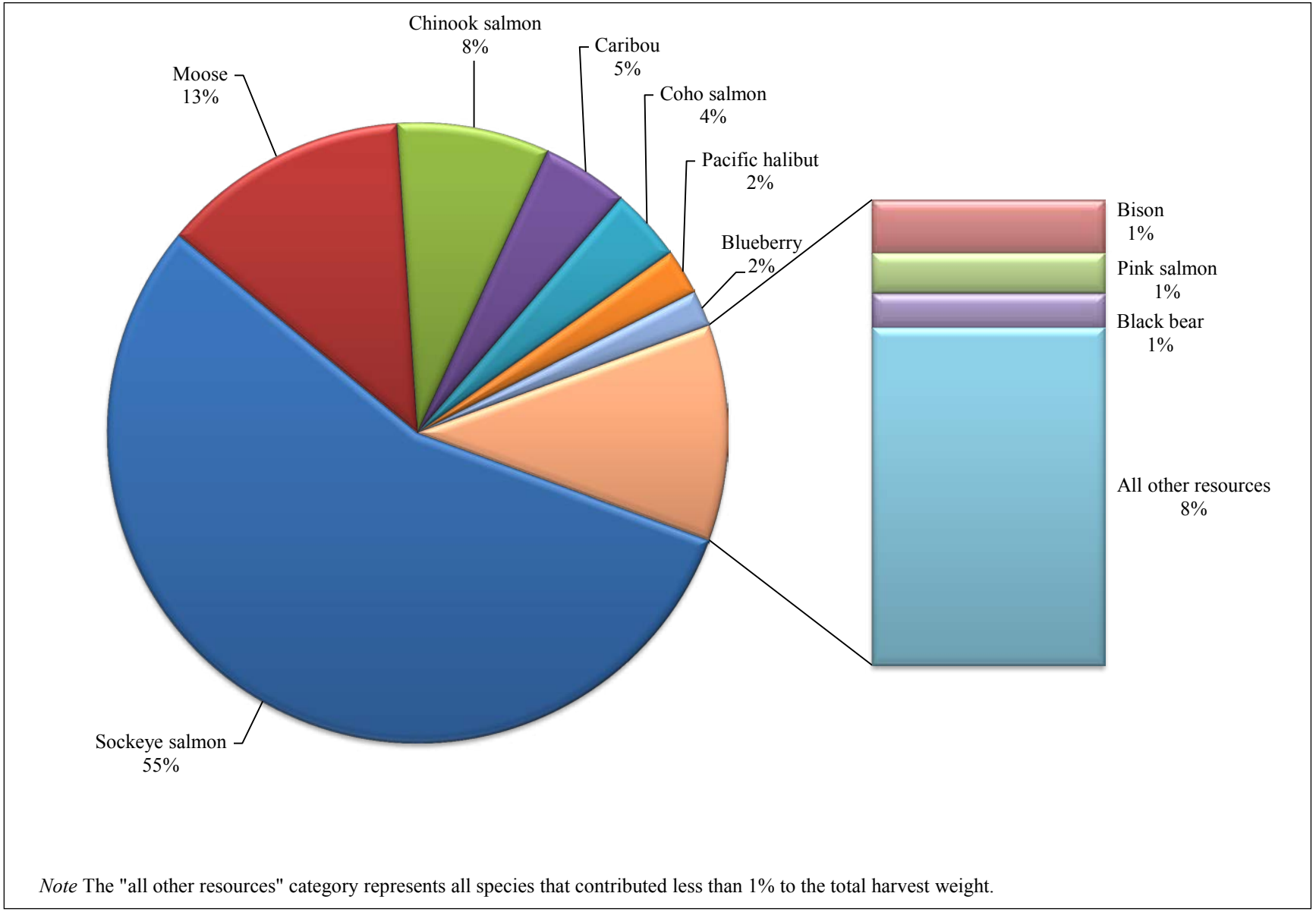
Source ADF&G Division of Subsistence household surveys, 2014.
a. Resources used by the same percentage of households share the lowest rank value instead of having sequential rank values.

Use and Harvest Characteristics by Resource Category

Table 6-13 helps identify the roles sharing and receiving resources play in use patterns of resources harvested in 2013. Sharing and receiving are important components to wild resource harvesting. Resources with poor harvest success rates or lower-than-desired harvests were those resources that were most shared. This is reflected most dramatically in the high number of households (77%) receiving large land mammals such as moose (70% of households received) and caribou (39% of households). It is important to note that a small portion of the receiving rates include meat harvested from roadkill salvage programs; however, sharing still remains high despite the extremely low successful harvest rates in Tazlina for large land mammals (11% of households harvested moose and 13% harvested caribou). Salmon also had a high rate of sharing with 61% of households having received salmon, and 67% gave it away. This is significant for 2013 because people said the extreme floods made the salmon less accessible and many people's fish wheels were damaged or had to be pulled from the river because of spring/early summer flooding. Although some people could not get their fish wheels in the river on time to intercept the big sockeye salmon pulse, almost everyone interviewed (including those who lost fish wheels due to flooding or had to pull them because of high water) knew people they could get fish from or whose wheels they could use.

Table 6-14 lists the top resources used by Tazlina households and Figure 6-9 depicts the resources with the largest harvests (1% or more of the total harvest composition as estimated in pounds usable weight per person) in 2013. These rankings nearly mirror each other and indicate that level of use was connected to total pounds harvested. Exceptions to this are vegetation, such as blueberries, which were widely used (75% of households) but contributed a relatively small harvest (2%).

Survey respondents indicated that in 2013 there was a low salmon harvest success rate; however, sockeye salmon was still the most harvested resource and contributed 55% of the overall harvest. The second most harvested resource was moose (13%) followed closely by Chinook salmon (8%), and caribou (5%). Vegetation in general made up the most used resource type in the community with 93% of households using vegetation of some type (Table 6-13); 3 kinds of berries were ranked as top used resources (Table 6-14). This is probably due to the ease of harvesting vegetation, much of which people gathered from their yards or their neighborhoods.



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

Figure 6-9.–Top species harvested by percentage of total harvest in pounds usable weight, Tazlina, 2013.

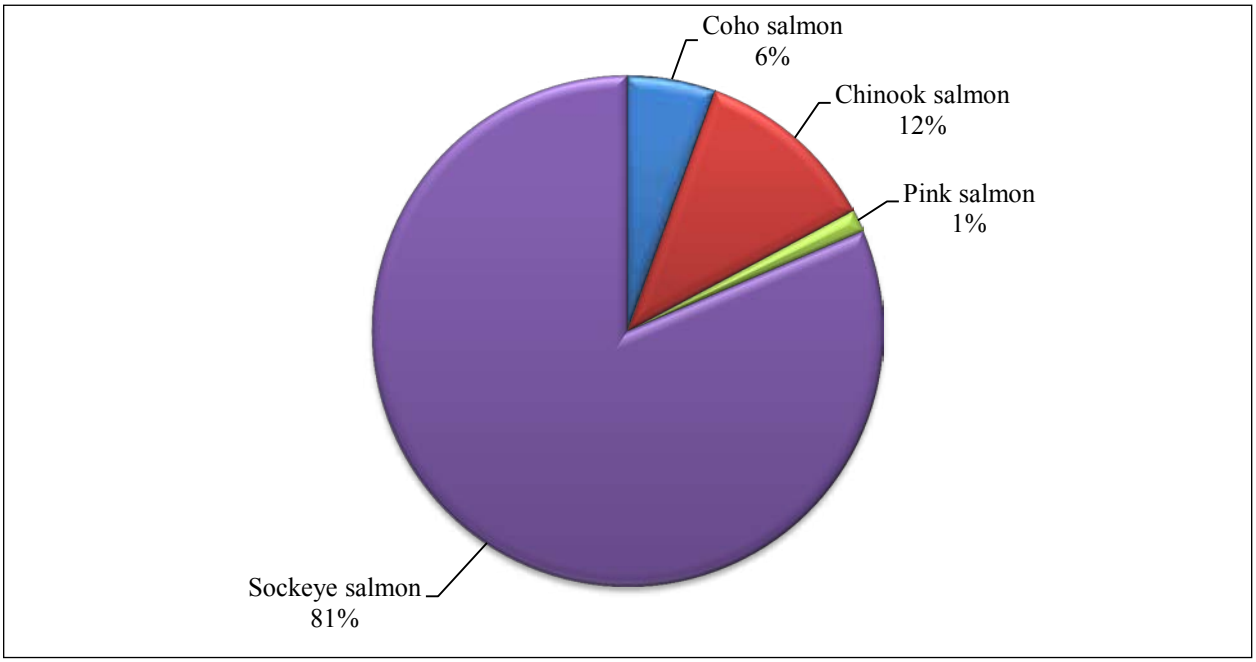


Figure 6-10.–Composition of salmon harvest in pounds usable weight, Tazlina, 2013.

Salmon

Salmon is and has historically been the most harvested and used resource in Tazlina (McMillan and Cuccarese 1988). In 2013, 92% of Tazlina households used salmon and 71% of households harvested salmon. Sockeye salmon dominated the type of salmon harvested in the Tazlina area in 2013. Approximately 81% of the harvested salmon (in pounds) was sockeye salmon (Figure 6-10). The harvest of Chinook salmon followed distantly, making up roughly 12% of the salmon harvest, and then coho salmon, which made up 6%, and pink salmon (1% of the salmon harvest). The majority of the sockeye salmon harvest occurred close to the community with fish wheels (Figure 6-11). Coho salmon were predominately harvested with fish wheels (57% of coho salmon harvest weight) and by rod and reel (37%) (Table 6-15).

The 2013 salmon season was not considered particularly successful compared to other years by local harvesters. Compounding factors included late spring flooding, high waters that continually damaged fish wheels, and a large pulse of sockeye salmon arriving later in the season. However, many people knew where to procure fish if necessary (borrowed wheels or received from friends) and people also relied on salmon canned from the previous year (2012) when people said harvest efforts were highly successful.

Chinook salmon harvests were down significantly from what long-term residents remember of harvests in the past. Out of concern for the stock, many respondents mentioned trying to remove Chinook salmon from the boxes of the fish wheels if it seemed like there was a chance the fish would survive. Almost all harvests of Chinook salmon by Tazlina residents were incidental and caught in fish wheels in operation for sockeye salmon; people made efforts to avoid harvesting Chinook salmon.

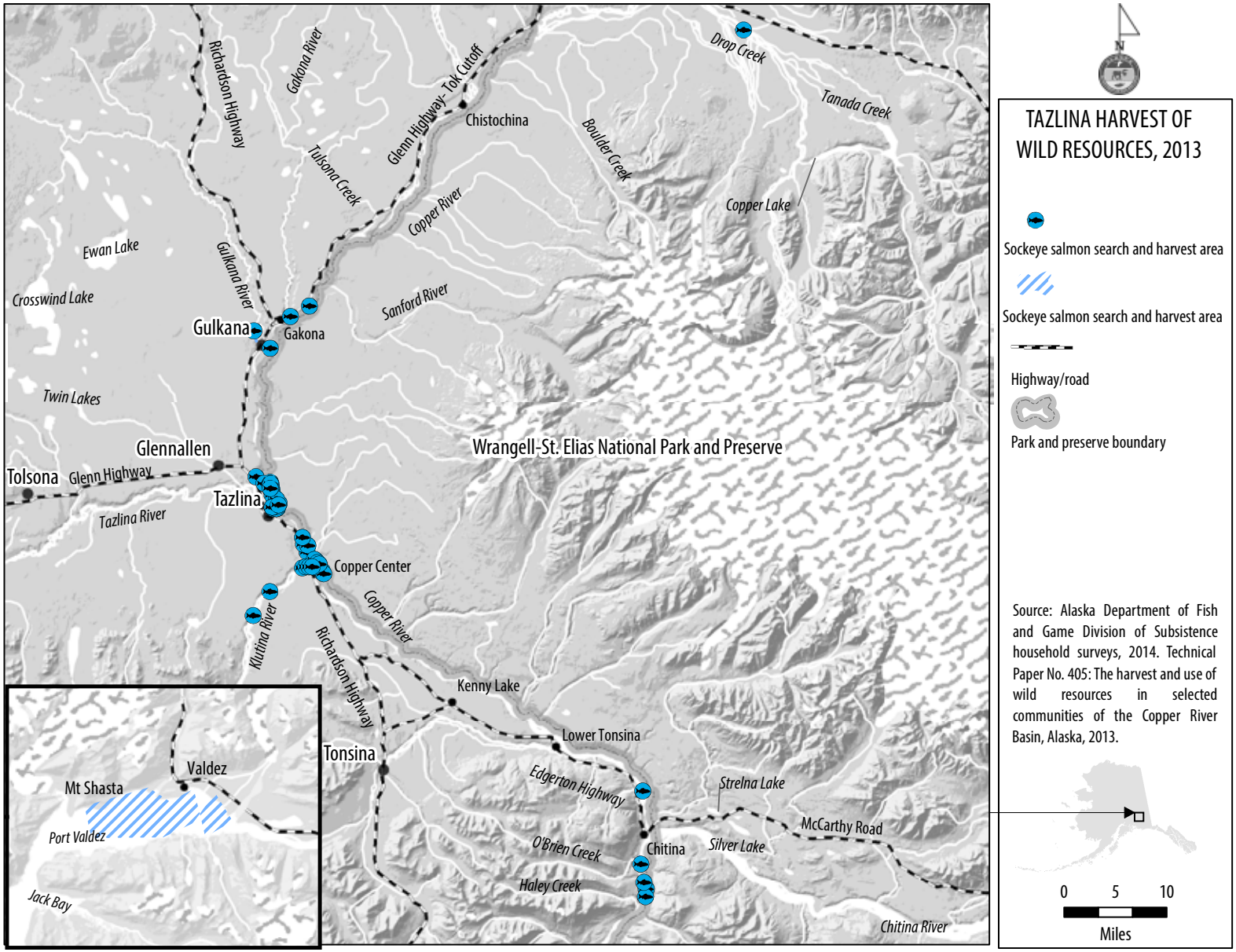


Figure 6-11.–Fishing and harvest locations of sockeye salmon, Tazlina, 2013.

Table 6-15.–Estimated percentages of salmon harvested by gear type, resource, and total harvest, Tazlina, 2013.

				Subsistence methods													
		Removed from commercial catch		Gillnet or seine		Fish wheel		Dip net		Other		Subsistence gear, any method		Rod and reel		Any method	
Resource	Percentage base	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Salmon	**Gear type**	**100.0%**	**100.0%**	**0.0%**	**0.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**0.0%**	**0.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
	Resource	**0.4%**	**0.4%**	**0.0%**	**0.0%**	**85.7%**	**87.5%**	**3.1%**	**3.0%**	**0.0%**	**0.0%**	**88.9%**	**90.5%**	**10.8%**	**9.1%**	**100.0%**	**100.0%**
	Total	**0.4%**	**0.4%**	**0.0%**	**0.0%**	**85.7%**	**87.5%**	**3.1%**	**3.0%**	**0.0%**	**0.0%**	**88.9%**	**90.5%**	**10.8%**	**9.1%**	**100.0%**	**100.0%**
Chum 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%	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%	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%	0.0%	0.0%	0.0%	0.0%	0.0%
Coho salmon	Gear type	70.6%	76.5%	0.0%	0.0%	3.0%	3.6%	0.7%	0.9%	0.0%	0.0%	2.9%	3.5%	15.1%	22.5%	4.4%	5.6%
	Resource	5.7%	5.7%	0.0%	0.0%	57.1%	57.1%	0.5%	0.5%	0.0%	0.0%	57.5%	57.5%	36.8%	36.8%	100.0%	100.0%
	Total	0.3%	0.3%	0.0%	0.0%	2.5%	3.2%	0.0%	0.0%	0.0%	0.0%	2.6%	3.2%	1.6%	2.0%	4.4%	5.6%
Chinook salmon	Gear type	0.0%	0.0%	0.0%	0.0%	4.7%	12.8%	2.0%	5.8%	0.0%	0.0%	4.6%	12.6%	1.0%	3.2%	4.2%	11.6%
	Resource	0.0%	0.0%	0.0%	0.0%	96.0%	96.0%	1.5%	1.5%	0.0%	0.0%	97.5%	97.5%	2.5%	2.5%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	4.0%	11.2%	0.1%	0.2%	0.0%	0.0%	4.1%	11.4%	0.1%	0.3%	4.2%	11.6%
Pink 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%	0.0%	29.9%	15.3%	3.2%	1.4%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	0.0%	3.2%	1.4%	3.2%	1.4%
Sockeye salmon	Gear type	29.4%	23.5%	0.0%	0.0%	92.3%	83.6%	97.3%	93.3%	0.0%	0.0%	92.5%	83.9%	54.0%	59.0%	88.1%	81.4%
	Resource	0.1%	0.1%	0.0%	0.0%	89.8%	89.8%	3.4%	3.4%	0.0%	0.0%	93.3%	93.3%	6.6%	6.6%	100.0%	100.0%
	Total	0.1%	0.1%	0.0%	0.0%	79.2%	73.1%	3.0%	2.8%	0.0%	0.0%	82.2%	75.9%	5.8%	5.4%	88.1%	81.4%
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%	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%	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%	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%	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%	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%	0.0%	0.0%	0.0%	0.0%	0.0%

Source ADF&G Division of Subsistence household surveys, 2014.

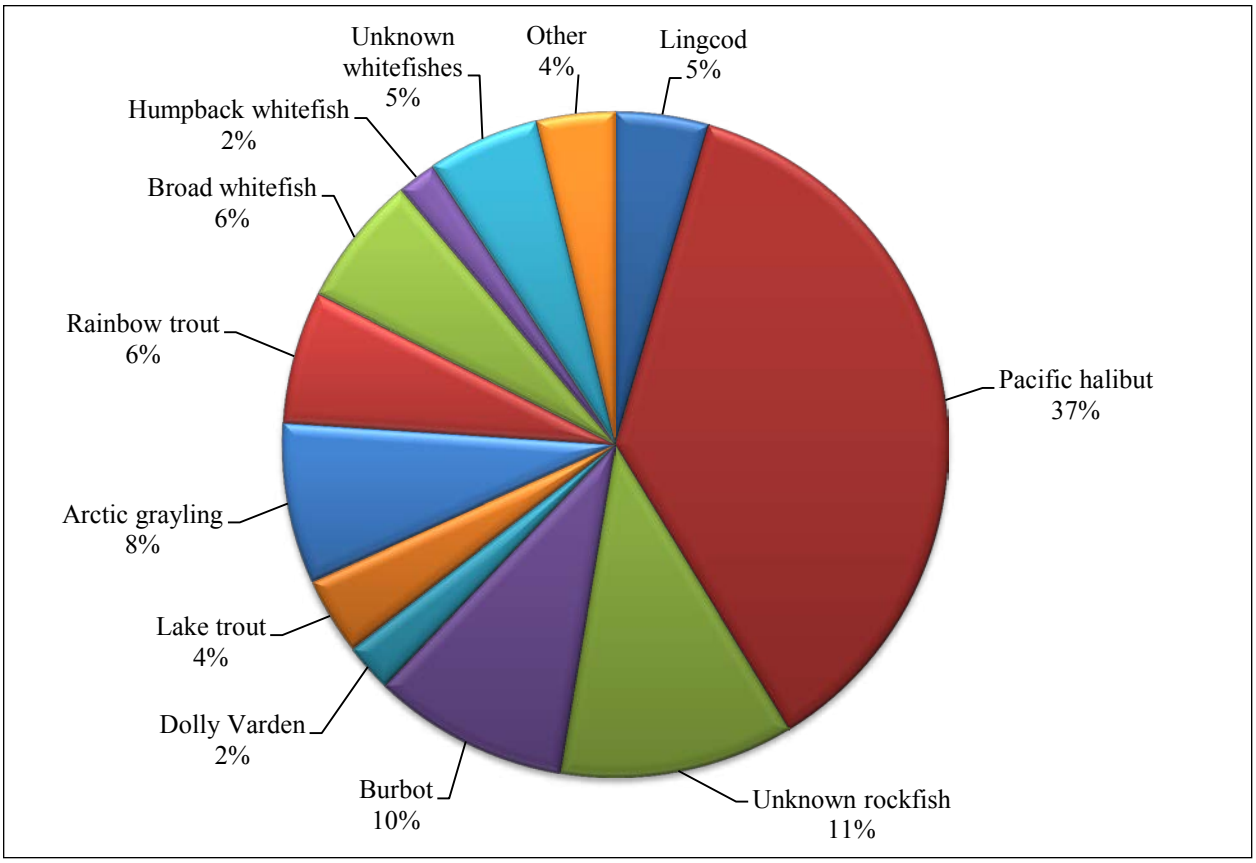


Figure 6-12.–Composition of nonsalmon fish harvest in pounds usable weight, Tazlina, 2013.

Nonsalmon Fish

Marine fish were the most harvested nonsalmon fish by harvest weight. Pacific halibut made up the majority of the nonsalmon fish harvest (37%), followed by unspecified types of rockfish (11%) (Figure 6-12). Marine fish were harvested mainly by rod and reel, with the exception of eulachon ("hooligan") and starry flounder, which were caught with dip nets (Table 6-16). The halibut, lingcod, and rockfish were caught off boats—some of the fishing was on charters out of Valdez, while other people used their own personal boats.

There was a concerted effort within the community to harvest lake and river fish such as burbot, lake and rainbow trout, Arctic grayling, and Dolly Varden. Burbot, rainbow trout, and lake trout were the only fish caught through the ice (Table 6-16). Most of the freshwater fish were caught by rod and reel. Exceptions to this were whitefishes, which were harvested in the fall with nets. The steelhead and longnose suckers were caught in fish wheels incidentally. Although nonsalmon freshwater fish are enjoyed and were extensively harvested historically (Reckord 1983a), most of the fishing in 2013 was characterized by residents as being conducted with family or friends recreationally rather than as part of a concentrated effort to put up fish (such as people in the community do with salmon).

All of the nonsalmon freshwater fish were harvested in the Copper River Basin (see maps in Appendix D). The farthest that people traveled to the north was approximately 65 miles to Paxson Lake, a popular area for harvesting resources; to the south people traveled to McCarthy Road (about 60 miles from Tazlina); and to the west people fished just between Tolsona and Mendeltna (about 35 miles away). Moose Creek in Glennallen was a popular spot to fish for freshwater fish, as well as various lakes in the region.

Table 6-16.–Estimated percentages of nonsalmon fish harvested by gear type, resource, and total nonsalmon fish harvest, Tazlina, 2013.

				Subsistence methods											
		Removed from commercial catch		Gillnet or seine		Ice fish		Other		Subsistence gear, any method		Rod and reel		Any method	
Resource	Percentage base	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Nonsalmon fish	**Gear type**	**0.0%**	**0.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
	Resource	**0.0%**	**0.0%**	**1.9%**	**1.8%**	**5.8%**	**8.9%**	**12.8%**	**18.7%**	**20.6%**	**29.4%**	**79.4%**	**70.6%**	**100.0%**	**100.0%**
	Total	**0.0%**	**0.0%**	**1.9%**	**1.8%**	**5.8%**	**8.9%**	**12.8%**	**18.7%**	**20.6%**	**29.4%**	**79.4%**	**70.6%**	**100.0%**	**100.0%**
Pacific herring	Gear type	0.0%	0.0%	0.0%	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%	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%	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%	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%	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%	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%	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%	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%	0.0%	0.0%	0.0%
Pacific herring roe on hemlock branches	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Eulachon (hooligan, candlefish)	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.4%	0.1%	0.2%	0.0%	0.0%	0.0%	0.1%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%
Unknown smelt	Gear type	0.0%	0.0%	0.0%	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%	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%	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%	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%	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%	0.0%	0.0%	0.0%
Pacific tomcod	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Starry flounder	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.4%	2.1%	0.9%	1.4%	0.0%	0.0%	0.2%	0.4%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.4%	0.2%	0.4%	0.0%	0.0%	0.2%	0.4%
Lingcod	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.2%	6.4%	2.5%	4.5%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	2.5%	4.5%	2.5%	4.5%
Pacific halibut	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	62.4%	52.1%	49.6%	36.8%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	49.6%	36.8%	49.6%	36.8%
Arctic lamprey	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%

-continued-

Table 6-16.–Page 2 of 3.

Resource	Percentage base	Removed from commercial catch		Subsistence methods											
				Gillnet or seine		Ice fish		Other		Subsistence gear, any method		Rod and reel		Any method	
		Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Unknown rockfish	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.8%	16.1%	3.8%	11.4%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	3.8%	11.4%	3.8%	11.4%
Unknown sculpin	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Burbot	Gear type	0.0%	0.0%	0.0%	0.0%	61.9%	72.4%	8.0%	9.7%	22.5%	28.0%	0.9%	1.8%	5.3%	9.5%
	Resource	0.0%	0.0%	0.0%	0.0%	67.4%	67.4%	19.1%	19.1%	86.5%	86.5%	13.5%	13.5%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	3.6%	6.4%	1.0%	1.8%	4.6%	8.2%	0.7%	1.3%	5.3%	9.5%
Dolly Varden	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.4%	3.3%	3.5%	2.3%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	3.5%	2.3%	3.5%	2.3%
Lake trout	Gear type	0.0%	0.0%	0.0%	0.0%	5.2%	5.0%	0.0%	0.0%	1.5%	1.5%	2.8%	4.7%	2.5%	3.7%
	Resource	0.0%	0.0%	0.0%	0.0%	11.9%	11.9%	0.0%	0.0%	11.9%	11.9%	88.1%	88.1%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.3%	0.4%	0.0%	0.0%	0.3%	0.4%	2.2%	3.3%	2.5%	3.7%
Arctic grayling	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	16.4%	5.8%	10.2%	3.7%	16.3%	9.5%	15.0%	7.8%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	14.0%	14.0%	14.0%	14.0%	86.0%	86.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.1%	1.1%	2.1%	1.1%	12.9%	6.7%	15.0%	7.8%
Northern pike	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Sheefish	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Longnose sucker	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	14.1%	5.0%	8.8%	3.2%	0.0%	0.0%	1.8%	0.9%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.8%	0.9%	1.8%	0.9%	0.0%	0.0%	1.8%	0.9%
Cutthroat trout	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Rainbow trout	Gear type	0.0%	0.0%	0.0%	0.0%	33.0%	22.5%	0.9%	0.7%	9.9%	7.2%	5.2%	6.1%	6.2%	6.4%
	Resource	0.0%	0.0%	0.0%	0.0%	31.1%	31.1%	1.9%	1.9%	33.0%	33.0%	67.0%	67.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	1.9%	2.0%	0.1%	0.1%	2.0%	2.1%	4.1%	4.3%	6.2%	6.4%
Steelhead	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.7%	8.0%	2.3%	5.1%	0.0%	0.0%	0.5%	1.5%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	1.5%	0.5%	1.5%	0.0%	0.0%	0.5%	1.5%
Unknown trout	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%

-continued-

Table 6-16.–Page 3 of 3.

Resource	Percentage base	Removed from commercial catch		Subsistence methods											
				Gillnet or seine		Ice fish		Other		Subsistence gear, any method		Rod and reel		Any method	
		Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Broad whitefish	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	16.9%	34.2%	10.5%	21.8%	0.0%	0.0%	2.2%	6.4%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.2%	6.4%	2.2%	6.4%	0.0%	0.0%	2.2%	6.4%
Least cisco	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Humpback whitefish	Gear type	0.0%	0.0%	37.5%	51.2%	0.0%	0.0%	5.6%	5.0%	7.0%	6.4%	0.0%	0.0%	1.4%	1.9%
	Resource	0.0%	0.0%	50.0%	50.0%	0.0%	0.0%	50.0%	50.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.7%	0.9%	0.0%	0.0%	0.7%	0.9%	1.4%	1.9%	0.0%	0.0%	1.4%	1.9%
Round whitefish	Gear type	0.0%	0.0%	62.5%	48.8%	0.0%	0.0%	0.0%	0.0%	5.8%	3.0%	0.0%	0.0%	1.2%	0.9%
	Resource	0.0%	0.0%	100.0%	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	1.2%	0.9%	0.0%	0.0%	0.0%	0.0%	1.2%	0.9%	0.0%	0.0%	1.2%	0.9%
Unknown whitefishes	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	32.8%	29.1%	20.4%	18.5%	0.0%	0.0%	4.2%	5.5%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.2%	5.5%	4.2%	5.5%	0.0%	0.0%	4.2%	5.5%

Source ADF&G Division of Subsistence household surveys, 2014.

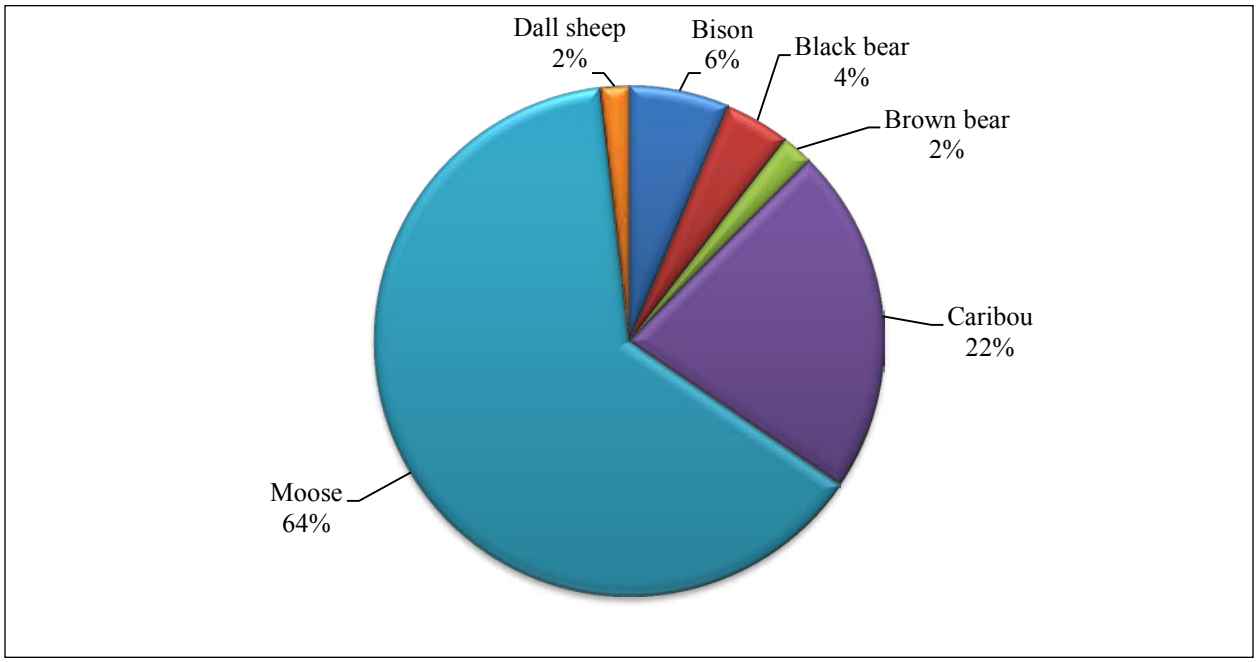


Figure 6-13.–Composition of large land mammal harvest in pounds usable weight, Tazlina, 2013.

Large Land Mammals

Large land mammals made up the second most harvested and used resources in Tazlina in 2013, with a wide diversity of species. The second most used and harvested resource was moose (Table 6-14; Figure 6-9). The large land mammal harvest was composed predominantly of moose (64% of large land mammal harvest) followed by caribou (22%), and bison 6% (Figure 6-13). Moose and caribou were singled out by community members as being particularly important in 2013. Moose and caribou were among the most sought-out resources: 62% and 48% of households hunted for moose and caribou, respectively, but harvests were low (about 12% of households harvested these species) (Table 6-13). Most large mammals were taken in the fall (Table 6-17).

Nonsubsistence and subsistence moose hunts are regulated to occur in the fall and winter. Many people reported that they prefer the fall hunt since the moose are fatter at that time. Moose hunting in 2013 occurred completely within the bounds of GMU 13 (Figure 6-14). This is probably due to the limited road access into GMU 11 and GMU 12. People felt that overharvesting by non-locals has greatly limited local residents' ability to harvest moose.

In addition to low moose returns, residents also discussed low caribou harvest success. People felt that the caribou were simply not in the right place at the right time—for instance, the animals were on state land during the federal hunt. Similar to moose, caribou hunters had a poor success rate when compared to the percentage of households attempting to harvest. The areas that were hunted for caribou are similar to those of moose (Figure 6-15).

Residents of the area who harvested bears said that spring bears are the best for eating. This is reflected in the timing of harvests: spring is when most of the bears were harvested (Table 6-17). Bears taken in the summer during the salmon runs (particularly brown bears) were usually inedible and shot in defense of life or property. One respondent stated that fall black bears, after they have been eating berries, were also tasty. A few people that harvested bears also rendered them for fat.

Dall sheep share a similar fall season to moose and caribou; however, Dall sheep only account for 2% of the large land mammal harvest (Figure 6-13). Bison are large animals and the low number harvested in 2013 made up 6% of the total weight of large land mammals harvested. The hunter stated that this is a rare

Table 6-17.–Estimated large land mammal harvests by month and sex, Tazlina, 2013.

Resource	Estimated harvest by month													Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk	
All large land mammals	**1.5**	**0.0**	**4.6**	**0.0**	**4.6**	**1.5**	**0.0**	**9.1**	**10.6**	**12.2**	**0.0**	**0.0**	**3.0**	**47.1**
Bison	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**1.5**
Black bear	0.0	0.0	0.0	0.0	4.6	1.5	0.0	0.0	1.5	0.0	0.0	0.0	0.0	**7.6**
Brown bear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	**1.5**
Caribou	1.5	0.0	3.0	0.0	0.0	0.0	0.0	1.5	1.5	10.6	0.0	0.0	0.0	**18.2**
Caribou, male	1.5	0.0	1.5	0.0	0.0	0.0	0.0	1.5	1.5	10.6	0.0	0.0	0.0	**16.7**
Caribou, female	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**1.5**
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	6.1	6.1	0.0	0.0	0.0	3.0	**15.2**
Moose, bull	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.6	6.1	0.0	0.0	0.0	3.0	**13.7**
Moose, cow	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	**1.5**
Dall sheep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	1.5	0.0	0.0	0.0	0.0	**3.0**

Source ADF&G Division of Subsistence household surveys, 2014.

occurrence, though, and that people in the community could not depend on a bison permit—thus stressing why moose and caribou are still extremely important, even if there is a year that households do not need to harvest them. The bison hunt targets plains bison that were introduced to Alaska in 1928 and are not part of customary and traditional use. Out of the roughly 15,000 applicants, 100 permits are awarded.[13]

13. Alaska Department of Fish and Game, 2014. "Bison Hunting in Alaska." Accessed November 2014. http://www.adfg.alaska.gov/index.cfm?adfg=bisonhunting.main

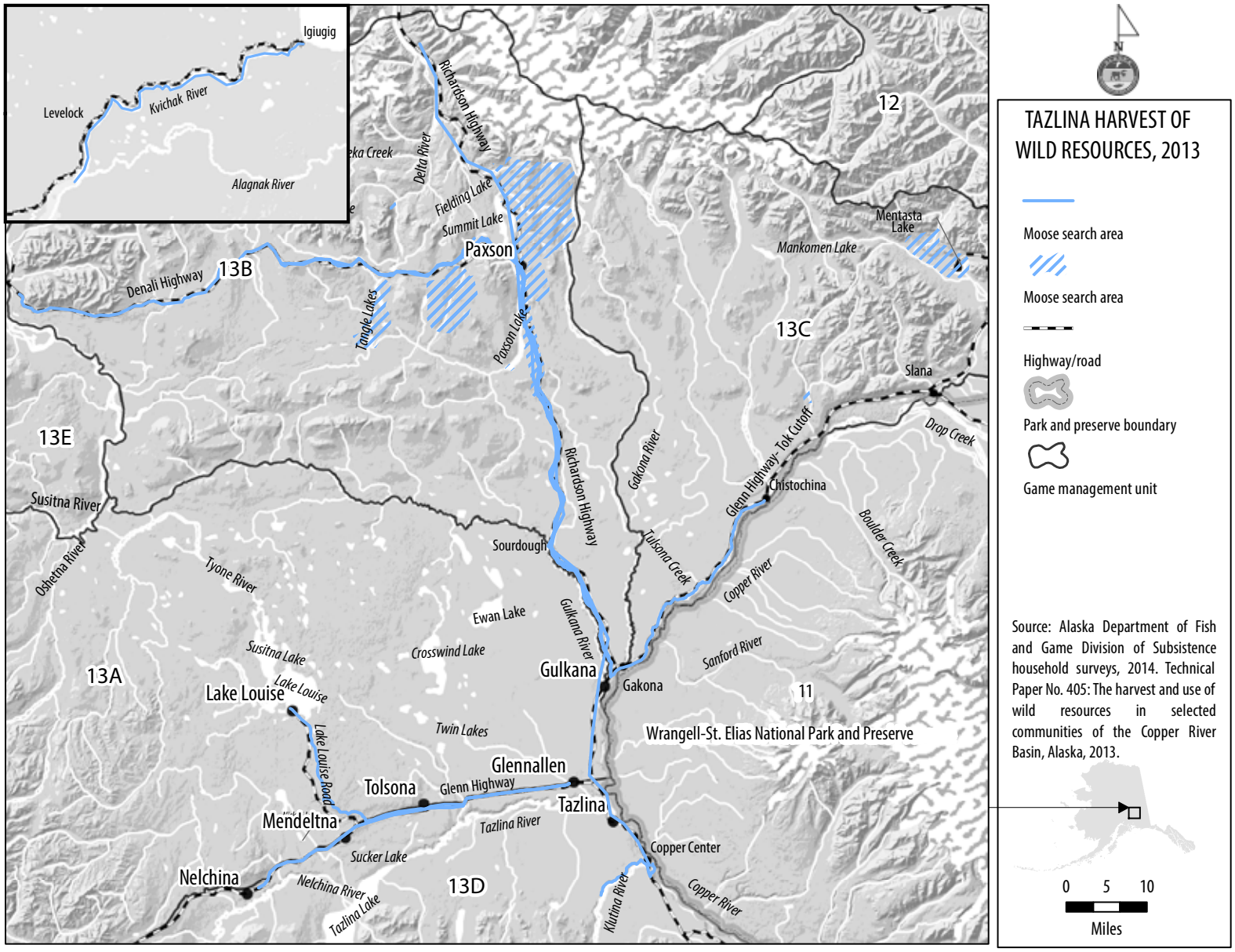


Figure 6-14.–Hunting locations of moose, Tazlina, 2013.

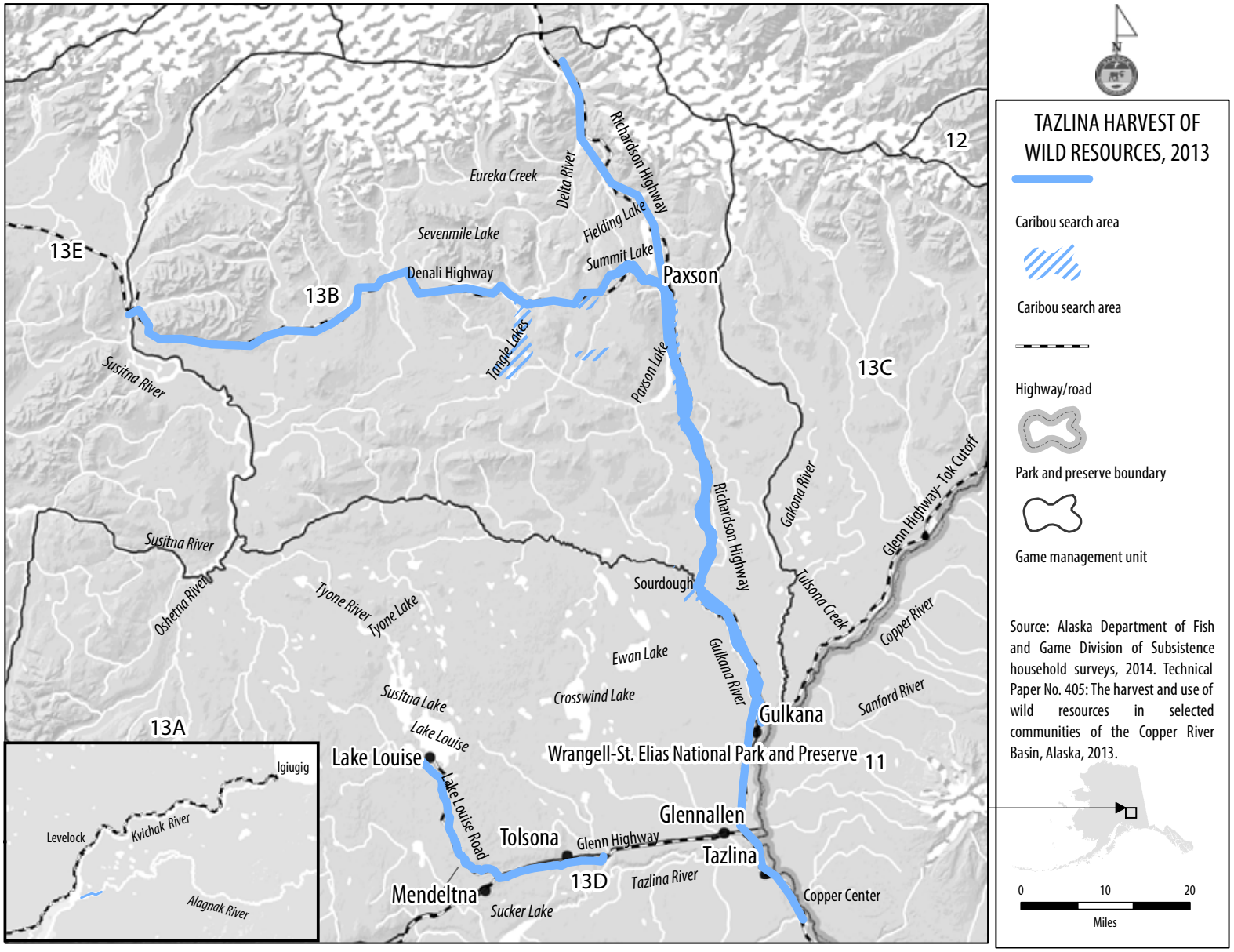


Figure 6-15.–Hunting locations of caribou, Tazlina, 2013.

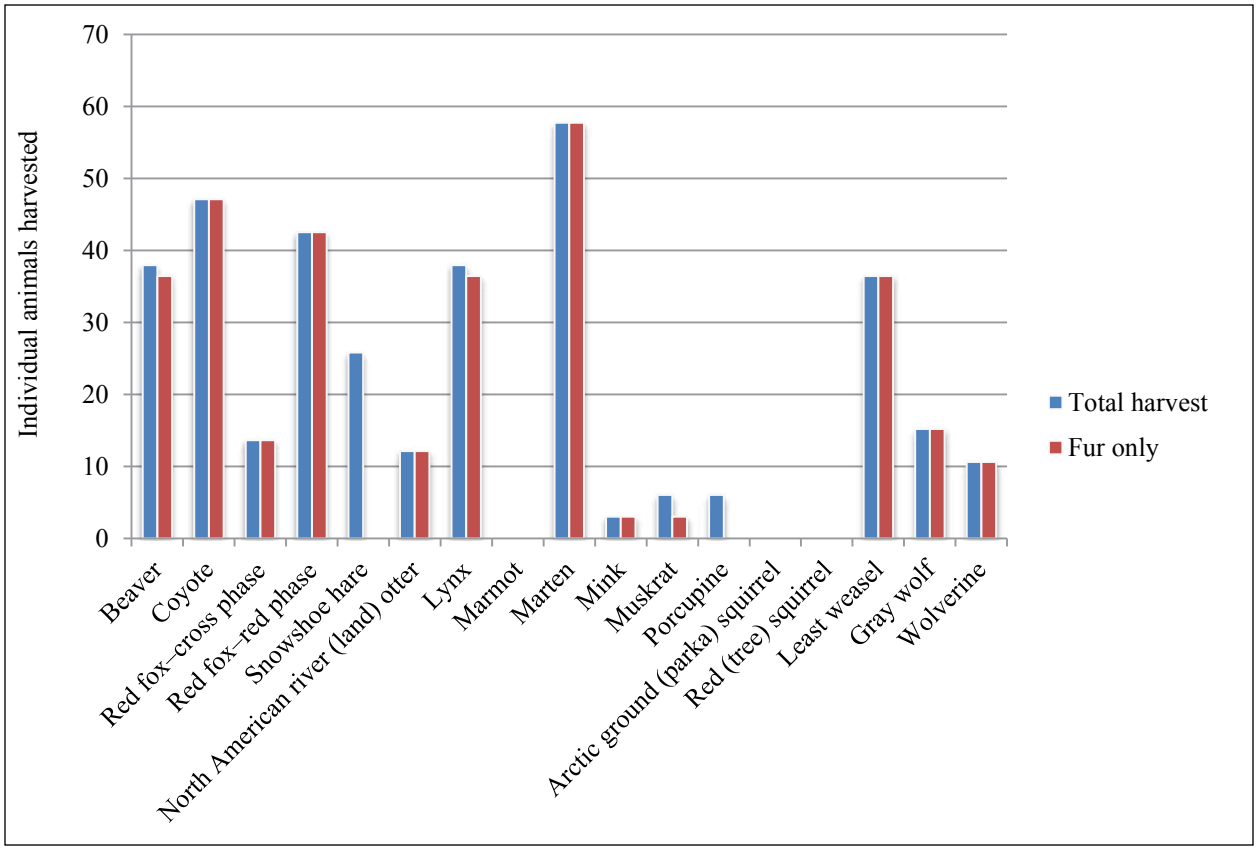


Figure 6-16.–Estimated small land mammal/furbearer harvests for fur and food only, Tazlina, 2013.

Small Land Mammals/Furbearers

The majority of small land mammals and furbearers were harvested by trappers. The exceptions to this were snowshoe hares, porcupines, one-half of the harvested muskrats, and a few beavers and lynx (Figure 6-16). The small mammals harvested for food were mostly hunted opportunistically during the summer months, but some were trapped (Table 6-18). Primarily, trapping occurred during colder months. Animals that were harvested solely for fur use were not considered in the estimated usable weight. Because of this, small land mammals made up less than 1% of the total wild food harvest for Tazlina (Figure 6-7).

Serious trapping involves a large investment of both time and money. Those who did so in the community were hobbyists and did not make a profit from trapping. One trapper could remember only 1 year in his time as a trapper in which he landed "in the black." Martens were heavily trapped the 2013 season (making up about 16% of the small mammal harvest based on individual animals harvested) because prices were high the previous year (Figure 6-17). The second most harvested small mammals were coyotes (13%) and red foxes in their red phase were third (12%).

Similar to other harvesting practices, small animal harvesting occurred within the Copper River Basin (Figure 6-18). The trapline farthest from the community ran south of Tazlina Lake, approximately 50 miles away. Hunting for small mammals occurred along the Richardson Highway and along the Denali Highway near Paxson. The most common small mammal harvested for food was the snowshoe hare. All of the 26 hares and all of the 6 porcupines harvested were used entirely for food (Figure 6-16). Fifty percent of muskrats harvested were used for food (3 animals). Lastly, 2 beavers were harvested for food. Characterizing a harvest as being for food does not mean that the animal's pelts, quills, etc., were not utilized; it simply means the animal was taken primarily as a food resource.

Table 6-18.–Estimated small land mammal/furbearer harvests by month, Tazlina, 2013.

Resource	Estimated harvest by month													Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk	
All small land mammals	**91.1**	**62.3**	**15.2**	**0.0**	**3.0**	**0.0**	**3.0**	**1.5**	**18.2**	**21.3**	**36.5**	**71.4**	**28.9**	**352.4**
Beaver	1.5	1.5	0.0	0.0	1.5	0.0	0.0	0.0	16.7	16.7	0.0	0.0	0.0	**38.0**
Coyote	7.6	10.6	10.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.6	7.6	3.0	**47.1**
Red fox–cross phase	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	4.6	0.0	**13.7**
Red fox–red phase	10.6	7.6	1.5	0.0	0.0	0.0	0.0	0.0	0.0	1.5	9.1	12.2	0.0	**42.5**
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	25.8	**25.8**
North american river (land) otter	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.6	6.1	0.0	**12.2**
Lynx	19.7	7.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.1	4.6	0.0	**38.0**
Marmot	0.0	0.0	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	25.8	18.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.7	0.0	**57.7**
Mink	1.5	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**3.0**
Muskrat	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	3.0	1.5	0.0	0.0	**6.1**
Porcupine	0.0	0.0	0.0	0.0	0.0	0.0	3.0	1.5	1.5	0.0	0.0	0.0	0.0	**6.1**
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**
Least weasel	15.2	9.1	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	6.1	0.0	**36.5**
Gray wolf	1.5	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	9.1	0.0	**15.2**
Wolverine	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.6	0.0	**10.6**

Source ADF&G Division of Subsistence household surveys, 2014.

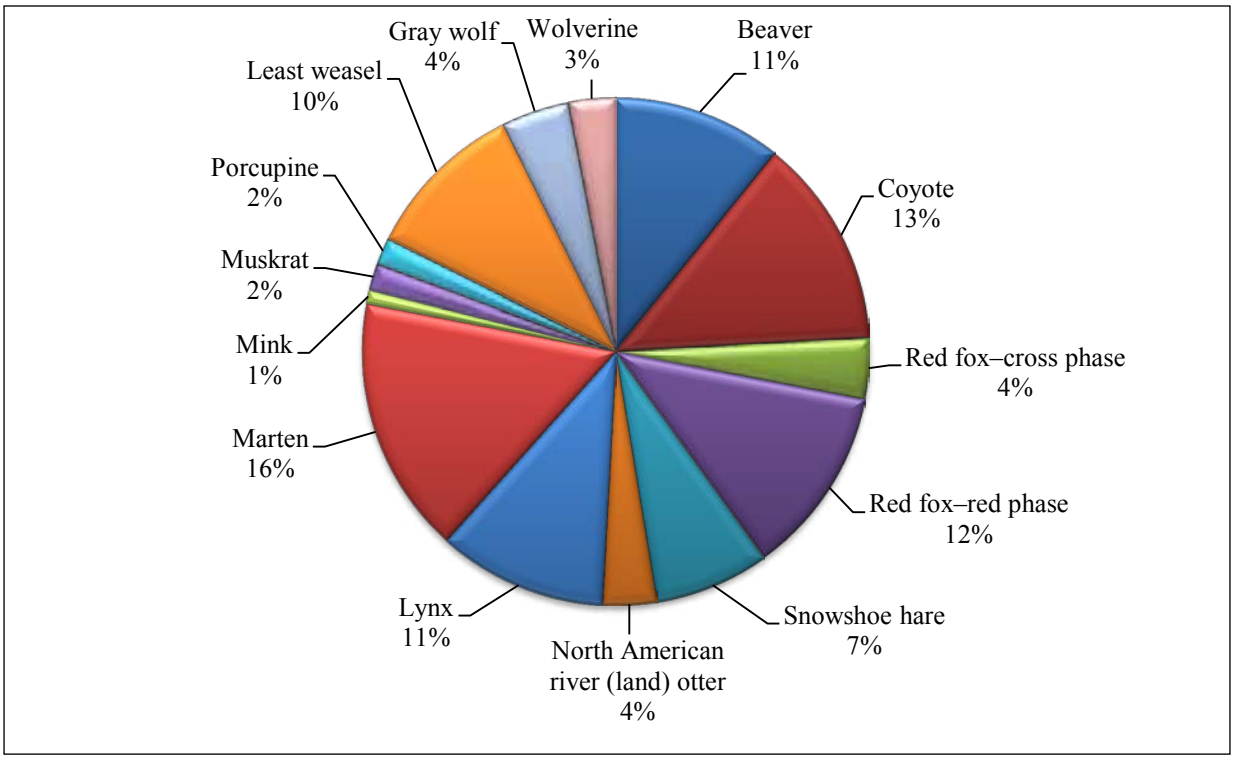


Figure 6-17.–Composition of small land mammal/furbearer harvest by individual animals harvested, Tazlina, 2013.

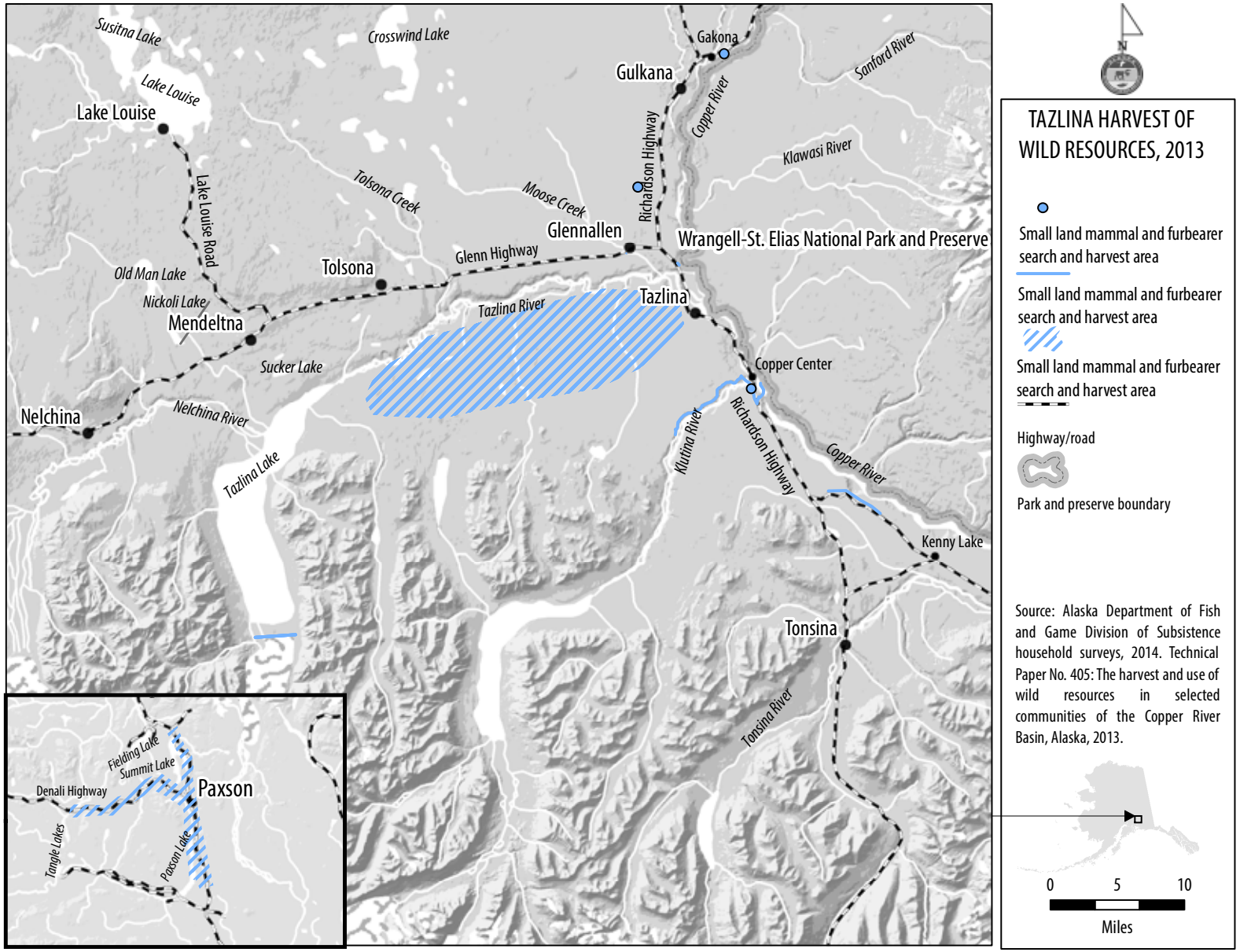


Figure 6-18.–Hunting and trapping locations of small land mammals/furbearers, Tazlina, 2013.

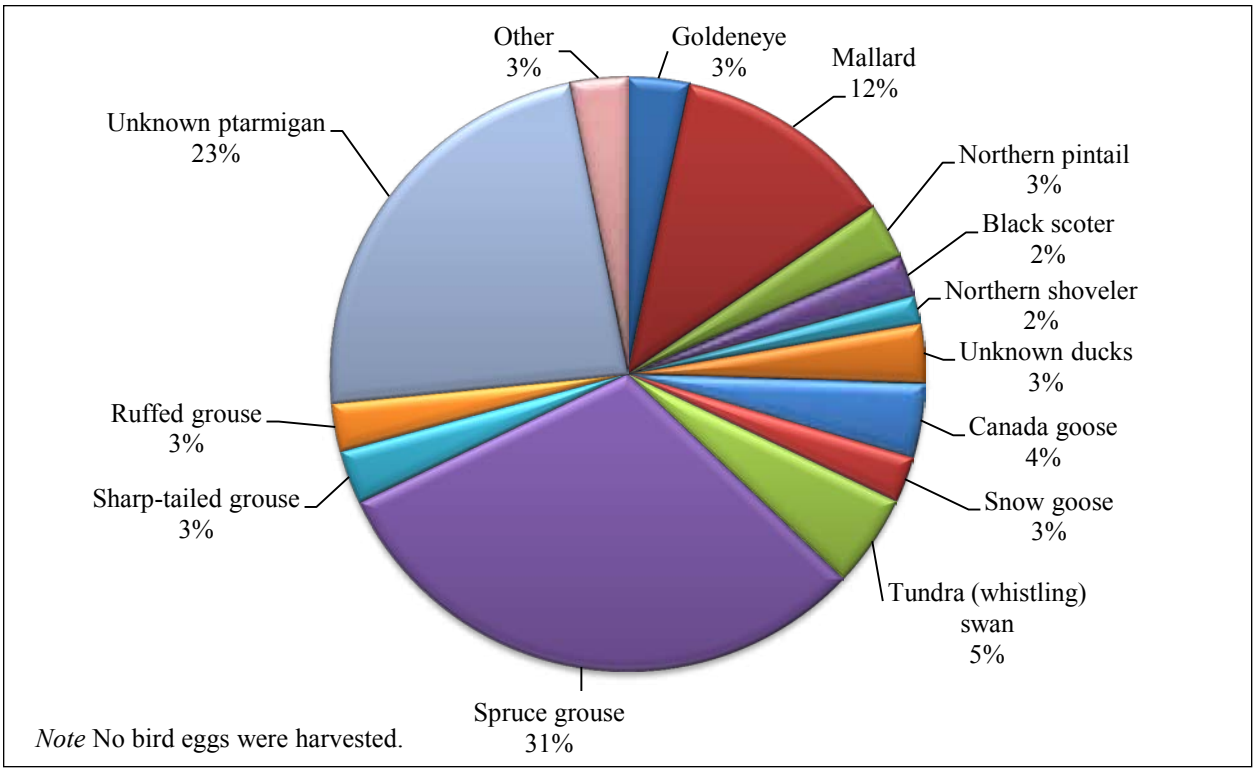


Figure 6-19.–Composition of bird and bird egg harvest in pounds usable weight, Tazlina, 2013.

Birds and Eggs

Upland game birds and migratory birds are both harvested at different times throughout the year. Game birds that were most harvested were spruce grouse (160 birds) and ptarmigan (122 birds (Table 6-13; Figure 6-19). A few local residents said that they had not seen as many ptarmigan in recent years, but that spruce grouse have been common. The other birds most frequently harvested were migratory waterfowl, including ducks and geese. Waterfowl were hunted in the spring and fall as they migrated through the region (Table 6-19). Mallards were the most commonly harvested duck and made up approximately 38% of ducks harvested (Table 6-13). Canada geese were the most common goose hunted, making up 62% of the total goose harvest. Overall, birds made up a small portion (1%) of the total harvest (Figure 6-7). No eggs were harvested from wild birds.

Birds were harvested mainly from along the road system. People described driving the road system looking for upland game birds. Some lakes were specifically targeted for waterfowl. However, a few households discussed how the waterfowl were not in their usual areas in 2013 (Figure 6-20).

Marine Mammals

There was no marine mammal harvest in the community; however, a small number of households did report using seals that they received. Two households reported that they usually received seal oil, but did not receive any that year (Table 6-13).

Table 6-19.–Estimated bird and bird egg harvests by season, Tazlina, 2013.

	Estimated harvest by season					
Resource	Winter	Spring	Summer	Fall	Season unknown	**Total**
All birds	**41.0**	**115.4**	**48.6**	**244.6**	**0.0**	**449.6**
Canvasback	0.0	0.0	0.0	0.0	0.0	**0.0**
Spectacled eider	0.0	0.0	0.0	0.0	0.0	**0.0**
Goldeneye	0.0	0.0	0.0	15.2	0.0	**15.2**
Mallard	0.0	33.4	0.0	10.6	0.0	**44.1**
Unknown merganser	0.0	3.0	0.0	0.0	0.0	**3.0**
Northern pintail	0.0	12.2	0.0	1.5	0.0	**13.7**
Black scoter	0.0	9.1	0.0	0.0	0.0	**9.1**
Northern shoveler	0.0	9.1	0.0	0.0	0.0	**9.1**
Green-winged teal	0.0	0.0	0.0	3.0	0.0	**3.0**
Unknown wigeon	0.0	0.0	0.0	3.0	0.0	**3.0**
Unknown ducks	0.0	6.1	0.0	10.6	0.0	**16.7**
Brant	0.0	0.0	0.0	0.0	0.0	**0.0**
Cackling goose	0.0	0.0	0.0	1.5	0.0	**1.5**
Canada goose	0.0	12.2	0.0	0.0	0.0	**12.2**
Unknown Canada/cackling geese	0.0	3.0	0.0	0.0	0.0	**3.0**
Emperor goose	0.0	0.0	0.0	0.0	0.0	**0.0**
Snow goose	0.0	3.0	0.0	0.0	0.0	**3.0**
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**
Tundra (whistling) swan	0.0	0.0	0.0	3.0	0.0	**3.0**
Sandhill crane	0.0	0.0	0.0	0.0	0.0	**0.0**
Spruce grouse	3.0	12.2	28.9	115.4	0.0	**159.5**
Sharp-tailed grouse	0.0	0.0	0.0	15.2	0.0	**15.2**
Ruffed grouse	0.0	0.0	0.0	13.7	0.0	**13.7**
Unknown ptarmigan	38.0	12.2	19.7	51.6	0.0	**121.5**
Unknown duck eggs	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown goose eggs	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown gull eggs	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown eggs	0.0	0.0	0.0	0.0	0.0	**0.0**

Source ADF&G Division of Subsistence household surveys, 2014.

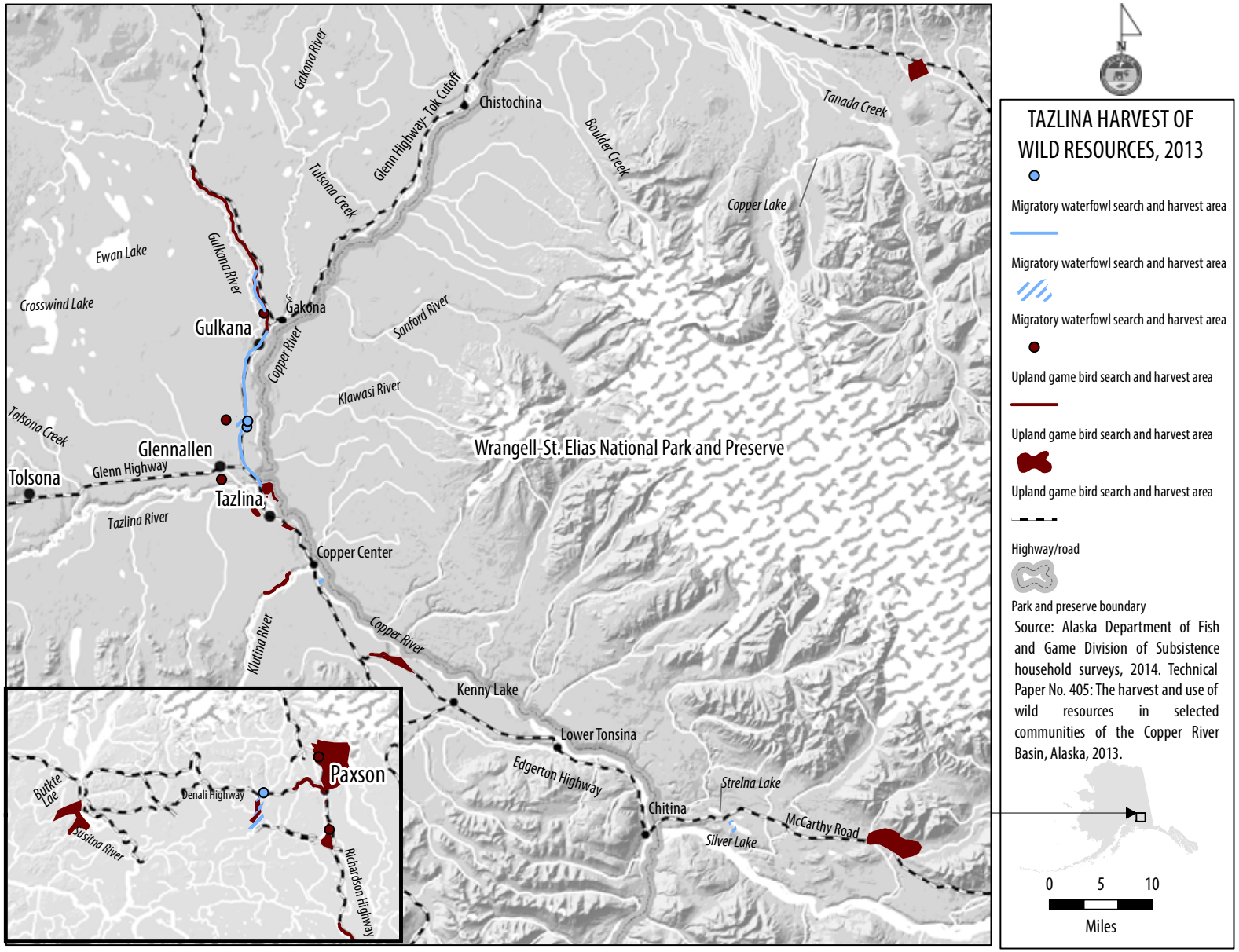


Figure 6-20.–Hunting and harvest locations of migratory waterfowl and upland game birds, Tazlina, 2013.

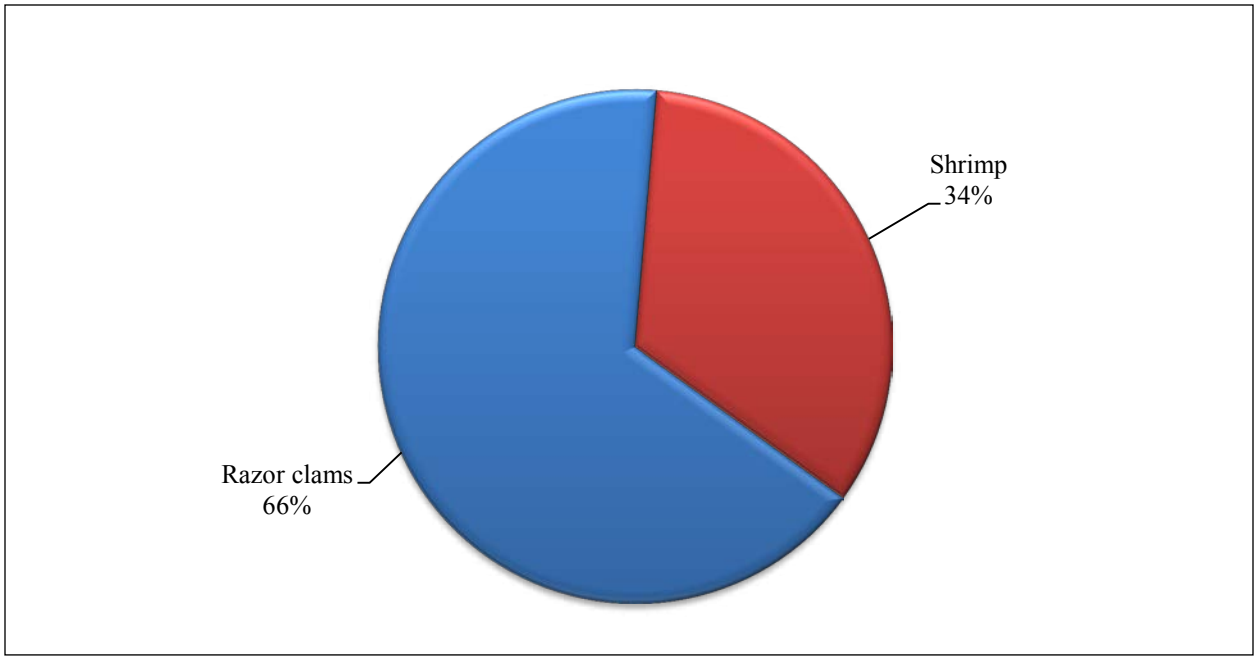


Figure 6-21.–Composition of marine invertebrates harvest in pounds usable weight, Tazlina, 2013.

Marine Invertebrates

Shrimp and razor clams made up the total marine invertebrates harvest efforts of the Tazlina community (Figure 6-21). One household procured razor clams on the east coast of the Kenai Peninsula at Clam Gulch (Figure 6-22). Another household that had their own boat was able to harvest razor clams in Kachemak Bay near the community of Halibut Cove. The shrimp were harvested in Jack Bay, a small bay off the Port of Valdez. The households that harvested marine invertebrates outside of Valdez and Homer both used their own boats. Marine invertebrates made up less than 1% of the total harvest of wild resources (Figure 6-7).

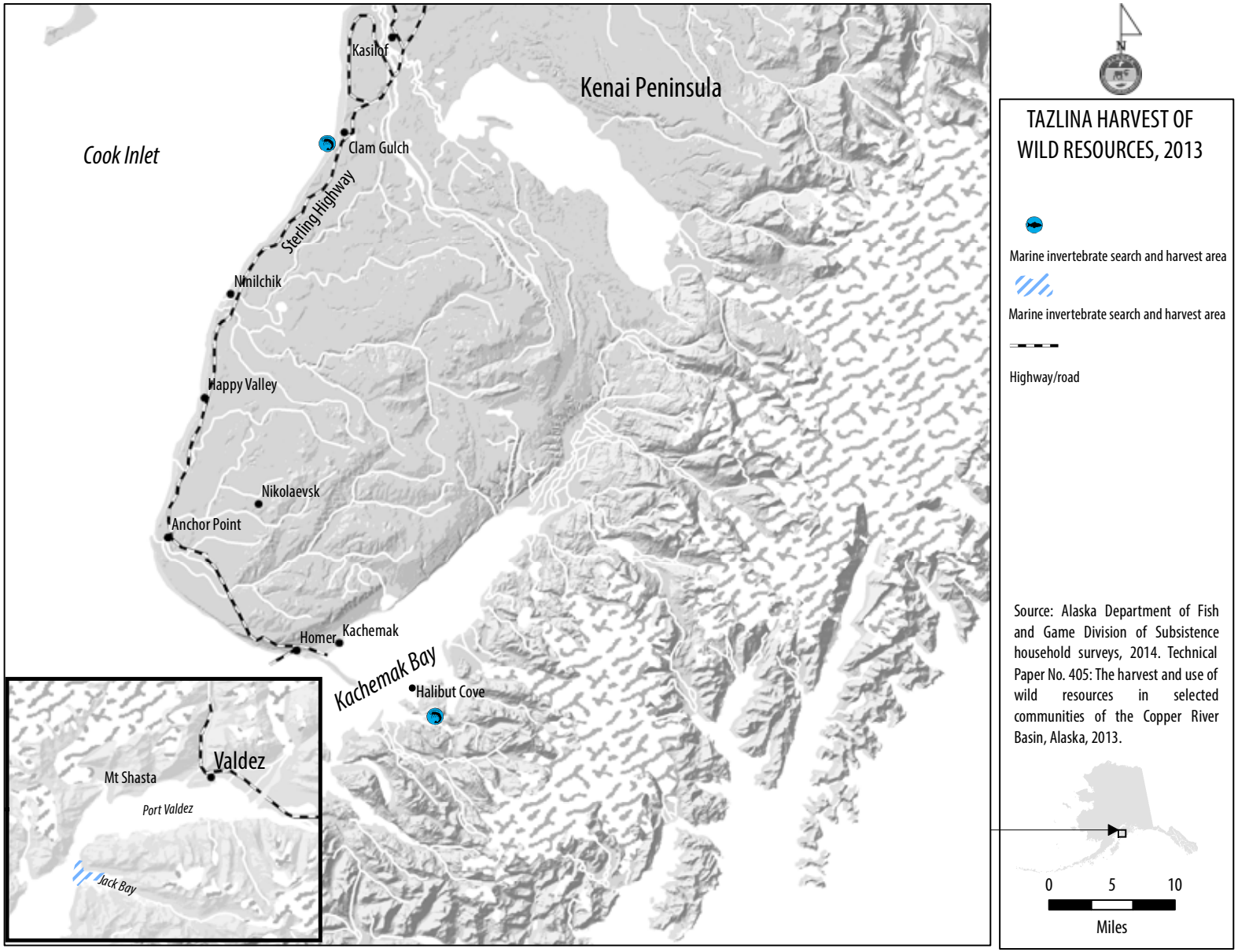


Figure 6-22.–Fishing and harvest locations of marine invertebrates, Tazlina, 2013.

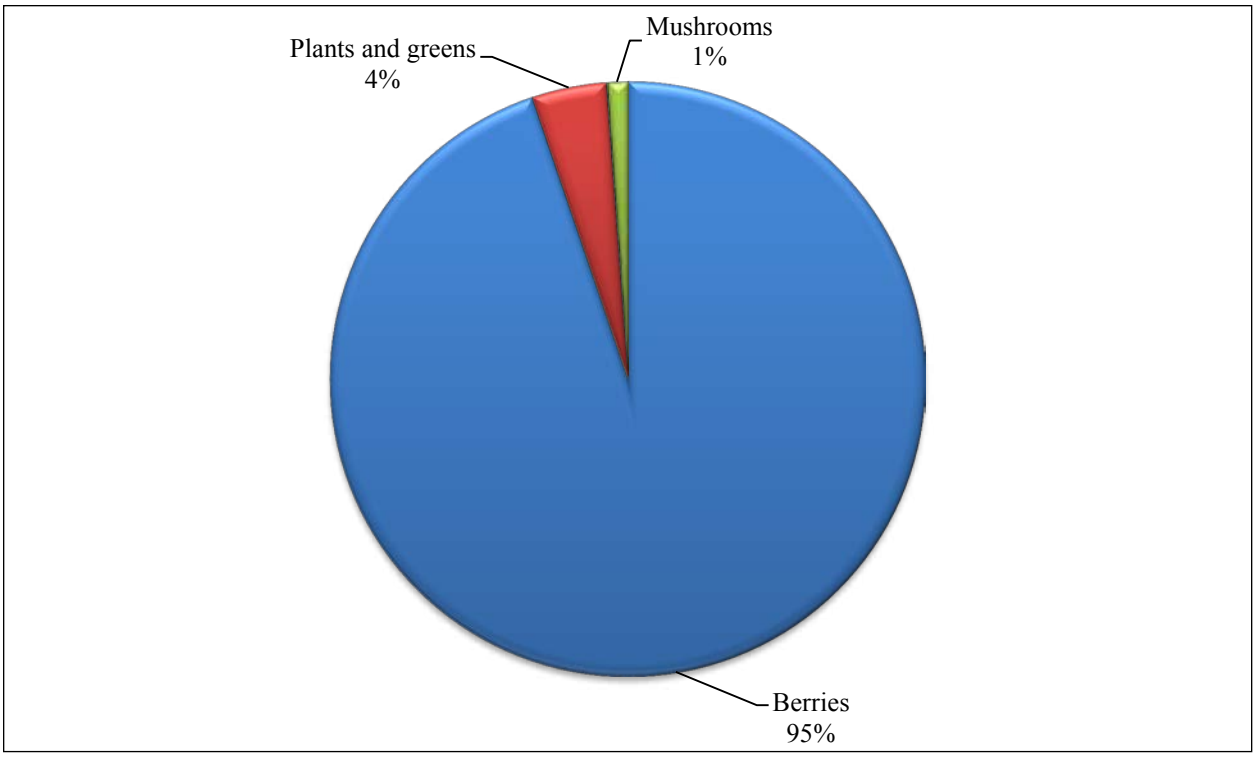


Figure 6-23.–Composition of vegetation harvest by type and pounds usable weight, Tazlina, 2013.

Vegetation

Vegetation is often the most used and harvested category of wild resources in Tazlina. In 2013, 94% of households used vegetation while 87% harvested these resources (Table 6-13). Berry harvests dominated the category; berries made up 95% of the category harvest (Figure 6-23). Blueberries (994 lb) were the most heavily harvested berry, followed by lowbush cranberries (432 lb) and raspberries (163 lb) (Table 6-13). These high harvest weight numbers reflect the convenience of harvesting berries. Most people harvested berries directly within the community; those who harvested berries farther outside of the community did so secondary to other harvesting efforts (Figure 6-24).

Plant harvests in addition to berries included a variety of mushrooms (1% of vegetation harvest), and other plants and greens such as rose hips and Hudson's Bay (Labrador) tea (4% of vegetation harvest) (Figure 6-23; Table 6-13). These plants were also harvested within proximity to the community (Figure 6-24). Wood, however, was the most used and harvested of all the vegetation resources (excluding berries). While not contributing to the community harvest estimated usable weight, 438 cords of wood were harvested by 58% of Tazlina households and used by 61% of households (Table 6-13).

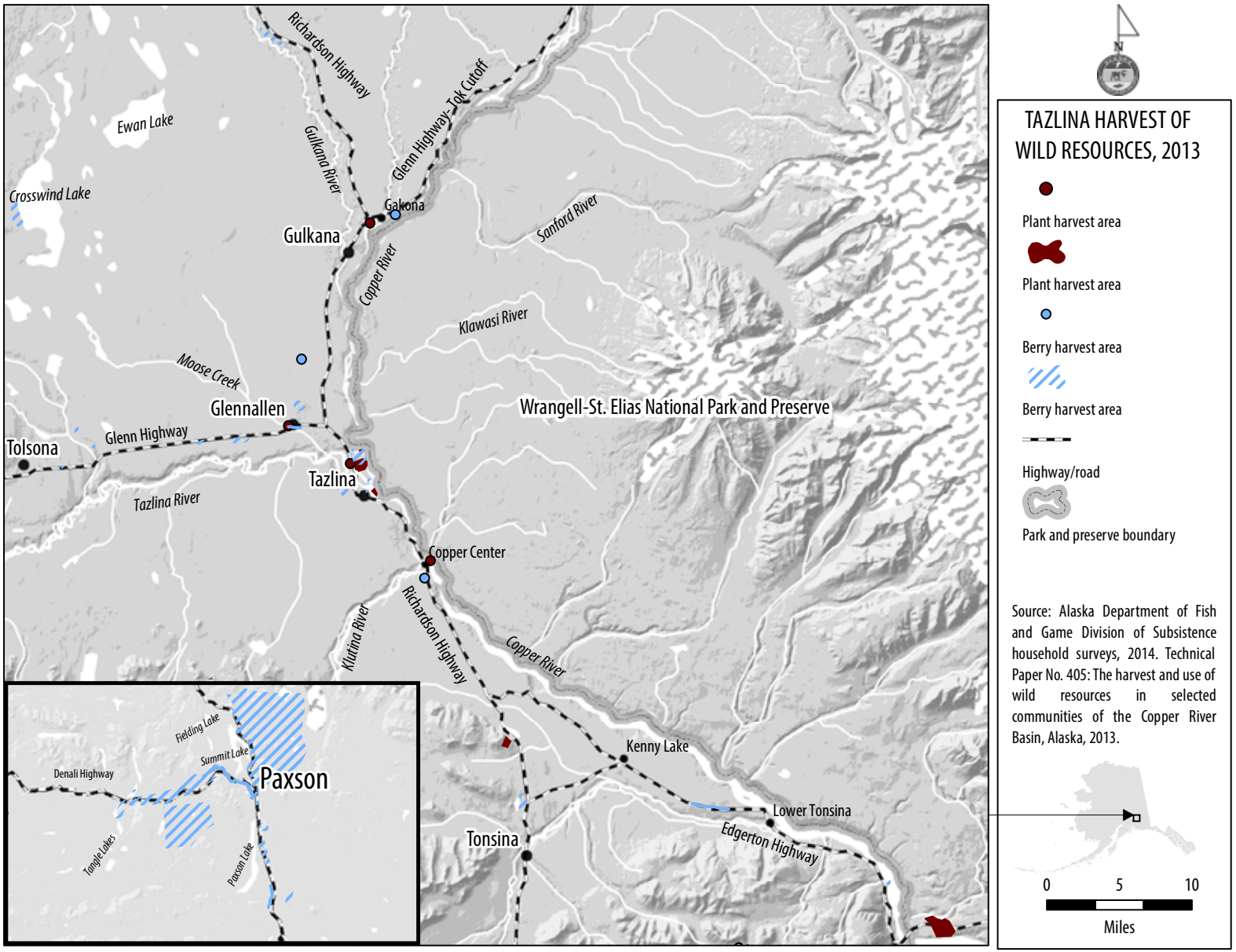


Figure 6-24.–Gathering and harvest locations of berries and plants, greens, and mushrooms, Tazlina, 2013.

Comparing Harvests and Uses in 2013 with Previous Years

Harvest Assessments

For the 10 resource categories and for all resources combined, survey respondents were asked to assess whether their uses and harvests in the 2013 study year were less, more, or about the same as other recent years. "Other recent years" was defined as about the last 5 years. Table 6-20 reports the number of valid responses for each category, the number of households that did not respond, and the number of households that did not use a resource category or all resources combined. In Table 6-20, response percentages are based on the number of valid responses for each category to contextualize these assessments within the set of community households that typically use each category.

Figure 6-25 depicts responses to the "less, same, more" assessment question. Households that said they did not ordinarily "use" something are not included within the results. This results in fewer responses for less commonly used categories such as bird eggs or marine mammals, and manifests in the chart as a very short set of colored bars compared to categories such as vegetation, salmon, or large land mammals, which are ordinarily used by most households. Some households did not respond to the question.

Taking all the resource categories into consideration, most Tazlina households, 60%, said they used less subsistence resources in general in 2013 compared to recent years (Table 6-20). A smaller number, 35%, said they used about the same amount, and only 5% said they used more. The main reason given for less use of resources overall was work interference or a lack of time to effectively participate in wild resource harvesting (cited by 28% of responding households) (Table 6-21). Some people could only go out 1 or 2 weekends to look for large land mammals, while others were not able to go out at all because of their work schedules. This reason for less use was followed closely by a lack of resource availability (26%). Personal reasons and unfavorable weather were also largely responsible for the less resource harvesting (19%).

Thirty-three percent of households that stated they used less salmon and attributed lowered use to weather: 22% said the weather negatively impacted their ability to harvest vegetation. Conflicting work schedules (24%) and a change in the amount of effort (24%) were the main factors that caused people to use less nonsalmon fish. Lack of sharing was cited relatively frequently as the reason for less use of salmon, marine mammals, and migratory birds.

Upland game birds (grouse and ptarmigan), vegetation, large land mammals (moose and caribou), small land mammals (rabbits), and salmon and nonsalmon fish were all considered to be in decline in the area. This lack of availability was a large concern for community members and the main reason they harvested fewer game birds (57%) and small land mammals (47%). The lack of availability led to a high rate of unsuccessful harvest attempts, which was the main reason given (26%) for less-than-usual use of large land mammals.

Those households that stated they harvested more resources attributed this predominantly to increased efforts (Table 6-22). As stated previously, most households felt they used less wild resources (Table 6-20). An exception to this trend is vegetation: 49% of households felt that use was the same as previous years and 18% indicated they used more. Vegetation and salmon were the 2 resources most frequently identified as being used more than in previous years (15% of households used more salmon). People said that their use was higher for salmon because they received more than usual and for vegetation it was because households had more help to harvest.

The impact to households from not getting enough wild resources is reported in Table 6-23. The impact from not getting enough salmon was noted as minor by 9 households, major by 9 households, and severe by 3 household out of 22 households reporting that they did not get enough salmon. For large land mammals the impact was noted as minor by 13 households, major by 19 households, and severe by 8 household out of a total of 42 households that did not get enough. For all resources 53% of households (out of 79) said that they did not get enough resources in 2013 and of those respondents 24% said that the impact from not getting enough resources was minor, 57% said it was major, and 14% said it was severe.

Table 6-20.–Changes in household uses of resources compared to recent years, Tazlina, 2013.

Resource category	Sampled households	Valid responses[a]	Households reporting use: Total households Number	Total households Percentage	Less Number	Less Percentage	Same Number	Same Percentage	More Number	More Percentage	Households not using Number	Households not using Percentage
Any resource	79	79	79	100.0%	66	83.5%	65	82.3%	34	43.0%	79	100.0%
All resources	**79**	**79**	**79**	**100.0%**	**47**	**59.5%**	**28**	**35.4%**	**4**	**5.1%**	**0**	**0.0%**
Salmon	79	79	78	98.7%	37	46.8%	29	36.7%	12	15.2%	1	1.3%
Nonsalmon fish	79	75	62	78.5%	30	40.0%	24	32.0%	8	10.7%	13	17.3%
Large land mammals	79	75	72	91.1%	47	62.7%	20	26.7%	5	6.7%	3	4.0%
Small land mammals	79	74	25	31.6%	17	23.0%	6	8.1%	2	2.7%	49	66.2%
Marine mammals	79	78	8	10.1%	3	3.8%	3	3.8%	2	2.6%	70	89.7%
Migratory waterfowl	79	73	16	20.3%	6	8.2%	4	5.5%	6	8.2%	57	78.1%
Other birds	79	70	35	44.3%	14	20.0%	18	25.7%	3	4.3%	35	50.0%
Bird eggs	79	79	1	1.3%	1	1.3%	0	0.0%	0	0.0%	78	98.7%
Marine invertebrates	79	76	14	17.7%	2	2.6%	8	10.5%	4	5.3%	62	81.6%
Vegetation	79	77	75	94.9%	23	29.9%	38	49.4%	14	18.2%	2	2.6%

Source ADF&G Division of Subsistence household surveys, 2014.

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

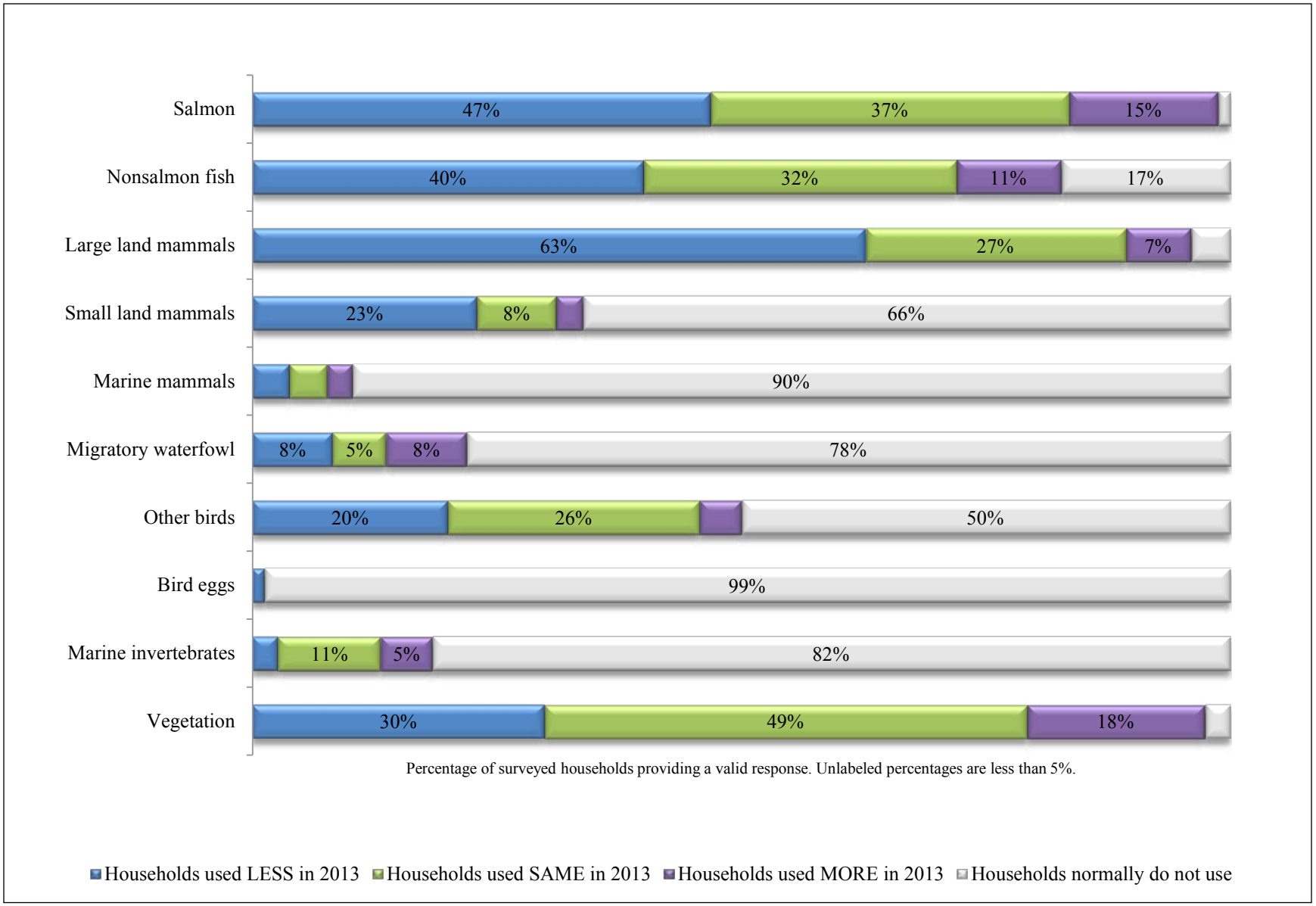


Figure 6-25.–Changes in household uses of resources compared to recent years, Tazlina, 2013.

Table 6-21.–Reasons for less household uses of resources compared to recent years, Tazlina, 2013.

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	79	65	15	23.1%	31	48%	4	6.2%	8	12%	17	26%	20	31%
All resources	**79**	**47**	**9**	**19.1%**	**12**	**26%**	**1**	**2.1%**	**3**	**6%**	**4**	**9%**	**6**	**13%**
Salmon	79	36	5	13.9%	3	8%	0	0.0%	4	11%	6	17%	2	6%
Nonsalmon fish	75	29	0	0.0%	4	14%	2	6.9%	1	3%	3	10%	7	24%
Large land mammals	75	47	7	14.9%	11	23%	0	0.0%	0	0%	7	15%	4	9%
Small land mammals	74	15	2	13.3%	7	47%	0	0.0%	0	0%	0	0%	2	13%
Marine mammals	78	3	0	0.0%	0	0%	0	0.0%	0	0%	3	100%	0	0%
Migratory waterfowl	73	6	1	16.7%	0	0%	0	0.0%	0	0%	1	17%	1	17%
Other birds	70	14	1	7.1%	8	57%	0	0.0%	0	0%	1	7%	1	7%
Bird eggs	79	1	0	0.0%	0	0%	0	0.0%	0	0%	0	0%	1	100%
Marine invertebrates	76	2	0	0.0%	0	0%	1	50.0%	0	0%	0	0%	0	0%
Vegetation	77	23	4	17.4%	5	22%	2	8.7%	2	9%	1	4%	5	22%

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Table 6-21.–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	79	65	18	27.7%	19	29.2%	4	6.2%	29	44.6%	4	6.2%	1	1.5%
All resources	**79**	**47**	**7**	**14.9%**	**9**	**19.1%**	**1**	**2%**	**13**	**27.7%**	**1**	**2.1%**	**0**	**0.0%**
Salmon	79	36	2	5.6%	12	33.3%	0	0%	5	13.9%	1	2.8%	0	0.0%
Nonsalmon fish	75	29	1	3.4%	2	6.9%	0	0%	7	24.1%	0	0.0%	1	3.4%
Large land mammals	75	47	12	25.5%	2	4.3%	1	2%	11	23.4%	3	6.4%	0	0.0%
Small land mammals	74	15	1	6.7%	1	6.7%	1	7%	2	13.3%	0	0.0%	0	0.0%
Marine mammals	78	3	0	0.0%	0	0.0%	0	0%	0	0.0%	0	0.0%	0	0.0%
Migratory waterfowl	73	6	0	0.0%	1	16.7%	0	0%	2	33.3%	0	0.0%	0	0.0%
Other birds	70	14	0	0.0%	2	14.3%	0	0%	4	28.6%	0	0.0%	0	0.0%
Bird eggs	79	1	0	0.0%	0	0.0%	0	0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	76	2	0	0.0%	0	0.0%	0	0%	1	50.0%	0	0.0%	0	0.0%
Vegetation	77	23	0	0.0%	5	21.7%	1	4%	6	26.1%	0	0.0%	0	0.0%

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Table 6-21.–Page 2 of 2.

Resource category	Valid responses[a]	Households reporting reasons for less use	Did not get enough		Did not need		Equipment/ fuel expense		Used other resources		Less competition	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	79	65	1	1.5%	6	9.2%	7	10.8%	1	1.5%	3	4.6%
All resources	**79**	**47**	**0**	**0.0%**	**3**	**6.4%**	**1**	**2.1%**	**0**	**0.0%**	**1**	**2.1%**
Salmon	79	36	0	0.0%	3	8.3%	0	0.0%	1	2.8%	0	0.0%
Nonsalmon fish	75	29	1	3.4%	2	6.9%	5	17.2%	0	0.0%	0	0.0%
Large land mammals	75	47	0	0.0%	1	2.1%	1	2.1%	0	0.0%	2	4.3%
Small land mammals	74	15	0	0.0%	1	6.7%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	78	3	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Migratory waterfowl	73	6	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other birds	70	14	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Bird eggs	79	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	76	2	0	0.0%	0	0.0%	1	50.0%	0	0.0%	0	0.0%
Vegetation	77	23	0	0.0%	1	4.3%	1	4.3%	0	0.0%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2014.

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

Table 6-22.–Reasons for more household uses of resources compared to recent years, Tazlina, 2013.

Resource category	Valid responses[a]	Households reporting reasons for more use	Increased availability		Used other resources		Favorable weather		Received more		Needed more	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	79	32	3	9.4%	0	0.0%	0	0.0%	16	50.0%	6	18.8%
All resources	**79**	**4**	**1**	**25.0%**	**0**	**0.0%**	**0**	**0.0%**	**1**	**25.0%**	**1**	**25.0%**
Salmon	79	12	0	0.0%	0	0.0%	0	0.0%	5	41.7%	3	25.0%
Nonsalmon fish	75	8	0	0.0%	0	0.0%	0	0.0%	4	50.0%	1	12.5%
Large land mammals	75	4	0	0.0%	0	0.0%	0	0.0%	2	50.0%	1	25.0%
Small land mammals	74	1	0	0.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%
Marine mammals	78	2	0	0.0%	0	0.0%	0	0.0%	2	100.0%	0	0.0%
Migratory waterfowl	73	5	0	0.0%	0	0.0%	0	0.0%	1	20.0%	0	0.0%
Other birds	70	3	1	33.3%	0	0.0%	0	0.0%	1	33.3%	0	0.0%
Bird eggs	79	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	76	4	0	0.0%	0	0.0%	0	0.0%	3	75.0%	1	25.0%
Vegetation	77	14	3	21.4%	0	0.0%	0	0.0%	1	7.1%	1	7.1%

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Table 6-22.–Continued.

Resource category	Valid responses[a]	Households reporting reasons for more use	Increased effort		Had more help		Other		Regulations		Traveled farther	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	79	32	15	46.9%	7	21.9%	1	3.1%	1	3.1%	0	0.0%
All resources	**79**	**4**	**3**	**75.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**
Salmon	79	12	2	16.7%	1	8.3%	0	0.0%	0	0.0%	0	0.0%
Nonsalmon fish	75	8	3	37.5%	1	12.5%	0	0.0%	0	0.0%	0	0.0%
Large land mammals	75	4	1	25.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	74	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	78	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Migratory waterfowl	73	5	4	80.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other birds	70	3	1	33.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Bird eggs	79	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	76	4	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	77	14	3	21.4%	5	35.7%	1	7.1%	1	7.1%	0	0.0%

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Table 6-22.–Page 2 of 2.

Resource category	Valid responses[a]	Households reporting reasons for more use	More success		Needed less		Store-bought expense		Got/ fixed equipment		Substituted resources	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	79	32	2	6.3%	0	0.0%	0	0.0%	1	3.1%	0	0.0%
All resources	**79**	**4**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**
Salmon	79	12	0	0.0%	0	0.0%	0	0.0%	1	8.3%	0	0.0%
Nonsalmon fish	75	8	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Large land mammals	75	4	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	74	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	78	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Migratory waterfowl	73	5	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other birds	70	3	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Bird eggs	79	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	76	4	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	77	14	2	14.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2014.

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

Table 6-23.–Reported impact to households reporting that they did not get enough of a type of resource, Tazlina, 2013.

		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
Salmon	79	77	97.5%	22	28.6%	1	4.5%	0	0.0%	9	40.9%	9	40.9%	3	13.6%
Nonsalmon fish	79	61	77.2%	29	47.5%	2	6.9%	0	0.0%	20	69.0%	5	17.2%	2	6.9%
Marine invertebrates	79	15	19.0%	12	80.0%	2	16.7%	0	0.0%	10	83.3%	0	0.0%	0	0.0%
Large land mammals	79	72	91.1%	42	58.3%	2	4.8%	0	0.0%	13	31.0%	19	45.2%	8	19.0%
Marine mammals	79	8	10.1%	4	50.0%	0	0.0%	0	0.0%	4	100.0%	0	0.0%	0	0.0%
Small land mammals	79	24	30.4%	11	45.8%	1	9.1%	0	0.0%	7	63.6%	2	18.2%	1	9.1%
Migratory waterfowl	79	16	20.3%	9	56.3%	0	0.0%	0	0.0%	6	66.7%	2	22.2%	1	11.1%
Other birds	79	34	43.0%	15	44.1%	2	13.3%	0	0.0%	10	66.7%	2	13.3%	1	6.7%
Bird eggs	79	1	1.3%	1	100.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%	0	0.0%
Vegetation	79	74	93.7%	35	47.3%	1	2.9%	0	0.0%	17	48.6%	12	34.3%	5	14.3%
All resources	**79**	**79**	**100.0%**	**42**	**53.2%**	**1**	**2.4%**	**1**	**2.4%**	**10**	**23.8%**	**24**	**57.1%**	**6**	**14.3%**

Source ADF&G Division of Subsistence household surveys, 2014.

a. Does not includes households failing to respond to the question or those households that never used the resource.

Table 6-24.–Comparison of harvest composition, Tazlina, 1987 and 2013.

	Estimated harvest in pounds usable weight								
	1982			1987			2013		
Resource	Total	Per capita	CIP	Total	Per capita	CIP	Total	Per capita	CIP
All resources	–	–	**0.0%**	**39,182.0**	**107.5**	**22.0%**	**52,880.3**	**150.1**	**14.6%**
Salmon	–	–		13,783.0	37.8		35,993.8	102.1	
Nonsalmon fish	–	–		6,741.0	18.5		3,409.5	9.7	
Large land mammals	–	–		15,480.0	42.5		10,740.8	30.5	
Small land mammals	–	–		766.0	2.1		113.3	0.3	
Birds and eggs	–	–		371.0	1.0		362.6	1.0	
Marine invertebrates	–	–		368.0	1.0		446.4	1.3	
Vegetation	–	–		1,673.0	4.6		1,813.9	5.1	

Sources For 2013, ADF&G Division of Subsistence household surveys, 2014; for previous study years, ADF&G Division of Subsistence Community Subsistence Information System (CSIS), accessed 2014.

Note No data are available for 1982 because Tazlina was surveyed as part of Glennallen for that study year.

Harvest Data

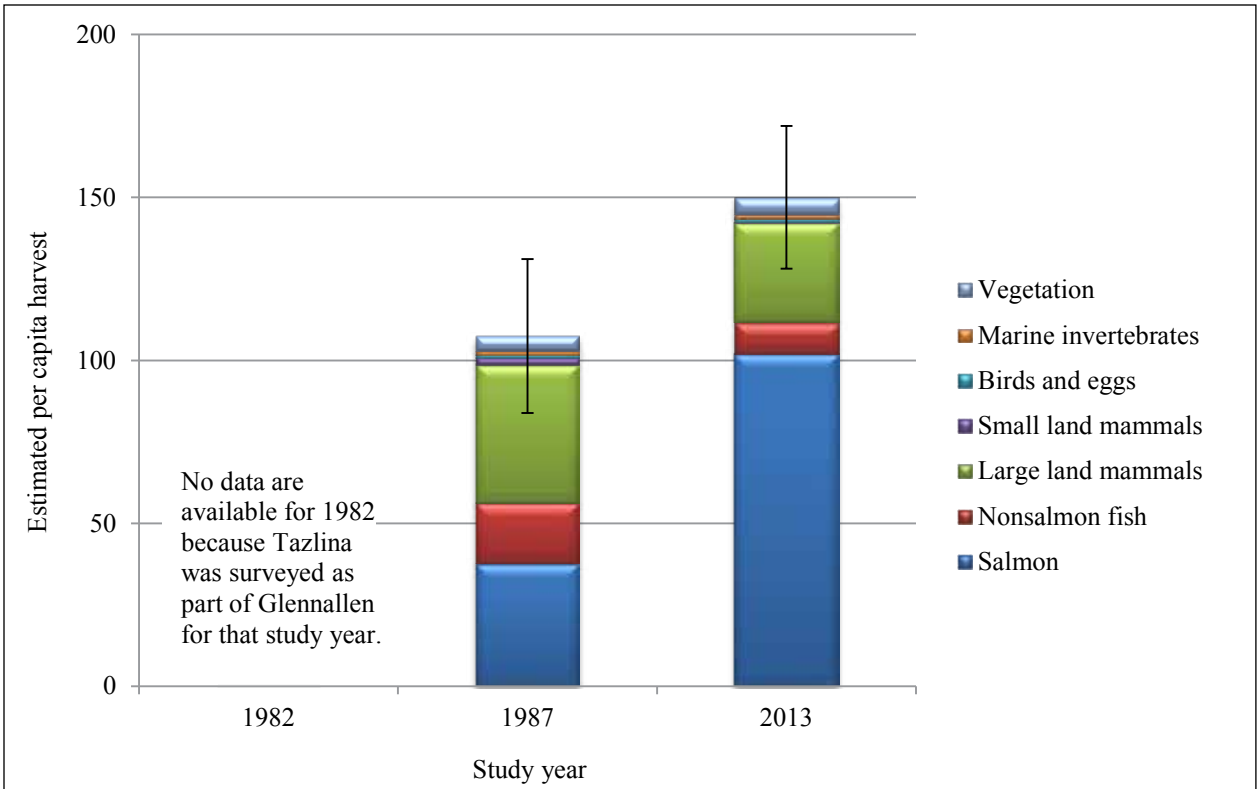
Changes in the harvest of resources by Tazlina residents can be discerned through comparisons with findings from other study years. As mentioned in the demographics section, households in the Tazlina and Copperville subdivisions were grouped with Glennallen households for study year 1982 (Stratton and Georgette 1984:73–74). As such, direct comparisons cannot be made for Tazlina area households for the 1982, 1987, and 2012 study years because of this sampling difference. However, the 2012 study area is similar to the one from 1987, which is when comprehensive subsistence harvest surveys were last conducted in Tazlina. Harvest data for 1987 were collected by ADF&G and were used in an environmental assessment for the U.S. Air Force titled *Alaska Over-the-Horizon Backscatter Radar System: Characteristics of Contemporary Subsistence Use Patterns in the Copper River Basin and Upper Tanana Area* (McMillan and Cuccarese 1988). Survey methods used for 2012 were similar to those applied for the 1987 study year and harvest and use patterns are comparable to help discern changes over time.

The total resource harvest in Tazlina in 1987 increased by 13,698 lb in 2013 (Table 6-24). The per capita harvest jumped from 108 lb in 1987 to 150 lb in 2013 (a 39% increase). Despite the difference in per capita harvest, there are notable similarities in the resource harvest patterns between the 2 study years. Both study years show salmon and large land mammals made up the greatest portion of harvested resources (Figure 6-26). Large land mammals made up an estimated 1,697 lb more of the total harvested weight than salmon in 1987 (Table 6-24). In 2013, salmon harvests surpassed large land mammals in weight by roughly 25,200 lb. A lack of success is reflected in the amount of large land mammals harvested per capita in 1987 (43 lb) versus 2013 (31 lb per capita). This low success rate for large land mammal harvests is also subtly reflected in the increased per capita salmon harvest in 2013 (a 64 lb increase from 1987). Many households noted that they concentrated on harvesting salmon more actively to compensate for a lack of large land mammals.

Nonsalmon fish made up the third most harvested resource category in both years, however considerably fewer nonsalmon fish were harvested in 2013 (10 lb per capita in 2013, which is down from 19 lb per capita in 1987). Many people who harvested nonsalmon fish noted that they seemed to be less abundant in 2013. People were still catching them, but they were catching less than they used to in the past. Small land mammals harvested by weight (not including harvests just for fur) decreased dramatically from 766 lb in 1987 to 113 lb in 2013 (2 lb per capita to less than one-half lb per capita). This is probably due to most people no longer trapping small land mammals for food, but rather hunting them opportunistically. Vegetation harvests were similar, with a slight per capita increase in 2013. Marine invertebrates and birds and eggs both stayed close to 1 lb per capita in each study year with no eggs being harvested.

Current and Historical Harvest Areas

During the 1983 and 1984 fieldwork seasons, ADF&G researchers conducted interviews with more than 200 hunters and fishers in 20 communities in or near the Copper River Basin to map areas where hunting,



Note Error bars represent the upper and lower bounds of the 95% confidence interval.

Figure 6-26.–Estimated harvests by pounds per capita and by resource category, Tazlina, 1987 and 2013.

fishing, trapping, and gathering of wild resources occurred between 1964 and 1984 (Stratton and Georgette 1985). However, Tazlina was included in the Glennallen area and therefore the information produced from this field season is not comparable to those earlier harvest assessments. In spite of not having historical maps to compare to this study's search and harvest area locations to past areas, surveyors recorded notes from respondents about changes in harvest areas. In Tazlina, people commented that they have to travel farther from the community using the road system to harvest some types of resources, such as moose, caribou, game birds, small mammals, and wood. However, based on trends from other Copper River Basin communities where historical mapping data are available, the actual distance traveled might be greater today than in decades past but the overall area traveled is most likely less than in previous years. This is due to people hunting predominantly from the road system and only venturing off the road by a short distance. Others stated that they no longer harvest particular resources because those resources are no longer available to harvest near the community.

Local Comments and Concerns

The following is a summary of local observations of concerns regarding wild resource harvests, populations, and trends that were recorded during the surveys in Tazlina. Comments included both general concerns regarding access and cost of living, while others were resource-specific. 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

Tazlina residents expressed concern about the state of the salmon runs in the Copper River Basin. Overall, people felt that there were fewer salmon in the river than in previous years. Most people attributed declining salmon runs to a changing environment. Later breakup, later snow, rivers not freezing, longer summers, and warmer falls all might be impacting the fish. The river condition was also thought to have impacted the runs—mainly the high water level that persisted through the early summer made it difficult for people to put in their fish wheels. Many people felt that commercial sockeye salmon fishing at the mouth of the river was responsible for overharvesting salmon. However, some felt that the commercial fishermen were not responsible, but rather that fault lies with the regulations that the commercial fishermen operated under.

The condition of the fish was mentioned by harvesters who noticed that the sockeye salmon seemed to be more "beat up" than usual and that the meat was softer. Others noted "weird white spots" on the filets, lots of parasites, scrapes, and holes. This has been described in other southern Alaska communities as well, such as Kenai and Egegik. Most people who commented on the physical condition of the fish wondered if the Fukushima nuclear disaster of 2011 affected the fish.

Lastly, accessing fish resources was also a concern for people in Tazlina. More access to fish wheels and allowing fish wheels in the Tazlina River were seen as ways to increase people's ability to successfully harvest salmon. Community members also hoped that ADF&G would begin to or continue stocking nonsalmon fish in lakes near the community as it did in the past because the nonsalmon fish populations have been less abundant.

Large Land Mammals

Large land mammals were of particular concern for the people in the Tazlina area. Many people had strong opinions about the state and federal hunting regulations for large land mammals, specifically moose, caribou, and Dall sheep. In regard to federal regulations, many people preferred the federal hunt because of the "any bull" opportunity for moose. People commented that they avoided the state hunts because of the regulations—including boundaries, hunting location restrictions placed on Tier I hunters, and antler size restrictions. One respondent summed up her sentiment about regulations by stating, "To hunt these days around here [Copper Basin], you need a lawyer and a surveyor."

People expressed the opinion that moose were becoming increasingly difficult to find, especially 4-brow tine bulls, and that there was too much pressure on the moose population by non-local residents. Other regulatory issues that were factors for discontent included difficulties with determining which moose were eligible (e.g., hard to determine between 50 inches and 49 inches) and the belief that the moose season is too early in the fall. Many of these same factors impacting moose harvests were viewed to be impacting caribou hunting efforts as well—particularly that there was too much competition by non-local hunters.

By far the most commented-upon issue regarding large land mammals was the "Copper Basin Moose Community Subsistence Harvest Permit Program."[14] The community subsistence hunt originally specified a local community preference. Due to litigation brought against the State of Alaska, in 2011 the community subsistence hunt opportunity was made available to all Alaska residents. The community hunts for moose occur in GMUs 11 and 13 and in a portion of GMU 12. The community hunt for caribou occurs only in GMU 13. People almost exclusively mentioned this hunt in relation to moose. There are fall and winter seasons. At least 25 people are needed to constitute a "community" or group. Many local residents felt that the community hunt now represents the exact opposite of why it was established: they stated that this hunt gives urban hunters the chance to participate in an "any bull" hunt and is not being used for subsistence.

Poor success rates when harvesting moose have been largely attributed to the influx of people using a highly sought-after resource. People in the community felt they were being out-competed by better equipped, non-local, non-rural people who had the means to take off work on opportune days (like during the season opener

14. Alaska Department of Fish and Game, n.d. "Cultural and Subsistence Harvest Permits." Accessed December 2014. http://www.adfg.alaska.gov/index.cfm?adfg=huntlicense.cultural

or for extended periods of time until successful). Respondents said non-local hunters brought expensive equipment that they had the means to run for extended periods of time, thus allowing them to get farther in to the backcountry quicker, and for an extended duration. Those who were hiking in from the road and manually packing out their meat said that they could not compete.

Small Land Mammals/Furbearers

The large investment needed run a trapline and the lack of profit in doing so prevent many people in Tazlina from participating in small land mammal harvesting. Many people spoke about having trapped in the past, or that their parents used to trap, but it cost too much money and took too much time to continue trapping today. Other younger people in the community said they did not know how to trap, but expressed a desire in learning. Overall, harvesters thought that small land mammals were in decline from in the past. Trappers in the community noted that some furbearer species were down (lynx) and others were up (wolves). This was attributed to natural cycles.

Birds and Eggs

In the view of respondents, ptarmigan are becoming less common in the area. Because of this, some perceived spruce grouse as more available to harvest. Waterfowl were not in areas where they usually are and this change impacted people's ability to harvest migratory bird species. Others commented that all bird populations are down sharply. When people who have lived in the Tazlina area for their entire lives reflected on the status of birds in the area, they said they used to see more. This change, particularly for migratory waterfowl, was thought to have been caused by a warming climate forcing birds to migrate to different areas.

Vegetation

Access was a major concern for people who heated a portion of their homes with wood. People commented that firewood was becoming harder and harder to come by. In order to get firewood people said that they had to drive quite far to the closest wood lot. This problem was compounded by more people harvesting wood to offset high home heating costs. More people harvesting wood meant that there was less deadfall available. Many people felt the solution to this was for the state to make more wood lots available.

A mushroom harvester said that the dry summer reduced mushroom numbers. Another respondent was concerned with the chemicals that the Alaska Department of Transportation and Public Facilities was using along the roadside and thought that those were hurting the vegetation.

Cost of Harvesting

The high use of gas/fuel-powered vehicles restricted people's harvesting efforts. Fuel and maintenance costs associated with ATVs, snowmachines, boats, cars, and other vehicles impacted people's harvesting patterns. For example, some people mentioned only being able to go out 1 or 2 weekends to look for moose (this issue was compounded by time restraints, like work, that many people had). If they were unsuccessful in harvesting an animal on those weekends, they did not get any for the season. Those who did not use alternative modes of transportation for getting into the backcountry also felt that they were at a severe disadvantage in their ability to harvest large land mammals compared to the well-equipped non-local hunters.

Energy

Many residents of Tazlina said that some of the most expensive energy in the country can be found in the Copper River Basin. This high cost of heating was seen as taking away monetary resources that could have

otherwise gone to wild resource harvesting. One respondent noted that having to supplement his heating oil stove with so much wood was time-consuming and prevented him from engaging in other harvesting activities. However, high energy costs did not translate into support for the Susitna-Watana dam energy project. This was mainly due to the perception that their area would not benefit from the energy being produced and because many people used the area for hunting and harvesting and were worried about the dam's impacts. One community member commented, "Alaska is always behind the rest of the country. In the time when all other states are taking dams down, why are we considering putting in dams when they can be so destructive for the environment and the community?" People wondered if the dam would further strain already scarce resources like caribou and moose. This high cost of energy was considered a contributor to the larger overall issue of high cost of living and few economic opportunities. Some people were being "priced out" of the area. This contributed to reinforcing conditions that were forcing people out of the community: fewer people caused job opportunities to become scarcer, which in turn caused schools to close, which again forced more people out of the community.

Climate Change

People have been noticing later breakups, less reliability in rivers freezing over, snow coming later and lasting longer, but less snow in total. A warmer fall and general warming trends have all been noticed as factors negatively effecting resource harvest. This was thought to be contributing to fewer birds and fish. Rivers not freezing also limit people's ability to travel in the wintertime off the road system.

Subsistence Opportunity

In regard to subsistence, many people felt that there should be a state rural priority for people in the Copper River Basin for gathering resources in the Copper River Basin. The most common sentiment regarding subsistence was that people coming out with "thousand-dollar operations" from the Matanuska–Susitna Valley, Anchorage, and Fairbanks were not subsistence hunters. Local people felt that they have to compete with lots of toys (i.e., ATVs or tracked vehicles) and money and in the end there is nothing left for them. Others felt that adjustments assisting local residents would give local harvesters more equitable access to resources. This was important to people in the community who described wild resource harvesting as more than food security, but rather part of family traditions, personal identity, and a way to connect generations to the land.

Resource Availability

The 1987 harvest assessment of the Copper River Basin noted that wild resources were already highly competed for, and predicted that an increase in population would further strain already limited availability (McMillan and Cuccarese 1988). Although the population in the Copper River Basin has remained fairly stable over the past 27 years, as comments in this report show, time has not alleviated this issue. Competition for resources is still one of the biggest concerns for local residents.

ACKNOWLEDGMENTS

The Division of Subsistence researchers would like to thank the hard working local researchers that made this project possible. We would also like to thank community residents who participated in the survey; the Native Village of Tazlina for their generous support and the use of their facilities; the Alaska Copper River Bed and Breakfast for providing stellar accommodations; and Ahtna, Inc., for their continued assistance.

7. TONSINA

Robbin La Vine and Eric Schacht

Community Background

Tonsina is situated within the sloping foothills of the Chugach Mountains in the southwest portion of the Copper River Basin and is the last census designated place (CDP) on the Richardson Highway before the city of Valdez. Much of the community is settled in the upper Tonsina watershed where the Tonsina River, Little Tonsina River, and Bernard and Squirrel creeks run together. Tonsina borders the Richardson Highway from its junction with the New Edgerton Highway at Pippin Lake (mile 82) then stretches south to Pump Station 12 (mile 65). The CDP also encompasses the Tonsina controlled use area extending across the mountains east of the Richardson Highway; no private residences were found there. Included in this survey are the small cluster of private properties and homes locally referred to as Serendipity that is located where the Tiekel and Tsina rivers meet in the Chugach Mountains at mile 46 of the Richardson Highway; these households are located south of the Tonsina CDP boundary but outside the Valdez CDP.

The upper Tonsina River watershed has long been part of Ahtna Athabascan traditional territory (Bleakley 2014; Reckord 1983a). Tonsina Lake, which drains into the Tonsina River, was the site of a permanent winter village at the time of contact with Euro-Americans in the mid-1800s through the early part of the 20th century, and sites of archaeological significance are scattered along its shore. The southern extension of the upper Tonsina River watershed leading to and through Thompson Pass was used as a seasonal trading route between the Ahtna and their coastal neighbors, the Chugach (Bleakley 2014).

The same corridor that served the Ahtna was later used by the military as an access route from Port Valdez to Fort Egbert in Eagle and to serve the needs of prospectors and entrepreneurs seeking fortune in the new American territory. Construction of the trail to Eagle began in 1899 and was complete by 1901. Roadhouses sprang up along the route that were built and operated by private citizens. One of these was the Tonsina Roadhouse, which was built in 1901. Although the original structure burned down in 1928, it was rebuilt in 1929 and still stands today (albeit empty and unused) (Bleakley 2014; Phillips 1984). Contemporary accommodations were built next to the old facility and operate as the Tonsina River Lodge offering a full-service restaurant, bar, and year-round accommodations.

Aside from the Tonsina River Lodge parcel and the properties lining the road corridor, the majority of land within the CDP is federally-owned or land belonging to Chugach Native Corporation. Tonsina community households can be found clustered in 3 areas: Tonsina Lodge south, along a small road to the north of and westward along Squirrel Creek, and the remaining residences stretch along the Richardson Highway from the Tonsina River bluff north to the junction with the Edgerton Highway and along the southern and western shore of Pippin Lake. According to a key respondent, much of the contemporary neighborhood of Tonsina Lodge south between Bernard Creek and the highway comes from a single subdivided 80-acre homestead.

The upper Tonsina River area shares most primary services with the neighboring communities of Kenny Lake and Willow Creek. Children in the area all attend school in Kenny Lake where there is also a volunteer fire department, a small library, a gas station, and a grocery store. Additionally, lodges and eating establishments along with seasonal gift shops can be found stretched along the Richardson Highway south through Willow Creek. In addition to the Tonsina River Lodge there is the Squirrel Creek State Recreation Site located one-half mile north of the lodge. Residents run small businesses and services from their homes along the road.

Table 7-1.–Population estimates, Tonsina, 2010 and 2013.

	Census (2010)	5-year American Community Survey (2008–2012)	This study (2013)
Total population			
Households	39	30	39.0
Population	78	71	89.9
Alaska Native			
Population	8	39	10.2
Percentage	10.3%	54.9%	11.3%

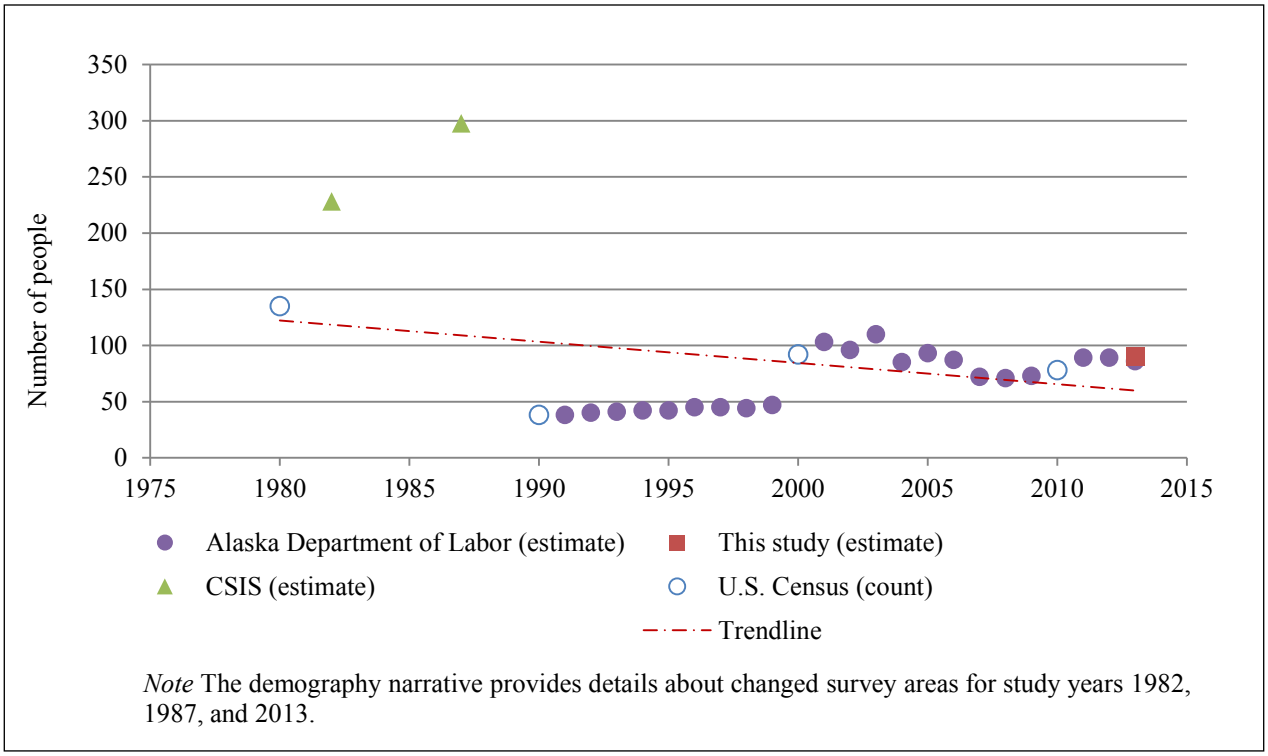
Sources U.S. Census Bureau (2011) for 2010 estimate; U.S. Census Bureau for American Community Survey 5-year survey estimate; and ADF&G Division of Subsistence household surveys, 2014, for 2013 estimate.
Note The term "households" means occupied housing units. Alaska Native population data from the American Community Survey and 2010 census come from the category "race alone or in combination with one or more other races."

Demography

According to the federal census, in 2010 the Tonsina CDP had 78 residents and 39 households (Table 7-1). The household survey conducted in 2014 found an estimated 2013 population of 90 residents, of which 11% were Alaska Native, and 39 households. These data were derived from a slightly expanded survey area than the Tonsina CDP boundary used for the federal census. Researchers learned that a small emerging community of 12 households that is locally referred to as Serendipity existed south of the Tonsina CDP boundaries but outside the Valdez CDP. On further investigation, only 4 of the 12 households were permanent, year-round residences. After consultation with community members and ADF&G team members, it was determined that these 4 households would be included with the Tonsina survey effort for this study since they identified themselves as Tonsina residents.

Figure 7-1 shows the population of Tonsina over time, starting with the 1980 federal census and includes estimates from the Alaska Department of Labor and Workforce Development and data from previous Division of Subsistence surveys that are recorded in the CSIS. The challenge with this particular figure and the population trendline is that boundaries for the CDP changed over time and thus, at least from 1990 to 2000, the CDP area increased resulting in a larger population. In addition, a major difference exists between the boundaries used for all other sources and the earlier Division of Subsistence studies for 1983 and 1987. During the 1980s, Tonsina was surveyed as the stretch of the Richardson Highway from the present-day CDP through the road portion of contemporary Willow Creek to the boundary of the Copper Center CDP. This large sample area more than doubled the population estimates of the 2 earlier division studies. Considering the amount of inter-study discrepancies that exist between decades, the most reliable and comparable data points for this study begin in 2000 and continue to the 2013 study year; these data demonstrate a relatively consistent population over the last 13 years.

Prior to the study, the Division of Subsistence researchers consulted with community representatives to identify 39 year-round households of the Tonsina CDP, including Serendipity (Table 7-2). Of these, 23 households (59%) were interviewed. The following data are expanded to cover the remaining households not surveyed. The mean number of years of residency for the entire Tonsina population was 16 years, with the maximum length of residency being 50 years (Table 7-3). The mean number of years of residency for the household head was slightly higher at 20 years. The average age of the Tonsina resident was 42 and the eldest resident at the time of the survey was 87. A larger portion of the population was male; 51 of the 90



Note The demography narrative provides details about changed survey areas for study years 1982, 1987, and 2013.

Figure 7-1.–Historical population estimates, Tonsina, 1980–2013.

Table 7-2.–Sample achievement, Tonsina, 2013.

	Tonsina
Number of dwelling units	46
Interview goal	46
Households interviewed	23
Households failed to be contacted	12
Households declined to be interviewed	4
Households moved or occupied by nonresident	7
Total households attempted to be interviewed	27
Refusal rate	14.8%
Final estimate of permanent households	39
Percentage of total households interviewed	59.0%
Interview weighting factor	1.7
Sampled population	53
Estimated population	89.9

Source ADF&G Division of Subsistence household surveys, 2014.

Table 7-3.–Sample and demographic characteristics, Tonsina, 2013.

Characteristics	
Sampled population	53
Estimated community population	90
Household size	
Mean	2.3
Minimum	1
Maximum	6
Age	
Mean	41.8
Minimum[a]	0
Maximum	87
Median	45
Length of residency	
Total population	
Mean	16.1
Minimum[a]	0
Maximum	50
Heads of household	
Mean	20.1
Minimum[a]	0
Maximum	50
Alaska Native	
Estimated households[b]	
Number	5.1
Percentage	13.0%
Estimated population	
Number	10
Percentage	11.3%

Source ADF&G Division of Subsistence household surveys, 2014.
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.

residents. The largest age cohort of the entire population was women between the ages of 60 and 64 (17% of the female population) and the largest age cohort for men (20%) fell between the ages of 50 and 59 (Table 7-4; Figure 7-2). The largest cohort for the entire community population combined (30%) was between the ages of 50 and 64, however a significant portion of the population (24%) was between the ages of 25 and 39, with17% of the population represented by youths between the ages of 0 and 14.

Very few of the household heads in Tonsina were born in the Copper River Basin—just 8%—and a vast majority were born elsewhere in the U.S. (70%), or outside the U.S. (8%) (Table 7-5). A larger portion of the entire population was born in the Copper River Basin (25%) most of whom were born in Tonsina (19% of the entire population) (Appendix Table E7-1).

Table 7-4.–Population profile, Tonsina, 2013.

	Male			Female			Total		
Age	Number	Percentage	Cumulative percentage	Number	Percentage	Cumulative percentage	Number	Percentage	Cumulative percentage
0–4	5.1	10.0%	10.0%	1.7	4.3%	4.3%	6.8	7.5%	7.5%
5–9	3.4	6.7%	16.7%	0.0	0.0%	4.3%	3.4	3.8%	11.3%
10–14	1.7	3.3%	20.0%	3.4	8.7%	13.0%	5.1	5.7%	17.0%
15–19	0.0	0.0%	20.0%	0.0	0.0%	13.0%	0.0	0.0%	17.0%
20–24	1.7	3.3%	23.3%	1.7	4.3%	17.4%	3.4	3.8%	20.8%
25–29	3.4	6.7%	30.0%	3.4	8.7%	26.1%	6.8	7.5%	28.3%
30–34	5.1	10.0%	40.0%	1.7	4.3%	30.4%	6.8	7.5%	35.8%
35–39	3.4	6.7%	46.7%	5.1	13.0%	43.5%	8.5	9.4%	45.3%
40–44	1.7	3.3%	50.0%	0.0	0.0%	43.5%	1.7	1.9%	47.2%
45–49	1.7	3.3%	53.3%	1.7	4.3%	47.8%	3.4	3.8%	50.9%
50–54	5.1	10.0%	63.3%	5.1	13.0%	60.9%	10.2	11.3%	62.3%
55–59	5.1	10.0%	73.3%	1.7	4.3%	65.2%	6.8	7.5%	69.8%
60–64	3.4	6.7%	80.0%	6.8	17.4%	82.6%	10.2	11.3%	81.1%
65–69	5.1	10.0%	90.0%	0.0	0.0%	82.6%	5.1	5.7%	86.8%
70–74	1.7	3.3%	93.3%	0.0	0.0%	82.6%	1.7	1.9%	88.7%
75–79	0.0	0.0%	93.3%	1.7	4.3%	87.0%	1.7	1.9%	90.6%
80–84	1.7	3.3%	96.7%	0.0	0.0%	87.0%	1.7	1.9%	92.5%
85–89	0.0	0.0%	96.7%	1.7	4.3%	91.3%	1.7	1.9%	94.3%
90–94	0.0	0.0%	96.7%	0.0	0.0%	91.3%	0.0	0.0%	94.3%
95–99	0.0	0.0%	96.7%	0.0	0.0%	91.3%	0.0	0.0%	94.3%
100–104	0.0	0.0%	96.7%	0.0	0.0%	91.3%	0.0	0.0%	94.3%
Missing	1.7	3.3%	100.0%	3.4	8.7%	100.0%	5.1	5.7%	100.0%
Total	**50.9**	**100.0%**	**100.0%**	**39.0**	**100.0%**	**100.0%**	**89.9**	**100.0%**	**100.0%**

Source ADF&G Division of Subsistence household surveys, 2014.

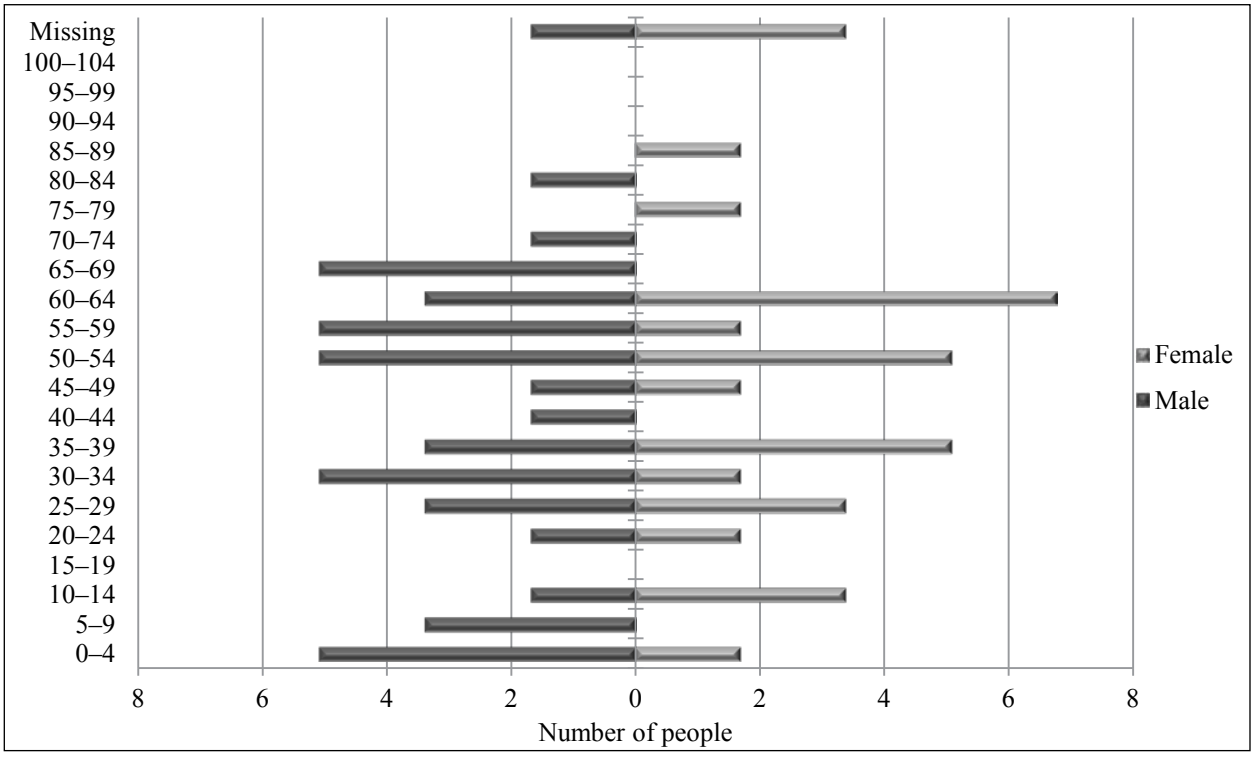


Figure 7-2.–Population profile, Tonsina, 2013.

Table 7-5.–Birthplaces of household heads, Tonsina, 2013.

Birthplace	Percentage
Anchorage	2.7%
Glennallen	2.7%
Juneau	2.7%
Kenny Lake	2.7%
Petersburg	2.7%
Tonsina	2.7%
Other U.S.	70.3%
Foreign	8.1%
Missing	5.4%

Source ADF&G Division of Subsistence household surveys, 2014.
Note "Birthplace" means the place of residence of the parents of the individual when the individual was born.

Cash Employment and Monetary Income

Table 7-6 is a summary of the estimated earned income as well as other sources of income for residents of Tonsina in 2013. The total community income for the 2013 study year was $3,328,007, of which $2,996,836 was earned income from employment. Other income derived from retirement, rental property, the sale of personal items and other assistance and dividends amounted to $331,171 for the entire community. During the study year the average household total income was approximately $85,334, of which earned income accounted for an average of $76,842 per household, or approximately 90% of the total community income. The estimated per capita earned income was $37,032. Other income contributed approximately 10% of the total community income, or $8,492 per household. The greatest contributing job sectors by percentage of total community income were services (36% of total community income) and agriculture, forestry, and fishing (27% of total community income). The largest sources of other income were Social Security and Alaska Permanent Fund dividends, which provided approximately 5% and 2% of the total community income, respectively.

In 2013, most of the jobs held by Tonsina residents (approximately 40%) came from the services sector and provided approximately 41% of the earned income (Table 7-7). Other employment sectors of significance included local and tribal governments (including employment at schools) (17% of jobs but only 7% of the earned income) and agriculture, forestry, and fishing (10% of jobs but 30% of the earned income).

An estimated 70 adults were of working age (over 16) in Tonsina, of which 65 (or 93%) were employed at some point throughout the study year (Table 7-8). Of these employed adults 55% were employed year-round with the mean length of employment averaging just less than 9 months during the study year. There were 95 jobs reported by the community with some individuals holding as many as 3 different jobs over the course of the 2013 study year and the mean being 1.5 jobs per working adult. On the household level, 37 of the 39 households (95%) contained at least 1 adult who was employed during 2013. The average number of jobs during the study year per employed household was 2.4; the average number of employed adults per employed household was 1.8.

Table 7-6.–Estimated earned and other income, Tonsina, 2013.

Income source	Number of people	Number of households	Total for community	-/+ 95% CI	Mean per household	Per capita income	Percentage of total community income
Earned income							
Services	25.4	18.5	$1,214,664	$370,495 – $2,741,307	$31,145		36.5%
Agriculture, forestry, and fishing	8.5	8.2	$883,612	$18,193 – $2,290,515	$22,657		26.6%
Mining	5.1	6.2	$210,846	$50,914 – $553,522	$5,406		6.3%
Local government, including tribal	11.9	14.4	$203,443	$21,606 – $376,662	$5,216		6.1%
Construction	3.4	4.1	$197,382	$40,569 – $582,483	$5,061		5.9%
Federal government	5.1	4.1	$115,735	$35,654 – $312,511	$2,968		3.5%
Retail trade	1.7	2.1	$101,136	$48,563 – $259,242	$2,593		3.0%
State government	5.1	6.2	$55,658	$953 – $189,971	$1,427		1.7%
Manufacturing	1.7	2.1	$10,669	$1,306 – $26,671	$274		0.3%
Transportation, communication, and utilities	1.7	2.1	$3,690	$2,139 – $10,527	$95		0.1%
Earned income subtotal	**54.3**	**36.9**	**$2,996,836**	**$1,800,992 – $5,010,061**	**$76,842**	**$33,347**	**90.0%**
Other income							
Social Security		10.2	$152,249	$40,114 – $300,626	$3,904		4.6%
Alaska Permanent Fund dividend		37.3	$74,778	$54,939 – $93,091	$1,917		2.2%
Rental income		4.3	$27,529	$120 – $98,526	$706		0.8%
Other		1.7	$20,348	$12,000 – $40,696	$522		0.6%
Unemployment		5.1	$17,727	$10,455 – $44,318	$455		0.5%
Sales (property/garage sales, etc.)		2.6	$13,000	$89 – $43,875	$333		0.4%
Pension/retirement		5.1	$6,686	$3,943 – $22,168	$171		0.2%
Disability		3.4	$6,382	$3,764 – $20,057	$164		0.2%
Longevity bonus		3.4	$6,003	$3,540 – $14,243	$154		0.2%
Heating assistance		5.1	$2,586	$1,525 – $6,189	$66		0.1%
Native corporation dividend		1.7	$2,543	$1,500 – $5,087	$65		0.1%
Veterans assistance		3.4	$1,340	$790 – $4,576	$34		0.0%
TANF (Temporary Assistance for Needy Families)		0.0	$0	$0 – $0	$0		0.0%
Adult public assistance (OAA, APD)		0.0	$0	$0 – $0	$0		0.0%
Supplemental Security income		0.0	$0	$0 – $0	$0		0.0%
Food stamps		0.0	$0	$0 – $0	$0		0.0%
Workers' compensation/insurance		0.0	$0	$0 – $0	$0		0.0%
Child support		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		**37.5**	**$331,171**	**$182,563 – $514,098**	**$8,492**	**$3,685**	**10.0%**
Community income total			**$3,328,007**	**$2,092,798 – $5,309,959**	**$85,334**	**$37,032**	**100.0%**

Source ADF&G Division of Subsistence household surveys, 2014.

Table 7-7.–Employment by industry, Tonsina, 2013.

Industry	Jobs	Households	Individuals	Percentage of wage earnings
Estimated total number	**95.2**	**36.9**	**64.8**	
Federal government	**6.3%**	**11.1%**	**9.4%**	**3.9%**
Technologists and technicians, except health	2.1%	5.6%	3.1%	0.1%
Administrative support occupations, including clerical	2.1%	5.6%	3.1%	1.2%
Service occupations	2.1%	5.6%	3.1%	2.5%
State government	**6.3%**	**16.7%**	**9.4%**	**1.9%**
Technologists and technicians, except health	4.2%	11.1%	6.3%	0.1%
Transportation and material moving occupations	2.1%	5.6%	3.1%	1.8%
Local government, including tribal	**16.7%**	**38.9%**	**21.9%**	**6.8%**
Teachers, librarians, and counselors	10.4%	22.2%	12.5%	5.1%
Writers, artists, entertainers, and athletes	2.1%	5.6%	3.1%	0.2%
Service occupations	4.2%	11.1%	6.3%	1.5%
Agriculture, forestry, and fishing	**10.4%**	**22.2%**	**15.6%**	**29.5%**
Agricultural, forestry, and fishing occupations	10.4%	22.2%	15.6%	29.5%
Mining	**6.3%**	**16.7%**	**9.4%**	**7.0%**
Construction and extractive occupations	4.2%	11.1%	6.3%	5.3%
Transportation and material moving occupations	2.1%	5.6%	3.1%	1.8%
Construction	**8.3%**	**11.1%**	**6.3%**	**6.6%**
Mechanics and repairers	4.2%	5.6%	3.1%	1.1%
Construction and extractive occupations	4.2%	11.1%	6.3%	5.5%
Manufacturing	**2.1%**	**5.6%**	**3.1%**	**0.4%**
Writers, artists, entertainers, and athletes	2.1%	5.6%	3.1%	0.4%
Transportation, communication, and utilities	**2.1%**	**5.6%**	**3.1%**	**0.1%**
Transportation and material moving occupations	2.1%	5.6%	3.1%	0.1%
Retail trade	**2.1%**	**5.6%**	**3.1%**	**3.4%**
Executive, administrative, and managerial	2.1%	5.6%	3.1%	3.4%
Services	**39.6%**	**50.0%**	**46.9%**	**40.5%**
Executive, administrative, and managerial	20.8%	22.2%	31.3%	31.5%
Engineers, surveyors, and architects	2.1%	5.6%	3.1%	2.5%
Administrative support occupations, including clerical	4.2%	11.1%	6.3%	2.7%
Service occupations	4.2%	5.6%	3.1%	0.2%
Mechanics and repairers	2.1%	5.6%	3.1%	0.9%
Construction and extractive occupations	2.1%	5.6%	3.1%	2.5%
Transportation and material moving occupations	4.2%	11.1%	6.3%	0.2%

Source ADF&G Division of Subsistence household surveys, 2014.

Table 7-8.–Employment characteristics, Tonsina, 2013.

Characteristic	Community Tonsina
All adults	
Number	69.5
Mean weeks employed	35.9
Employed adults	
Number	64.8
Percentage	93.2%
Jobs	
Number	95.2
Mean	1.5
Minimum	1
Maximum	3
Months employed	
Mean	8.9
Minimum	4
Maximum	12
Percentage employed year-round	54.9%
Mean weeks employed	38.5
Households	
Number	39
Employed	
Number	36.9
Percentage	94.7%
Jobs per employed household	
Mean	2.4
Minimum	2
Maximum	6
Employed adults	
Mean	
Employed households	1.8
Total households	1.7
Minimum	1
Maximum	6
Mean person-weeks of employment	40.8

Source ADF&G Division of Subsistence household surveys, 2014.

Levels of Individual Participation in the Harvesting and Processing of Wild Resources

Table 7-9 reports the expanded levels of individual participation in the harvest and processing of wild resources by all Tonsina residents in 2013. Approximately 83% of all residents participated in the harvest of wild resources while 89% participated in the processing of wild resources. With reference to specific resource categories, more people processed than harvested resources, which is a common pattern in particular for the harvesting and processing of large land mammals and salmon. It is less commonly seen when there is opportunistic harvesting of plants and berries. In Tonsina, 83% of community members gathered vegetation while 85% processed; 60% of community members participated in the harvest of fish while 72% processed; 38% participated in hunting large land mammals while about 51% processed large land mammals; about 25% participated in hunting birds and 30% processed; and about 9% participated in hunting and trapping small land mammals while 17% processed harvests.

The survey included questions about individual participation in wild harvest activities such as working with fish wheels, handicrafts, and cooking wild foods. In Tonsina, 6% of residents built or repaired fish wheels or helped to place or remove a fish wheel. In 2013, 13% of residents sewed skins or cloth and 72% of residents cooked wild foods (Table 7-10).

Household Resource Harvest and Use Patterns and Sharing of Wild Resources

Table 7-11 summarizes resource harvest and use characteristics for Tonsina in 2013 at the household level. Most households (96%) used wild resources in 2013, while 87% attempted to harvest and 87% harvested resources. The average harvest was 459 lb usable weight per household, or 199 lb per capita. During the study year, community households harvested an average of 8 kinds of resources and used an average of 11 kinds of resources. The maximum number of resources used by any household was 29. In addition, households gave away an average of 3 kinds of resources with 78% of households sharing resources with other households and 87% of households receiving resources from others. Overall, as many as 117 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.

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 7-3, in the 2013 study year in Tonsina, about 69% of the harvested wild resource as estimated in usable pounds was 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 Tonsina and the other study communities.

The survey included questions about residents' use of alternative or motorized modes of transportation to access wild food harvest areas as well as the use of portable motors for harvesting activities. Figure 7-4 demonstrates the percentage of community households that used an alternate means of transportation (in addition to or aside from using cars, trucks, or traveling on foot). Approximately 52% of the Tonsina households used an ATV when harvesting wild foods and the same percentage (52%) used snowmachines. About 30% of households used a boat, and 4% of households each used aircraft and a dog sled when harvesting wild resources. Seventy percent of households used a chain saw, 48% used an ice auger, 30% used a generator, and 26% of households used a winch (Figure 7-5).

Table 7-9.–Individual participation in subsistence harvesting and processing activities, Tonsina, 2013.

Total number of people	**89.9**
Fish	
Fish	
Number	54.3
Percentage	60.4%
Process	
Number	64.4
Percentage	71.7%
Large land mammals	
Hunt	
Number	33.9
Percentage	37.7%
Process	
Number	45.8
Percentage	50.9%
Small land mammals	
Hunt or trap	
Number	8.5
Percentage	9.4%
Process	
Number	15.3
Percentage	17.0%
Birds and eggs	
Hunt/gather	
Number	22.0
Percentage	24.5%
Process	
Number	27.1
Percentage	30.2%
Vegetation	
Gather	
Number	74.6
Percentage	83.0%
Process	
Number	76.3
Percentage	84.9%
Any resource	
Attempt harvest	
Number	74.6
Percentage	83.0%
Process	
Number	79.7
Percentage	88.7%

Source ADF&G Division of Subsistence household surveys, 2014.

Table 7-10.–Household member participation in subsistence craft activities, Tonsina, 2013.

Total number of people	**89.9**
Building, maintaining, or moving fish wheels	
Number	5.1
Percentage	5.7%
Sewing skins or cloth	
Number	11.9
Percentage	13.2%
Cooking wild foods	
Number	64.4
Percentage	71.7%

Source ADF&G Division of Subsistence household surveys, 2014.

Figure 7-6 demonstrates the percentage of households that used natural materials for handicrafts; 9% used antlers and 4% used bark. Significantly, 22% of households used other raw natural materials, most of which were fur and skins.

In most Copper River Basin communities, firewood is commonly used to supplement home heating if not used as the primary source. Table 7-12 demonstrates the percentage of sampled households that used wood for home heating in Tonsina. Approximately 17% of the sampled households used only firewood to heat their homes, while the same number (17%) did not use wood at all. The vast majority of sampled households (approximately 83%) used at least some firewood, or solely used firewood, to heat their homes, and the average cost of home heating was estimated to be around $2,001 a year.

Harvest Quantities and Composition

Table 7-13 reports estimated wild resource harvests and uses by Tonsina residents in 2013 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[1]). The "harvest" category includes resources harvested by any member of the surveyed household during the study year. The "use" category includes all 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 firewood are included because they are an important part of the subsistence way of life. Differences between harvest and use percentages reflect sharing among households, which results in a wider distribution of wild foods.

In 2013, residents of Tonsina harvested an estimated total of 17,913 lb, or 199 lb per capita, of wild resources (Table 7-13). In terms of pounds harvested, salmon constituted the largest portion of the community harvest (51%) totaling 9,145 lb, or 102 lb per capita (Figure 7-7; Table 7-13). Large land mammals as a category contributed the second most usable weight to the 2013 harvest (30%) (Figure 7-7). The community harvested approximately 5,461 lb of large land mammals, or 61 lb per capita (Table 7-13). Nonsalmon fish contributed 11% of the harvest with 1,883 lb total, or 21 lb per capita. Vegetation and small land mammals/furbearers both made up 3% of the harvest with 6 lb per capita each, and marine invertebrates and birds each made up approximately 1% or less of the harvest (Figure 7-7; Table 7-13).

1. 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 7-11.–Resource harvest and use characteristics, Tonsina, 2013.

Characteristic	
Mean number of resources used per household	**11.4**
Minimum	0
Maximum	29
95% confidence limit (±)	19.0%
Median	10
Mean number of resources attempted to harvest per household	**8.7**
Minimum	0
Maximum	28
95% confidence limit (±)	26.8%
Median	7
Mean number of resources harvested per household	**8.2**
Minimum	0
Maximum	27
95% confidence limit (±)	27.1%
Median	7
Mean number of resources received per household	**3.7**
Minimum	0
Maximum	11
95% confidence limit (±)	21.8%
Median	3
Mean number of resources given away per household	**3.2**
Minimum	0
Maximum	13
95% confidence limit (±)	30.0%
Median	2
Household harvest (pounds)	
Minimum	0
Maximum	2,706
Mean	459.3
Median	276
Total harvest weight (lb)	17,912.9
Community per capita harvest (lb)	199.3
Percentage using any resource	95.7%
Percentage attempting to harvest any resource	87.0%
Percentage harvesting any resource	87.0%
Percentage receiving any resource	87.0%
Percentage giving away any resource	78.3%
Number of households in sample	23
Number of resources asked about and identified voluntarily by respondents	117

Source ADF&G Division of Subsistence household surveys, 2014.

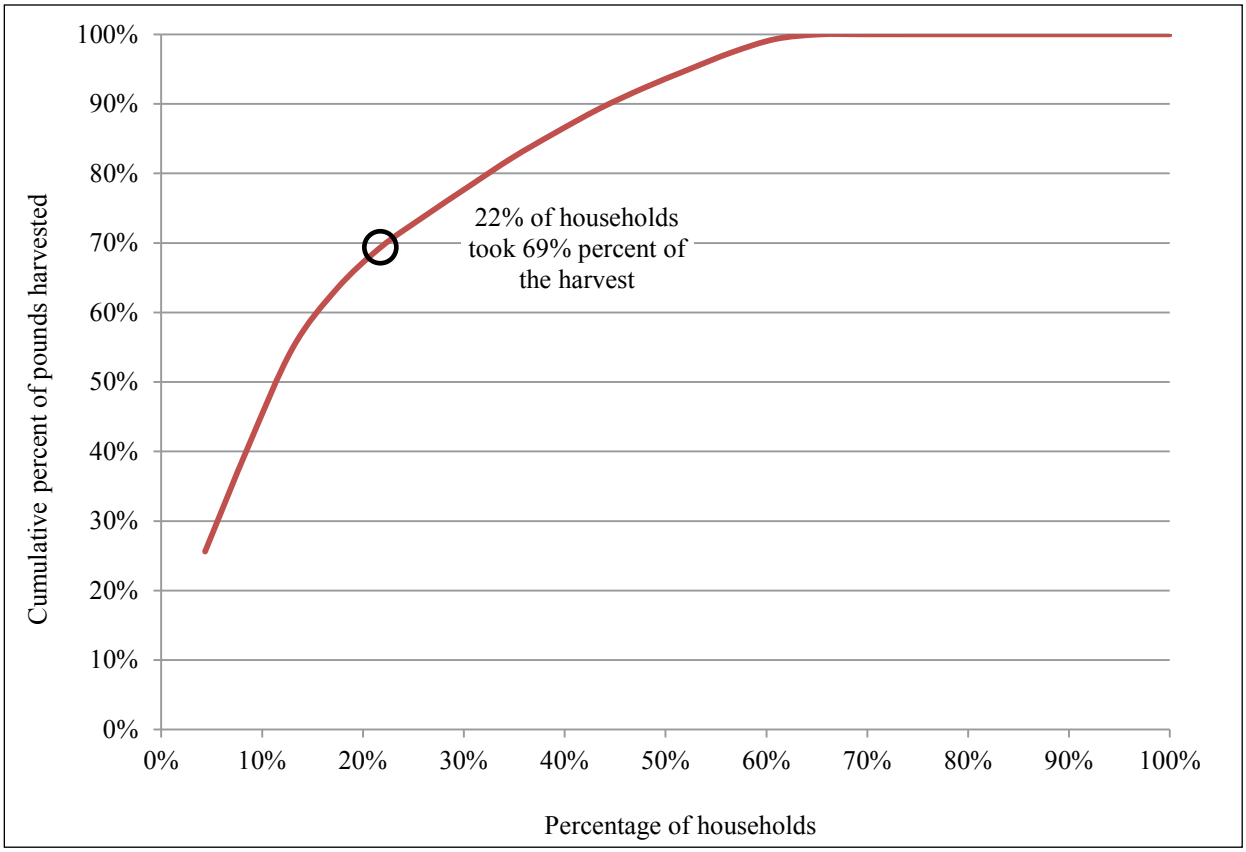


Figure 7-3.–Household specialization, Tonsina, 2013.

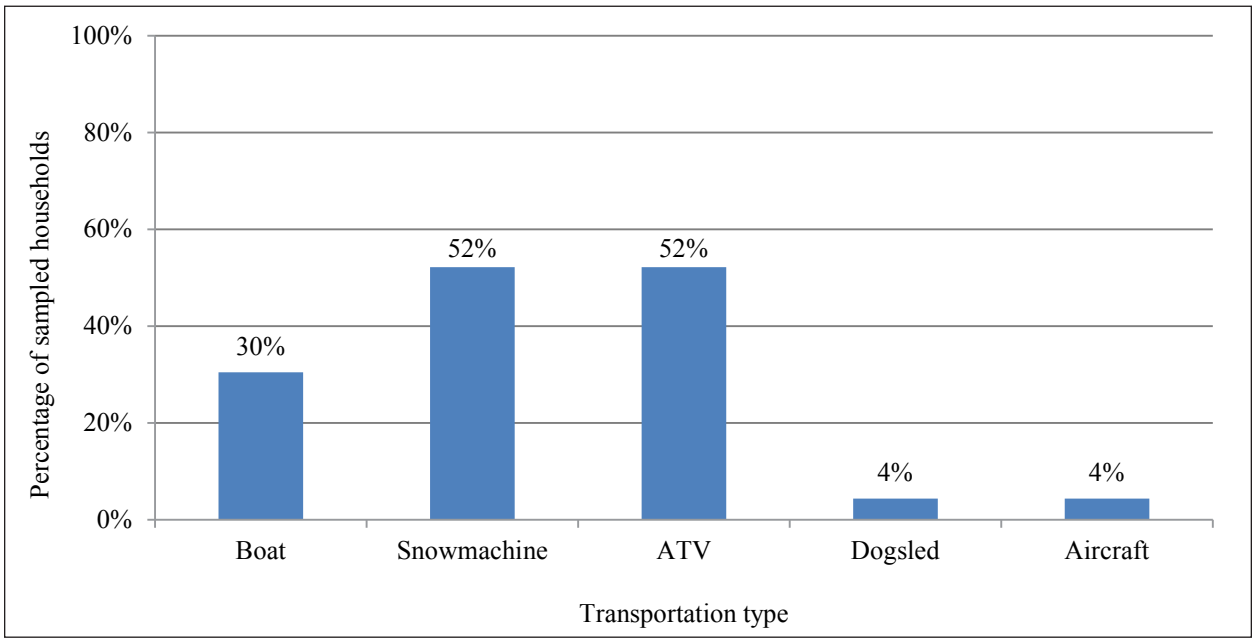


Figure 7-4.–Alternative modes of transportation used by sampled households to access wild resources, Tonsina, 2013.

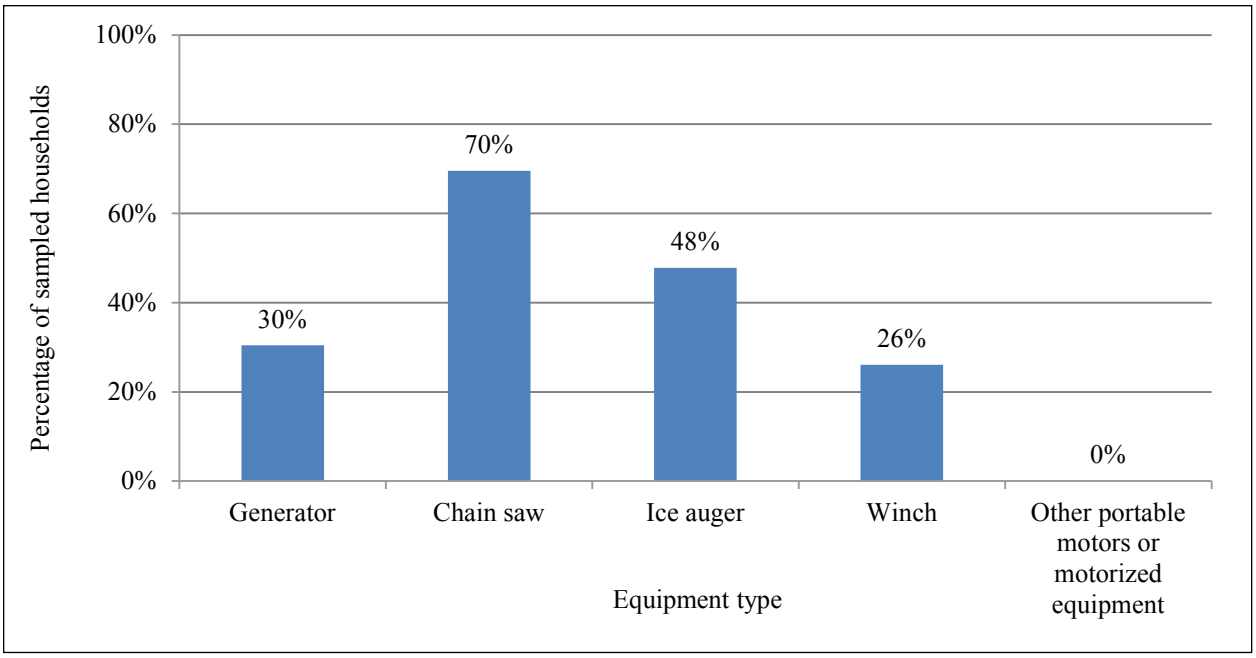


Figure 7-5.–Portable motorized equipment used by sampled households while searching for and harvesting wild resources, Tonsina, 2013.

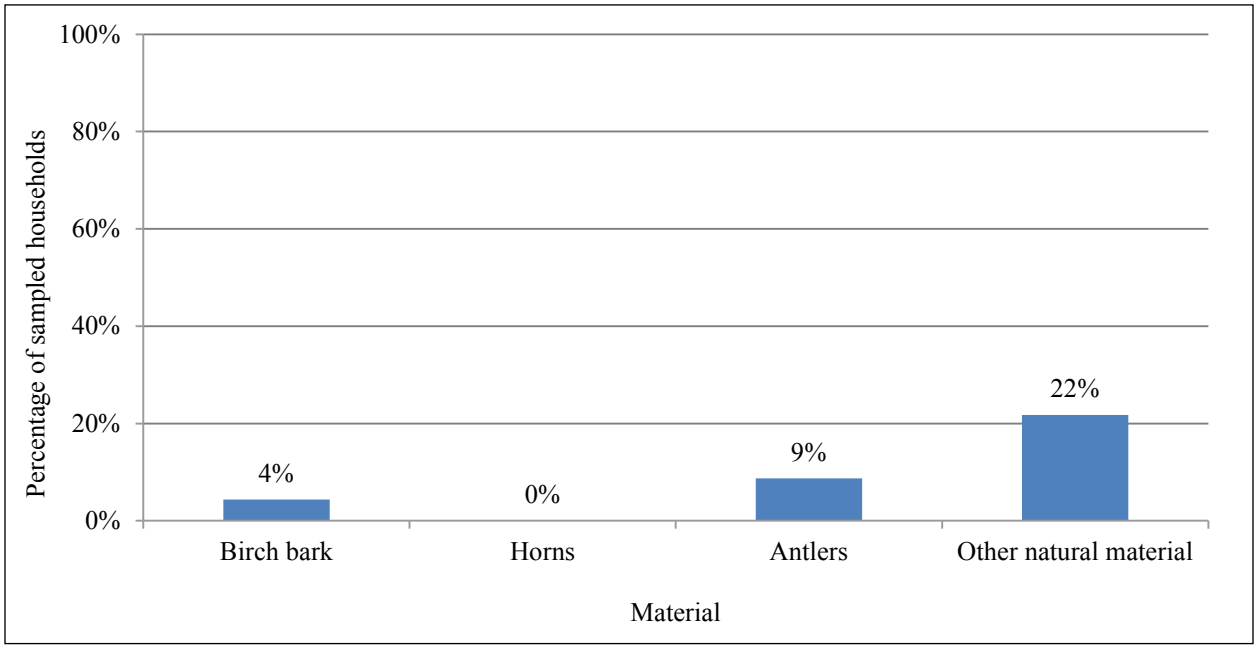


Figure 7-6.–Natural materials used by sampled households for making handicrafts, Tonsina, 2013.

Table 7-12.–Use of firewood for home heating in sampled households, Tonsina, 2013.

Community	Average annual cost of home heating	Household use of wood for home heating as a percentage of total fuel for heating											
		0%		1%–25%		26%–50%		51%–75%		76%–99%		100%	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Tonsina	$2,001	4	17.4%	3	13.0%	5	21.7%	4	17.4%	3	13.0%	4	17.4%

Source ADF&G Division of Subsistence household surveys, 2014.

Table 7-13.–Estimated use and harvests of fish, game, and vegetation resources, Tonsina, 2013.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount[a]			95% confidence limit (±)
	Use %	Attempt %	Harvest %	Receive %	Give %	Total	Mean per household	Per capita	Total	Unit	Mean per household	
All resources	**95.7**	**87.0**	**87.0**	**87.0**	**78.3**	**17,912.9**	**459.3**	**199.3**				**39.9**
Salmon	**87.0**	**52.2**	**52.2**	**73.9**	**43.5**	**9,145.0**	**234.5**	**101.8**				**45.5**
Chum salmon	4.3	4.3	4.3	0.0	0.0	8.7	0.2	0.1	1.7	ind	0.0	132.8
Coho salmon	30.4	21.7	21.7	17.4	17.4	569.0	14.6	6.3	91.6	ind	2.3	63.8
Chinook salmon	43.5	30.4	30.4	30.4	13.0	535.5	13.7	6.0	39.0	ind	1.0	63.6
Pink salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Sockeye salmon	87.0	52.2	52.2	60.9	43.5	8,031.8	205.9	89.4	1,751.6	ind	44.9	49.2
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	4.3	0.0	0.0	4.3	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Nonsalmon fish	**82.6**	**56.5**	**56.5**	**56.5**	**30.4**	**1,882.7**	**48.3**	**20.9**				**55.2**
Pacific herring	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	ind	0.0	0.0
Eulachon (hooligan, candlefish)	4.3	4.3	4.3	0.0	4.3	169.6	4.3	1.9	52.2	gal	1.3	132.8
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
Pacific (gray) cod	4.3	0.0	0.0	4.3	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Pacific tomcod	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown flounder	4.3	4.3	4.3	0.0	0.0	25.4	0.7	0.3	8.5	ind	0.2	132.8
Lingcod	8.7	4.3	4.3	4.3	4.3	16.3	0.4	0.2	6.8	ind	0.2	132.8
Pacific halibut	65.2	13.0	13.0	56.5	13.0	512.1	13.1	5.7	512.1	lb	13.1	131.9
Arctic lamprey	4.3	4.3	4.3	4.3	0.0	1.0	0.0	0.0	1.7	ind	0.0	132.8
Unknown rockfish	26.1	13.0	13.0	13.0	4.3	203.5	5.2	2.3	50.9	ind	1.3	74.2
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
Salmon shark	4.3	0.0	0.0	4.3	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Burbot	17.4	17.4	17.4	0.0	4.3	150.6	3.9	1.7	62.7	ind	1.6	91.4
Brook trout	4.3	4.3	4.3	0.0	4.3	35.6	0.9	0.4	25.4	ind	0.7	132.8
Dolly Varden	17.4	17.4	17.4	0.0	4.3	87.0	2.2	1.0	96.7	ind	2.5	87.2
Lake trout	17.4	17.4	17.4	0.0	13.0	159.4	4.1	1.8	79.7	ind	2.0	69.2
Arctic grayling	21.7	21.7	21.7	0.0	0.0	93.8	2.4	1.0	134.0	ind	3.4	87.0
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

-continued-

Table 7-13.–Page 2 of 5.

Resource	Percentage of households: Use %	Attempt %	Harvest %	Receive %	Give %	Harvest weight (lb): Total	Mean per household	Per capita	Harvest amount[a]: Total	Unit	Mean per household	95% confidence limit (±)
Nonsalmon fish, continued												
Longnose sucker	4.3	4.3	4.3	0.0	0.0	1.2	0.0	0.0	1.7	ind	0.0	132.8
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	21.7	21.7	21.7	0.0	4.3	427.3	11.0	4.8	305.2	ind	7.8	110.2
Unknown trout	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Broad whitefish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Least cisco	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Humpback whitefish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Round whitefish	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	**82.6**	**47.8**	**30.4**	**56.5**	**39.1**	**5,460.8**	**140.0**	**60.8**				**52.7**
Bison	4.3	0.0	0.0	4.3	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Black bear	21.7	17.4	13.0	8.7	13.0	393.4	10.1	4.4	6.8	ind	0.2	78.2
Brown bear	4.3	4.3	4.3	0.0	4.3	239.1	6.1	2.7	1.7	ind	0.0	132.8
Caribou	47.8	30.4	26.1	26.1	21.7	3,086.1	79.1	34.3	23.7	ind	0.6	54.4
Deer	4.3	4.3	4.3	0.0	4.3	216.2	5.5	2.4	5.1	ind	0.1	132.8
Mountain goat	4.3	0.0	0.0	4.3	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Moose	69.6	34.8	8.7	47.8	17.4	1,526.1	39.1	17.0	3.4	ind	0.1	91.8
Dall sheep	8.7	4.3	0.0	8.7	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Small land mammals	**26.1**	**21.7**	**21.7**	**4.3**	**8.7**	**531.8**	**13.6**	**5.9**				**128.5**
Beaver	8.7	8.7	8.7	0.0	4.3	381.5	9.8	4.2	27.1	ind	0.7	132.8
Coyote	8.7	8.7	8.7	0.0	0.0	0.0	0.0	0.0	18.7	ind	0.5	101.6
Red fox–cross phase	8.7	8.7	8.7	0.0	0.0	0.0	0.0	0.0	10.2	ind	0.3	91.8
Red fox–red phase	8.7	8.7	8.7	0.0	0.0	0.0	0.0	0.0	20.3	ind	0.5	91.8
Snowshoe hare	4.3	4.3	4.3	0.0	0.0	17.0	0.4	0.2	8.5	ind	0.2	132.8
North American river (land) otter	4.3	4.3	4.3	0.0	0.0	0.0	0.0	0.0	10.2	ind	0.3	132.8
Lynx	17.4	13.0	13.0	4.3	8.7	81.4	2.1	0.9	89.9	ind	2.3	132.8
Marmot	4.3	4.3	4.3	0.0	0.0	0.0	0.0	0.0	1.7	ind	0.0	132.8
Marten	13.0	13.0	13.0	0.0	0.0	0.0	0.0	0.0	88.2	ind	2.3	87.5
Mink	4.3	4.3	4.3	0.0	0.0	0.0	0.0	0.0	17.0	ind	0.4	132.8
Muskrat	8.7	8.7	8.7	0.0	4.3	51.9	1.3	0.6	334.0	ind	8.6	132.8
Porcupine	4.3	4.3	4.3	0.0	0.0	0.0	0.0	0.0	8.5	ind	0.2	132.8

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Table 7-13.–Page 3 of 5.

Resource	Percentage of households: Use %	Attempt %	Harvest %	Receive %	Give %	Harvest weight (lb): Total	Mean per household	Per capita	Harvest amount[a]: Total	Unit	Mean per household	95% confidence limit (±)
Small land mammals, continued												
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	4.3	4.3	4.3	0.0	0.0	0.0	0.0	0.0	1.7	ind	0.0	132.8
Least weasel	13.0	13.0	13.0	0.0	0.0	0.0	0.0	0.0	95.0	ind	2.4	90.4
Gray wolf	8.7	8.7	8.7	0.0	0.0	0.0	0.0	0.0	11.9	ind	0.3	114.6
Wolverine	8.7	8.7	8.7	0.0	0.0	0.0	0.0	0.0	11.9	ind	0.3	100.6
Marine mammals	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**				**0.0**
Fur seal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Harbor seal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown seal	0.0	0.0	0.0	0.0	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
Unknown whale	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	**34.8**	**39.1**	**34.8**	**4.3**	**8.7**	**212.6**	**5.5**	**2.4**				**70.4**
Canvasback	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Spectacled 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	4.3	4.3	4.3	0.0	4.3	5.4	0.1	0.1	6.8	ind	0.2	132.8
Mallard	8.7	8.7	8.7	0.0	8.7	18.7	0.5	0.2	18.7	ind	0.5	120.8
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
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
Green-winged teal	4.3	4.3	4.3	0.0	0.0	1.0	0.0	0.0	3.4	ind	0.1	132.8
Unknown ducks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Brant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Cackling goose	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Canada goose	0.0	4.3	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
Emperor goose	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Snow goose	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	0.0	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 7-13.–Page 4 of 5.

Resource	Percentage of households: Use %	Attempt %	Harvest %	Receive %	Give %	Harvest weight (lb): Total	Mean per household	Per capita	Harvest amount[a]: Total	Unit	Mean per household	95% confidence limit (±)
Birds and eggs, continued												
Tundra (whistling) swan	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
Spruce grouse	30.4	34.8	30.4	0.0	0.0	53.4	1.4	0.6	76.3	ind	2.0	65.4
Sharp-tailed grouse	4.3	4.3	4.3	0.0	4.3	7.1	0.2	0.1	10.2	ind	0.3	132.8
Ruffed grouse	13.0	13.0	13.0	4.3	4.3	17.8	0.5	0.2	25.4	ind	0.7	93.8
Unknown ptarmigan	17.4	17.4	17.4	0.0	4.3	109.2	2.8	1.2	156.0	ind	4.0	79.6
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
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 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	**39.1**	**13.0**	**13.0**	**26.1**	**4.3**	**144.1**	**3.7**	**1.6**				**80.1**
Freshwater 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
Dungeness crab	4.3	0.0	0.0	4.3	0.0	0.0	0.0	0.0	0.0	lb	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	lb	0.0	0.0
Unknown tanner crab	4.3	0.0	0.0	4.3	0.0	0.0	0.0	0.0	0.0	lb	0.0	0.0
Octopus	4.3	0.0	0.0	4.3	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Shrimp	34.8	13.0	13.0	21.7	4.3	144.1	3.7	1.6	144.1	lb	3.7	80.1
Squid	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Vegetation	**91.3**	**87.0**	**87.0**	**17.4**	**43.5**	**535.8**	**13.7**	**6.0**				**50.8**
Blueberry	52.2	47.8	47.8	4.3	13.0	211.1	5.4	2.3	52.8	gal	1.4	45.3
Lowbush cranberry	34.8	30.4	30.4	4.3	13.0	54.3	1.4	0.6	13.6	gal	0.3	56.9
Highbush cranberry	13.0	13.0	13.0	0.0	8.7	135.7	3.5	1.5	33.9	gal	0.9	107.1
Crowberry	4.3	4.3	4.3	0.0	0.0	6.8	0.2	0.1	1.7	gal	0.0	132.8
Nagoonberry	4.3	4.3	4.3	0.0	0.0	1.7	0.0	0.0	0.4	gal	0.0	132.8
Raspberry	43.5	43.5	43.5	0.0	17.4	83.1	2.1	0.9	20.8	gal	0.5	47.0
Other wild berry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Hudson's Bay (Labrador) tea	4.3	4.3	4.3	0.0	0.0	0.8	0.0	0.0	0.8	gal	0.0	132.8
Sourdock	4.3	4.3	4.3	0.0	0.0	1.7	0.0	0.0	1.7	gal	0.0	132.8
Other wild greens	4.3	4.3	4.3	0.0	0.0	1.7	0.0	0.0	1.7	gal	0.0	132.8
Unknown mushrooms	26.1	26.1	26.1	0.0	8.7	31.4	0.8	0.3	31.4	gal	0.8	76.1

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Table 7-13.–Page 5 of 5.

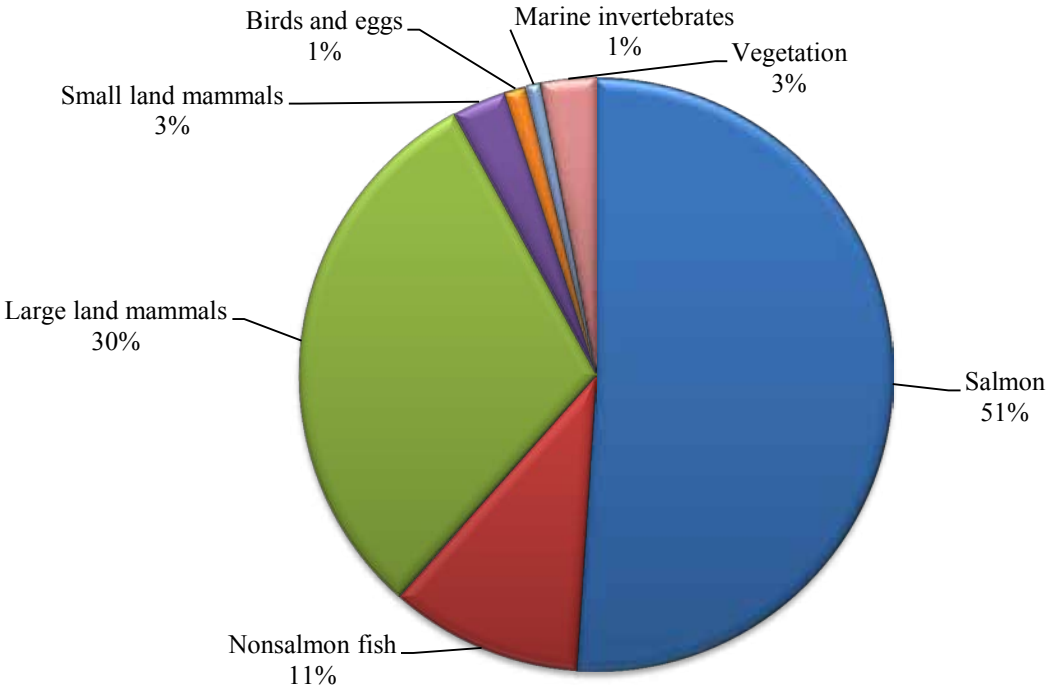
Resource	Percentage of households: Use %	Attempt %	Harvest %	Receive %	Give %	Harvest weight (lb): Total	Mean per household	Per capita	Harvest amount[a]: Total	Unit	Mean per household	95% confidence limit (±)
Vegetation, continued												
Fireweed	13.0	8.7	8.7	4.3	8.7	7.6	0.2	0.1	7.6	gal	0.2	118.3
Alder	4.3	4.3	4.3	0.0	0.0	0.0	0.0	0.0	1.7	cord	0.0	132.8
Other wood	87.0	73.9	73.9	13.0	13.0	0.0	0.0	0.0	179.7	cord	4.6	30.5

Source ADF&G Division of Subsistence household surveys, 2014.

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.

a. Summary rows that include incompatible units of measure have been left blank.



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

Figure 7-7.–Composition of harvest by resource category in pounds usable weight, Tonsina, 2013.

Seasonal Round

Residents of Tonsina harvest a wide variety of resources and like most rural Alaska communities they often target specific species during certain times of the year following a cyclical harvest pattern that is in part defined by seasonal availability and in part by laws, regulations, and land access. Harvest efforts for particular resources are not defined by a calendar year; for example, trapping is an activity that bridges one year to the next, connected by a season that begins in the late fall (usually once the snow has arrived) and extends through February and sometimes into March. In the spring once waterways are clear of ice, most Copper River Basin communities turn their attention to preparing for the harvest of salmon; in 2013, more than 50% of the Tonsina harvest was salmon. Chinook and sockeye salmon arrive in the Copper River watershed by late May. Some salmon can be harvested close to the community on the Tonsina River, but the majority of the salmon harvest is taken from the Copper River by fish wheel near Chitina and Copper Center. Salmon are harvested intensively from mid-June through July; the late-run coho salmon are harvested locally or out of Valdez into August. Other late spring and mid-summer activities include hunting for bears and migratory waterfowl, trapping for water-based furbearers such as muskrats and beavers, and rod-and-reel fishing for nonsalmon fish at the local ponds, lakes, and waterways. Of particular importance for some Tonsina residents is the chartering of deep sea boats out of Valdez to fish for Pacific halibut, rockfish, lingcod, and other saltwater species through the summer months. Plants and berries are harvested in the community and locally along the Richardson Highway mostly during the summer months and into early fall.

As in most places throughout the Copper River Basin and the rest of Alaska, fall is hunting season and the second most important annual opportunity to fill freezers in preparation for winter (the first being salmon). While some caribou were harvested in the winter months most of the animals were harvested in September and October. Many Tonsina residents hunt for moose locally, but most travel north to Paxson and the Denali Highway to hunt for caribou. Fall is also when the bulk of the bird harvests take place for both migratory

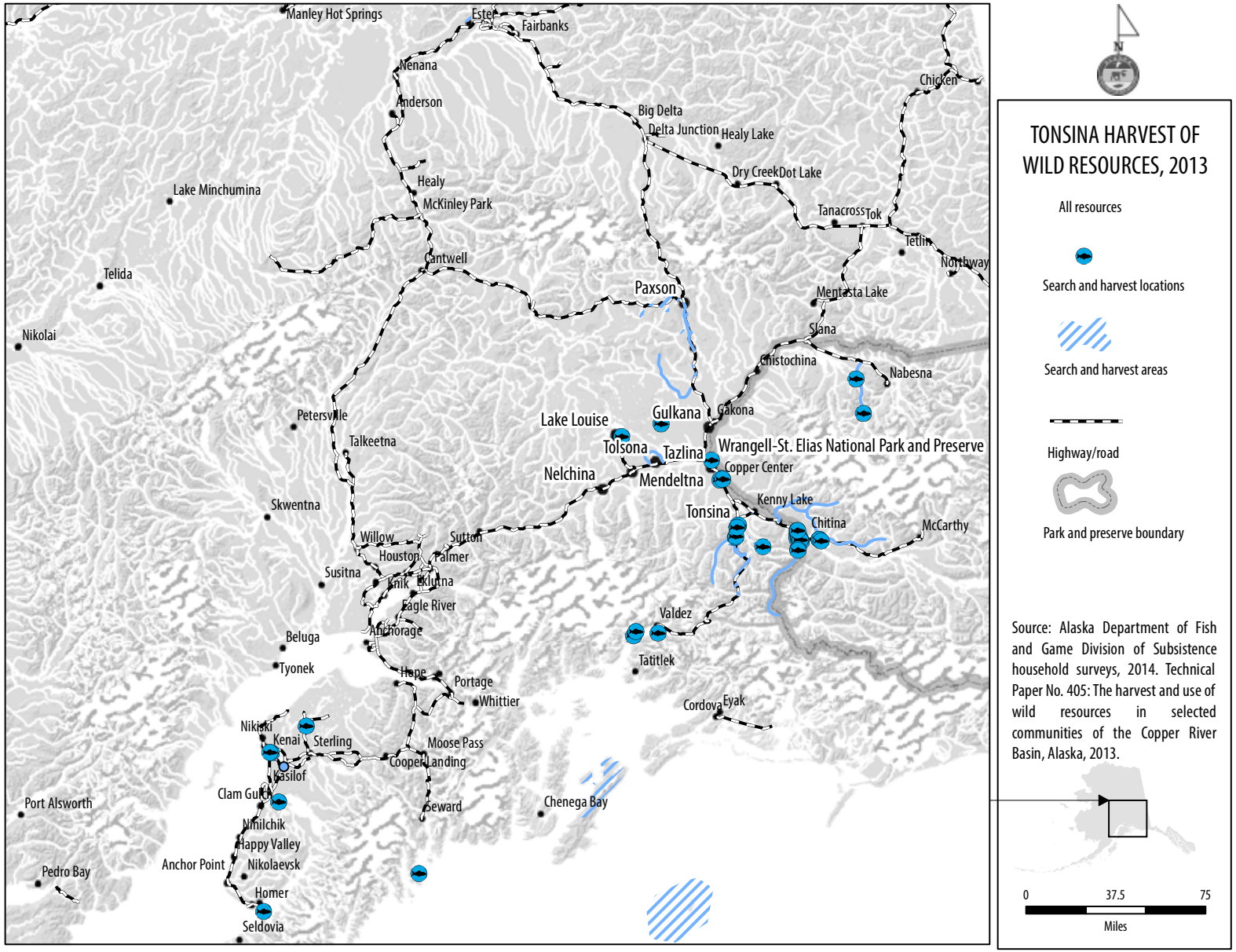


Figure 7-8.–Wild resources search and harvest areas, Tonsina, 2013.

Table 7-14.–Top ranked resources used by households, Tonsina, 2013.

Rank[a]	Resource	Percentage of households using
1.	Sockeye salmon	87.0%
2.	Moose	69.6%
3.	Pacific halibut	65.2%
4.	Blueberry	52.2%
5.	Caribou	47.8%
6.	Chinook salmon	43.5%
6.	Raspberry	43.5%
8.	Shrimp	34.8%
8.	Lowbush cranberry	34.8%
10.	Coho salmon	30.4%

Source ADF&G Division of Subsistence household surveys, 2014.
a. Resources used by the same percentage of households share the lowest rank value instead of having sequential rank values.

waterfowl and upland game birds; additionally, a significant proportion of the upland game birds harvests occur during winter.

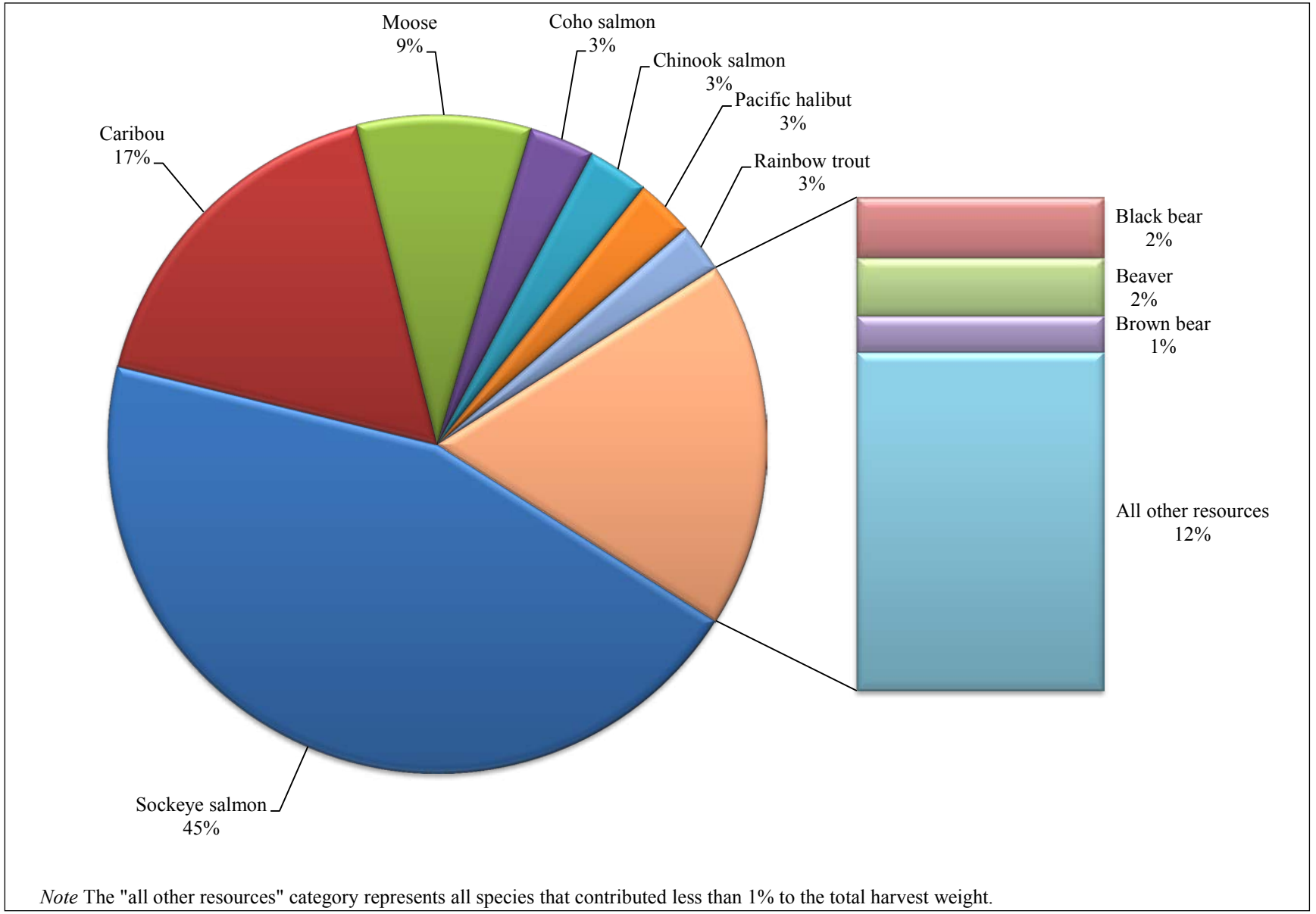
The community of Tonsina has a few households that actively engage in trapping both as a way of life and a means of supplementing income. As noted earlier, trapping for furbearers occurs primarily during the winter months after the first snow with the productive months extending from November through February. Harvesting firewood is a year-round activity and occurs mostly locally and south along the Richardson Highway.

While the majority of Tonsina 2013 harvest activities occurred within the community and the Copper River Basin, residents traveled as far north as the Fairbanks area to harvest upland game birds, southwest to the Kenai Peninsula for salmon and nonsalmon fish, and throughout Prince William Sound and the Gulf of Alaska for fish and deer (Figure 7-8).

Use and Harvest Characteristics by Resource Category

Table 7-13 helps identify the roles sharing and receiving resources play in use patterns of resources harvested in 2013. Estimates of sharing indicate that 87% of Tonsina households received wild resources from other households and 78% of households gave resources away. Salmon, large land mammals, and vegetation were the most commonly shared resources. Salmon were used by 87% of households, given away by 44% of households, and received by 74% of households. Large land mammals were used by 83% of households, given away by 39% of households, and received by 57% of households. Vegetation was used by 91% of households—the most of any resource category—and 44% of households gave away while 17% received vegetation resources.

Table 7-14 lists the top resources used by Tonsina households and Figure 7-9 depicts the resources with the largest harvests (1% or more of the total harvest composition as estimated in pounds usable weight per person) during the 2013 study year. Sockeye salmon was the most used resource (89% of the households) and made the largest contribution to the community harvest (45% of harvest). Moose was the second most used resource in Tonsina (70% of the households) but contributed far less to the overall harvest (9%). In addition, despite caribou's large contribution to the per capita harvest (17% of harvest), Pacific halibut and blueberries were used by more households: 65% and 52%, respectively. Of interest, some resources that made the list of the top ranked resources used did not contribute enough per capita weight to contribute more than 1% to the total harvest and appear on Figure 7-9; those resources include blueberries, raspberries



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

Figure 7-9.–Top species harvested by percentage of total harvest in pounds usable weight, Tonsina, 2013.

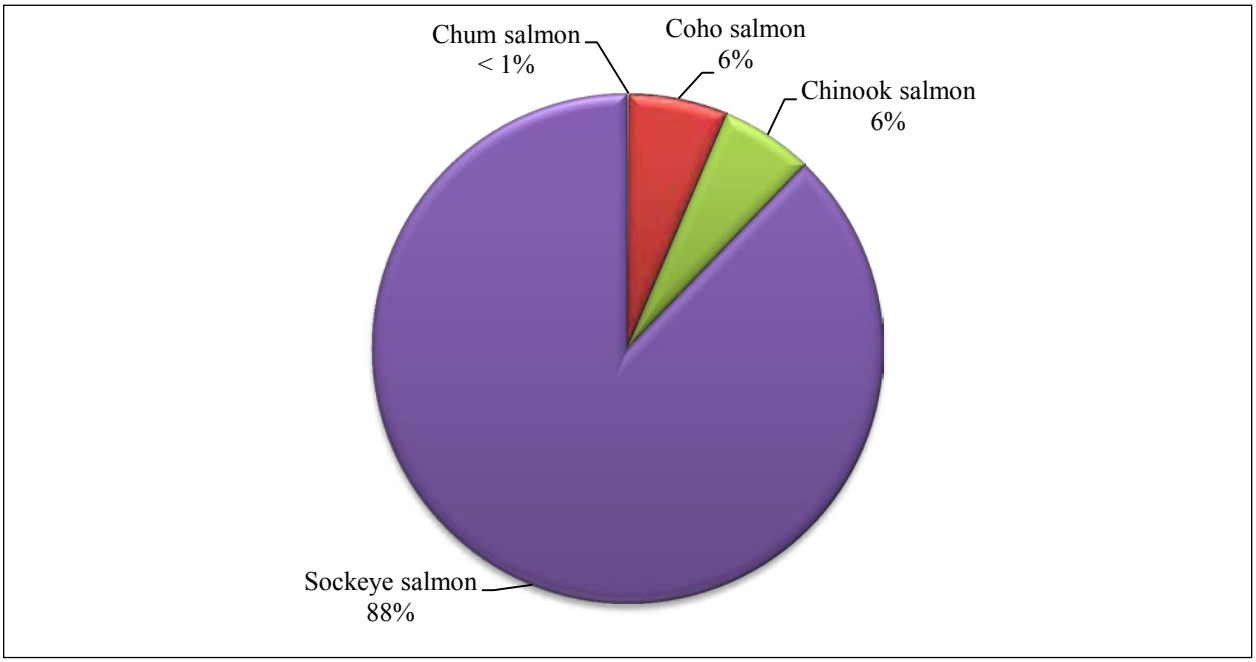


Figure 7-10.–Composition of salmon harvest in pounds usable weight, Tonsina, 2013.

(used in 44% of households), shrimp (used in 35% of the households), and lowbush cranberries (also used in 35% of the households).

Salmon

Salmon composed 51% of the Tonsina harvest in pounds usable weight for 2013 totaling 9,145 lb, or 102 lb per capita (Figure 7-7; Table 7-13). Sockeye salmon made up 88% (8,032 lb, or 89 lb per capita) of the total salmon harvest with the remaining harvest composition as follows: 6% coho salmon (569 lb total) and 6% Chinook salmon (536 lb total) (Figure 7-10). An estimated 2 chum salmon were harvested (Table 7-13). Sockeye salmon were used in more households than any other kind of salmon (87% of households in Tonsina used sockeye salmon), and sockeye salmon was the most successfully harvested (52% of households), received (61% of households) and shared (44%) of the salmon species used in the community. Chinook salmon was the second most used salmon species (44% of households) followed by coho salmon (30% of households).

During the 2013 study year, Tonsina residents harvested the bulk of their salmon by fish wheel (71% of usable pounds) (Table 7-15). The remaining gear types used for salmon harvests included dip net (22% of usable pounds), rod and reel (7% of usable pounds), and other methods using subsistence gear. Most of the sockeye and Chinook salmon were harvested locally from fish wheels along the Copper River with some harvests by rod and reel occurring along the Klutina River for sockeye and in Port Valdez for Chinook salmon (Figure 7-11). One family reported harvesting a Chinook salmon by hand in the upper Tonsina River. Additionally, dip nets were used to harvest sockeye salmon at the outlets of Haley and O'Brien creeks as well as at the outlet of the Kenai River (Table 7-15; Figure 7-11). Of the coho salmon harvested, a little more than one-half (56% of usable pounds) were harvested by subsistence gear, including dip nets and fish wheels, and rod and reel were used to harvest 44% of the harvest. Tonsina households harvested coho salmon locally by fish wheel in the Copper River Basin or traveled to Valdez to rod and reel fish for coho.

Table 7-15.–Estimated percentages of salmon harvested by gear type, resource, and total harvest, Tonsina, 2013.

Resource	Percentage base	Removed from commercial catch		Subsistence methods													
				Gillnet or seine		Fish wheel		Dip net		Other		Subsistence gear, any method		Rod and reel		Any method	
		Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Salmon	**Gear type**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
	Resource	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**71.3%**	**70.7%**	**23.0%**	**22.4%**	**0.1%**	**0.3%**	**94.4%**	**93.3%**	**5.6%**	**6.7%**	**100.0%**	**100.0%**
	Total	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**71.3%**	**70.7%**	**23.0%**	**22.4%**	**0.1%**	**0.3%**	**94.4%**	**93.3%**	**5.6%**	**6.7%**	**100.0%**	**100.0%**
Chum 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%	0.0%	1.6%	1.4%	0.1%	0.1%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	0.0%	0.1%	0.1%	0.1%	0.1%
Coho salmon	Gear type	0.0%	0.0%	0.0%	0.0%	1.3%	1.6%	7.8%	10.3%	0.0%	0.0%	2.9%	3.7%	38.7%	41.4%	4.9%	6.2%
	Resource	0.0%	0.0%	0.0%	0.0%	18.5%	18.5%	37.0%	37.0%	0.0%	0.0%	55.6%	55.6%	44.4%	44.4%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.9%	1.2%	1.8%	2.3%	0.0%	0.0%	2.7%	3.5%	2.2%	2.8%	4.9%	6.2%
Chinook salmon	Gear type	0.0%	0.0%	0.0%	0.0%	2.3%	6.5%	0.0%	0.0%	100.0%	100.0%	1.8%	5.2%	6.5%	15.2%	2.1%	5.9%
	Resource	0.0%	0.0%	0.0%	0.0%	78.3%	78.3%	0.0%	0.0%	4.3%	4.3%	82.6%	82.6%	17.4%	17.4%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	1.6%	4.6%	0.0%	0.0%	0.1%	0.3%	1.7%	4.8%	0.4%	1.0%	2.1%	5.9%
Pink 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%	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%	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%	0.0%	0.0%	0.0%	0.0%	0.0%
Sockeye salmon	Gear type	0.0%	0.0%	0.0%	0.0%	96.5%	91.9%	92.2%	89.7%	0.0%	0.0%	95.3%	91.1%	53.2%	42.0%	93.0%	87.8%
	Resource	0.0%	0.0%	0.0%	0.0%	74.0%	74.0%	22.8%	22.8%	0.0%	0.0%	96.8%	96.8%	3.2%	3.2%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	68.8%	65.0%	21.2%	20.1%	0.0%	0.0%	90.0%	85.0%	3.0%	2.8%	93.0%	87.8%
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%	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%	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%	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%	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%	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%	0.0%	0.0%	0.0%	0.0%	0.0%

Source ADF&G Division of Subsistence household surveys, 2014.

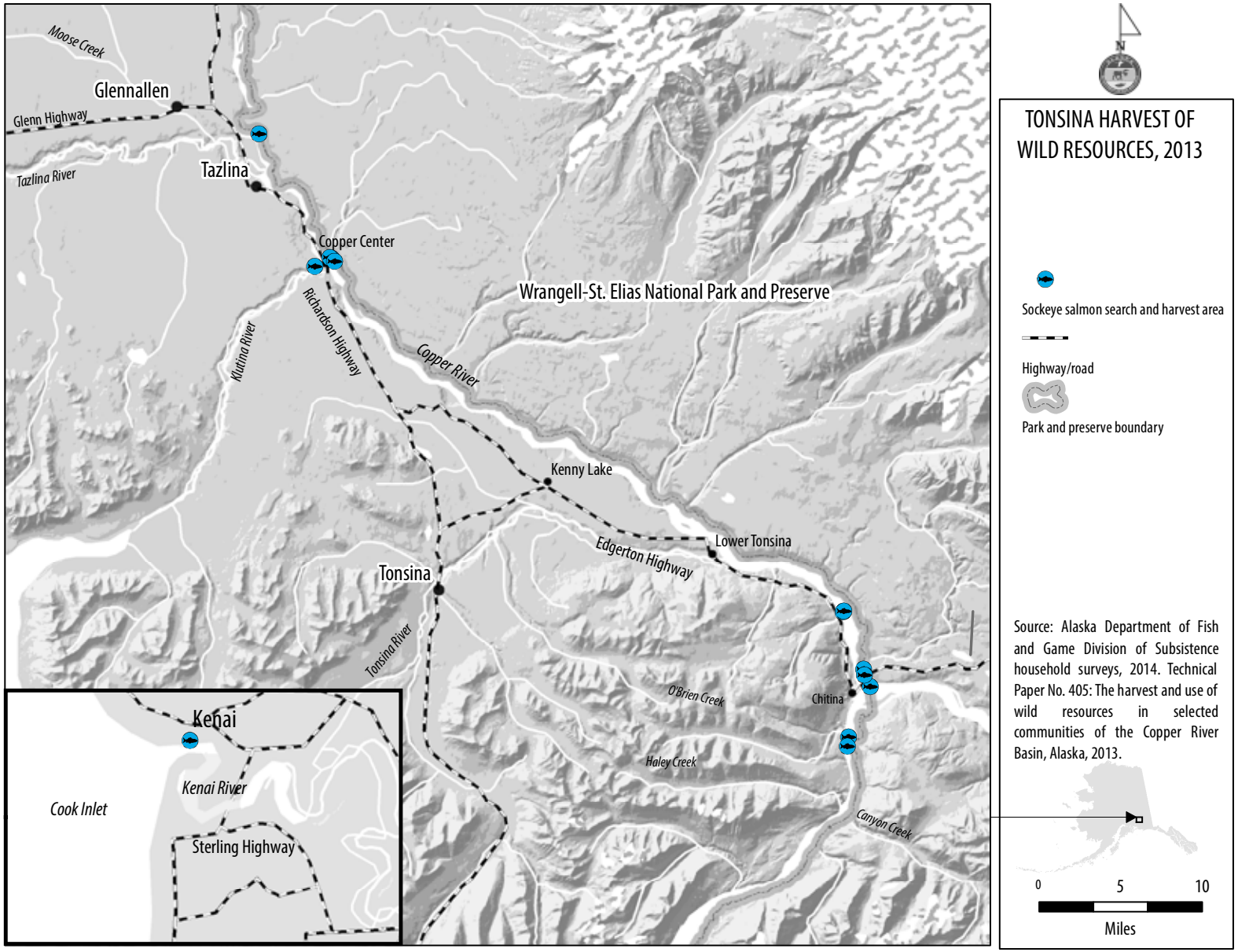


Figure 7-11.–Fishing and harvest locations of sockeye salmon, Tonsina, 2013.

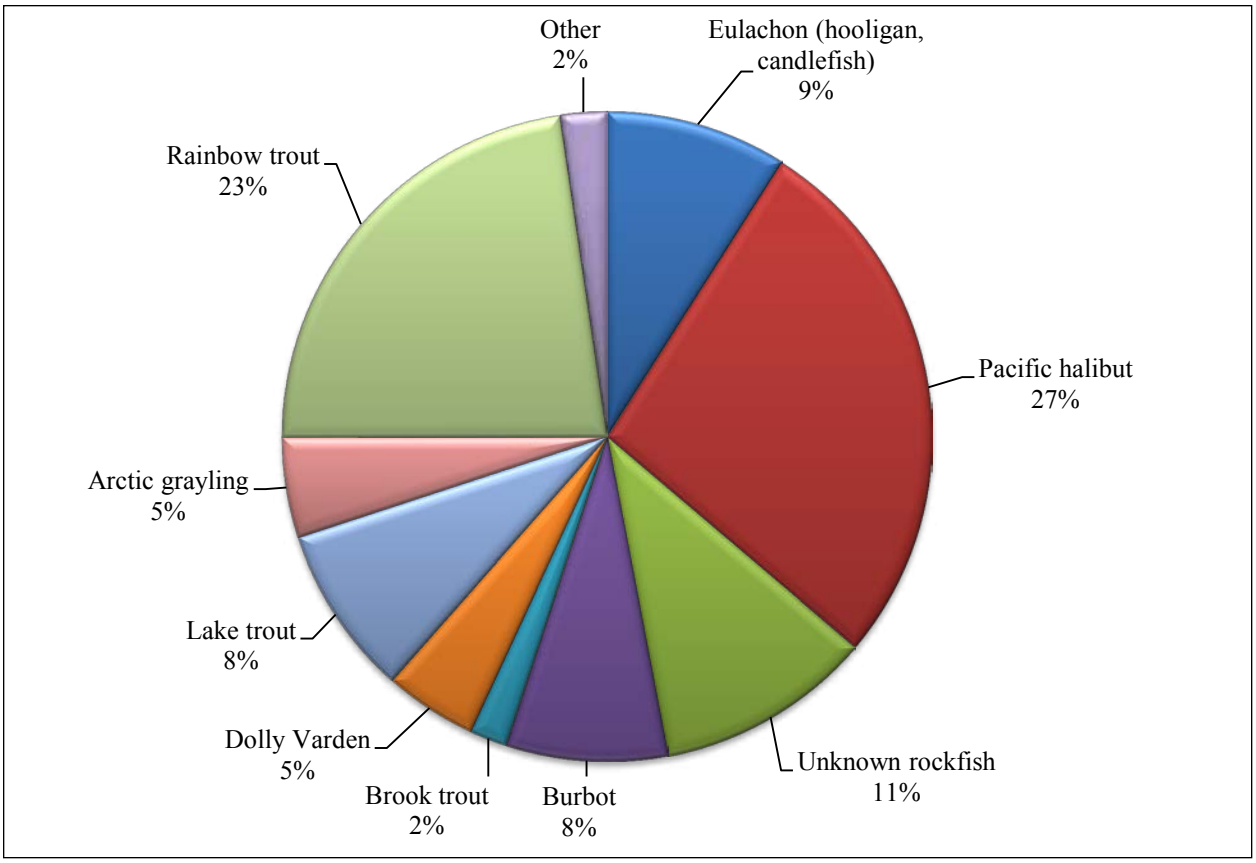


Figure 7-12.–Composition of nonsalmon fish harvest in pounds usable weight, Tonsina, 2013.

Nonsalmon Fish

Tonsina households harvested an estimated total of 1,883 lb, or 21 lb per capita, of nonsalmon fish; this harvest made up 11% of the total wild resource harvest in 2013 (Table 7-13; Figure 7-7). The harvest composition of nonsalmon fish was split almost equally between freshwater and marine species (Figure 7-12). In terms of total pounds and percentages, the largest portion of the nonsalmon fish harvest (27%) was composed of Pacific halibut (512 lb, or about 6 lb per capita) and rainbow trout contributed the second largest portion of the nonsalmon fish harvest (23%; 427 lb, or 5 lb per capita) (Figure 7-12; Table 7-13). Other species of significance for the 2013 nonsalmon fish harvest include unspecified species of rockfish (11%), eulachon (9%), burbot and lake trout (both composing 8% each of the nonsalmon fish harvest), and Arctic grayling and Dolly Varden (both composing 5% each of the nonsalmon harvest).

The majority of the nonsalmon fish harvest in pounds (52%) was harvested by rod and reel (Table 7-16). Subsistence methods used included gillnet or seine (9% of usable pounds and used only to harvest eulachon), ice fishing (used to harvest rainbow trout, burbot, lake trout, and Dolly Varden), and other subsistence gear.

During the 2013 study year, Tonsina residents reported harvesting nonsalmon freshwater fish both locally in the Copper River watershed and on the Kenai Peninsula. Rainbow trout were harvested in the upper Tonsina River within the Tonsina community, Pippin Lake off the Richardson Highway, in the small roadside lakes just north of Chitina, and east of Chitina in Silver Lake (Figure 7-13). Burbot were harvested in Lake Louise, Crosswind Lake, and at Tanada and Goat creeks. Arctic grayling were harvested within the community of Tonsina and just north of Chitina. Lake trout were harvested locally in the upper fork of Bernard Creek as well as on the Kenai Peninsula, and the Dolly Varden harvested by Tonsina community households came only from Dolly Varden Lake on the Kenai Peninsula. Marine fish were harvested in Prince William Sound,

Table 7-16.–Estimated percentages of nonsalmon fish harvested by gear type, resource, and total nonsalmon fish harvest, Tonsina, 2013.

				Subsistence methods											
		Removed from commercial catch		Gillnet or seine		Ice fish		Other		Subsistence gear, any method		Rod and reel		Any method	
Resource	Percentage base	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Nonsalmon fish	**Gear type**	**0.0%**	**0.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
	Resource	**0.0%**	**0.0%**	**3.9%**	**9.0%**	**35.0%**	**38.6%**	**0.1%**	**0.1%**	**39.0%**	**47.6%**	**61.0%**	**52.4%**	**100.0%**	**100.0%**
	Total	**0.0%**	**0.0%**	**3.9%**	**9.0%**	**35.0%**	**38.6%**	**0.1%**	**0.1%**	**39.0%**	**47.6%**	**61.0%**	**52.4%**	**100.0%**	**100.0%**
Pacific herring	Gear type	0.0%	0.0%	0.0%	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%	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%	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%	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%	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%	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%	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%	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%	0.0%	0.0%	0.0%
Eulachon (hooligan, candlefish)	Gear type	0.0%	0.0%	100.0%	100.0%	0.0%	0.0%	0.0%	0.0%	10.0%	18.9%	0.0%	0.0%	3.9%	9.0%
	Resource	0.0%	0.0%	100.0%	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	3.9%	9.0%	0.0%	0.0%	0.0%	0.0%	3.9%	9.0%	0.0%	0.0%	3.9%	9.0%
Unknown smelt	Gear type	0.0%	0.0%	0.0%	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%	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%	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%	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%	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%	0.0%	0.0%	0.0%
Pacific tomcod	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Starry flounder	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Unknown flounder	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	2.6%	0.6%	1.4%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	0.6%	1.4%	0.6%	1.4%
Lingcod	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	1.7%	0.5%	0.9%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	0.5%	0.9%	0.5%	0.9%
Pacific halibut	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	62.8%	51.9%	38.3%	27.2%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	38.3%	27.2%	38.3%	27.2%
Arctic lamprey	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	0.3%	0.1%	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%	100.0%	100.0%	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%	0.1%	0.1%	0.0%	0.0%	0.1%	0.1%

-continued-

Table 7-16.–Page 2 of 3.

Resource	Percentage base	Removed from commercial catch		Subsistence methods: Gillnet or seine		Ice fish		Other		Subsistence gear, any method		Rod and reel		Any method	
		Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Unknown rockfish	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.2%	20.6%	3.8%	10.8%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	3.8%	10.8%	3.8%	10.8%
Unknown sculpin	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Salmon shark	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Burbot	Gear type	0.0%	0.0%	0.0%	0.0%	13.4%	20.7%	0.0%	0.0%	12.0%	16.8%	0.0%	0.0%	4.7%	8.0%
	Resource	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	4.7%	8.0%	0.0%	0.0%	4.7%	8.0%	0.0%	0.0%	4.7%	8.0%
Brook trout	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.1%	3.6%	1.9%	1.9%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	1.9%	1.9%	1.9%	1.9%
Dolly Varden	Gear type	0.0%	0.0%	0.0%	0.0%	12.7%	7.4%	0.0%	0.0%	11.4%	6.0%	4.6%	3.4%	7.2%	4.6%
	Resource	0.0%	0.0%	0.0%	0.0%	61.4%	61.4%	0.0%	0.0%	61.4%	61.4%	38.6%	38.6%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	4.4%	2.8%	0.0%	0.0%	4.4%	2.8%	2.8%	1.8%	7.2%	4.6%
Lake trout	Gear type	0.0%	0.0%	0.0%	0.0%	13.4%	17.3%	0.0%	0.0%	12.0%	14.0%	2.1%	3.4%	6.0%	8.5%
	Resource	0.0%	0.0%	0.0%	0.0%	78.7%	78.7%	0.0%	0.0%	78.7%	78.7%	21.3%	21.3%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	4.7%	6.7%	0.0%	0.0%	4.7%	6.7%	1.3%	1.8%	6.0%	8.5%
Arctic grayling	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	16.4%	9.5%	10.0%	5.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	10.0%	5.0%	10.0%	5.0%
Northern pike	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Longnose sucker	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.1%	0.1%	0.1%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	0.1%	0.1%	0.1%	0.1%
Cutthroat trout	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Rainbow trout	Gear type	0.0%	0.0%	0.0%	0.0%	60.5%	54.6%	0.0%	0.0%	54.3%	44.2%	2.7%	3.1%	22.8%	22.7%
	Resource	0.0%	0.0%	0.0%	0.0%	92.8%	92.8%	0.0%	0.0%	92.8%	92.8%	7.2%	7.2%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	21.2%	21.1%	0.0%	0.0%	21.2%	21.1%	1.6%	1.6%	22.8%	22.7%
Unknown trout	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%

-continued-

Table 7-16.–Page 3 of 3.

Resource	Percentage base	Removed from commercial catch		Subsistence methods											
				Gillnet or seine		Ice fish		Other		Subsistence gear, any method		Rod and reel		Any method	
		Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Broad whitefish	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Least cisco	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Humpback whitefish	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Round whitefish	Gear type	0.0%	0.0%	0.0%	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%	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%	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%	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%	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%	0.0%	0.0%	0.0%

Source ADF&G Division of Subsistence household surveys, 2014.

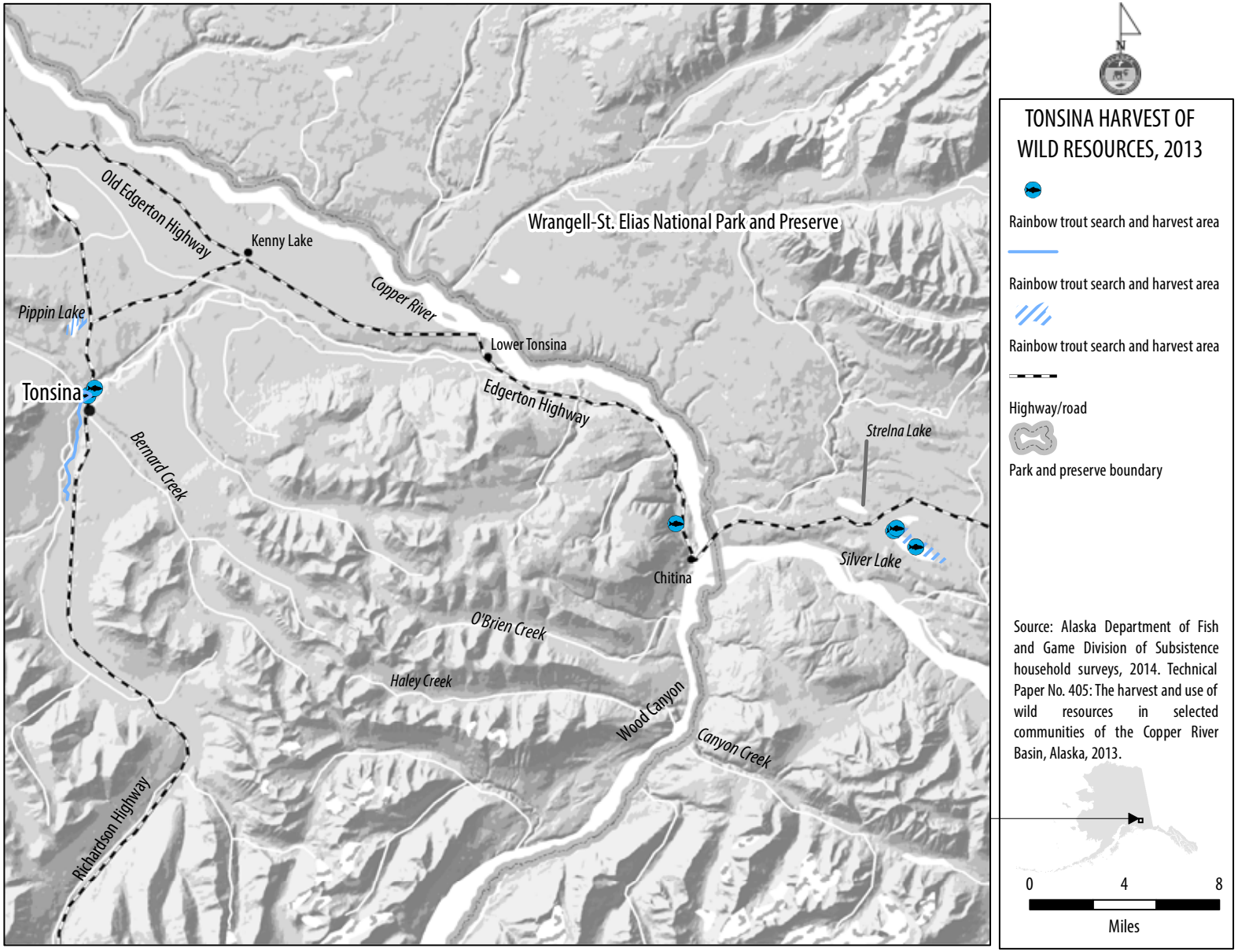


Figure 7-13.–Fishing and harvest locations of rainbow trout, Tonsina, 2013.

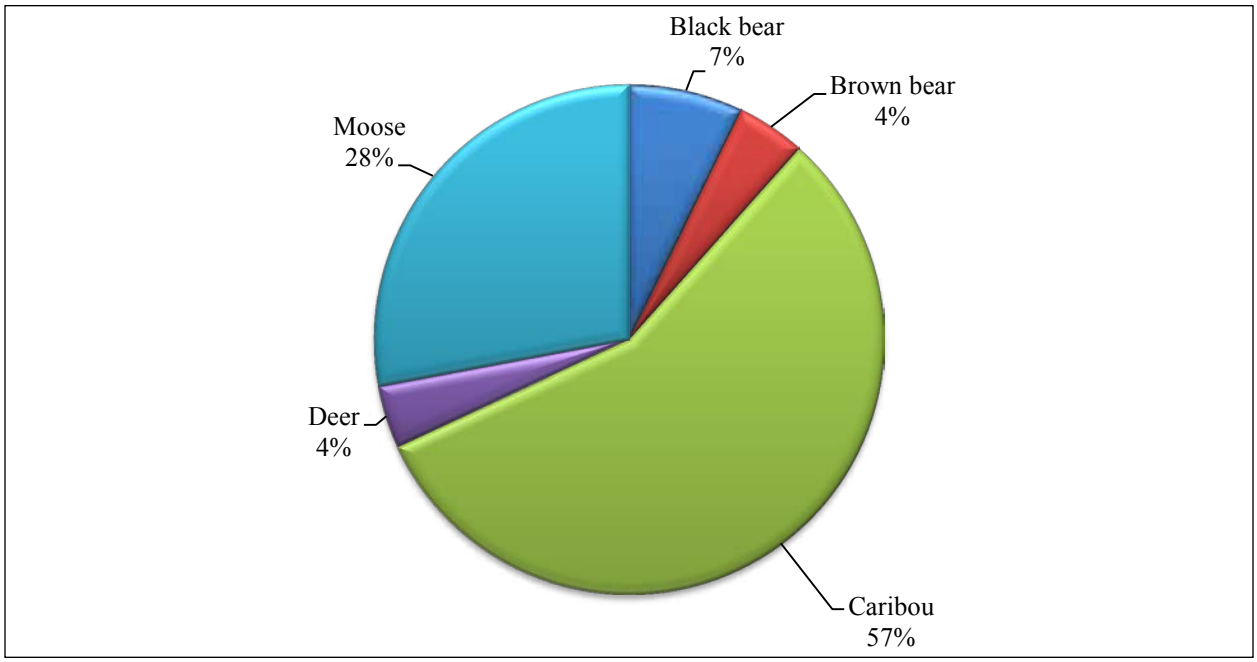


Figure 7-14.–Composition of large land mammal harvest in pounds usable weight, Tonsina, 2013.

the Gulf of Alaska, and in waters lining the north and south shores of the Kenai Peninsula (see maps in Appendix D).

Large Land Mammals

In 2013, large land mammals made up 30% of the Tonsina wild resource harvest by weight, contributing 5,461 lb total, or 61 lb per capita (Figure 7-7; Table 7-13). Caribou provided 57% (3,086 lb) of the large land mammal harvest and moose provided 28% (1,526 lb) of the harvest, which is significant considering caribou are smaller animals than moose (Figure 7-14; Table 7-13). Additionally of interest is that, despite the smaller 2013 harvest, moose was used in more households than caribou; 70% of Tonsina households used moose while only 48% of households used caribou (Table 7-13). Other large land mammals contributing to the 2013 harvest include black bears (7% of the harvest or 4 lb per capita), brown bears (4% or just under 3 lb per capita), and deer (also 4% of the harvest). Representative of their contribution to the harvest, black bears were used in 22% of the households (13% harvested black bears, 13% gave and 9% received this resource), and brown bears and deer were used by 4% of households. Other large land mammals used in 2013 but not harvested by households included bison, mountain goats, and Dall sheep (Table 7-13). All the species used but not harvested in 2013 were reported as received by surveyed households and use can be attributed to sharing (Table 7-13).

In 2013, Tonsina households harvested approximately 24 caribou (22 males and 2 females); 8 caribou were harvested in March and 16 in the fall/early winter hunt (Table 7-17). In contrast, only 3 moose (all males) were harvested and all harvests were in the fall. Black bears were harvested in May, June, and September, brown bears were harvested in June, and deer were harvested in November and December.

During the study year, Tonsina households reported searching for caribou along the Richardson Highway from Sourdough to Paxson, and along the Denali Highway as far west as Tangle Lakes (Figure 7-15). Moose were hunted primarily along the Richardson Highway from Tonsina to Stuart Creek, and bears were hunted on the slopes south of the upper Tonsina River, on the Richardson Highway north of Thompson Pass, and on the Copper River above Wood Canyon. Tonsina households also reported hunting deer on Montague Island in Prince William Sound.

Table 7-17.–Estimated large land mammal harvests by month and sex, Tonsina, 2013.

Resource	Estimated harvest by month													Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk	
All large land mammals	**0.0**	**0.0**	**8.5**	**0.0**	**1.7**	**5.1**	**0.0**	**3.4**	**10.2**	**5.1**	**5.1**	**1.7**	**0.0**	**40.7**
Bison	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Black bear	0.0	0.0	0.0	0.0	1.7	3.4	0.0	0.0	1.7	0.0	0.0	0.0	0.0	**6.8**
Brown bear	0.0	0.0	0.0	0.0	0.0	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**1.7**
Caribou	0.0	0.0	8.5	0.0	0.0	0.0	0.0	1.7	6.8	5.1	1.7	0.0	0.0	**23.7**
Caribou, male	0.0	0.0	8.5	0.0	0.0	0.0	0.0	1.7	5.1	5.1	1.7	0.0	0.0	**22.0**
Caribou, female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.0	0.0	0.0	0.0	**1.7**
Deer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.4	1.7	0.0	**5.1**
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	1.7	1.7	0.0	0.0	0.0	0.0	**3.4**
Moose, bull	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	1.7	0.0	0.0	0.0	0.0	**3.4**
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**
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, 2014.

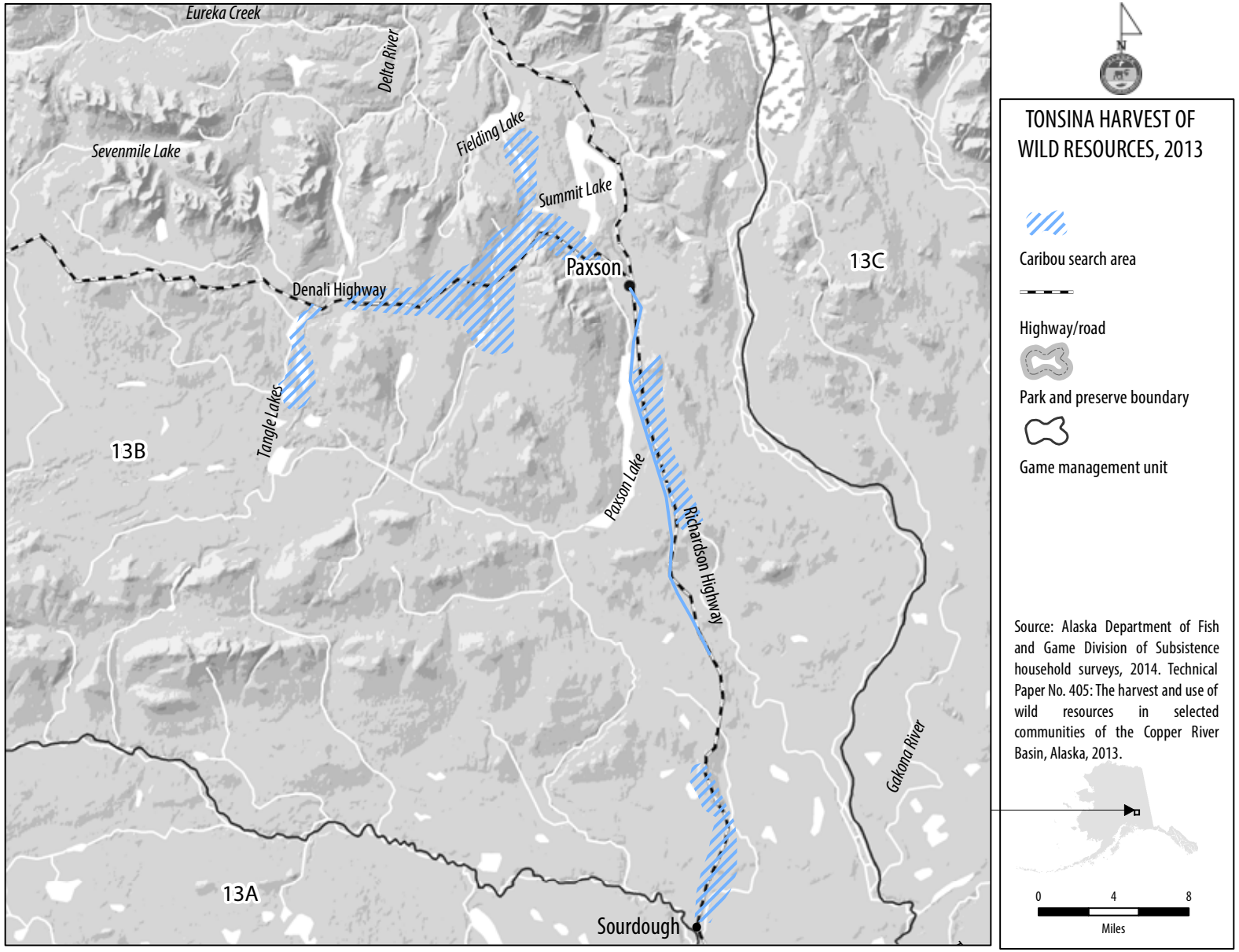


Figure 7-15.–Hunting locations of caribou, Tonsina, 2013.

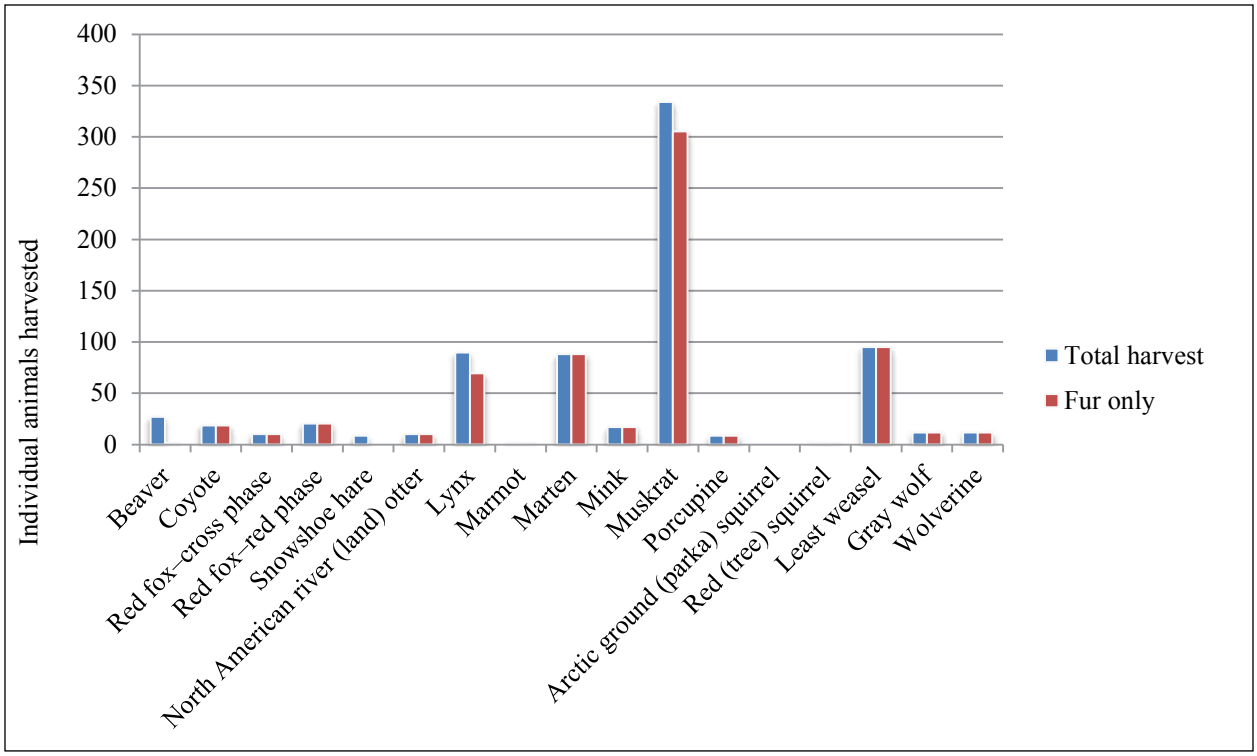


Figure 7-16.–Estimated small land mammal/furbearer harvests for fur and food only, Tonsina, 2013.

Small Land Mammals/Furbearers

As listed in Table 7-13, the harvest of small land mammals by Tonsina households used for food was 532 lb total (6 lb per capita) and contributed 3% of the overall community harvest (Figure 7-7). The animals used for food in addition to their fur include beavers (382 lb total), lynx (81 lb), muskrats (52 lb), and snowshoe hares (17 lb) (Figure 7-16; Table 7-13). Figure 7-16 compares, by number of individual animals harvested, the total harvest of small land mammals with the number of animals harvested for fur only. For example, of the 27 beavers harvested in 2013 approximately 25 were used for both food and fur; and of the 334 muskrats harvested about 29 were used for both food and fur. However most furbearers (coyotes, foxes, marmots, martens, minks, otters, porcupines, weasels, gray wolves, and wolverines) were harvested for their fur only.

Figure 7-17 represents the harvest composition of all small land mammals hunted or trapped in 2013 by number of individual animals harvested (rather than by weight) and Table 7-18 describes the harvest of small land mammals by month of harvest. Muskrats were harvested most (44% of small land mammal harvest, or 334 individuals), followed by weasels (13% of harvest, or 95 individuals), lynx (12% of harvest, or 90 individuals), and martens (12% of harvest, or 88 individuals). Most furbearer harvests follow a standard trapping season, which usually starts in November and extends through February. With the exception of muskrat harvests (all of which were in April and May), the majority of harvests took place in January (142 animals) and February (112 animals). Since the majority of the small land mammals harvest is conducted by those few households that actively trap, use was not as pervasive; only 26% reported use and 22% reported harvesting small land mammal species (Table 7-13).

The search and harvest areas for small land mammals and furbearers in 2013 included local areas west of the Richardson Highway around Pippin Lake and the upper Tonsina River. Other trappers had lines in the Tolsona community area, to the west of the Gulkana River near Sourdough, and off the Nabesna Road along the Goat Creek watershed (Figure 7-18). In addition, some trappers had lines north of Chitina, east of Chitina along McCarthy Road, and south of Chitina along the Copper River.

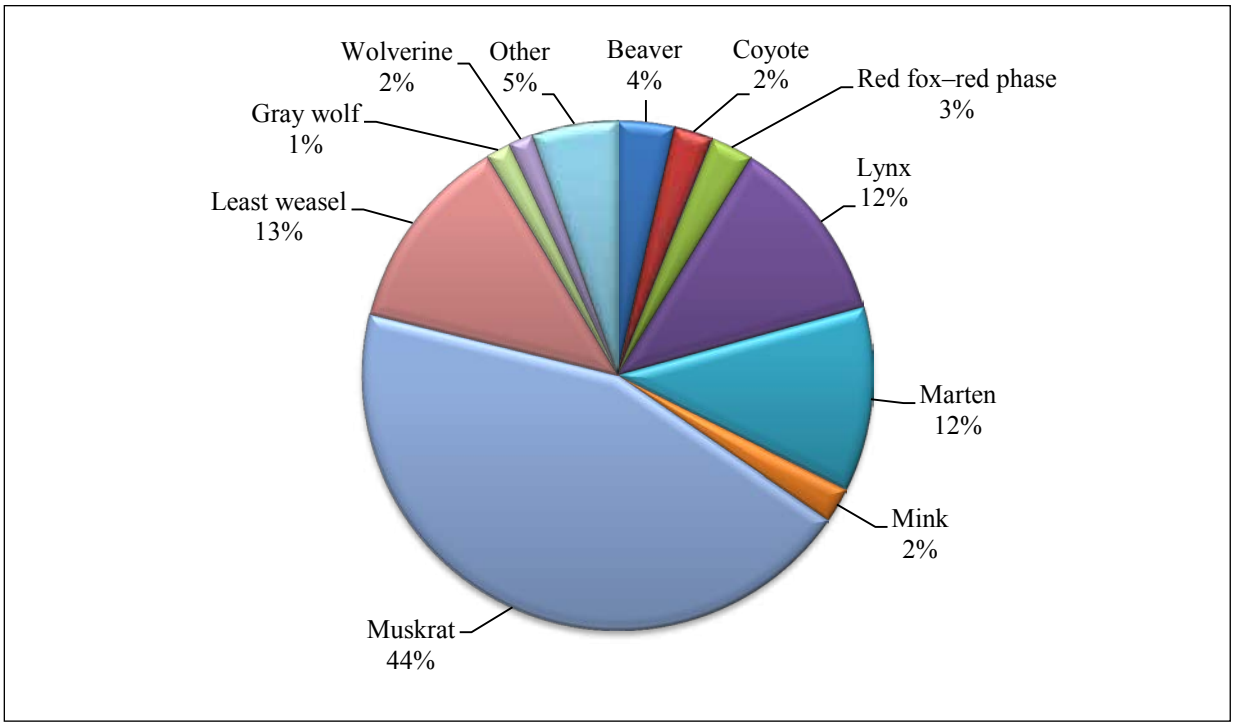


Figure 7-17.–Composition of small land mammal/furbearer harvest by individual animals harvested, Tonsina, 2013.

Table 7-18.–Estimated small land mammal/furbearer harvests by month, Tonsina, 2013.

	Estimated harvest by month													
Resource	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk	**Total**
All small land mammals	**142.4**	**111.9**	**3.4**	**174.7**	**188.2**	**0.0**	**0.0**	**0.0**	**3.4**	**3.4**	**57.7**	**69.5**	**0.0**	**754.6**
Beaver	0.0	0.0	0.0	1.7	25.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**27.1**
Coyote	13.6	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.0	**18.7**
Red fox–cross phase	5.1	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.0	**10.2**
Red fox–red phase	13.6	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	1.7	0.0	**20.3**
Snowshoe hare	8.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**8.5**
North american river (land) otter	0.0	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.5	0.0	0.0	**10.2**
Lynx	42.4	33.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	11.9	0.0	**89.9**
Marmot	0.0	0.0	0.0	0.0	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**1.7**
Marten	23.7	20.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.0	27.1	0.0	**88.2**
Mink	0.0	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.6	0.0	0.0	**17.0**
Muskrat	0.0	0.0	0.0	173.0	161.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**334.0**
Porcupine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.4	3.4	0.0	1.7	0.0	**8.5**
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	1.7	0.0	**1.7**
Least weasel	28.8	30.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.3	20.3	0.0	**95.0**
Gray wolf	3.4	5.1	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**11.9**
Wolverine	3.4	6.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.0	**11.9**

Source ADF&G Division of Subsistence household surveys, 2014.

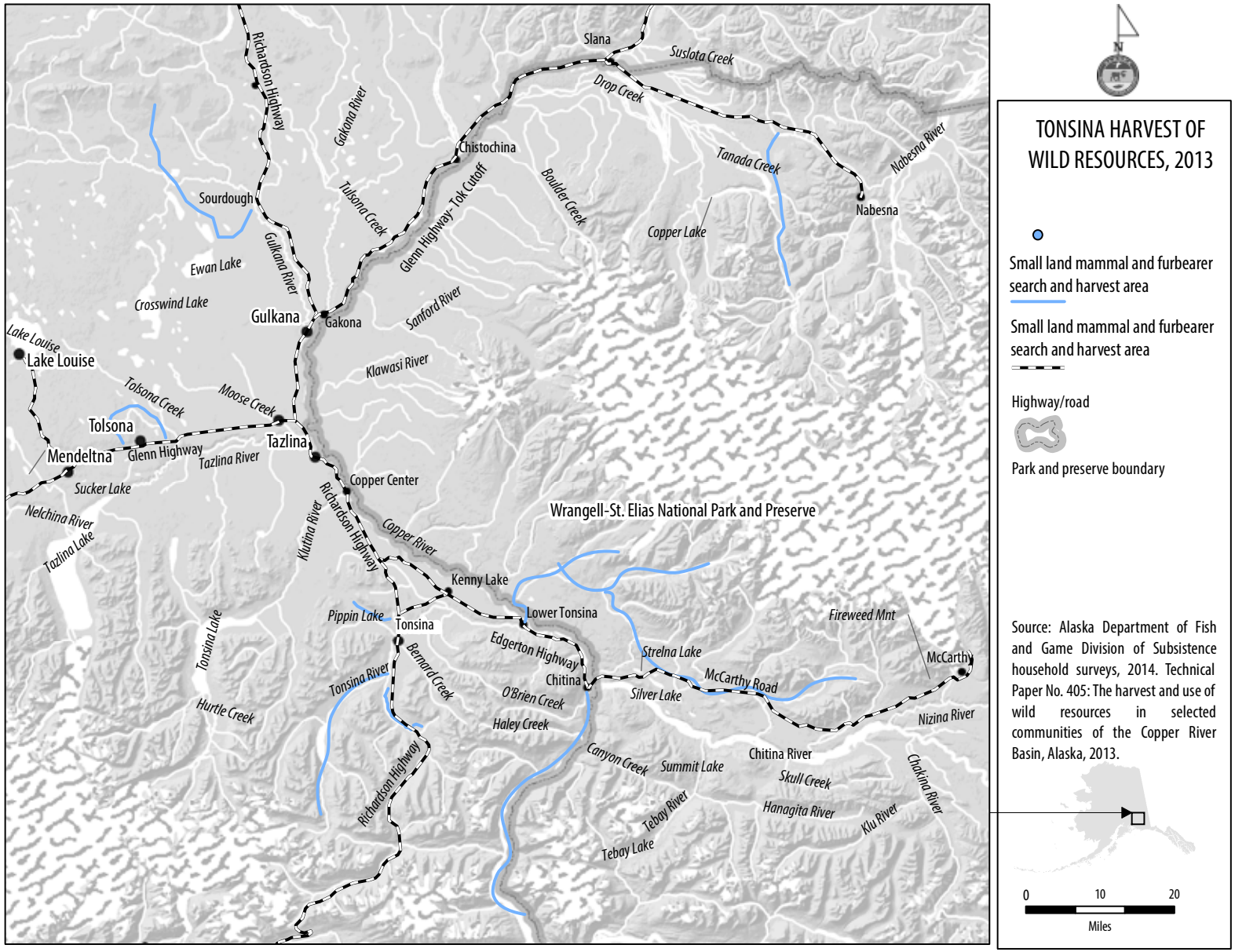


Figure 7-18.–Hunting and trapping locations of small land mammals/furbearers, Tonsina, 2013.

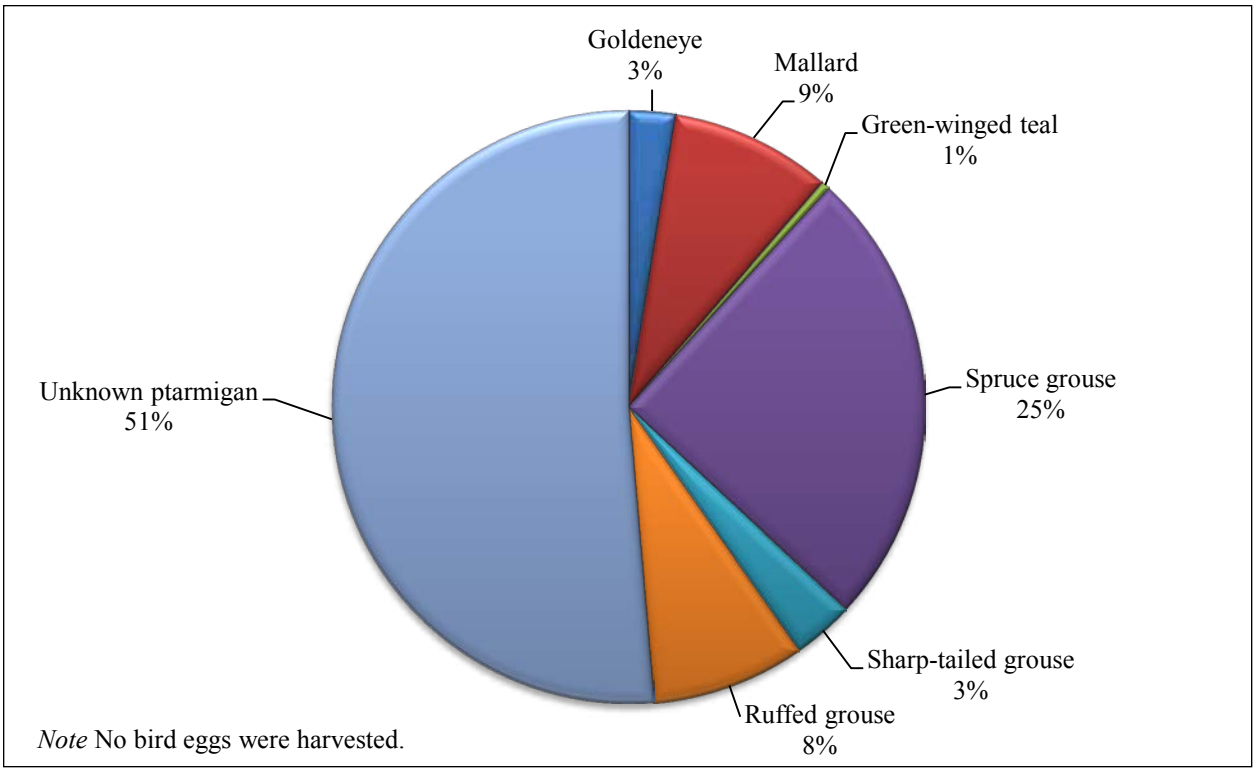


Figure 7-19.–Composition of bird and bird egg harvest in pounds usable weight, Tonsina, 2013.

Birds and Eggs

Birds were hunted and used by 35% of Tonsina households and made up approximately 1% of the total community harvest (Table 7-13; Figure 7-7). The total bird harvest was approximately 213 lb, or about 2 lb per capita. Ptarmigan accounted for 51% of the bird harvest by the community (109 lb total), followed by spruce grouse (25%, or 53 lb total), and mallards (9%, or 19 lb total) (Figure 7-19; Table 7-13). More households attempted to harvest birds (39%) than those claiming a successful harvest (35%), and while 9% of households shared birds only 4% of Tonsina households said they received birds.

The majority of the Tonsina community's bird harvests took place in the fall; 151 of the 297 birds harvested were taken during this time (Table 7-19). The second most prolific season was winter (122 birds harvested). Areas of harvest for upland game birds included locations in or close to the community of Tonsina in the mountains south, west, and east of the Richardson Highway (Figure 7-20). Tonsina households also harvested upland game birds in Kenny Lake, Bernard Creek, on the Denali Highway west of Paxson, and as far away the Fairbanks North Star Borough near Fairbanks and Ester. Migratory waterfowl were harvested locally in Tonsina, and north in Paxson and Tangle Lakes.

Marine Invertebrates

A small amount of marine invertebrates were harvested during the study year. As listed in Table 7-13, the total harvest of marine invertebrates by Tonsina households in 2013 was made up of shrimp (144 lb, or just less than 2 lb per capita). Shrimp were harvested by 13% of the households but used by 39% of Tonsina households. Some sharing occurred; 4% of households gave away marine invertebrates and 26% received marine invertebrates. Species other than shrimp were used in households as well; Dungeness crab, unknown tanner crab, and octopus were used in 4% of Tonsina homes, all of which was received from others. No harvest areas were documented.

Table 7-19.–Estimated bird and bird egg harvests by season, Tonsina, 2013.

Resource	Estimated harvest by season					
	Winter	Spring	Summer	Fall	Season unknown	**Total**
All birds	**122.1**	**10.2**	**13.6**	**150.9**	**0.0**	**296.7**
Canvasback	0.0	0.0	0.0	0.0	0.0	**0.0**
Spectacled eider	0.0	0.0	0.0	0.0	0.0	**0.0**
Goldeneye	0.0	0.0	0.0	6.8	0.0	**6.8**
Mallard	0.0	0.0	1.7	17.0	0.0	**18.7**
Northern pintail	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**
Green-winged teal	0.0	3.4	0.0	0.0	0.0	**3.4**
Unknown ducks	0.0	0.0	0.0	0.0	0.0	**0.0**
Brant	0.0	0.0	0.0	0.0	0.0	**0.0**
Cackling goose	0.0	0.0	0.0	0.0	0.0	**0.0**
Canada goose	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**
Emperor goose	0.0	0.0	0.0	0.0	0.0	**0.0**
Snow goose	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**
Tundra (whistling) swan	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**
Spruce grouse	0.0	5.1	11.9	59.3	0.0	**76.3**
Sharp-tailed grouse	10.2	0.0	0.0	0.0	0.0	**10.2**
Ruffed grouse	0.0	1.7	0.0	23.7	0.0	**25.4**
Unknown ptarmigan	111.9	0.0	0.0	44.1	0.0	**156.0**
Unknown duck eggs	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown goose eggs	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown gull eggs	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown eggs	0.0	0.0	0.0	0.0	0.0	**0.0**

Source ADF&G Division of Subsistence household surveys, 2014.

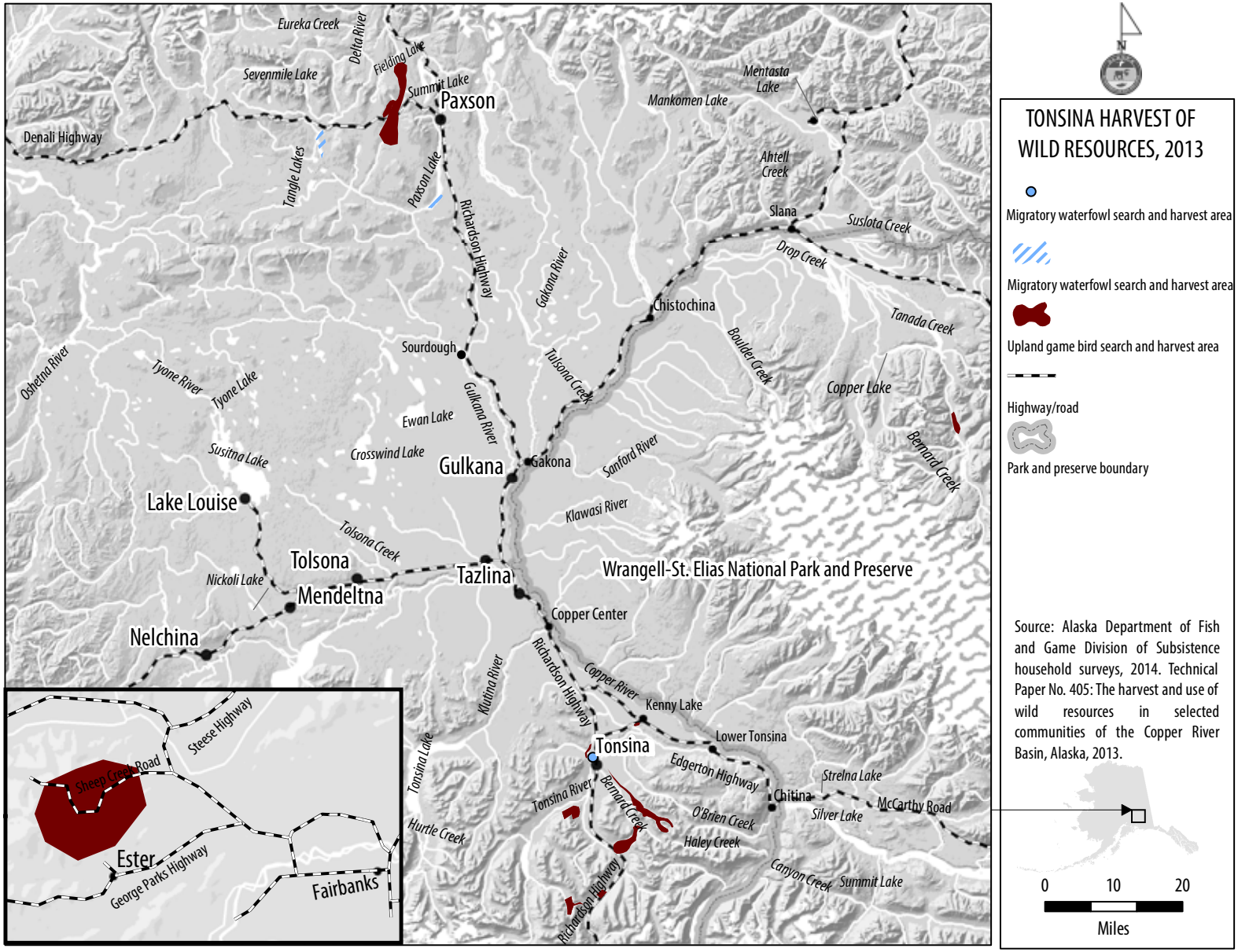


Figure 7-20.–Hunting and harvest locations of migratory waterfowl and upland game birds, Tonsina, 2013.

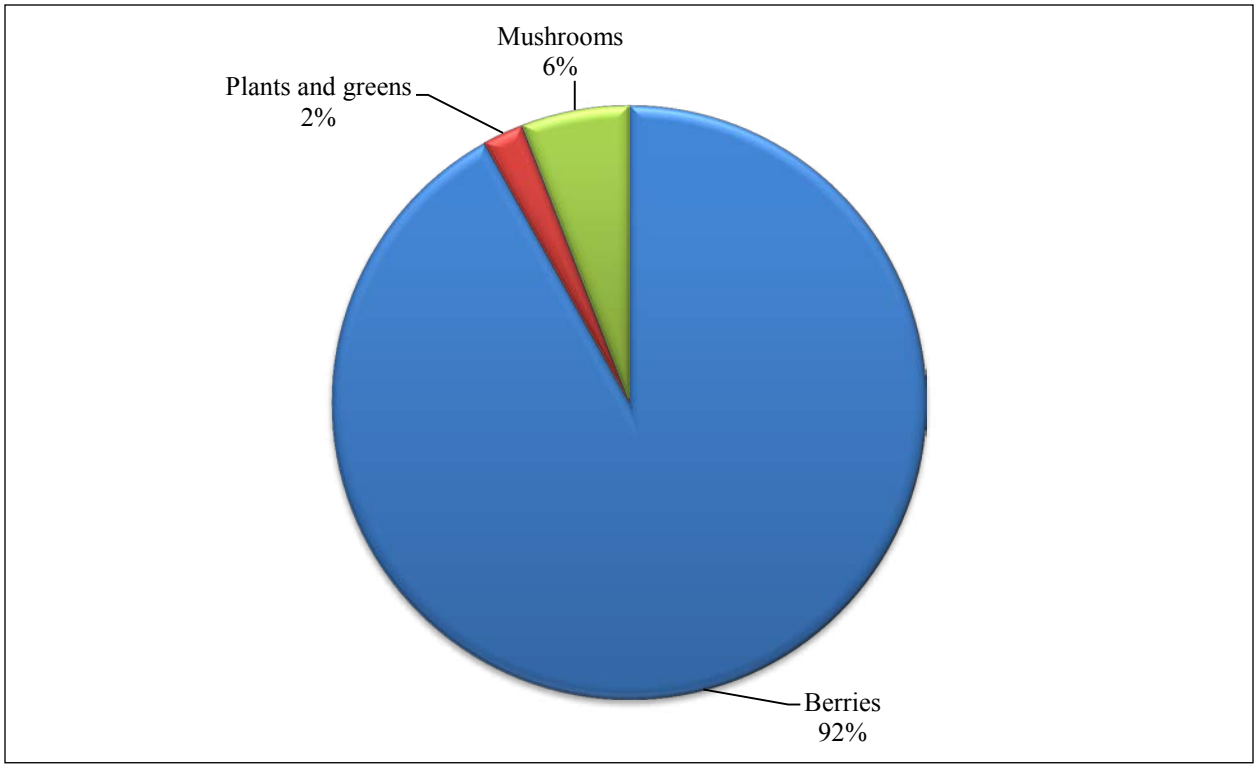


Figure 7-21.–Composition of vegetation harvest by type and pounds usable weight, Tonsina, 2013.

Vegetation

In 2013, Tonsina households harvested 536 lb, or 6 lb per capita, of edible vegetation that made up approximately 3% of the community harvest (Table 7-13; Figure 7-7). The majority of the vegetation harvest was berries (92%) followed by mushrooms (6%) and other plants and greens (2%) (Figure 7-21). Most households in Tonsina (91%) used vegetation during the 2013 study year; blueberries, which had the highest harvest of all the berries (211 lb total), was used in 52% of the households and raspberries, despite a lower harvest weight (83 lb total) were used by the second most households (44% of the households) (Table 7-13). Wood, however, was the most used and harvested of all the vegetation resources. While not contributing to the community harvest estimate by weight, 180 cords of wood were harvested by 74% of the households and used by 87% of households (Table 7-13).

Plants and berries were harvested locally within Tonsina and along the Richardson Highway as far as Stuart Creek and Tiekel River (Figure 7-22). Wood was harvested locally in Tonsina and south along the Richardson Highway toward Valdez.

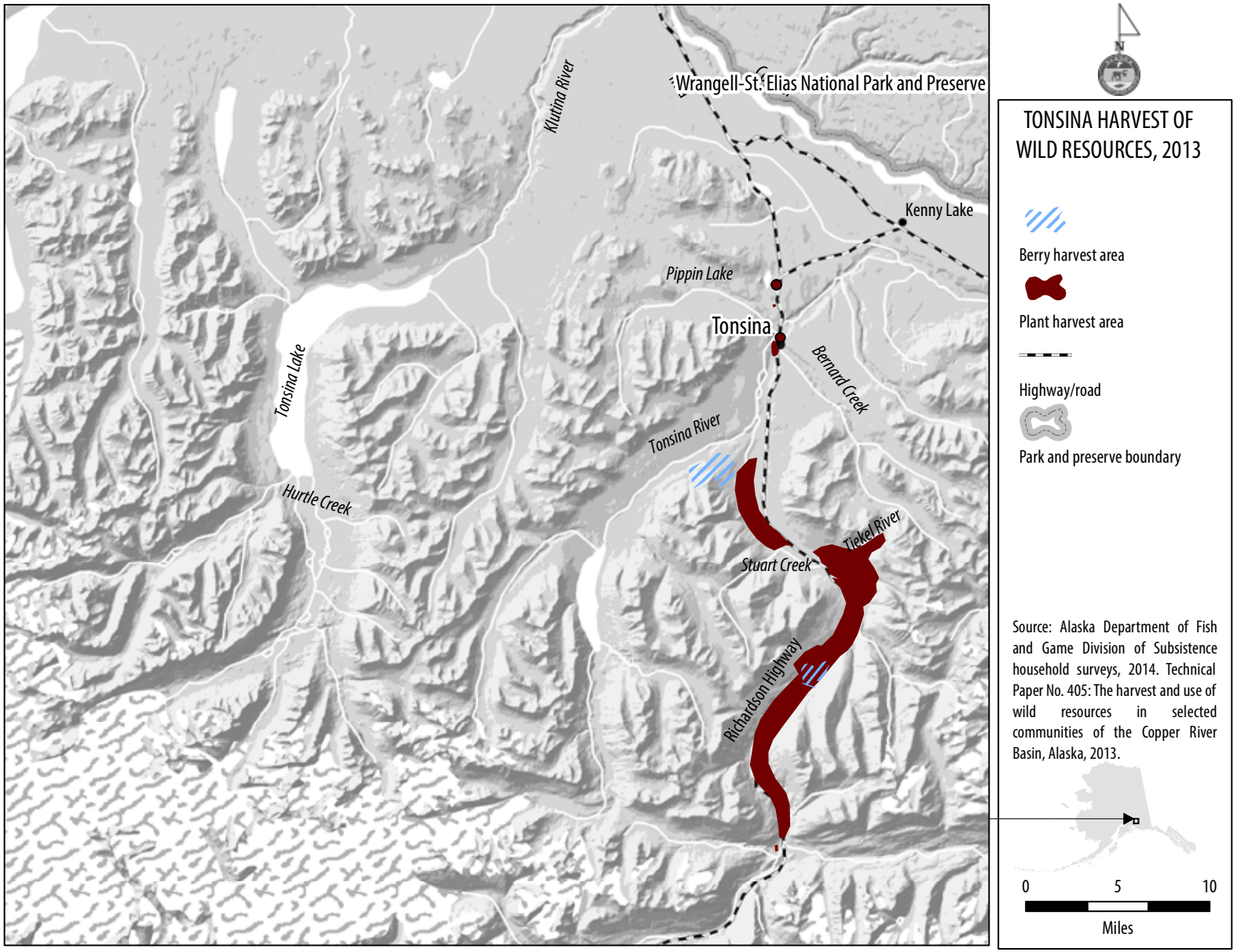


Figure 7-22.–Gathering and harvest locations of berries and plants, greens, and mushrooms, Tonsina, 2013.

Comparing Harvests and Uses in 2013 with Previous Years

Harvest Assessments

For 10 resource categories and for all resources combined, survey respondents were asked to assess whether their uses and harvests in the 2013 study year were less, more, or about the same as other recent years. "Other recent years" was defined as about the last 5 years. Table 7-20 reports the number of valid responses for each category, the number of households that did not respond, and the number of households that did not use a resource category or all resources combined. In Table 7-20, response percentages are based on the number of valid responses for each category to contextualize these assessments within the set of community households that typically use each category.

Figure 7-23 depicts responses to the "less, same, more" assessment question for each resource category. Households that said they did not ordinarily "use" something are not included within the results. This results in fewer responses for less commonly used categories such as bird eggs or marine mammals, and manifests in the chart as a very short set of colored bars (or none at all) compared to categories such as salmon or large land mammals which are ordinarily used by most households. Some households did not respond to the question.

All sampled households in Tonsina (23) were asked to take their entire year of harvest into consideration and assess whether their use of all resources was less, same, or more than in recent years. Of those 23 households, 19 (or 86%) said they used the same amounts of wild resources in general over the previous 12 months as compared to recent years (Table 7-20). Nine percent of responding sampled households said they used less and only 5% said they used more. Both Table 7-20 and Figure 7-23 demonstrate responses for individual resource categories. The majority of responding households reported their use of vegetation (57%), salmon (52%), nonsalmon fish (57%), and large land mammals (65%) was the same during the study year as compared to recent years (Figure 7-23). Use of other birds was evenly split (13% for each category) between less, same, and more assessments when compared to recent years, while marine invertebrate use was primarily the same or less, and small land mammals use was primarily less than recent years.

Table 7-21 and Table 7-22 depict, by resource category, the reasons Tonsina respondents gave for less or more use. 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 hindering residents from harvesting resources, 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 outside effects on residents' opportunities to engage in hunting, fishing, and gathering activities.

Of the surveyed Tonsina households that provided assessments for the 2013 study year, 13 households reported their use of at least 1 resource ("any resource") was less. The reasons most cited for less use of any resource were working/no time (46%), less resources available (38%), and did not need (31%) (Table 7-21). Working/no time and did not need were the main reasons 4 households reported for why their use of salmon was less and working/no time and lack of equipment were the reasons cited by the households reporting less use of migratory birds. Eighty percent of those households reporting less use of small land mammals cited less resources being available as the main reason their use had declined during the study year. Of those households that reported their use of any resource was more during the study year as compared to recent years (11 households of the 23), increased availability, received more, and increased effort were the main reasons cited for more use of any resource (Table 7-22).

The impact to households from not getting enough wild resources is reported in Table 7-23. The impact from not getting enough nonsalmon fish was noted as minor by 5 households out of 6 households reporting that they did not get enough nonsalmon fish. The only resources where residents noted a major impact were large land mammals (2 households of 3 that did not get enough) and also vegetation (1 household of 5 that did not get enough). For all resources only 9% of households (out of 23) said that they did not get enough resources in 2013.

Table 7-20.–Changes in household uses of resources compared to recent years, Tonsina, 2013.

Resource category	Sampled households	Valid responses[a]	Households reporting use: Total households Number	Total households Percentage	Less Number	Less Percentage	Same Number	Same Percentage	More Number	More Percentage	Households not using Number	Households not using Percentage
Any resource	23	23	23	100.0%	13	56.5%	21	91.3%	11	47.8%	23	100.0%
All resources	**23**	**22**	**22**	**95.7%**	**2**	**9.1%**	**19**	**86.4%**	**1**	**4.5%**	**0**	**0.0%**
Salmon	23	23	21	91.3%	4	17.4%	12	52.2%	5	21.7%	2	8.7%
Nonsalmon fish	23	23	20	87.0%	3	13.0%	13	56.5%	4	17.4%	3	13.0%
Large land mammals	23	23	19	82.6%	2	8.7%	15	65.2%	2	8.7%	4	17.4%
Small land mammals	23	22	6	26.1%	5	22.7%	1	4.5%	0	0.0%	16	72.7%
Marine mammals	23	22	0	0.0%	0	0.0%	0	0.0%	0	0.0%	22	100.0%
Migratory waterfowl	23	22	4	17.4%	2	9.1%	0	0.0%	2	9.1%	18	81.8%
Other birds	23	23	9	39.1%	3	13.0%	3	13.0%	3	13.0%	14	60.9%
Bird eggs	23	23	0	0.0%	0	0.0%	0	0.0%	0	0.0%	23	100.0%
Marine invertebrates	23	22	7	30.4%	3	13.6%	3	13.6%	1	4.5%	15	68.2%
Vegetation	23	23	22	95.7%	5	21.7%	13	56.5%	4	17.4%	1	4.3%

Source ADF&G Division of Subsistence household surveys, 2014.

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

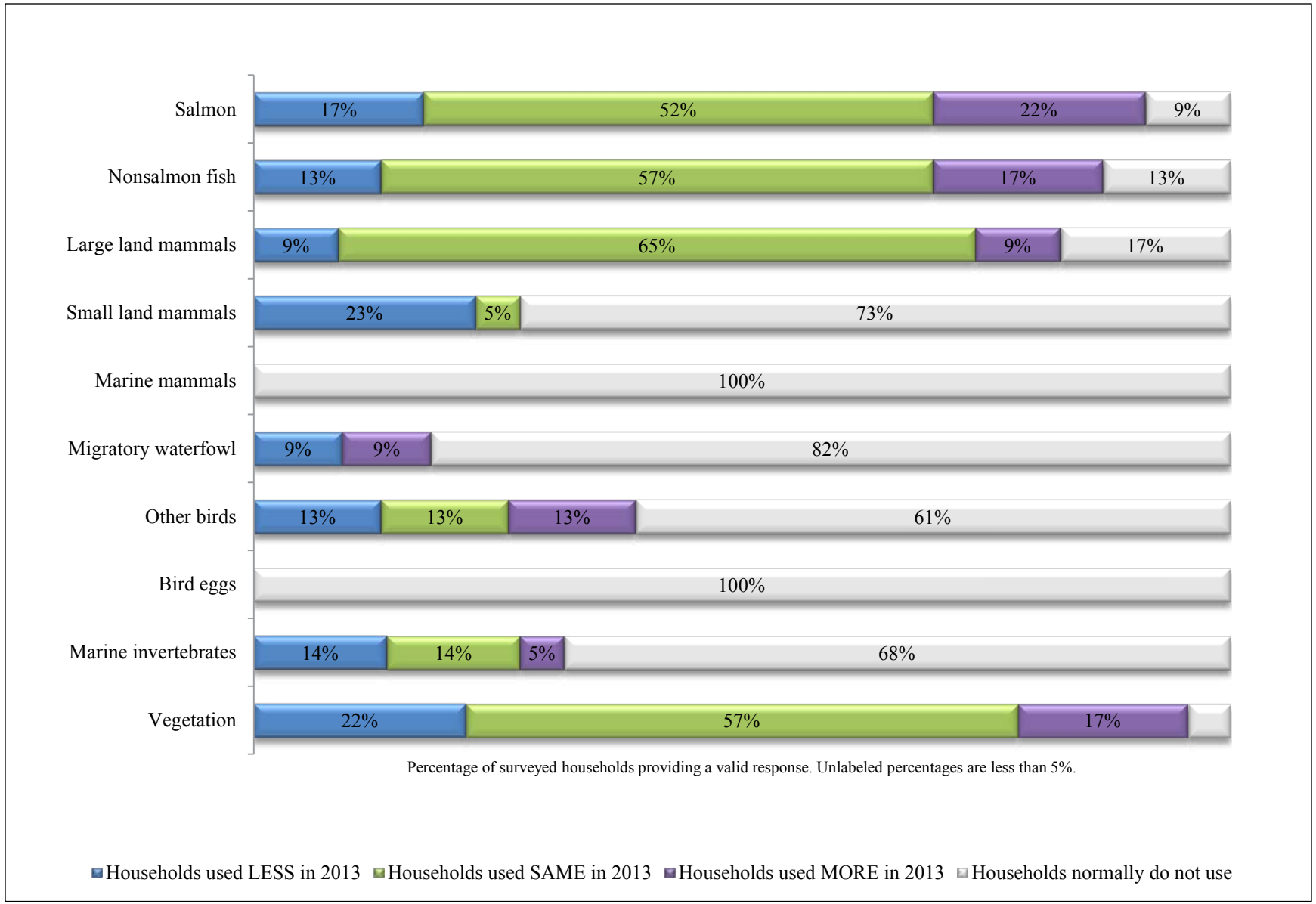


Figure 7-23.–Changes in household uses of resources compared to recent years, Tonsina, 2013.

Table 7-21.–Reasons for less household uses of resources compared to recent years, Tonsina, 2013.

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	23	13	1	7.7%	5	38%	0	0.0%	2	15%	1	8%	3	23%
All resources	**22**	**2**	**1**	**50.0%**	**0**	**0%**	**0**	**0.0%**	**0**	**0%**	**0**	**0%**	**0**	**0%**
Salmon	23	4	0	0.0%	0	0%	0	0.0%	0	0%	0	0%	0	0%
Nonsalmon fish	23	3	1	33.3%	0	0%	0	0.0%	0	0%	1	33%	2	67%
Large land mammals	23	2	1	50.0%	0	0%	0	0.0%	0	0%	0	0%	0	0%
Small land mammals	22	5	0	0.0%	4	80%	0	0.0%	0	0%	0	0%	0	0%
Marine mammals	22	0	0	0.0%	0	0%	0	0.0%	0	0%	0	0%	0	0%
Migratory waterfowl	22	2	0	0.0%	0	0%	0	0.0%	1	50%	0	0%	0	0%
Other birds	23	3	0	0.0%	1	33%	0	0.0%	0	0%	0	0%	0	0%
Bird eggs	23	0	0	0.0%	0	0%	0	0.0%	0	0%	0	0%	0	0%
Marine invertebrates	22	3	0	0.0%	0	0%	0	0.0%	0	0%	1	33%	2	67%
Vegetation	23	5	1	20.0%	1	20%	0	0.0%	1	20%	0	0%	0	0%

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Table 7-21.–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	23	13	1	7.7%	3	23.1%	0	0.0%	6	46.2%	0	0.0%	1	7.7%
All resources	**22**	**2**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0%**	**2**	**100.0%**	**0**	**0.0%**	**0**	**0.0%**
Salmon	23	4	0	0.0%	0	0.0%	0	0%	2	50.0%	0	0.0%	0	0.0%
Nonsalmon fish	23	3	0	0.0%	0	0.0%	0	0%	1	33.3%	0	0.0%	0	0.0%
Large land mammals	23	2	1	50.0%	0	0.0%	0	0%	1	50.0%	0	0.0%	0	0.0%
Small land mammals	22	5	0	0.0%	1	20.0%	0	0%	1	20.0%	0	0.0%	1	20.0%
Marine mammals	22	0	0	0.0%	0	0.0%	0	0%	0	0.0%	0	0.0%	0	0.0%
Migratory waterfowl	22	2	0	0.0%	0	0.0%	0	0%	2	100.0%	0	0.0%	0	0.0%
Other birds	23	3	1	33.3%	1	33.3%	0	0%	0	0.0%	0	0.0%	0	0.0%
Bird eggs	23	0	0	0.0%	0	0.0%	0	0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	22	3	0	0.0%	0	0.0%	0	0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	23	5	0	0.0%	1	20.0%	0	0%	1	20.0%	0	0.0%	0	0.0%

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Table 7-21.–Page 2 of 2.

Resource category	Valid responses[a]	Households reporting reasons for less use	Did not get enough		Did not need		Equipment/ fuel expense		Used other resources		Less competition	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	23	13	0	0.0%	4	30.8%	0	0.0%	0	0.0%	0	0.0%
All resources	**22**	**2**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**
Salmon	23	4	0	0.0%	2	50.0%	0	0.0%	0	0.0%	0	0.0%
Nonsalmon fish	23	3	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Large land mammals	23	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	22	5	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	22	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Migratory waterfowl	22	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other birds	23	3	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Bird eggs	23	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	22	3	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	23	5	0	0.0%	2	40.0%	0	0.0%	0	0.0%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2014.

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

Table 7-22.–Reasons for more household uses of resources compared to recent years, Tonsina, 2013.

Resource category	Valid responses[a]	Households reporting reasons for more use	Increased availability		Used other resources		Favorable weather		Received more		Needed more	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	23	11	5	45.5%	0	0.0%	1	9.1%	4	36.4%	2	18.2%
All resources	**22**	**1**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**
Salmon	23	5	2	40.0%	0	0.0%	0	0.0%	1	20.0%	0	0.0%
Nonsalmon fish	23	4	1	25.0%	0	0.0%	0	0.0%	1	25.0%	0	0.0%
Large land mammals	23	2	0	0.0%	0	0.0%	0	0.0%	1	50.0%	0	0.0%
Small land mammals	22	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	22	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Migratory waterfowl	22	2	1	50.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other birds	23	3	1	33.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Bird eggs	23	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	22	1	0	0.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%
Vegetation	23	4	1	25.0%	0	0.0%	1	25.0%	0	0.0%	2	50.0%

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Table 7-22.–Continued.

Resource category	Valid responses[a]	Households reporting reasons for more use	Increased effort		Had more help		Other		Regulations		Traveled farther	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	23	11	4	36.4%	2	18.2%	0	0.0%	0	0.0%	1	9.1%
All resources	**22**	**1**	**1**	**100.0%**	**1**	**100.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**
Salmon	23	5	2	40.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Nonsalmon fish	23	4	2	50.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Large land mammals	23	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	22	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	22	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Migratory waterfowl	22	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other birds	23	3	2	66.7%	1	33.3%	0	0.0%	0	0.0%	0	0.0%
Bird eggs	23	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	22	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	23	4	0	0.0%	1	25.0%	0	0.0%	0	0.0%	1	25.0%

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Table 7-22.–Page 2 of 2.

Resource category	Valid responses[a]	Households reporting reasons for more use	More success		Needed less		Store-bought expense		Got/ fixed equipment		Substituted resources	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	23	11	2	18.2%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
All resources	**22**	**1**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**
Salmon	23	5	1	20.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Nonsalmon fish	23	4	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Large land mammals	23	2	1	50.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	22	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	22	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Migratory waterfowl	22	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other birds	23	3	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Bird eggs	23	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	22	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	23	4	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2014.

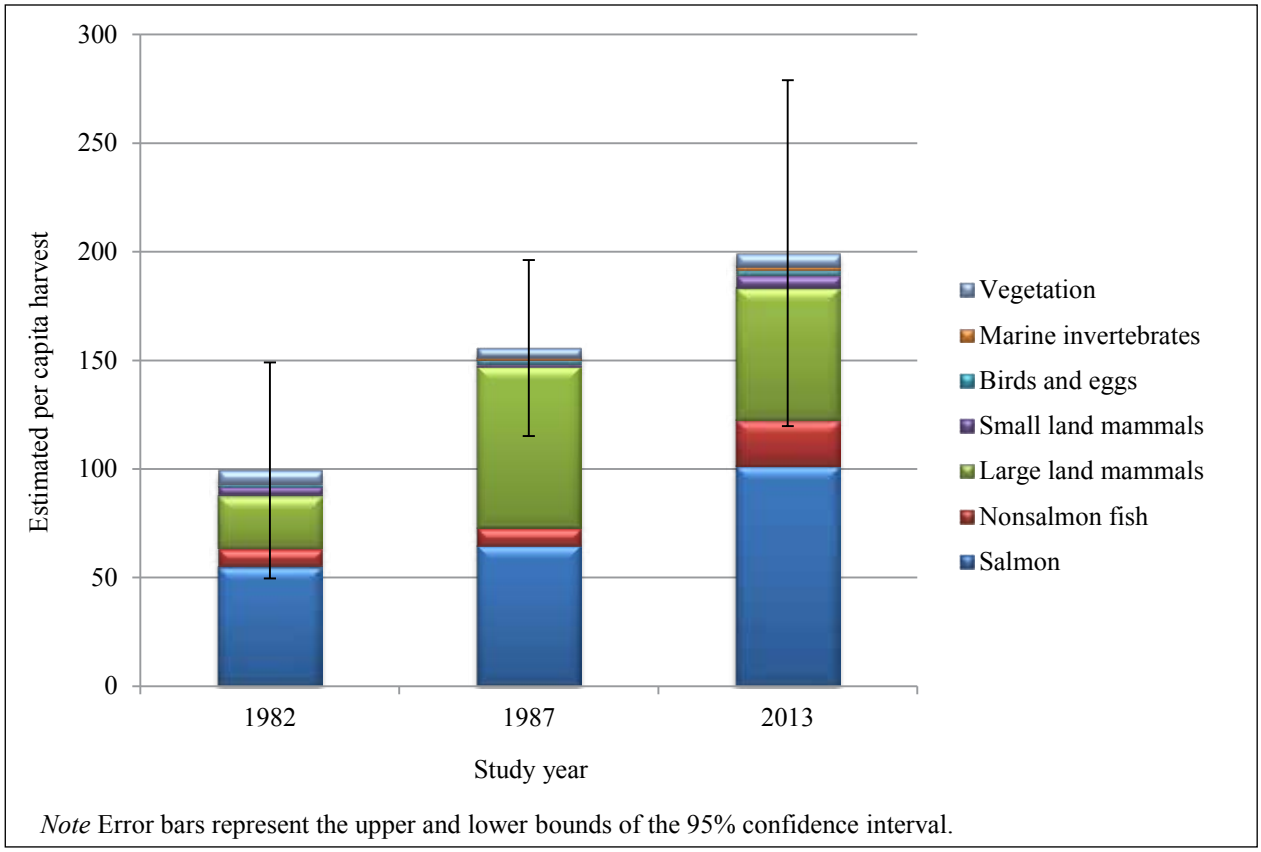
a. Valid responses do not include households that did not provide any response and households reporting never use.

Table 7-23.–Reported impact to households reporting that they did not get enough of a type of resource, Tonsina, 2013.

		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
Salmon	23	21	91.3%	2	9.5%	0	0.0%	0	0.0%	2	100.0%	0	0.0%	0	0.0%
Nonsalmon fish	23	19	82.6%	6	31.6%	1	16.7%	0	0.0%	5	83.3%	0	0.0%	0	0.0%
Marine invertebrates	23	7	30.4%	4	57.1%	0	0.0%	0	0.0%	4	100.0%	0	0.0%	0	0.0%
Large land mammals	23	19	82.6%	3	15.8%	0	0.0%	0	0.0%	1	33.3%	2	66.7%	0	0.0%
Marine mammals	23	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	23	6	26.1%	1	16.7%	0	0.0%	0	0.0%	1	100.0%	0	0.0%	0	0.0%
Migratory waterfowl	23	4	17.4%	2	50.0%	0	0.0%	0	0.0%	2	100.0%	0	0.0%	0	0.0%
Other birds	23	9	39.1%	1	11.1%	0	0.0%	0	0.0%	1	100.0%	0	0.0%	0	0.0%
Bird eggs	23	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	23	22	95.7%	5	22.7%	0	0.0%	0	0.0%	4	80.0%	1	20.0%	0	0.0%
All resources	**23**	**23**	**100.0%**	**2**	**8.7%**	**0**	**0.0%**	**1**	**50.0%**	**1**	**50.0%**	**0**	**0.0%**	**0**	**0.0%**

Source ADF&G Division of Subsistence household surveys, 2014.

a. Does not includes households failing to respond to the question or those households that never used the resource.



Note Error bars represent the upper and lower bounds of the 95% confidence interval.

Figure 7-24.–Estimated harvests by pounds per capita and by resource category, Tonsina, 1982, 1987, and 2013.

Harvest Data

Changes in the harvest of resources by Tonsina residents can also be discerned through comparisons with findings from other study years. Comprehensive subsistence harvest surveys were conducted in Tonsina in 1983 (for a study year spanning June 1982 through May 1983) and 1988 (for a study year spanning June 1987 through May 1988) by the Division of Subsistence (McMillan and Cuccarese 1988; Stratton and Georgette 1984). Although the survey areas differ from the earlier study years to the later, the community characteristics remain consistent and comparable. For more detail refer to the Tonsina discussion in the subsection "Household Survey Implementation" in the chapter "Introduction."

Figure 7-24 demonstrates the change in harvest composition in pounds per capita over time and Table 7-24 demonstrates changes in total and per capita harvests over time. Both graphics demonstrate an overall increase in per capita harvest from 1982 to the present study year; from 99 lb per capita in 1982, to 156 lb per capita in 1987, to 199 lb per capita in 2013 (Table 7-24).

With regard to individual resource categories, salmon, large land mammals, and nonsalmon fish composed the majority of the harvest over all study years (Figure 7-24). Salmon per capita harvests almost doubled between 1982 and 2013 (55 lb per capita to 102 lb per capita; a 47 lb per capita increase). Between 1982 and 1987, the large land mammal harvest increased significantly from 24 lb to 74 lb per capita, then decreased by 13 lb to 61 lb per capita in 2013. The nonsalmon fish harvest remained consistent between 1982 and 1987 with 8 lb per capita harvested for both years, then increased to 21 lb per capita in 2013. Vegetation and small land mammal per capita harvests fluctuated over time, while birds and eggs and marine invertebrate harvests increased slightly.

Table 7-24.–Comparison of harvest composition, Tonsina, 1982, 1987, and 2013.

	Estimated harvest in pounds usable weight								
	1982			1987			2013		
Resource	Total	Per capita	CIP	Total	Per capita	CIP	Total	Per capita	CIP
All resources	**22,644.0**	**99.3**	**50.0%**	**46,310.0**	**155.7**	**26.0%**	**17,912.9**	**199.3**	**39.9%**
Salmon	12,624.0	55.4		19,238.0	64.7		9,145.0	101.8	
Nonsalmon fish	1,911.0	8.4		2,492.0	8.4		1,882.7	20.9	
Large land mammals	5,535.0	24.3		22,003.0	74.0		5,460.8	60.8	
Small land mammals	874.0	3.8		402.0	1.4		531.8	5.9	
Birds and eggs	271.0	1.2		554.0	1.9		212.6	2.4	
Marine invertebrates	–	–		326.0	1.1		144.1	1.6	
Vegetation	1,429.0	6.3		1,296.0	4.4		535.8	6.0	

Sources For 2013, ADF&G Division of Subsistence household surveys, 2014; for previous study years, ADF&G Division of Subsistence Community Subsistence Information System (CSIS), accessed 2014.

Note "–" indicates no harvest.

Current and Historical Harvest Areas

During the 1983 and 1984 fieldwork seasons, ADF&G researchers conducted interviews with more than 200 hunters and fishers in 20 communities in or near the Copper River Basin to map areas where hunting, fishing, trapping, and gathering of wild resources occurred between 1964 and 1984 (Stratton and Georgette 1985). This effort produced 2 separate publications by 2 different ADF&G divisions; the Division of Habitat published the maps and the Division of Subsistence published a description of the project and mapping methods. The maps depicting the harvest and use areas used by study community residents during this 20-year span are published in *Alaska Habitat Management Guide Southcentral Region: Reference Maps—Volume 3. Community Use of Fish, Wildlife, and Plants* (Alaska Department of Fish and Game Division of Habitat 1985).[2] Information about the mapping project is available in Copper Basin Resource Use Map Index and Methodology (Stratton and Georgette 1985). A total of 8 harvest and use (referred to in this report as "search") maps were produced that show activities for Tonsina area residents for 1964–1984. These maps cover harvest and use areas for select large land mammal species (moose, caribou, and Dall sheep), waterfowl, furbearers (small land mammals), fish (salmon and freshwater fish), and vegetation. Absent from these maps are harvest and use areas for upland game birds, and black and brown bears. Changes in the resource harvest and use/search areas by Tonsina residents can be discerned through limited comparisons between the maps published in 1985, which depict a 20-year harvest and use pattern, and the maps produced from this study, which only reflect search and harvest areas for the study year 2013. Additional caveats to keep in mind; map data for the 1964–1984 time period were restricted to the Copper River Basin and no effort was made to map resources outside this special extent; also, the historical maps document extensive use across wide swaths of land off the road system and in Unit 11 in what is now the Wrangell-St. Elias National Park and Preserve.

With regard to specific species, the most noticeable differences in the harvest and use/search areas of the 2 map sets were visible with moose, caribou, and in particular Dall sheep. In 2013, the maps show caribou were hunted and harvested only in Unit 13B from Sourdough north along the Richardson Highway to Paxson, and then from Paxson west along the Denali Highway to the Tangle Lakes area. The historical maps show some activity north of Sourdough but demonstrate the majority of harvest and use areas occurred mostly in units 13A and 13C, and portions of Unit 11, and while road corridors were significant for caribou harvests most of the hunting area occurred off the road system. Historically, in Unit 13A caribou were hunted west of the Richardson Highway from Sourdough to Gulkana and north of the Glenn Highway in sections around Tolsona, Lake Louise and the Lake Louise access road, Mendeltna, and west of Nelchina. In units 13C and 11, caribou harvest areas lined the entire Glenn Highway–Tok Cutoff from Gulkana to Slana and up the extent of the Nabesna Road then west along the northern flank of the Mount Sanford

2. A complete index of documents published in 1985 and 1986 as part of *Alaska Habitat Management Guide* is available online: http://www.arlis.org/docs/vol1/C/AHMG/index.html.

foothills. There was some hunting activity for caribou documented in Unit 11 up the Dadina River from its confluence with the Copper River.

Moose hunting for the 2013 year occurred along the Richardson Highway corridor from Tonsina southbound, and for a short stretch of highway south of Paxson. Some hunting was reported as occurring off the Denali Highway near Tangle Lakes. The historical maps demonstrate extensive harvest and search areas off the road corridors mainly in units 13C and 13D and into Unit 11 on the Nabesna Road corridor and in areas north and south of McCarthy Road. Moose were indicated as being hunted along the Copper River south of Chitina and where it is joined by the Tasnuna and Bremner rivers.

No sheep hunting areas were documented for the 2013 survey but the historical maps document extensive harvest and use in Unit 11 along the west and southern flanks of Mount Wrangell and Mount Drum as well as on the mountains east of McCarthy and those mountains south of the Chitina River. The historical maps also documented sheep hunting and search areas in the mountains surrounding Tonsina to the west, south, and east.

Salmon fishing locations showed little variation between the 2013 maps and the 20-year maps. Fishing effort for both sets of maps was concentrated around Chitina (both upriver and downriver from the bridge) and Copper Center, with some fishing occurring around Tonsina. Differences in salmon harvest patterns include 2013 fishing areas of Valdez and Copperville that were not historically used, and the 20-year mapped areas along the Gulkana, Klutina, and Tonsina rivers were not fished in the 2013 harvest year.

Tonsina harvest patterns for nonsalmon fish had some crossover between the 2 sets of maps; both demonstrate harvest effort locally in Tonsina and the small rivers and lakes in the mountains surrounding the community and in the roadside lakes approaching Chitina and in Strelna and Silver lakes east of Chitina. In addition, both sets of maps demonstrate harvest effort in the watershed south of Nabesna Road and at Crosswind Lake. The differences in harvest and search/use areas between the 2 map sets is seen in the expanded harvest areas throughout the basin's waterways for the 20-year maps; including the entire navigable Gulkana River, waterways around Mentasta and Chistochina, tributaries and waterways around Klutina Lake, and Moose Creek in Glennallen. Additionally, Tonsina residents fished in Ewan Lake, the mountains south of the Chitina River, the small lakes south of McCarthy, and in the upper Kotsina River.

The harvest of furbearers was documented by both sets of maps; however the 20-year maps focused on trapping activity alone while the 2013 maps included those species such as hares that could be harvested without a trapline. There are differences and similarities between the 2 sets of maps. The most obvious difference is that the 20-year maps include no trapping activity north of Copper Center while some of the 2013 mapped trapping activity occurred north of Copper Center. Both sets of maps include areas of harvests close to the Tonsina community, but the 20-year maps extend harvest areas west and south of Tonsina, west and east of Copper Center, and in the upper Chitina River valley to the south of McCarthy. Similarities between the 2 sets of maps include search areas south of Chitina along the Copper River, in the mountains east of the Copper River from Kenny Lake, and east of Chitina and north from McCarthy Road.

Migratory waterfowl were harvested within or near the Tonsina community in both sets of maps; however 2013 maps demonstrate effort in Paxson and Tangle Lakes while the 20-year maps demonstrate effort in Lake Louise, St. Anne Lake, which drains into Klutina Lake, and areas just east of Chitina along McCarthy Road.

Vegetation was harvested locally in Tonsina as demonstrated by both sets of maps and south along the Richardson Highway. Additionally, both sets of maps document harvest effort on the Denali Highway just west of Paxson. Differences include extended areas of harvest in the 20-year maps from Tonsina north and areas west of the Richardson Highway, harvests along the road to Lake Louise, and areas around Chitina and Chistochina.

Local Comments and Concerns

Following is a summary of local observations of wild resource populations and trends that were recorded during the surveys in Tonsina. Some households did not offer any additional comments or concerns 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

Considering that halibut composed more than one-quarter of Tonsina's nonsalmon harvest, it is not surprising that many households expressed concern over the reduction of the halibut bag limit on sport-fishing charters out of Valdez. A number of respondents said that reducing the halibut bag limit to 1 fish was cost prohibitive for Alaska residents who rely on the fish to help fill their freezers. Other households were concerned over the decline in Chinook salmon and expressed support for a temporary moratorium on commercial and sport harvests in order to allow the stocks to recover.

Large Land Mammals

Local residents expressed concern that the bulk of moose and caribou harvests in Unit 13 are by urban hunters and non-area residents. Local residents observed that urban hunters are often better equipped with ATVs and can out-compete many rural residents, especially those locals who rely upon road vehicles, to access hunting areas. A few households observed that predation by bears and wolves is impacting the moose population in Unit 13 and they advocate for intensive management of bears and wolves in the area.

Small Land Mammals/Furbearers

Some trappers in the community preferred not to map their trapline locations for fear of possible sabotage by those individuals or organizations who they allege want to restrict or eliminate trapping in the area. A few households did comment that traplines set near public trails were an endangerment to pets and children. In addition, all trappers surveyed commented on the lack of small land mammals during the study year and stressed that the 2013 year was not representative of the past 5 years. One trapper and resident of Tonsina for the past 45 years said, "I've trapped here since the first grade and 2013 was the worst year I've ever experienced." Most of the trappers in the community blamed the low abundance of small land mammals on a combination of weather conditions, habitat, and population cycles.

Wood

Firewood contributed to the heating of many Tonsina residences and for 4 sampled households was the sole source of home heat. Many households expressed concern that the accessible wood lots were over harvested and some areas traditionally harvested were no longer accessible due to the transfer of land along the road corridors to Ahtna, Inc., which restricts access to their lands. Several Tonsina community members complained about residents from Valdez harvesting wood in the Tonsina area. In addition, a reliable and affordable source of firewood for purchase went out of business before surveys were administered in 2014.

Other

Some residents expressed concern that local toxic dumping, trash burning, and mining can impact natural resources and water quality; in particular for those residents that pull their drinking water directly out of local rivers and streams within the same drainage.

Many households discussed the impacts that the high costs of living were having on the Tonsina community and others in the Copper River Basin; families were leaving the area and the local school population

had declined. The expense of fuel and electricity was a particular hardship on residents. Some residents recommended pro-rating energy costs year-round rather than having a cheaper per kilowatt price in summer when residents need less and spend less. However most of the residents who stay year-round told researchers that despite the expense and challenge of rural life they prefer it over urban life, and wild foods over store-bought foods.

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8. EAST GLENN HIGHWAY: MENDELTNA

Bronwyn Jones and Joshua T. Ream

Introducing The East Glenn Highway Communities

The East Glenn Highway complex is an amalgamation of 3 communities, all of which are census designated places (CDPs) that were surveyed separately for this project. Each community is small; they contain no obvious population centers or business districts, and they are interconnected residentially and economically. Most of the survey findings are discussed by community. However, for selected survey results (e.g., resource search and harvest areas and historical harvest comparisons) this report combined these communities since previous surveys for study years 1982 and 1987 also combined these communities. At the time those studies were conducted, the U.S. Census Bureau had not established separate CDP boundaries for each community so the area households were grouped for the surveys and referred to as the "East Glenn Highway"; data were not collected at the community level (i.e., Mendeltna) for study years 1982 and 1987 (McMillan and Cuccarese 1988; Stratton and Georgette 1984). Consequently, historical comparisons in this study required combining some of the 2013 community data (see chapter "East Glenn Highway: Tonsina").

For the 2013 study year, the East Glenn Highway complex comprises the CDPs of Nelchina, Mendeltna, and Tolsona, as defined by the 2010 federal census, occurring from Glenn Highway mile marker 137 to mile marker 173 (Figure 8-1). Nelchina is the westernmost member of the complex stretching from Glenn Highway mile 137, at its westernmost border with the Matanuska–Susitna Borough, to mile 150, at its easternmost border with the Mendeltna CDP. Mendeltna continues from mile marker 150 through mile 166 of the Glenn Highway. This CDP also includes miles 1 through 15 of the Lake Louise Road where its northern border is shared with the southern border of the Lake Louise CDP. The third member of the complex is Tolsona, which is located from Glenn Highway mile 167 through mile 173. The easternmost border of the CDP runs along Tolsona Creek and is shared with the westernmost border of the Glennallen CDP. Interestingly, community members' perception of the community boundaries did not necessarily align with the CDP areas; this topic is discussed further in the "Local Comments and Concerns" sections in the East Glenn Highway chapters.

In general, study methods include surveying communities separately by CDP to allow for individual analysis of communities, as presented in this and the following 2 chapters, as well as facilitate comparison analysis that identifies changes between study years. However, there are complications associated with comparing 2013 study results to previous survey data. As mentioned previously, none of the communities were part of a CDP in the 1980s. The East Glenn Highway communities were part of the Valdez-Cordova Census Area in 1990, but only the Mendeltna CDP was delineated; both Nelchina and Tolsona were designated as part of the "balance" of the census area at that time.[1] The division's prior studies in these communities defined the easternmost border of the East Glenn Highway complex as occurring at mile 180 of the Glenn Highway, which was at the westernmost border of the Glennallen CDP (McMillan and Cuccarese 1988; Stratton and Georgette 1984). Between 1990 and 2000 the westernmost CDP boundary for Glennallen shifted west from Glenn Highway mile 180 to Glenn Highway mile 173 (U.S. Census Bureau 2003:III-12). This caused households between these mile markers (those that were previously included within the East Glenn Highway complex and located in what is now Tolsona) to be redesignated as Glennallen households for this study. This is an important consideration when comparing 2013 and historical data since the redesignation caused a decrease in the number of Tolsona households; this is a small community and shifting just a few households can make a significant difference to harvest patterns and quantities. For example the findings for Tolsona, as described in chapter 10 "East Glenn Highway: Tolsona," describe an

1. Alaska Department of Labor and Workforce Development (ADLWD) Research and Analysis Section. Juneau. n.d. "Population & Census: Maps & GIS." Accessed August 19, 2014. http://laborstats.alaska.gov/census/maps.htm

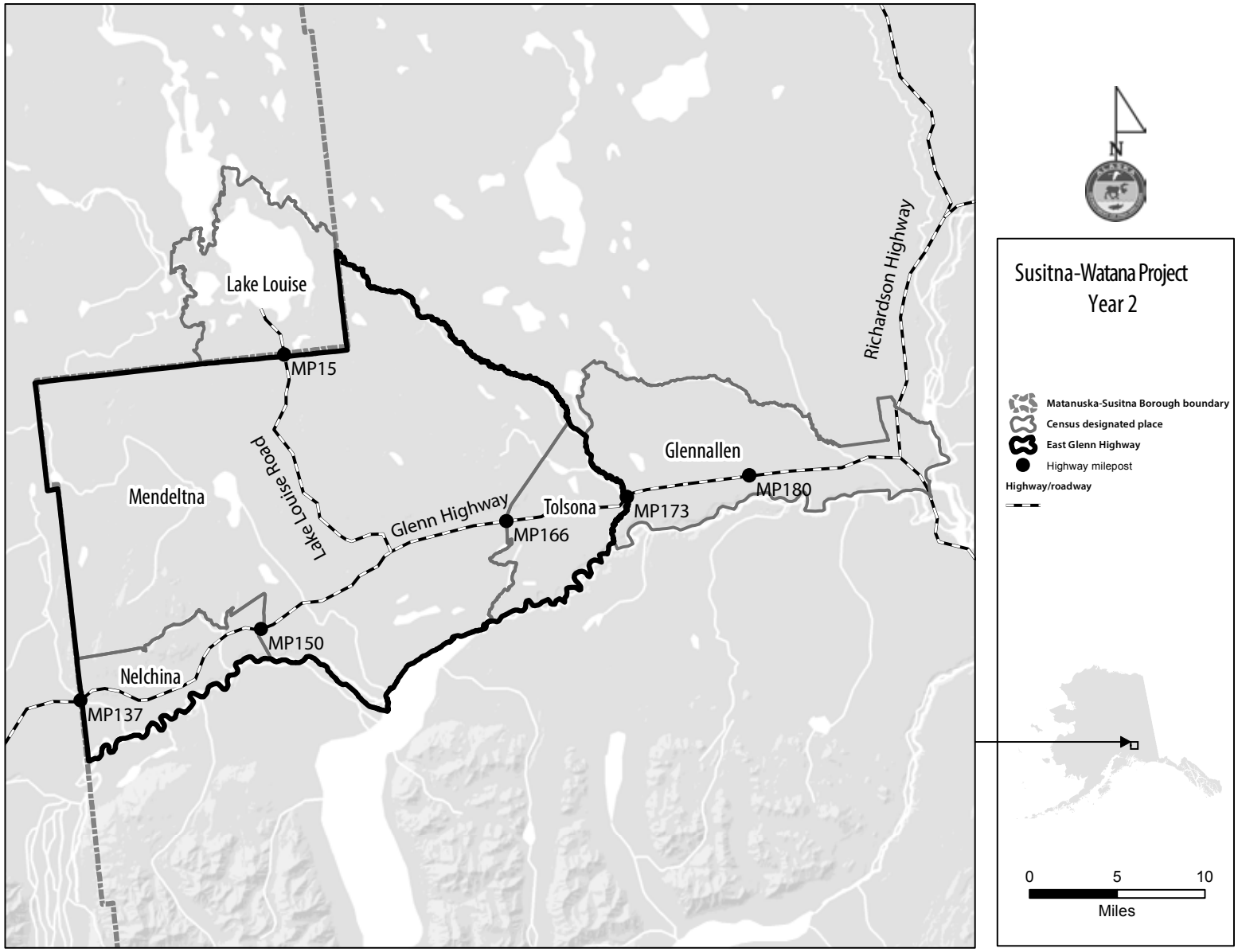

Figure 8-1.–Map of study community and census designated place boundaries, East Glenn Highway.

increase in per capita harvests for that community. While the impact of these redesignations may be greater for Tolsona specifically, the impact is likely lesser on the East Glenn Highway complex as a whole.

The most recent CDP boundary separating Tolsona from Glennallen follows Tolsona Creek at Glenn Highway mile 173, but this also conflicts with some physical attributes of the community. The Tolsona Wilderness Campground is located along the eastern edge of Tolsona Creek and is therefore now considered to be in Glennallen. In another example, an Alaska Department of Transportation road sign indicates that the easternmost boundary of Tolsona begins approximately at Glenn Highway mile 176.

The westernmost border of the East Glenn Highway complex is at Glenn Highway mile 137, and this has not changed since the 1987 study year. This border has remained the western boundary of the Valdez-Cordova Census Area, but in 2000 it also became the westernmost boundary of the Nelchina CDP. The boundary is aligned with the easternmost boundary of the Matanuska–Susitna Borough. Also consistent with previous studies is the northernmost boundary of the East Glenn Highway complex, which has also followed the Matanuska–Susitna Borough boundary markers over time. North of this line is the Lake Louise CDP (the Matanuska–Susitna Borough's easternmost community).

Given the above information, the East Glenn Highway complex designation may better reflect the overall harvest patterns of area residents that may not be fully elucidated when analyzing data for the individual communities. Discussing selected survey results of the combined East Glenn Highway complex also provides the ability to compare harvest patterns over time considering the availability of historical combined data. These data are largely comparable given only minor spatial changes in CDP boundaries along the eastern and northern extents of the complex.

Spatial harvest data were combined for all 3 communities and are therefore reported at the East Glenn Highway level. Therefore, unlike the other chapters, there will be no discussion of hunting, fishing, and gathering areas until the final East Glenn Highway chapter. This amalgamated harvest location data will be reported in the subsection "Current and Historical Harvest Areas" in the section "Comparing Harvests and Uses in 2013 with Previous Years" in the chapter "East Glenn Highway: Tolsona."

Following is a brief discussion that highlights community features and geographical attributes of the East Glenn Highway complex; the remainder of this chapter discusses community information specific to Mendeltna as well as Mendeltna's individual 2013 comprehensive survey results. The next 2 chapters will similarly review individual community background and survey results for Nelchina and Tolsona. As mentioned previously, selected study findings will appear for the combined East Glenn Highway complex at the conclusion of chapter 10 "East Glenn Highway: Tolsona."

Most households in the East Glenn Highway complex are near the road system. The CDPs include a much greater spatial extent of largely uninhabited land that is lacking structures. The complex is bordered to the west and north by the Matanuska–Susitna Borough and to the east by the community of Glennallen, a larger regional community hub for the area. The East Glenn Highway lies on the western edge of the Copper River Basin; it is approximately 10 miles north of the Chugach Mountains and approximately 5 miles east of the Talkeetna Mountains.

The topography of the area consists largely of rolling hills with a single prominent peak. Slide Mountain is on the western edge of this complex and has an elevation of approximately 4,000 feet.[2] Two small yet important ridges occur to the west including Tolsona Ridge and another along Lake Louise Road. Most of the habitat is boreal forest and the landscape is spotted with freshwater lakes, ponds, and streams. Old Man Lake, Nickolai Lake, Tolsona Lake, and Sucker Lake are among the largest bodies of water in the complex. Two larger and regionally significant lakes occur on the margins of the complex—Lake Louise to the north and Tazlina Lake to the south. The Nelchina River, Mendeltna Creek, and Tolsona Creek are also hydrologically significant features of the region.

The land in this area was historically occupied by Ahtna Athabascans and many Ahtna settlements existed in the area prior to the 20th century (Stratton and Georgette 1984), though few Alaska Natives inhabit this area today.

2. Peakbagger.com, "Slide Mountain, Alaska," http://www.peakbagger.com/peak.aspx?pid=419 (accessed August 20, 2014).

Mendeltna (*Bendilna'* in Ahtna) was perhaps the most important upland settlement in the area with a permanent population of between 20 and 30 people prior to the 20th century (Stratton and Georgette 1984). It was located on Mendeltna Creek where salmon were traditionally caught using fish traps and eventually fish wheels (Stratton and Georgette 1984). The community was also a stop along a trail from Tyone Lake to Tazlina Lake.[3] The discovery of gold brought settlers and prospectors to the area in the late 19th century.[4] The Ahtna population of the area was decimated by influenza in the early 20th century (Reckord 1983a) and homesteading eventually lead to primarily Euro-American land ownership (Stratton and Georgette 1984). Among the 3 communities today, Mendeltna has the fewest year-round residents.

The modern community of Nelchina extends along the Glenn Highway approximately between miles 137 and 150. However, the historical community of Nelchina was originally a mining establishment (circa 1913) at the mouth of Crooked Creek (Chapin 1915). There were several trails into the Chugach Mountains from there that provided miners with access to the streams where gold was discovered in the late 1800s.[5] The community was first reported in 1915 in a U.S. Geological Survey (USGS) publication authored by Theodore Chapin (Chapin 1915).

Tolsona is located east of Mendeltna. The history of this community is less well documented than it is for the other communities in the complex. The name Tolsona first appears in a 1915 USGS publication (Chapin 1915) and refers to a creek and a large lake in the community. Many of the homes in the area are only seasonally occupied.

Glennallen is a regional hub community located approximately 40 miles east of Tolsona at the junction of the Glenn and Richardson highways and is an important economic center for the region. Many residents of the East Glenn Highway communities use services available in Glennallen, including a post office, grocery stores, gas stations, libraries, and schools. Some residents of Nelchina opt to send their children to school at Glacier View, which is located approximately 40 miles west of the community in the Matanuska–Susitna Borough. Lake Louise is also a small community with which East Glenn Highway residents interact frequently. The community sits on a large lake of the same name and is a popular recreation area.

The Glenn Highway is the major anthropogenic feature of the East Glenn Highway complex. It links each of the communities and is the major transportation corridor between the Matanuska and Susitna river basins and the Copper River Basin. This highway was originally planned in the 1930s but road construction did not begin until 1941 in response to Pacific defense buildup activity for World War II. The highway is named after Capt. Edwin F. Glenn who led exploratory expeditions to Cook Inlet and the Copper River in 1898 and 1899.[6]

Mendeltna Community Background

The community of Mendeltna is at approximately mile 153 of the Glenn Highway near Mendeltna Creek, and is about 30 miles southwest of Glennallen. Mendeltna is located approximately10 miles west of Nelchina and 30 miles west of Eureka. The Mendeltna CDP stretches along the Glenn Highway from mile 150 through mile 166 as well as south of the highway along the Nelchina River bordering Tazlina Lake and north of the highway toward Lake Louise (Figure 8-1). Mendeltna lies along black spruce-covered flatlands in the west portion of the Copper River Basin. Tremendous views of the Wrangell Mountains are showcased

3. Alaska Department of Commerce, Community, and Economic Development (ADCCED) Division of Community and Regional Affairs, Juneau. n.d. "Alaska Community Database Online: Community Information." Accessed August 2014. http://commerce.alaska.gov/cra/DCRAExternal/community/Details/d925935e-37ce-42e8-b601-c8c8c0970eaa

4. Alaska Department of Commerce, Community, and Economic Development (ADCCED) Division of Community and Regional Affairs, Juneau. n.d. "Alaska Community Database Online: Community Information." Accessed August 2014. http://commerce.alaska.gov/cra/DCRAExternal/community/Details/d925935e-37ce-42e8-b601-c8c8c0970eaa

5. Alaska Department of Commerce, Community, and Economic Development (ADCCED) Division of Community and Regional Affairs, Juneau. n.d. "Alaska Community Database Online: Community Information." Accessed August 2014. http://commerce.alaska.gov/cra/DCRAExternal/community/Details/fd739f87-b93f-4be1-9dc9-68dfc375f97e

6. Archives and Special Collections Department, University of Alaska Anchorage–Alaska Pacific University Consortium Library, "Guide to the Edwin F. Glenn Papers: 1889–1917," http://consortiumlibrary.org/archives/FindingAids/hmc-0116.html (accessed August 20, 2014).

Table 8-1.–Population estimates, Mendeltna, 2010 and 2013.

	Census (2010)	5-year American Community Survey (2008–2012)	This study (2013)
Total population			
Households	19	14	14.0
Population	39	19	33.6
Alaska Native			
Population	3	0	0.0
Percentage	7.7%	0.0%	0.0%

Sources U.S. Census Bureau (2011) for 2010 estimate; U.S. Census Bureau for American Community Survey 5-year survey estimate; and ADF&G Division of Subsistence household surveys, 2014, for 2013 estimate.
Note The term "households" means occupied housing units. Alaska Native population data from the American Community Survey and 2010 census come from the category "race alone or in combination with one or more other races."

to the east. As part of Interior Alaska, the climate can range from the upper 80s ˚F in the summer to -50 ˚F in the winter.

At the end of the 19th century, Mendeltna was the only permanent upland village in the western part of the Ahtna territory. Historians estimate the permanent population of Mendeltna during this time was between 20 and 30 people (Reckord 1983a). In the summer months, Ahtna residents of Mendeltna used fish traps in Mendeltna Creek to catch salmon. In the fall, hunters and their families from the Copper River area traveled to Mendeltna to hunt for game. Mendeltna was a popular gathering place and many potlatches were held during the fall gatherings. In the early 20th century, Mendeltna village played an important role in the fur trade. It was an essential stopping point for fur trappers in Interior Alaska who were heading to trading posts in the Cook Inlet region. The spread of disease in the early 20th century decimated the small population and the village site was abandoned early in the 20th century around the 1930s (Reckord 1983a).

The Mendeltna Creek Lodge was built by Jack and Marge Bates in 1940 to serve the Army Corps of Engineers who were building the Glenn Highway.[7] The Mendeltna Creek Lodge is still in operation. Today, Mendeltna is a primarily road-based community with no discernible center. However, some services are available (the Mendeltna Creek Lodge has a gas station, restaurant, and lodging). Additionally, Mendeltna has a church that serves the community.

Demography

Like many road-based rural Alaska communities, the community of Mendeltna encompasses a large geographic area with most of the residences bordering the road. The survey area for this project aligns with the federal Mendeltna CDP boundaries. Many Mendeltna homes, as well the Mendeltna Creek Lodge, are located off the road but generally within sight of the roadway; most residents access their homes with highway vehicles via private driveways.

According to the U.S. Census Bureau, Mendeltna had 39 residents in 19 households in 2010 (Table 8-1). For 2013, this survey found a somewhat smaller population in Mendeltna of 34 people in 14 households. The 2010 federal census found that 8% of Mendeltna's population was Alaska Native (3 residents), and this survey found that none of the Mendeltna residents were Alaska Native.

7. Groundspeak, Inc., "Geocaching: Roadhouse Stop # 13–Mendeltna Creek," http://www.geocaching.com/geocache/GC2DCW1_roadhouse-stop-12-mendeltna-creek (accessed August 20, 2014).

Figure 8-2 portrays Mendeltna population estimates over time (since the 1950s) based on U.S. Census Bureau data, data collected by the Alaska Department of Labor and Workforce Development (ADLWD), and the ADF&G Division of Subsistence's estimate for this study. The chart demonstrates that the Mendeltna population has had a declining trend since 2000; according to ADLWD, the community reached its population peak in 1999 with approximately 80 people residing in the community. The chart also shows that during the 21st century, Mendeltna's population has continued to experience annual fluctuations.

Prior to the survey, researchers, in consultation with community officials and other knowledgeable respondents, estimated and confirmed 14 year-round households in Mendeltna. Table 8-2 describes the sample achievement of this study; the survey staff were able to interview 10 of the 14 Mendeltna households. The survey staff were unable to make contact with 3 households and 1 household declined to be interviewed. The total percentage of surveyed Mendeltna households was approximately 71%. The following data are expanded to cover the remaining households not surveyed.

The estimated mean age of the community population was 46 years of age and the mean household size was 2 people (Table 8-3). For the total estimated Mendeltna population (34), the mean length of residency was 17 years; for heads of households the corresponding estimate was a few years more at 19 years.

Table 8-4 and Figure 8-3 profile the population for the community in 2013. According to the survey results, approximately 54% of Mendeltna's population was male and 46% female in study year 2013 (Table 8-4). For the male population, the largest age cohort was 60–64 years of age (23% of the male population) followed by age cohorts 50–54 and 55–59 years of age (each were 15% of the male population). For the female population, the largest age cohorts were 55–59 years of age (27% of the female population), 45–49 and 0–4 years of age (each were 18% of the female population). It should be mentioned that in 2013, there were no residents of either sex between the ages of 5–24 years of age (Figure 8-3). This lack of a younger population may be tied with the absence of easily accessible schools to attend.

The majority (74%) of the Mendeltna household heads interviewed were born outside Alaska in other U.S. locations (Table 8-5). Approximately 5% of the Mendeltna household heads were born in other Alaska towns such as Anchorage, Glennallen, Nikiski, and Palmer. Of the aforementioned Alaska communities, Glennallen is within a short driving distance from Mendeltna. The birthplaces of the overall population are available in Appendix Table E8-1.

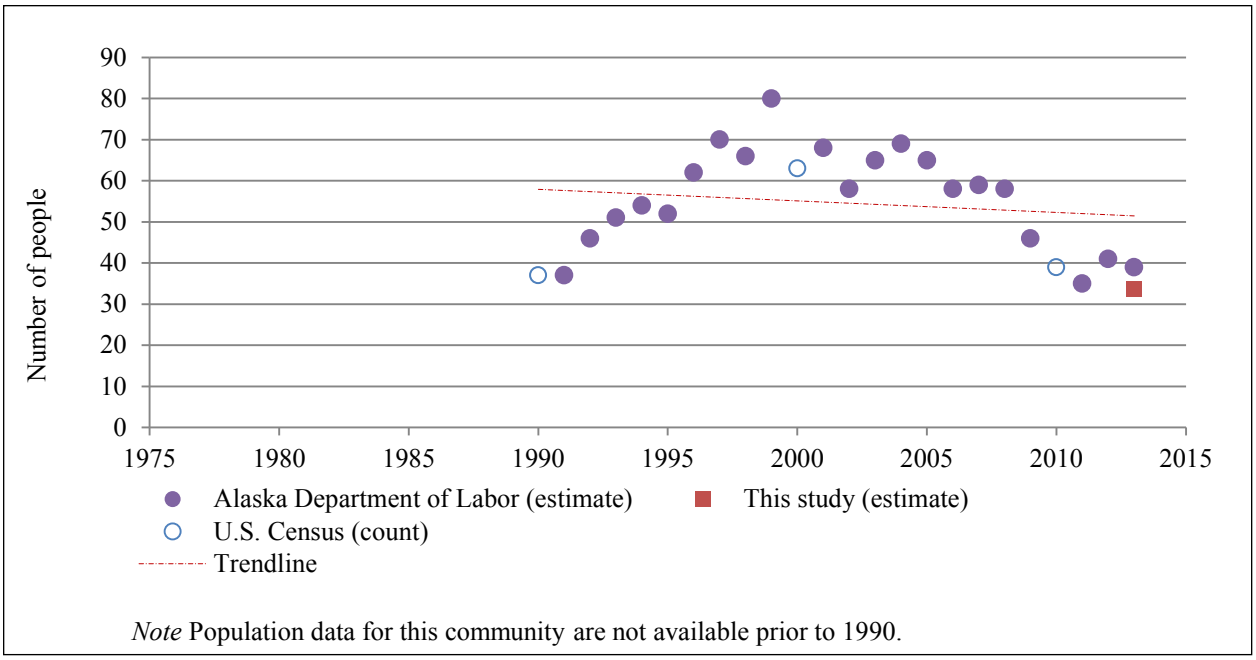

Figure 8-2.–Historical population estimates, Mendeltna, 1990–2013.

Table 8-2.–Sample achievement, Mendeltna, 2013.

	Mendeltna
Number of dwelling units	14
Interview goal	14
Households interviewed	10
Households failed to be contacted	3
Households declined to be interviewed	1
Households moved or occupied by nonresident	0
Total households attempted to be interviewed	11
Refusal rate	9.1%
Final estimate of permanent households	14
Percentage of total households interviewed	71.4%
Interview weighting factor	1.4
Sampled population	24
Estimated population	33.6

Source ADF&G Division of Subsistence household surveys, 2014.

Table 8-3.–Sample and demographic characteristics, Mendeltna, 2013.

Characteristics	
Sampled population	24
Estimated community population	34
Household size	
Mean	2.4
Minimum	1
Maximum	4
Age	
Mean	45.6
Minimum[a]	0
Maximum	75
Median	53.5
Length of residency	
Total population	
Mean	17.2
Minimum[a]	1
Maximum	55
Heads of household	
Mean	18.8
Minimum[a]	5
Maximum	55
Alaska Native households[b]	
Estimated households[b]	
Number	0.0
Percentage	0.0%
Estimated population	
Number	0
Percentage	0.0%

Source ADF&G Division of Subsistence household surveys, 2014.

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 8-4.–Population profile, Mendeltna, 2013.

	Male			Female			Total		
Age	Number	Percentage	Cumulative percentage	Number	Percentage	Cumulative percentage	Number	Percentage	Cumulative percentage
0–4	1.4	7.7%	7.7%	2.8	18.2%	18.2%	4.2	12.5%	12.5%
5–9	0.0	0.0%	7.7%	0.0	0.0%	18.2%	0.0	0.0%	12.5%
10–14	0.0	0.0%	7.7%	0.0	0.0%	18.2%	0.0	0.0%	12.5%
15–19	0.0	0.0%	7.7%	0.0	0.0%	18.2%	0.0	0.0%	12.5%
20–24	0.0	0.0%	7.7%	0.0	0.0%	18.2%	0.0	0.0%	12.5%
25–29	1.4	7.7%	15.4%	0.0	0.0%	18.2%	1.4	4.2%	16.7%
30–34	1.4	7.7%	23.1%	1.4	9.1%	27.3%	2.8	8.3%	25.0%
35–39	1.4	7.7%	30.8%	0.0	0.0%	27.3%	1.4	4.2%	29.2%
40–44	0.0	0.0%	30.8%	1.4	9.1%	36.4%	1.4	4.2%	33.3%
45–49	1.4	7.7%	38.5%	2.8	18.2%	54.5%	4.2	12.5%	45.8%
50–54	2.8	15.4%	53.8%	1.4	9.1%	63.6%	4.2	12.5%	58.3%
55–59	2.8	15.4%	69.2%	4.2	27.3%	90.9%	7.0	20.8%	79.2%
60–64	4.2	23.1%	92.3%	0.0	0.0%	90.9%	4.2	12.5%	91.7%
65–69	0.0	0.0%	92.3%	0.0	0.0%	90.9%	0.0	0.0%	91.7%
70–74	0.0	0.0%	92.3%	1.4	9.1%	100.0%	1.4	4.2%	95.8%
75–79	1.4	7.7%	100.0%	0.0	0.0%	100.0%	1.4	4.2%	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	**18.2**	**100.0%**	**100.0%**	**15.4**	**100.0%**	**100.0%**	**33.6**	**100.0%**	**100.0%**

Source ADF&G Division of Subsistence household surveys, 2014.

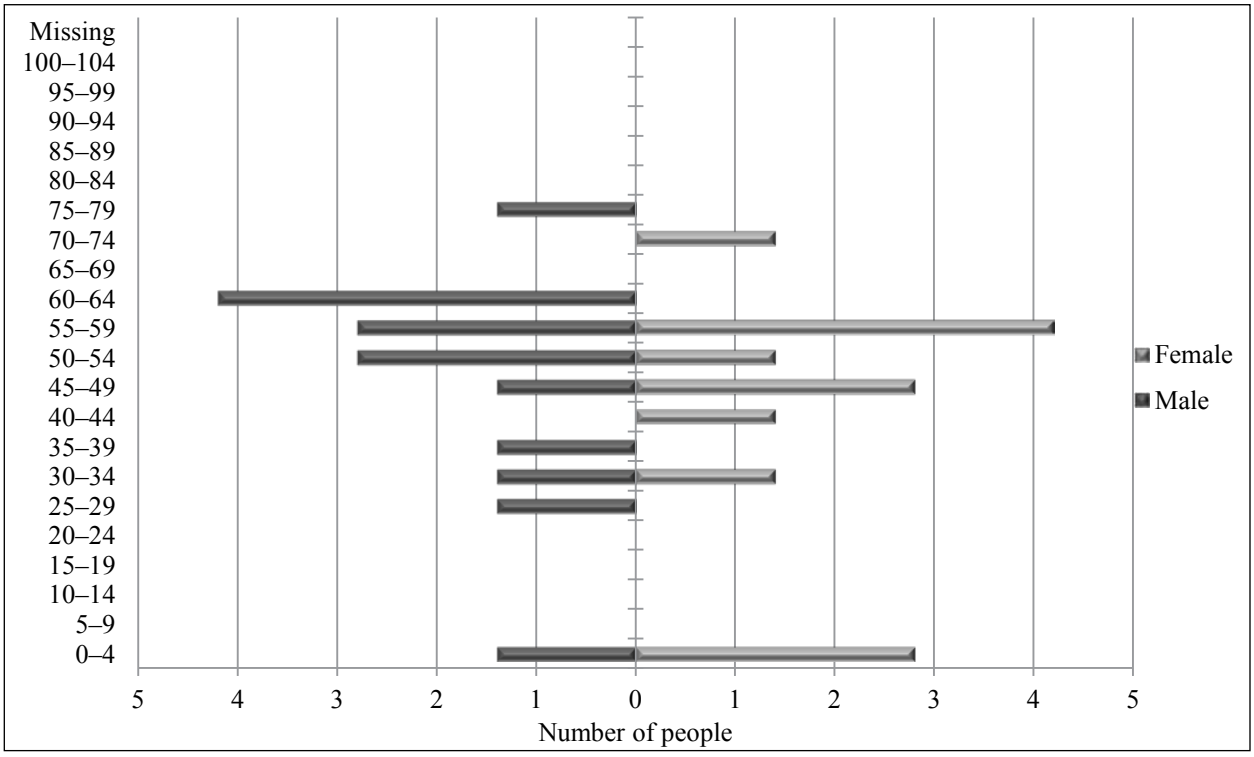

Figure 8-3.–Population profile, Mendeltna, 2013.

Table 8-5.–Birthplaces of household heads, Mendeltna, 2013.

Birthplace	Percentage
Anchorage	5.3%
Glennallen	5.3%
Nikiski	5.3%
Palmer	5.3%
Other Alaska	5.3%
Other U.S.	73.7%

Source ADF&G Division of Subsistence household surveys, 2014.
Note "Birthplace" means the place of residence of the parents of the individual when the individual was born.

Cash Employment and Monetary Income

While local employment opportunities in Mendeltna are limited, the location of Mendeltna—along the Glenn Highway approximately 30 miles southwest of Glennallen, which is the regional hub for the large Copper River region—enables community residents to travel on the state-maintained highways to nearby communities for work. The majority of income available to Mendeltna households during study year 2013 came from employment (90%) (Table 8-6). According to survey results, the mean earned annual household income from jobs for a Mendeltna household was $86,277. Most of the earned income (43%) came from employment in the transportation, communication, and utilities sector (Table 8-7). In comparison, the mean other income per Mendeltna household was $9,973 coming mostly from Social Security, pensions or retirement, Alaska Permanent Fund dividends, or disability (Table 8-6). Social Security and pensions or retirement were the 2 largest sources of other income for Mendeltna households; per household income from Social Security was $3,878 for 2013 and income from pensions or retirement averaged $2,017 per household that year. The mean annual income for a Mendeltna household during the study year was $96,250. The per capita income for Mendeltna was $40,104.

In 2013, the majority of earned income for Mendeltna households came from the transportation, communication, and utilities industry (43% of earned income) (Table 8-7). Other important employment sectors were state government (20% of earned income), mining (21%), and services (10%). Retail trade provided 26% of the jobs held by Mendeltna residents during the study year and provided 5% of the earned income for the community. Manufacturing wages provided 1% of the earned income in Mendeltna.

Table 8-8 describes the employment characteristics of Mendeltna adults for study year 2013. The survey estimated there was a total of 30 adults over the working age of 16 in Mendeltna; the mean length of employment for all working-age adults in Mendeltna was approximately 8 months (32 weeks). The survey found 26 of the 30 adults were employed in 2013. The minimum duration of employment for the 26 employed adults was 6 months and the maximum 12 months. Approximately 65% of the employed adults worked year-round. At the household level, 100% of households (14) in the community contained at least 1 household member who was employed. The mean number of jobs per employed Mendeltna household was 2.5.

Table 8-6.–Estimated earned and other income, Mendeltna, 2013.

Income source	Number of people	Number of households	Total for community	-/+ 95% CI	Mean per household	Per capita income	Percentage of total community income
Earned income							
Transportation, communication, and utilities	4.2	3.5	$519,756	$203,226 – $1,322,312	$37,125		38.6%
Mining	1.4	1.8	$257,305	$214,772 – $783,207	$18,379		19.1%
State government	4.2	5.3	$238,007	$71,786 – $518,009	$17,001		17.7%
Services	4.2	5.3	$114,501	$15,823 – $376,923	$8,179		8.5%
Retail trade	7.0	3.5	$60,946	$9,672 – $187,236	$4,353		4.5%
Manufacturing	2.8	1.8	$8,362	$7,005 – $22,255	$597		0.6%
Construction	1.4	1.8	$5,146	$4,321 – $13,337	$368		0.4%
Local government, including tribal	1.4	1.8	$3,860	$3,268 – $10,969	$276		0.3%
Earned income subtotal	**19.6**	**14.0**	**$1,207,882**	**$555,020 – $2,139,000**	**$86,277**	**$35,949**	**89.6%**
Other income							
Social Security		1.4	$54,298	$38,784 – $108,595	$3,878		4.0%
Pension/retirement		2.8	$28,241	$20,172 – $81,682	$2,017		2.1%
Alaska Permanent Fund dividend		12.6	$26,460	$16,380 – $31,500	$1,890		2.0%
Disability		1.4	$25,200	$18,000 – $50,400	$1,800		1.9%
Veterans assistance		1.4	$3,080	$2,200 – $6,160	$220		0.2%
CITGO fuel voucher		4.2	$2,345	$1,675 – $4,760	$168		0.2%
TANF (Temporary Assistance for Needy Families)		0.0	$0	$0 – $0	$0		0.0%
Adult public assistance (OAA, APD)		0.0	$0	$0 – $0	$0		0.0%
Supplemental Security income		0.0	$0	$0 – $0	$0		0.0%
Food stamps		0.0	$0	$0 – $0	$0		0.0%
Longevity bonus		0.0	$0	$0 – $0	$0		0.0%
Heating assistance		0.0	$0	$0 – $0	$0		0.0%
Workers' compensation/insurance		0.0	$0	$0 – $0	$0		0.0%
Unemployment		0.0	$0	$0 – $0	$0		0.0%
Native corporation dividend		0.0	$0	$0 – $0	$0		0.0%
Child support		0.0	$0	$0 – $0	$0		0.0%
Other		0.0	$0	$0 – $0	$0		0.0%
Foster care		0.0	$0	$0 – $0	$0		0.0%
Meeting honoraria		0.0	$0	$0 – $0	$0		0.0%
Other income subtotal		**12.6**	**$139,623**	**$41,020 – $282,440**	**$9,973**	**$4,155**	**10.4%**
Community income total			**$1,347,506**	**$737,288 – $2,200,346**	**$96,250**	**$40,104**	**100.0%**

Source ADF&G Division of Subsistence household surveys, 2014.

Table 8-7.–Employment by industry, Mendeltna, 2013.

Industry	Jobs	Households	Individuals	Percentage of wage earnings
Estimated total number	**34.9**	**14.0**	**25.7**	
State government	**15.8%**	**37.5%**	**21.4%**	**19.7%**
Technologists and technicians, except health	5.3%	12.5%	7.1%	5.9%
Transportation and material moving occupations	10.5%	25.0%	14.3%	13.8%
Local government, including tribal	**5.3%**	**12.5%**	**7.1%**	**0.3%**
Technologists and technicians, except health	5.3%	12.5%	7.1%	0.3%
Mining	**5.3%**	**12.5%**	**7.1%**	**21.3%**
Construction and extractive occupations	5.3%	12.5%	7.1%	21.3%
Construction	**5.3%**	**12.5%**	**7.1%**	**0.4%**
Construction and extractive occupations	5.3%	12.5%	7.1%	0.4%
Manufacturing	**10.5%**	**12.5%**	**14.3%**	**0.7%**
Writers, artists, entertainers, and athletes	5.3%	12.5%	7.1%	0.4%
Production working occupations	5.3%	12.5%	7.1%	0.3%
Transportation, communication, and utilities	**15.8%**	**25.0%**	**21.4%**	**43.0%**
Executive, administrative, and managerial	5.3%	12.5%	7.1%	12.8%
Administrative support occupations, including clerical	5.3%	12.5%	7.1%	5.8%
Transportation and material moving occupations	5.3%	12.5%	7.1%	24.5%
Retail trade	**26.3%**	**25.0%**	**35.7%**	**5.0%**
Executive, administrative, and managerial	10.5%	12.5%	14.3%	2.6%
Marketing and sales occupations	15.8%	25.0%	21.4%	2.4%
Services	**15.8%**	**37.5%**	**21.4%**	**9.5%**
Executive, administrative, and managerial	10.5%	25.0%	14.3%	8.9%
Service occupations	5.3%	12.5%	7.1%	0.5%

Source ADF&G Division of Subsistence household surveys, 2014.

Table 8-8.–Employment characteristics, Mendeltna, 2013.

Characteristic	Community Mendeltna
All adults	
Number	29.4
Mean weeks employed	32.2
Employed adults	
Number	25.7
Percentage	87.5%
Jobs	
Number	34.9
Mean	1.4
Minimum	1
Maximum	3
Months employed	
Mean	8.5
Minimum	6
Maximum	12
Percentage employed year-round	65.3%
Mean weeks employed	36.8
Households	
Number	14
Employed	
Number	14.0
Percentage	100.0%
Jobs per employed household	
Mean	2.5
Minimum	1
Maximum	4
Employed adults	
Mean	
Employed households	1.8
Total households	1.8
Minimum	1
Maximum	3
Mean person-weeks of employment	41.6

Source ADF&G Division of Subsistence household surveys, 2014.

Levels of Individual Participation in the Harvesting and Processing of Wild Resources

Table 8-9 reports the expanded levels of individual participation in the harvesting and processing of wild resources by all Mendeltna residents in 2013.

All Mendeltna residents attempted to harvest some wild resources in 2013. With reference to specific resource categories, 92% of all residents gathered plants (including berries), 67% fished, 46% hunted for large land mammals, 13% hunted or trapped for small land mammals, and 4% hunted for birds. Similarly, a high percentage (92%) of Mendeltna residents engaged in processing some wild resources. Most residents (83%) participated in processing plants followed by 79% of the population participating in processing fish. Compared with fish processing, fewer individuals (46%) participated in processing large land mammals, and 8% participated in processing birds. The least number of individuals (4%) participated in processing small land mammals. For the most part, Mendeltna residents' individual participation in harvesting and processing of wild resources was evenly distributed among the different resource categories; a few more individuals participated in processing birds rather than hunting for them. In comparison, a few more Mendeltna residents hunted for small land mammals rather than processed them.

The survey included questions about individual participation in wild harvest activities such as working with fish wheels, handicrafts, and cooking wild foods. In Mendeltna, 8% of residents built or repaired fish wheels or helped to place or remove a fish wheel (Table 8-10). In 2013, 13% of residents sewed skins or cloth and 79% of residents cooked wild foods.

Household Resource Harvest and Use Patterns and Sharing of Wild Resources

Table 8-11 summarizes resource harvest and use characteristics for Mendeltna in 2013 at the household level. All households (100%) used wild resources in 2013, and 100% also attempted to harvest or harvested resources. The average harvest was 126 lb usable weight per household, or 53 lb per capita. During the study year, community households harvested an average of 8 kinds of resources and used and average of 11 kinds of resources. The maximum number of resources used by any household was 17 out of a possible 115 resources identified as locally available. In addition, households gave away an average of 3 kinds of resources and 90% of households reported sharing resources with other households.

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 8-4, in the 2013 study year in Mendeltna, about 68% of the harvest of wild resources as estimated in usable pounds was harvested by 40% 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 Mendeltna and the other study communities.

The survey included questions about residents' use of alternative or motorized modes of transportation to access wild food harvest areas as well as the use of portable motors in harvesting wild resources. Figure 8-5 demonstrates the percentage of community households that used an alternate means of transportation (in addition to or aside from using cars, trucks, or traveling on foot). All Mendeltna households used an all-terrain vehicle (ATV) when harvesting wild foods. About 60% of households used a boat, 30% used snowmachines, and 20% used an aircraft when harvesting wild resources. Eighty percent of households used a chain saw, 40% used a winch, 30% used an ice auger, and generators were used by 20% of households (Figure 8-6).

Table 8-9.–Individual participation in subsistence harvesting and processing activities, Mendeltna, 2013.

Total number of people	**33.6**
Fish	
Fish	
Number	22.4
Percentage	66.7%
Process	
Number	26.6
Percentage	79.2%
Large land mammals	
Hunt	
Number	15.4
Percentage	45.8%
Process	
Number	15.4
Percentage	45.8%
Small land mammals	
Hunt or trap	
Number	4.2
Percentage	12.5%
Process	
Number	1.4
Percentage	4.2%
Birds and eggs	
Hunt/gather	
Number	1.4
Percentage	4.2%
Process	
Number	2.8
Percentage	8.3%
Vegetation	
Gather	
Number	30.8
Percentage	91.7%
Process	
Number	28.0
Percentage	83.3%
Any resource	
Attempt harvest	
Number	33.6
Percentage	100.0%
Process	
Number	30.8
Percentage	91.7%

Source ADF&G Division of Subsistence household surveys, 2014.

Table 8-10.–Household member participation in subsistence craft activities, Mendeltna, 2013.

Total number of people	**33.6**
Building, maintaining, or moving fish wheels	
Number	2.8
Percentage	8.3%
Sewing skins or cloth	
Number	4.2
Percentage	12.5%
Cooking wild foods	
Number	26.6
Percentage	79.2%

Source ADF&G Division of Subsistence household surveys, 2014.

Figure 8-7 demonstrates the percentage of households that used natural materials for handicrafts; 30% used antlers, 20% used horns, and 20% used other raw natural materials.

For the community of Mendeltna, firewood is used widely as a primary, or supplemental, source of heating in homes by a few households. Survey results indicate that during the 2013 study year, approximately 50% of the 10 interviewed Mendeltna households heated their home mostly with firewood (76–100% of home heat source) (Table 8-12). A smaller percentage (20%) used firewood as a supplemental source of home heat (1–25% of home heating source). Thirty percent of interviewed Mendeltna households said they had not used any firewood in 2013 to heat their home. According to survey results, the overall average annual cost of home heating in Mendeltna was $1,782 during study year 2013.

Harvest Quantities and Composition

Table 8-13 reports estimated wild resource harvests and uses by Mendeltna residents in 2013 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[8]). The "harvest" category includes resources harvested by any member of the surveyed household during the study year. The "use" category includes all 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 firewood are included because they are an important part of the subsistence way of life. Differences between harvest and use percentages reflect sharing among households, which results in a wider distribution of wild foods.

According to survey results, Mendeltna residents harvested an estimated total of 1,769 lb of wild resources in 2013 (Table 8-13). At the household level, the average harvest was 126 lb and at the individual level the per capita harvest was 53 lb. Salmon made up most (48%) of the overall harvest totaling 856 lb, or 26 lb per capita (Figure 8-8; Table 8-13). Large land mammals was the second most harvested resource category (21% of the harvest) with the community harvest totaling 364 lb, or 11 lb per capita. The third most harvested resource category was vegetation at 16% of the harvest, or approximately 8 lb per capita. Following vegetation, nonsalmon fish was the fourth most harvested resource category at 14% of the harvest. The only remaining resource category—birds and eggs—contributed to the overall harvest substantially less than the 4 categories listed above. Birds and eggs composed 1% of the overall harvest; the total community harvest was 15 lb, or less than 1 lb per capita (Figure 8-8; Table 8-13). There were no successful harvests of small land mammals and marine invertebrates by residents of Mendeltna in 2013 and no attempt to harvest marine mammals (Table 8-13).

8. 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 8-11.–Resource harvest and use characteristics, Mendeltna, 2013.

Characteristic	
Mean number of resources used per household	**10.5**
Minimum	5
Maximum	17
95% confidence limit (±)	14.0%
Median	10
Mean number of resources attempted to harvest per household	**9.9**
Minimum	5
Maximum	14
95% confidence limit (±)	11.1%
Median	10.5
Mean number of resources harvested per household	**7.6**
Minimum	4
Maximum	11
95% confidence limit (±)	11.9%
Median	8
Mean number of resources received per household	**4.1**
Minimum	0
Maximum	11
95% confidence limit (±)	28.3%
Median	4
Mean number of resources given away per household	**2.5**
Minimum	0
Maximum	4
95% confidence limit (±)	21.9%
Median	3
Household harvest (pounds)	
Minimum	19
Maximum	274
Mean	126.4
Median	112
Total harvest weight (lb)	1,769.0
Community per capita harvest (lb)	52.6
Percentage using any resource	100.0%
Percentage attempting to harvest any resource	100.0%
Percentage harvesting any resource	100.0%
Percentage receiving any resource	90.0%
Percentage giving away any resource	90.0%
Number of households in sample	10
Number of resources asked about and identified voluntarily by respondents	115

Source ADF&G Division of Subsistence household surveys, 2014.

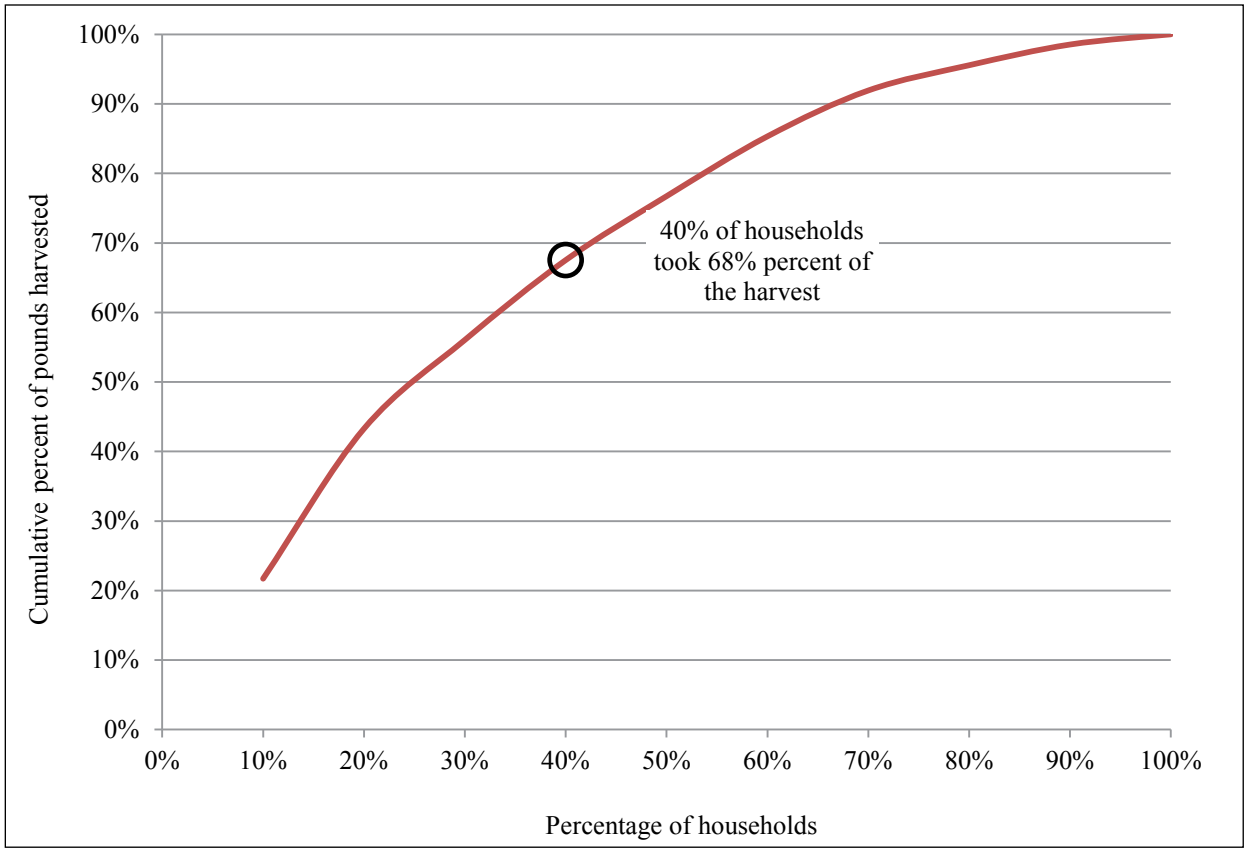

Figure 8-4.–Household specialization, Mendeltna, 2013.

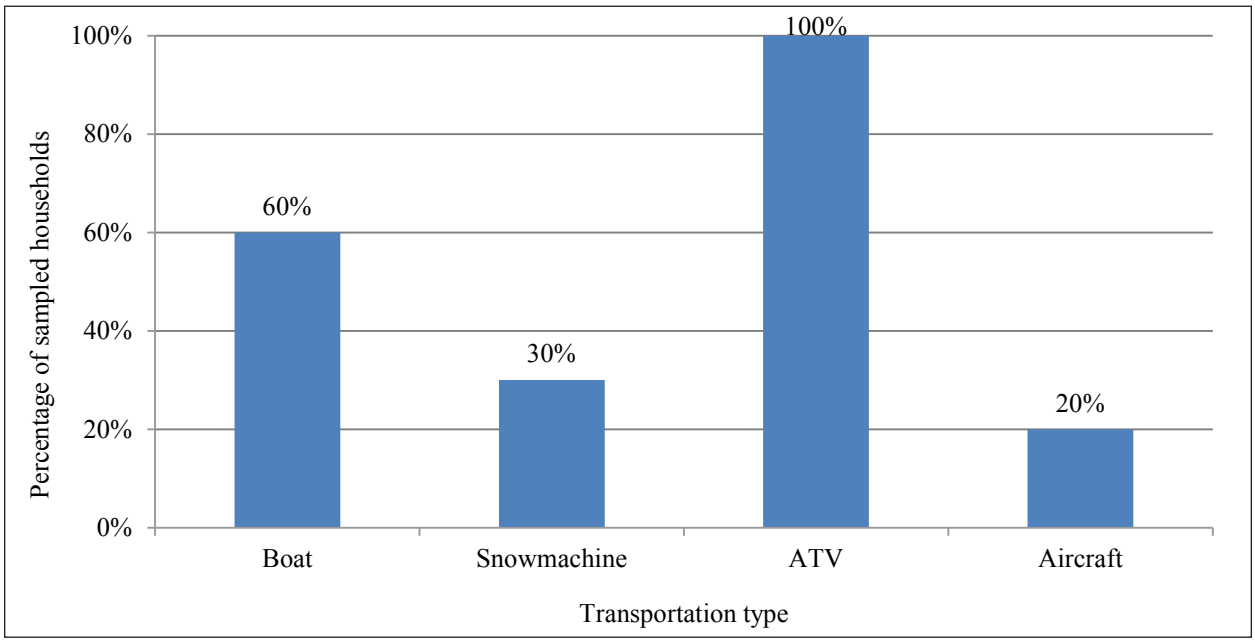

Figure 8-5.–Alternative modes of transportation used by sampled households to access wild resources, Mendeltna, 2013.

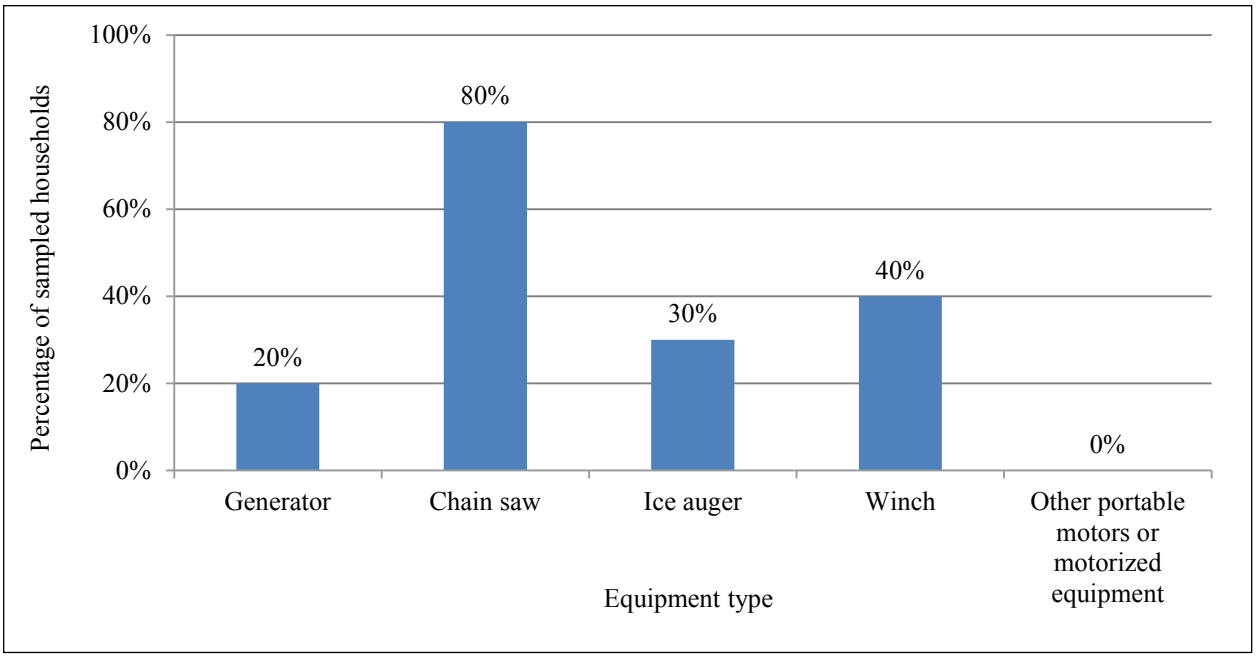

Figure 8-6.–Portable motorized equipment used by sampled households while searching for and harvesting wild resources, Mendeltna, 2013.

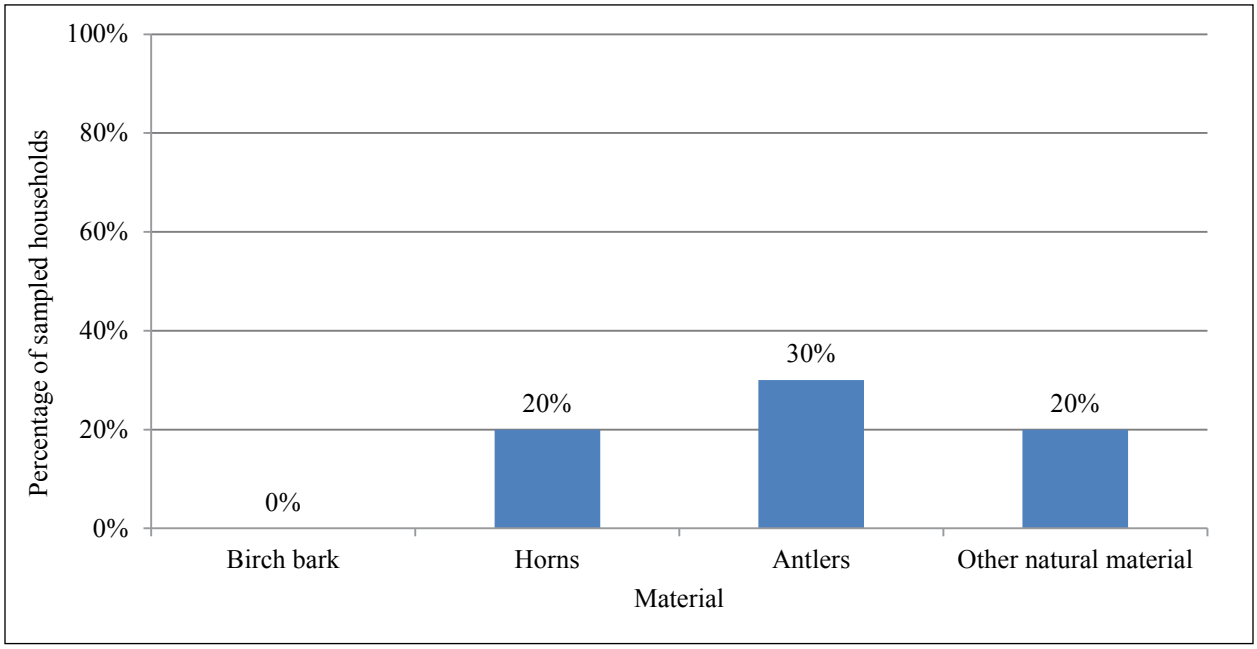

Figure 8-7.–Natural materials used by sampled households for making handicrafts, Mendeltna, 2013.

Table 8-12.–Use of firewood for home heating in sampled households, Mendeltna, 2013.

Community	Average annual cost of home heating	Household use of wood for home heating as a percentage of total fuel for heating											
		0%		1%–25%		26%–50%		51%–75%		76%–99%		100%	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Mendeltna	$1,782	3	30.0%	2	20.0%	0	0.0%	0	0.0%	3	30.0%	2	20.0%

Source ADF&G Division of Subsistence household surveys, 2014.

Table 8-13.–Estimated use and harvests of fish, game, and vegetation resources, Mendeltna, 2013.

Resource	Percentage of households: Use %	Attempt %	Harvest %	Receive %	Give %	Harvest weight (lb): Total	Mean per household	Per capita	Harvest amount[a]: Total	Unit	Mean per household	95% confidence limit (±)
All resources	**100.0**	**100.0**	**100.0**	**90.0**	**90.0**	**1,769.0**	**126.4**	**52.6**				**27.3**
Salmon	**100.0**	**70.0**	**70.0**	**70.0**	**60.0**	**856.4**	**61.2**	**25.5**				**50.2**
Chum salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Coho salmon	40.0	20.0	20.0	20.0	10.0	34.8	2.5	1.0	5.6	ind	0.4	80.6
Chinook salmon	30.0	20.0	20.0	30.0	20.0	57.7	4.1	1.7	4.2	ind	0.3	86.0
Pink salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Sockeye salmon	90.0	60.0	60.0	60.0	60.0	763.9	54.6	22.7	166.6	ind	11.9	56.0
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	**90.0**	**90.0**	**90.0**	**40.0**	**10.0**	**257.5**	**18.4**	**7.7**				**69.9**
Pacific herring	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	ind	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
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	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Lingcod	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	50.0	20.0	20.0	20.0	10.0	154.0	11.0	4.6	154.0	lb	11.0	109.3
Arctic lamprey	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	10.0	10.0	10.0	0.0	0.0	2.8	0.2	0.1	1.1	ind	0.1	120.9
Unknown rockfish	10.0	10.0	10.0	0.0	0.0	7.0	0.5	0.2	1.8	ind	0.1	120.9
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
Burbot	20.0	20.0	20.0	10.0	0.0	23.5	1.7	0.7	9.8	ind	0.7	103.2
Dolly Varden	0.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Lake trout	20.0	20.0	20.0	10.0	0.0	28.0	2.0	0.8	14.0	ind	1.0	97.1
Arctic grayling	40.0	40.0	40.0	10.0	0.0	24.5	1.8	0.7	35.0	ind	2.5	62.5
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
Longnose sucker	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	40.0	30.0	30.0	20.0	0.0	17.6	1.3	0.5	12.6	ind	0.9	81.2
Unknown trout	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Broad whitefish	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 8-13.–Page 2 of 4.

Resource	Percentage of households: Use %	Attempt %	Harvest %	Receive %	Give %	Harvest weight (lb): Total	Mean per household	Per capita	Harvest amount[a]: Total	Unit	Mean per household	95% confidence limit (±)
Nonsalmon fish, continued												
Least cisco	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Humpback whitefish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Round whitefish	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	**100.0**	**80.0**	**10.0**	**90.0**	**40.0**	**364.0**	**26.0**	**10.8**				**120.9**
Bison	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Black bear	10.0	10.0	0.0	10.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Brown bear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Caribou	50.0	70.0	10.0	40.0	20.0	364.0	26.0	10.8	2.8	ind	0.2	120.9
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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Moose	100.0	80.0	0.0	90.0	30.0	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	**0.0**	**20.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**				**0.0**
Beaver	0.0	10.0	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–cross phase	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–red phase	0.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Snowshoe hare	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
North American river (land) otter	0.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Lynx	0.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Marmot	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	10.0	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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
Least 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

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Table 8-13.–Page 3 of 4.

Resource	Percentage of households: Use %	Attempt %	Harvest %	Receive %	Give %	Harvest weight (lb): Total	Mean per household	Per capita	Harvest amount[a]: Total	Unit	Mean per household	95% confidence limit (±)
Marine mammals	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**				**0.0**
Fur seal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Harbor seal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown seal	0.0	0.0	0.0	0.0	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
Unknown whale	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	**20.0**	**10.0**	**10.0**	**20.0**	**0.0**	**15.4**	**1.1**	**0.5**				**120.9**
Canvasback	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Spectacled 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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Mallard	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
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
Northern shoveler	10.0	10.0	10.0	0.0	0.0	1.7	0.1	0.1	2.8	ind	0.2	120.9
Green-winged teal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
American wigeon	10.0	10.0	10.0	10.0	0.0	11.8	0.8	0.4	16.8	ind	1.2	120.9
Unknown ducks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Brant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Cackling goose	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Canada 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 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
Emperor goose	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Snow goose	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Tundra (whistling) swan	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
Spruce grouse	10.0	0.0	0.0	10.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Ruffed grouse	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown ptarmigan	10.0	10.0	10.0	10.0	0.0	2.0	0.1	0.1	2.8	ind	0.2	120.9
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

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Table 8-13.–Page 4 of 4.

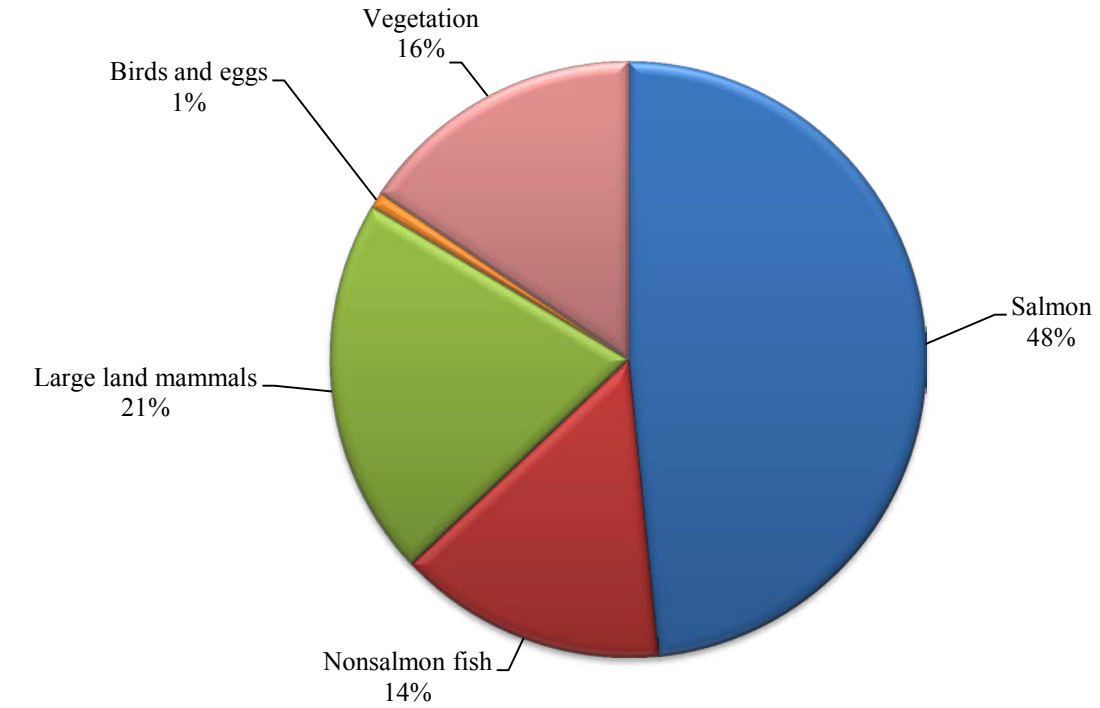
Resource	Percentage of households: Use %	Attempt %	Harvest %	Receive %	Give %	Harvest weight (lb): Total	Mean per household	Per capita	Harvest amount[a]: Total	Unit	Mean per household	95% confidence limit (±)
Birds and eggs, continued												
Unknown goose eggs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
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 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	**20.0**	**10.0**	**0.0**	**20.0**	**0.0**	**0.0**	**0.0**	**0.0**				**0.0**
Freshwater 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	10.0	10.0	0.0	10.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Dungeness crab	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	lb	0.0	0.0
Unknown king crab	10.0	0.0	0.0	10.0	0.0	0.0	0.0	0.0	0.0	lb	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	lb	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
Shrimp	10.0	0.0	0.0	10.0	0.0	0.0	0.0	0.0	0.0	lb	0.0	0.0
Squid	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Vegetation	**100.0**	**100.0**	**100.0**	**20.0**	**50.0**	**275.7**	**19.7**	**8.2**				**29.2**
Blueberry	100.0	100.0	100.0	20.0	50.0	157.5	11.3	4.7	39.4	gal	2.8	42.7
Lowbush cranberry	70.0	70.0	70.0	10.0	30.0	43.4	3.1	1.3	10.9	gal	0.8	48.8
Highbush cranberry	10.0	10.0	10.0	0.0	10.0	11.2	0.8	0.3	2.8	gal	0.2	120.9
Crowberry	50.0	50.0	50.0	0.0	0.0	18.2	1.3	0.5	4.6	gal	0.3	78.1
Cloudberry	10.0	10.0	10.0	0.0	0.0	0.4	0.0	0.0	0.1	gal	0.0	120.9
Raspberry	40.0	40.0	40.0	0.0	10.0	26.6	1.9	0.8	6.7	gal	0.5	60.3
Salmonberry	20.0	20.0	20.0	0.0	0.0	11.6	0.8	0.3	2.9	gal	0.2	116.9
Other wild berry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Hudson's Bay (Labrador) tea	10.0	10.0	10.0	0.0	0.0	0.1	0.0	0.0	0.1	gal	0.0	120.9
Wild rose hips	20.0	20.0	20.0	0.0	0.0	6.0	0.4	0.2	1.5	gal	0.1	113.2
Other wild greens	10.0	10.0	10.0	0.0	0.0	0.2	0.0	0.0	0.2	gal	0.0	120.9
Unknown mushrooms	0.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Fireweed	10.0	10.0	10.0	0.0	0.0	0.7	0.1	0.0	0.7	gal	0.1	120.9
Other wood	90.0	90.0	90.0	0.0	0.0	0.0	0.0	0.0	79.5	cord	5.7	37.1

Source ADF&G Division of Subsistence household surveys, 2014.

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.

a. Summary rows that include incompatible units of measure have been left blank.



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

Figure 8-8.–Composition of harvest by resource category in pounds usable weight, Mendeltna, 2013.

Seasonal Round for East Glenn Highway

Mendeltna, Nelchina, and Tolsona residents harvest wild resources throughout the year and, like most rural Alaska communities, they target specific species at certain seasons of the year following a cyclical harvest pattern. This seasonal harvest pattern is in part defined by seasonal resource availability, and in part by laws, regulations, and land access. A small number of residents from these communities have access to small airplanes or marine boats and use these modes of transportation to travel to more distant wild resource search and harvest areas. However, the majority of residents' resource search and harvest activities take place within the community boundaries or in the larger Copper River Basin area (Figure 8-9). Besides airplanes and boats, motorized vehicles, such as highway vehicles, ATVs, and snowmachines are commonly used modes of transportation used by residents of these 3 communities, as was discussed above. Another reported mode of transportation employed by community residents was walking; residents commented that they often walked to harvesting areas that were only a short distance from their home, or might not have been accessible by other means.

While harvest activities are ongoing throughout the year, early June marks the beginning of salmon harvesting efforts for these communities. Chinook salmon are the first salmon species to arrive in the Copper River watershed, followed quickly by sockeye salmon. The majority of community members actively harvest salmon species in the Copper River by mid-June and fishing continues through the coho salmon run that occurs into September. Most residents harvest their salmon by fish wheel or dip net and less often by rod and reel. Some residents may travel to Valdez for rod and reel fishing of coho and pink salmon later in the season.

Nonsalmon freshwater fish are harvested all throughout the year and across a large area extending north of the East Glenn community complex to lakes around Lake Louise and Crosswind Lake. For some families, freshwater fish precede salmon as the first resource harvested for the summer season. Once the ice clears

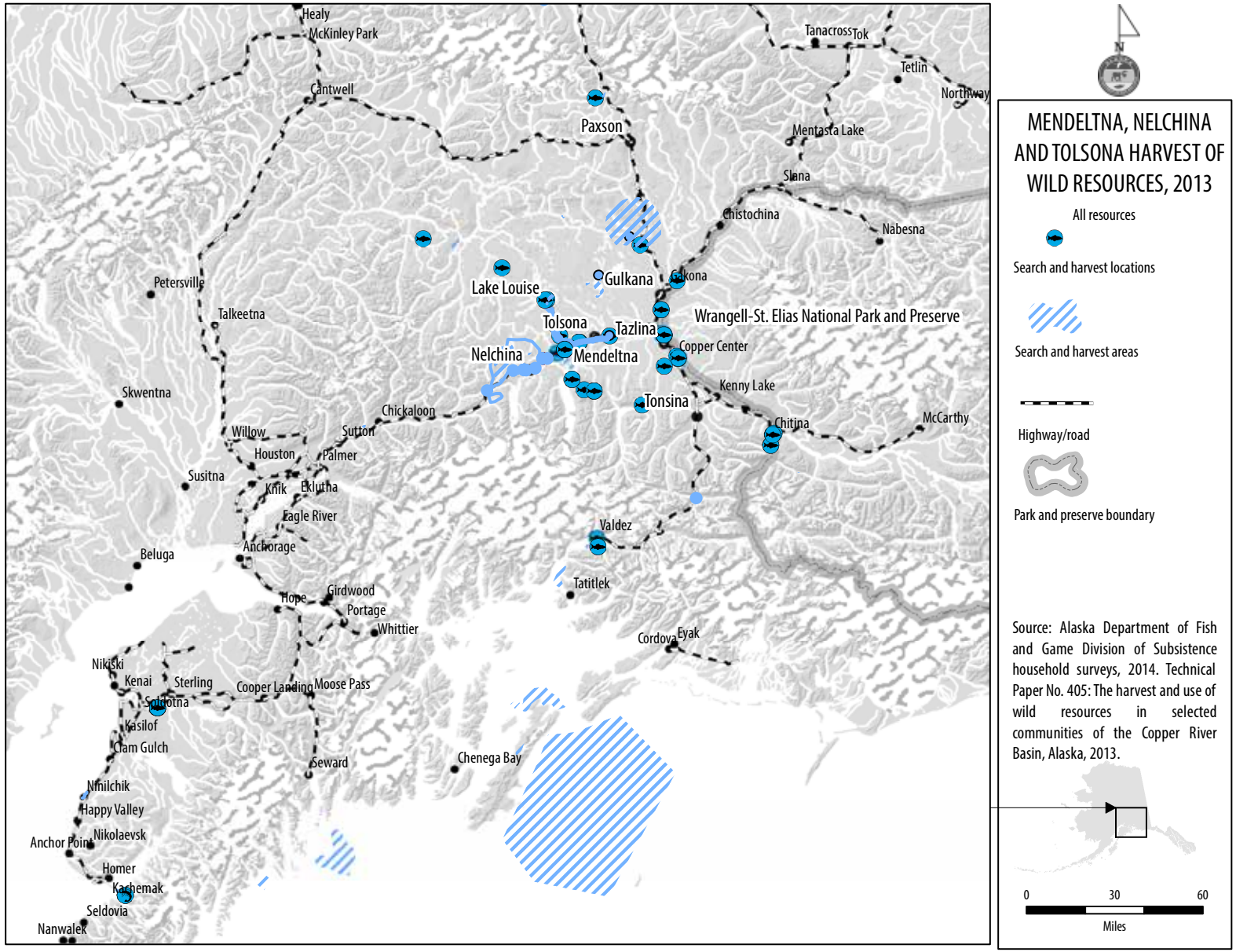


Figure 8-9.–Wild resources search and harvest areas, East Glenn Highway: Mendeltna, Nelchina, and Tolsona, 2013.

from local lakes and streams residents may target freshwater fish as early as May using rod and reel. This type of fishing takes place in smaller creeks near the communities. Many kinds of nonsalmon fish are also harvested during the fall using rod and reel, and during winter and spring months by jigging through the ice.

Large land mammal hunting is an important fall activity that starts in August; depending on the resource and regulations, hunting efforts can stretch through November with some opportunities existing for a spring harvest. During the study year most of the harvests took place between August and October with much of the effort taking place along the Glenn and Richardson highways.

The majority of small land mammals are trapped for their fur during the winter months when snow is on the ground but others are harvested for their meat as well as their fur all throughout the year. An average trapping season most commonly extends from November through February—depending on the snow conditions and the quality of the fur on the animals that the trappers are harvesting.

Migratory birds and upland game birds are both harvested at different times throughout the year. Waterfowl are hunted in the spring , while upland game birds—such as the different species of ptarmigan and grouse—are locally harvested from early fall through the winter months and are often harvested opportunistically throughout the year while hunting for other resources, such as moose and caribou.

Community residents harvest plants, mushrooms, and berries during summer and fall. For example, blueberries, raspberries, crowberries, and salmonberries began to ripen in late July and are gathered during late summer; highbush and lowbush cranberries are gathered during fall. Depending on the year, the harvest of wild mushrooms, such as shaggy manes, milk caps, puff balls, and orange delicious, takes place throughout the summer and harvesting activities stretch into early fall. Harvesting firewood for home heating is an important year-round activity for these 3 communities.

Once the lakes in the Copper River Basin freeze, some residents ice fish for nonsalmon species such as burbot, lake trout, and rainbow trout. Typically in May after the snow on lower elevations has fully melted harvesting activities of vegetation such as spring mushrooms and fiddlehead ferns occurs. In 2013, only a few residents harvested locally available mushrooms.

Use and Harvest Characteristics by Resource Category

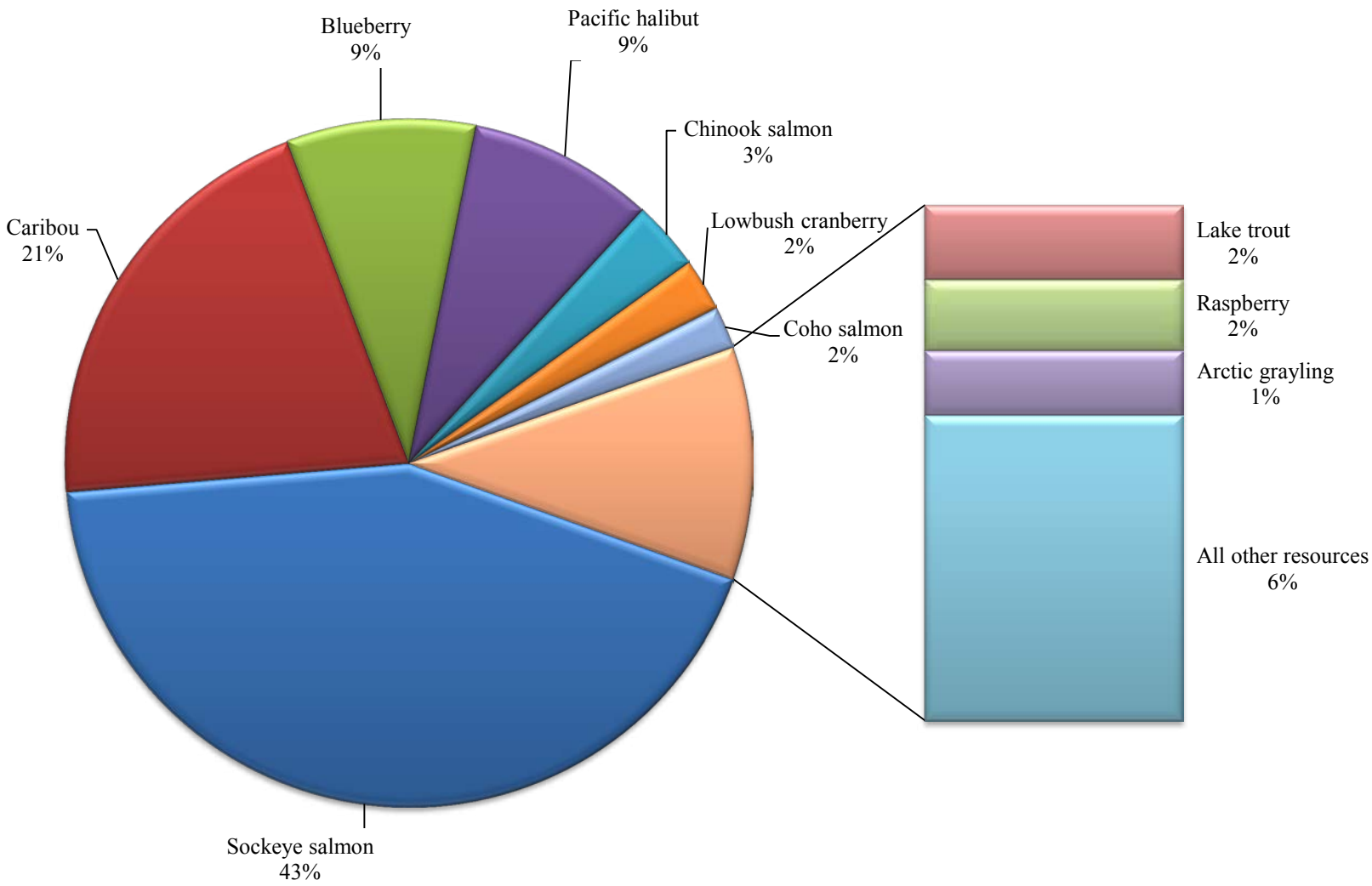
Table 8-13 helps identify the roles sharing and receiving resources play in use patterns of resources harvested in 2013. Estimates of sharing indicate that 90% Mendeltna households received wild resources from other households and 90% of households gave resources away. Salmon, large land mammals, and vegetation were the most commonly shared and received resources. Salmon were used by 100% of households, given away by 60% of households, and received by 70% of households. Large land mammals were used by 100% of households, given away by 40% of households, and received by 90% of households. Vegetation was used by 100% of households and 50% of households gave away and 20% received vegetation resources.

Table 8-14 lists the top resources used by Mendeltna households and Figure 8-10 depicts the resources with the largest harvests (1% or more of the total harvest composition as estimated in pounds usable weight per person) during the 2013 study year. Moose was used by 100% of Mendeltna households and was tied with blueberries for the most used wild resource in 2013 (Table 8-14). Interestingly, no household harvested a moose during the study year (Table 8-13); this indicates that households used moose resources that were either received from residents from other communities or the Alaska Moose Salvage Program (road-killed moose), or that households had used leftover meat harvested in previous years. Blueberries contributed 9% to the overall harvest of resources. Sockeye salmon made the largest contribution to the community harvest (43% of total harvest) and 90% of households used sockeye salmon (Figure 8-10; Table 8-14). Caribou was the second most harvested wild resource and contributed 21% to the overall harvest. Even though caribou made up a large portion of the total harvest, it was used by just one-half (50%) of Mendeltna households in 2013 (Table 8-14). Another important contribution to the community in terms of usable weight was Pacific halibut (9%).

Table 8-14.–Top ranked resources used by households, Mendeltna, 2013.

Rank[a]	Resource	Percentage of households using
1.	Moose	100.0%
1.	Blueberry	100.0%
3.	Sockeye salmon	90.0%
4.	Lowbush cranberry	70.0%
5.	Pacific halibut	50.0%
5.	Caribou	50.0%
5.	Crowberry	50.0%
8.	Coho salmon	40.0%
8.	Arctic grayling	40.0%
8.	Rainbow trout	40.0%

Source ADF&G Division of Subsistence household surveys, 2014.
a. Resources used by the same percentage of households share the lowest rank value instead of having sequential rank values.



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

Figure 8-10.–Top species harvested by percentage of total harvest in pounds usable weight, Mendeltna, 2013.

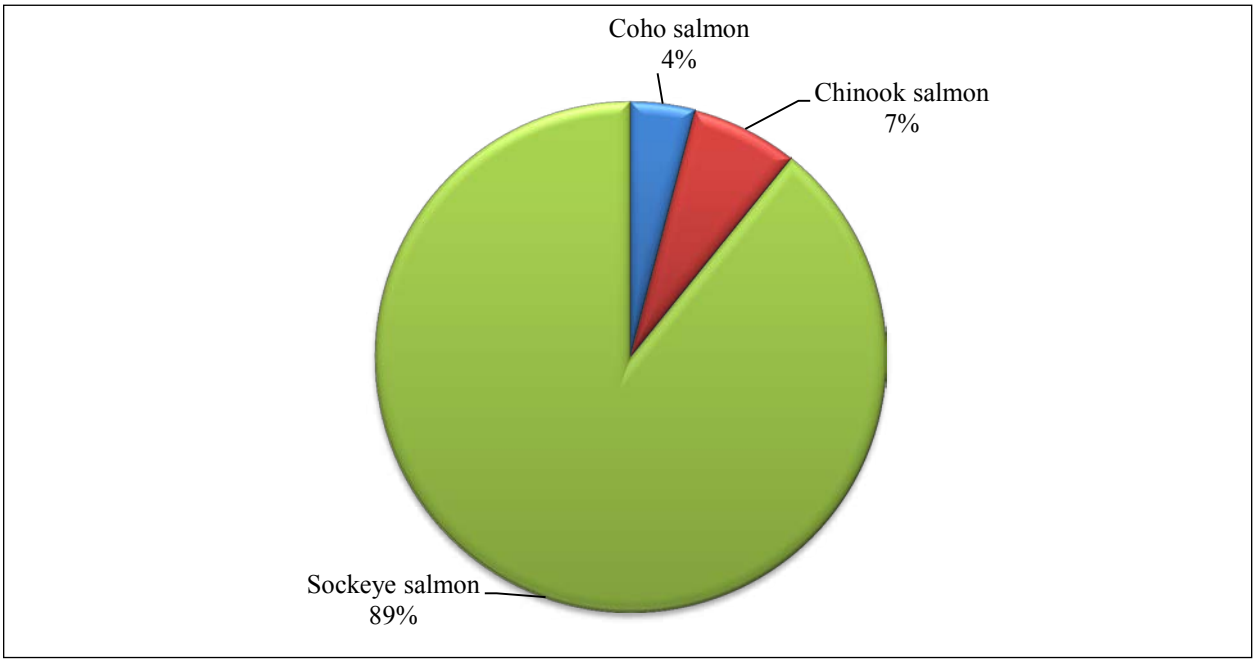


Figure 8-11.–Composition of salmon harvest in pounds usable weight, Mendeltna, 2013.

Salmon

Salmon composed 48% of the Mendeltna harvest in pounds usable weight for 2013, totaling 856 lb, or 26 lb per capita, most of which was sockeye salmon (Figure 8-8; Table 8-13). Sockeye salmon made up 89% (764 lb, or 23 lb per capita) of the total salmon harvest; the remaining composition of the salmon harvest was as follows: 7% Chinook salmon (58 lb, or 2 lb per capita) and 4% coho salmon (35 lb, or 1 lb per capita) (Figure 8-11; Table 8-13). Sockeye salmon were used in more households than any other kind of salmon (90% of households in Mendeltna used sockeye salmon), and sockeye salmon was the most successfully harvested (60% of households), received (60% of households), and shared (60% of households) of the salmon species used in the community (Table 8-13). Coho salmon was the second most used salmon species (40% of households) followed by Chinook salmon (30% of households).

During study year 2013, Mendeltna households harvested the majority (83% of the salmon harvest in pounds usable weight) of their salmon with fish wheels. The remaining salmon harvest (17%) was taken with rod and reel (Table 8-15). Fish wheels were used to take 91% of the sockeye salmon harvest and 33% of Chinook salmon harvest.

Table 8-15.–Estimated percentages of salmon harvested by gear type, resource, and total harvest, Mendeltna, 2013.

Resource	Percentage base	Removed from commercial catch		Subsistence methods													
				Gillnet or seine		Fish wheel		Dip net		Other		Subsistence gear, any method		Rod and reel		Any method	
		Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Salmon	**Gear type**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**100.0%**	**100.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
	Resource	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**86.5%**	**83.2%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**86.5%**	**83.2%**	**13.5%**	**16.8%**	**100.0%**	**100.0%**
	Total	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**86.5%**	**83.2%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**86.5%**	**83.2%**	**13.5%**	**16.8%**	**100.0%**	**100.0%**
Chum 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%	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%	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%	0.0%	0.0%	0.0%	0.0%	0.0%
Coho 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%	0.0%	23.5%	24.2%	3.2%	4.1%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	0.0%	3.2%	4.1%	3.2%	4.1%
Chinook salmon	Gear type	0.0%	0.0%	0.0%	0.0%	0.9%	2.7%	0.0%	0.0%	0.0%	0.0%	0.9%	2.7%	11.8%	26.7%	2.4%	6.7%
	Resource	0.0%	0.0%	0.0%	0.0%	33.3%	33.3%	0.0%	0.0%	0.0%	0.0%	33.3%	33.3%	66.7%	66.7%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.8%	2.2%	0.0%	0.0%	0.0%	0.0%	0.8%	2.2%	1.6%	4.5%	2.4%	6.7%
Pink 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%	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%	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%	0.0%	0.0%	0.0%	0.0%	0.0%
Sockeye salmon	Gear type	0.0%	0.0%	0.0%	0.0%	99.1%	97.3%	0.0%	0.0%	0.0%	0.0%	99.1%	97.3%	64.7%	49.1%	94.4%	89.2%
	Resource	0.0%	0.0%	0.0%	0.0%	90.8%	90.8%	0.0%	0.0%	0.0%	0.0%	90.8%	90.8%	9.2%	9.2%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	85.7%	81.0%	0.0%	0.0%	0.0%	0.0%	85.7%	81.0%	8.7%	8.2%	94.4%	89.2%
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%	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%	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%	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%	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%	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%	0.0%	0.0%	0.0%	0.0%	0.0%

Source ADF&G Division of Subsistence household surveys, 2014.

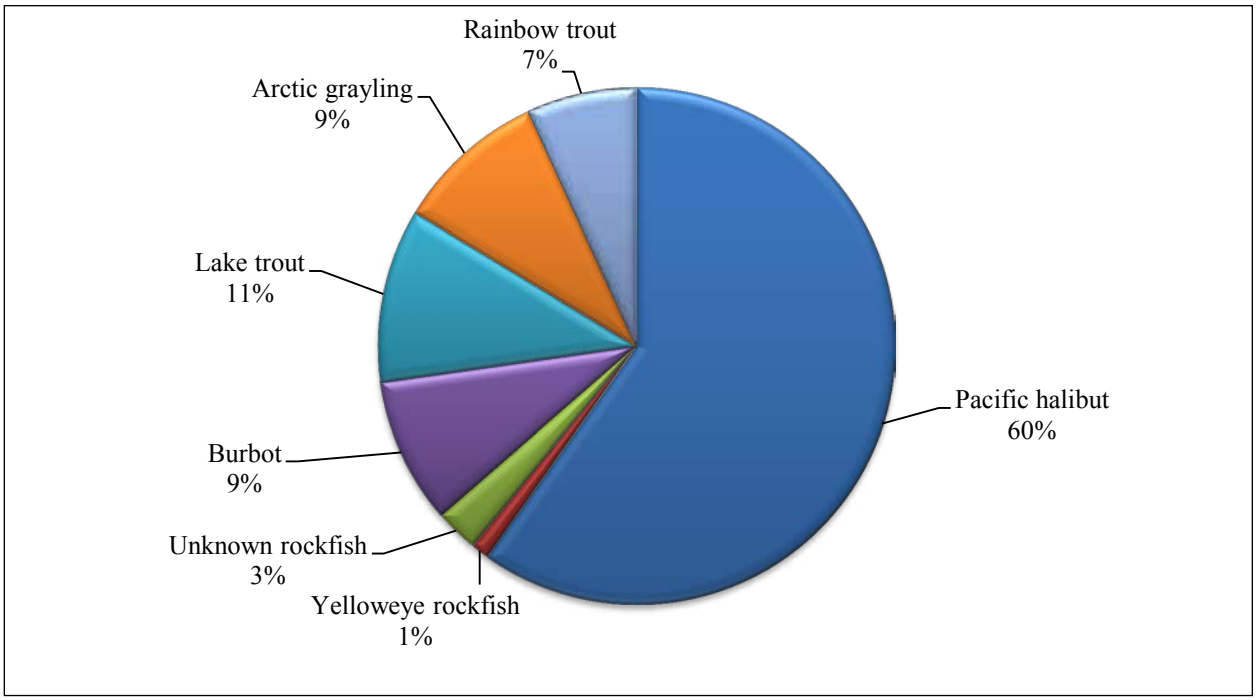


Figure 8-12.–Composition of nonsalmon fish harvest in pounds usable weight, Mendeltna, 2013.

Nonsalmon Fish

Mendeltna households harvested an estimated total of 258 lb, or 8 lb per capita, of nonsalmon fish; this harvest made up 14% of the total wild resource harvest in 2013 (Table 8-13; Figure 8-8). In terms of total pounds and percentages, the largest portion of the nonsalmon fish harvest (60%) was composed of Pacific halibut (154 lb, or 5 lb per capita) (Figure 8-12; Table 8-13). The remaining 40% of the nonsalmon fish harvest was mostly composed of freshwater species such as lake trout (28 lb, or less than 1 lb per capita), Arctic grayling (25 lb), burbot (24 lb), and rainbow trout (18 lb). The remaining portion of the total nonsalmon fish harvest was made up of rockfish (10 lb).

Nonsalmon fish were harvested either by rod and reel or while ice fishing. Table 8-16 reports the gear types used by Mendeltna households to harvest nonsalmon fish in 2013. In terms of pounds usable weight, the majority (87%) of the nonsalmon fish harvest was taken with rod and reel. Sixty-nine percent of the nonsalmon fish harvest weight caught by rod and reel was Pacific halibut, which was caught in Prince William Sound. The remaining nonsalmon fish harvest weight caught by rod and reel included Arctic grayling (11 %), rainbow trout (8%), lake trout (6%), rockfish (4%), and burbot (2%). A small percentage (13%) of the pounds usable weight of all nonsalmon fish was harvested by ice fishing. This harvest was composed of burbot (59% of ice fishing harvest) and lake trout (41%).

Table 8-16.–Estimated percentages of nonsalmon fish harvested by gear type, resource, and total nonsalmon fish harvest, Mendeltna, 2013.

				Subsistence methods											
		Removed from commercial catch		Gillnet or seine		Ice fish		Other		Subsistence gear, any method		Rod and reel		Any method	
Resource	Percentage base	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Nonsalmon fish	**Gear type**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**100.0%**	**100.0%**	**0.0%**	**0.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
	Resource	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**6.7%**	**13.3%**	**0.0%**	**0.0%**	**6.7%**	**13.3%**	**93.3%**	**86.7%**	**100.0%**	**100.0%**
	Total	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**6.7%**	**13.3%**	**0.0%**	**0.0%**	**6.7%**	**13.3%**	**93.3%**	**86.7%**	**100.0%**	**100.0%**
Pacific herring	Gear type	0.0%	0.0%	0.0%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	0.0%	0.0%	0.0%
Pacific tomcod	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Starry flounder	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Lingcod	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Pacific halibut	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	72.4%	69.0%	67.5%	59.8%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	67.5%	59.8%	67.5%	59.8%
Arctic lamprey	Gear type	0.0%	0.0%	0.0%	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%	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%	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%	0.0%	0.0%	0.5%	1.3%	0.5%	1.1%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	0.5%	1.1%	0.5%	1.1%
Unknown rockfish	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	3.1%	0.8%	2.7%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	0.8%	2.7%	0.8%	2.7%

-continued-

Table 8-16.–Page 2 of 3.

Resource	Percentage base	Removed from commercial catch		Subsistence methods: Gillnet or seine		Ice fish		Other		Subsistence gear, any method		Rod and reel		Any method	
		Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Unknown sculpin	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Burbot	Gear type	0.0%	0.0%	0.0%	0.0%	54.5%	59.0%	0.0%	0.0%	54.5%	59.0%	0.7%	1.5%	4.3%	9.1%
	Resource	0.0%	0.0%	0.0%	0.0%	85.7%	85.7%	0.0%	0.0%	85.7%	85.7%	14.3%	14.3%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	3.7%	7.8%	0.0%	0.0%	3.7%	7.8%	0.6%	1.3%	4.3%	9.1%
Dolly Varden	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Lake trout	Gear type	0.0%	0.0%	0.0%	0.0%	45.5%	41.0%	0.0%	0.0%	45.5%	41.0%	3.3%	6.3%	6.1%	10.9%
	Resource	0.0%	0.0%	0.0%	0.0%	50.0%	50.0%	0.0%	0.0%	50.0%	50.0%	50.0%	50.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	3.1%	5.4%	0.0%	0.0%	3.1%	5.4%	3.1%	5.4%	6.1%	10.9%
Arctic grayling	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	16.4%	11.0%	15.3%	9.5%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	15.3%	9.5%	15.3%	9.5%
Northern pike	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Longnose sucker	Gear type	0.0%	0.0%	0.0%	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%	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%	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%	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%	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%	0.0%	0.0%	0.0%
Rainbow trout	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.9%	7.9%	5.5%	6.9%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	5.5%	6.9%	5.5%	6.9%
Unknown trout	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Broad whitefish	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Least cisco	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Humpback whitefish	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%

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Table 8-16.–Page 3 of 3.

Resource	Percentage base	Removed from commercial catch		Subsistence methods											
				Gillnet or seine		Ice fish		Other		Subsistence gear, any method		Rod and reel		Any method	
		Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Round whitefish	Gear type	0.0%	0.0%	0.0%	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%	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%	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%	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%	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%	0.0%	0.0%	0.0%

Source ADF&G Division of Subsistence household surveys, 2014.

Table 8-17.–Estimated large land mammal harvests by month and sex, Mendeltna, 2013.

Resource	Estimated harvest by month													Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk	
All large land mammals	**1.4**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**1.4**	**0.0**	**0.0**	**0.0**	**2.8**
Bison	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Black bear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Brown bear	0.0	0.0	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	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0	0.0	**2.8**
Caribou, male	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0	0.0	**2.8**
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**
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	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**
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, 2014.

Large Land Mammals

In 2013, the harvest of large land mammals made up 21% of Mendeltna residents' overall wild resource harvest (Figure 8-8). In pounds usable weight, the estimated total harvest was 364 lb, or approximately 11 lb per capita (Table 8-13). Caribou made up 100% of the total large land mammal harvest in 2013. Seventy percent of households attempted to harvest caribou in 2013 and 10% of community households successfully harvested caribou. Mendeltna households were successful at harvesting caribou during January and October; it is estimated that 1 caribou was harvested in January and 1 in October (Table 8-17).

According to survey results, 80% of Mendeltna households attempted to harvest moose, but none were successful. Regardless of a small number of Mendeltna households successfully harvesting the 2 most targeted large land mammal species (moose and caribou), many community households used these resources after receiving some either from other households in Mendeltna or other Alaska communities. According to the survey, 90% of Mendeltna households received some moose and 100% used moose during the study year (Table 8-13). In comparison, 40% of community households received some caribou and 50% used caribou in 2013.There was a small effort to harvest black bears by Mendeltna households (10%), but no households harvested bears in 2013.

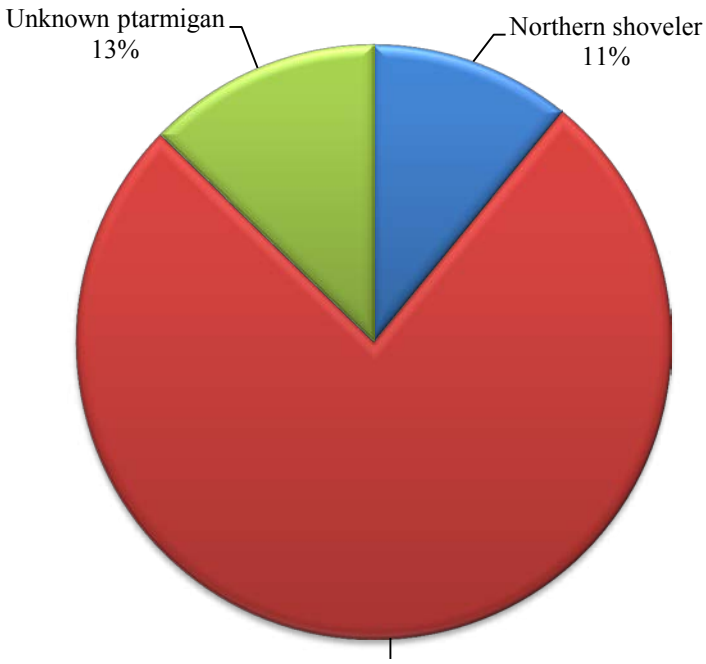
Table 8-18.–Estimated small land mammal/furbearer harvests by month, Mendeltna, 2013.

Resource	Estimated harvest by month													Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk	
All small land mammals	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
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–cross phase	0.0	0.0	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–red phase	0.0	0.0	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**
Marmot	0.0	0.0	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	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	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, 2013.

Small Land Mammals/Furbearers

Twenty percent of households reported attempting to harvest small land mammals; targeted species included: beavers, red foxes, North American river otters, lynx, and martens. However, there were no successful harvests of small land mammals/furbearers by Mendeltna residents in 2013 (Table 8-13; Table 8-18). There was no sharing and no use of small land mammals during the 2013 study year.



Note No bird eggs were harvested.

Figure 8-13.–Composition of bird and bird egg harvest in pounds usable weight, Mendeltna, 2013.

Birds and Eggs

For study year 2013, the harvest of birds totaled approximately 15 lb, or less than1 lb per capita, and made up 1% of Mendeltna households' total wild resource harvest (Table 8-13; Figure 8-8). In terms of pounds usable weight, the majority of the harvest (14 lb) was migratory birds—consisting of American wigeons (12 lb) and northern shovelers (2 lb) (Table 8-13). The remaining 13% of the bird harvest (2 lb) was composed of ptarmigan (Figure 8-13; Table 8-13). Mendeltna households harvested all birds during the fall months (Table 8-19). No bird egg harvests were reported by Mendeltna residents in 2013.

Marine Invertebrates

As listed in Table 8-13, 10% of Mendeltna households attempted to harvest razor clams, but there were no successful harvests of marine invertebrates by Mendeltna households in 2013. However, 20% of Mendeltna households received some marine invertebrates and 20% used some marine invertebrates in 2013. Three species of marine invertebrates were received by Mendeltna households from households outside of Mendeltna. The species of received and used marine invertebrates included: razor clams, king crab, and shrimp.

Table 8-19.–Estimated bird and bird egg harvests by season, Mendeltna, 2013.

Resource	Estimated harvest by season					
	Winter	Spring	Summer	Fall	Season unknown	**Total**
All birds	**0.0**	**0.0**	**0.0**	**22.4**	**0.0**	**22.4**
Canvasback	0.0	0.0	0.0	0.0	0.0	**0.0**
Spectacled 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**
Mallard	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**
Black scoter	0.0	0.0	0.0	0.0	0.0	**0.0**
Northern shoveler	0.0	0.0	0.0	2.8	0.0	**2.8**
Green-winged teal	0.0	0.0	0.0	0.0	0.0	**0.0**
American wigeon	0.0	0.0	0.0	16.8	0.0	**16.8**
Unknown ducks	0.0	0.0	0.0	0.0	0.0	**0.0**
Brant	0.0	0.0	0.0	0.0	0.0	**0.0**
Cackling goose	0.0	0.0	0.0	0.0	0.0	**0.0**
Canada goose	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**
Emperor goose	0.0	0.0	0.0	0.0	0.0	**0.0**
Snow goose	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**
Tundra (whistling) swan	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**
Spruce grouse	0.0	0.0	0.0	0.0	0.0	**0.0**
Ruffed grouse	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown ptarmigan	0.0	0.0	0.0	2.8	0.0	**2.8**
Unknown duck eggs	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown goose eggs	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown gull eggs	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown eggs	0.0	0.0	0.0	0.0	0.0	**0.0**

Source ADF&G Division of Subsistence household surveys, 2014.

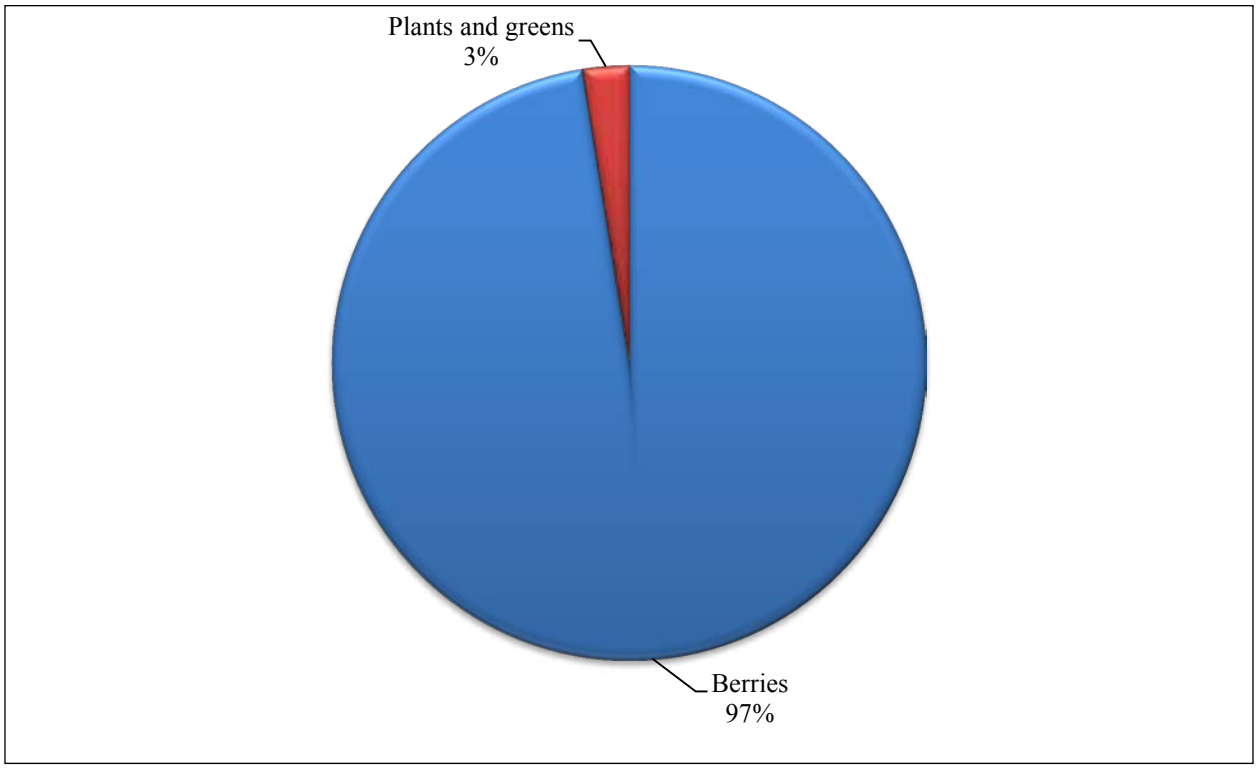


Figure 8-14.–Composition of vegetation harvest by type and pounds usable weight, Mendeltna, 2013.

Vegetation

In study year 2013, vegetation made up 16% of the total wild food harvest in Mendeltna; 100% of Mendeltna households used some vegetation resources and 100% harvested some (Figure 8-8; Table 8-13). Mendeltna residents harvested an estimated total of 276 lb, or 8 lb per capita, of vegetation in 2013, the majority of which was berries (97% of total vegetation harvest) (Table 8-13; Figure 8-14). In terms of total pounds harvested, the majority of the berry harvest was composed of blueberries (158 lb, or 5 lb per capita) followed by lowbush cranberries (43 lb, or 1 lb per capita), raspberries (27 lb), crowberries (18 lb), salmonberries (12 lb), and highbush cranberries (11 lb) (Table 8-13). In comparison, the majority of the other vegetation harvest was composed of wild rose hips (6 lb, or less than 1 lb per capita); the remaining other vegetation harvested were fireweed (1 lb), other wild greens (less than 1 lb), and Hudson's Bay (Labrador) tea (less than 1 lb).

As discussed above, vegetation resources are widely harvested and used in Mendeltna. Numbers of households sharing and receiving indicate that during study year 2013 berries were shared more than plants, greens, and mushrooms; 50% of community households gave away some berries while none shared other vegetation resources (Table 8-13). Similarly, 20% of Mendeltna households received some berries and none received any plants, greens, or mushrooms. Blueberries were the most widely shared berry species (50% of households gave some away) and was also the most received berry (20% of households received some). Almost all households (90%) in Mendeltna harvested and used firewood in 2013. The total community harvest was 80 cords and the mean number of firewood cords harvested per household was 6.

Comparing Harvests and Uses in 2013 with Previous Years

Harvest Assessments

For 10 resource categories and for all resources combined, survey respondents were asked to assess whether their uses and harvests in the 2013 study year were less, more, or about the same as other recent years. "Other recent years" was defined as about the last 5 years. Table 8-20 reports the number of valid responses for each category, the number of households that did not respond, and the number of households that did not use a resource category or all resources combined. In Table 8-20, response percentages are based on the number of valid responses for each category to contextualize these assessments within the set of community households that typically use each category.

Figure 8-15 depicts responses to the "less, same, more" assessment question. Households that said they did not ordinarily "use" something are not included within the results. This results in fewer responses for less commonly used categories such as bird eggs or marine mammals or migratory waterfowl, which manifests in the chart as a very short set of colored bars compared to categories such as salmon or large land mammals, which are ordinarily used by most households. Some households did not respond to the question.

Taking all the resource categories into consideration, most Mendeltna households (40%) said they used the same amount of wild resources in general over the previous 12 months compared to recent years (Table 8-20). A smaller number, 30% of households, said they used less, and 30% said they used more in 2013.

For salmon use, 10 valid responses were provided and one-half of those responses (5 households, or 50%) reported the same level of use of salmon in the study year as compared to recent years, while 4 households reported less use and 1 household reported more use (Table 8-20). Similarly, of the 10 valid responses provided by respondents regarding level of use of large land mammals, 6 households (or 60%) reported the same level of use in 2013 than in recent years; this was the resource category with the largest percentage of households reporting the same level of use in 2013. Unlike the responses for salmon use, more households reported using more large land mammals (3 households) than reported using less (1 household). For nonsalmon fish and vegetation, 4 of 10 households (or 40%) reported using those resources at the same level compared to recent years.

Table 8-21 reports the reasons why, according to their assessments, Mendeltna households' use of wild resources was less in 2013; correspondingly Table 8-22 reports the reasons why Mendeltna households' use of resources was more. This was an open-ended question and respondents could provide more than 1 reason for each resource category. Project staff grouped the responses into categories, such as regulations hindering residents from harvesting resources, 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 outside effects on residents' opportunities to engage in hunting, fishing, and gathering activities.

Looking at all resources combined, 3 households reported that their use was less; 67% cited unsuccessful efforts and 33% cited family/personal circumstances as the main reasons for using less wild resources in 2013 (Table 8-21). In comparison, increased effort, needed more, more success, and store-bought food expense were the 4 reasons cited for increased use of all wild resources during 2013 by Mendeltna households that responded to this question (2 households) (Table 8-22). Looking at the reasons cited for using less birds (migratory and other birds combined), resources being less available was cited by all responding Mendeltna households (Table 8-21). Increased availability was the primary reason cited by households for increased use of vegetation during the study year; favorable weather and increased effort were also cited (Table 8-22).

The impact to households from not getting enough wild resources is reported in Table 8-23. The most noticeable impact was for large land mammals for which 4 households reported not getting enough resources; 2 households noted a minor impact while 2 households reported that the impact was major. Only 3 caribou (estimated) were harvested and no moose during 2013. For all resources 30% of households (out of 10) said that they did not get enough resources in 2013 and of those respondents 68% said that the impact from not getting enough resources was minor while another 33% said it was major.

Table 8-20.–Changes in household uses of resources compared to recent years, Mendeltna, 2013.

Resource category	Sampled households	Valid responses[a]	Households reporting use: Total households Number	Total households Percentage	Less Number	Less Percentage	Same Number	Same Percentage	More Number	More Percentage	Households not using Number	Households not using Percentage
Any resource	10	10	10	100.0%	6	60.0%	9	90.0%	8	80.0%	10	100.0%
All resources	**10**	**10**	**10**	**100.0%**	**3**	**30.0%**	**4**	**40.0%**	**3**	**30.0%**	**0**	**0.0%**
Salmon	10	10	10	100.0%	4	40.0%	5	50.0%	1	10.0%	0	0.0%
Nonsalmon fish	10	10	10	100.0%	4	40.0%	4	40.0%	2	20.0%	0	0.0%
Large land mammals	10	10	10	100.0%	1	10.0%	6	60.0%	3	30.0%	0	0.0%
Small land mammals	10	10	2	20.0%	2	20.0%	0	0.0%	0	0.0%	8	80.0%
Marine mammals	10	10	0	0.0%	0	0.0%	0	0.0%	0	0.0%	10	100.0%
Migratory waterfowl	10	10	1	10.0%	1	10.0%	0	0.0%	0	0.0%	9	90.0%
Other birds	10	10	2	20.0%	2	20.0%	0	0.0%	0	0.0%	8	80.0%
Bird eggs	10	10	0	0.0%	0	0.0%	0	0.0%	0	0.0%	10	100.0%
Marine invertebrates	10	10	2	20.0%	1	10.0%	0	0.0%	1	10.0%	8	80.0%
Vegetation	10	10	10	100.0%	2	20.0%	4	40.0%	4	40.0%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2014.

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

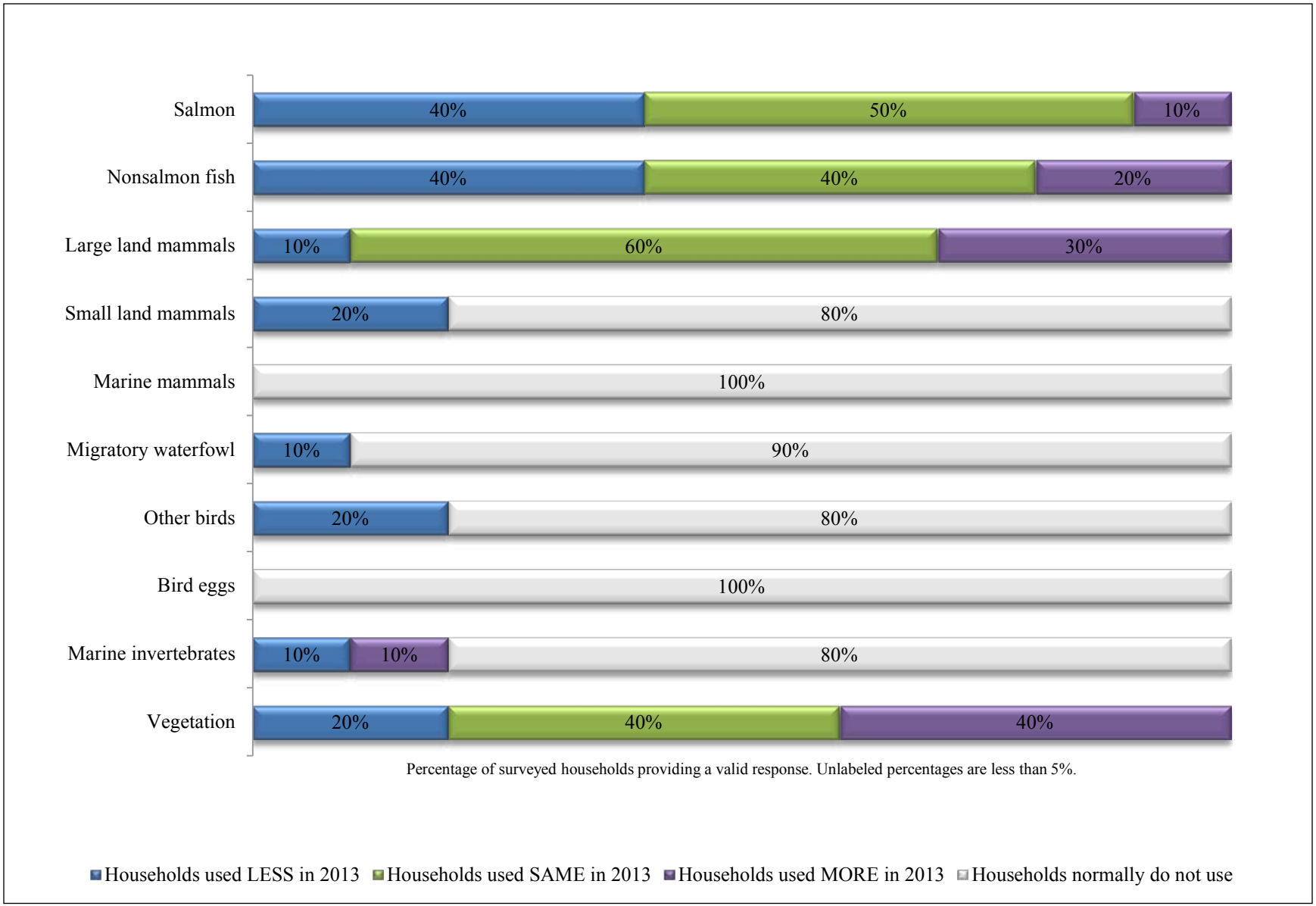


Figure 8-15.–Changes in household uses of resources compared to recent years, Mendeltna, 2013.

Table 8-21.–Reasons for less household uses of resources compared to recent years, Mendeltna, 2013.

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	10	6	1	16.7%	2	33%	0	0.0%	0	0%	1	17%	2	33%
All resources	**10**	**3**	**1**	**33.3%**	**0**	**0%**	**0**	**0.0%**	**0**	**0%**	**0**	**0%**	**0**	**0%**
Salmon	10	4	1	25.0%	0	0%	0	0.0%	0	0%	0	0%	1	25%
Nonsalmon fish	10	4	0	0.0%	0	0%	0	0.0%	0	0%	1	25%	1	25%
Large land mammals	10	1	0	0.0%	0	0%	0	0.0%	0	0%	0	0%	0	0%
Small land mammals	10	2	0	0.0%	0	0%	0	0.0%	0	0%	0	0%	0	0%
Marine mammals	10	0	0	0.0%	0	0%	0	0.0%	0	0%	0	0%	0	0%
Migratory waterfowl	10	1	0	0.0%	1	100%	0	0.0%	0	0%	0	0%	0	0%
Other birds	10	2	0	0.0%	2	100%	0	0.0%	0	0%	0	0%	0	0%
Bird eggs	10	0	0	0.0%	0	0%	0	0.0%	0	0%	0	0%	0	0%
Marine invertebrates	10	1	0	0.0%	0	0%	0	0.0%	0	0%	0	0%	1	100%
Vegetation	10	2	0	0.0%	1	50%	0	0.0%	0	0%	0	0%	1	50%

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Table 8-21.–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	10	6	3	50.0%	2	33.3%	0	0.0%	2	33.3%	0	0.0%	0	0.0%
All resources	**10**	**3**	**2**	**66.7%**	**0**	**0.0%**	**0**	**0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**
Salmon	10	4	0	0.0%	0	0.0%	0	0%	1	25.0%	0	0.0%	0	0.0%
Nonsalmon fish	10	4	0	0.0%	0	0.0%	0	0%	1	25.0%	0	0.0%	0	0.0%
Large land mammals	10	1	1	100.0%	0	0.0%	0	0%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	10	2	1	50.0%	0	0.0%	0	0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	10	0	0	0.0%	0	0.0%	0	0%	0	0.0%	0	0.0%	0	0.0%
Migratory waterfowl	10	1	0	0.0%	0	0.0%	0	0%	0	0.0%	0	0.0%	0	0.0%
Other birds	10	2	0	0.0%	0	0.0%	0	0%	0	0.0%	0	0.0%	0	0.0%
Bird eggs	10	0	0	0.0%	0	0.0%	0	0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	10	1	0	0.0%	0	0.0%	0	0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	10	2	0	0.0%	2	100.0%	0	0%	0	0.0%	0	0.0%	0	0.0%

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Table 8-21.–Page 2 of 2.

Resource category	Valid responses[a]	Households reporting reasons for less use	Did not get enough		Did not need		Equipment/ fuel expense		Used other resources		Less competition	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	10	6	1	16.7%	2	33.3%	0	0.0%	1	16.7%	0	0.0%
All resources	**10**	**3**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**
Salmon	10	4	0	0.0%	2	50.0%	0	0.0%	0	0.0%	0	0.0%
Nonsalmon fish	10	4	0	0.0%	1	25.0%	0	0.0%	1	25.0%	0	0.0%
Large land mammals	10	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	10	2	1	50.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	10	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Migratory waterfowl	10	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other birds	10	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Bird eggs	10	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	10	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	10	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2014.

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

Table 8-22.–Reasons for more household uses of resources compared to recent years, Mendeltna, 2013.

Resource category	Valid responses[a]	Households reporting reasons for more use	Increased availability		Used other resources		Favorable weather		Received more		Needed more	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	10	6	2	33.3%	1	16.7%	1	16.7%	0	0.0%	1	16.7%
All resources	**10**	**2**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**1**	**50.0%**
Salmon	10	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Nonsalmon fish	10	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Large land mammals	10	3	0	0.0%	1	33.3%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	10	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	10	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Migratory waterfowl	10	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other birds	10	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Bird eggs	10	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	10	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	10	3	2	66.7%	0	0.0%	1	33.3%	0	0.0%	0	0.0%

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Table 8-22.–Continued.

Resource category	Valid responses[a]	Households reporting reasons for more use	Increased effort		Had more help		Other		Regulations		Traveled farther	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	10	6	2	33.3%	0	0.0%	1	16.7%	0	0.0%	0	0.0%
All resources	**10**	**2**	**1**	**50.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**
Salmon	10	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Nonsalmon fish	10	1	1	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Large land mammals	10	3	0	0.0%	0	0.0%	1	33.3%	0	0.0%	0	0.0%
Small land mammals	10	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	10	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Migratory waterfowl	10	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other birds	10	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Bird eggs	10	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	10	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	10	3	1	33.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

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Table 8-22.–Page 2 of 2.

Resource category	Valid responses[a]	Households reporting reasons for more use	More success		Needed less		Store-bought expense		Got/ fixed equipment		Substituted resources	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	10	6	2	33.3%	1	16.7%	1	16.7%	0	0.0%	0	0.0%
All resources	**10**	**2**	**1**	**50.0%**	**0**	**0.0%**	**1**	**50.0%**	**0**	**0.0%**	**0**	**0.0%**
Salmon	10	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Nonsalmon fish	10	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Large land mammals	10	3	1	33.3%	1	33.3%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	10	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	10	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Migratory waterfowl	10	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other birds	10	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Bird eggs	10	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	10	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	10	3	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2014.

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

Table 8-23.–Reported impact to households reporting that they did not get enough of a type of resource, Mendeltna, 2013.

		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
Salmon	10	10	100.0%	3	30.0%	0	0.0%	0	0.0%	3	100.0%	0	0.0%	0	0.0%
Nonsalmon fish	10	10	100.0%	3	30.0%	0	0.0%	0	0.0%	3	100.0%	0	0.0%	0	0.0%
Marine invertebrates	10	2	20.0%	2	100.0%	0	0.0%	0	0.0%	2	100.0%	0	0.0%	0	0.0%
Large land mammals	10	10	100.0%	4	40.0%	0	0.0%	0	0.0%	2	50.0%	2	50.0%	0	0.0%
Marine mammals	10	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	10	2	20.0%	1	50.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%	0	0.0%
Migratory waterfowl	10	1	10.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other birds	10	2	20.0%	1	50.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%	0	0.0%
Bird eggs	10	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	10	10	100.0%	4	40.0%	0	0.0%	0	0.0%	3	75.0%	0	0.0%	1	25.0%
All resources	**10**	**10**	**100.0%**	**3**	**30.0%**	**0**	**0.0%**	**0**	**0.0%**	**2**	**66.7%**	**1**	**33.3%**	**0**	**0.0%**

Source ADF&G Division of Subsistence household surveys, 2014.

a. Does not includes households failing to respond to the question or those households that never used the resource.

Harvest Data

Changes in the harvest of resources by Mendeltna residents can also be discerned through comparisons with findings from other study years. These comparisons will be discussed in the chapter "East Glenn Highway: Tolsona."

Current and Historical Harvest Areas

Discussion of comparisons between current and historical search and harvest areas can be found in the subsection "Current and Historical Harvest Areas" in the section "Comparing Harvests and Uses in 2013 with Previous Years" in the chapter "East Glenn Highway: Tolsona."

Local Comments and Concerns

Following is a summary of local observations of wild resource populations and trends that were recorded during the surveys in Mendeltna. Some households did not offer any additional comments or concerns 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 was the most harvested wild resource by Mendeltna households and many harvested their salmon from fish wheels they share with other households in the Copper River or by dip net in the Chitina dip net fishery. Residents commented that 2013 was an unusual year for the Copper River fishery due to a flooding event that changed the course of the river and affected the placement of the fish wheel. Mendeltna households expressed concern regarding the future of Chinook salmon fishing in the Copper River. Many commented that Chinook salmon return rates have been noticeably decreasing over the past decade.

Large Land Mammals

Many Mendeltna respondents expressed concerns about not having enough opportunity to hunt for large land mammals such as moose and caribou in the Copper River Basin. Lack of opportunity was attributed to competition and crowding by residents from around the state who arrive to hunt in the local area. Several households expressed a desire for a rural residency preference for large mammal hunting due to increased hunting pressure from non-local residents.

Community Boundaries

With regard to the East Glenn Highway complex communities, research found that residents' perceptions of community affiliation were fluid and often did not reflect the boundaries of the respective community CDPs. Many residents were surprised at the official CDP boundaries and they were confused as to why the U.S. Census Bureau decided to spatially delineate the communities in the manner it had. Among the 3 combined communities, Mendeltna has the largest CDP in terms of area but the fewest resident households. Some of the Mendeltna CDP residents self-identify with Nelchina, some with Tolsona, and even fewer with Mendeltna as their place of residence. Mendeltna separates Nelchina from Tolsona and thus residents of the latter communities rarely self-identify with one another.

Cost of Heating Fuel

The cost of fuel for heating homes was a concern brought up by many Mendeltna households during the survey. These households expressed concern about the continuing rise of fuel costs and several expressed concerns that they may need to relocate if the trend continues.

ACKNOWLEDGMENTS

The ADF&G staff would like to thank Mabel and Russ Wimmer from the Mendeltna Creek Lodge for letting ADF&G use their facilities to host meetings, training sessions, and conduct surveys. Also, thanks are extended to Erin Fingle for her help as the local research assistant.

9. EAST GLENN HIGHWAY: NELCHINA

Malla Kukkonen

A broad overview of the East Glenn Highway area, as well as the reasons and methods for consolidating some data for the communities of Mendeltna, Nelchina, and Tolsona, was included in the previous chapter. This chapter will only include specific background and findings for Nelchina. Spatial harvest data were combined with Mendeltna and Tolsona and will be reported in the subsection "Current and Historical Harvest Areas" in the section "Comparing Harvests and Uses in 2013 with Previous Years" in chapter 10 "East Glenn Highway: Tolsona." Additionally, harvest data comparisons with previous years will be included in chapter 10.

Community Background

The name Nelchina is the traditional Ahtna Athabascan name for the area and the name was applied to the historical community developed around a mining settlement established at the mouth of Crooked Creek around 1913. Despite a government exploration party to the area in 1898, and the activities of a small number of trappers and prospectors working in the area, the Nelchina–Susitna region had remained largely unexplored up until the time it was settled. What is now known as the historic Chickaloon–Knik–Nelchina trail system, which originally was an Ahtna trail, was the only access trail into the region in the beginning of the 20th century. Large amounts of supplies were freighted up to the developing Nelchina–Susitna gold fields along this trail, which served as the only access route into the Copper River Basin until the construction of the Glenn Highway in the early 1940s (Bauer 1987; Chapin 1915:118–130, 1918; Orth 1971rep.:680; Wendt 1997). Theodore Chapin (1918:20), a United States Geological Survey (USGS) employee studying the region's geology and mineral resources in the summer of 1914, described the early settlement of Nelchina as: "[…] the seat of the Nelchina recording precinct and the general headquarters of the neighboring region." During his visit in 1914, Chapin documented between 15–20 small cabins in Nelchina (Chapin 1915:122). Most of the population in the early Nelchina settlement was documented as Euro-American. The majority of the Ahtna population living in the Copper River Basin was either permanently residing in Copper Center, which was the principal settlement in the region at the time, or continued to live seasonally in cabins as well as hunting and fishing camps while harvesting wild resources around throughout the Copper River Basin (Chapin 1918:7–20).

The Nelchina–Susitna gold fields were the destinations of some of the last gold rushes that took place in Alaska after 1910 and according to Wendt (1997), the gold strikes at Nelchina were small in comparison to the majority of Alaska's previous gold discoveries. While there were approximately 400 men prospecting on the tributaries of the Little Nelchina River, Tyone Creek, and Oshetna River during the 1914 season, only a small number of them stayed and were able to make a reasonable living from their claims in the long run. In fact, many struggled and ended up selling their claims to other interested miners (Chapin 1918:59; Wendt 1997). Although the initial boom was over soon, a few miners continued to live and mine the Nelchina area gold fields after 1916. The historical settlement was finally abandoned in the early 1940s (Bauer 1987).

A number of homesteaders and young families settled in the Nelchina area during the 1970s and early 1980s when new privately-owned land became available for purchase along the Glenn Highway. Like many current rural Alaska road-based communities, the present community of Nelchina is not located in a centralized location but rather is composed of a collection of households stretched along the Glenn Highway from approximately mile 137 to 150. Since 2000, the U.S. Census Bureau has included Nelchina as a census designated place (CDP) in the Valdez-Cordova Census Area (U.S. Census Bureau 2003:III-1–III-15). Most of the households considering Nelchina their permanent place of residence are located along the highway; only a few households live off the road and access their property with an all-terrain vehicle (ATV) or a snowmachine. There is no organized local government in the community but the Nelchina-Mendeltna Community Corporation, a not-for-profit corporation established in 1987, organizes and advocates for local

issues and planning. One of the essential services provided by the community corporation to Nelchina and Mendeltna households is organizing and maintaining a local transfer station for household refuse (Mary Odden, Nelchina resident, personal communication, January 2014).

In 2013, Nelchina had a small general store, a car repair and towing service, and a lodge, which has been in operation since the mid-1960s. The closest post office and other services, such as medical care, a larger grocery store, and gas stations, are available in Glennallen, which is approximately 45 miles east of Nelchina. The community school, Lottie Sparks Elementary, was closed in 2002 after functioning as both a school and a community center for more than 15 years. During the past 5 years, new land offerings by the State of Alaska have provided new subdivision development and subsequent construction in different parts of the larger Nelchina area. Long-time community residents said that before the new land openings, the community population had fluctuated very little because there was only a limited number of land plots available for anyone interested in settling in the community. With the new land openings and subdivision development, a number of young families with children have moved to Nelchina. Community residents commented that the cost of living in the area has been, and continues to be, high. In fact, the high cost of living is a factor that in the past forced many families to leave Nelchina. A number of the current Nelchina households, with or without children, are faced with the same challenge. Furthermore, several of the community households are also fully retired; in comparison some retired households continue to work seasonal jobs in the Copper River Basin or at other locations.

Demography

The households included in the Nelchina sample surveyed for this study were located approximately between mile 137 and mile 150 of the Glenn Highway (Figure 8-1). In addition, 2 households located in the Tolsona CDP identified themselves as Nelchina residents and requested that they be included in the Nelchina findings. Since the East Glenn Highway communities were going to be combined for analysis the research staff accepted this change. The section "Local Comments and Concerns" includes a discussion about residents' perception about community boundaries.

According to the U.S. Census Bureau, Nelchina had 59 residents in 30 households in 2010 (Table 9-1). In comparison, the household survey conducted for this study found an estimated a population of 76 people in 29 households in the community in 2013. The number of Alaska Natives residing in Nelchina has remained small; in 2010 the U.S. Census Bureau estimated that approximately 12% (or 7 people) of the total Nelchina population were Alaska Native. According to results from this survey, in 2013, 9% of Nelchina residents (or approximately 6 people) were Alaska Native. Figure 9-1 portrays Nelchina population changes since year 2000 (when the Nelchina CDP was formed) and is based on U.S. Census Bureau counts, population estimates produced by the Alaska Department of Labor and Workforce Development (ADLWD), and this study. The figure shows that over time, Nelchina's population has remained reasonably steady with the number of residents in the community increasing slightly since 2010.

Before the survey effort, researchers, in collaboration with knowledgeable community residents, estimated and confirmed that there were 30 housing units in Nelchina, 1 of which was vacant. The survey staff were able to interview 18 (62%) of the 29 year-round households in Nelchina, making the total sampled Nelchina population 47 (Table 9-2). The survey team was unable to contact 9 households and 2 households declined to be interviewed. The following data are expanded to cover the households not surveyed. According to survey results, the mean number of years of residency in Nelchina for the total population was 18 years; the maximum length of residence was 53 years (Table 9-3). In 2013, the average household size in Nelchina was small—approximately 3 people per household. In general, 55% of the population was female and 45% male (Table 9-4). The largest age cohort of the entire Nelchina population was males and females between ages 55–59 years of age; this age cohort made up approximately 24% of the total Nelchina male population, and 19% of community's female population (Figure 9-2; Table 9-4). Age cohorts of both sexes were fairly evenly distributed among age ranges 5 to 19 and 65 to 74 years of age (Figure 9-2). However, there were no males or females between ages 20 to 24 or 40 to 44 years of age residing in Nelchina in 2013 (Table 9-4; Figure 9-2). Furthermore, the mean age of community residents was 40 years of age (Table 9-3). It is also

Table 9-1.–Population estimates, Nelchina, 2010 and 2013.

	Census (2010)	5-year American Community Survey (2008–2012)	This study (2013)
Total population			
Households	30	19	29.0
Population	59	80	75.7
Alaska Native			
Population	7	0	6.4
Percentage	11.9%	0.0%	8.5%

Sources U.S. Census Bureau (2011) for 2010 estimate; U.S. Census Bureau for American Community Survey 5-year survey estimate; and ADF&G Division of Subsistence household surveys, 2014, for 2013 estimate.
Note The term "households" means occupied housing units. Alaska Native population data from the American Community Survey and 2010 census come from the category "race alone or in combination with one or more other races."

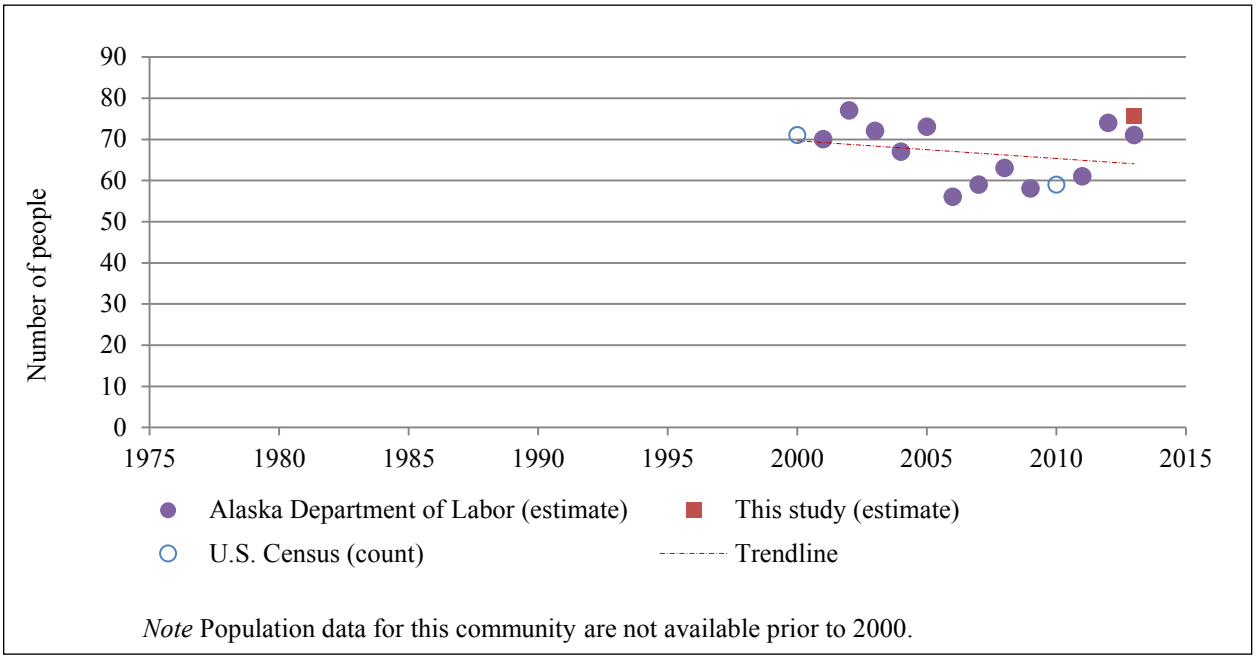

Figure 9-1.–Historical population estimates, Nelchina, 2000–2013.

Table 9-2.–Sample achievement, Nelchina, 2013.

	Nelchina
Number of dwelling units	30
Interview goal	30
Households interviewed	18
Households failed to be contacted	9
Households declined to be interviewed	2
Households moved or occupied by nonresident	1
Total households attempted to be interviewed	20
Refusal rate	10.0%
Final estimate of permanent households	29
Percentage of total households interviewed	62.1%
Interview weighting factor	1.6
Sampled population	47
Estimated population	75.7

Source ADF&G Division of Subsistence household surveys, 2014.

noteworthy that while a number of females between 75 and 89 years of age resided in Nelchina in 2013, the oldest males were between ages 70 and 74 years of age (Table 9-4; Figure 9-2).

The survey also asked about the birthplaces of household members. According to survey results, the majority (87%) of Nelchina household heads were born outside Alaska in other parts of the United States (Table 9-5). A small percentage of Nelchina household heads (approximately 7%) were born in Anchorage. For the Nelchina population overall, the majority (approximately 60%) of the community residents were born somewhere else in the United States (Appendix Table E9-1). In comparison, 19% of Nelchina residents claimed Nelchina as their birthplace, 6% cited nearby Chickaloon, and 4% cited either Anchorage or Chugiak as their birthplace.

Table 9-3.–Sample and demographic characteristics, Nelchina, 2013.

Characteristics	
Sampled population	47
Estimated community population	76
Household size	
Mean	2.6
Minimum	1
Maximum	7
Age	
Mean	39.8
Minimum[a]	0
Maximum	85
Median	39
Length of residency	
Total population	
Mean	18.0
Minimum[a]	0
Maximum	53
Heads of household	
Mean	23.6
Minimum[a]	0
Maximum	53
Alaska Native	
Estimated households[b]	
Number	3.2
Percentage	11.1%
Estimated population	
Number	6
Percentage	8.5%

Source ADF&G Division of Subsistence household surveys, 2014.

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 9-4.–Population profile, Nelchina, 2013.

	Male			Female			Total		
Age	Number	Percentage	Cumulative percentage	Number	Percentage	Cumulative percentage	Number	Percentage	Cumulative percentage
0–4	0.0	0.0%	0.0%	3.2	7.7%	7.7%	3.2	4.3%	4.3%
5–9	3.2	9.5%	9.5%	4.8	11.5%	19.2%	8.1	10.6%	14.9%
10–14	3.2	9.5%	19.0%	4.8	11.5%	30.8%	8.1	10.6%	25.5%
15–19	3.2	9.5%	28.6%	3.2	7.7%	38.5%	6.4	8.5%	34.0%
20–24	0.0	0.0%	28.6%	0.0	0.0%	38.5%	0.0	0.0%	34.0%
25–29	1.6	4.8%	33.3%	1.6	3.8%	42.3%	3.2	4.3%	38.3%
30–34	4.8	14.3%	47.6%	1.6	3.8%	46.2%	6.4	8.5%	46.8%
35–39	0.0	0.0%	47.6%	3.2	7.7%	53.8%	3.2	4.3%	51.1%
40–44	0.0	0.0%	47.6%	0.0	0.0%	53.8%	0.0	0.0%	51.1%
45–49	1.6	4.8%	52.4%	0.0	0.0%	53.8%	1.6	2.1%	53.2%
50–54	0.0	0.0%	52.4%	3.2	7.7%	61.5%	3.2	4.3%	57.4%
55–59	8.1	23.8%	76.2%	8.1	19.2%	80.8%	16.1	21.3%	78.7%
60–64	4.8	14.3%	90.5%	0.0	0.0%	80.8%	4.8	6.4%	85.1%
65–69	1.6	4.8%	95.2%	1.6	3.8%	84.6%	3.2	4.3%	89.4%
70–74	1.6	4.8%	100.0%	1.6	3.8%	88.5%	3.2	4.3%	93.6%
75–79	0.0	0.0%	100.0%	1.6	3.8%	92.3%	1.6	2.1%	95.7%
80–84	0.0	0.0%	100.0%	1.6	3.8%	96.2%	1.6	2.1%	97.9%
85–89	0.0	0.0%	100.0%	1.6	3.8%	100.0%	1.6	2.1%	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	**33.8**	**100.0%**	**100.0%**	**41.9**	**100.0%**	**100.0%**	**75.7**	**100.0%**	**100.0%**

Source ADF&G Division of Subsistence household surveys, 2014.

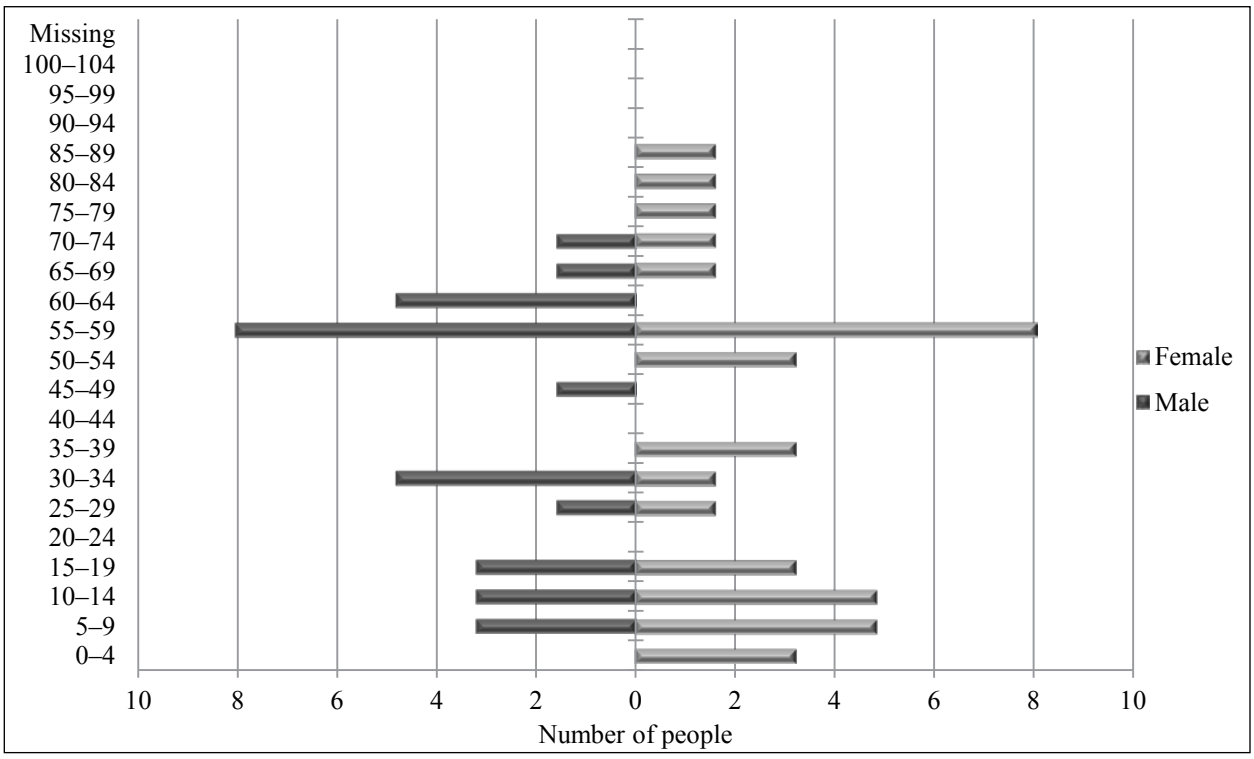

Figure 9-2.–Population profile, Nelchina, 2013.

Table 9-5.–Birthplaces of household heads, Nelchina, 2013.

Birthplace	Percentage
Anchorage	6.7%
Cube Cove	3.3%
Other U.S.	86.7%
Missing	3.3%

Source ADF&G Division of Subsistence household surveys, 2014.
Note "Birthplace" means the place of residence of the parents of the individual when the individual was born.

Cash Employment and Monetary Income

Nelchina is located approximately 45 miles west of Glennallen and 137 miles northeast of Anchorage. Glennallen, which is the regional hub for the Copper River Basin, is the closest center with local, tribal, state, and federal government agency offices, and a variety of services that offer both year-round and seasonal wage earning opportunities for area residents. The number of permanent employment opportunities in Nelchina has always been very limited and many community residents work in Glennallen, or even farther away in other Alaska communities. A number of the community households are fully retired, or choose to work seasonal jobs in the Copper River Basin or to work at other locations.

Table 9-6 summarizes the estimated earned and other income sources for residents of Nelchina in 2013. The table shows that in 2013 the average earned income per Nelchina household was $58,022, or 88% of the total community income. In comparison, other income averaged $8,284 per household and made up 13% of the total community income. The per capita income was $25,394. Wages earned in employment with state government, the services sector, and the mining industry contributed the most to the total community income. The largest sources of other income were pension/retirement and Alaska Permanent Fund dividends. Pension/retirement accounted for 6% and the dividends for 3% of the total community income in 2013.

In 2013, the majority (50%) of jobs held by Nelchina residents were with the services sector (Table 9-7). Other important employment sectors in 2013 were state government (20%) and mining (10%). Federal, local, and tribal government, as well as construction employers each provided 5% of the jobs held by Nelchina residents during the study year. It needs to be noted that an additional 5% of the employment by industry data were not indicated. In comparison, income earned from employment with state government and services occupations provided most (27% and 26%, respectively) of the earned income by industry category. The remaining earned income provided by industry category was earned from employment in mining (17%), local and tribal government (7%), and federal government (2%) positions. An additional 15% of community earned income was from unspecified industries.

The study found 55 working-age adults over the age of 16 in Nelchina in 2013; the calculated average length of employment for all Nelchina adults was 24.5 weeks or approximately 6 months (Table 9-8). According to survey results, of the 55 adults in Nelchina, 41 were employed in 2013. For the employed adults, the mean length of employment was approximately 7.5 months. In comparison, 51% of the adults in Nelchina were employed year-round in 2013. At the household level, all 29 Nelchina households had an adult household member employed at some point during the study year. The mean number of jobs held by an employed household in 2013 was 1.6. Furthermore, there was an average of 1.4 employed adults in each Nelchina household during study year 2013.

Table 9-6.–Estimated earned and other income, Nelchina, 2013.

Income source	Number of people	Number of households	Total for community	-/+ 95% CI	Mean per household	Per capita income	Percentage of total community income
Earned income							
State government	6.4	9.7	$461,528	$130,829 – $1,264,847	$15,915		24.0%
Services	16.1	16.9	$437,618	$101,178 – $717,578	$15,090		22.8%
Mining	3.2	4.8	$284,078	$30,786 – $956,383	$9,796		14.8%
Other employment	1.6	2.4	$254,636	$66,540 – $1,026,706	$8,781		13.2%
Local government, including tribal	1.6	2.4	$109,494	$90,827 – $222,059	$3,776		5.7%
Construction	1.6	2.4	$103,446	$83,525 – $195,450	$3,567		5.4%
Federal government	1.6	2.4	$31,830	$25,700 – $64,238	$1,098		1.7%
Earned income subtotal	**29.0**	**29.0**	**$1,682,630**	**$985,636 – $3,002,600**	**$58,022**	**$22,221**	**87.5%**
Other income							
Pension/retirement		6.4	$112,588	$1,058 – $278,400	$3,882		5.9%
Alaska Permanent Fund dividend		27.4	$62,350	$42,050 – $81,200	$2,150		3.2%
Social Security		6.4	$36,178	$1,633 – $91,563	$1,248		1.9%
Child support		3.2	$13,920	$8,640 – $32,480	$480		0.7%
Longevity bonus		3.2	$8,217	$5,100 – $22,233	$283		0.4%
Unemployment		3.2	$4,094	$2,541 – $13,050	$141		0.2%
Native corporation dividend		3.2	$1,450	$900 – $3,383	$50		0.1%
Medicare/Medicaid		1.8	$1,301	$808 – $3,793	$45		0.1%
Other		1.6	$144	$89 – $1,074	$5		0.0%
TANF (Temporary Assistance for Needy Families)		0.0	$0	$0 – $0	$0		0.0%
Adult public assistance (OAA, APD)		0.0	$0	$0 – $0	$0		0.0%
Supplemental Security income		0.0	$0	$0 – $0	$0		0.0%
Food stamps		0.0	$0	$0 – $0	$0		0.0%
Heating assistance		0.0	$0	$0 – $0	$0		0.0%
Workers' compensation/insurance		0.0	$0	$0 – $0	$0		0.0%
Disability		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		**27.5**	**$240,242**	**$126,395 – $407,551**	**$8,284**	**$3,173**	**12.5%**
Community income total			**$1,922,872**	**$1,230,366 – $3,167,638**	**$66,306**	**$25,394**	**100.0%**

Source ADF&G Division of Subsistence household surveys, 2014.

Table 9-7.–Employment by industry, Nelchina, 2013.

Industry	Jobs	Households	Individuals	Percentage of wage earnings
Estimated total number	**45.6**	**29.0**	**41.1**	
Federal government	**5.0%**	**8.3%**	**5.6%**	**1.9%**
Technologists and technicians, except health	5.0%	8.3%	5.6%	1.9%
State government	**20.0%**	**33.3%**	**22.2%**	**27.4%**
Technologists and technicians, except health	5.0%	8.3%	5.6%	5.7%
Service occupations	5.0%	8.3%	5.6%	0.9%
Transportation and material moving occupations	5.0%	8.3%	5.6%	5.7%
Occupation not indicated	5.0%	8.3%	5.6%	15.1%
Local government, including tribal	**5.0%**	**8.3%**	**5.6%**	**6.5%**
Teachers, librarians, and counselors	5.0%	8.3%	5.6%	6.5%
Mining	**10.0%**	**16.7%**	**11.1%**	**16.9%**
Engineers, surveyors, and architects	5.0%	8.3%	5.6%	1.7%
Occupation not indicated	5.0%	8.3%	5.6%	15.1%
Construction	**5.0%**	**8.3%**	**5.6%**	**6.1%**
Construction and extractive occupations	5.0%	8.3%	5.6%	6.1%
Services	**50.0%**	**58.3%**	**55.6%**	**26.0%**
Executive, administrative, and managerial	5.0%	8.3%	5.6%	2.8%
Writers, artists, entertainers, and athletes	5.0%	8.3%	5.6%	0.1%
Health technologists and technicians	5.0%	8.3%	5.6%	3.8%
Administrative support occupations, including clerical	10.0%	16.7%	11.1%	2.7%
Service occupations	10.0%	16.7%	11.1%	6.1%
Mechanics and repairers	5.0%	8.3%	5.6%	4.2%
Transportation and material moving occupations	10.0%	16.7%	11.1%	6.4%
Industry not indicated	**5.0%**	**8.3%**	**5.6%**	**15.1%**
Occupation not indicated	5.0%	8.3%	5.6%	15.1%

Source ADF&G Division of Subsistence household surveys, 2014.

Table 9-8.–Employment characteristics, Nelchina, 2013.

Characteristic	Community Nelchina
All adults	
Number	54.8
Mean weeks employed	24.5
Employed adults	
Number	41.1
Percentage	75.0%
Jobs	
Number	45.6
Mean	1.1
Minimum	1
Maximum	2
Months employed	
Mean	7.5
Minimum	2
Maximum	12
Percentage employed year-round	51.0%
Mean weeks employed	32.6
Households	
Number	29
Employed	
Number	29.0
Percentage	100.0%
Jobs per employed household	
Mean	1.6
Minimum	1
Maximum	4
Employed adults	
Mean	
Employed households	1.4
Total households	1.4
Minimum	1
Maximum	2
Mean person-weeks of employment	31.8

Source ADF&G Division of Subsistence household surveys, 2014.

Levels of Individual Participation in the Harvesting and Processing of Wild Resources

Table 9-9 reports the expanded levels of individual participation in the harvest and processing of wild resources by all Nelchina residents in 2013. Approximately 87% of community residents harvested some wild resources. With reference to specific resource categories, most (87%) residents harvested some vegetation resources, followed by 53% of residents fishing, and 45% hunting for large land mammals. A smaller number of Nelchina residents hunted for birds (19%), and even fewer (9%) hunted or trapped small land mammals. According to survey results, 89% of Nelchina residents processed some wild resources during 2013. Nearly as many residents (85%) processed vegetation. Fewer individuals were involved in processing fish (57%) and large land mammals (53%). An even smaller number processed some birds (15%), and the least number of community members (11%) were involved in processing small land mammals. It is interesting to note that more Nelchina residents processed large land mammals (53%) than hunted for them (45%); this indicates that some households, or household members, likely assisted with processing of a successfully harvested animal at some point during 2013.

The survey included questions about individual participation in wild harvest activities such as working with fish wheels, handicrafts, and cooking wild foods. In Nelchina, 4% of residents built or repaired fish wheels or helped to place or remove a fish wheel (Table 9-10). In 2013, a similar small percentage (4%) of residents sewed skins or cloth and 87% of residents cooked wild foods.

Household Resource Harvest and Use Patterns and Sharing of Wild Resources

Table 9-11 summarizes resource harvest and use characteristics for Nelchina in 2013 at the household level. Most households (94%) used wild resources in 2013; in addition 83% attempted to harvest, or harvested resources. The average harvest was 335 lb usable weight per household, or 128 lb per capita. During the study year, community households harvested an average of 7 kinds of resources and used an average of 8 kinds of resources. The maximum number of resources used by any Nelchina household was 19. In addition, households gave away an average of 3 kinds of resources; furthermore, 83% of households shared resources with other households.

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 9-3, in the 2013 study year in Nelchina, about 72% of the harvests of wild resources as estimated in usable pounds was harvested by 33% 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 Nelchina and the other study communities.

The survey included questions about residents' use of alternative and motorized modes of transportation to access wild food harvest areas and the use of portable motors. Figure 9-4 demonstrates the percentage of community households that used an alternate means of transportation (in addition to or aside from using cars, trucks, or traveling on foot). Approximately 67% of the Nelchina households used an all-terrain vehicle (ATV) when harvesting wild foods. About 33% of households used a boat, 33% used snowmachines, and 11% used an aircraft. Fifty-six percent of Nelchina households used a chain saw, 33% used a winch, 28% used an ice auger, and generators were used by 11% of households (Figure 9-5).

Figure 9-6 demonstrates the percentage of Nelchina households that used natural materials for handicrafts; 11% used antlers, another 11% used horns, but no household reported using bark. Furthermore, 17% of households used other raw natural materials, including furs, skins, and diamond willow.

Table 9-9.–Individual participation in subsistence harvesting and processing activities, Nelchina, 2013.

Total number of people	**75.7**
Fish	
Fish	
Number	40.3
Percentage	53.2%
Process	
Number	43.5
Percentage	57.4%
Large land mammals	
Hunt	
Number	33.8
Percentage	44.7%
Process	
Number	40.3
Percentage	53.2%
Small land mammals	
Hunt or trap	
Number	6.4
Percentage	8.5%
Process	
Number	8.1
Percentage	10.6%
Birds and eggs	
Hunt/gather	
Number	14.5
Percentage	19.1%
Process	
Number	11.3
Percentage	14.9%
Vegetation	
Gather	
Number	66.1
Percentage	87.2%
Process	
Number	64.4
Percentage	85.1%
Any resource	
Attempt harvest	
Number	66.1
Percentage	87.2%
Process	
Number	67.7
Percentage	89.4%

Source ADF&G Division of Subsistence household surveys, 2014.

Table 9-10.–Household member participation in subsistence craft activities, Nelchina, 2013.

Total number of people	**75.7**
Building, maintaining, or moving fish wheels	
Number	3.2
Percentage	4.3%
Sewing skins or cloth	
Number	3.2
Percentage	4.3%
Cooking wild foods	
Number	66.1
Percentage	87.2%

Source ADF&G Division of Subsistence household surveys, 2014.

Like in many rural Alaska communities, firewood is used widely as a primary, or supplemental, source of home heating in Nelchina. Survey results indicate that during 2013 approximately 39% of the interviewed Nelchina households heated their home mostly with firewood (76–99% of home heating source) (Table 9-12). A smaller percentage (17%) used firewood as a supplemental source of home heat (26–50% of home heating source); in comparison, a similar number (17%) of interviewed Nelchina households said they had not used any firewood in 2013 to heat their home. Furthermore, only 1 household reported relying entirely on firewood as a source of home heating. According to survey results, the overall average annual cost of home heating in Nelchina was $2,023 during study year 2013.

Harvest Quantities and Composition

Table 9-13 reports estimated wild resource harvests and uses by Nelchina residents in 2013 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[1]). The "harvest" category includes resources harvested by any member of the surveyed household during the study year. The "use" category includes all 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 firewood are included because they are an important part of the subsistence way of life. Differences between harvest and use percentages reflect sharing among households, which results in a wider distribution of wild foods.

In 2013, Nelchina households harvested an estimated total of 9,720 lb, or 128 lb per capita of wild resources (Table 9-13). The majority of this harvest (5,675 lb, or 75 lb per capita) was composed of large land mammals, which as a single resource category contributed 58% of the community's total wild resource harvest in 2013 (Table 9-13; Figure 9-7). Fish was the second most harvested resource category with a total harvest of 2,738 lb, or 36 lb per capita; the overall wild resource harvest comprises 22% salmon resources and 7% nonsalmon fish resources. Marine invertebrates made up 7% of the estimated overall community harvest totaling 666 lb, or 9 lb per capita. The harvest of a variety of vegetation resources was nearly as large, making up 6% of the overall harvest and totaling 583 lb, or 8 lb per capita. Only a few Nelchina households harvested small land mammals or birds. The total harvest of small land mammals was 32 lb and the total harvest of birds 26 lb; the per capita harvest of resources from both of these resource categories was less than 1 lb per capita. Nelchina households did not report harvesting any bird eggs or marine mammals during study year 2013.

1. 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 9-11.–Resource harvest and use characteristics, Nelchina, 2013.

Characteristic	
Mean number of resources used per household	**8.3**
Minimum	0
Maximum	19
95% confidence limit (±)	21.7%
Median	7.5
Mean number of resources attempted to harvest per household	**8.3**
Minimum	0
Maximum	21
95% confidence limit (±)	22.2%
Median	8.5
Mean number of resources harvested per household	**6.9**
Minimum	0
Maximum	16
95% confidence limit (±)	21.4%
Median	7
Mean number of resources received per household	**2.8**
Minimum	0
Maximum	11
95% confidence limit (±)	34.8%
Median	1
Mean number of resources given away per household	**3.0**
Minimum	0
Maximum	9
95% confidence limit (±)	30.1%
Median	2
Household harvest (pounds)	
Minimum	0
Maximum	1,082
Mean	335.2
Median	215
Total harvest weight (lb)	9,720.1
Community per capita harvest (lb)	128.4
Percentage using any resource	94.4%
Percentage attempting to harvest any resource	83.3%
Percentage harvesting any resource	83.3%
Percentage receiving any resource	83.3%
Percentage giving away any resource	83.3%
Number of households in sample	18
Number of resources asked about and identified voluntarily by respondents	116

Source ADF&G Division of Subsistence household surveys, 2014.

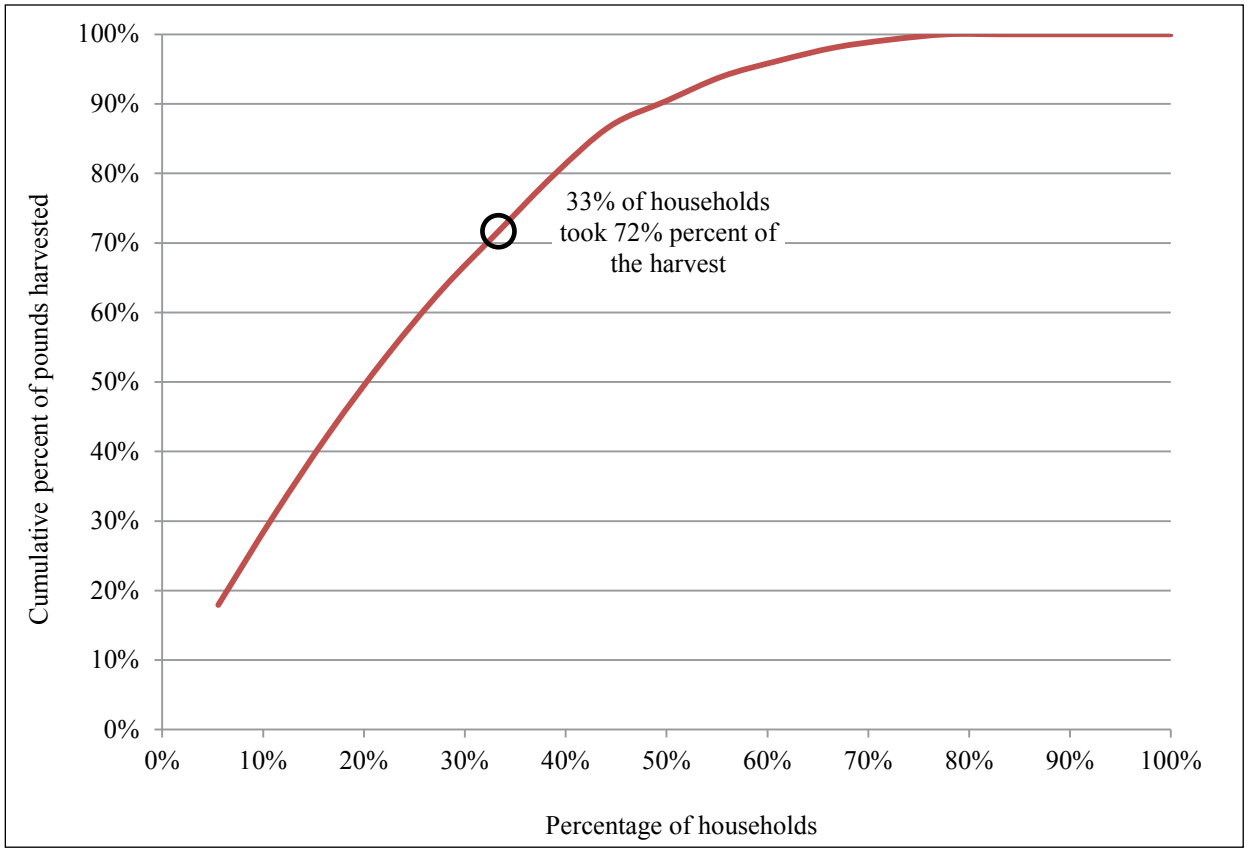

Figure 9-3.–Household specialization, Nelchina, 2013.

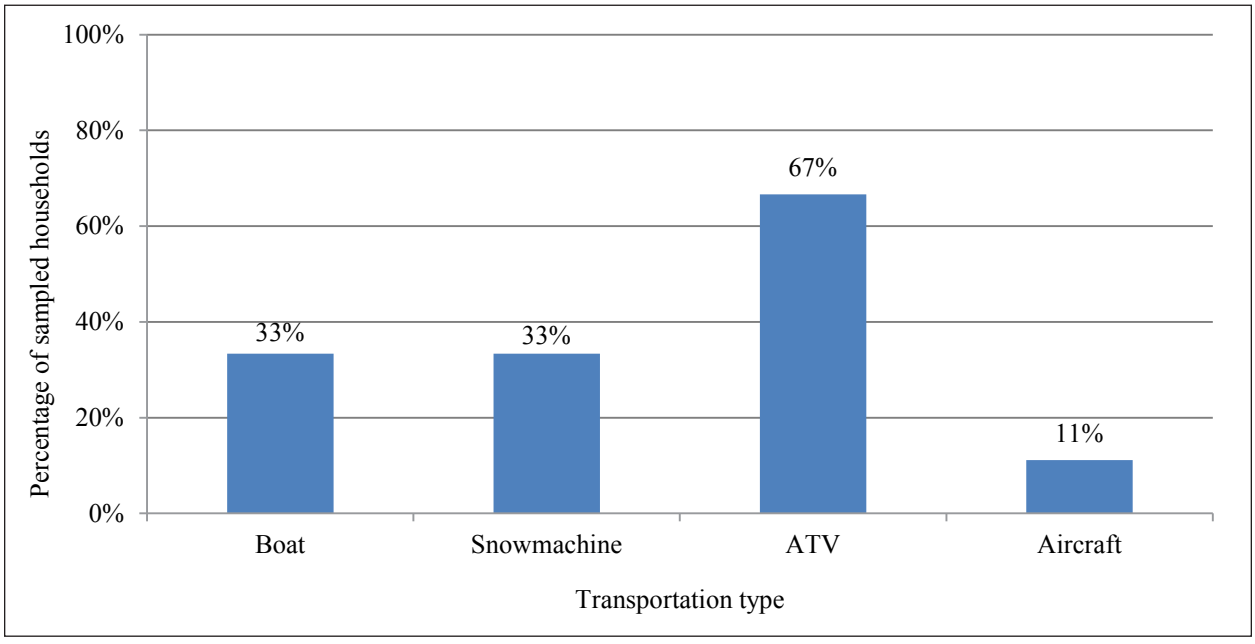

Figure 9-4.–Alternative modes of transportation used by sampled households to access wild resources, Nelchina, 2013.

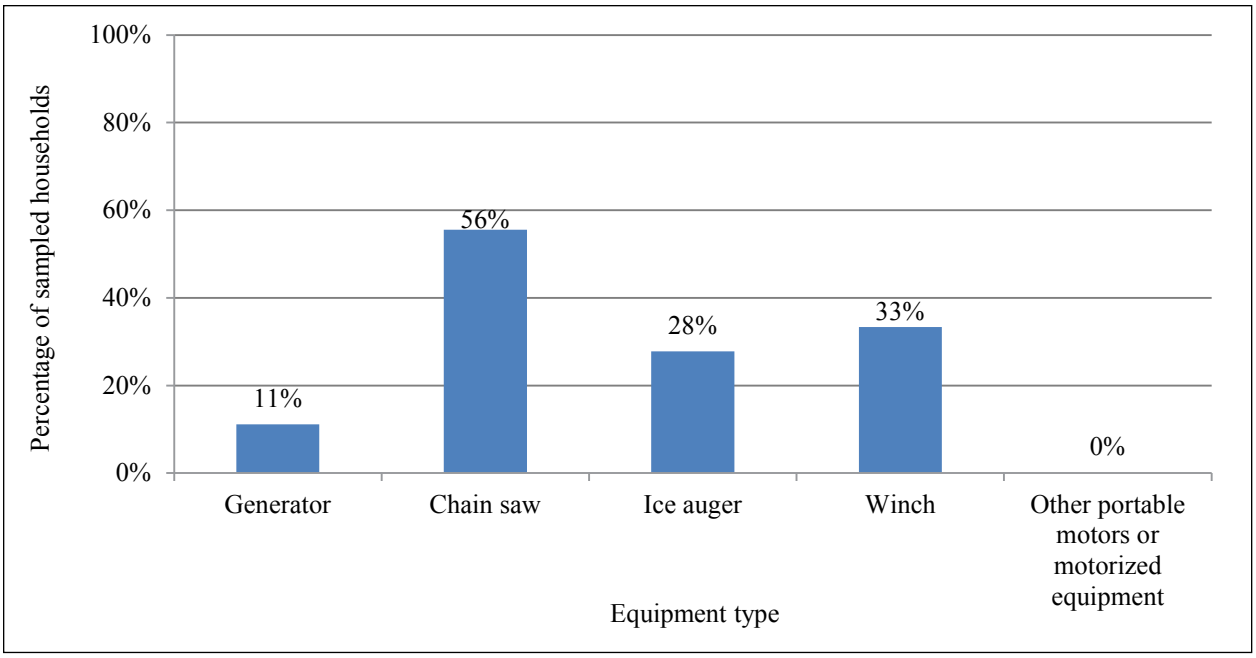

Figure 9-5.–Portable motorized equipment used by sampled households while searching for and harvesting wild resources, Nelchina, 2013.

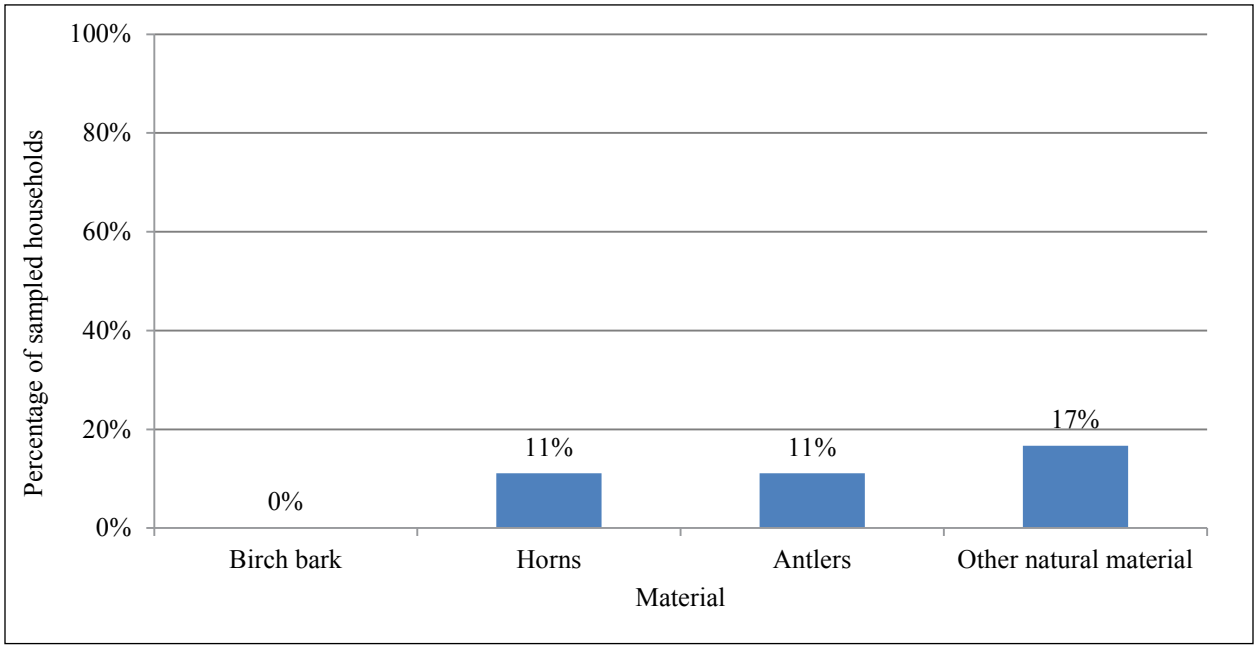

Figure 9-6.–Natural materials used by sampled households for making handicrafts, Nelchina, 2013.

Table 9-12.–Use of firewood for home heating in sampled households, Nelchina, 2013.

Community	Average annual cost of home heating	Household use of wood for home heating as a percentage of total fuel for heating											
		0%		1%–25%		26%–50%		51%–75%		76%–99%		100%	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Nelchina	$2,023	3	16.7%	2	11.1%	3	16.7%	2	11.1%	7	38.9%	1	5.6%

Source ADF&G Division of Subsistence household surveys, 2014.

Table 9-13.–Estimated use and harvests of fish, game, and vegetation resources, Nelchina, 2013.

	Percentage of households					Harvest weight (lb)			Harvest amount[a]			95%
	Use	Attempt	Harvest	Receive	Give		Mean per				Mean per	confidence
Resource	%	%	%	%	%	Total	household	Per capita	Total	Unit	household	limit (±)
All resources	**94.4**	**83.3**	**83.3**	**83.3**	**83.3**	**9,720.1**	**335.2**	**128.4**				**30.2**
Salmon	**66.7**	**55.6**	**50.0**	**38.9**	**38.9**	**2,098.6**	**72.4**	**27.7**				**51.6**
Chum salmon	5.6	5.6	5.6	0.0	0.0	198.9	6.9	2.6	38.7	ind	1.3	129.9
Coho salmon	16.7	27.8	5.6	16.7	11.1	200.2	6.9	2.6	32.2	ind	1.1	129.9
Chinook salmon	16.7	11.1	11.1	11.1	5.6	88.5	3.1	1.2	6.4	ind	0.2	100.9
Pink salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Sockeye salmon	55.6	44.4	38.9	27.8	27.8	1,610.9	55.5	21.3	351.3	ind	12.1	65.2
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	**61.1**	**61.1**	**50.0**	**50.0**	**33.3**	**639.0**	**22.0**	**8.4**				**47.2**
Pacific herring	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	ind	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
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	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Lingcod	5.6	5.6	5.6	0.0	0.0	3.9	0.1	0.1	1.6	ind	0.1	129.9
Pacific halibut	33.3	11.1	11.1	22.2	5.6	235.1	8.1	3.1	235.1	lb	8.1	113.4
Arctic lamprey	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	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
Burbot	33.3	27.8	27.8	16.7	16.7	112.1	3.9	1.5	46.7	ind	1.6	53.4
Dolly Varden	11.1	16.7	11.1	0.0	0.0	17.4	0.6	0.2	19.3	ind	0.7	90.5
Lake trout	44.4	50.0	38.9	11.1	11.1	177.2	6.1	2.3	88.6	ind	3.1	51.9
Arctic grayling	27.8	27.8	27.8	11.1	5.6	35.0	1.2	0.5	49.9	ind	1.7	59.4
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
Longnose sucker	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	16.7	33.3	16.7	5.6	0.0	35.8	1.2	0.5	25.6	ind	0.9	91.7
Unknown trout	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Broad whitefish	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 9-13.–Page 2 of 4.

Resource	Percentage of households: Use %	Attempt %	Harvest %	Receive %	Give %	Harvest weight (lb): Total	Mean per household	Per capita	Harvest amount[a]: Total	Unit	Mean per household	95% confidence limit (±)
Nonsalmon fish, continued												
Least cisco	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Humpback whitefish	5.6	5.6	5.6	5.6	5.6	16.9	0.6	0.2	9.7	ind	0.3	129.9
Round whitefish	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	5.6	5.6	5.6	5.6	0.0	5.6	0.2	0.1	3.2	ind	0.1	129.9
Large land mammals	**72.2**	**66.7**	**55.6**	**44.4**	**55.6**	**5,675.1**	**195.7**	**74.9**				**35.9**
Bison	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Black bear	11.1	5.6	0.0	11.1	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Brown bear	0.0	5.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Caribou	44.4	38.9	27.8	27.8	22.2	1,256.7	43.3	16.6	9.7	ind	0.3	54.6
Deer	11.1	5.6	5.6	5.6	0.0	68.5	2.4	0.9	1.6	ind	0.1	129.9
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	61.1	61.1	33.3	38.9	50.0	4,350.0	150.0	57.4	9.7	ind	0.3	44.6
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	**16.7**	**22.2**	**16.7**	**0.0**	**11.1**	**32.2**	**1.1**	**0.4**				**91.1**
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	5.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Red fox–cross phase	0.0	5.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Red fox–red phase	0.0	5.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Snowshoe hare	5.6	5.6	5.6	0.0	5.6	19.3	0.7	0.3	9.7	ind	0.3	129.9
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	5.6	11.1	5.6	0.0	5.6	12.9	0.4	0.2	3.2	ind	0.1	129.9
Marmot	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Marten	5.6	11.1	5.6	0.0	0.0	0.0	0.0	0.0	1.6	ind	0.1	129.9
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	5.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Porcupine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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
Least weasel	5.6	5.6	5.6	0.0	0.0	0.0	0.0	0.0	9.7	ind	0.3	129.9
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

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Table 9-13.–Page 3 of 4.

Resource	Percentage of households: Use %	Attempt %	Harvest %	Receive %	Give %	Harvest weight (lb): Total	Mean per household	Per capita	Harvest amount[a]: Total	Unit	Mean per household	95% confidence limit (±)
Marine mammals	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**				**0.0**
Fur seal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Harbor seal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown seal	0.0	0.0	0.0	0.0	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
Unknown whale	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	**27.8**	**22.2**	**22.2**	**5.6**	**0.0**	**25.9**	**0.9**	**0.3**				**87.3**
Canvasback	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Spectacled 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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Mallard	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
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
Green-winged teal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
American wigeon	0.0	5.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown ducks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Brant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Cackling goose	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Canada 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 Canada/ cackling geese	5.6	0.0	0.0	5.6	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Emperor goose	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Snow goose	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Tundra (whistling) swan	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
Spruce grouse	22.2	22.2	22.2	0.0	0.0	15.8	0.5	0.2	22.6	ind	0.8	70.9
Ruffed grouse	5.6	5.6	5.6	0.0	0.0	6.8	0.2	0.1	9.7	ind	0.3	129.9
Unknown ptarmigan	5.6	5.6	5.6	0.0	0.0	3.4	0.1	0.0	4.8	ind	0.2	129.9
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

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Table 9-13.–Page 4 of 4.

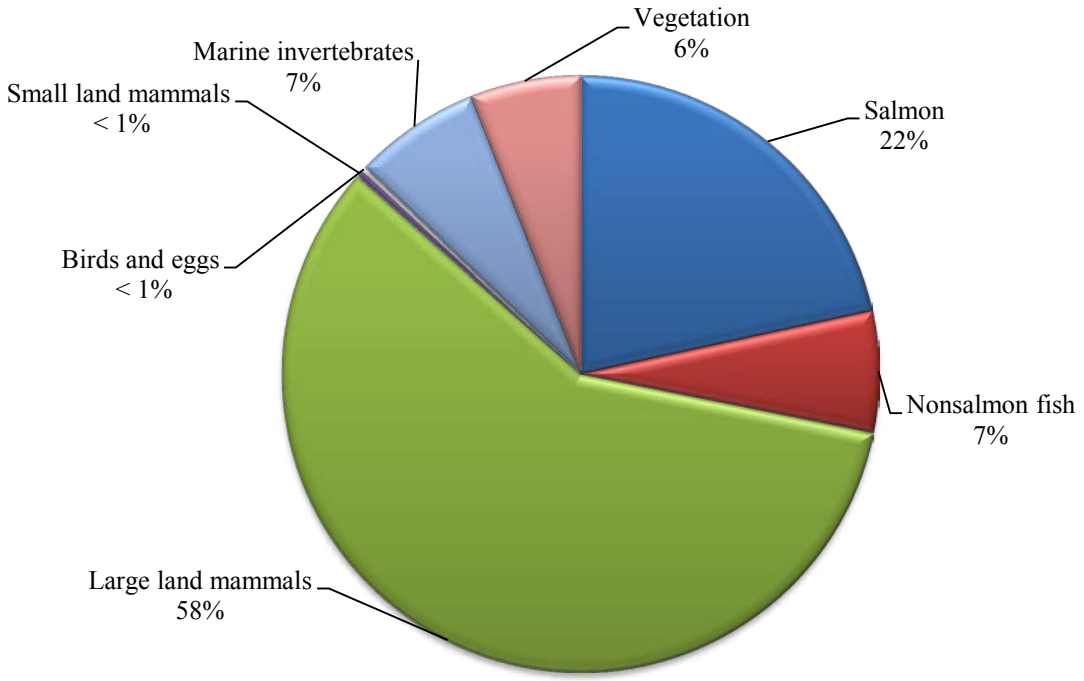
Resource	Percentage of households: Use %	Attempt %	Harvest %	Receive %	Give %	Harvest weight (lb): Total	Mean per household	Per capita	Harvest amount[a]: Total	Unit	Mean per household	95% confidence limit (±)
Birds and eggs, continued												
Unknown gull eggs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown 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	**16.7**	**11.1**	**11.1**	**16.7**	**11.1**	**666.0**	**23.0**	**8.8**				**95.2**
Butter clams	11.1	11.1	11.1	11.1	11.1	61.9	2.1	0.8	20.6	gal	0.7	103.8
Freshwater 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	11.1	11.1	11.1	5.6	11.1	604.2	20.8	8.0	201.4	gal	6.9	94.5
Dungeness crab	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	lb	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	lb	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	lb	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
Shrimp	5.6	0.0	0.0	5.6	0.0	0.0	0.0	0.0	0.0	lb	0.0	0.0
Squid	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Vegetation	**83.3**	**83.3**	**83.3**	**16.7**	**44.4**	**583.2**	**20.1**	**7.7**				**32.9**
Blueberry	72.2	72.2	72.2	5.6	22.2	293.2	10.1	3.9	73.3	gal	2.5	34.0
Lowbush cranberry	44.4	44.4	44.4	5.6	11.1	89.4	3.1	1.2	22.4	gal	0.8	55.0
Highbush cranberry	16.7	16.7	16.7	5.6	11.1	90.2	3.1	1.2	22.6	gal	0.8	94.1
Crowberry	16.7	16.7	16.7	5.6	5.6	8.1	0.3	0.1	2.0	gal	0.1	104.0
Currants	11.1	11.1	11.1	0.0	11.1	33.8	1.2	0.4	8.5	gal	0.3	123.5
Huckleberry	5.6	5.6	5.6	0.0	0.0	2.4	0.1	0.0	0.4	gal	0.0	129.9
Cloudberry	5.6	5.6	5.6	0.0	0.0	0.2	0.0	0.0	0.1	gal	0.0	129.9
Raspberry	44.4	44.4	44.4	0.0	16.7	56.8	2.0	0.8	14.2	gal	0.5	52.6
Other wild berry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
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
Wild rose hips	5.6	5.6	5.6	0.0	0.0	6.4	0.2	0.1	1.6	gal	0.1	129.9
Other wild greens	5.6	5.6	5.6	0.0	0.0	0.1	0.0	0.0	0.1	gal	0.0	129.9
Unknown mushrooms	11.1	11.1	11.1	0.0	0.0	1.7	0.1	0.0	1.7	gal	0.1	122.1
Fireweed	5.6	5.6	5.6	5.6	0.0	0.8	0.0	0.0	0.8	gal	0.0	129.9
Plantain	5.6	5.6	5.6	0.0	0.0	0.1	0.0	0.0	0.1	gal	0.0	129.9
Other wood	83.3	83.3	83.3	5.9	29.4	0.0	0.0	0.0	177.4	cord	6.1	28.4

Source ADF&G Division of Subsistence household surveys, 2014.

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.

a. Summary rows that include incompatible units of measure have been left blank.



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

Figure 9-7.–Composition of harvest by resource category in pounds usable weight, Nelchina, 2013.

Seasonal Round

A complete description of the seasonal round for this community can be found in the chapter "East Glenn Highway: Mendeltna."

Use and Harvest Characteristics by Resource Category

Nelchina households use a variety of wild resources throughout the year and sharing and receiving of resources is common among community households. According to survey results, 83% Nelchina households both received and gave away some wild resources during study year 2013 (Table 9-13). Fish, large land mammals, and vegetation were the most shared resources. In comparison, fish, large land mammals, marine invertebrates, and vegetation were resources received by most Nelchina households. With regard to most used resources, vegetation, which was the most used category of all, was used by approximately 83% of Nelchina households, large land mammals by 72% of households, salmon by 67% of households, and nonsalmon fish by 61% of households.

Table 9-14 lists the top resources used by Nelchina households and Figure 9-8 depicts the resources with the largest harvests (1% or more of the total harvest composition as estimated in pounds usable weight per person) in 2013. The harvest of moose made the largest contribution (45%) to the total Nelchina wild resource harvest followed by sockeye salmon (17%), and caribou (13%) (Figure 9-8). All 3 resources also appeared among the most used resources in Nelchina in 2013; moose ranked second (61% of households used moose), sockeye salmon ranked third (56% of households used sockeye salmon), and caribou shared fourth place with lake trout, lowbush cranberries, and raspberries (44% of households used each resource) (Table 9-14). However, the most widely used resource in Nelchina in study year 2013 was blueberries (72%

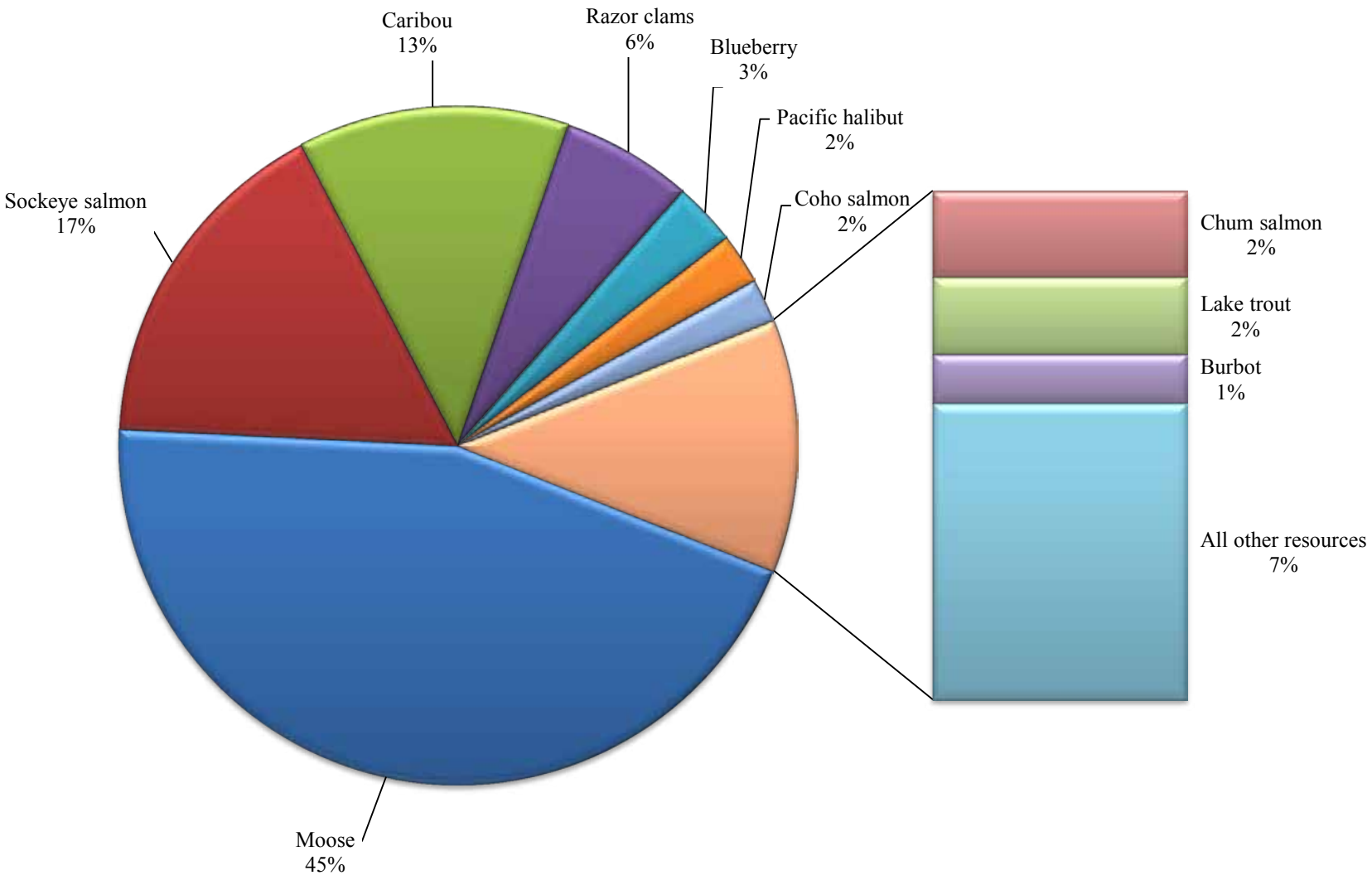
Table 9-14.–Top ranked resources used by households, Nelchina, 2013.

Rank[a]	Resource	Percentage of households using
1.	Blueberry	72.2%
2.	Moose	61.1%
3.	Sockeye salmon	55.6%
4.	Lake trout	44.4%
4.	Caribou	44.4%
4.	Lowbush cranberry	44.4%
4.	Raspberry	44.4%
8.	Pacific halibut	33.3%
8.	Burbot	33.3%
10.	Arctic grayling	27.8%

Source ADF&G Division of Subsistence household surveys, 2014.
a. Resources used by the same percentage of households share the lowest rank value instead of having sequential rank values.

of households used blueberries), which in terms of total per capita harvest placed fifth among the most harvested wild resources for contributing 3% of the harvest.

While 7 of the most harvested resources also appeared on the list of top ranked resources used, razor clams, which in terms of the per capita harvest were ranked the fourth most harvested resource (6% of harvest), were used only by a small number (11%) of Nelchina households (Figure 9-8; Table 9-14; Table 9-13). It is also noteworthy that while the 4 nonsalmon fish species (lake trout, Pacific halibut, burbot, and Arctic grayling) that appeared on the top used resources list each contributed a lesser per capita harvest to the total harvest of wild resources (between 2% to less than 1% of the total harvest). Three of these 4 resources (lake trout, Pacific halibut, and burbot) were used by more households than harvested them—this is likely due to households sharing the resources.



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

Figure 9-8.–Top species harvested by percentage of total harvest in pounds usable weight, Nelchina, 2013.

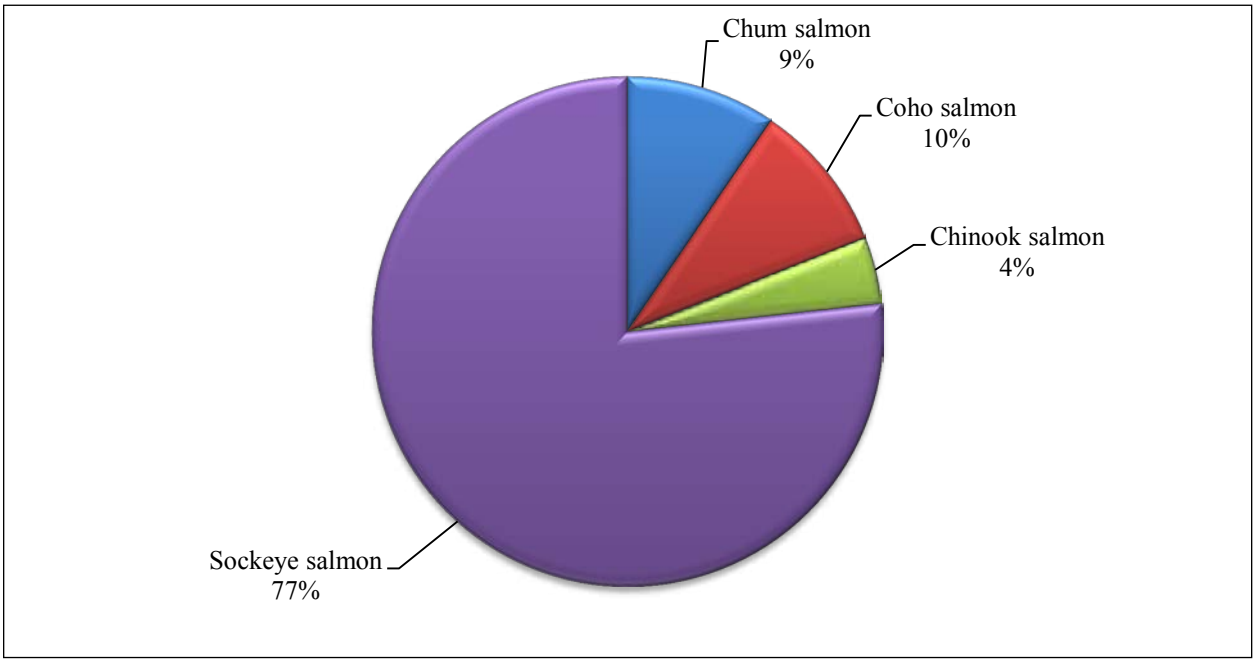


Figure 9-9.–Composition of salmon harvest in pounds usable weight, Nelchina, 2013.

Salmon

Salmon made up 22% of the Nelchina wild resource harvest in 2013 totaling 2,099 lb, or 28 lb per capita (Figure 9-7; Table 9-13). The majority (77%) of the salmon harvest was sockeye salmon totaling 1,611 lb, or 21 lb per capita (Figure 9-9; Table 9-13). The rest of the salmon harvest was made up as follows: 10% coho salmon (200 lb total, or 3 lb per capita), 9% chum salmon (199 lb total, or 3 lb per capita), and 4% Chinook salmon (89 lb total, or 1 lb per capita) (Figure 9-9; Table 9-13). Sockeye salmon was the most widely used, harvested, and shared salmon species in Nelchina in 2013; approximately 56% of community households used sockeye salmon, 39% harvested sockeye salmon, and 28% shared some sockeye salmon at some point during the study year. Coho and Chinook salmon were the second most used salmon species (each species were used by 17% of households); in comparison only approximately 6% of Nelchina households used chum salmon (Table 9-13). Highlighting the importance of sockeye salmon, survey results also indicate that a substantially smaller number of Nelchina households attempted to harvest other salmon species than sockeye salmon; only 6% of households attempted to harvest chum salmon, 11% of households attempted to harvest Chinook salmon, and 28% of households attempted to harvest coho salmon (Table 9-13).

During study year 2013, Nelchina households harvested the majority (55% of the salmon harvest in pounds usable weight) of their salmon with fish wheels; the remaining harvest was largely taken with dip nets (29% of the salmon harvest in pounds usable weight) (Table 9-15). In addition, a smaller portion of the salmon harvest weight (16%) was taken using rod and reel. Fish wheels were used to take 67% of the sockeye salmon harvest and 75% of Chinook salmon harvest. In comparison, all the chum salmon harvested by Nelchina households in 2013 were taken with rod and reel and all the coho salmon were harvested with dip nets.

Table 9-15.–Estimated percentages of salmon harvested by gear type, resource, and total harvest, Nelchina, 2013.

				Subsistence methods													
		Removed from commercial catch		Gillnet or seine		Fish wheel		Dip net		Other		Subsistence gear, any method		Rod and reel		Any method	
Resource	Percentage base	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Salmon	**Gear type**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**0.0%**	**0.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
	Resource	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**56.4%**	**54.9%**	**27.4%**	**28.9%**	**0.0%**	**0.0%**	**83.8%**	**83.8%**	**16.2%**	**16.2%**	**100.0%**	**100.0%**
	Total	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**56.4%**	**54.9%**	**27.4%**	**28.9%**	**0.0%**	**0.0%**	**83.8%**	**83.8%**	**16.2%**	**16.2%**	**100.0%**	**100.0%**
Chum 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%	0.0%	55.7%	58.6%	9.0%	9.5%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	0.0%	9.0%	9.5%	9.0%	9.5%
Coho salmon	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	27.4%	33.0%	0.0%	0.0%	9.0%	11.4%	0.0%	0.0%	7.5%	9.5%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	7.5%	9.5%	0.0%	0.0%	7.5%	9.5%	0.0%	0.0%	7.5%	9.5%
Chinook salmon	Gear type	0.0%	0.0%	0.0%	0.0%	2.0%	5.8%	1.4%	3.6%	0.0%	0.0%	1.8%	5.0%	0.0%	0.0%	1.5%	4.2%
	Resource	0.0%	0.0%	0.0%	0.0%	75.0%	75.0%	25.0%	25.0%	0.0%	0.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	1.1%	3.2%	0.4%	1.1%	0.0%	0.0%	1.5%	4.2%	0.0%	0.0%	1.5%	4.2%
Pink 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%	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%	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%	0.0%	0.0%	0.0%	0.0%	0.0%
Sockeye salmon	Gear type	0.0%	0.0%	0.0%	0.0%	98.0%	94.2%	71.2%	63.3%	0.0%	0.0%	89.2%	83.6%	44.3%	41.4%	82.0%	76.8%
	Resource	0.0%	0.0%	0.0%	0.0%	67.4%	67.4%	23.8%	23.8%	0.0%	0.0%	91.3%	91.3%	8.7%	8.7%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	55.3%	51.7%	19.5%	18.3%	0.0%	0.0%	74.8%	70.1%	7.2%	6.7%	82.0%	76.8%
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%	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%	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%	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%	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%	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%	0.0%	0.0%	0.0%	0.0%	0.0%

Source ADF&G Division of Subsistence household surveys, 2014.

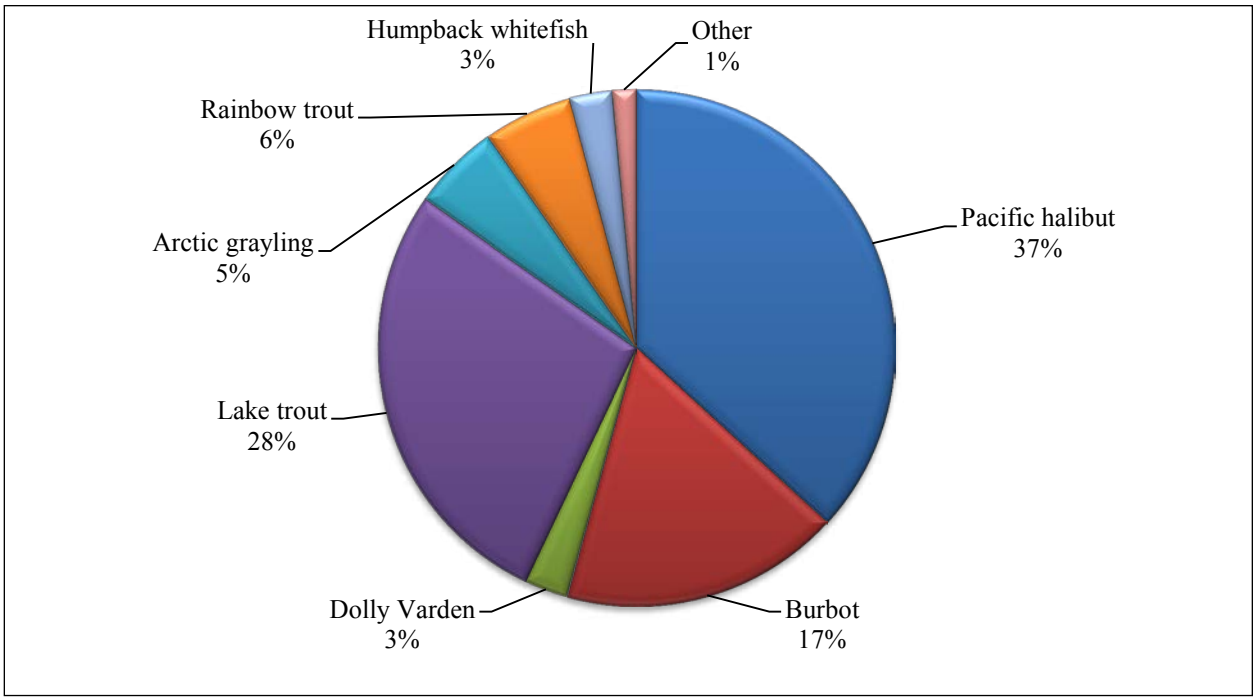


Figure 9-10.–Composition of nonsalmon fish harvest in pounds usable weight, Nelchina, 2013.

Nonsalmon Fish

In 2013, Nelchina households harvested an estimated total of 639 lb, or 8 lb per capita, of nonsalmon fish from both fresh and marine water environments; the total nonsalmon fish harvest made up 7% of the community's total wild resource harvest for that year (Table 9-13; Figure 9-7). In terms of total pounds harvested, the largest portion (37%) of the harvest was Pacific halibut totaling 235 lb, or 3 lb per capita (Table 9-13; Figure 9-10). The remaining harvest was largely composed of 2 other species: 28% lake trout (177 lb total, or 2 lb per capita) and 17% burbot (112 lb total, or 2 lb per capita). The harvests of rainbow trout, Arctic grayling, humpback whitefish, and other nonsalmon fish each contributed less than 1 lb per capita to the total harvest of nonsalmon fish in 2013 by Nelchina households (Table 9-13).

While Pacific halibut contributed the most to Nelchina households' total harvest of nonsalmon fish, lake trout were harvested and used more widely in the community; 39% of Nelchina households harvested lake trout and 44% of households used some during 2013 (Table 9-13). In addition, lake trout was the most sought-after nonsalmon fish species with 50% of Nelchina households attempting to harvest some in 2013. Of note, a larger number of Nelchina households also harvested burbot (28% of households harvesting) than Pacific halibut (11% of households harvesting) yet a similar number (33% of households) used both resources. This is likely due to more households receiving Pacific halibut than either burbot or lake trout.

Table 9-16 reports the gear types used by Nelchina households to harvest their nonsalmon fish in 2013. In terms of pounds usable weight, the majority (88%) of the nonsalmon fish harvest was taken with rod and reel. Thirty-seven percent of the nonsalmon fish harvest weight was Pacific halibut, which was caught by rod and reel in marine environments that are located substantial distances from Nelchina. In addition, Nelchina households reported harvesting most (59%) of their burbot by jigging through the ice, or ice fishing.

Table 9-16.–Estimated percentages of nonsalmon fish harvested by gear type, resource, and total nonsalmon fish harvest, Nelchina, 2013.

Resource	Percentage base	Removed from commercial catch		Subsistence methods											
				Gillnet or seine		Ice fish		Other		Subsistence gear, any method		Rod and reel		Any method	
		Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Nonsalmon fish	**Gear type**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
	Resource	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**5.7%**	**10.3%**	**2.4%**	**1.8%**	**8.1%**	**12.1%**	**91.9%**	**87.9%**	**100.0%**	**100.0%**
	Total	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**5.7%**	**10.3%**	**2.4%**	**1.8%**	**8.1%**	**12.1%**	**91.9%**	**87.9%**	**100.0%**	**100.0%**
Pacific herring	Gear type	0.0%	0.0%	0.0%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	0.0%	0.0%	0.0%
Pacific tomcod	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Starry flounder	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Lingcod	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	0.7%	0.3%	0.6%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	0.3%	0.6%	0.3%	0.6%
Pacific halibut	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	53.3%	41.9%	49.0%	36.8%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	49.0%	36.8%	49.0%	36.8%
Arctic lamprey	Gear type	0.0%	0.0%	0.0%	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%	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%	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%	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%	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%	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%	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%	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%	0.0%	0.0%	0.0%

-continued-

Table 9-16.–Page 2 of 3.

Resource	Percentage base	Removed from commercial catch		Subsistence methods											
				Gillnet or seine		Ice fish		Other		Subsistence gear, any method		Rod and reel		Any method	
		Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Burbot	Gear type	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	0.0%	70.3%	84.9%	4.4%	8.3%	9.7%	17.5%
	Resource	0.0%	0.0%	0.0%	0.0%	58.6%	58.6%	0.0%	0.0%	58.6%	58.6%	41.4%	41.4%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	5.7%	10.3%	0.0%	0.0%	5.7%	10.3%	4.0%	7.3%	9.7%	17.5%
Dolly Varden	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.4%	3.1%	4.0%	2.7%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	4.0%	2.7%	4.0%	2.7%
Lake trout	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	20.1%	31.6%	18.5%	27.7%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	18.5%	27.7%	18.5%	27.7%
Arctic grayling	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	55.7%	38.6%	16.5%	5.8%	9.9%	5.4%	10.4%	5.5%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	12.9%	12.9%	12.9%	12.9%	87.1%	87.1%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%	0.7%	1.3%	0.7%	9.1%	4.8%	10.4%	5.5%
Northern pike	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Longnose sucker	Gear type	0.0%	0.0%	0.0%	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%	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%	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%	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%	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%	0.0%	0.0%	0.0%
Rainbow trout	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	44.3%	61.4%	13.1%	9.3%	4.6%	5.1%	5.3%	5.6%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	20.0%	20.0%	20.0%	20.0%	80.0%	80.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.1%	1.1%	1.1%	1.1%	4.3%	4.5%	5.3%	5.6%
Unknown trout	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Broad whitefish	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Least cisco	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Humpback whitefish	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.2%	3.0%	2.0%	2.6%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	2.0%	2.6%	2.0%	2.6%
Round whitefish	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%

-continued-

Table 9-16.–Page 3 of 3.

Resource	Percentage base	Removed from commercial catch		Subsistence methods											
				Gillnet or seine		Ice fish		Other		Subsistence gear, any method		Rod and reel		Any method	
		Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Unknown whitefishes	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	1.0%	0.7%	0.9%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	0.7%	0.9%	0.7%	0.9%

Source ADF&G Division of Subsistence household surveys, 2014.

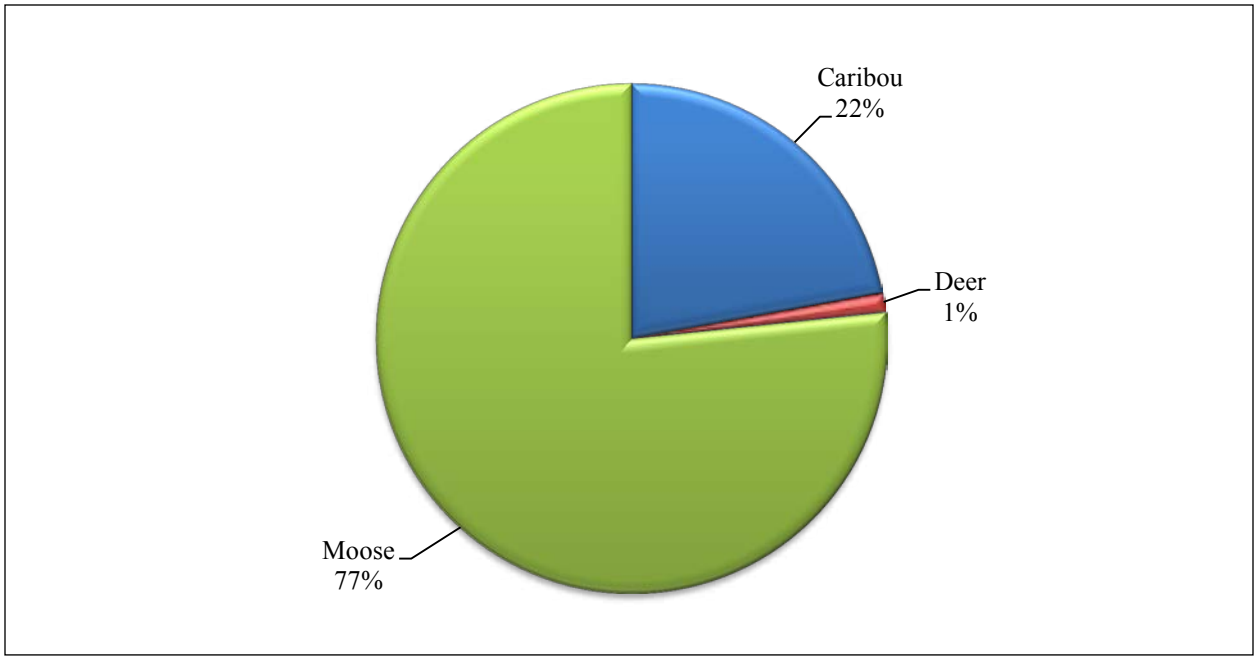


Figure 9-11.–Composition of large land mammal harvest in pounds usable weight, Nelchina, 2013.

Large Land Mammals

In 2013, moose made up the largest portion (77%) of Nelchina households' large land mammal harvest totaling 4,350 lb, or 57 lb per capita (Figure 9-11; Table 9-13). The remaining harvest was composed of caribou (22%) and deer (1%) (Figure 9-11). Moose were also the most successfully harvested (33% of households harvesting), used (61% of households using), received (39% of households receiving), and shared (50% of households sharing) large land mammal species in the community during the study year (Table 9-13). According to survey results, Nelchina households were successful at harvesting moose during the fall hunt; an estimated 2 moose were harvested in August and an additional 8 animals in September (Table 9-17).

During the study year 2013, Nelchina households harvested an estimated 10 caribou, which by usable weight totaled 1,257 lb, or 17 lb per capita (Table 9-13). According to survey results, 28% of Nelchina households successfully harvested caribou, 22% of households shared some, and 44% of households used caribou during the study year. Furthermore, fewer Nelchina households received caribou (28%) than moose. Regarding receiving caribou, it needs to be noted that a few Nelchina households received some caribou from the roadkill salvage program during study year 2013. With regard to caribou harvests, Nelchina households harvested most of their caribou in September (an estimated 6 animals) with an additional estimated 2 caribou harvested in October (Table 9-17).

It is noteworthy that while a much smaller number of Nelchina households (6% of households) attempted to harvest deer in 2013, they all were successful at their hunting (Table 9-13). Nelchina households harvested an estimated 2 deer during the study year, which in terms of pounds usable weight totaled 69 lb, or less than 1 lb per capita. Survey results indicate that no sharing of deer took place among Nelchina households, yet a larger number of Nelchina households used deer than successfully harvested any in 2013 (11% of households used deer but only 6% of households harvested) (Table 9-13). The difference is likely due to some Nelchina households receiving deer meat from households outside Nelchina, or using deer meat that was harvested in previous years.

Table 9-17.–Estimated large land mammal harvests by month and sex, Nelchina, 2013.

Resource	Estimated harvest by month													Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk	
All large land mammals	**1.6**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**3.2**	**14.5**	**1.6**	**0.0**	**0.0**	**0.0**	**20.9**
Bison	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Black bear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Brown bear	0.0	0.0	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	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.4	1.6	0.0	0.0	0.0	**9.7**
Caribou, male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.4	1.6	0.0	0.0	0.0	**8.1**
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**
Deer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0	**1.6**
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	1.6	8.1	0.0	0.0	0.0	0.0	**9.7**
Moose, bull	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	8.1	0.0	0.0	0.0	0.0	**9.7**
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**
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, 2014.

Small Land Mammals/Furbearers

The harvest and use of small land mammals, either to be consumed as food, or trapped for furs to be sold for income, is a traditional activity for Copper River Basin residents. The number of active trappers in the Copper River Basin communities has declined over the past 3 decades and Nelchina is no exception; in study year 2013 only 17% of Nelchina households either used or harvested small land mammals (Table 9-13). Thus it is not unexpected that the overall harvest of small lands mammals contributed less than 1% to the estimated total harvest of wild resources in the community (Figure 9-7). In terms of pounds usable weight harvested, the harvests of small land mammals totaled only 32 lb, or less than 1 lb per capita (Table 9-13).

Figure 9-12 shows the composition of the small land mammal harvest in terms of numbers of animals harvested; the harvests of weasels and snowshoe hares each contributed 40% to the total number of animals. The remaining small land mammal harvest was composed of lynx (13%) and martens (7%). Survey results indicate that of these 4 resources, snowshoe hares and lynx were harvested for their furs but also consumed as food; in comparison, the weasels and martens were taken for their fur only (Figure 9-13). Nelchina households harvested an estimated 10 snowshoe hares (5 in September and 5 in October); in comparison, the estimated 10 weasels were all harvested in February (Table 9-18). In addition, an estimated 3 lynx were harvested in January and an estimated 2 martens in December (Table 9-18).

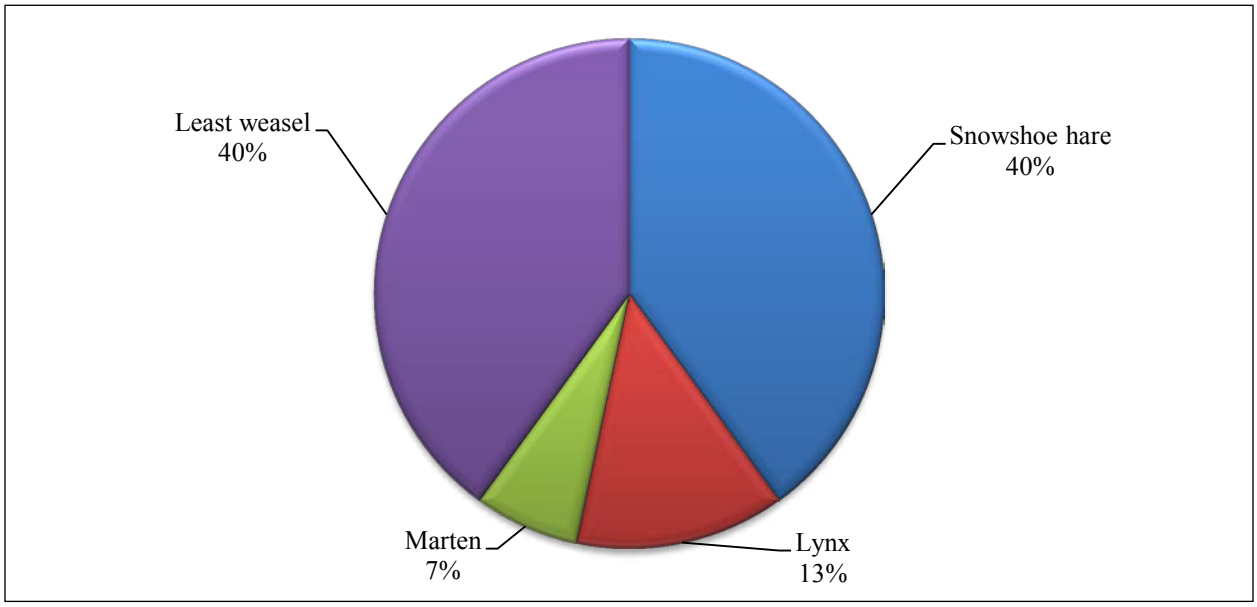


Figure 9-12.–Composition of small land mammal/furbearer harvest by individual animals harvested, Nelchina, 2013.

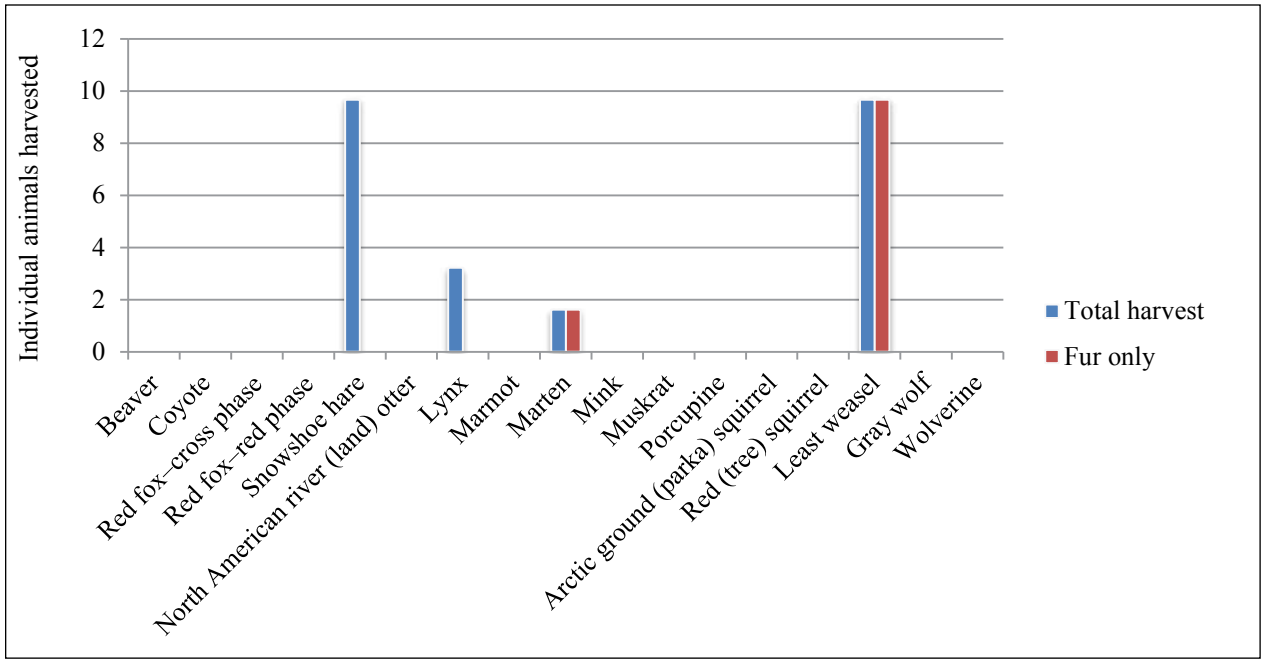
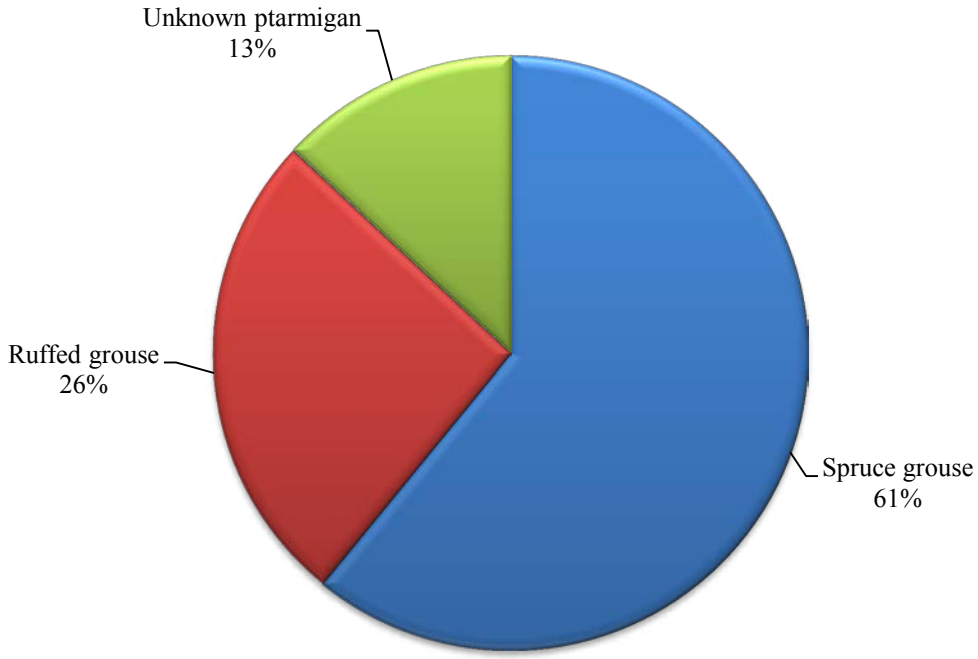


Figure 9-13.–Estimated small land mammal/furbearer harvests for fur and food only, Nelchina, 2013.

Table 9-18.–Estimated small land mammal/furbearer harvests by month, Nelchina, 2013.

Resource	Estimated harvest by month													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk	**Total**
All small land mammals	**3.2**	**9.7**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**4.8**	**4.8**	**0.0**	**1.6**	**0.0**	**24.2**
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–cross phase	0.0	0.0	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–red phase	0.0	0.0	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	4.8	4.8	0.0	0.0	0.0	**9.7**
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	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**3.2**
Marmot	0.0	0.0	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	1.6	0.0	**1.6**
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	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	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**
Least weasel	0.0	9.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**9.7**
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, 2014.



Note No bird eggs were harvested.

Figure 9-14.–Composition of bird and bird egg harvest in pounds usable weight, Nelchina, 2013.

Birds and Eggs

In 2013, birds were hunted and harvested by 22% of Nelchina households and used by 28% of households (Table 9-13). The total harvest of birds by Nelchina households was very small; in terms of pounds usable weight, the harvest of birds contributed less than 1% to the community's overall harvest of wild resources in study year 2013 (Figure 9-7). The total bird harvest was 26 lb, or less than 1 lb per capita (Table 9-13). Furthermore, the entire bird harvest was composed solely of upland game birds; specifically spruce grouse (totaling 16 lb), ruffed grouse (totaling 7 lb), and ptarmigan (totaling 3 lb) (Table 9-13; Figure 9-14). Nelchina households harvested spruce grouse during summer and fall months; in comparison all the ruffed grouse and ptarmigan were harvested in the fall (Table 9-19). No bird eggs were harvested or used by Nelchina households in 2013 (Table 9-13).

Table 9-19.–Estimated bird and bird egg harvests by season, Nelchina, 2013.

Resource	Estimated harvest by season					
	Winter	Spring	Summer	Fall	Season unknown	**Total**
All birds	**0.0**	**0.0**	**8.1**	**29.0**	**0.0**	**37.1**
Canvasback	0.0	0.0	0.0	0.0	0.0	**0.0**
Spectacled 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**
Mallard	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**
Black scoter	0.0	0.0	0.0	0.0	0.0	**0.0**
Green-winged teal	0.0	0.0	0.0	0.0	0.0	**0.0**
American wigeon	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown ducks	0.0	0.0	0.0	0.0	0.0	**0.0**
Brant	0.0	0.0	0.0	0.0	0.0	**0.0**
Cackling goose	0.0	0.0	0.0	0.0	0.0	**0.0**
Canada goose	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**
Emperor goose	0.0	0.0	0.0	0.0	0.0	**0.0**
Snow goose	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**
Tundra (whistling) swan	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**
Spruce grouse	0.0	0.0	8.1	14.5	0.0	**22.6**
Ruffed grouse	0.0	0.0	0.0	9.7	0.0	**9.7**
Unknown ptarmigan	0.0	0.0	0.0	4.8	0.0	**4.8**
Unknown duck eggs	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown goose eggs	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown gull eggs	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown eggs	0.0	0.0	0.0	0.0	0.0	**0.0**

Source ADF&G Division of Subsistence household surveys, 2014.

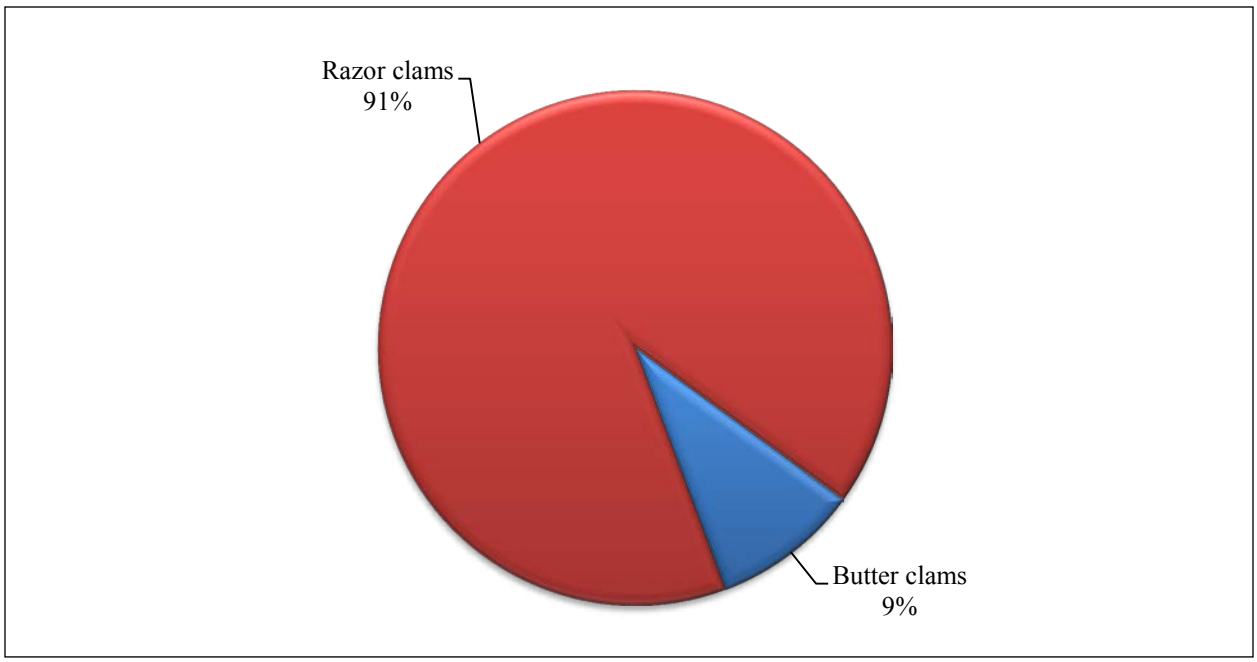


Figure 9-15.–Composition of marine invertebrates harvest in pounds usable weight, Nelchina, 2013.

Marine Invertebrates

The harvest of marine invertebrates contributed 7% to Nelchina households' overall harvest of wild resources in 2013; the total estimated harvest was 666 lb, or 9 lb per capita (Figure 9-7; Table 9-13). When compared to other resource categories in terms of pounds usable weight harvested, the harvest of marine invertebrates contributed more to Nelchina households' overall harvest of wild resources than nonsalmon fish and vegetation (Figure 9-7; Table 9-13). Furthermore, the value of the marine invertebrates harvest is notable in that substantial travel to a marine environment is required from Nelchina households to harvest these resources.

The majority of the marine invertebrates harvest was razor clams (totaling 604 lb) followed by butter clams (totaling 62 lb) (Figure 9-15; Table 9-13). It is noteworthy that the sizable clam harvest was gathered by a few Nelchina households (11% of households harvesting) who shared their harvest with other households (11% of households gave some away) (Table 9-13). Overall, an estimated 17% of Nelchina households used marine invertebrates, some of which were shrimp received by a small number of households from outside the community.

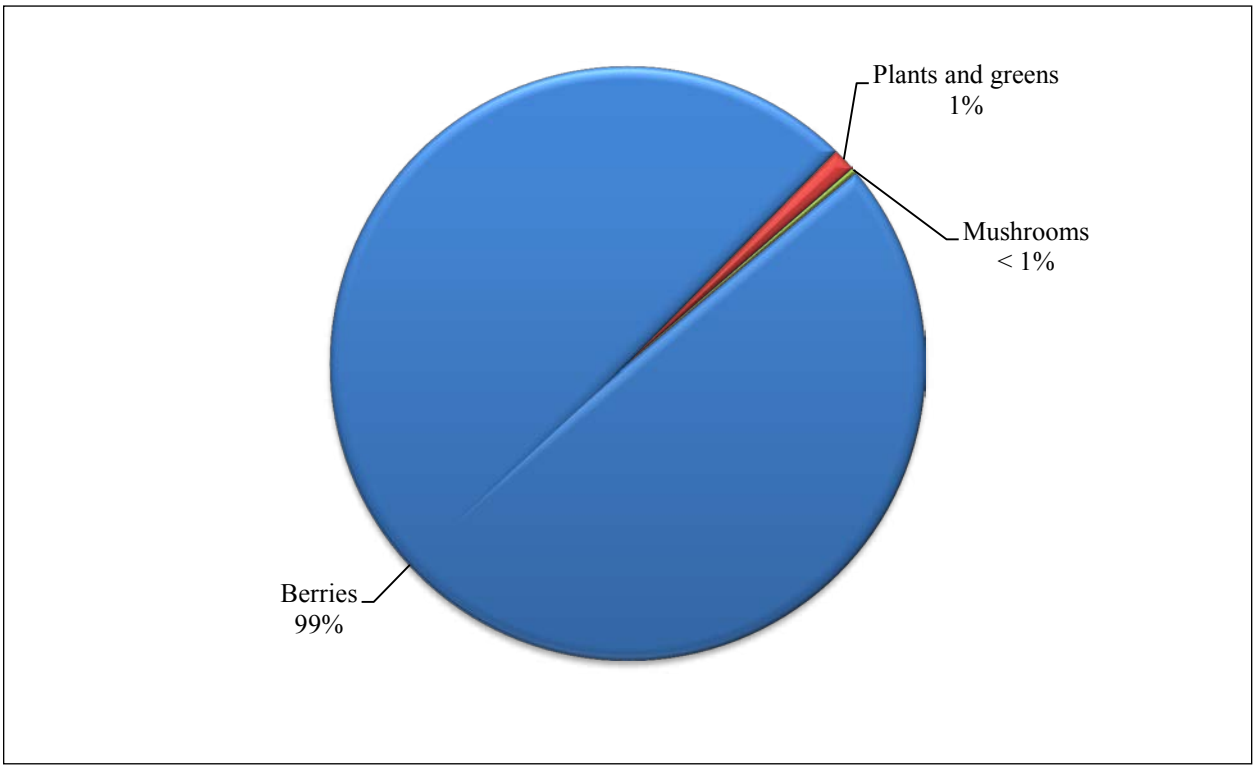


Figure 9-16.–Composition of vegetation harvest by type and pounds usable weight, Nelchina, 2013.

Vegetation

In 2013, vegetation resources, including berries, plants, and mushrooms, were both harvested and used by 83% of Nelchina households—the most of any resource category (Table 9-13). It needs to be noted that while wood is included in the vegetation resource category, and appears as the most harvested and used single resource in that category (83% of households harvesting and using), the harvest of wood did not contribute to the overall community harvest estimate of pounds usable weight.

During study year 2013, the harvest of vegetation contributed 6% to Nelchina households' overall wild resource harvest totaling 583 lb, or 8 lb per capita (Figure 9-7; Table 9-13). Nearly all (99%) of the harvest was berries, particularly blueberries (293 lb total, or 4 lb per capita), highbush cranberries (90 lb total, or 1 lb per capita), and lowbush cranberries (90 lb total, or 1 lb per capita) (Figure 9-16; Table 9-13). Blueberries (72% of households harvesting) as well as lowbush cranberries and raspberries (44% of households harvesting each species) were the 3 most harvested berry species; all 3 berry species also appeared on the top ranked resources used by Nelchina households with blueberries being the most widely used single resource (excluding wood) during study year 2013 (Table 9-13; Table 9-14).

Regarding sharing and receiving, survey results indicate that more Nelchina households gave away some vegetation resources than received any (44% of households gave some away but 17% received some) (Table 9-13). The most widely shared resource was blueberries with 22% of Nelchina households giving some away. In comparison, a small number of community households received a variety of other types of vegetation resources—including wood. Of note, more Nelchina households harvested and used mushrooms (11% of households harvested and used some) than wild plants such as wild rose hips, fireweed, or other wild greens (6% of households harvested and used each resource) (Table 9-13).

Comparing Harvests and Uses in 2013 with Previous Years

Harvest Assessments

For 10 resource categories and for all resources combined, survey respondents were asked to assess whether their uses and harvests in the 2013 study year were less, more, or about the same as other recent years. "Other recent years" was defined as about the last 5 years. Table 9-20 reports the number of valid responses for each category, the number of households that did not respond, and the number of households that did not use a resource category or all resources combined. In Table 9-20, response percentages are based on the number of valid responses for each category to contextualize these assessments within the set of community households that typically use each category.

Figure 9-17 depicts responses to the "less, same, more" assessment question. Households that said they did not ordinarily "use" something are not included within the results. This results in fewer responses for less commonly used categories such as migratory waterfowl, or marine invertebrates, and manifests in the chart as a very short set of colored bars compared to categories such as large land mammals, salmon, or nonsalmon fish, which are ordinarily used by most households. Some households did not respond to the question.

Taking all the resource categories into consideration, most Nelchina households, 44%, said they used less subsistence resources in general over the previous 12 months compared to recent years (Table 9-20). A smaller number, 39%, of responding households that used resources, said they used about the same amount, and only 11% said they used more. Looking at the use of large land mammals, 18 valid responses were received with 3 households reporting not using any large land mammals. The majority (8, or 44%) of the 15 households that used large land mammals in 2013 said they had used the same amount of large land mammals during the study year as compared to recent years (Table 9-20; Figure 9-17). Also, for salmon and vegetation, the majority of the received valid responses indicated that Nelchina households' use of these resources had been the same in 2013 as in recent years. Regarding use of other birds and small land mammals, the majority of Nelchina households reported using less of these resources in 2013 than in previous years. In comparison, the received valid responses regarding use of migratory waterfowl and nonsalmon fish were divided. Only 2 households reported using migratory birds in 2013; of these 2 households, 1 reported using less migratory birds and 1 used more migratory birds. For nonsalmon fish use, of the 15 households reporting use of these resources, 6 reported using less and 6 used the same amount in 2013 as in recent years. The only resource category for which the majority of the valid responses indicated the level of use was more during the study year than in recent years was marine invertebrates. However, it needs to be noted that only a small number of Nelchina households (3 of 18 households) reported using marine invertebrates in 2013. Of these 3 households, 2 said that they had used more marine invertebrates and 1 said their use had been the same in 2013 than in recent years.

Table 9-21 and Table 9-22 list the reasons Nelchina households gave for using less or more of wild resources from the different resource categories. This was an open-ended question and respondents could provide more than 1 reason for each resource category. Researchers grouped the responses into categories, such as regulations hindering residents from harvesting resources, 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 outside effects on residents' opportunities to engage in hunting, fishing, and gathering activities. According to survey results, the main reasons Nelchina households' use of wild resources overall was less in 2013 were not having enough time/working (25% of 8 responding households), or related to personal/family affairs (25% of 8 responding households) (Table 9-21).The main reasons stated by Nelchina households that responded to the question about using more of all resources were grouped as "other" (50% of 2 responding households) or the need to harvest more (50% of 2 responding households) (Table 9-22). Looking at Nelchina households' assessments regarding changes in their use of any wild resource, the main reasons cited for using less were lack of effort (54% of 13 responding households), and fewer resources available (23% of 13 responding households) (Table 9-21). Likewise, the main reasons stated for using

Table 9-20.–Changes in household uses of resources compared to recent years, Nelchina, 2013.

Resource category	Sampled households	Valid responses[a]	Households reporting use: Total households Number	Total households Percentage	Less Number	Less Percentage	Same Number	Same Percentage	More Number	More Percentage	Households not using Number	Households not using Percentage
Any resource	18	18	17	94.4%	13	72.2%	14	77.8%	9	50.0%	18	100.0%
All resources	**18**	**18**	**17**	**94.4%**	**8**	**44.4%**	**7**	**38.9%**	**2**	**11.1%**	**1**	**5.6%**
Salmon	18	18	14	77.8%	4	22.2%	7	38.9%	3	16.7%	4	22.2%
Nonsalmon fish	18	18	15	83.3%	6	33.3%	6	33.3%	3	16.7%	3	16.7%
Large land mammals	18	18	15	83.3%	5	27.8%	8	44.4%	2	11.1%	3	16.7%
Small land mammals	18	18	6	33.3%	3	16.7%	2	11.1%	1	5.6%	12	66.7%
Marine mammals	18	18	0	0.0%	0	0.0%	0	0.0%	0	0.0%	18	100.0%
Migratory waterfowl	18	18	2	11.1%	1	5.6%	0	0.0%	1	5.6%	16	88.9%
Other birds	18	18	8	44.4%	7	38.9%	1	5.6%	0	0.0%	10	55.6%
Bird eggs	18	18	0	0.0%	0	0.0%	0	0.0%	0	0.0%	18	100.0%
Marine invertebrates	18	18	3	16.7%	0	0.0%	1	5.6%	2	11.1%	15	83.3%
Vegetation	18	18	15	83.3%	2	11.1%	9	50.0%	4	22.2%	3	16.7%

Source ADF&G Division of Subsistence household surveys, 2014.

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

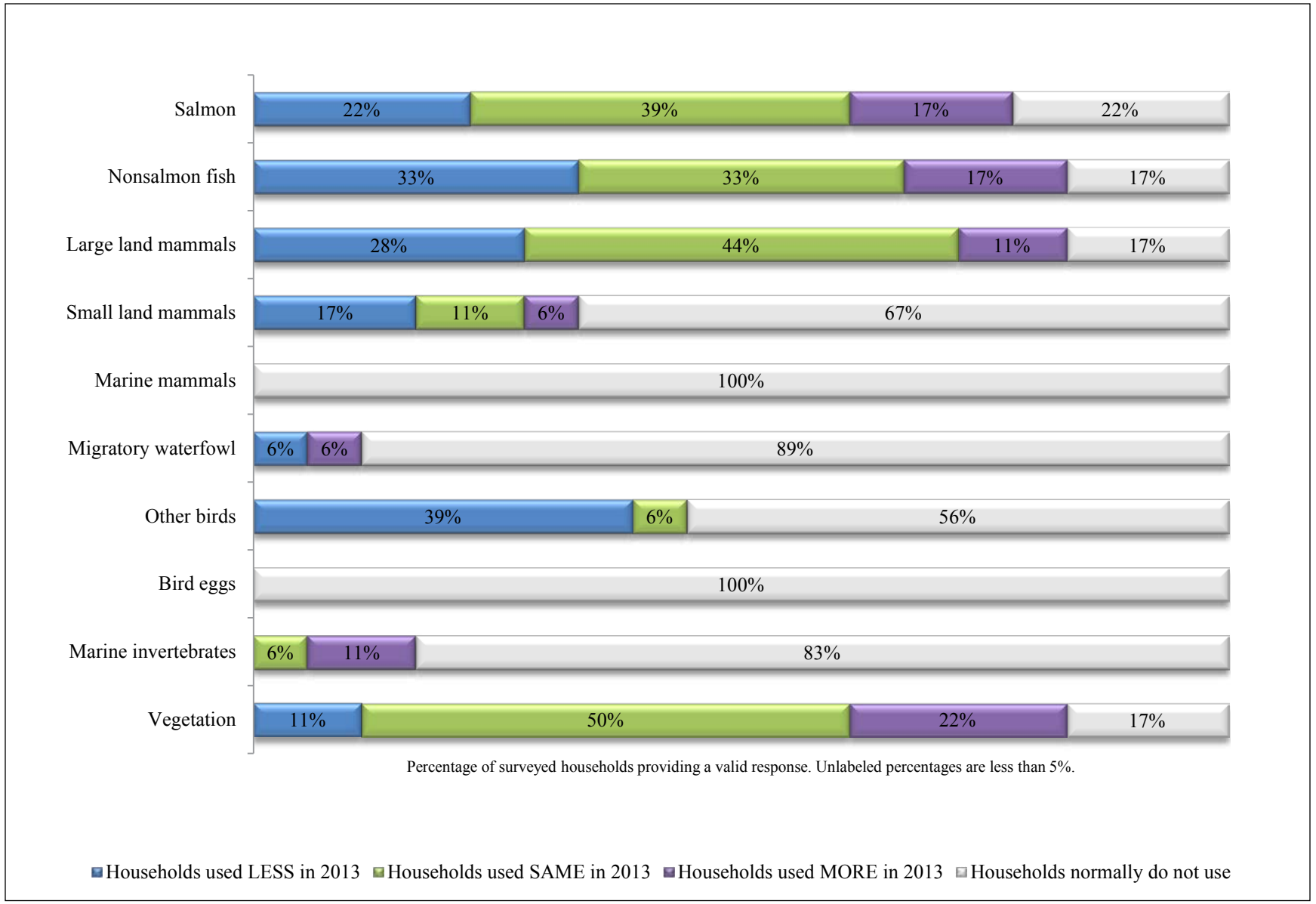


Figure 9-17.–Changes in household uses of resources compared to recent years, Nelchina, 2013.

Table 9-21.–Reasons for less household uses of resources compared to recent years, Nelchina, 2013.

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	18	13	2	15.4%	3	23%	0	0.0%	2	15%	0	0%	7	54%
All resources	**18**	**8**	**2**	**25.0%**	**1**	**13%**	**0**	**0.0%**	**1**	**13%**	**0**	**0%**	**1**	**13%**
Salmon	18	4	0	0.0%	0	0%	0	0.0%	2	50%	0	0%	0	0%
Nonsalmon fish	18	5	1	20.0%	0	0%	0	0.0%	0	0%	0	0%	2	40%
Large land mammals	18	5	2	40.0%	0	0%	0	0.0%	0	0%	0	0%	0	0%
Small land mammals	18	3	0	0.0%	0	0%	0	0.0%	0	0%	0	0%	2	67%
Marine mammals	18	0	0	0.0%	0	0%	0	0.0%	0	0%	0	0%	0	0%
Migratory waterfowl	18	1	0	0.0%	0	0%	0	0.0%	0	0%	0	0%	1	100%
Other birds	18	7	1	14.3%	2	29%	0	0.0%	0	0%	0	0%	3	43%
Bird eggs	18	0	0	0.0%	0	0%	0	0.0%	0	0%	0	0%	0	0%
Marine invertebrates	18	0	0	0.0%	0	0%	0	0.0%	0	0%	0	0%	0	0%
Vegetation	18	2	1	50.0%	0	0%	0	0.0%	0	0%	0	0%	0	0%

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Table 9-21.–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	18	13	2	15.4%	0	0.0%	0	0.0%	2	15.4%	0	0.0%	0	0.0%
All resources	**18**	**8**	**1**	**12.5%**	**0**	**0.0%**	**0**	**0%**	**2**	**25.0%**	**0**	**0.0%**	**0**	**0.0%**
Salmon	18	4	0	0.0%	0	0.0%	0	0%	2	50.0%	0	0.0%	0	0.0%
Nonsalmon fish	18	5	0	0.0%	0	0.0%	0	0%	1	20.0%	0	0.0%	0	0.0%
Large land mammals	18	5	2	40.0%	0	0.0%	0	0%	1	20.0%	0	0.0%	0	0.0%
Small land mammals	18	3	1	33.3%	0	0.0%	0	0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	18	0	0	0.0%	0	0.0%	0	0%	0	0.0%	0	0.0%	0	0.0%
Migratory waterfowl	18	1	0	0.0%	0	0.0%	0	0%	0	0.0%	0	0.0%	0	0.0%
Other birds	18	7	0	0.0%	0	0.0%	0	0%	0	0.0%	0	0.0%	0	0.0%
Bird eggs	18	0	0	0.0%	0	0.0%	0	0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	18	0	0	0.0%	0	0.0%	0	0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	18	2	0	0.0%	0	0.0%	0	0%	1	50.0%	0	0.0%	0	0.0%

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Table 9-21.–Page 2 of 2.

Resource category	Valid responses[a]	Households reporting reasons for less use	Did not get enough		Did not need		Equipment/ fuel expense		Used other resources		Less competition	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	18	13	1	7.7%	2	15.4%	1	7.7%	0	0.0%	0	0.0%
All resources	**18**	**8**	**0**	**0.0%**	**1**	**12.5%**	**1**	**12.5%**	**0**	**0.0%**	**0**	**0.0%**
Salmon	18	4	0	0.0%	0	0.0%	1	25.0%	0	0.0%	0	0.0%
Nonsalmon fish	18	5	0	0.0%	1	20.0%	1	20.0%	0	0.0%	0	0.0%
Large land mammals	18	5	0	0.0%	0	0.0%	1	20.0%	0	0.0%	0	0.0%
Small land mammals	18	3	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	18	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Migratory waterfowl	18	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other birds	18	7	1	14.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Bird eggs	18	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	18	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	18	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2014.

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

Table 9-22.–Reasons for more household uses of resources compared to recent years, Nelchina, 2013.

Resource category	Valid responses[a]	Households reporting reasons for more use	Increased availability		Used other resources		Favorable weather		Received more		Needed more	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	18	9	3	33.3%	0	0.0%	0	0.0%	2	22.2%	1	11.1%
All resources	**18**	**2**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**1**	**50.0%**
Salmon	18	3	1	33.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Nonsalmon fish	18	3	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	33.3%
Large land mammals	18	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	50.0%
Small land mammals	18	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	18	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Migratory waterfowl	18	1	0	0.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%
Other birds	18	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Bird eggs	18	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	18	2	0	0.0%	0	0.0%	0	0.0%	1	50.0%	0	0.0%
Vegetation	18	4	2	50.0%	0	0.0%	0	0.0%	0	0.0%	1	25.0%

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Table 9-22.–Continued.

Resource category	Valid responses[a]	Households reporting reasons for more use	Increased effort		Had more help		Other		Regulations		Traveled farther	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	18	9	2	22.2%	0	0.0%	1	11.1%	0	0.0%	0	0.0%
All resources	**18**	**2**	**0**	**0.0%**	**0**	**0.0%**	**1**	**50.0%**	**0**	**0.0%**	**0**	**0.0%**
Salmon	18	3	1	33.3%	0	0.0%	1	33.3%	0	0.0%	0	0.0%
Nonsalmon fish	18	3	1	33.3%	0	0.0%	1	33.3%	0	0.0%	0	0.0%
Large land mammals	18	2	0	0.0%	0	0.0%	1	50.0%	0	0.0%	0	0.0%
Small land mammals	18	1	0	0.0%	0	0.0%	1	100.0%	0	0.0%	0	0.0%
Marine mammals	18	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Migratory waterfowl	18	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other birds	18	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Bird eggs	18	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	18	2	1	50.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	18	4	0	0.0%	0	0.0%	1	25.0%	0	0.0%	0	0.0%

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Table 9-22.–Page 2 of 2.

Resource category	Valid responses[a]	Households reporting reasons for more use	More success		Needed less		Store-bought expense		Got/ fixed equipment		Substituted resources	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	18	9	1	11.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
All resources	**18**	**2**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**
Salmon	18	3	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Nonsalmon fish	18	3	1	33.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Large land mammals	18	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	18	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	18	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Migratory waterfowl	18	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other birds	18	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Bird eggs	18	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	18	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	18	4	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2014.

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

Table 9-23.–Reported impact to households reporting that they did not get enough of a type of resource, Nelchina, 2013.

		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
Salmon	18	13	72.2%	7	53.8%	1	14.3%	0	0.0%	5	71.4%	1	14.3%	0	0.0%
Nonsalmon fish	18	13	72.2%	4	30.8%	0	0.0%	0	0.0%	3	75.0%	1	25.0%	0	0.0%
Marine invertebrates	18	3	16.7%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Large land mammals	18	15	83.3%	5	33.3%	0	0.0%	0	0.0%	3	60.0%	2	40.0%	0	0.0%
Marine mammals	18	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	18	5	27.8%	1	20.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%	0	0.0%
Migratory waterfowl	18	2	11.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other birds	18	8	44.4%	5	62.5%	0	0.0%	0	0.0%	5	100.0%	0	0.0%	0	0.0%
Bird eggs	18	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	18	14	77.8%	7	50.0%	0	0.0%	0	0.0%	7	100.0%	0	0.0%	0	0.0%
All resources	**18**	**16**	**88.9%**	**6**	**37.5%**	**0**	**0.0%**	**0**	**0.0%**	**3**	**50.0%**	**3**	**50.0%**	**0**	**0.0%**

Source ADF&G Division of Subsistence household surveys, 2014.

a. Does not includes households failing to respond to the question or those households that never used the resource.

more of any wild resource were increased resource availability (33% of 9 responding households), and increased effort as well as receiving more (22% of 9 responding households citing each) (Table 9-22).

In considering individual resource categories, the reasons most cited for less use of large land mammals were family/personal related (40% of 5 responding households) and unsuccessful hunting (40% of 5 responding households) and (Table 9-21). In addition, cost of equipment and fuel were given as a reason for using less salmon, nonsalmon fish, and large land mammals. Lack of effort was the reason most Nelchina households cited for using less nonsalmon fish, small land mammals, and birds. In comparison, family/personal reasons as well as work interfering with harvesting activities were given as the reasons for using less vegetation. Furthermore, work interfering and lack of equipment were reasons Nelchina households cited most as reasons for using less salmon during study year 2013.

Looking at reasons Nelchina households attributed to using more resources from individual resource categories, reasons categorized as "other" were related to using more salmon, nonsalmon fish, large and small land mammals, as well as vegetation (Table 9-22). For the increased use of migratory waterfowl and marine invertebrates, receiving more was the main reason indicated by community households. Furthermore, increased effort was named as a reason for using more salmon, nonsalmon fish, and marine invertebrates. In comparison, increased resource availability was a reason Nelchina households said had increased their use of salmon and vegetation during study year 2013.

The impact to households from not getting enough wild resources is reported in Table 9-23. The most notable impact was for large land mammals, which is the category that had the most respondents cite that a supply shortage caused a major impact. For large land mammals, 5 out of 15 households reported that they did not get enough in 2013. Of these responses 3 noted the impact as minor and 2 as major. Another notable impact was a lack of nonsalmon fish with 3 households that did not get enough noting that the impact was minor and 1 other household saying that it was a major impact. For all resources 38% of households (out of 16 households) said that they did not get enough resources in 2013 and of those respondents 50% said that the impact of not getting enough resources was minor while another 50% said it was major.

Harvest Data

Changes in the harvest of resources by Nelchina residents can also be discerned through comparisons with findings from other study years. These comparisons will be discussed in the chapter "East Glenn Highway: Tolsona."

Current and Historical Harvest Areas

Discussion of comparisons between current and historical search and harvest areas can be found in the subsection "Current and Historical Harvest Areas" in the "Comparing Harvests and Uses in 2013 with Previous Years" section in the chapter "East Glenn Highway: Tolsona."

Local Comments and Concerns

Following is a summary of local observations of wild resource populations and trends that were recorded during the surveys in Nelchina. Some households did not offer any additional comments or concerns 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

Fish, particularly salmon, are important wild resources used by most Nelchina households. A few households expressed concerns about the large number of fish that households in general are allowed to harvest with

a fish wheel; to them the existing limits for salmon harvests by fish wheel of 500 for a household of 2 or more persons seem too high. In comparison, other households argued in favor of the existing allowable fish wheel salmon harvest limits and said that for large households, these salmon are essential food to be consumed throughout the year. Another respondent commented that during his time living in the Copper River Basin, many previously available sport fishing opportunities for salmon in areas farther away from the road system have been closed and this forces people to fish along the road system thus making certain areas very crowded. The same household was also critical about the continuously changing sport fishing regulations by saying that they appear to make catching fish more and more difficult for all Alaska residents.

Large Land Mammals

Overall, Nelchina residents expressed most concerns about the continuously increasing hunting pressure they experience from non-local hunters when hunting for large game animals, particularly moose. One long-time community resident commented that in his experience, hunting pressure from non-local hunters looking to harvest large land mammals, particularly moose, has been growing for the past 15 years. Community members expressed their deep frustrations about seeing increasing numbers of non-local hunters coming to Game Management Unit (GMU) 13 every fall. In particular, non-local hunters are accessing the larger Eureka–Nelchina area, which survey respondents consider their traditional hunting grounds, to hunt for large land mammals using large motorhomes and noisy ATVs. Nelchina residents feel that the existing management system should be changed to better accommodate the needs of local, rural residents to hunt and harvest large game first before opening the hunting season for other user groups. Community members emphasized that subsistence-harvested moose and caribou are essential sources of protein for them.

During the community review meeting, a few Nelchina residents said that they would like to see the fall hunting season delayed to October because of increasingly warm weather. They said that the warm fall weather makes it challenging to keep the harvested moose or caribou meat from spoiling. Other households were of the opposite opinion; in their view, delaying the hunt would just encourage more non-local hunters to come to the area. Another suggestion, brought up during the community review meeting, was for ADF&G to allow a registration moose and/or caribou hunt during the winter months.

Many community members also said that the area's moose populations are in decline; a few Nelchina households said that an unreported number of animals get killed by inexperienced non-local hunters who shoot and kill non-legal moose (moose with an antler spread less than 50 inches or with fewer than 4 brow tines). Concerned residents added that these kills do not always get reported to the correct wildlife management agency, and in the worst case that residents have observed the killed animal is hidden and the valuable meat left to waste in the field. Nelchina residents were also highly critical about the community hunts that have provided additional hunting opportunity for non-local hunters to come hunt in the Copper River Basin; they feel that these additional hunting opportunities are an unnecessary stress for the local moose and caribou populations, and that if allowed to take place, the hunts should not be open to non-local residents. A small number of Nelchina households were also critical about the large number of moose allowed by ADF&G to be harvested by Alaska Natives living in the basin for their religious ceremonies during 2013.[2] A few Nelchina households suggested that until the area moose population has stabilized, moose hunting regulations should limit legal moose harvests to bulls with antler spreads larger than 50 inches, and not provide an "any bull" opportunity through the community subsistence hunt.

Another concern expressed by many Nelchina households was the loss of important moose habitat in the larger Nelchina area due the new subdivision development, which they said poses a long-term threat to the health of the area moose population. During the community review meeting, a few Nelchina residents called for improved communication between the Alaska Department of Natural Resources and ADF&G regarding the subdivision development in the area. In addition, a few community members commented that the noise pollution from recreational activities such as driving an ATV in the summer and fall months, and snowmachining in the winter, may cause unnecessary stress for the area moose population. In the

2. According to ADF&G records, in 2013 there were 7 moose ceremonial (potlatch) permits issued in the Copper River Basin and 2 caribou ceremonial (potlatch) permits. The reported harvest was 5 moose and 1 caribou.

community review meeting, a number of meeting participants expressed opposing arguments; in their opinion bears and wolves are the bigger problem for the area moose population because the animals are so used to sounds resulting from human activities in the area year-round. During the community meeting, some participants commented that if new roads were built toward the west coast of Alaska, some of the hunting pressure for GMU 13 would possibly ease up. Another resident summarized frustration with the large number of non-local hunters coming to the area by saying the following: "This is a big state and you can't have everyone harvesting moose in a postage-stamp size area of land."

Small Land Mammals/Furbearers

Only a few Nelchina households trapped in 2013, but a number of community residents expressed their concerns about some road trapping that appears to be done by non-local residents. Nelchina residents said that they had noticed some new traps appearing very close to the edge of the highway and that according to their observations these traps are not checked or maintained regularly. While being morally questionable to Nelchina residents, the traps are also a safety concern for community dog owners since a small number of animals had already been caught in the traps. Community residents pointed out that in the worst case the domestic animal caught in the trap will lose its leg(s) that were caught in the trap. During the community review meeting, participants also commented that they believe that area hare, wolf, coyote, and lynx populations were down in 2013 due to a low cycle in their long-term population patterns. Residents believe that they will see more of all of these species in the area in the future.

Birds

Similarly to a range of small land mammal and furbearer species, Nelchina residents commented that both upland game bird species and migratory waterfowl have been on the decline in the past few years. According to Nelchina residents, 2013 was a particularly bad year for migratory waterfowl due to a very wet spring. Community members said that they had seen more grouse in the area lately; furthermore, they believe that the upland game bird populations will return in larger numbers in the near future.

Vegetation

According to Nelchina residents, 2013 was a good year for berries, particularly for blueberries. While many households said they had done well with their berry harvest during the study year, a small number commented that they believe that competition for wild berries growing in the area is also increasing. They explained that this is because of the many non-local hunters who come to the area for moose and caribou hunting with their families and also pick berries while looking for large game.

Community Boundaries

The residents of Nelchina, Mendeltna, and Tolsona do not necessarily identify themselves as residents of a certain community with defined borders. Rather they see themselves as residents of the Copper River Basin. Prior to the survey effort, researchers discussed the sample borders of Nelchina with knowledgeable, long-term residents of the community. During the discussions community members identified the geographic area of Nelchina as stretching from the Matanuska–Susitna Borough border at approximately mile 137 of the Glenn Highway to approximately mile 160, which is about a mile past the Lake Louise road junction. This area is different from the CDP borders identified for the Nelchina CDP by the U.S. Census Bureau in 2010; according to the 2010 census block map for the Nelchina CDP, the CDP covers an area from milepost 137 to approximately milepost 150.[3]

3. U.S. Census Bureau 2010. Geography section: Maps & Data; Census reference maps from the 2010 Census, Census 2000 and the 1990 Census; 2010 Census Block maps searchable map database. https://www.census.gov/geo/maps-data/maps/block/2010/. Accessed September 12, 2014.

Joint Pacific Alaska Range Complex (JPARC)[4]

Another topic that Nelchina residents expressed deep concerns about is the development of JPARC, a military training and testing environment, which includes lands and airspace in the larger Nelchina area. A few residents questioned the need for the military to use and take over such a large area in the Copper River Basin; a number of households also said that they believe their input in the federally required Environmental Impact Statement process had been overlooked. Community members said that sharing airspace with military personnel would make a huge impact on hunting in Nelchina. Others pointed out that some military planes are already flying very low (at tree level) when passing through the area, which is very upsetting for local residents and animals alike due to noise pollution. Community residents were very worried about their current, and potentially increasing long-term exposure, to continuous noise pollution, which they think is harmful for the well-being of the area human and animal populations alike. A few residents also pointed out that the increased number of low-flying military planes in the area airspace is a potential safety hazard for small planes that are commonly used for business and personal use in the Copper River Basin.

ACKNOWLEDGMENTS

The research team would like to thank the people of Nelchina for their participation in the study; without your contributions we would not have been able to collect and update the valuable baseline wild resource harvest data that we now have. Our thanks also go to Teresa Noble and Stephanie Littleton, our great local research assistants whose work contacting community residents and getting the surveys completed with ease was instrumental.

4. According to Alaska Command FAQ release*, and the Executive summary of the JPARC Modernization and Enhancement Environmental Impact Statement (EIS), the JPARC consists of all the land, air, sea, space and cyberspace used for military training in Alaska. Presently, the JPARC area covers 65,000 square miles of available airspace, 2,490 square miles of land space with 1.5 million acres of maneuver land, and 42,000 square nautical miles of sea and airspace in the Gulf of Alaska. In addition to home-station training provided for Alaska-based units, joint, inter-agency and multi-national training has taken place, and is planned to take place in JPARC in the future. The purpose of the proposed modernization and enhancement actions in the JPARC area are aimed to best support the military exercises in and near Alaska. For further information about JPARC and the proposed changes including the full EIS, see the JPARC Modernization and enhancement EIS website at http://www.jparceis.com/ or http://www.jber.af.mil/jparc.asp. (U.S. Army Alaska and U.S. 11th Air Force, Alaskan Command 2013).

*Joint Pacific Alaska Range Complex Frequently Asked Questions, version 1.2. Alaska Command Public Affairs online publication. n.d. http://www.jber.af.mil/shared/media/document/AFD-120214-039.pdf (Accessed September 11, 2014).

10. EAST GLENN HIGHWAY: TOLSONA

Joshua T. Ream, Dustin Murray, and Malla Kukkonen

A broad overview of the East Glenn Highway area, as well as the reasons and methods for consolidating some data for the communities of Mendeltna, Nelchina, and Tolsona, was included in chapter 8 "East Glenn Highway: Mendeltna." This chapter will only include specific background and findings for Tolsona. Spatial harvest data were combined with Mendeltna and Nelchina and will be reported in the subsection "Current and Historical Harvest Areas" in the section "Comparing Harvests and Uses in 2013 with Previous Years" in this chapter. Additionally, harvest data comparisons with previous years will be included in this chapter for all 3 communities.

Community Background

The small community of Tolsona is located near mile 170 of the Glenn Highway at the base of the 2,974-foot Tolsona Mountain. Tolsona is about a 4-hour drive from Anchorage. The closest communities to Tolsona are Glennallen, which lies 14 miles to the east, and Mendeltna, which lies 16 miles to the west. Tolsona was not a CDP in 1990, but by 2000 it had been designated an unincorporated community in the Valdez-Cordova Census Area. Tolsona's climate is characteristic of a continental climate zone. On average, Tolsona receives 39 inches of snowfall annually. While the average temperature in January is -10 °F, July brings an average temperature of 56 °F.[1] Being situated between the Chugach and Talkeetna mountains, it is not surprising that Tolsona's surroundings are rich with wildlife. Moose, caribou, and bear, in addition to small game, are common to the area. Various fish species also populate the numerous creeks, rivers, and lakes around Tolsona.

Although Tolsona is not a Native community, the name "Tolsona" is Athabascan in origin and was associated with both Tolsona River and Tolsona Lake. The United States Geological Survey (USGS) first referenced the name Tolsona in a 1915 publication.[2]

Only a few services are available in Tolsona, one of which is Tolsona Lake Seaplane Base. This base was established in 1967 and it is owned by the Alaska Department of Fish & Game.[3] Tolsona Lake Resort, located about 17 miles west of Glennallen, is perhaps the largest structure in Tolsona. The resort claims that "Tolsona Lake is the Float Plane Hub of the Copper River Basin." Both Copper Valley Air Service and Lee's Air Taxi provide access to Tolsona Lake.[4] Tolsona Lake, as well as Moose Lake, are accessible by Tolsona Lake Road.[5] A campground called Tolsona Wilderness Campground can also be found in Tolsona. It is located on the banks of Tolsona Creek at about mile 173 of the Glenn Highway.

Demography

The community of Tolsona is relatively small and this study found an estimated 2013 population of 12 households and 24 individuals (Table 10-1). This estimate is slightly lower than the 2010 U.S. Census Bureau survey, which reported 18 households and 30 individuals in that year. Since 2000, when the CDP

1. Alaska Department of Commerce, Community, and Economic Development (ADCCED) Division of Community and Regional Affairs, Juneau. n.d. "Alaska Community Database Online: Community Information." Accessed September 2014. http://commerce.alaska.gov/cra/DCRAExternal/community/Details/c825b514-f3ce-4aa5-b5f4-998c17902236
2. Alaska Department of Commerce, Community, and Economic Development (ADCCED) Division of Community and Regional Affairs, Juneau. n.d. "Alaska Community Database Online: Community Information." Accessed September 2014. http://commerce.alaska.gov/cra/DCRAExternal/community/Details/c825b514-f3ce-4aa5-b5f4-998c17902236
3. AirNav.com, "Tolsona Lake Seaplane Base," http://www.airnav.com/airport/58A (accessed September 10, 2014).
4. Tolsona Lake Resort, "Area Info," www.tolsonalakeresort.com (accessed September 10, 2014).
5. Alaska Department of Commerce, Community, and Economic Development (ADCCED) Division of Community and Regional Affairs, Juneau. n.d. "Alaska Community Database Online: Community Information." Accessed September 2014. http://commerce.alaska.gov/cra/DCRAExternal/community/Details/c825b514-f3ce-4aa5-b5f4-998c17902236

Table 10-1.–Population estimates, Tolsona, 2010 and 2013.

	Census (2010)	5-year American Community Survey (2008–2012)[a]	This study (2013)
Total population			
Households	18	0	12.0
Population	30	0	24.0
Alaska Native			
Population	0	0	0.0
Percentage	0.0%	0.0%	0.0%

Sources U.S. Census Bureau (2011) for 2010 estimate; U.S. Census Bureau for American Community Survey 5-year survey estimate; and ADF&G Division of Subsistence household surveys, 2014, for 2013 estimate.
Note The term "households" means occupied housing units. Alaska Native population data from the American Community Survey (ACS) and 2010 census come from the category "race alone or in combination with one or more other races."
a. The ACS estimate is based on a random sample. Although uncertain, the population estimate of zero (0) may be the result of a random sample consisting entirely of vacant households.

was established, the population of Tolsona has remained relatively constant as shown in Figure 10-1. Of the 12 permanent Tolsona households identified in this study, 8 were interviewed, resulting in a sample achievement of 67% (Table 10-2). Two households could not be contacted during the study and 2 households declined to participate.

Most of Tolsona's residents were between the ages of 45 and 79 with a relatively even distribution overall of males and females in that age range (Figure 10-2). Approximately 19% of the community falls within the 60–64 age range (Table 10-3); this is the highest percentage for any 5-year category. No one was found to be 80 years old or older in the community. A few individuals in their late twenties and early thirties resided in the community. Only 3 children, all female, were estimated to reside in Tolsona.

The mean household size in Tolsona is 2 persons; the mean age of community residents is 47 years old; and the mean length of residency is 23 years (Table 10-4). No households in Tolsona identified as being Alaska Native.

None of the surveyed household heads in Tolsona reported that their parents were living in the community when they were born (Table 10-5). Only 8% of household heads were born in Alaska (all in Fairbanks). When considering all residents of Tolsona, 75% were born outside of Alaska (Appendix Table E10-1). Of the total population only 13% had parents who resided in Tolsona when they were born. Thus most adult residents moved to Tolsona during their lifetime and the inter-generational presence in the area is extremely limited.

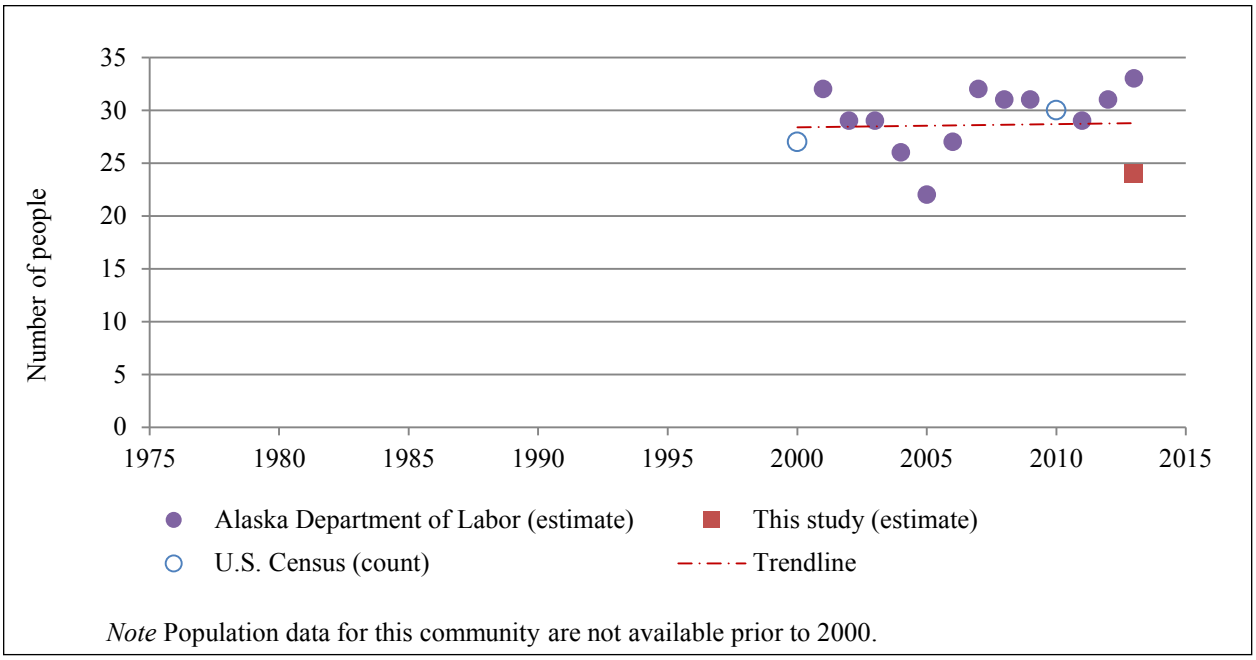

Figure 10-1.–Historical population estimates, Tolsona, 2000–2013.

Table 10-2.–Sample achievement, Tolsona, 2013.

	Tolsona
Number of dwelling units	14
Interview goal	14
Households interviewed	8
Households failed to be contacted	2
Households declined to be interviewed	2
Households moved or occupied by nonresident	2
Total households attempted to be interviewed	10
Refusal rate	20.0%
Final estimate of permanent households	12
Percentage of total households interviewed	66.7%
Interview weighting factor	1.5
Sampled population	16
Estimated population	24.0

Source ADF&G Division of Subsistence household surveys, 2014.

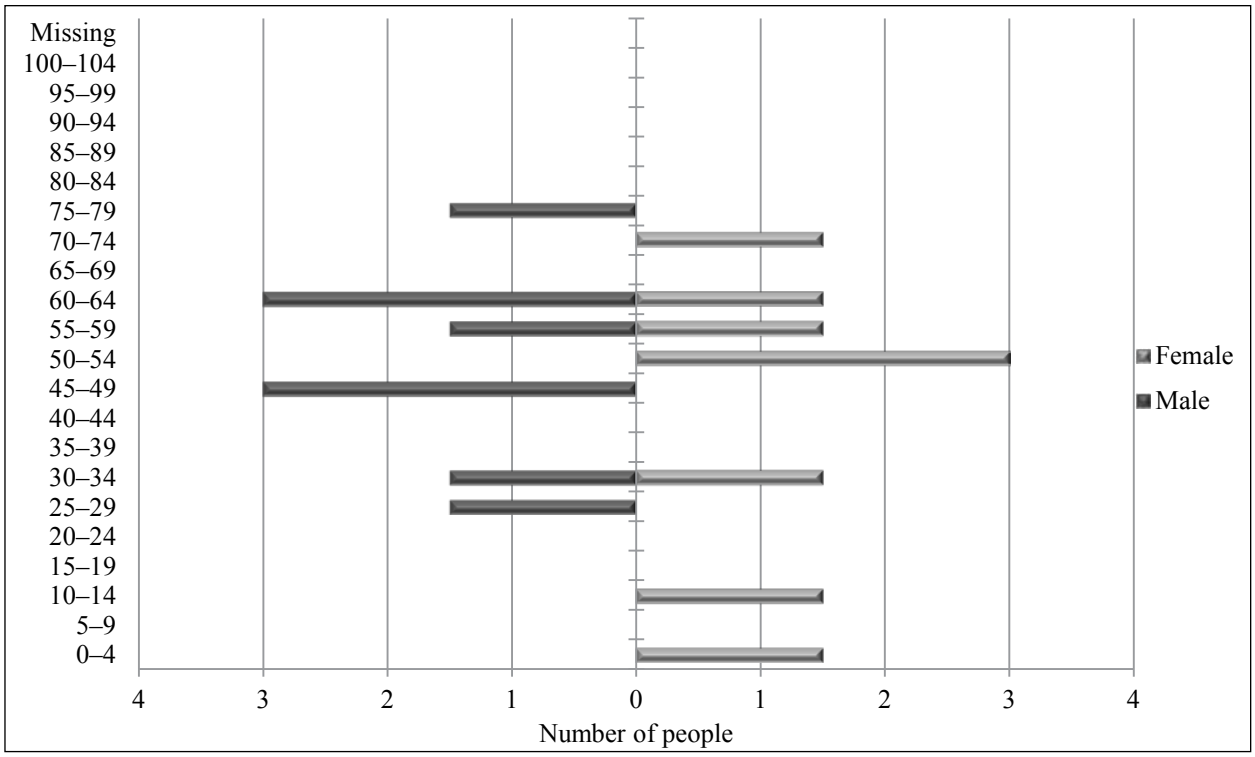

Figure 10-2.–Population profile, Tolsona, 2013.

Table 10-3.–Population profile, Tolsona, 2013.

	Male			Female			Total		
Age	Number	Percentage	Cumulative percentage	Number	Percentage	Cumulative percentage	Number	Percentage	Cumulative percentage
0–4	0.0	0.0%	0.0%	1.5	12.5%	12.5%	1.5	6.3%	6.3%
5–9	0.0	0.0%	0.0%	0.0	0.0%	12.5%	0.0	0.0%	6.3%
10–14	0.0	0.0%	0.0%	1.5	12.5%	25.0%	1.5	6.3%	12.5%
15–19	0.0	0.0%	0.0%	0.0	0.0%	25.0%	0.0	0.0%	12.5%
20–24	0.0	0.0%	0.0%	0.0	0.0%	25.0%	0.0	0.0%	12.5%
25–29	1.5	12.5%	12.5%	0.0	0.0%	25.0%	1.5	6.3%	18.8%
30–34	1.5	12.5%	25.0%	1.5	12.5%	37.5%	3.0	12.5%	31.3%
35–39	0.0	0.0%	25.0%	0.0	0.0%	37.5%	0.0	0.0%	31.3%
40–44	0.0	0.0%	25.0%	0.0	0.0%	37.5%	0.0	0.0%	31.3%
45–49	3.0	25.0%	50.0%	0.0	0.0%	37.5%	3.0	12.5%	43.8%
50–54	0.0	0.0%	50.0%	3.0	25.0%	62.5%	3.0	12.5%	56.3%
55–59	1.5	12.5%	62.5%	1.5	12.5%	75.0%	3.0	12.5%	68.8%
60–64	3.0	25.0%	87.5%	1.5	12.5%	87.5%	4.5	18.8%	87.5%
65–69	0.0	0.0%	87.5%	0.0	0.0%	87.5%	0.0	0.0%	87.5%
70–74	0.0	0.0%	87.5%	1.5	12.5%	100.0%	1.5	6.3%	93.8%
75–79	1.5	12.5%	100.0%	0.0	0.0%	100.0%	1.5	6.3%	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	**12.0**	**100.0%**	**100.0%**	**12.0**	**100.0%**	**100.0%**	**24.0**	**100.0%**	**100.0%**

Source ADF&G Division of Subsistence household surveys, 2014.

Table 10-4.–Sample and demographic characteristics, Tolsona, 2013.

Characteristics	
Sampled population	16
Estimated community population	24
Household size	
Mean	2.0
Minimum	1
Maximum	4
Age	
Mean	47.2
Minimum[a]	1
Maximum	76
Median	53
Length of residency	
Total population	
Mean	23.1
Minimum[a]	1
Maximum	50
Heads of household	
Mean	25.8
Minimum[a]	1
Maximum	50
Alaska Native	
Estimated households[b]	
Number	0.0
Percentage	0.0%
Estimated population	
Number	0
Percentage	0.0%

Source ADF&G Division of Subsistence household surveys, 2014.
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 10-5.–Birthplaces of household heads, Tolsona, 2013.

Birthplace	Percentage
Fairbanks	7.7%
Other U.S.	92.3%

Source ADF&G Division of Subsistence household surveys, 2014.
Note "Birthplace" means the place of residence of the parents of the individual when the individual was born.

Cash Employment and Monetary Income

Table 10-6 provides a summary of the estimated earned income in addition to various other sources of income for residents of Tolsona in 2013. The table shows that the total community earned income for Tolsona in 2013 was $537,515 and other income totaled $352,500. The average household income for Tolsona was $74,168 and the per capita income was $37,084. Table 10-6 also shows that in 2013 earned income averaged $44,793 per household. This equates to about 60% of the total community income, with other income sources contributing on average $29,375 per household (40% of total community income). The largest source of other income was pension/retirement funds, which accounted for almost 23% of the total community income in 2013, followed by rental income, which accounted for 10% of the total community income in 2013.

Table 10-7 shows that the employment industries that contributed the most to the community earned income were services (85% of wage earnings), followed by construction (9% of wage earnings), and federal government (5% of wage earnings). In 2013, 100% of the adults in Tolsona were employed at some point during the year (Table 10-8). These adults were employed for an average of 8 months. On average in 2013, 100% of households contained at least 1 adult who was employed. The mean number of jobs per employed household was 1.8.

Table 10-6.–Estimated earned and other income, Tolsona, 2013.

Income source	Number of people	Number of households	Total for community	-/+ 95% CI	Mean per household	Per capita income	Percentage of total community income
Earned income							
Services	13.5	10.3	$456,267	$200,502 – $917,870	$38,022		51.3%
Construction	1.5	1.7	$49,889	$42,521 – $188,473	$4,157		5.6%
Federal government	1.5	1.7	$28,508	$24,298 – $107,699	$2,376		3.2%
Transportation, communication, and utilities	1.5	1.7	$2,851	$2,282 – $9,036	$238		0.3%
Earned income subtotal	**18.0**	**12.0**	**$537,515**	**$208,058 – $1,003,797**	**$44,793**	**$22,396**	**60.4%**
Other income							
Pension/retirement		4.5	$205,500	$137,000 – $432,000	$17,125		23.1%
Rental income		3.0	$90,000	$60,000 – $210,000	$7,500		10.1%
Social Security		3.0	$28,500	$19,000 – $67,500	$2,375		3.2%
Alaska Permanent Fund dividend		10.5	$18,900	$10,800 – $25,650	$1,575		2.1%
Unemployment		1.5	$5,250	$3,500 – $10,500	$438		0.6%
Heating assistance		1.5	$3,900	$2,600 – $7,800	$325		0.4%
Child support		1.5	$450	$300 – $900	$38		0.1%
TANF (Temporary Assistance for Needy Families)		0.0	$0	$0 – $0	$0		0.0%
Adult public assistance (OAA, APD)		0.0	$0	$0 – $0	$0		0.0%
Supplemental Security income		0.0	$0	$0 – $0	$0		0.0%
Food stamps		0.0	$0	$0 – $0	$0		0.0%
Longevity bonus		0.0	$0	$0 – $0	$0		0.0%
Workers' compensation/insurance		0.0	$0	$0 – $0	$0		0.0%
Disability		0.0	$0	$0 – $0	$0		0.0%
Veterans assistance		0.0	$0	$0 – $0	$0		0.0%
Native corporation dividend		0.0	$0	$0 – $0	$0		0.0%
Other		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		**12.0**	**$352,500**	**$98,400 – $643,350**	**$29,375**	**$14,688**	**39.6%**
Community income total			**$890,015**	**$419,438 – $1,552,605**	**$74,168**	**$37,084**	**100.0%**

Source ADF&G Division of Subsistence household surveys, 2014.

Table 10-7.–Employment by industry, Tolsona, 2013.

Industry	Jobs	Households	Individuals	Percentage of wage earnings
Estimated total number	**21.0**	**12.0**	**21.0**	
Federal government	**8.3%**	**14.3%**	**8.3%**	**5.3%**
Handlers, equipment cleaners, helpers, and laborers	8.3%	14.3%	8.3%	5.3%
Transportation, communication, and utilities	**8.3%**	**14.3%**	**8.3%**	**0.5%**
Handlers, equipment cleaners, helpers, and laborers	8.3%	14.3%	8.3%	0.5%
Construction	**8.3%**	**14.3%**	**8.3%**	**9.3%**
Executive, administrative, and managerial	8.3%	14.3%	8.3%	9.3%
Services	**75.0%**	**85.7%**	**75.0%**	**84.9%**
Executive, administrative, and managerial	33.3%	42.9%	33.3%	43.8%
Service occupations	16.7%	28.6%	16.7%	16.8%
Mechanics and repairers	8.3%	14.3%	8.3%	18.6%
Handlers, equipment cleaners, helpers, and laborers	16.7%	28.6%	16.7%	5.7%

Source ADF&G Division of Subsistence household surveys, 2014.

Table 10-8.–Employment characteristics, Tolsona, 2013.

Characteristic	Community Tolsona
All adults	
Number	21.0
Mean weeks employed	34.0
Employed adults	
Number	21.0
Percentage	100.0%
Jobs	
Number	21.0
Mean	1.0
Minimum	1
Maximum	1
Months employed	
Mean	7.9
Minimum	2
Maximum	12
Percentage employed year-round	50.0%
Mean weeks employed	34.0
Households	
Number	12
Employed	
Number	12.0
Percentage	100.0%
Jobs per employed household	
Mean	1.8
Minimum	1
Maximum	3
Employed adults	
Mean	
Employed households	1.8
Total households	1.8
Minimum	1
Maximum	3
Mean person-weeks of employment	36.3

Source ADF&G Division of Subsistence household surveys, 2014.

Levels of Individual Participation in the Harvesting and Processing of Wild Resources

Table 10-9 reports the expanded levels of individual participation in the harvest and processing of wild resources by all Tolsona residents in 2013. Nearly 94% of residents attempted to harvest some sort of resource in 2013. In terms of distinct resource categories, approximately 81% of residents attempted to gather plants, 75% fished, 50% hunted for large land mammals, about 31% hunted for birds, and 6% hunted for small land mammals. In comparison, 100% of Tolsona residents processed some type of resource in 2013. In regard to specific resource categories, 88% of residents participated in the processing of both fish and vegetation. Half of the community was involved in the processing of large land mammals. Additionally, 38% of individuals participated in processing birds. Finally, only 6% of Tolsona residents processed small land mammals. The number of individuals helping to process wild resources was equal to or slightly higher than those harvesting the resource for most resource categories. The category with the greatest difference between harvesting and processing was fish, with 88% of individuals helping to process and 75% harvesting, a difference of only 13%.

The survey included questions about participation in craft activities relating to the harvest and use of wild resources. In Tolsona, more than 12% of individuals built or repaired fish wheels or helped to place or remove a fish wheel (Table 10-10). In 2013, about 6% of residents sewed skins or cloth and 75% of residents cooked wild foods.

Table 10-9.–Individual participation in subsistence harvesting and processing activities, Tolsona, 2013.

Total number of people	**24.0**
Fish	
Fish	
Number	18.0
Percentage	75.0%
Process	
Number	21.0
Percentage	87.5%
Large land mammals	
Hunt	
Number	12.0
Percentage	50.0%
Process	
Number	12.0
Percentage	50.0%
Small land mammals	
Hunt or trap	
Number	1.5
Percentage	6.3%
Process	
Number	1.5
Percentage	6.3%
Birds and eggs	
Hunt/gather	
Number	7.5
Percentage	31.3%
Process	
Number	9.0
Percentage	37.5%
Vegetation	
Gather	
Number	19.5
Percentage	81.3%
Process	
Number	21.0
Percentage	87.5%
Any resource	
Attempt harvest	
Number	22.5
Percentage	93.8%
Process	
Number	24.0
Percentage	100.0%

Source ADF&G Division of Subsistence household surveys, 2014.

Table 10-10.–Household member participation in subsistence craft activities, Tolsona, 2013.

Total number of people	**24.0**
Building, maintaining, or moving fish wheels	
Number	3.0
Percentage	12.5%
Sewing skins or cloth	
Number	1.5
Percentage	6.3%
Cooking wild foods	
Number	18.0
Percentage	75.0%

Source ADF&G Division of Subsistence household surveys, 2014.

Household Resource Harvest and Use Patterns and Sharing of Wild Resources

Table 10-11 summarizes resource harvest and use characteristics for Tolsona in 2013 at the household level. All households (100%) used wild resources in 2013, while 88% attempted to harvest or harvested resources. The average harvest was 622 lb usable weight per household, or 311 lb per capita. During the study year, households harvested an average of 9 kinds of resources and used and average of 14 kinds of resources. The maximum number of resources used by any household was 35. In addition, households gave away an average of 6 kinds of resources and 75% of households shared resources with other households. Since Tolsona is a small community the figure that appears in other community results chapters showing that a small number of households harvested a large percentage of the community harvest is not included in this chapter for confidentiality reasons.

The survey included questions about residents' use of alternative and motorized transportation to access harvest areas as well as the use of portable motors. Figure 10-3 demonstrates the percentage of community households that used an alternate means of transportation (in addition to or aside from using cars, trucks, or traveling on foot). Approximately 50% of the Tolsona households used a boat when harvesting wild foods, 50% used a snowmachine, 38% used an ATV, and 38% used an aircraft.

Portable motors used included a chain saw (75%), winch (38%), ice auger (38%), generator (13%), and 25% of households used other portable motors (Figure 10-4). Figure 10-5 demonstrates the percentage of households that used natural materials for handicrafts; 13% used bark, antlers, and horns.

Firewood is very important for heating homes in many rural communities. Tolsona households had an average annual cost of heating their homes of $2,292 (Table 10-12). Though 38% of households had none of their household heat come from firewood, the remaining 63% of households had greater than 25% of their household heat provided by firewood. Importantly, 75% of households used and harvested wood in 2013 (Table 10-13), though this includes wood collected for other purposes as well.

Table 10-11.–Resource harvest and use characteristics, Tolsona, 2013.

Characteristic	
Mean number of resources used per household	**13.9**
Minimum	2
Maximum	35
95% confidence limit (±)	34.7%
Median	13
Mean number of resources attempted to harvest per household	**9.8**
Minimum	0
Maximum	32
95% confidence limit (±)	52.2%
Median	8.5
Mean number of resources harvested per household	**9.0**
Minimum	0
Maximum	31
95% confidence limit (±)	53.9%
Median	8.5
Mean number of resources received per household	**7.5**
Minimum	2
Maximum	12
95% confidence limit (±)	23.1%
Median	7
Mean number of resources given away per household	**5.5**
Minimum	0
Maximum	18
95% confidence limit (±)	51.6%
Median	5
Household harvest (pounds)	
Minimum	0
Maximum	3,995
Mean	621.5
Median	72
Total harvest weight (lb)	7,458.2
Community per capita harvest (lb)	310.8
Percentage using any resource	100.0%
Percentage attempting to harvest any resource	87.5%
Percentage harvesting any resource	87.5%
Percentage receiving any resource	100.0%
Percentage giving away any resource	75.0%
Number of households in sample	8
Number of resources asked about and identified voluntarily by respondents	114

Source ADF&G Division of Subsistence household surveys, 2014.

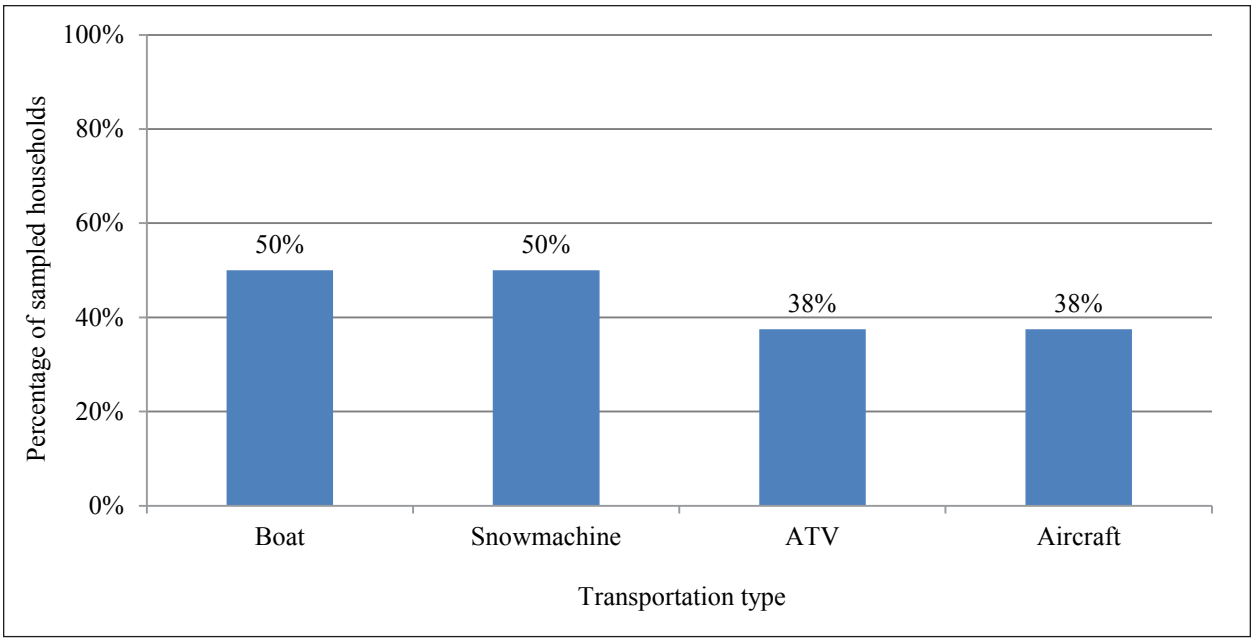

Figure 10-3.–Alternative modes of transportation used by sampled households to access wild resources, Tolsona, 2013.

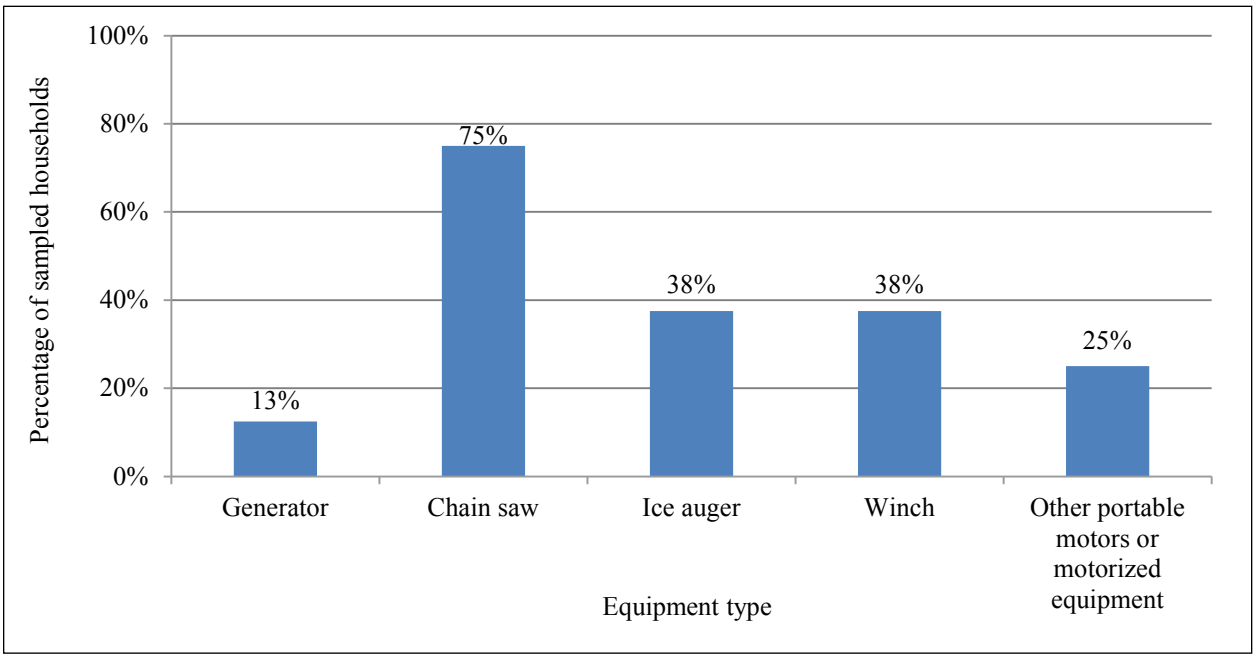

Figure 10-4.–Portable motorized equipment used by sampled households while searching for and harvesting wild resources, Tolsona, 2013.

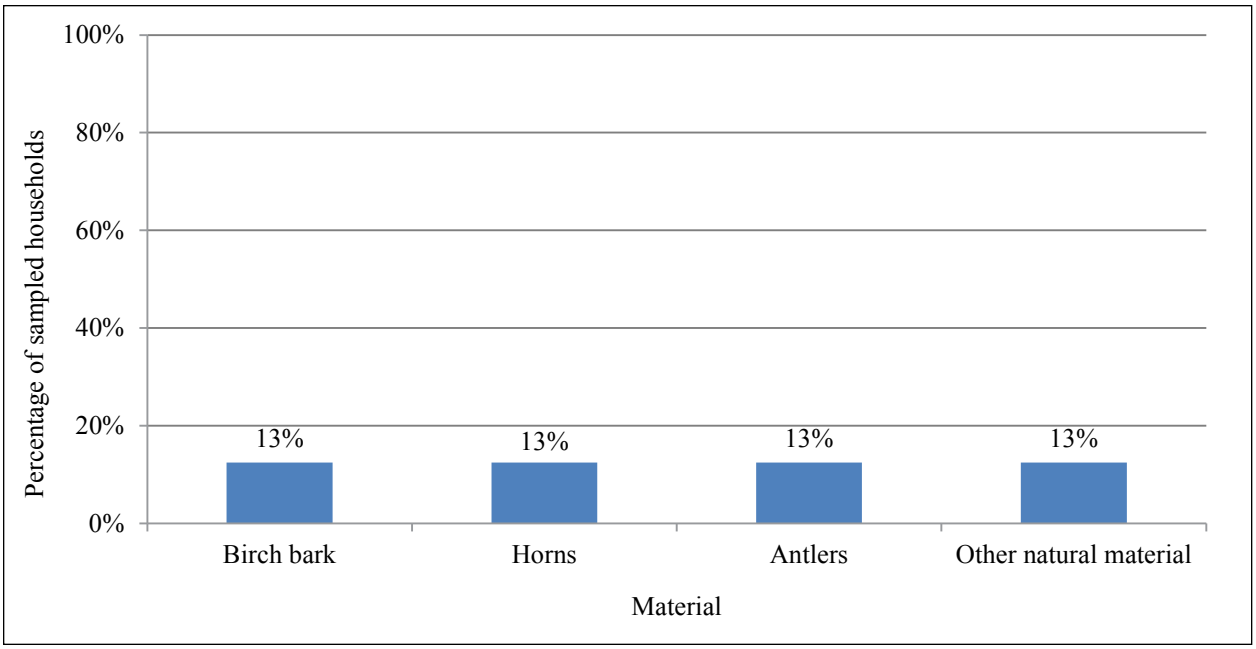

Figure 10-5.–Natural materials used by sampled households for making handicrafts, Tolsona, 2013.

Harvest Quantities and Composition

Table 10-13 reports estimated wild resource harvests and uses by Tolsona residents in 2013 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 harvest category includes resources harvested by any member of the surveyed household during the study year. The use category includes all 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 firewood are included because they are an important part of the subsistence way of life. Differences between harvest and use percentages reflect sharing among households, which results in a wider distribution of wild foods.

The total harvest for Tolsona in 2013 as recorded in pounds usable weight was 7,458 lb (Table 10-13). This equals a total harvest of approximately 622 lb per household and 311 lb per capita for all resources combined. Salmon made up the greatest proportion of this harvest—41% of the total harvest—and approximately 128 lb of salmon were harvested per capita (Figure 10-6; Table 10-13). Large land mammals were also a significant proportion of the total harvest, representing 37%, followed by nonsalmon fish (15%), vegetation (6%), and birds (1%). The per capita harvests of large land mammals, nonsalmon fish, vegetation, and birds were 116 lb, 45 lb, 19 lb, and 2 lb, respectively. A per capita harvest of less than 1 lb of small land mammals was estimated. No marine mammal or marine invertebrate harvest was reported.

Seasonal Round

A complete description of the seasonal round for this community can be found in the chapter "East Glenn Highway: Mendeltna."

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 10-12.–Use of firewood for home heating in sampled households, Tolsona, 2013.

Community	Average annual cost of home heating	Household use of wood for home heating as a percentage of total fuel for heating											
		0%		1%–25%		26%–50%		51%–75%		76%–99%		100%	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Tolsona	$2,292	3	37.5%	0	0.0%	3	37.5%	0	0.0%	2	25.0%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2014.

Table 10-13.–Estimated use and harvests of fish, game, and vegetation resources, Tolsona, 2013.

Resource	Percentage of households: Use %	Attempt %	Harvest %	Receive %	Give %	Harvest weight (lb): Total	Mean per household	Per capita	Harvest amount[a]: Total	Unit	Mean per household	95% confidence limit (±)
All resources	**100.0**	**87.5**	**87.5**	**100.0**	**75.0**	**7,458.2**	**621.5**	**310.8**				**107.1**
Salmon	**87.5**	**50.0**	**50.0**	**87.5**	**50.0**	**3,060.5**	**255.0**	**127.5**				**120.0**
Chum salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Coho salmon	12.5	0.0	0.0	12.5	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Chinook salmon	50.0	12.5	12.5	37.5	12.5	123.6	10.3	5.1	9.0	ind	0.8	136.5
Pink salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Sockeye salmon	87.5	50.0	50.0	87.5	50.0	2,936.9	244.7	122.4	640.5	ind	53.4	119.3
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	**100.0**	**75.0**	**75.0**	**100.0**	**37.5**	**1,074.7**	**89.6**	**44.8**				**95.6**
Pacific herring	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	ind	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
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	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Lingcod	25.0	12.5	12.5	0.0	12.5	7.2	0.6	0.3	3.0	ind	0.3	136.5
Pacific halibut	75.0	25.0	25.0	62.5	25.0	420.0	35.0	17.5	420.0	lb	35.0	99.7
Arctic lamprey	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	25.0	12.5	12.5	12.5	12.5	60.0	5.0	2.5	15.0	ind	1.3	136.5
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
Burbot	75.0	50.0	50.0	50.0	25.0	244.8	20.4	10.2	102.0	ind	8.5	97.5
Dolly Varden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Lake trout	37.5	37.5	37.5	12.5	25.0	111.0	9.3	4.6	55.5	ind	4.6	90.5
Arctic grayling	25.0	37.5	25.0	0.0	12.5	26.3	2.2	1.1	37.5	ind	3.1	91.7
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
Longnose sucker	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	62.5	62.5	62.5	12.5	0.0	79.8	6.7	3.3	57.0	ind	4.8	62.6
Unknown trout	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Broad whitefish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Least cisco	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 10-13.–Page 2 of 4.

Resource	Percentage of households: Use %	Attempt %	Harvest %	Receive %	Give %	Harvest weight (lb): Total	Mean per household	Per capita	Harvest amount[a]: Total	Unit	Mean per household	95% confidence limit (±)
Nonsalmon fish, continued												
Humpback whitefish	12.5	12.5	12.5	12.5	12.5	118.1	9.8	4.9	67.5	ind	5.6	136.5
Round whitefish	12.5	12.5	12.5	0.0	12.5	7.5	0.6	0.3	7.5	ind	0.6	136.5
Unknown whitefishes	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Large land mammals	**87.5**	**50.0**	**25.0**	**75.0**	**50.0**	**2,787.0**	**232.3**	**116.1**				**104.0**
Bison	25.0	0.0	0.0	12.5	12.5	0.0	0.0	0.0	0.0	ind	0.0	0.0
Black bear	37.5	25.0	12.5	25.0	25.0	87.0	7.3	3.6	1.5	ind	0.1	136.5
Brown bear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Caribou	25.0	12.5	0.0	25.0	12.5	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Moose	87.5	50.0	25.0	75.0	50.0	2,700.0	225.0	112.5	6.0	ind	0.5	103.2
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	**12.5**	**12.5**	**12.5**	**0.0**	**12.5**	**18.0**	**1.5**	**0.8**				**136.5**
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–cross phase	12.5	12.5	12.5	0.0	12.5	0.0	0.0	0.0	3.0	ind	0.3	136.5
Red fox–red phase	12.5	12.5	12.5	0.0	12.5	0.0	0.0	0.0	4.5	ind	0.4	136.5
Snowshoe hare	12.5	12.5	12.5	0.0	0.0	18.0	1.5	0.8	9.0	ind	0.8	136.5
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
Marmot	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Marten	12.5	12.5	12.5	0.0	0.0	0.0	0.0	0.0	4.5	ind	0.4	136.5
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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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
Least 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	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**				**0.0**
Fur seal	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 10-13.–Page 3 of 4.

Resource	Percentage of households: Use %	Attempt %	Harvest %	Receive %	Give %	Harvest weight (lb): Total	Mean per household	Per capita	Harvest amount[a]: Total	Unit	Mean per household	95% confidence limit (±)
Marine mammals, continued												
Harbor seal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown seal	0.0	0.0	0.0	0.0	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
Unknown whale	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	**37.5**	**37.5**	**37.5**	**12.5**	**12.5**	**52.1**	**4.3**	**2.2**				**100.1**
Canvasback	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Spectacled 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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Mallard	12.5	0.0	0.0	12.5	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Northern pintail	12.5	12.5	12.5	0.0	0.0	4.8	0.4	0.2	6.0	ind	0.5	136.5
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
Green-winged 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 ducks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Brant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Cackling goose	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Canada 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 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
Emperor goose	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Snow goose	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Tundra (whistling) swan	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
Spruce grouse	25.0	25.0	25.0	0.0	0.0	38.9	3.2	1.6	55.5	ind	4.6	103.9
Sharp-tailed grouse	12.5	12.5	12.5	0.0	0.0	2.1	0.2	0.1	3.0	ind	0.3	136.5
Ruffed grouse	25.0	25.0	25.0	12.5	12.5	4.2	0.4	0.2	6.0	ind	0.5	89.4
Unknown ptarmigan	12.5	12.5	12.5	0.0	0.0	2.1	0.2	0.1	3.0	ind	0.3	136.5
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
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 eggs	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 10-13.–Page 4 of 4.

Resource	Percentage of households: Use %	Attempt %	Harvest %	Receive %	Give %	Harvest weight (lb): Total	Mean per household	Per capita	Harvest amount[a]: Total	Unit	Mean per household	95% confidence limit (±)
Marine invertebrates	**25.0**	**0.0**	**0.0**	**25.0**	**0.0**	**0.0**	**0.0**	**0.0**				**0.0**
Butter clams	12.5	0.0	0.0	12.5	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Freshwater 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	12.5	0.0	0.0	12.5	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Dungeness crab	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	lb	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	lb	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	lb	0.0	0.0
Unknown mussels	12.5	0.0	0.0	12.5	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
Shrimp	12.5	0.0	0.0	12.5	0.0	0.0	0.0	0.0	0.0	lb	0.0	0.0
Squid	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**	**75.0**	**75.0**	**87.5**	**75.0**	**466.0**	**38.8**	**19.4**				**90.6**
Blueberry	87.5	62.5	62.5	87.5	62.5	135.0	11.3	5.6	33.8	gal	2.8	78.6
Lowbush cranberry	62.5	62.5	62.5	37.5	37.5	90.0	7.5	3.8	22.5	gal	1.9	87.2
Highbush cranberry	37.5	25.0	25.0	12.5	12.5	39.0	3.3	1.6	9.8	gal	0.8	125.0
Crowberry	25.0	12.5	12.5	12.5	12.5	12.0	1.0	0.5	3.0	gal	0.3	136.5
Huckleberry	12.5	12.5	12.5	0.0	0.0	0.6	0.0	0.0	0.1	gal	0.0	136.5
Raspberry	87.5	62.5	62.5	50.0	50.0	120.8	10.1	5.0	30.2	gal	2.5	77.9
Salmonberry	25.0	25.0	25.0	0.0	0.0	6.4	0.5	0.3	1.6	gal	0.1	127.6
Other wild berry	25.0	25.0	25.0	0.0	0.0	36.8	3.1	1.5	9.2	gal	0.8	133.4
Wild rhubarb	12.5	12.5	12.5	0.0	0.0	3.0	0.3	0.1	3.0	gal	0.3	136.5
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
Other wild greens	25.0	25.0	25.0	0.0	0.0	9.0	0.8	0.4	9.0	gal	0.8	135.7
Unknown mushrooms	12.5	12.5	12.5	0.0	0.0	13.5	1.1	0.6	13.5	gal	1.1	136.5
Other wood	75.0	75.0	75.0	25.0	37.5	0.0	0.0	0.0	259.5	cord	21.6	80.1

Source ADF&G Division of Subsistence household surveys, 2014.

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.

a. Summary rows that include incompatible units of measure have been left blank.

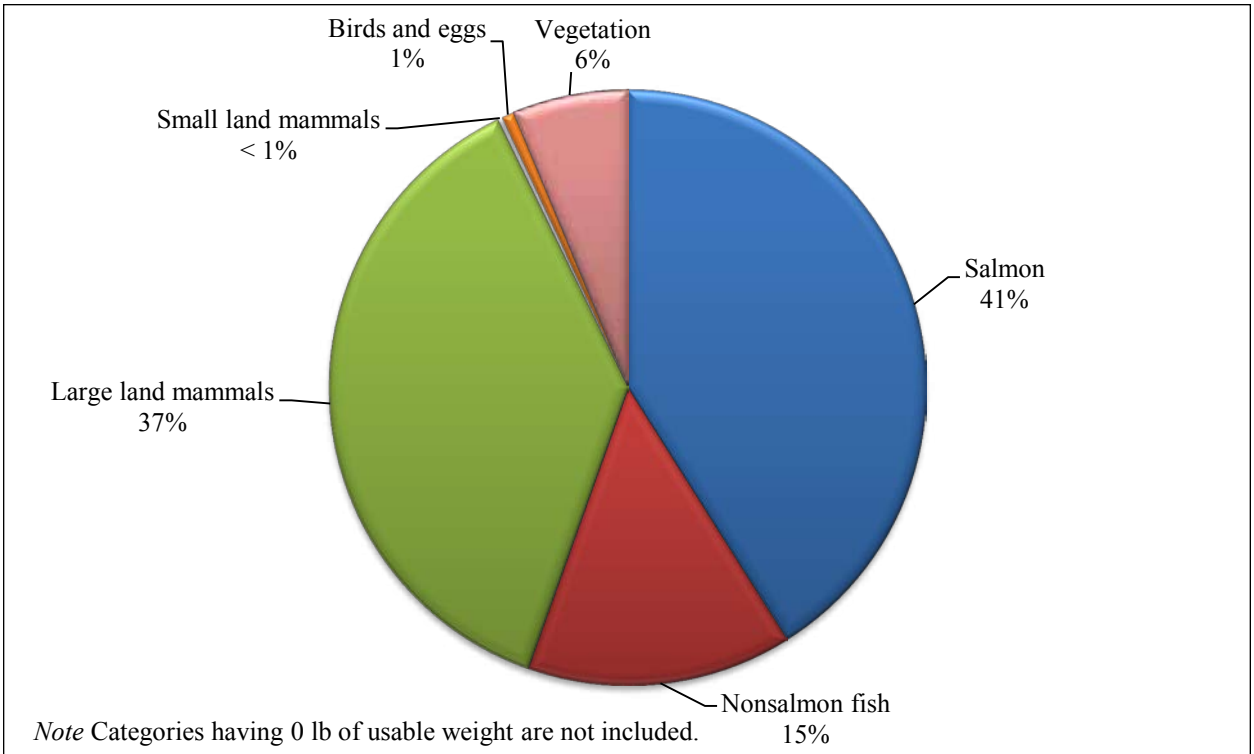


Figure 10-6.–Composition of harvest by resource category in pounds usable weight, Tolsona, 2013.

Use and Harvest Characteristics by Resource Category

Table 10-13 reports estimated wild resource harvests and uses by Tolsona residents in 2013 and is organized first by general category and then by species. This table 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 Tolsona residents in 2013. All households received resources in 2013, and 75% of households gave away resources.

Nonsalmon fish was the resource category most frequently received by Tolsona residents in 2013. All households received nonsalmon fish. This was followed closely by receipt of salmon and vegetation (88% of households) and receipt of large land mammals (75% of households). Importantly, there was no harvest of marine invertebrates, but 25% of households received these resources.

Vegetation was the resource category most frequently given away by Tolsona households (75% of households) (Table 10-13). Fifty percent of households gave away salmon and large land mammals; following those categories, 38% of households gave away nonsalmon fish and only 12% of households gave away small land mammals or birds. No households gave away marine invertebrates or marine mammals.

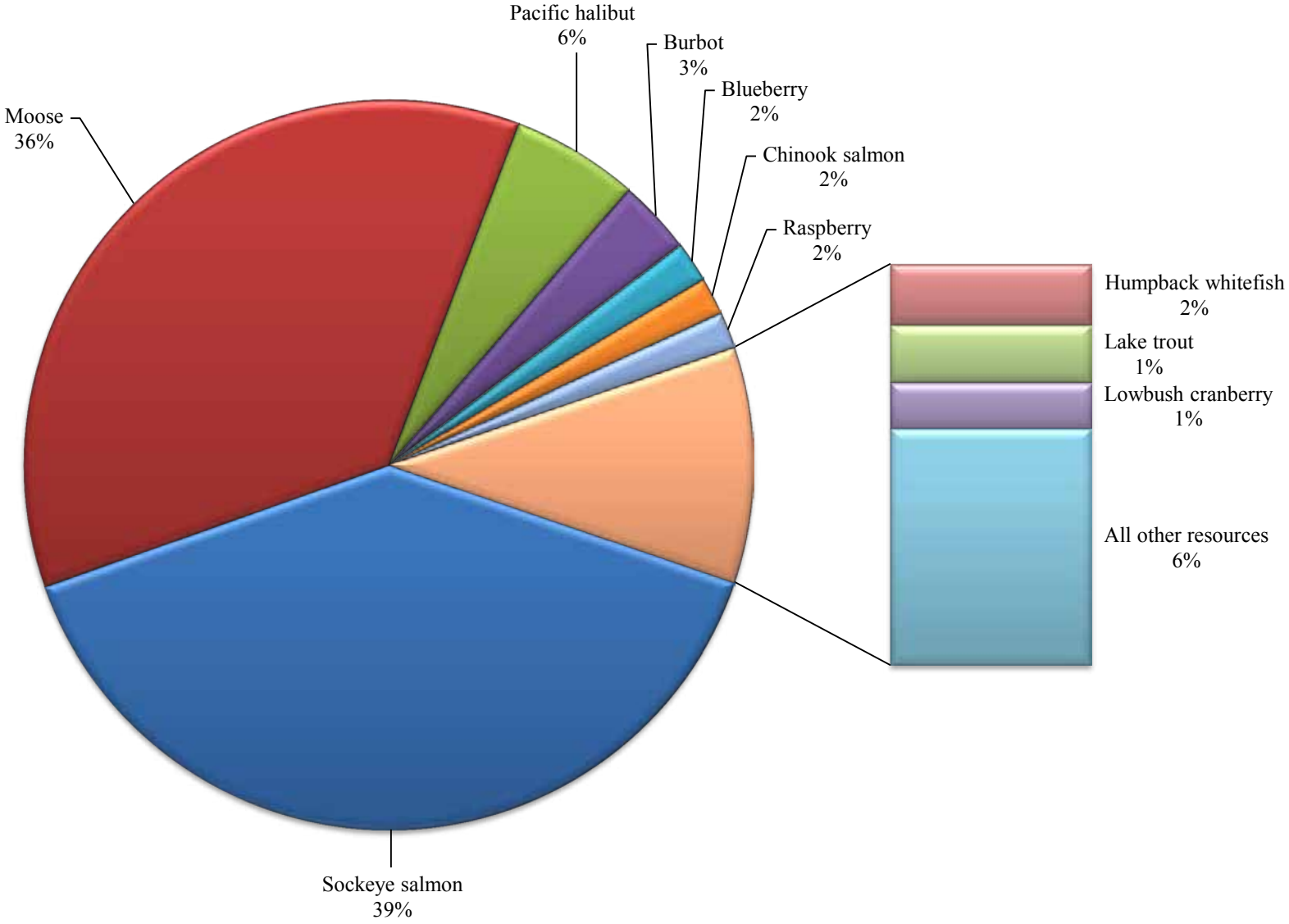
Table 10-14 lists the top resources used by Tolsona households and Figure 10-7 depicts the resources with the largest harvests (1% or more of the total harvest composition as estimated in pounds usable weight per person) during the 2013 study year. A majority of households (88%) used sockeye salmon, moose, blueberries, and raspberries (Table 10-14). These resources are locally available. Seventy-five percent of households used Pacific halibut and burbot. Importantly, 3 species of berries received a top harvest rank (Figure 10-7).

Table 10-14.–Top ranked resources used by households, Tolsona, 2013.

Rank[a]	Resource	Percentage of households using
1.	Sockeye salmon	87.5%
1.	Moose	87.5%
1.	Blueberry	87.5%
1.	Raspberry	87.5%
5.	Pacific halibut	75.0%
5.	Burbot	75.0%
7.	Rainbow trout	62.5%
7.	Lowbush cranberry	62.5%
9.	Chinook salmon	50.0%
10.	Lake trout	37.5%

Source ADF&G Division of Subsistence household surveys, 2014.
a. Resources used by the same percentage of households share the lowest rank value instead of having sequential rank values.

The number of households using a resource is not always directly proportional to the top resources harvested by per capita harvest weight. For instance, blueberries and raspberries each made up 2% of the overall harvest even though they were used by most households (Table 10-13; Figure 10-7). This suggests that certain resources are important to households despite being harvested in relatively small quantities. Sockeye salmon made up the largest percentage of the harvest (39%), followed by moose (36%), and Pacific halibut (6%) (Figure 10-7).



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

Figure 10-7.–Top species harvested by percentage of total harvest in pounds usable weight, Tolsona, 2013.

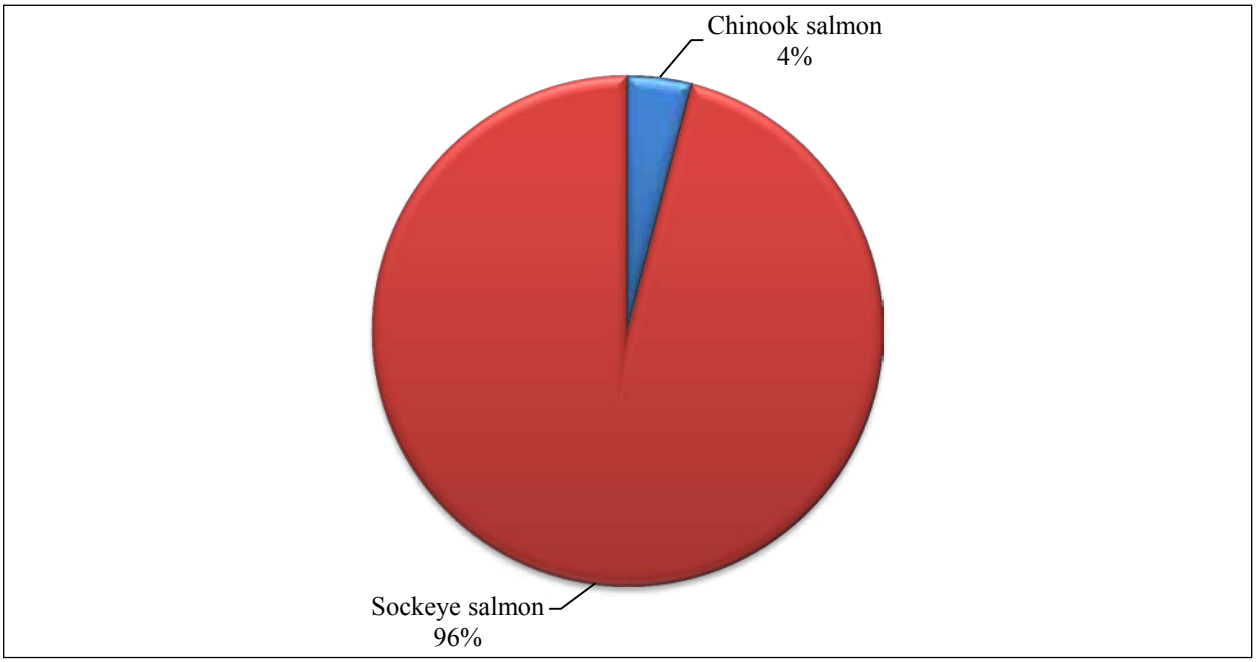


Figure 10-8.–Composition of salmon harvest in pounds usable weight, Tolsona, 2013.

Salmon

Of the 3,061 lb of salmon harvested by Tolsona residents in 2013, 96% of the harvest was composed of sockeye salmon and the remaining 4% was Chinook salmon (Figure 10-8). No other type of salmon was reported harvested by Tolsona residents in 2013 (Table 10-13). The per capita harvest weights, by species, were 122 lb for sockeye salmon and 5 lb for Chinook salmon.

Sockeye salmon were used by 88% of Tolsona households and Chinook salmon were used by 50% of households (Table 10-13). Fifty percent of households attempted to harvest sockeye salmon and all of these were successful. Only 13% of households attempted to harvest Chinook salmon, but all of these households were successful. Much of the household use of both species was derived from sharing, with 88% of households receiving sockeye salmon, and 38% of households receiving Chinook salmon. These species were given away with slightly less frequency—50% of households gave away sockeye salmon and 13% of households gave away Chinook salmon.

The majority of Tolsona's salmon harvest (94%) in 2013 was achieved using subsistence methods and gear (Table 10-15). For sockeye salmon, 92% of fish were harvested with a fish wheel, 2% were harvested with a dip net, and 6% were harvested with rod and reel. For Chinook salmon, 67% of fish were harvested with a fish wheel and the remaining 33% were harvested with rod and reel. Fish wheels and dip nets are allowable gear under state and federal subsistence regulations.

Table 10-15.–Estimated percentages of salmon harvested by gear type, resource, and total harvest, Tolsona, 2013.

				Subsistence methods													
		Removed from commercial catch		Gillnet or seine		Fish wheel		Dip net		Other		Subsistence gear, any method		Rod and reel		Any method	
Resource	Percentage base	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Salmon	**Gear type**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**0.0%**	**0.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
	Resource	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**91.5%**	**90.8%**	**2.1%**	**2.0%**	**0.0%**	**0.0%**	**93.5%**	**92.8%**	**6.5%**	**7.2%**	**100.0%**	**100.0%**
	Total	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**91.5%**	**90.8%**	**2.1%**	**2.0%**	**0.0%**	**0.0%**	**93.5%**	**92.8%**	**6.5%**	**7.2%**	**100.0%**	**100.0%**
Chum 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%	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%	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%	0.0%	0.0%	0.0%	0.0%	0.0%
Coho 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%	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%	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%	0.0%	0.0%	0.0%	0.0%	0.0%
Chinook salmon	Gear type	0.0%	0.0%	0.0%	0.0%	1.0%	3.0%	0.0%	0.0%	0.0%	0.0%	1.0%	2.9%	7.1%	18.7%	1.4%	4.0%
	Resource	0.0%	0.0%	0.0%	0.0%	66.7%	66.7%	0.0%	0.0%	0.0%	0.0%	66.7%	66.7%	33.3%	33.3%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.9%	2.7%	0.0%	0.0%	0.0%	0.0%	0.9%	2.7%	0.5%	1.3%	1.4%	4.0%
Pink 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%	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%	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%	0.0%	0.0%	0.0%	0.0%	0.0%
Sockeye salmon	Gear type	0.0%	0.0%	0.0%	0.0%	99.0%	97.0%	100.0%	100.0%	0.0%	0.0%	99.0%	97.1%	92.9%	81.3%	98.6%	96.0%
	Resource	0.0%	0.0%	0.0%	0.0%	91.8%	91.8%	2.1%	2.1%	0.0%	0.0%	93.9%	93.9%	6.1%	6.1%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	90.5%	88.1%	2.1%	2.0%	0.0%	0.0%	92.6%	90.1%	6.0%	5.8%	98.6%	96.0%
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%	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%	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%	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%	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%	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%	0.0%	0.0%	0.0%	0.0%	0.0%

Source ADF&G Division of Subsistence household surveys, 2014.

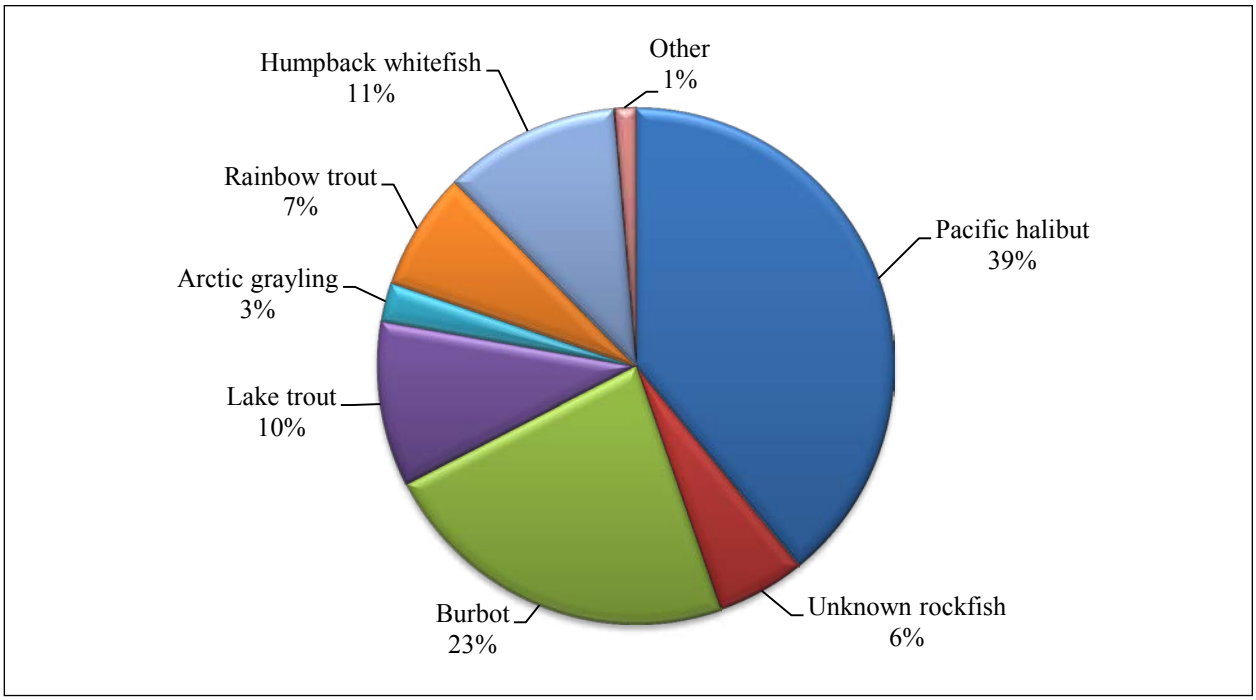


Figure 10-9.–Composition of nonsalmon fish harvest in pounds usable weight, Tolsona, 2013.

Nonsalmon Fish

Nine species of nonsalmon fish were harvested by Tolsona residents in 2013 representing a total harvested weight of 1,075 lb (Table 10-13). All households used at least 1 species of nonsalmon fish. For the nonsalmon fish harvest, 39% of the usable weight was provided by Pacific halibut, 23% by burbot, 11% by humpback whitefish, 7% by rainbow trout, 6% by unspecified species of rockfish, 4% by Arctic grayling, and 1% by other fish (Figure 10-9). Marine fish made up 45% of the nonsalmon fish harvest and locally available freshwater nonsalmon fish made up 55% (Table 10-13).

Among the marine nonsalmon fish used in Tolsona in 2013, Pacific halibut was used by the most households (75%) followed by both lingcod and rockfish—each were used by 25% of households (Table 10-13). Pacific halibut was harvested by only 25% of households but this species was received by 63% of households. Only 13% of households harvested lingcod and rockfish, and no households received lingcod and 13% received rockfish. The per capita harvests of Pacific halibut, lingcod, and rockfish species were 18 lb, less than 1 lb, and 3 lb, respectively. All of the households that attempted to harvest these species were successful, and each of these marine fish were harvested entirely with rod and reel (Table 10-16).

Among the freshwater nonsalmon fish used in Tolsona in 2013, burbot was used by the most households (75%), followed by rainbow trout (63%), lake trout (38%), and Arctic grayling (25%) (Table 10-13). Humpback whitefish, round whitefish, and unspecified species of whitefishes were each used by 13% of households. All households that attempted to harvest freshwater nonsalmon fish species (except Arctic grayling) were successful. By order of per capita harvest weight for freshwater nonsalmon fish, burbot had the greatest per capita harvest (10 lb), followed by humpback whitefish (5 lb), lake trout (5 lb), rainbow trout (3 lb), Arctic grayling (1 lb), and round whitefish (less than 1 lb).

Burbot were received by 50% of households and given away by 25% of households, but most other freshwater nonsalmon fish were shared minimally. Lake trout, rainbow trout, and humpback whitefish were received by 13% of households. No other species was received by any household. Lake trout was given away by 25% of households. Arctic grayling, humpback whitefish, and round whitefish were given away by 13% of households. No other species was given away by any household.

Table 10-16.–Estimated percentages of nonsalmon fish harvested by gear type, resource, and total nonsalmon fish harvest, Tolsona, 2013.

				Subsistence methods											
		Removed from commercial catch		Gillnet or seine		Ice fish		Other		Subsistence gear, any method		Rod and reel		Any method	
Resource	Percentage base	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Nonsalmon fish	**Gear type**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
	Resource	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**16.7%**	**27.5%**	**9.8%**	**11.7%**	**26.5%**	**39.2%**	**73.5%**	**60.8%**	**100.0%**	**100.0%**
	Total	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**16.7%**	**27.5%**	**9.8%**	**11.7%**	**26.5%**	**39.2%**	**73.5%**	**60.8%**	**100.0%**	**100.0%**
Pacific herring	Gear type	0.0%	0.0%	0.0%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	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%	0.0%	0.0%	0.0%
Pacific tomcod	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Starry flounder	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Lingcod	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	1.1%	0.4%	0.7%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	0.4%	0.7%	0.4%	0.7%
Pacific halibut	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	74.7%	64.3%	54.9%	39.1%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	54.9%	39.1%	54.9%	39.1%
Arctic lamprey	Gear type	0.0%	0.0%	0.0%	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%	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%	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%	0.0%	0.0%	2.7%	9.2%	2.0%	5.6%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	2.0%	5.6%	2.0%	5.6%
Unknown sculpin	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%

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Table 10-16.–Page 2 of 3.

Resource	Percentage base	Removed from commercial catch		Subsistence methods: Gillnet or seine		Ice fish		Other		Subsistence gear, any method		Rod and reel		Any method	
		Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Burbot	Gear type	0.0%	0.0%	0.0%	0.0%	80.0%	82.8%	0.0%	0.0%	50.4%	58.1%	0.0%	0.0%	13.3%	22.8%
	Resource	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	13.3%	22.8%	0.0%	0.0%	13.3%	22.8%	0.0%	0.0%	13.3%	22.8%
Dolly Varden	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Lake trout	Gear type	0.0%	0.0%	0.0%	0.0%	20.0%	17.2%	0.0%	0.0%	12.6%	12.1%	5.3%	9.2%	7.3%	10.3%
	Resource	0.0%	0.0%	0.0%	0.0%	45.9%	45.9%	0.0%	0.0%	45.9%	45.9%	54.1%	54.1%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	3.3%	4.7%	0.0%	0.0%	3.3%	4.7%	3.9%	5.6%	7.3%	10.3%
Arctic grayling	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.7%	4.0%	4.9%	2.4%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	4.9%	2.4%	4.9%	2.4%
Northern pike	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Longnose sucker	Gear type	0.0%	0.0%	0.0%	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%	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%	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%	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%	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%	0.0%	0.0%	0.0%
Rainbow trout	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	10.1%	12.2%	7.5%	7.4%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	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%	7.5%	7.4%	7.5%	7.4%
Unknown trout	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Broad whitefish	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Least cisco	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%
Humpback whitefish	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	90.0%	94.0%	33.3%	28.0%	0.0%	0.0%	8.8%	11.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	8.8%	11.0%	8.8%	11.0%	0.0%	0.0%	8.8%	11.0%
Round whitefish	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	10.0%	6.0%	3.7%	1.8%	0.0%	0.0%	1.0%	0.7%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	0.7%	1.0%	0.7%	0.0%	0.0%	1.0%	0.7%

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Table 10-16.–Page 3 of 3.

Resource	Percentage base	Removed from commercial catch		Subsistence methods											
				Gillnet or seine		Ice fish		Other		Subsistence gear, any method		Rod and reel		Any method	
		Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Unknown whitefishes	Gear type	0.0%	0.0%	0.0%	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%	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%	0.0%	0.0%	0.0%

Source ADF&G Division of Subsistence household surveys, 2014.

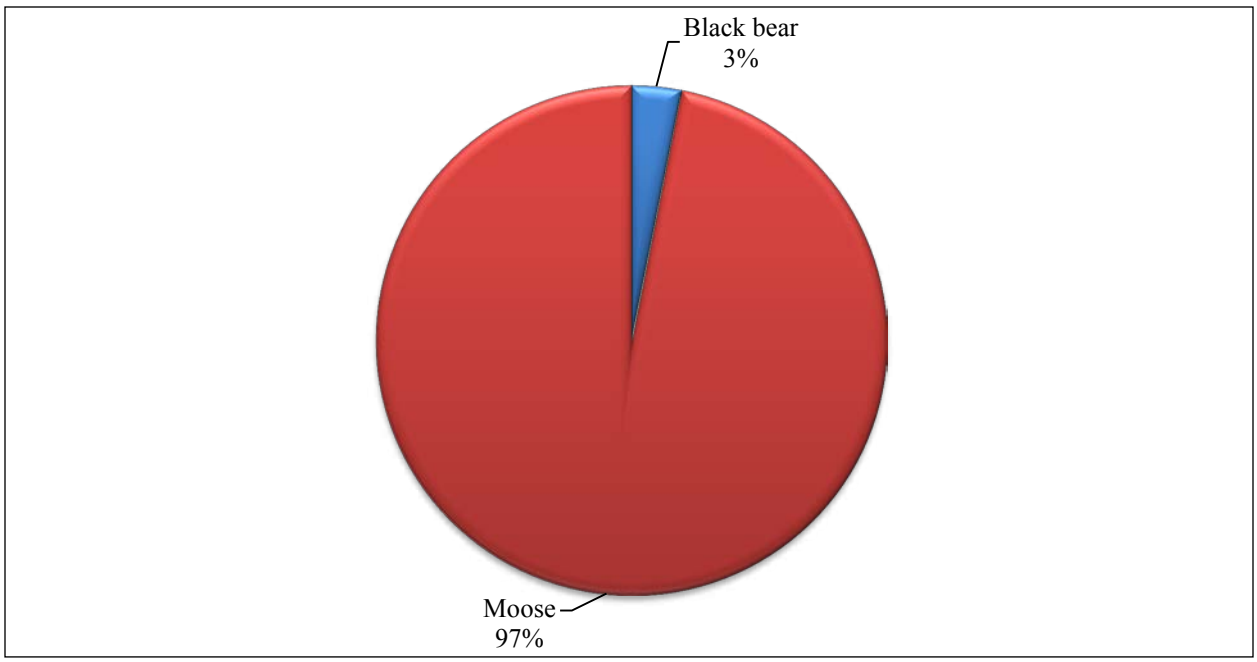

Figure 10-10.–Composition of large land mammal harvest in pounds usable weight, Tolsona, 2013.

Freshwater nonsalmon fish were harvested with a variety of gear types (Table 10-16). Burbot were harvested exclusively by ice fishing. Arctic grayling and rainbow trout were harvested exclusively by rod and reel. Humpback whitefish and round whitefish were harvested exclusively with other subsistence gear. Fifty-four percent of lake trout were harvested with a rod and reel while the remaining 46% were harvested by ice fishing. All of the unspecified species of whitefishes used in 2013 were harvested by an unknown method in a previous year.

Large Land Mammals

Large land mammals were used by 88% of households in Tolsona in 2013 (Table 10-13). Only 2 species were harvested in 2012: moose (97% of large mammal harvest) and black bear (3% of large mammal harvest) (Figure 10-10). Fifty percent of households hunted large land mammals but only 25% of Tolsona households successfully harvested an animal in this category. Moose were the most frequently used (88% of households) and harvested (25% of households) animal in this category. Moose was also the most frequently shared species in this category, with approximately 75% of households receiving moose and 50% of households giving it away. An estimated 113 lb of moose was harvested per capita and this represents an estimated 6 harvested animals, all of which were bulls harvested in the fall (Table 10-17).

Interestingly, black bears were the second most frequently used species in the large land mammal category, with 38% of households using this resource (Table 10-13). One black bear was harvested in May (Table 10-17). Despite the limited harvest, 25% of households received and 25% of households gave away black bears demonstrating that households that received black bear also then gave it away to others.

Caribou are locally considered an important subsistence resource but were used by a relatively low proportion of Tolsona households (25%) in 2013 (Table 10-13). Only 13% of households hunted caribou and none were successful. Twenty-five percent of households received caribou and 13% gave caribou away. Some residents suggested that the minimal use of this resource was related to a preference for moose both in terms of size per unit of harvest effort and in palatability. At least 1 resident suggested that greater effort to harvest caribou would have been made if the moose harvest had been unsuccessful.

Table 10-17.–Estimated large land mammal harvests by month and sex, Tolsona, 2013.

Resource	Estimated harvest by month													Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk	
All large land mammals	**0.0**	**0.0**	**0.0**	**0.0**	**1.5**	**0.0**	**0.0**	**4.5**	**1.5**	**0.0**	**0.0**	**0.0**	**0.0**	**7.5**
Bison	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Black bear	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**1.5**
Brown bear	0.0	0.0	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	0.0	0.0	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**
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	4.5	1.5	0.0	0.0	0.0	0.0	**6.0**
Moose, bull	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.5	1.5	0.0	0.0	0.0	0.0	**6.0**
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**
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, 2014.

Bison were used by 25% of Tolsona households in 2013, but no households attempted to harvest this species, which does not occur locally (Table 10-13). This species was shared between households, with 13% of households receiving bison and 13% giving it away.

Small Land Mammals/Furbearers

The harvest of small land mammals by Tolsona residents was minimal in 2013. Only 13% of households used small land mammals (Table 10-13). The same percentage attempted to harvest, harvested, and gave away these species. Among those species harvested were red fox–cross phase, red fox–red phase, snowshoe hare, and marten. Both phases of red fox were given away by 13% of households, but no small land mammal resource was received by any household.

All foxes and martens harvested were used for fur only, but snowshoe hares were harvested and consumed (Figure 10-11). Those animals harvested for fur receive a conversion factor of 0 (zero) in Table 10-13 and are thus not included in calculations for usable harvest weight. Snowshoe hares made up 43% (9 animals) of the harvest for this category, followed by red foxes–red phase (22%; 5 animals), martens (21%; 5 animals), and red foxes–cross phase (14%; 3 animals) (Figure 10-12: Table 10-13). All of the animals were harvested in January except for snowshoe hares, which were all harvested in June (Table 10-18).

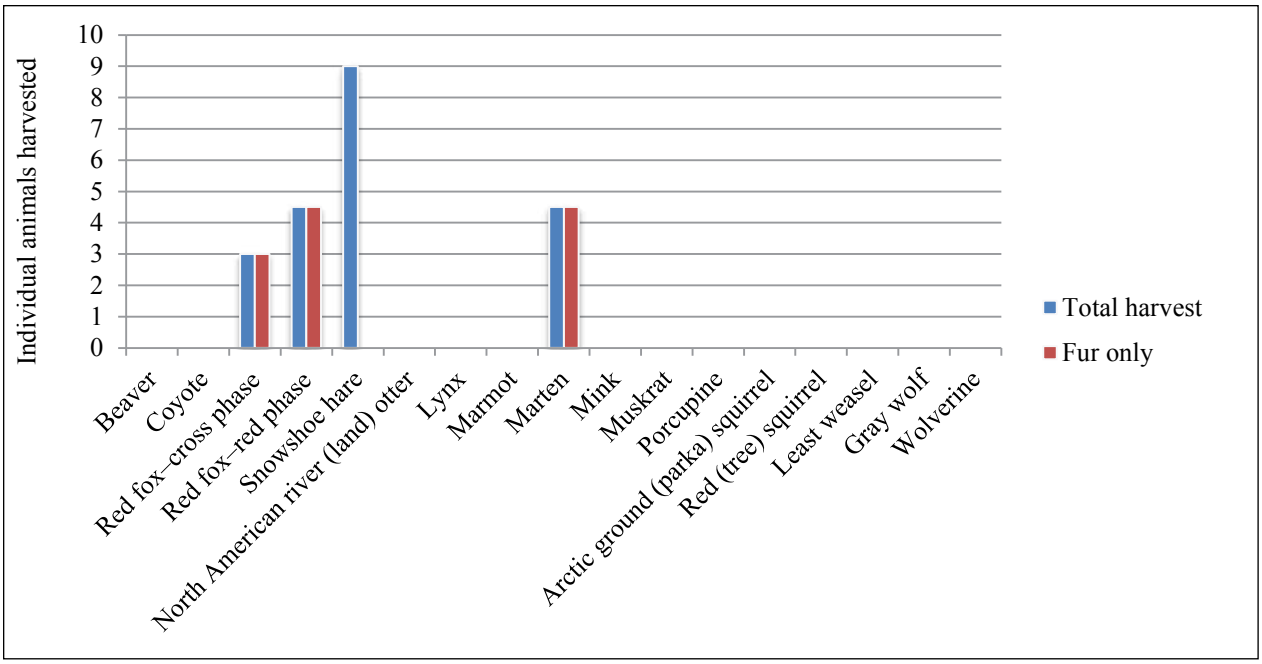

Figure 10-12.–Estimated small land mammal/furbearer harvests for fur and food only, Tolsona, 2013.

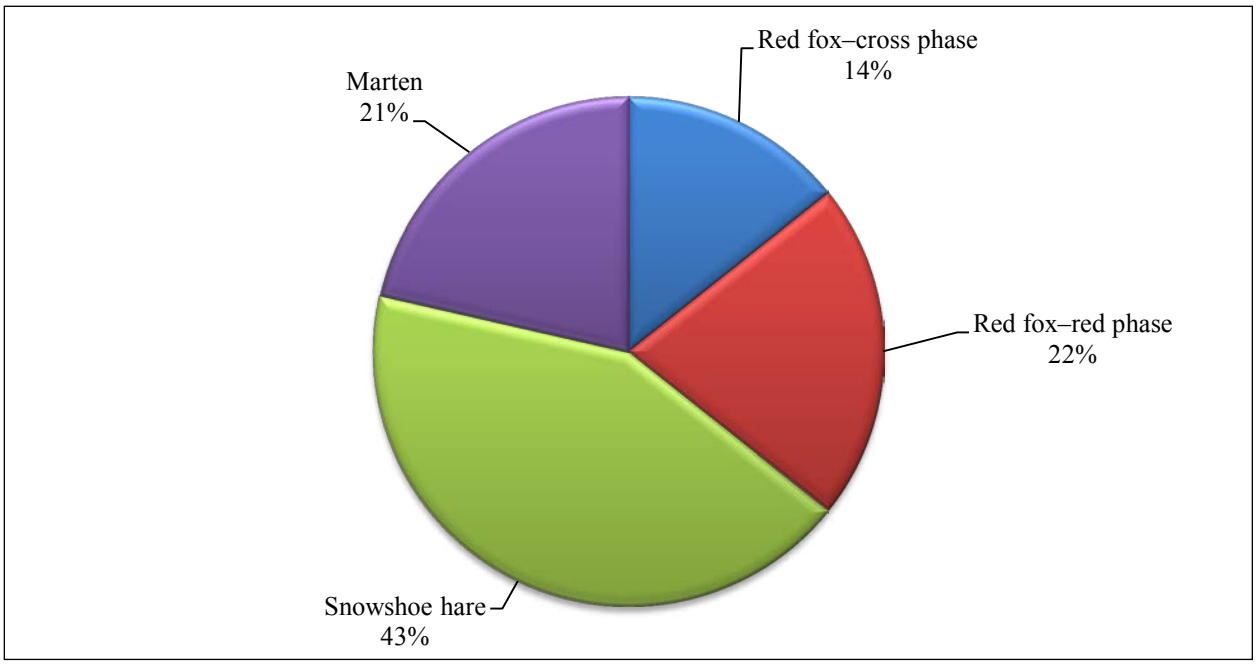

Figure 10-11.–Composition of small land mammal/furbearer harvest by individual animals harvested, Tolsona, 2013.

Table 10-18.–Estimated small land mammal/furbearer harvests by month, Tolsona, 2013.

Resource	Estimated harvest by month													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk	**Total**
All small land mammals	**12.0**	**0.0**	**0.0**	**0.0**	**0.0**	**9.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**21.0**
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–cross phase	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**3.0**
Red fox–red phase	4.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**4.5**
Snowshoe hare	0.0	0.0	0.0	0.0	0.0	9.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**9.0**
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**
Marmot	0.0	0.0	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	4.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**4.5**
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	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	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**
Least 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, 2014.

Table 10-19.–Estimated bird and bird egg harvests by season, Tolsona, 2013.

Resource	Estimated harvest by season					
	Winter	Spring	Summer	Fall	Season unknown	**Total**
All birds	**0.0**	**6.0**	**0.0**	**67.5**	**0.0**	**73.5**
Canvasback	0.0	0.0	0.0	0.0	0.0	**0.0**
Spectacled 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**
Mallard	0.0	0.0	0.0	0.0	0.0	**0.0**
Northern pintail	0.0	6.0	0.0	0.0	0.0	**6.0**
Black scoter	0.0	0.0	0.0	0.0	0.0	**0.0**
Green-winged teal	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown ducks	0.0	0.0	0.0	0.0	0.0	**0.0**
Brant	0.0	0.0	0.0	0.0	0.0	**0.0**
Cackling goose	0.0	0.0	0.0	0.0	0.0	**0.0**
Canada goose	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**
Emperor goose	0.0	0.0	0.0	0.0	0.0	**0.0**
Snow goose	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**
Tundra (whistling) swan	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**
Spruce grouse	0.0	0.0	0.0	55.5	0.0	**55.5**
Sharp-tailed grouse	0.0	0.0	0.0	3.0	0.0	**3.0**
Ruffed grouse	0.0	0.0	0.0	6.0	0.0	**6.0**
Unknown ptarmigan	0.0	0.0	0.0	3.0	0.0	**3.0**
Unknown duck eggs	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown goose eggs	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown gull eggs	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown eggs	0.0	0.0	0.0	0.0	0.0	**0.0**

Source ADF&G Division of Subsistence household surveys, 2014.

Birds and Eggs

Birds were used by 38% of households in Tolsona in 2013 (Table 10-13). No eggs were used, harvested, or shared. Thirty-eight percent of households hunted birds and 38% of Tolsona households were successful in harvesting birds. Sharing of birds in the community was minimal; mallards and ruffed grouse were received by 13% of households, and only ruffed grouse was given away (also by 13% of households). The per capita harvest of birds was approximately 2 lb for this community. All birds were harvested in the fall except for northern pintails, all of which were harvested in the spring (Table 10-19).

Spruce grouse and ruffed grouse were used by the greatest proportion of households with 25% of households using each of these (Table 10-13). Spruce grouse made up 75% of the harvest for this category (Figure 10-13). The per capita harvest of spruce grouse was 2 lb (represented by 56 birds) and the per capita harvest of ruffed grouse was less than 1 lb (represented by 6 birds) (Table 10-13). Upland game birds as a whole made up 91% of the per capita bird harvest.

Ducks and geese were used and harvested by fewer households than were grouse and ptarmigan and made up less than 10% of the per capita harvest for this category (Table 10-13). Only mallards and northern pintails were used by Tolsona residents in 2013, and each of these by 13% of households. The mallards

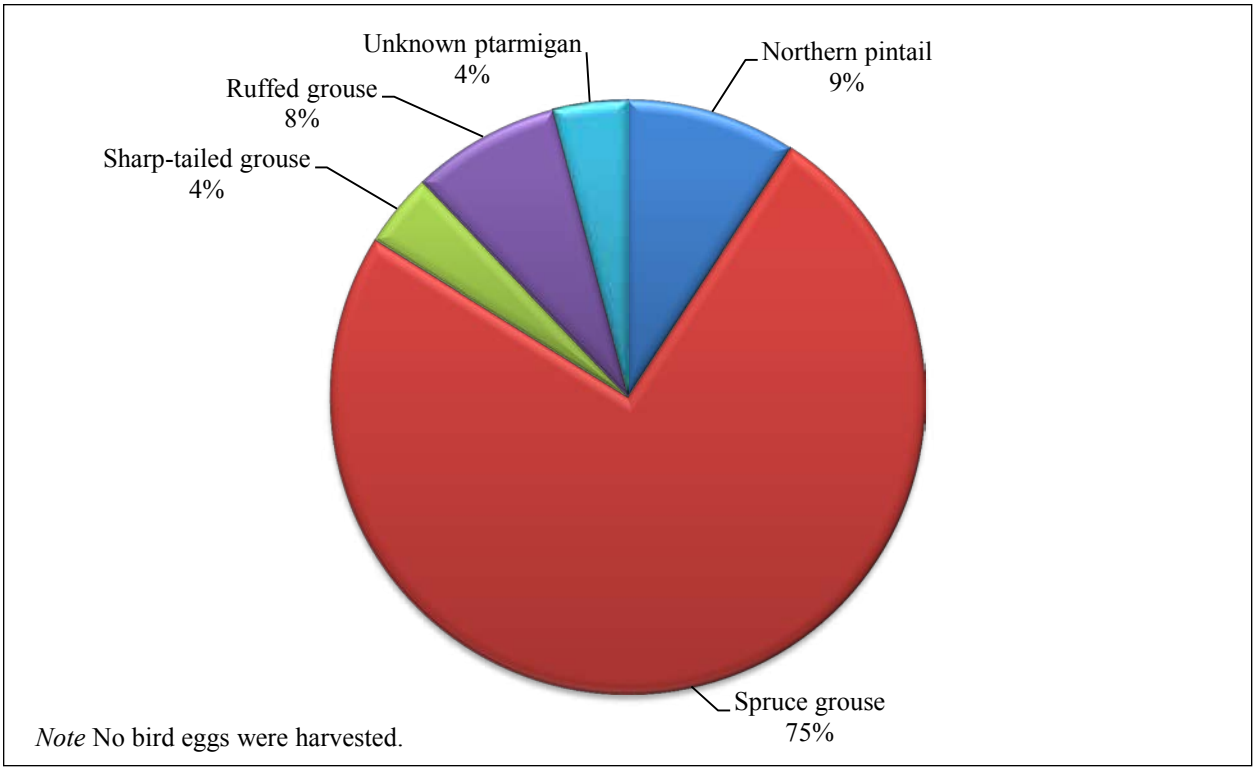

Figure 10-13.–Composition of bird and bird egg harvest in pounds usable weight, Tolsona, 2013.

were received and there was no attempt at harvest. The northern pintails were harvested but not shared, and the usable harvest weight was less than 1 lb per capita.

Marine Invertebrates

Tolsona residents did not attempt to harvest marine invertebrates in 2013 but several species were used by 25% of households (Table 10-13). These species include butter clams, razor clams, unknown mussels, and shrimp, each of which were used and received by 13% of households. Among the primary reasons for the lack of harvest and minimal use of marine invertebrates is the distance that must be traveled to access these resources.

Vegetation

Vegetation was used by a large proportion (88%) of Tolsona households in 2013 (Table 10-13). All households that attempted to harvest individual species were successful. The vast majority of the harvest in this category was berries (94%) (Figure 10-14). Plants and greens as well as mushrooms each made up only 3% of the harvest for this category.

Eight species of berries were used by Tolsona households (Table 10-13). Blueberries and raspberries were used by the greatest percentage of households (88%), followed by lowbush cranberries (63%), and highbush cranberries (38%). The per capita harvest of blueberries was 6 lb and for raspberries it was 5 lb. Other berry types harvested were lowbush cranberries (4 lb per capita), highbush cranberries (2 lb per capita), and other wild berries (2 lb per capita); those berries with a harvest of less than 1 lb per capita included crowberries, salmonberries, and huckleberries.

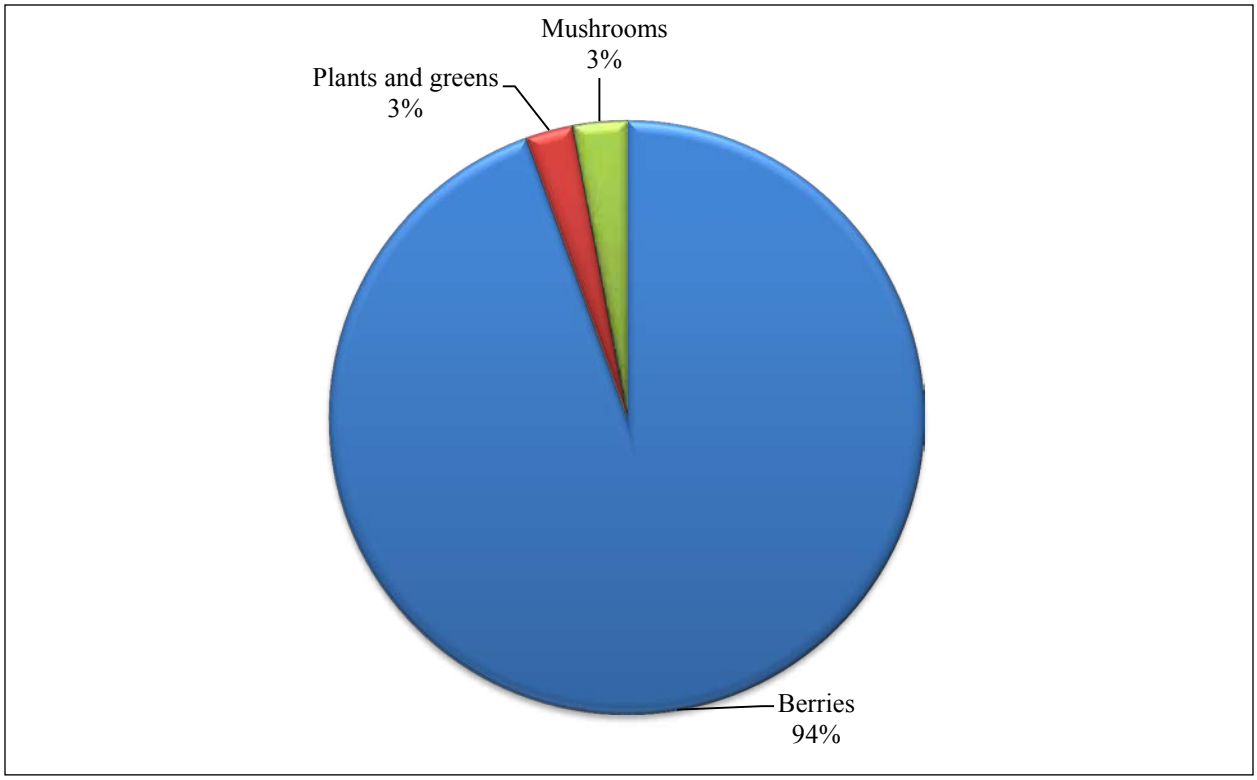

Figure 10-14.–Composition of vegetation harvest by type and pounds usable weight, Tolsona, 2013.

Sharing of berries and berry products is commonplace in Tolsona, especially for blueberries and raspberries. Eighty-seven percent of households received blueberries and 63% of households gave away blueberries (Table 10-13). Fifty percent of households both received and gave away raspberries. Neither huckleberries nor salmonberries were shared by Tolsona households.

Plants were used and shared far less frequently than berries. Twenty-five percent of households used and harvested "other wild greens," which includes all plants that are not specifically asked about in the survey (Table 10-13). Wild rhubarb was used and harvested by 13% of households. Mushrooms were also used and harvested by only 13% of households. No plants, greens, or mushrooms were shared in Tolsona in 2013. Overall, plants, greens, and mushrooms combined contributed about 1 lb per capita to the Tolsona harvest for 2013.

This study also collected information on the harvest of wood. Wood is often considered an important resource and can play a critical role in the seasonal round of communities. As mentioned in previous sections, firewood is also often an important source of fuel for heating homes. Table 10-13 included "other wood" and this includes all wood harvested for firewood, handicrafts, smoke houses, and other purposes. Seventy-five percent of Tolsona households used and harvested wood in 2013 (Table 10-13). Twenty-five percent of households received wood and 38% of households gave away wood. A total of 260 cords of firewood were reportedly harvested by the community as a whole in 2013.

Comparing Harvests and Uses in 2013 with Previous Years

Harvest Assessments

For 10 resource categories and for all resources combined, survey respondents were asked to assess whether their uses and harvests in the 2013 study year were less, more, or about the same as other recent years. "Other recent years" was defined as about the last 5 years. Table 10-20 reports the number of valid responses for each category, the number of households that did not respond, and the number of households that did not use a resource category or all resources combined. In Table 10-20, response percentages are based on the number of valid responses for each category to contextualize these assessments within the set of community households that typically use each category.

Figure 10-15 depicts responses to the "less, same, more" assessment question. Households that said they did not ordinarily "use" something are not included within the results. This results in fewer responses for less commonly used categories such as migratory waterfowl or small land mammals, and manifests in the chart as a very short set of colored bars compared to categories such as salmon, nonsalmon fish, large land mammals, and vegetation, which are ordinarily used by most households. Some households did not respond to the question.

Taking all resources into consideration, few Tolsona households, 25%, said they used fewer wild resources in general compared to recent years (Table 10-20). A greater number, 50%, said they used about the same amount, and 25% said they used more. Two households reported less use of all resources; one of these reported the reason as being family/personal and the other reported that they did not need the same amount as previous years (Table 10-21). Two households reported more use of all resources; one household reported the reason as increased availability and the other reported the reason as increased effort (Table 10-22).

Considering individual categories of wild foods, salmon and nonsalmon fish were reported by the greatest percentage of households as being used less in 2013 than in recent years (Table 10-20). For salmon, 63% of households reported using less, while 50% of households reported using less nonsalmon fish. Two households reported that the reason for harvesting less salmon was a lack of equipment, while less sharing, lack of effort, and working/no time were each reported by 1 household (Table 10-21). For nonsalmon fish, less sharing and lack of effort were each reported by 2 households, while lack of equipment and working/no time were each reported by 1 household as reasons for less use. Three households reported using less marine invertebrates in 2013 than in recent years; 1 household reported the reason was less sharing and 1 household reported the reason was working/no time (Table 10-20; Table 10-21).

Salmon, nonsalmon fish, and large land mammals were each reportedly used more by 2 Tolsona households in 2013 than they were in recent years (Table 10-20). For salmon, 1 household reported the reason for using more as having received more salmon (Table 10-22). For nonsalmon fish, 1 household reported the reason for using more as increased availability while 1 household reported the reason was increased effort. For large land mammals, 1 household reported the reason was increased availability while 1 household reported the reason was more success. Interestingly, 50% of households reported using more vegetation than in recent years, with 2 households reporting the reason was increased availability, 1 household reporting the reason was increased effort, and 1 household reporting the reason was greater success (Table 10-20; Table 10-22).

The impact to households from not getting enough wild resources is reported in Table 10-23. The most notable impact for not getting enough resources was for nonsalmon fish as a category with 4 out of 8 households noting an impact. Of those responses 3 households noted a minor impact while one household noted a major impact. For all resources 38% of households (out of 8 households) said that they did not get enough resources in 2013 and of those respondents all said the impact was minor.

Table 10-20.–Changes in household uses of resources compared to recent years, Tolsona, 2013.

Resource category	Sampled households	Valid responses[a]	Households reporting use: Total households Number	Total households Percentage	Less Number	Less Percentage	Same Number	Same Percentage	More Number	More Percentage	Households not using Number	Households not using Percentage
Any resource	8	8	8	100.0%	7	87.5%	5	62.5%	6	75.0%	8	100.0%
All resources	**8**	**8**	**8**	**100.0%**	**2**	**25.0%**	**4**	**50.0%**	**2**	**25.0%**	**0**	**0.0%**
Salmon	8	8	7	87.5%	5	62.5%	0	0.0%	2	25.0%	1	12.5%
Nonsalmon fish	8	8	8	100.0%	4	50.0%	2	25.0%	2	25.0%	0	0.0%
Large land mammals	8	8	7	87.5%	1	12.5%	4	50.0%	2	25.0%	1	12.5%
Small land mammals	8	8	2	25.0%	2	25.0%	0	0.0%	0	0.0%	6	75.0%
Marine mammals	8	8	0	0.0%	0	0.0%	0	0.0%	0	0.0%	8	100.0%
Migratory waterfowl	8	8	2	25.0%	0	0.0%	2	25.0%	0	0.0%	6	75.0%
Other birds	8	8	3	37.5%	2	25.0%	1	12.5%	0	0.0%	5	62.5%
Bird eggs	8	8	0	0.0%	0	0.0%	0	0.0%	0	0.0%	8	100.0%
Marine invertebrates	8	8	3	37.5%	3	37.5%	0	0.0%	0	0.0%	5	62.5%
Vegetation	8	8	7	87.5%	0	0.0%	3	37.5%	4	50.0%	1	12.5%

Source ADF&G Division of Subsistence household surveys, 2014.

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

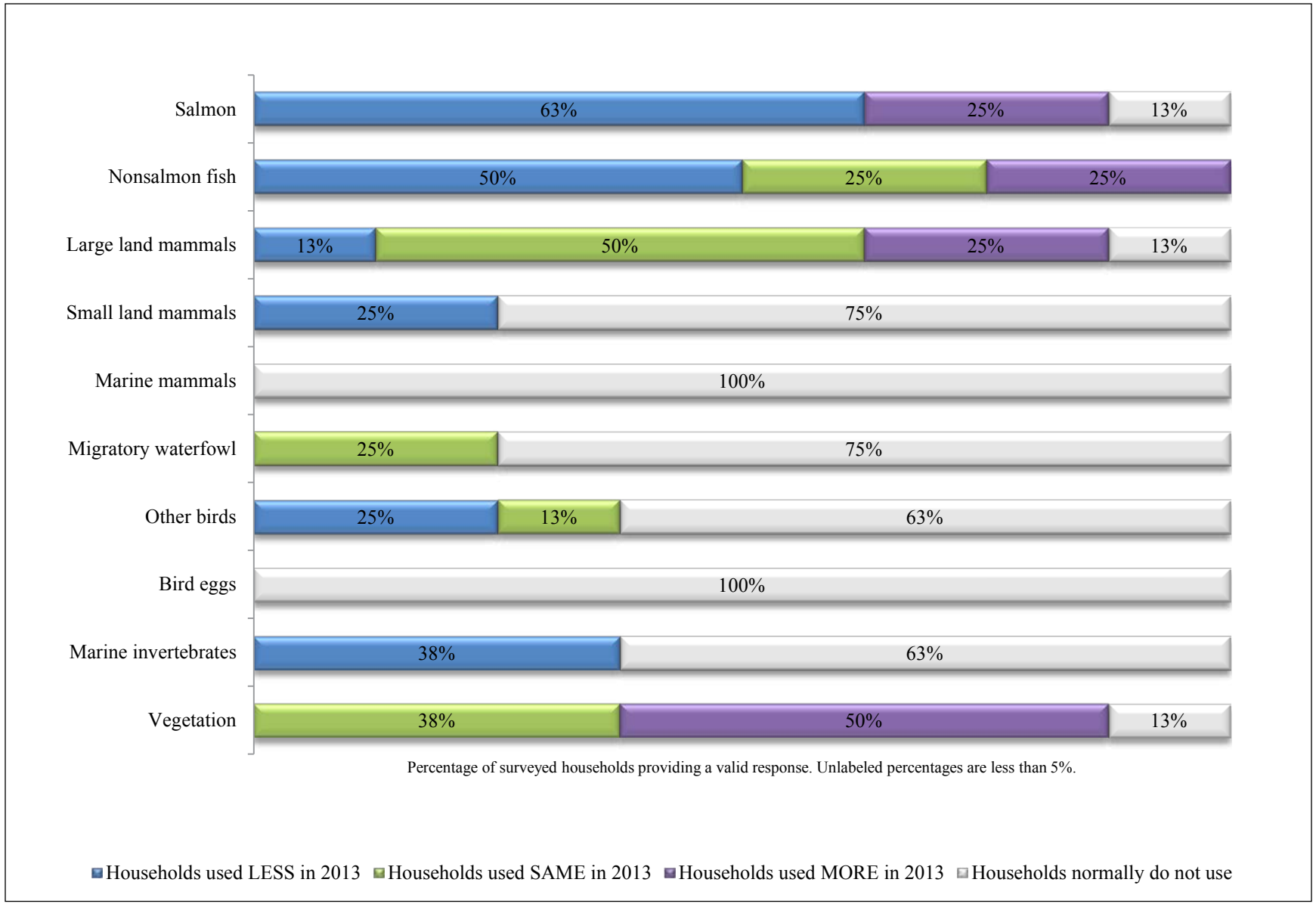

Figure 10-15.–Changes in household uses of resources compared to recent years, Tolsona, 2013.

Table 10-21.–Reasons for less household uses of resources compared to recent years, Tolsona, 2013.

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	8	7	1	14.3%	2	29%	0	0.0%	3	43%	4	57%	3	43%
All resources	**8**	**2**	**1**	**50.0%**	**0**	**0%**	**0**	**0.0%**	**0**	**0%**	**0**	**0%**	**0**	**0%**
Salmon	8	5	0	0.0%	0	0%	0	0.0%	2	40%	1	20%	1	20%
Nonsalmon fish	8	4	0	0.0%	0	0%	0	0.0%	1	25%	2	50%	2	50%
Large land mammals	8	1	0	0.0%	0	0%	0	0.0%	0	0%	0	0%	1	100%
Small land mammals	8	2	0	0.0%	0	0%	0	0.0%	0	0%	0	0%	1	50%
Marine mammals	8	0	0	0.0%	0	0%	0	0.0%	0	0%	0	0%	0	0%
Migratory waterfowl	8	0	0	0.0%	0	0%	0	0.0%	0	0%	0	0%	0	0%
Other birds	8	2	0	0.0%	2	100%	0	0.0%	0	0%	0	0%	0	0%
Bird eggs	8	0	0	0.0%	0	0%	0	0.0%	0	0%	0	0%	0	0%
Marine invertebrates	8	2	0	0.0%	0	0%	0	0.0%	0	0%	1	50%	0	0%
Vegetation	8	0	0	0.0%	0	0%	0	0.0%	0	0%	0	0%	0	0%

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Table 10-21.–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	8	7	0	0.0%	0	0.0%	1	14.3%	2	28.6%	0	0.0%	0	0.0%
All resources	**8**	**2**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**
Salmon	8	5	0	0.0%	0	0.0%	0	0%	1	20.0%	0	0.0%	0	0.0%
Nonsalmon fish	8	4	0	0.0%	0	0.0%	0	0%	1	25.0%	0	0.0%	0	0.0%
Large land mammals	8	1	0	0.0%	0	0.0%	0	0%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	8	2	0	0.0%	0	0.0%	1	50%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	8	0	0	0.0%	0	0.0%	0	0%	0	0.0%	0	0.0%	0	0.0%
Migratory waterfowl	8	0	0	0.0%	0	0.0%	0	0%	0	0.0%	0	0.0%	0	0.0%
Other birds	8	2	0	0.0%	0	0.0%	0	0%	0	0.0%	0	0.0%	0	0.0%
Bird eggs	8	0	0	0.0%	0	0.0%	0	0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	8	2	0	0.0%	0	0.0%	0	0%	1	50.0%	0	0.0%	0	0.0%
Vegetation	8	0	0	0.0%	0	0.0%	0	0%	0	0.0%	0	0.0%	0	0.0%

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Table 10-21.–Page 2 of 2.

Resource category	Valid responses[a]	Households reporting reasons for less use	Did not get enough		Did not need		Equipment/ fuel expense		Used other resources		Less competition	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	8	7	0	0.0%	1	14.3%	0	0.0%	0	0.0%	0	0.0%
All resources	**8**	**2**	**0**	**0.0%**	**1**	**50.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**
Salmon	8	5	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Nonsalmon fish	8	4	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Large land mammals	8	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	8	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	8	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Migratory waterfowl	8	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other birds	8	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Bird eggs	8	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	8	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	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, 2014.

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

Table 10-22.–Reasons for more household uses of resources compared to recent years, Tolsona, 2013.

Resource category	Valid responses[a]	Households reporting reasons for more use	Increased availability		Used other resources		Favorable weather		Received more		Needed more	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	8	6	3	50.0%	0	0.0%	0	0.0%	1	16.7%	0	0.0%
All resources	**8**	**2**	**1**	**50.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**
Salmon	8	2	0	0.0%	0	0.0%	0	0.0%	1	50.0%	0	0.0%
Nonsalmon fish	8	2	1	50.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Large land mammals	8	2	1	50.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	8	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	8	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Migratory waterfowl	8	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other birds	8	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Bird eggs	8	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	8	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	8	4	2	50.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

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Table 10-22.–Continued.

Resource category	Valid responses[a]	Households reporting reasons for more use	Increased effort		Had more help		Other		Regulations		Traveled farther	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	8	6	2	33.3%	0	0.0%	1	16.7%	0	0.0%	0	0.0%
All resources	**8**	**2**	**1**	**50.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**
Salmon	8	2	0	0.0%	0	0.0%	1	50.0%	0	0.0%	0	0.0%
Nonsalmon fish	8	2	1	50.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Large land mammals	8	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	8	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	8	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Migratory waterfowl	8	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other birds	8	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Bird eggs	8	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	8	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	8	4	1	25.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

-continued-

Table 10-22.–Page 2 of 2.

Resource category	Valid responses[a]	Households reporting reasons for more use	More success		Needed less		Store-bought expense		Got/ fixed equipment		Substituted resources	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	8	6	2	33.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
All resources	**8**	**2**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**
Salmon	8	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Nonsalmon fish	8	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Large land mammals	8	2	1	50.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	8	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	8	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Migratory waterfowl	8	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other birds	8	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Bird eggs	8	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	8	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	8	4	1	25.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2014.

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

Table 10-23.–Reported impact to households reporting that they did not get enough of a type of resource, Tolsona, 2013.

		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
Salmon	8	7	87.5%	2	28.6%	0	0.0%	0	0.0%	2	100.0%	0	0.0%	0	0.0%
Nonsalmon fish	8	8	100.0%	4	50.0%	0	0.0%	0	0.0%	3	75.0%	1	25.0%	0	0.0%
Marine invertebrates	8	2	25.0%	2	100.0%	0	0.0%	0	0.0%	2	100.0%	0	0.0%	0	0.0%
Large land mammals	8	7	87.5%	2	28.6%	0	0.0%	0	0.0%	2	100.0%	0	0.0%	0	0.0%
Marine mammals	8	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	8	2	25.0%	1	50.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%	0	0.0%
Migratory waterfowl	8	2	25.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other birds	8	3	37.5%	2	66.7%	0	0.0%	0	0.0%	2	100.0%	0	0.0%	0	0.0%
Bird eggs	8	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	8	7	87.5%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
All resources	**8**	**8**	**100.0%**	**3**	**37.5%**	**0**	**0.0%**	**0**	**0.0%**	**3**	**100.0%**	**0**	**0.0%**	**0**	**0.0%**

Source ADF&G Division of Subsistence household surveys, 2014.

a. Does not include households failing to respond to the question or those households that never used the resource.

Harvest Data for East Glenn Highway

As described in the beginning of the chapter "East Glenn Highway: Mendeltna," prior to this study, the Division of Subsistence has conducted 2 similar comprehensive surveys that included the East Glenn Highway communities of Mendeltna, Nelchina, and Tolsona. The first survey was conducted for study year 1982 (Stratton and Georgette 1984) and the second for study year 1987 (McMillan and Cuccarese 1988). The East Glenn Highway survey unit was the same in both previous studies and extended from mile 137 to mile 180 along the Glenn Highway. In this study, the households included in the study resided between miles 137 and 173, and from mile 1 to mile 15 of Lake Louise Road. As noted previously, the eastern boundary for the 2013 study changed due to the extension of the western boundary of the Glennallen CDP to mile 173.

Table 10-24 summarizes the total estimated wild resource harvests in pounds usable weight for each major resource category, as well as per capita harvests, from the 2 previous studies in 1982, 1987, and from this study. For the purposes of this comparison, the 3 study communities were combined. Figure 10-16 portrays the changes in harvest composition by resource category from the 3 studies in terms of per capita harvest. In 1982, the estimated total harvest of wild resource in pounds usable weight was 27,898 lb, or 153 lb per capita (Table 10-24). For that study year, large land mammals, salmon, and nonsalmon fish (in the listed order) contributed the most to the total harvest, at 50 lb, 49 lb, and 31 lb, respectively (Table 10-24; Figure 10-16). In 1987, the total harvest had increased slightly to 28,800 lb. The per capita harvest had, however declined to 132 lb. For the 1987 study year, salmon made up the largest portion of the total harvest with an estimated per capita harvest of 72 lb, followed by large land mammals (44 lb) and nonsalmon fish (10 lb). Compared to the results from the 2 previous studies, the total wild resource harvest declined substantially in 2013—totaling 18,947 lb (Table 10-24). This was primarily a consequence of a drop in population from 182 in 1983 and a high of 217 in 1987 to 133 in 2013. In comparison, the per capita harvest of 142 lb in 2013 was larger than the 132 lb recorded in 1987, yet it remained smaller than the 154 lb per capita harvest estimated in 1982. Looking at the harvest composition in 2013, in terms of usable pounds harvested, large land mammals again contributed the most to the total harvest (66 lb) , followed by salmon (45 lb) and nonsalmon fish (15 lb) (Table 10-24; Figure 10-16).

As described above, large land mammals, salmon, and nonsalmon fish are the 3 resource categories East Glenn Highway communities have relied on and harvested in the largest quantities in the 3 study years. By further comparing the data from the 3 studies, one can make some additional observations. Regarding large land mammals, the per capita harvest of 66 lb estimated in 2013 was the highest for the 3 study years, yet the percentages of East Glenn Highway households attempting to harvest and harvesting these resources has remained very similar in all 3 studies. The 1982 data do not provide the percentage of households attempting to harvest these resources but indicate that 40% of East Glenn Highway communities harvested some large land mammals (Stratton and Georgette 1984). According to results from the 1987 study, 63% of households hunted and 43% were successful at harvesting large land mammals (CSIS). The corresponding numbers for the 2013 study are 66% households hunting and 37% harvesting large land mammals (Table 10-25).

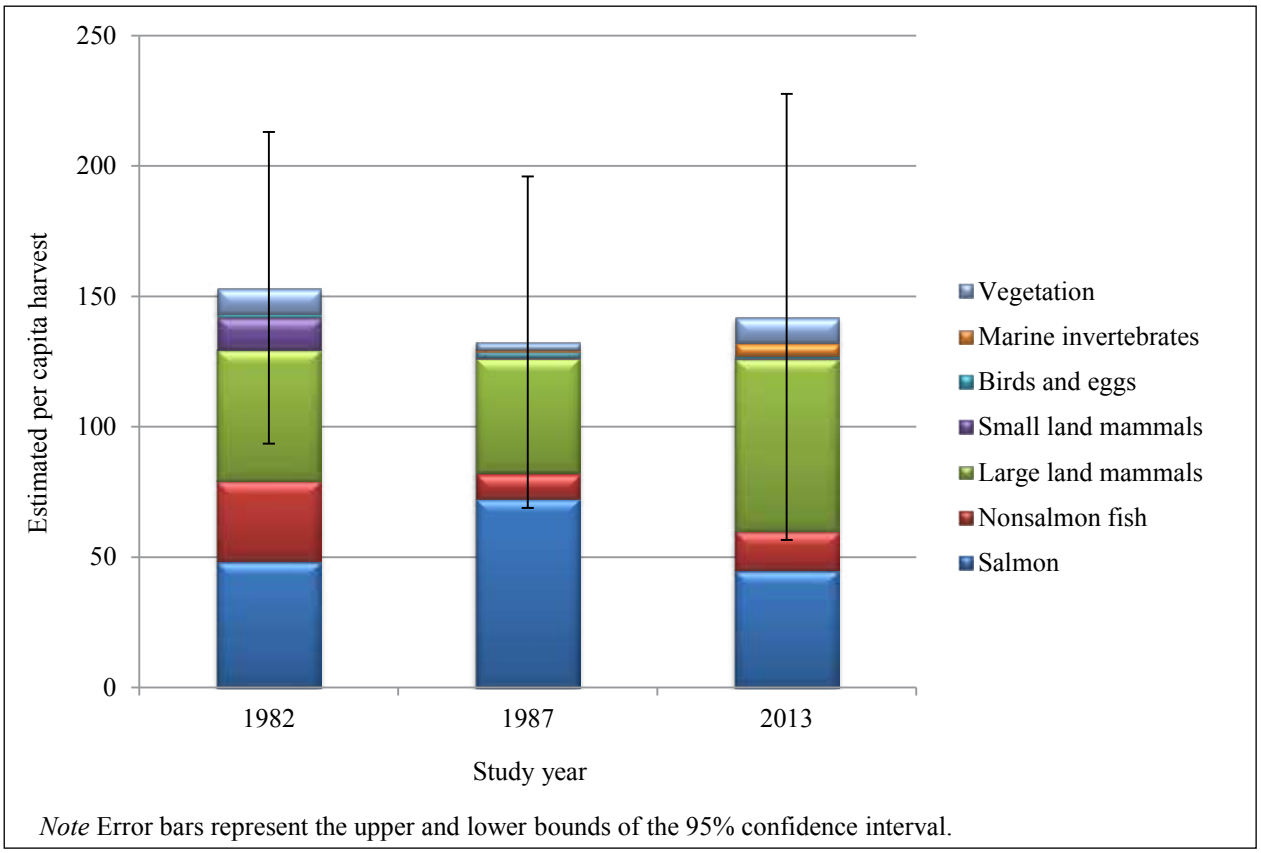
At the species level, moose and caribou have continued to be the 2 land mammal species targeted by most East Glenn Highway households since the first survey. Comparing the numbers of households hunting and successfully harvesting moose shows a relatively similar level of hunting throughout the 3 studies; according to Stratton and Georgette (1984:72), 87% of East Glenn Highway households hunted moose but only 13% were successful in 1982. For study year 1987, the percentage of households hunting moose had declined to 53% but again only 13% were successful (CSIS). In 2013 approximately 64% of households hunted and 23% harvested moose, which is the highest percentage of successful households recorded in the 3 studies (Stratton and Georgette 1984:72; Table 10-25; CSIS).

As for caribou, according to the 1982 study, 33% of households were successful at harvesting caribou and at least the same number of households can said to have hunted caribou (Stratton and Georgette 1984:71). In 1987, approximately 52% of households hunted and 42% harvested caribou (CSIS). Results for study year 2013 indicate that 41% of East Glenn Highway households hunted caribou yet only 17% were successful

Table 10-24.–Comparison of harvest composition, East Glenn Highway, 1982, 1987, and 2013.

	Estimated harvest in pounds usable weight								
	1982			1987			2013		
Resource	Total	Per capita	CIP	Total	Per capita	CIP	Total	Per capita	CIP
All resources	**27,898.0**	**153.3**	**39.0%**	**28,800.0**	**132.4**	**48.0%**	**18,947.3**	**142.1**	**60.2%**
Salmon	8,846.0	48.6		15,743.0	72.4		6,015.4	45.1	
Nonsalmon fish	5,621.0	30.9		2,144.0	9.9		1,971.2	14.8	
Large land mammals	9,139.0	50.2		9,532.0	43.8		8,826.1	66.2	
Small land mammals	2,256.0	12.4		143.0	0.7		50.2	0.4	
Birds and eggs	213.0	1.2		448.0	2.1		93.4	0.7	
Marine invertebrates	–	–		169.0	0.8		666.0	5.0	
Vegetation	1,825.0	10.0		621.0	2.9		1,324.9	9.9	

Sources For 2013, ADF&G Division of Subsistence household surveys, 2014; for previous study years, ADF&G Division of Subsistence Community Subsistence Information System (CSIS), accessed 2014.
Note "East Glenn Highway" is a composite community consisting of the following 3 communities: Mendeltna, Nelchina, and Tolsona. It is presented here for the purpose of comparing current data with historical data.
Note "–" indicates no harvest.



Note Error bars represent the upper and lower bounds of the 95% confidence interval.

Figure 10-16.–Estimated harvests by pounds per capita and by resource category, East Glenn Highway, 1982, 1987, and 2013.

Table 10-25.–Estimated uses of fish, game, and vegetation resources, East Glenn Highway, 2013.

	Percentage of households				
	Use	Attempt	Harvest	Receive	Give
Resource	%	%	%	%	%
All resources	**97.1**	**88.5**	**88.5**	**88.7**	**83.2**
Salmon	79.7	58.0	55.1	57.4	46.7
Nonsalmon fish	76.9	71.5	65.6	58.4	28.3
Large land mammals	82.6	66.4	37.3	62.7	50.4
Caribou	41.6	41.1	17.2	30.3	19.5
Moose	76.8	63.5	23.0	59.8	44.9
Small land mammals	11.5	19.5	11.5	0.0	8.6
Marine mammals	0.0	0.0	0.0	0.0	0.0
Birds and eggs	27.9	22.4	22.4	10.7	2.7
Marine invertebrates	19.3	8.4	5.9	19.3	5.9
Vegetation	88.5	85.8	85.8	33.0	52.5

Source ADF&G Division of Subsistence household surveys, 2014.
Note "East Glenn Highway" includes combined findings for Tolsona, Nelchina, and Mendeltna.
Note Resources where the percentage using is greater than the combined received and harvest indicate use from resources obtained during a previous year.

at harvesting (Table 10-25). After the first survey in 1982, Stratton and Georgette (1984:72) in general described more East Glenn Highway households being successful at harvesting caribou than moose. This assessment seems to have changed for study year 2013 because the numbers of households hunting and successfully harvesting caribou appear to have declined since the 1980s. However, it needs to be added that during the household surveys conducted for the 2013 study year in January 2014, several East Glenn Highway households commented that caribou had only just started to return to the areas where they had traditionally been seen in larger numbers after a decade or so of returning in much smaller numbers. Community residents also commented that a number of caribou had been hit and killed by motorists traveling on the Glenn Highway during the last few months of 2013 and several households had received caribou meat salvaged from these road-killed animals before the end of the year. These 2 local observations could help explain the decline in the number of East Glenn Highway households hunting and harvesting caribou during 2013.

While there are notable fluctuations in the per capita harvest of salmon in the 3 study years, the harvest of salmon, particularly sockeye and Chinook salmon, continues to be very important for East Glenn Highway households. Looking at the numbers of households attempting to harvest and harvesting salmon, study year 1987 had the most households fishing for and harvesting salmon with 80% of the households attempting to harvest and harvesting salmon (CSIS). In 1982, an estimated 67% of East Glenn Highway households harvested salmon and at least the same amount fished for salmon (CSIS). In 2013, which has the lowest per capita harvest of salmon (45 lb) for the 3 study years, 58% of households reported attempting to harvest salmon and 55% were successful (Table 10-24; Table 10-25). During the household survey effort, a few East Glenn Highway households commented that they had not been able to fish for salmon as much as they would have liked in 2013 due to having no access to a fish wheel after the flooding events in the Copper River. Unusually limited access to fishing locations and essential fishing gear such as fish wheels could explain the decline in the harvest attempts and actual harvesting in 2013.

Of the 3 resource categories that have contributed the most to East Glenn Highway households' harvests in all 3 studies, nonsalmon fish shows the most fluctuation and decline in the per capita harvest since the first study in 1982 (Table 10-24; Figure 10-16). In 1982, approximately 93% of households harvested

nonsalmon fish and the same number attempted to harvest nonsalmon fish (CSIS). According to the 1987 study, the number of East Glenn Highway households fishing for and harvesting nonsalmon fish had declined substantially to approximately 40% (CSIS). For study year 2013, the corresponding numbers increased with approximately 72% of households attempting to harvest and 66% harvesting some nonsalmon fish (Table 10-25). Despite the increased fishing effort and harvest of nonsalmon fish in the 2013 study, the per capita harvest of nonsalmon fish (15 lb) continued to be substantially lower than the level recorded in the 1982 study. Interestingly, locally available freshwater fish, such as lake trout, rainbow trout, Arctic grayling, and burbot, continue to be the most harvested fish species among East Glenn Highway households throughout the 3 study years. Looking at the harvest data since the first study, marine fish, such as Pacific halibut and various species of rockfish, have been contributing to the total harvest of nonsalmon fish in all 3 study years in relatively small amounts (CSIS).

In addition to the described changes in harvest of large land mammals, salmon, and nonsalmon fish, notable fluctuations in harvest composition over time have also taken place in other resource categories. The most visible change is the substantial, and continuing, decline of harvest of small land mammals (Table 10-24; Figure 10-16). Between 1982 and 1987, the harvest of small land mammals declined from a total of 2,256 lb, or 12 lb per capita in 1982, to a total 143 lb, or less than 1 lb per capita in 1987. According to the 2013 survey results, the harvest of small land mammals has continued to decline—totaling only 50 lb, or less than 1 lb per capita for the most recent study year. At the same time, there is a noteworthy increase in the harvest of marine invertebrates; the survey in 1982 did not record any harvest of these resources yet in 1987 the total harvest of marine invertebrates was 169 lb, or less than 1 lb per capita. For study year 2013, the harvest of marine invertebrates had increased to 666 lb, or 5 lb per capita. The value of the increased marine invertebrates harvest becomes highlighted when taking into consideration that substantial travel to a marine environment is required from East Glenn Highway community households to harvest these resources. Due to the large time gap (26 years) spanning the 2 previous studies and the most recent study, it is hard to tell whether there has been a shift in East Glenn Highway community residents' harvest preferences toward marine invertebrates over some other resources. According to community members who participated in the data review meetings in the fall of 2014, the marked increase in the per capita harvest of marine invertebrates is likely a result of a few households from these 3 communities having the interest and time to attempt to harvest marine invertebrates and being successful at their harvest during 2013.

Other observations of changes in the resource harvest composition of East Glenn Highway households include fluctuations in the harvest levels of birds and vegetation. Regarding birds, in 1982 the total harvest was 213 lb, or 1 lb per capita; for study year 1987 the harvest increased to 448 lb totaling 2 lb per capita. In the 2013 study year, the estimated harvest of birds totaled only 93 lb, or less than 1 lb per capita (Table 10-24; Figure 10-16). During the survey effort, some East Glenn Highway community residents commented that they had avoided harvesting upland game birds, particularly any grouse, because they had not seen as many in the area during 2013.Other households pointed out that the late snow in spring 2013 could have resulted in smaller numbers of migratory waterfowl near their communities. In addition to bird population cycle-related reasons and individual hunters' decisions not to harvest certain bird species due to concerns over the sustainability of these species, the survey data from the 3 studies show that East Glenn Highway communities' bird harvest levels have fluctuated noticeably over time. Study year 2013 has the lowest per capita harvest of birds (less than 1 lb per capita (McMillan and Cuccarese 1988; Stratton and Georgette 1984).

The harvest of vegetation resources declined from a total of 1,825 lb, or 10 lb per capita in 1982 to 621 lb total, or 3 lb per capita in 1987. In the 2013 study, the harvest of vegetation had increased to 1,325 lb, or 10 lb per capita. During the survey effort, several East Glenn Highway community households commented that 2013 was a good berry year, particularly for blueberries. While changes in annual availability of vegetation resources, particularly berries, can explain some of the fluctuation in the harvests, it is also worth noting that during the 2013 survey effort some East Glenn Highway community residents commented that during some years it is difficult to find time to harvest vegetation due to work interfering. However, survey data also show that overall the harvest and use levels of vegetation resources in East Glenn Highway communities have remained relatively high in all 3 studies (McMillan and Cuccarese 1988; Stratton and Georgette 1984).

The causes of changes and reasons for fluctuations in the levels of a community's subsistence harvests are complex and therefore it is a challenge to make generalized statements about subsistence harvest trends based on only 3 studies over the course of 3 decades. Although harvests of certain wild resources, such as nonsalmon fish, small land mammals, and marine invertebrates, have changed over time, the 3 studies show that overall East Glenn Highway community residents continue to rely on their wild resource harvests. The same point was emphasized in the many discussions project staff had with residents of the East Glenn Highway communities during the household surveys: their reliance on wild resources has remained consistent over time and they would like to be able to continue relying on these resources in the future.

Current and Historical Harvest Areas for East Glenn Highway

It is possible to compare historical spatial harvest data with the 2013 study year to identify changes in search and harvest areas for wild food resources over time. For the East Glenn Highway, limited spatial data were collected as part of the 1982 and 1987 study year surveys (McMillan and Cuccarese 1988; Stratton and Georgette 1984). Additionally, during the 1983 and 1984 fieldwork seasons, ADF&G researchers conducted interviews with more than 200 hunters and fishers in 20 communities in or near the Copper River Basin to map areas where hunting, fishing, trapping, and gathering of wild resources occurred between 1964 and 1984 (Stratton and Georgette 1985). This effort produced 2 separate publications by 2 different ADF&G divisions; the Division of Habitat published the maps and the Division of Subsistence published a description of the project and mapping methods. The maps depicting the harvest and use areas used by study community residents during this 20-year span are published in *Alaska Habitat Management Guide Southcentral Region: Reference Maps—Volume 3. Community Use of Fish, Wildlife, and Plants* (Alaska Department of Fish and Game Division of Habitat 1985).[7] Information about the mapping project is available in *Copper Basin Resource Use Map Index and Methodology* (Stratton and Georgette 1985). These maps did not record harvest and use areas for all wild food categories that were included in the 2013 survey. Changes in the resource harvest and use/search areas by East Glenn Highway area residents can be discerned through limited comparisons of the maps published in 1985, which depict harvest and use areas for 20 years, and the documentation of harvesting areas for the 1982 and 1987 studies.

Map data for the period of 1964–1984 were restricted to the Copper River Basin. For the 2013 study year, however, resource harvest locations were mapped statewide, showing that residents of East Glenn Highway communities sought and harvested wild foods from areas along Cook Inlet and in Southeast Alaska (Figure 10-17). These non-Copper River Basin search and harvest areas were usually opportunistic and the travel was rarely solely for subsistence purposes.

Considering only the search and harvest areas within the Copper River Basin, the extent of the search and harvest areas in 2013 appears significantly smaller than the 1964–1984 time frame. However, a 20-year time frame allows for harvesters to travel to more areas over time than the 1 year of harvesting effort shown in this study. In 2013, search and harvest areas were primarily along highway and road corridors, especially the Sourdough area south along the Richardson Highway to Valdez, and from Glennallen west along the Glenn Highway to Eureka. From 1964–1984, East Glenn Highway residents sought and harvested wild foods within larger areas more distant from the road system. They also harvested in many areas that are now within the boundaries of the Wrangell-St. Elias National Park and Preserve.

In 2013, East Glenn Highway search areas for moose included a large area of GMU 13D north of the Glenn Highway near Nelchina, a smaller area south of the Glenn Highway near Eureka Creek, the entire length of the Glenn Highway from Mendeltna to Glennallen, and a small area near Lake Louise Road. Another large search area farther from East Glenn Highway that encompasses parts of GMU 13B and 13C was along the Richardson Highway north of Sourdough, and a smaller area entirely within GMU 13B along the Richardson Highway near Summit Lake.

7. A complete index of documents published in 1985 and 1986 as part of *Alaska Habitat Management Guide* is available online: http://www.arlis.org/docs/vol1/C/AHMG/index.html.

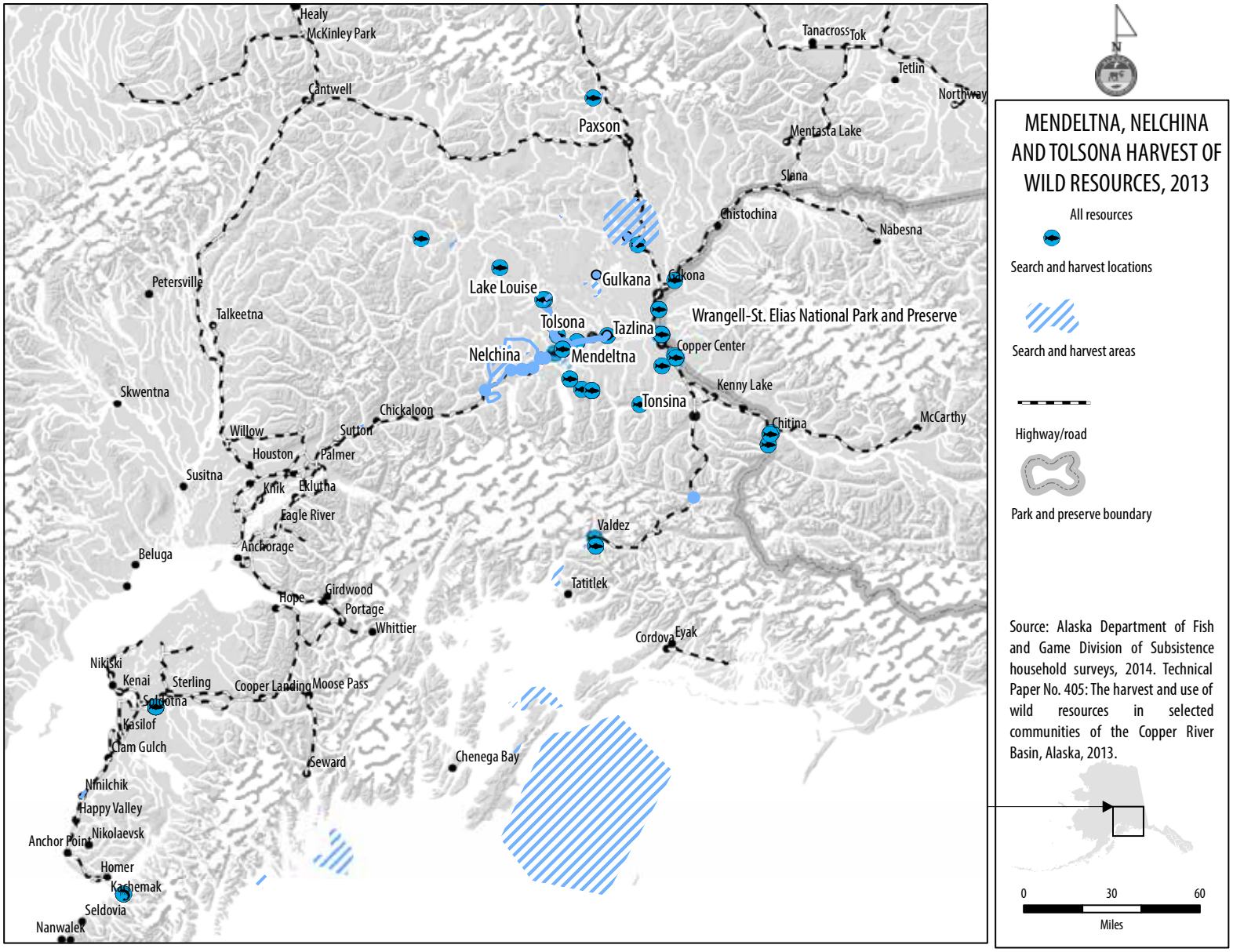


Figure 10-17.–Wild resources search and harvest areas, East Glenn Highway, 2013.

Between 1964–1984, East Glenn Highway residents sought moose within a much larger area north of the Glenn Highway from the Little Nelchina River to the west, to the Susitna River to the north, and to the Richardson Highway to the east. Residents also sought moose within a large portion of what is now the Wrangell-St. Elias National Park and Preserve, especially along a stretch of the south shore of the Chitina River, east of the Richardson and Edgerton highways, and Glenn Highway–Tok Cutoff from the Kenny Lake area north to Chistochina along the Copper River, and an area south of Nabesna Road between Slana and Nabesna. Many of these areas are east of the 2013 moose search and harvest areas (Figure 10-18). Additionally, a small search area to the east of the Richardson Highway near Paxson and another small area along the Chistochina River were hunted for moose in those years.

Caribou were hunted in 2013 within an area north of the Glenn Highway along the Little Nelchina River, along the Glenn Highway from Mendeltna east to Glennallen, and in a large area to the east and west of the Richardson Highway north of Sourdough and south of Paxson. Two smaller areas where caribou were also sought were to the east of Lake Louise Road and in the vicinity of Tolsona Lake. During the 1964–1984 time period, caribou were sought within a much greater area in GMU 13A north of the Glenn Highway—as far north as the Susitna River. They were also hunted during those years within what is now the Wrangell-St. Elias National Park and Preserve, to the south and east of the Glenn Highway–Tok Cutoff, and to the south of Nabesna Road. The latter area is east of the 2013 caribou search areas (Figure 10-19).

Bears were hunted by East Glenn Highway residents in 2013, usually opportunistically while in pursuit of other species. A large search area for both black bears and brown bears was reported to the east and west of the Richardson Highway, north of Sourdough and south of Paxson. Two additional search areas for black bears included a small area in the vicinity of Soup Lake, and an area near Potato Point on the north shore of Port Valdez. No hunting areas for bears were recorded for 1964–1984 (Stratton and Georgette 1985).

No sheep hunting occurred in 2013 but they were sought during the period of 1964–1984 in a variety of areas across the Copper River Basin (Stratton and Georgette 1985). These areas include the Talkeetna Mountains near the Nelchina River, Slide Mountain, the Chugach Mountains near the Little Nelchina River, Tazlina Lake, and Klutina Lake, and within the Wrangell-St. Elias National Park and Preserve near Nabesna, east of Copper Center, south of McCarthy Road near the Chitina River, and to the southeast of the community of McCarthy.

Sockeye salmon were sought and harvested by East Glenn Highway residents in a variety of locations around the state in 2013 (Figure 10-20). In the Copper River Basin these areas included Tazlina Lake, the Gulkana River near Sourdough, the Klutina River both west of the Richardson Highway and at its confluence with the Copper River, in the Copper River just south of Gulkana, and in the Copper River near Chitina. Some households also reported harvesting sockeye salmon in Port Valdez as well as in the Kenai River upstream from Soldotna. Both coho salmon and Chinook salmon were sought and harvested from the Copper River near Chitina as well, but coho salmon were also sought and harvested in Port Valdez and in the Kenai River. East Glenn Highway residents also fished for Chinook salmon in the Klutina River near its confluence with the Copper River.

Between 1964–1984, East Glenn Highway residents appear to have sought and harvested salmon in some different locations than where they did in 2013. The historical data are only available for all species of salmon combined. During this time period, salmon were harvested along Mendeltna Creek upstream of Old Man Lake as well as downstream of the lake to its confluence with Tazlina Lake. They also sought and harvested salmon from the mouth of Kaina Creek, the mouth of the Chulikana Creek where it empties into Klutina Lake, and along the Mahlo River and Manker Creek near their confluence with the Klutina River. Salmon fishing also occurred from the Gulkana River confluence with the Copper River and further upstream near where the middle fork and the west fork of the Gulkana River converge.

In 2013, nonsalmon fish were sought and harvested by East Glenn Highway residents from a variety of locations. Residents fished for burbot in Tolsona Lake, Moose Lake, and Crosswind Lake (Figure 10-21). Rainbow trout were sought and harvested from Buffalo, Tex Smith, Tolsona, and Crosswind lakes, and from an unnamed lake to the east of Lake Louise Road, Tolsona Creek and from several ponds in the Anchorage

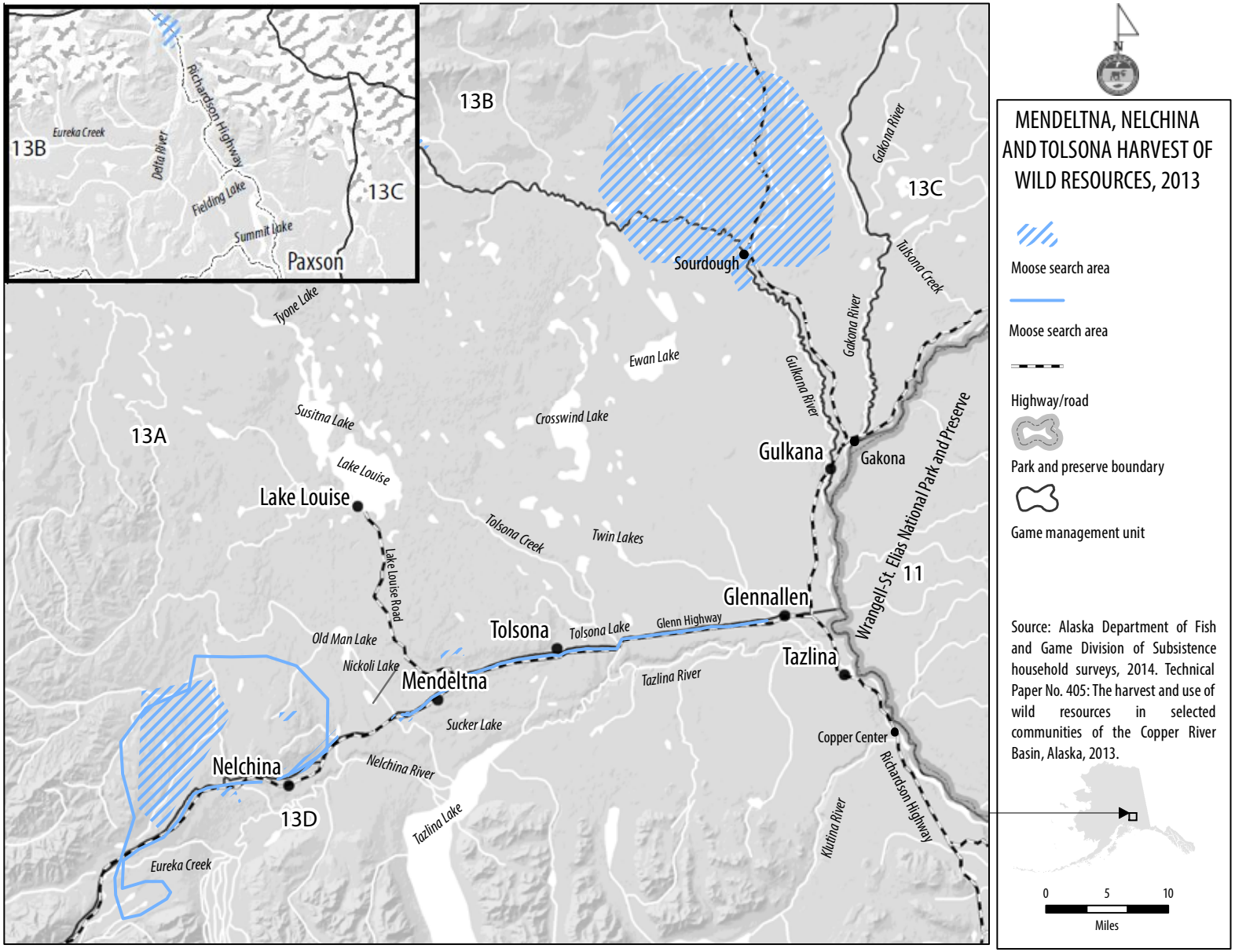


Figure 10-18.–Hunting locations of moose, East Glenn Highway, 2013.

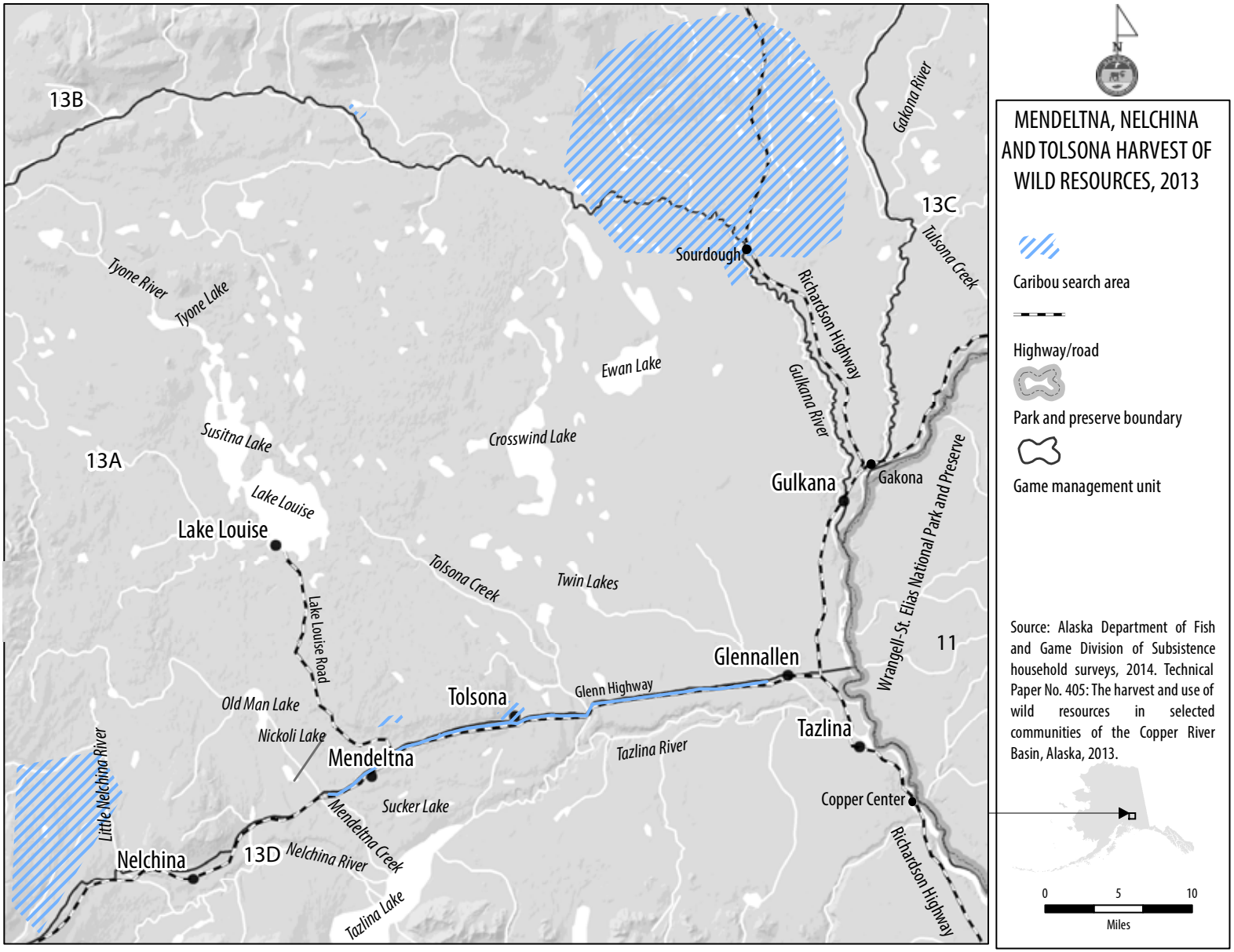


Figure 10-19.–Hunting locations of caribou, East Glenn Highway, 2013.

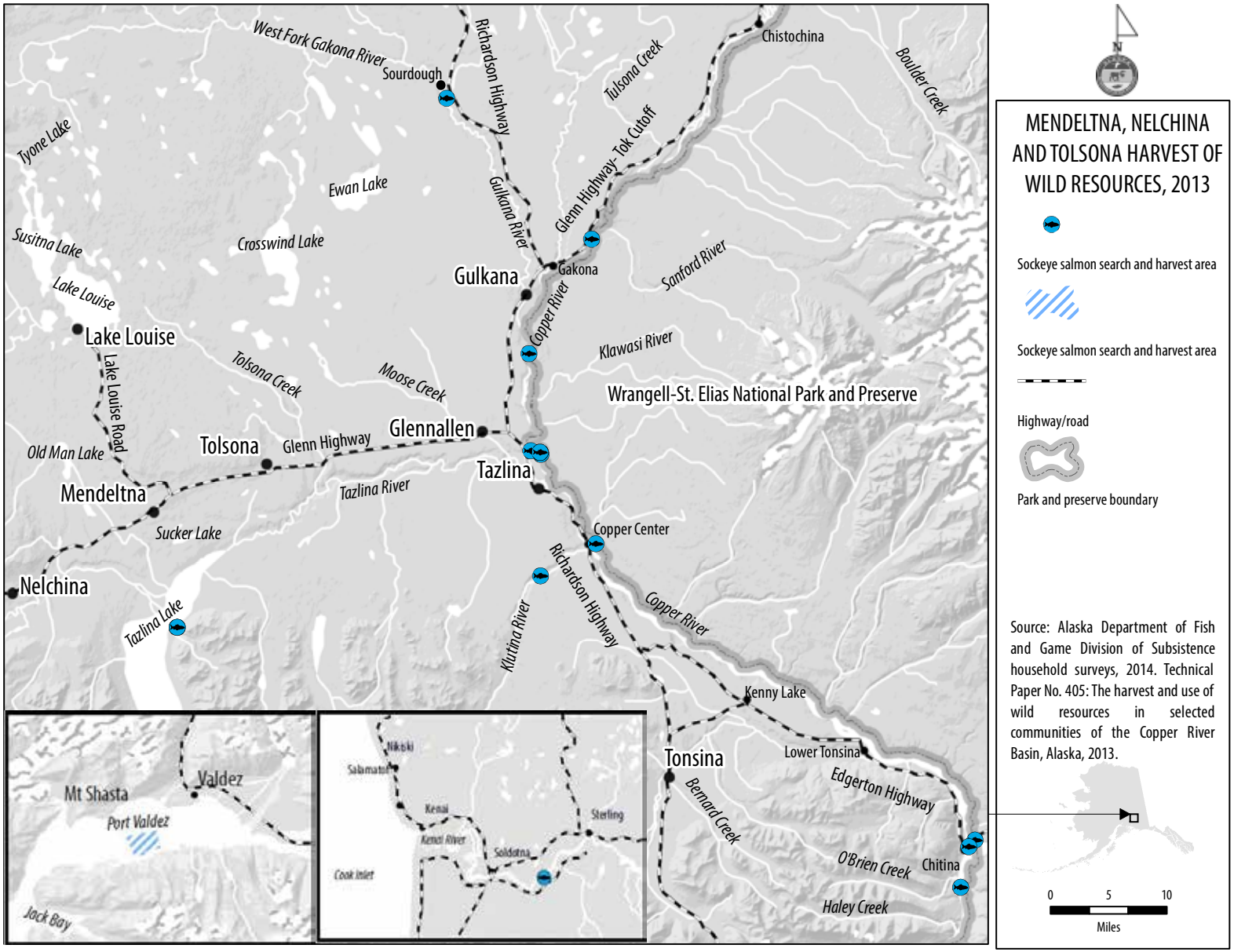


Figure 10-20.–Fishing and harvest locations of sockeye salmon, East Glenn Highway, 2013.

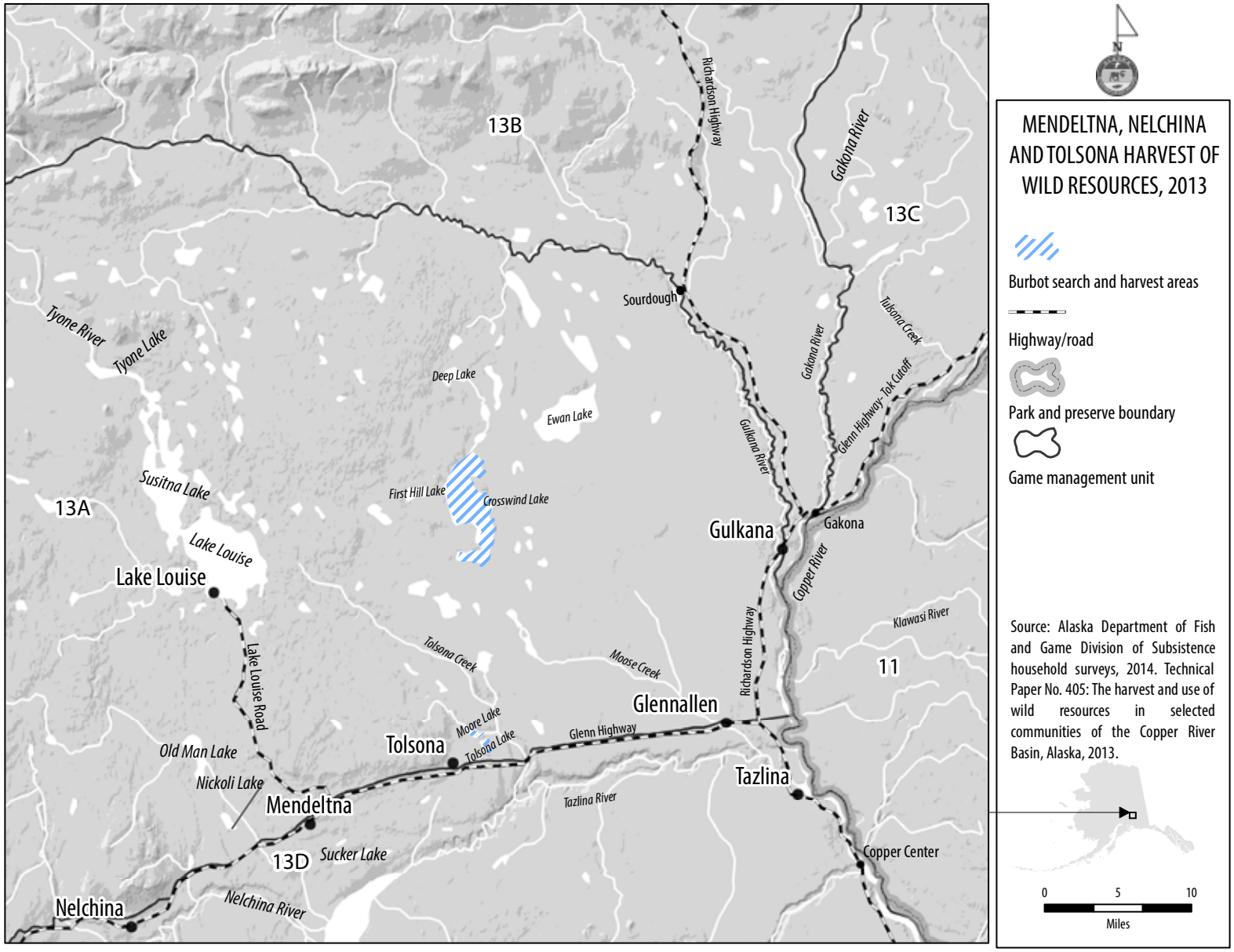


Figure 10-21.–Fishing and harvest locations of burbot, East Glenn Highway, 2013.

area (Figure 10-22). Arctic grayling were sought and harvested from Mendeltna Creek, Tolsona Lake, Lake Louise, Tolsona Creek, and Crosswind and Kaina lakes. Fishing for lake trout occurred in High, Kaina, First Hill, and Crosswind lakes, Lake Louise, and an unnamed lake to the east of Tyone Creek and to the northwest of Susitna Lake. Dolly Varden were only sought and harvested in the Klutina River near Klutina Lake. Both broad whitefish and humpback whitefish were sought and harvested from First Hill Lake.

Fishing targeted 3 species of nonsalmon marine fish in 2013. Pacific halibut were sought and harvested within a large area of the Gulf of Alaska from the southeastern portion of Montague Island east to Middleton Island and north to Hinchinbrook Island; lingcod and rockfish fishing occurred there, too. Lingcod was also sought and harvested in a small area to the northeast of Green Island, while rockfish was also sought and harvested in an area south of the Resurrection Peninsula located southwest of Seward. Other search and harvest areas for Pacific halibut include the northern edge of Montague Island in Prince William Sound, an area near Jack Bay near Port Valdez, an area just south of the Resurrection Peninsula located southeast of Seward, an area near Sandy Bay located southwest of Seward, and in Kachemak Bay.

Historical map data for nonsalmon fish are only available for freshwater species harvested in the Copper River Basin between 1964–1984. The map data for this period also combine all species. Generally, residents of East Glenn Highway appear to have traveled much farther for these species in the past than they did in 2013. Freshwater nonsalmon fish were historically harvested in many lakes, rivers, and streams south of the Denali Highway, north of the Glenn Highway, west of the Richardson Highway, and east of the Susitna River. Some of these areas include the west and middle forks of the Gulkana River, Lake Louise, Little Lake Louise, and Dog, Crosswind, Fish, Deep, and Solsona lakes, as well as Tolsona and Mendeltna creeks, among others. South of the Glenn Highway residents fished in Mendeltna Creek, Sucker Lake, Klutina Lake, Klutina River, St. Anne Creek, and Hudson Lake, among other bodies of water. Residents also fished along the Copper River and south of Nabesna Road between Slana and Nabesna.

Small land mammals and furbearers were hunted and trapped by East Glenn Highway residents in 2013 primarily along the entirety of Lake Louise Road and along the Glenn Highway from its junction with Lake Louise Road to just east of Tolsona Creek (Figure 10-23). These species were also sought and harvested along Mendeltna Creek from the Glenn Highway south to Tazlina Lake, and in the vicinity of Tolsona and Moose lakes.

Map data for the 1964–1984 time period are available for furbearers but it is unclear as to which species were included in this category; "small land mammals" were not included in the category "furbearers" and it is uncertain based on the report and data as to whether snowshoe hares were designated as furbearers and included (Stratton and Georgette 1985). During 1964–1984, furbearers were sought over a much larger area than in 2013, covering the majority of land between Slide Mountain to the west, Lake Louise to the north, the Klutina River to the east, and the northern edge of the Chugach Mountains to the south.

Upland game birds and migratory waterfowl were hunted largely near the East Glenn Highway communities in 2013 (Figure 10-24). Waterfowl hunting occurred in 4 main areas, including an area west of the community of Nelchina along the Little Nelchina River, along the entirety of Lake Louise Road, along the Glenn Highway from its junction with Lake Louise Road to Tolsona Creek, and from the Glenn Highway north to the northern edge of Crosswind Lake and between Tolsona Creek and Moose Creek. Upland game birds hunted along the entirety of Lake Louise Road, along the Glenn Highway from its junction with Lake Louise Road to Tolsona Creek, and more distantly north of the Denali Highway between Tangle Lakes and the Maclaren River.

Only waterfowl hunting areas were mapped for the period of 1964–1984. During that time, waterfowl were sought primarily along Mendeltna Creek north of the Glenn Highway, in Old Man Lake, in St. Anne Lake, along the northern edge of Fish Lake, and along the northern and southern edges of Crosswind Lake.

Marine invertebrate harvest areas were recorded for study year 2013 but not for the period of 1964–1984. In 2013, marine invertebrates were harvested exclusively on the Kenai Peninsula along a stretch of beach north of Ninilchik and within an area on the southern edge of Kachemak Bay between Anisom Point and Peterson Bay.

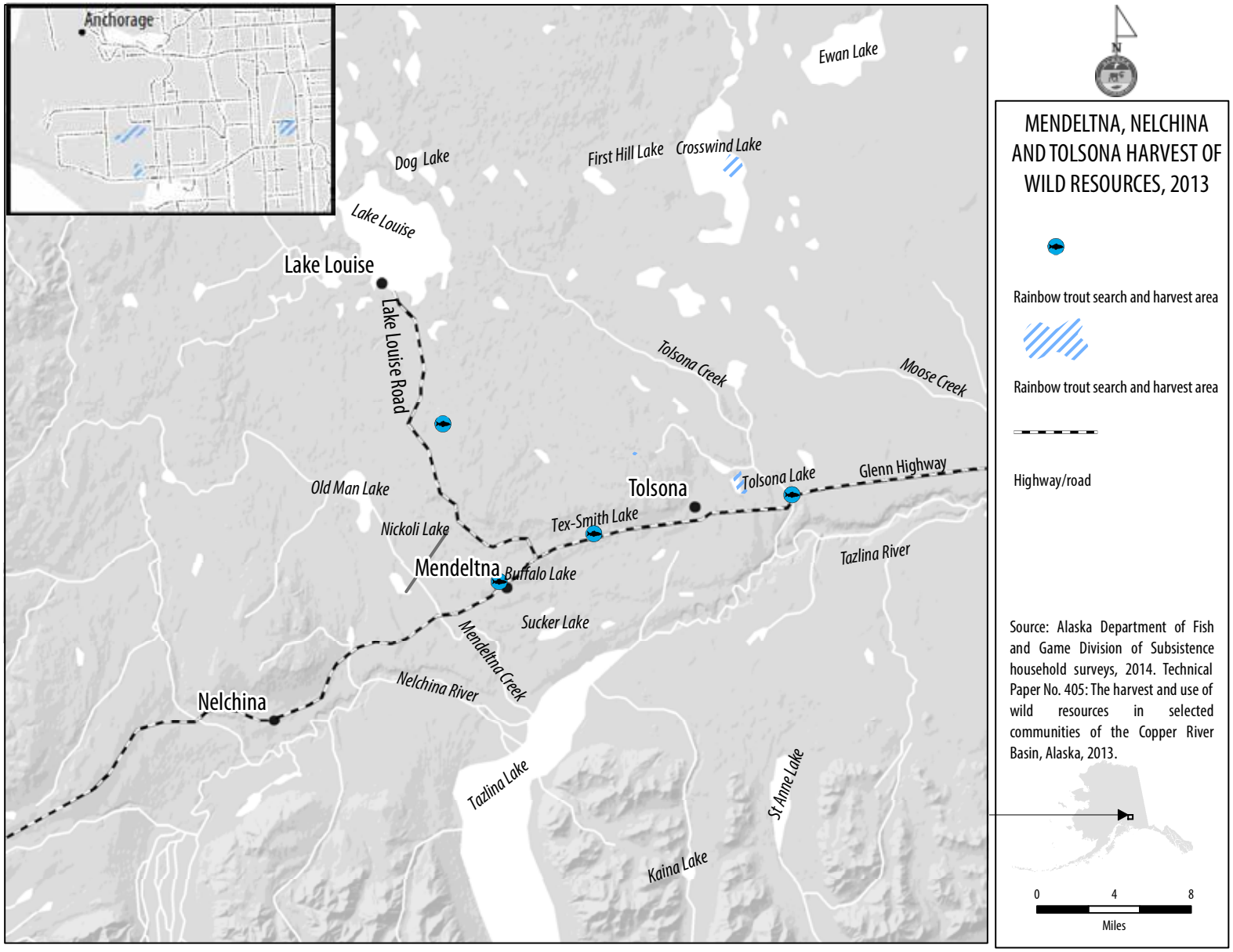


Figure 10-22.–Fishing and harvest locations of rainbow trout, East Glenn Highway, 2013.

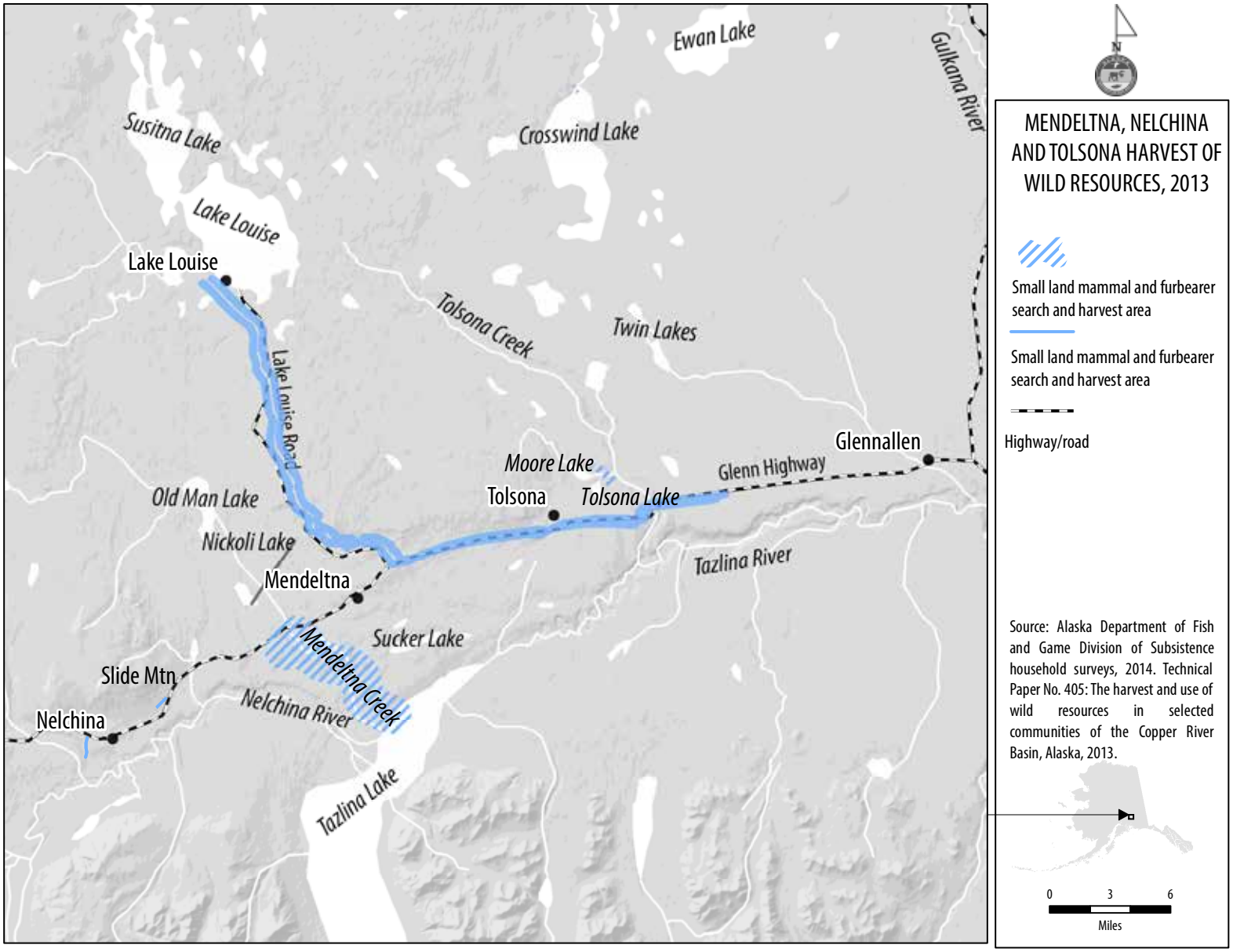


Figure 10-23.–Hunting and trapping locations of small land mammals/furbearers, East Glenn Highway, 2013.

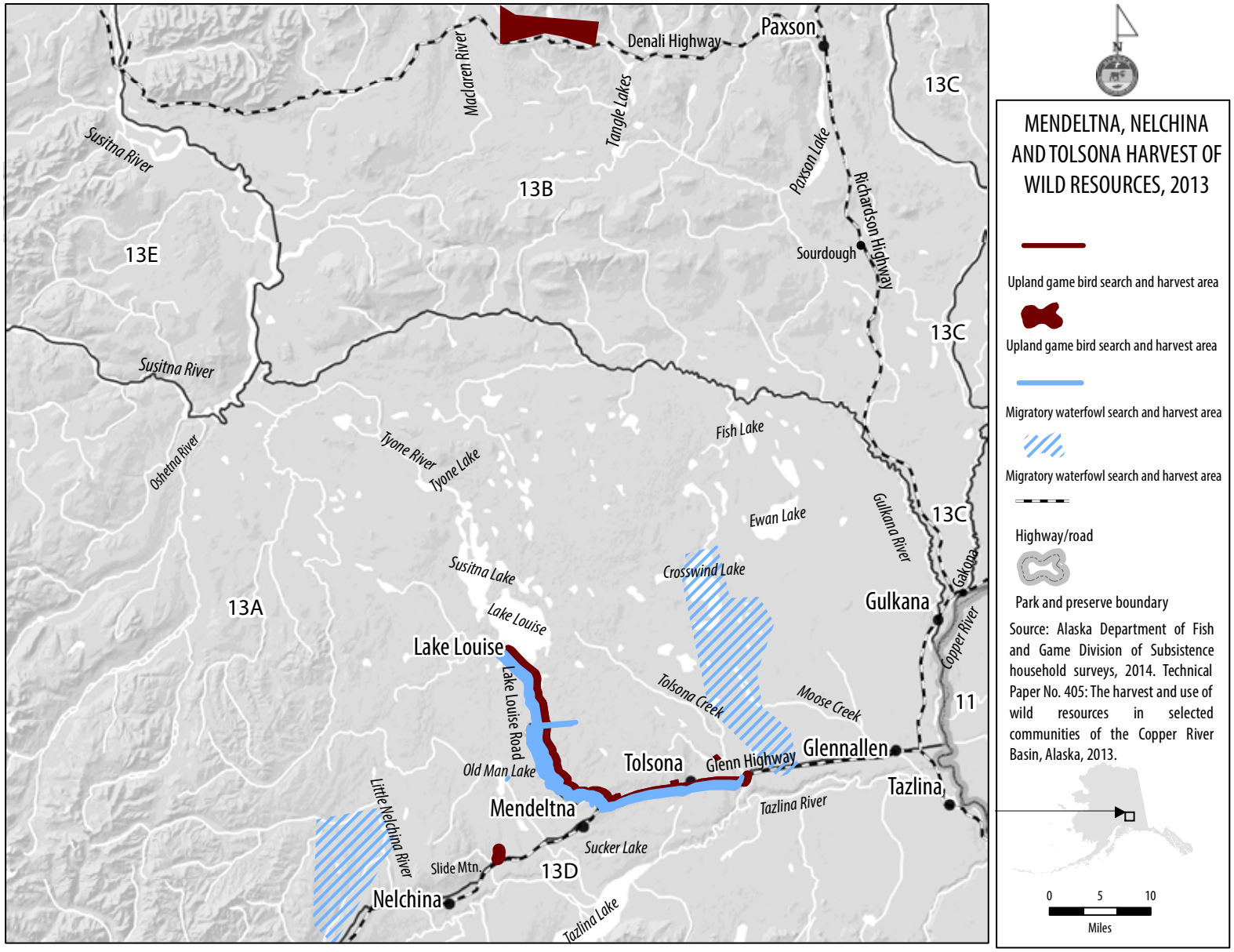


Figure 10-24.–Hunting and harvest locations of migratory waterfowl and upland game birds, East Glenn Highway, 2013.

In 2013, East Glenn Highway residents harvested vegetation primarily near the communities and usually close to their homes (Figure 10-25). Most vegetation harvests occurred within 2 miles of the Glenn Highway from just west of the Little Nelchina River to just east of Tolsona Creek. These areas include both plant and berry harvest locations. Three small additional berry harvest areas were also used to the east of Lake Louise Road. Berries were also harvested near the community of Kasaan on Prince of Wales Island. Between 1964–1984, vegetation was harvested in an area south of the Glenn Highway between the Matanuska River and the Nelchina River, in an area to the northeast of the junction of Lake Louise Road and the Glenn Highway, and along the Glenn Highway in the vicinity of Tolsona Lake. No distinction between harvest locations for berries and plants was made in the historical data.

Firewood search and harvest area data are only available for study year 2013, when East Glenn Highway residents harvested firewood within relatively small areas near the community. These areas are close to the community of Nelchina, Snowshoe Lake, Tex Smith Lake, Soup Lake, Tolsona and Moose lakes, and Tolsona Creek. Two additional harvest areas include a location along the Glenn Highway to the east of Tolsona Creek, and another one to the east of Lake Louise Road.

Local Comments and Concerns

Following is a summary of local observations of Tolsona residents as they pertain to wild resource populations and trends that were recorded during the surveys. 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.

Community Boundaries

Tolsona residents do not agree with the census designated place (CDP) boundaries established by the U.S. Census Bureau as a means of delineating the extent of their community. It is the opinion of many residents that the Tolsona CDP is too small, especially with concern to the easternmost and westernmost boundaries along the Glenn Highway. Many residents would like to see the CDP boundaries change to reflect their own sense of self-identification.

Several households self-identify with the community of Tolsona but lie outside of the CDP boundaries, falling within either the Mendeltna CDP or the Glennallen CDP. For the purposes of this study, households that self-identify with Tolsona but that are located within the Mendeltna CDP are still part of the East Glenn Highway complex. This was less of a concern to community members compared to the households that fell within the Glennallen CDP and were thus excluded from being part of the East Glenn Highway complex. The Glennallen CDP gained territory in 2000 that encompassed households that were previously designated as the "balance" of the Valdez-Cordova Census Area in study years 1982 and 1987.

Fish

In general, survey respondents in Tolsona were pleased with their access to salmon resources and they expressed little concern for salmon stocks, especially for sockeye salmon. Several respondents reported hearing about statewide declines of Chinook salmon, and they commented that they would like to know more about the causes of this decline. At least 1 household that uses a fish wheel to harvest salmon indicated that they do not attempt to keep any Chinook salmon unless they are injured and unlikely to survive. They are released because "we know the population is struggling." During the community data review meeting in August 2014, several attendees stated that they are happy with their sockeye salmon harvest and the resource availability in 2014.

While salmon species make up a much larger percentage of Tolsona's fish harvest, nonsalmon fish species are considered very important by many households in the community. Salmon are not available in the immediate area and nonsalmon fish are locally abundant in the plethora of local lakes, ponds, and streams.

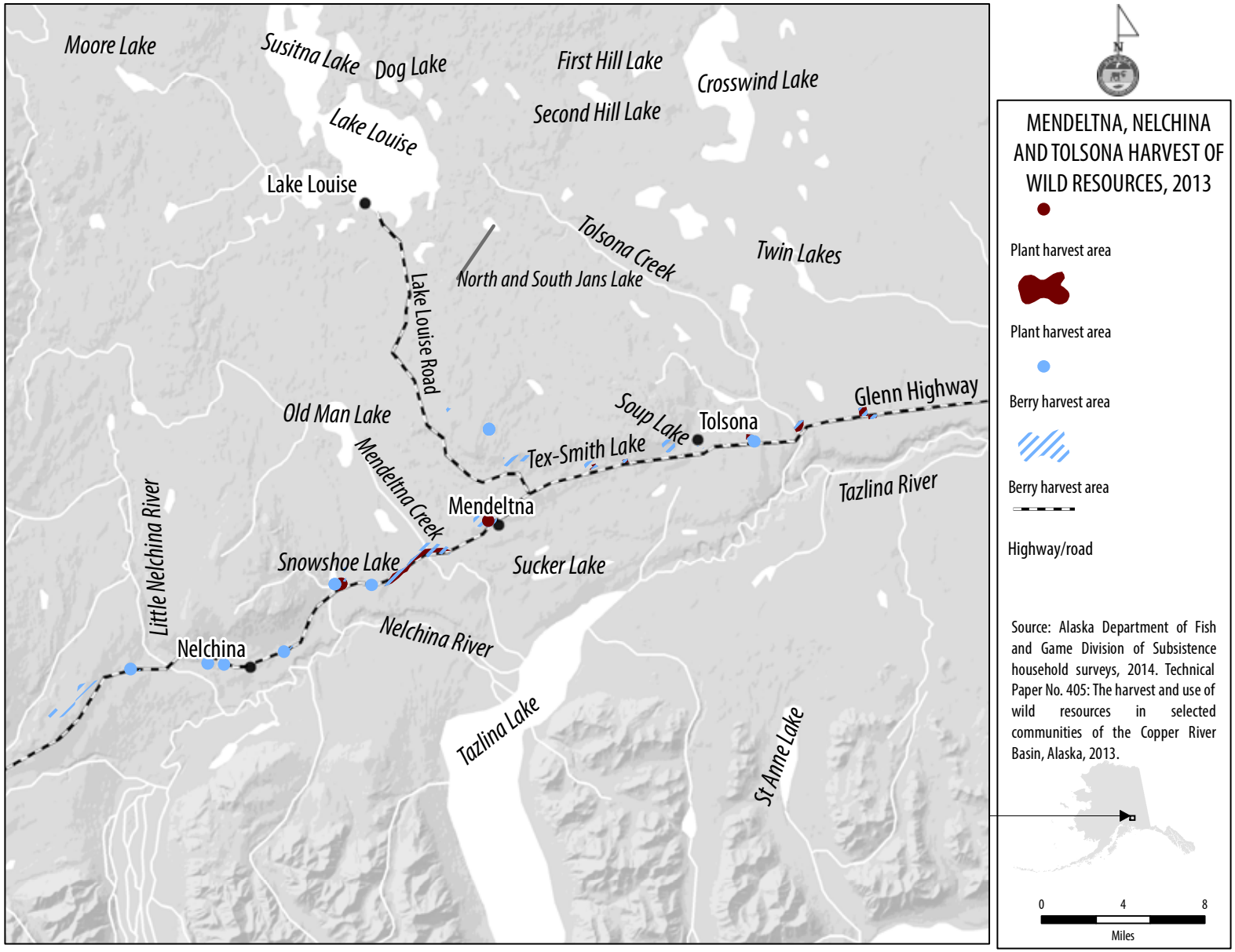


Figure 10-25.–Gathering and harvest locations of berries and plants, greens, and mushrooms, East Glenn Highway, 2013.

In addition, many lodges along the East Glenn Highway promote nonsalmon fishing and depend on tourism associated with this resource.

In Tolsona, the greatest concerns regarding nonsalmon fish appear to be with species present in Tolsona Lake. Several households mentioned that Tolsona Lake used to be a very popular destination for ice fishing for burbot and rainbow trout, but that fishing success has declined substantially in recent years. In fact, 2013 was the first year in recent history that the lodge was closed for the winter due to limited successful ice fishing the year prior. Residents attribute this to a decline in nonsalmon fish in the lake.

During the spring of 2013, several residents reported observing massive quantities of nonsalmon fish, mostly burbot, dead along the shores of Tolsona Lake immediately after the breakup of ice. A key respondent believes that this die-off was caused by depleted oxygen under the ice as a result of falling water volume in the lake. He attributes this water level drop to an eroding retaining wall at the northern end of the lake. The wall was reportedly maintained until recently by ADF&G as part of long-time fish hatchery operations in that area. The hatchery has since been moved to Moose Lake, and the retaining wall has not been maintained.

In contrast to the decline in Tolsona Lake burbot populations, residents attending the community review meeting reported a rise in rainbow trout populations in the spring and summer of 2014. They appeared very pleased with the quantity, size, and health of this population, and 1 resident noted that it is the best trout fishing he has seen in the area in years.

A final prominent comment regarding nonsalmon fish near the community of Tolsona pertains to the stocking of fish by ADF&G. Residents appear to support the hatchery and stocking programs, but they are confused as to the process for choosing which lakes to stock. Several residents noted that stocked lakes are often far from the road system and difficult to access. One resident stated, "If you can't get to a stocked lake, why stock it?" This resident suggested that ADF&G reevaluate its stocking program and that ADF&G should consider stocking lakes closer to the road system, especially Tolsona Lake.

Large Land Mammals

State hunting regulations for large land mammals in GMU 13 are perhaps the most contentious set of issues pertaining to wild food harvests in the Tolsona area, and many residents have concerns about regulations, especially the "Copper Basin Moose Community Subsistence Harvest Permit Program" (CSH).[8] While residents like the idea of being able to hunt for any bull moose prior to the regular season, many respondents indicated that the hunt has significantly increased hunting pressure due to participation by largely urban permit holders from Anchorage, Wasilla, and Palmer. A key respondent noted:

> Hundreds if not thousands of hunters come to Unit 13 for the CSH. They come in their $100,000 motorhomes and they bring multiple $10,000 all-terrain vehicles. They spend more per ounce of meat harvested than they spend all year at the grocery store. That is not subsistence. They're competing with the people that actually need the meat and it's wrong.

Some residents cited competition for moose as a complaint, as well as safety issues pertaining to the number of hunters in the area. Several respondents noted that the quantity of ATVs on the landscape is pushing moose farther and farther from the road, making them more difficult to harvest for local residents.

Two key respondent households mentioned that the problems with the CSH are the criteria used for issuing permits and that participants are not following the customary and traditional use patterns established in the CSH. Both households also mentioned a need for increased enforcement during the CSH, and that Alaska State Troopers need to be well versed on regulations pertaining to the hunt. Unless some effort is made to restrict the number of hunters having access to the CSH, the expressed sentiments toward this hunt were that the consequences currently outweigh the benefits of the program. Additionally, several households

8. Alaska Department of Fish and Game, "Cultural and Subsistence Harvest Permits" http://www.adfg.alaska.gov/index.cfm?adfg=huntlicense.cultural (accessed December 2014).

mentioned that they prefer and depend on federal regulations that provide rural preference for large land mammal hunts in the area.

For caribou, residents of Tolsona reported that the spring of 2013 was difficult for the migrating Nelchina caribou herd due to an early breakup of freshwater systems in the area. One key respondent noted bearing witness to calf mortality related to drowning in rivers and lakes. This same respondent mentioned helping at least 1 calf that was found drowning in Tolsona Lake by taking it to shore in his boat.

In the winter 2012–2013, most of the Nelchina caribou herd failed to migrate from the area to their winter foraging grounds to the northeast of Tolsona. The herd remained in the Tolsona area throughout the winter. Residents suggested that this is unusual, but that it tends to happen about once every 10 years. A major concern in these years is that the caribou congregate on and near the Glenn Highway, and vehicle collisions are common. A local roadkill salvage program is used to harvest meat and reduce waste.

Small Land Mammals/Furbearers

Few households in the Tolsona area reported harvests or observations of small land mammals and furbearers. At least 1 household traps regularly and uses the resulting furs to make clothes and handicrafts. Another household indicated that they do not accept gifts of furs because they are ethically opposed to pain experienced by some animals that are trapped.

Birds and Eggs

Two households reported observations of birds and eggs. One household reported that they avoid harvesting grouse because of local population declines. Another household reported that monitoring and recording song birds and birds of prey in the area has long been a popular pastime. This household provided several decades of observational records related to these birding activities.

Vegetation

The harvest of vegetation is considered by many households to be an important component of Tolsona's seasonal round and subsistence activities. Most households in the area harvest berries of some quantity and sharing of these resources is commonplace. Juices, jams and jellies, and other culinary items are made and distributed among households. Residents report that good berry years are cyclical and that they do not have any major concerns regarding local berry populations.

One of the key respondents for Tolsona noted the importance of firewood to the community. He indicated that wood is used on a daily basis by many households for a variety of purposes. He also stated that the harvest of firewood was once very economically important for the community since it was sold commercially on a large scale. According to this respondent, more than 75% of the wood harvested commercially in the Copper River Basin came from Tolsona. He indicated that commercial harvests are expected to once again increase with the opening of an additional woodlot in the area in the near future.

ACKNOWLEDGEMNTS

We would like to thank the Tolsona Community Corporation for support and assistance in making this research possible. We would also like to thank our local research assistant (LRA) Kristal Bengtson for all of her hard work in contacting individuals, encouraging participation, setting up and conducting interviews, and hosting project staff. Additionally, we thank our key respondent households for providing context and historical information to enhance our understanding of survey results and harvest patterns.

11. DISCUSSION AND CONCLUSIONS

Sarah M. Hazell, Robbin La Vine, and Davin Holen

Overview of Findings for the Study Communities, 2013

This report documents the wild resource harvest and use patterns of 9 study communities in the Copper River Basin: Glennallen, Gulkana, Lake Louise, Paxson, Tazlina, Tonsina, and the East Glenn Highway communities of Mendeltna, Nelchina, and Tolsona. The 2013 study year is the completion of a multi-year effort to update the harvest assessment for the entire area through funding from the WRST and the Alaska Energy Authority. A summary of the harvest update for all Copper River Basin communities will conclude this chapter.

The 2013 communities are positioned along the Glenn and Richardson highways, with the exception of Lake Louise, which is located 18 miles north of the Glenn Highway. Glennallen is centrally located at the intersection of the 2 highways; Nelchina is the community farthest to the west (approximately 40 miles from Glennallen); Paxson is farthest north of Glennallen (approximately 70 miles); and Tonsina is the farthest south (approximately 40 miles). While most of the 2013 harvest occurred locally within the Copper River Basin, surveyed households extended their harvest activities north to the Fairbanks area, south into Prince William Sound and the Gulf of Alaska, and west into the Cook Inlet watershed and along the Kenai Peninsula. A few Copper River Basin households traveled as far as Bristol Bay to hunt for moose, caribou, migratory waterfowl, and to fish with rod and reel.

There are a few events of significance that influenced the 2013 harvest year and might possibly have impacted the level of harvest by the communities. There was significant flooding in the spring of 2013 just before the salmon harvest season opening. While some communities were only minimally affected, others lost stretches of bank, fish wheels, and in some cases full fish camps. Fish wheels are a point of access to fishing for entire communities, in addition to individual families; the loss of a fish wheel can impact multiple households. Additionally, many households reported a change in caribou migration patterns for the fall hunt that resulted in fewer caribou harvests for those who rely on the Denali Highway road corridor for access to the herd.

Table 11-1 summarizes selected findings regarding demography, cash economy, and wild resource harvests and uses by all study communities in 2013. Glennallen had the largest population (384) and Tolsona had the smallest (24). Gulkana had the highest percentage of Alaska Native residents (70%), the highest percentage of household heads born in Alaska (83%), and the longest average length of residency in the community (30 years). Lake Louise, Mendeltna, Paxson, and Tolsona did not have any Alaska Native residents during the 2013 study year. In addition, Paxson and Tolsona had the lowest percentage of household heads born in Alaska (7% and 8%, respectively) and Tazlina had the lowest average length of residency for all communities (16 years).

Although Glennallen is generally considered the commercial hub of the Copper River Basin, Lake Louise had the highest per capita income ($58,516) and Gulkana had the lowest ($17,500) (Table 11-1). Difference in per capita income estimates between communities can be explained in part by the difference in availability of wage employment and high levels of per capita income can also be explained by the high percentage of adults (16 years and older) who are employed year-round; Lake Louise was the only community in the study with 100% adults employed year-round. Mendeltna and Nelchina also had high rates of adult year-round employment (79% and 72%, respectively) while Tonsina and Tolsona had the lowest rates of adult year-round employment (56% and 58%, respectively). The average months of employment were comparable in the remaining 8 communities: employment duration ranged from just over 9 months in Tolsona to just under 11 months in Mendeltna.

Table 11-1.–Comparison of selected findings, study communities, 2013.

Category	Community								
	Glennallen	Gulkana	Lake	Tazlina	Tonsina	Mendeltna	Paxson	Nelchina	Tolsona
Demography									
Population	383.6	103.6	26.6	352.4	89.9	33.6	31.6	75.7	24.0
Percentage of population that is Alaska Native	17.8%	70.0%	0.0%	39.2%	11.3%	0.0%	0.0%	8.5%	0.0%
Percentage of household heads born in Alaska	15.6%	83.0%	6.7%	40.0%	21.6%	26.3%	7.1%	13.3%	7.7%
Average length of residency of household heads (year)	19.6	29.5	22.1	16.2	20.1	18.8	22.5	23.6	25.8
Cash economy									
Average number of months employed	10.1	9.7	12.0	9.9	9.8	10.6	9.6	10.4	9.2
Percentage of employed adults working year-round	65.8%	63.9%	100.0%	66.1%	56.3%	78.6%	61.5%	72.2%	58.3%
Percentage of income from sources other than employment	11.8%	19.7%	37.1%	10.4%	10.0%	10.4%	20.7%	12.5%	39.6%
Average household income[a]	$66,208	$54,915	$111,180	$67,450	$85,334	$96,250	$51,870	$66,306	$74,168
Per capita income[a]	$24,161	$17,500	$58,516	$22,968	$37,032	$40,104	$18,042	$25,394	$37,084
Resource harvest and use									
Per capita harvest, pounds usable weight	97.6	144.2	73.0	150.1	199.3	52.6	214.0	128.4	310.8
Average household harvest, pounds usable weight	267.5	452.5	138.7	440.7	459.3	126.4	615.3	335.2	621.5
Number of resources used by 50% or more households	6.0	7.0	8.0	6.0	5.0	8.0	8.0	4.0	10.0
Average number of resources used per household	8.5	9.7	10.1	10.0	11.4	10.5	11.8	8.3	13.9
Average number of resources attempted to be harvested per household	6.8	5.5	8.4	8.5	8.7	9.9	11.4	8.3	9.8
Average number of resources harvested per household	5.5	4.7	6.6	7.0	8.2	7.6	9.8	6.9	9.0
Average number of resources received per household	3.6	5.9	3.9	4.1	3.7	4.1	2.6	2.8	7.5
Average number of resources given away per household	2.7	4.3	1.6	3.9	3.2	2.5	4.4	3.0	5.5
Percentage of total harvest taken by top 25% ranked households	75.7%	78.1%	61.8%	64.4%	69.4%	43.3%	59.9%	53.7%	93.0%
Percentage of households that harvested 70% of harvest	20.8%	20.7%	30.0%	27.8%	21.7%	40.0%	37.5%	33.3%	12.5%
Per capita harvest by lowest ranked 50% of households	1.8	1.4	10.8	12.9	15.4	17.1	59.7	16.9	10.1
Percentage of total harvest taken by lowest ranked 50% of harvesting households	1.9%	1.0%	14.8%	8.6%	7.7%	32.5%	27.9%	13.2%	3.2%
Average number of resources used by lowest ranked 50% of households	5.4	6.8	8.3	7.6	5.6	11.0	6.6	6.5	8.8
Average number of resources used by top 25% ranked households	12.9	16.4	17.0	14.7	22.4	8.5	27.5	14.5	26.5

Source ADF&G Division of Subsistence household surveys, 2014.

a. Includes income from sources other than employment.

As estimated in pounds usable weight, Tolsona had the highest per capita harvest in 2013 (311 lb) and Mendeltna had the lowest per capita harvest (53 lb) (Table 11-1). Other high harvesting communities for the 2013 study year include Paxson (214 lb per capita) and Tonsina (199 lb per capita) and Tazlina (150 lb per capita). In terms of average total household harvests of wild foods, Tolsona averaged 622 lb per household, Paxson averaged 615 lb per household, Tonsina averaged 459 lb per household, and Gulkana averaged 453 lb per household.

Households in each community used a wide range of individual resources and species with the number used per household averaging between 8 and 14 types of resources (Table 11-1). The average number of species households attempted to harvest was between 6 and 11 per household and the average number of resources harvested per household ranged between 5 (Gulkana) and 10 (Paxson). Households in all 9 communities received between 3 (Paxson and Nelchina) and 8 (Tolsona) kinds of resources each, while households in each study community shared an average of 2 (Lake Louise) to 6 (Tolsona) resources with others.

Table 11-1 illustrates how a relatively small portion of each community provides for the bulk of the community harvest (further detail on this common Alaska harvest pattern can be found in Wolfe [1987] and Wolfe et al. [2010]). In Tolsona, 93% of the harvest was taken by the top 25% ranked households (13% of households brought in 70% of the harvest) and in Gulkana 78% of the harvest was taken by the top 25% ranked households (21% of households brought in 70% of the harvest). High harvesting households, those ranked within the top 25%, used on average between 9 and 28 resources. The 50% of households with the lowest harvests used on average between 5 and 11 resources. Of interest, the pattern demonstrated by Paxson represents a community where household contribution to the overall community harvest is more equally distributed (38% of households took 72% of the harvest). Mendeltna shows a similar pattern with 40% of households harvesting 70% of resources, however, the per capita harvest between the 2 communities is very different with a per capita harvest of 214 lb in Paxson and 53 lb in Mendeltna.

Table 11-2 reports the estimated levels of individual participation in the harvest and processing of wild resources by all residents in each study community for 2013. The communities of Lake Louise and Mendeltna had the highest rate of individual participation in attempted harvest of any resource (100%) and Tolsona had the highest rate of individual participation in the processing of any resource (100%). Paxson had the lowest rate of individual participation in both the harvesting of any resource and the processing of any resource (61%) despite having one of the highest per capita harvests for the study year. Lake Louise had the highest level of individual participation for fishing (80%) and Tolsona had the highest participation rate for processing fish (88%). Participation by individuals in all communities was highest for fishing and processing fish and the gathering and processing of plants, berries, or wood, and individual participation was lowest for hunting and processing small land mammals/furbearers or birds and eggs—depending on the community. Gulkana had the highest level of participation for hunting large land mammals (55%) and Glennallen the lowest (28%) while Paxson had the highest level of individual participation in the processing of large land mammals (57%) and Lake Louise the lowest (11%). Gulkana had the highest level of individual participation in the building or maintaining of fish wheels (34%) as well as sewing skins or cloth (20%), and Nelchina had the highest level of individual participation in the cooking of wild foods (87%) (Table 11-3).

Figure 11-1 demonstrates participation at the household level in using, harvesting and sharing resources for each study community. During the 2013 study year all communities had a high percentage of households using wild resources. In Lake Louise, Mendeltna, Paxson, and Tolsona, all households (100%) used wild resources while Nelchina had the lowest percentage of households that used wild resources at 94% (which is still quite high). Lake Louise and Mendeltna also had 100% household participation in the harvest of wild resources; Lake Louise, Paxson, and Tolsona had 100% of households receiving wild resources; and Mendeltna had the highest level of household participation in the sharing of wild resources (90%). All communities had high levels of sharing of resources with at least 70% of households indicating that they received and gave away resources (Figure 11-1).

Table 11-2.–Individual participation in subsistence harvesting and processing activities, study communities, 2013.

	Glennallen	Gulkana	Lake Louise	Tazlina	Tonsina	Mendeltna	Paxson	Nelchina	Tolsona
Total number of people	**383.6**	**103.6**	**26.6**	**352.4**	**89.9**	**33.6**	**31.6**	**75.7**	**24.0**
Fish									
Fish									
Number	196.4	60.3	21.0	247.6	54.3	22.4	17.9	40.3	18.0
Percentage	51.2%	58.2%	78.9%	70.3%	60.4%	66.7%	56.5%	53.2%	75.0%
Process									
Number	207.4	67.1	22.4	258.2	64.4	26.6	17.9	43.5	21.0
Percentage	54.1%	64.8%	84.2%	73.3%	71.7%	79.2%	56.5%	57.4%	87.5%
Large land mammals									
Hunt									
Number	108.3	56.9	14.0	154.9	33.9	15.4	15.1	33.8	12.0
Percentage	28.2%	54.9%	52.6%	44.0%	37.7%	45.8%	47.8%	44.7%	50.0%
Process									
Number	170.7	55.8	2.8	150.4	45.8	15.4	17.9	40.3	12.0
Percentage	44.5%	53.8%	10.5%	42.7%	50.9%	45.8%	56.5%	53.2%	50.0%
Small land mammals									
Hunt or trap									
Number	27.5	30.7	2.8	68.4	8.5	4.2	5.5	6.4	1.5
Percentage	7.2%	29.7%	10.5%	19.4%	9.4%	12.5%	17.4%	8.5%	6.3%
Process									
Number	29.4	28.4	4.2	62.3	15.3	1.4	4.1	8.1	1.5
Percentage	7.7%	27.5%	15.8%	17.7%	17.0%	4.2%	13.0%	10.6%	6.3%
Birds and eggs									
Hunt/gather									
Number	51.8	30.7	9.8	80.5	22.0	1.4	6.9	14.5	7.5
Percentage	13.5%	29.7%	36.8%	22.8%	24.5%	4.2%	21.7%	19.1%	31.3%
Process									
Number	43.9	31.9	9.8	75.9	27.1	2.8	6.9	11.3	9.0
Percentage	11.4%	30.8%	36.8%	21.6%	30.2%	8.3%	21.7%	14.9%	37.5%
Vegetation									
Gather									
Number	309.2	70.6	26.6	278.2	74.6	30.8	19.0	66.1	19.5
Percentage	80.6%	68.1%	100.0%	78.9%	83.0%	91.7%	60.0%	87.2%	81.3%
Process									
Number	295.8	67.1	25.2	275.1	76.3	28.0	19.0	64.4	21.0
Percentage	77.1%	64.8%	94.7%	78.1%	84.9%	83.3%	60.0%	85.1%	87.5%
Any resource									
Attempt harvest									
Number	310.9	80.8	26.6	312.9	74.6	33.6	19.3	66.1	22.5
Percentage	81.0%	78.0%	100.0%	88.8%	83.0%	100.0%	60.9%	87.2%	93.8%
Process									
Number	305.5	81.9	25.2	308.4	79.7	30.8	19.3	67.7	24.0
Percentage	79.6%	79.1%	94.7%	87.5%	88.7%	91.7%	60.9%	89.4%	100.0%

Source ADF&G Division of Subsistence household surveys, 2014.

Table 11-3.–Household member participation in subsistence craft activities, study communities, 2013.

	Glennallen	Gulkana	Lake Louise	Tazlina	Tonsina	Mendeltna	Paxson	Nelchina	Tolsona
Total number of people	**383.6**	**103.6**	**26.6**	**352.4**	**89.9**	**33.6**	**31.6**	**75.7**	**24.0**
Building fish wheels									
Number	56.6	35.3	0.0	104.0	5.1	2.8	0.0	3.2	3.0
Percentage	14.8%	34.1%	0.0%	29.5%	5.7%	8.3%	0.0%	4.3%	12.5%
Sewing skins or cloth									
Number	45.7	20.5	0.0	35.7	11.9	4.2	1.4	3.2	1.5
Percentage	11.9%	19.8%	0.0%	10.1%	13.2%	12.5%	4.3%	4.3%	6.3%
Cooking wild foods									
Number	275.9	77.4	22.4	240.6	64.4	26.6	20.6	66.1	18.0
Percentage	71.9%	74.7%	84.2%	68.3%	71.7%	79.2%	65.2%	87.2%	75.0%

Source ADF&G Division of Subsistence household surveys, 2014.

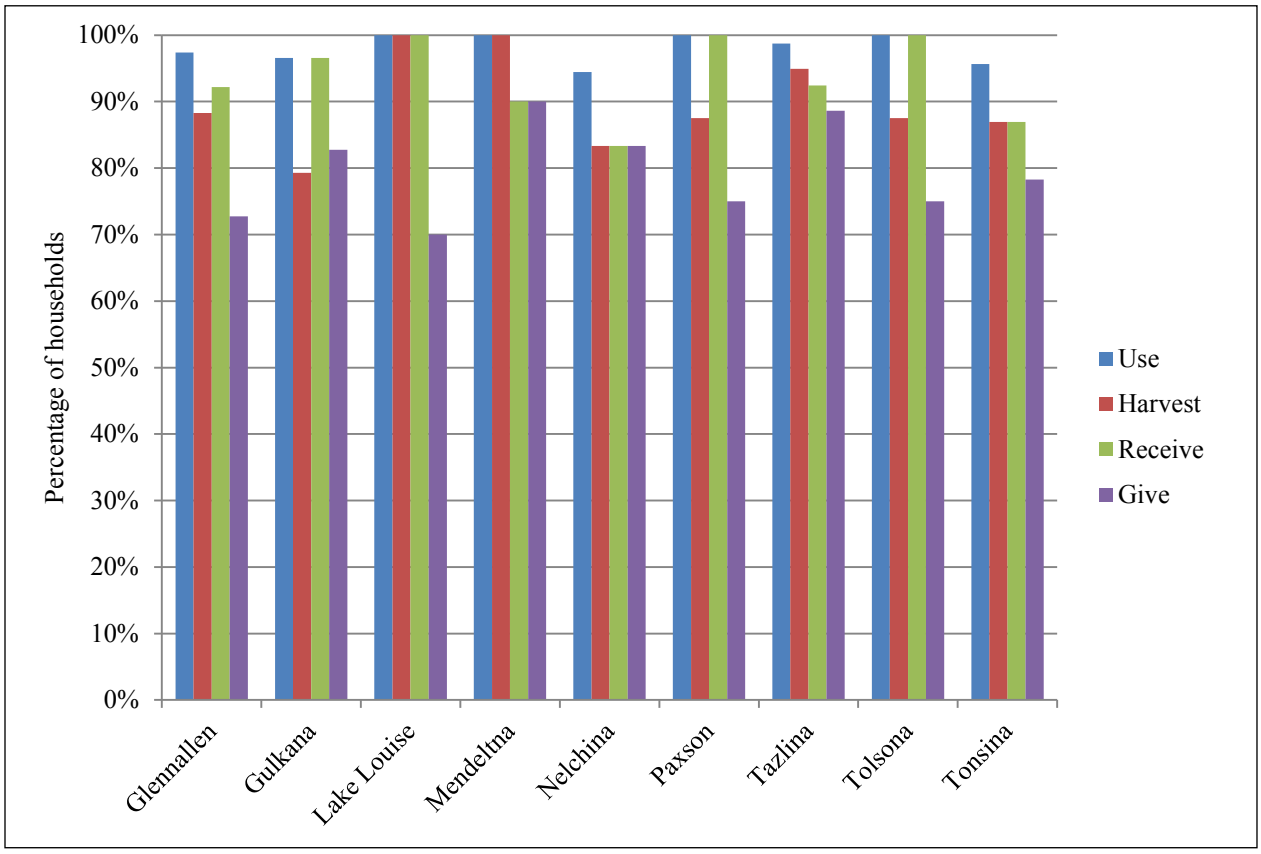


Figure 11-1.–Estimated household participation in harvesting and using resources, study communities, 2013.

Harvest Composition and Uses in 2013

Figure 11-2 illustrates the harvest composition of each community in per capita usable weight and figures 2-7, 3-7, 4-7, 5-7, 6-7, 7-7, 8-8, 9-7, and 10-7 represent the harvest composition for each community as a percentage of usable weight. As discussed in the previous section the community with the highest per capita harvest was Tolsona (311 lb) and the community with the lowest per capita harvest (but part of the Tolsona community exchange network) was Mendeltna (53 lb). The category constituting most of the 2013 harvests in a majority of the communities was salmon followed by large land mammals. However large land mammals contributed the largest portion of the harvest in Lake Louise, Nelchina, and Paxson, while salmon contributed the second greatest portion. Another category of significance for most of the 2013 study communities was nonsalmon fish, which made notable contributions to the percentage of harvest to Lake Louise, Paxson, and Tolsona—all communities on or close to large bodies of fresh water.

In regard to ranges in per capita harvests by resource group Tolsona had the highest per capita harvest of all resource groups with the exception of birds and eggs, marine invertebrates, and small land mammals (Figure 11-2). However, Tolsona represents a per capita harvest that is significantly shared with many households outside its CDP, including the communities of Mendeltna and Nelchina. Of the major categories, Tolsona harvested 128 lb per capita of salmon, 116 lb per capita of large land mammals, and 45 lb per capita of nonsalmon fish. Following Tolsona, Tazlina had the second highest per capita harvest of salmon (102 lb) followed by Tonsina (102 lb) and Gulkana (92 lb per capita); Lake Louise had the smallest per capita harvest of salmon (9 lb). Paxson had the second highest per capita harvest of large land mammals (84 lb) followed by Nelchina (75 lb) and Tonsina (61 lb). Paxson and Tonsina had the highest per capita harvests of small land mammals (15 lb and 6 lb, respectively). Harvests of vegetation ranged from 19 lb per capita in Tolsona to 4 lb per capita in Gulkana.

Table 11-4 presents the top ranked most used resources by percentage in each study community. For the purposes of this report "most used" refers to those edible resources used in each household whether harvested, received, or used from previous years. The ranking shows the frequency at which an individual resource was used for each community, therefore, a resource may appear more than once (such as blueberries, which are ranked anywhere from 1 to 4, depending on the community). Blueberries and sockeye salmon were the top ranked resource used in 5 communities each. Blueberries were used by 100% of households in Lake Louise and Mendeltna, by 88% of households in Paxson and Tolsona, and by 72% of households in Nelchina. Sockeye salmon were used by 92% of households in Tazlina, 88% of households in Paxson and Tolsona, 87% of households in Tonsina, and 81% of households in Glennallen. Moose was the top ranked resource in 3 communities: used by 100% of households in Mendeltna, 90% of households in Gulkana, and 88% of households in Tolsona. Household use was ranked highest at 100% (blueberry and moose) although lowest use still ranked in the top 10, with 23% of households using coho salmon in Glennallen and 23% of households using ptarmigan in Tazlina.

Firewood is an important resource in the harvest and use patterns of Copper River Basin residents and is used in many homes to supplement the cost of heating through the long, cold winters. Table 11-5 demonstrates the use of firewood for home heating in all communities for the 2013 study year. A large percentage of the sampled households in Glennallen (44%), Tazlina (41%), Tonsina (48%), Mendeltna (50%), and Nelchina (56%) use wood as a source for at least one-half to all (51% to 100%) of their home heating. Paxson had the highest percentage of sampled households reporting no use of firewood to heat their homes (63%) followed by Lake Louise (40%) and Tolsona (38%). The average annual cost of home heating was lowest in Mendeltna ($2,495) and highest in Paxson ($3,500).

This project also asked additional questions about resource uses that are not asked during every survey effort. Table 11-6 reports contributions in 2013 to household use of caribou and moose from the Alaska Roadkill Salvage Program and Table 11-7 shows the percentage of households using resources that were harvested in the previous year by resource category. During winter and spring 2014, while communities were being surveyed, residents reported a high number of animals were struck on the Copper River Basin road system—particularly caribou. These animals did not contribute to the 2013 harvest estimate, and the estimates provided in Table 11-6 are only for the 2013 study year. In 2013 households in only 3

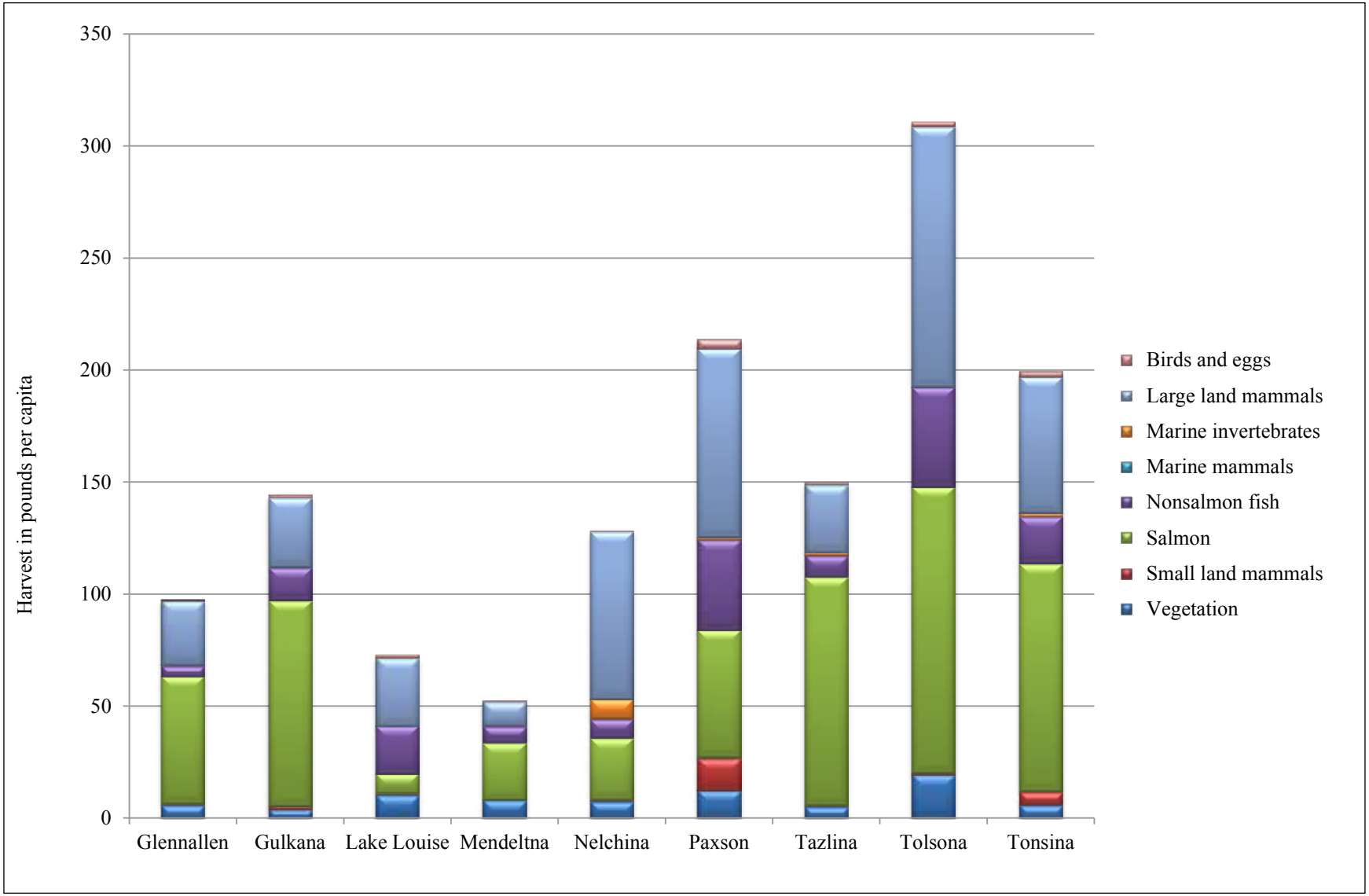


Figure 11-2.–Estimated harvests by pounds per capita and by resource category, study communities, 2013.

Table 11-4.–Ranked resource use (by percentage of households using), by study community, 2013.

Rank	Resource	Glennallen	Gulkana	Lake Louise	Mendeltna	Nelchina	Paxson	Tazlina	Tolsona	Tonsina
1	Blueberry			100%	100%	72%	88%		88%	
	Moose		90%		100%				88%	
	Raspberry								88%	
	Sockeye salmon	81%					88%	92%	88%	87%
2	Blueberry	75%								
	Moose					61%		77%		70%
	Sockeye salmon		83%	90%						
3	Blueberry		76%					75%		
	Lake trout						75%			
	Moose	71%		70%						
	Pacific halibut									65%
	Sockeye salmon				90%	56%				
4	Arctic grayling						63%			
	Blueberry									52%
	Burbot			60%						
	Caribou	58%				44%				
	Chinook salmon		66%					57%		
	Coho salmon						63%			
	Lake trout					44%				
	Lowbush cranberry			60%	70%	44%				
	Pacific halibut						63%			
	Raspberry					44%				
5	Arctic grayling		55%							
	Burbot								75%	
	Caribou				50%			56%		48%
	Crowberry				50%					
	Lowbush cranberry	57%								
	Pacific halibut				50%				75%	
6	Arctic grayling			50%						
	Caribou			50%						
	Chinook salmon	43%								43%
	Pacific halibut		52%					49%		
	Raspberry									43%
7	Caribou		48%				50%			
	Lowbush cranberry							44%	63%	
	Moose						50%			
	Pacific halibut	38%								
	Rainbow trout								63%	
8	Arctic grayling				40%					
	Burbot					33%				
	Coho salmon				40%					
	Highbush cranberry		34%							
	Lowbush cranberry									35%
	Pacific halibut			40%		33%				
	Rainbow trout				40%					
	Raspberry	26%			40%			34%		
	Shrimp									35%
9	Arctic grayling	25%						30%		
	Chinook salmon			30%			38%		50%	
	Coho salmon		28%							
	Highbush cranberry			30%						
	Lake trout			30%						
	Lowbush cranberry						38%			
	Spruce grouse			30%						
	Unknown mushrooms			30%						

-continued-

Table 11-4.–Page 2 of 2.

Rank	Resource	Glennallen	Gulkana	Lake Louise	Mendeltna	Nelchina	Paxson	Tazlina	Tolsona	Tonsina
10	Arctic grayling					28%				
	Black bear								38%	
	Coho salmon	23%								30%
	Highbush cranberry								38%	
	Lake trout								38%	
	Porcupine		24%							
	Spruce grouse									30%
	Unknown ptarmigan							23%		

Source ADF&G Division of Subsistence household surveys, 2014.

Table 11-5.–Use of firewood for home heating in sampled households, study communities, 2013.

Community	Average annual cost of home heating	Household use of wood for home heating as a percentage of sampled households											
		0%		1%–25%		26%–50%		51%–75%		76%–99%		100%	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Glennallen	$3,317	26	33.8%	9	11.7%	8	10.4%	11	14.3%	19	24.7%	4	5.2%
Gulkana	$2,917	10	34.5%	5	17.2%	8	27.6%	1	3.4%	3	10.3%	2	6.9%
Lake Louise	$2,820	4	40.0%	0	0.0%	3	30.0%	1	10.0%	2	20.0%	0	0.0%
Tazlina	$3,133	28	35.4%	5	6.3%	14	17.7%	10	12.7%	15	19.0%	7	8.9%
Tonsina	$3,393	4	17.4%	3	13.0%	5	21.7%	4	17.4%	3	13.0%	4	17.4%
Mendeltna	$2,495	3	30.0%	2	20.0%	0	0.0%	0	0.0%	3	30.0%	2	20.0%
Paxson	$3,500	5	62.5%	1	12.5%	0	0.0%	0	0.0%	2	25.0%	0	0.0%
Nelchina	$3,259	3	16.7%	2	11.1%	3	16.7%	2	11.1%	7	38.9%	1	5.6%
Tolsona	$3,438	3	37.5%	0	0.0%	3	37.5%	0	0.0%	2	25.0%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2014.

Table 11-6.–Percentage of households that received (and, by extension, used) resources from the roadkill salvage program, study communities, 2013.

	Glennallen		Gulkana		Lake Louise		Mendeltna		Nelchina		Tazlina		Tolsona		Tonsina	
Name	Used	Received from roadkill program	Used	Received from roadkill program	Used	Received from roadkill program	Used	Received from roadkill program	Used	Received from roadkill program	Used	Received from roadkill program	Used	Received from roadkill program	Used	Received from roadkill program
Large land mammals	81.8%	7.8%	89.7%	3.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	88.6%	15.2%	0.0%	0.0%	0.0%	0.0%
Caribou	58.4%	3.9%	48.3%	3.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	55.7%	5.1%	0.0%	0.0%	0.0%	0.0%
Moose	71.4%	6.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	77.2%	13.9%	0.0%	0.0%	0.0%	0.0%

Source ADF&G Division of Subsistence household surveys, 2014.

Note No households in Paxson reported receiving resources from the roadkill salvage program.

Table 11-7.–Percentage of households using harvest from a previous year, study communities, 2013.

Resource	Glennallen		Lake Louise		Tazlina		Tonsina		Mendeltna		Nelchina		Tolsona	
	Used	Used previous harvest	Used	Used previous harvest	Used	Used previous harvest	Used	Used previous harvest	Used	Used previous harvest	Used	Used previous harvest	Used	Used previous harvest
All resources	**97.4%**	**18.2%**	**100.0%**	**20.0%**	**98.7%**	**12.7%**	**95.7%**	**13.0%**	**100.0%**	**20.0%**	**94.4%**	**16.7%**	**100.0%**	**12.5%**
Fish	**87.0%**	**7.8%**	0.0%	0.0%	**93.7%**	**5.1%**	0.0%	0.0%	**100.0%**	**10.0%**	**83.3%**	**5.6%**	**100.0%**	**12.5%**
Salmon	**84.4%**	**3.9%**	0.0%	0.0%	**92.4%**	**1.3%**	0.0%	0.0%	0.0%	0.0%	**66.7%**	**5.6%**	**87.5%**	**12.5%**
Coho salmon	23.4%	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Chinook salmon	42.9%	3.9%	0.0%	0.0%	57.0%	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	50.0%	12.5%
Sockeye salmon	80.5%	2.6%	0.0%	0.0%	92.4%	1.3%	0.0%	0.0%	0.0%	0.0%	55.6%	5.6%	0.0%	0.0%
Nonsalmon fish	**57.1%**	**5.2%**	0.0%	0.0%	**68.4%**	**3.8%**	0.0%	0.0%	**90.0%**	**10.0%**	0.0%	0.0%	**100.0%**	**12.5%**
Cod	0.0%	0.0%	0.0%	0.0%	2.5%	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Pacific (gray) cod	0.0%	0.0%	0.0%	0.0%	2.5%	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Greenling	0.0%	0.0%	0.0%	0.0%	8.9%	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	25.0%	12.5%
Lingcod	0.0%	0.0%	0.0%	0.0%	8.9%	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	25.0%	12.5%
Pacific halibut	37.7%	3.9%	0.0%	0.0%	49.4%	2.5%	0.0%	0.0%	50.0%	10.0%	0.0%	0.0%	0.0%	0.0%
Rockfish	0.0%	0.0%	0.0%	0.0%	13.9%	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown rockfish	0.0%	0.0%	0.0%	0.0%	13.9%	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Sheefish	1.3%	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Trout	16.9%	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rainbow trout	15.8%	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Whitefishes	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	25.0%	12.5%
Unknown whitefishes	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	12.5%	12.5%
Land mammals	**81.8%**	**13.0%**	**80.0%**	**20.0%**	**89.9%**	**8.9%**	**82.6%**	**13.0%**	**100.0%**	**10.0%**	**72.2%**	**11.1%**	**87.5%**	**12.5%**
Large land mammals	**81.8%**	**13.0%**	**70.0%**	**20.0%**	**88.6%**	**8.9%**	**82.6%**	**13.0%**	**100.0%**	**10.0%**	**72.2%**	**11.1%**	**87.5%**	**12.5%**
Bison	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	25.0%	12.5%
Black bear	7.8%	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Caribou	58.4%	10.4%	50.0%	20.0%	55.7%	6.3%	0.0%	0.0%	0.0%	0.0%	44.4%	5.6%	0.0%	0.0%
Deer	3.9%	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Moose	71.4%	6.5%	0.0%	0.0%	77.2%	2.5%	69.6%	13.0%	100.0%	10.0%	61.1%	5.6%	0.0%	0.0%
Dall sheep	0.0%	0.0%	0.0%	0.0%	5.1%	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Marine invertebrates	**15.6%**	**1.3%**	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Clams	5.2%	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Razor clams	5.2%	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Vegetation	0.0%	0.0%	0.0%	0.0%	**93.7%**	**1.3%**	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Plants, greens, and mushrooms	0.0%	0.0%	0.0%	0.0%	24.1%	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown mushrooms	0.0%	0.0%	0.0%	0.0%	10.1%	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Source ADF&G Division of Subsistence household surveys, 2014.

communities reported using either moose or caribou obtained through the roadkill salvage program; 8% in Glennallen, 3% in Gulkana, and 15% in Tazlina (Table 11-6). While caribou from the roadkill program were used in all 3 communities, moose from the roadkill program were used by more households than caribou in Glennallen and Tazlina (7% and 14%, respectively). Households also used resources left over from harvests that occurred prior to the study year. Of all 9 study communities in 2013, 7 reported using resources from previous years, with use ranging from 20% of households in Lake Louise and Mendeltna to 13% in Tazlina, Tonsina, and Tolsona (Table 11-7).[1] Tazlina reported the widest range of resources used from previous years: 13 resources that were previously harvested were used, including different species of salmon, nonsalmon fish, large land mammals, and vegetation.

Transportation and Portable Motors

The survey included questions about the use of alternative transportation for accessing resources (in addition to or aside from using cars, trucks, or traveling on foot). Figure 11-3 demonstrates the percentage of sampled households that used a boat, snowmachine, ATV, dogsled, or aircraft during their harvest efforts and Figure 11-4 indicates whether households owned, borrowed, leased, or chartered those modes of transportation. The ATV was one of the most commonly used alternative vehicle for 2013 and the highest used alternative transportation in 4 of the 9 study communities: 100% of households reported using an ATV in Mendeltna, approximately 66% of households in Nelchina, 51% in Tazlina, and about 21% of households in Gulkana. Boats were the most used alternative form of transportation in Glennallen (35% of households), and were tied for most used with snowmachines in Lake Louise (70% of households) and Tolsona (50% of households). Aircraft were used by a small portion of households in every study except for Lake Louise (although Tolsona households exhibited significant use of aircraft, at 38%) and dogsleds were used only in Paxson (13% of households) and Tonsina (4% of households).

Figure 11-5 and Table 11-8 present the percentage of sampled households reporting the use of portable motors when harvesting or attempting to harvest wild resources. Chain saws were the most used equipment item in all study communities except for Lake Louise and Paxson; the highest level of use was reported by Mendeltna households (80%) but use was also high in Tazlina, Tolsona, and Tonsina (about 70% of households used chain saws at each). In Lake Louise, generator use was highest (70% of households) and in Paxson ice augers were the portable motor used more than any other (38%).

1. Information regarding the use of resources from the previous year's harvest was collected only if volunteered by respondents. Consequently, data presented in Table 11-7 should be considered minimum values. No data are available for study communities that do not appear in this table (i.e., respondents did not volunteer the information during the course of survey administration).

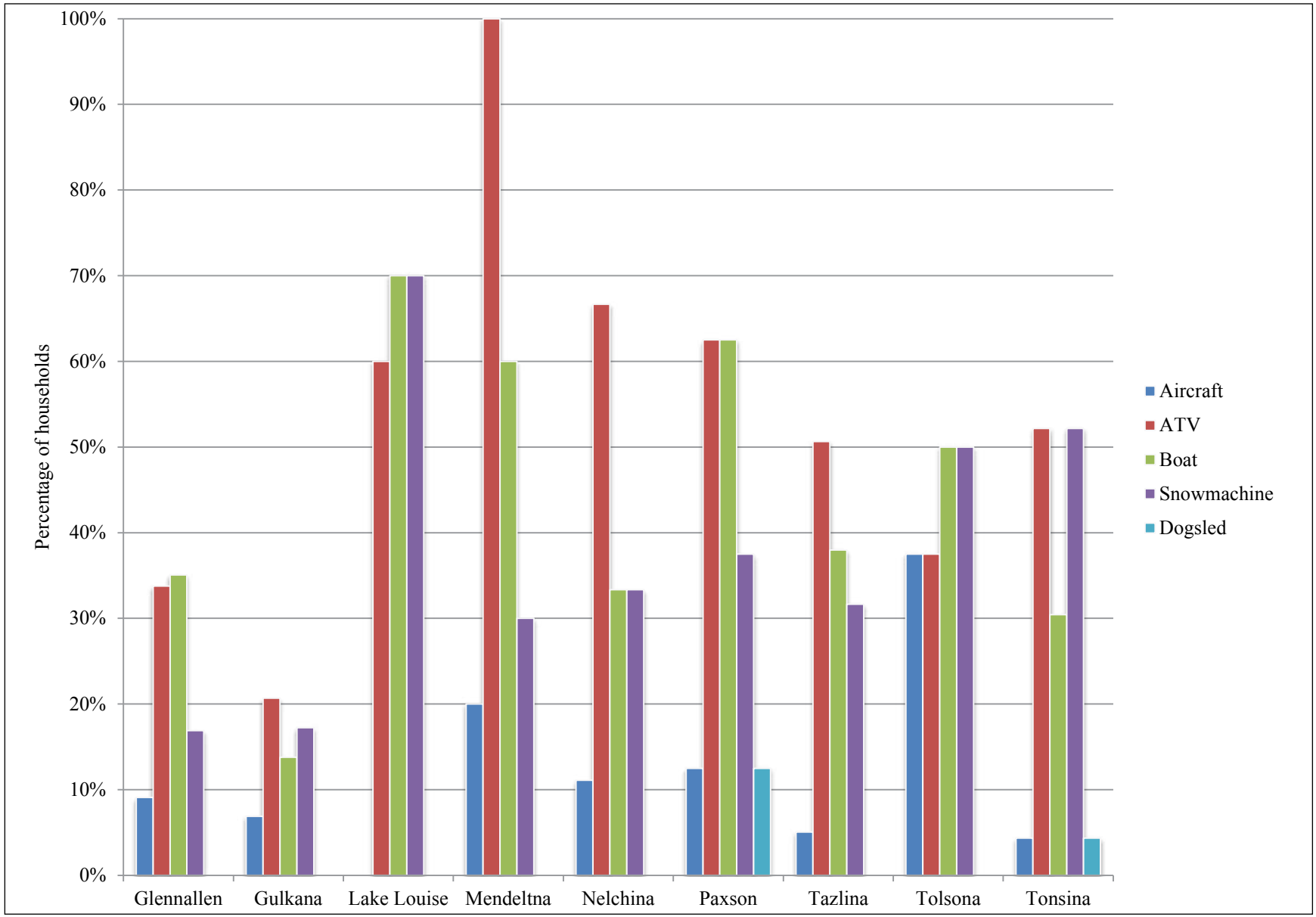


Figure 11-3.–Alternative modes of transportation used by sampled households to access resources, study communities, 2013.

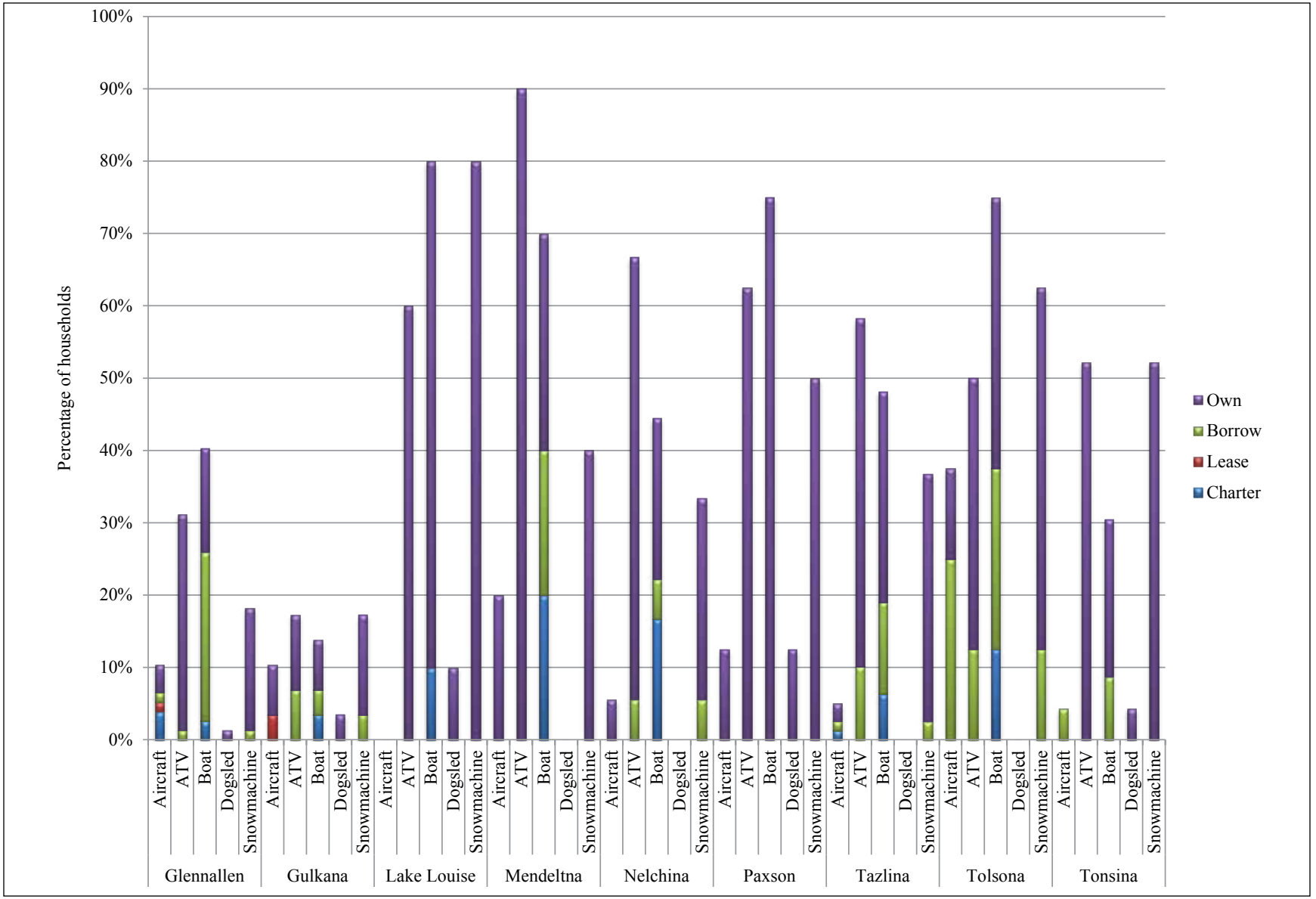


Figure 11-4.–Sampled households' use of owned, borrowed, leased, or chartered modes of alternative transportation to access resources, study communities, 2013.

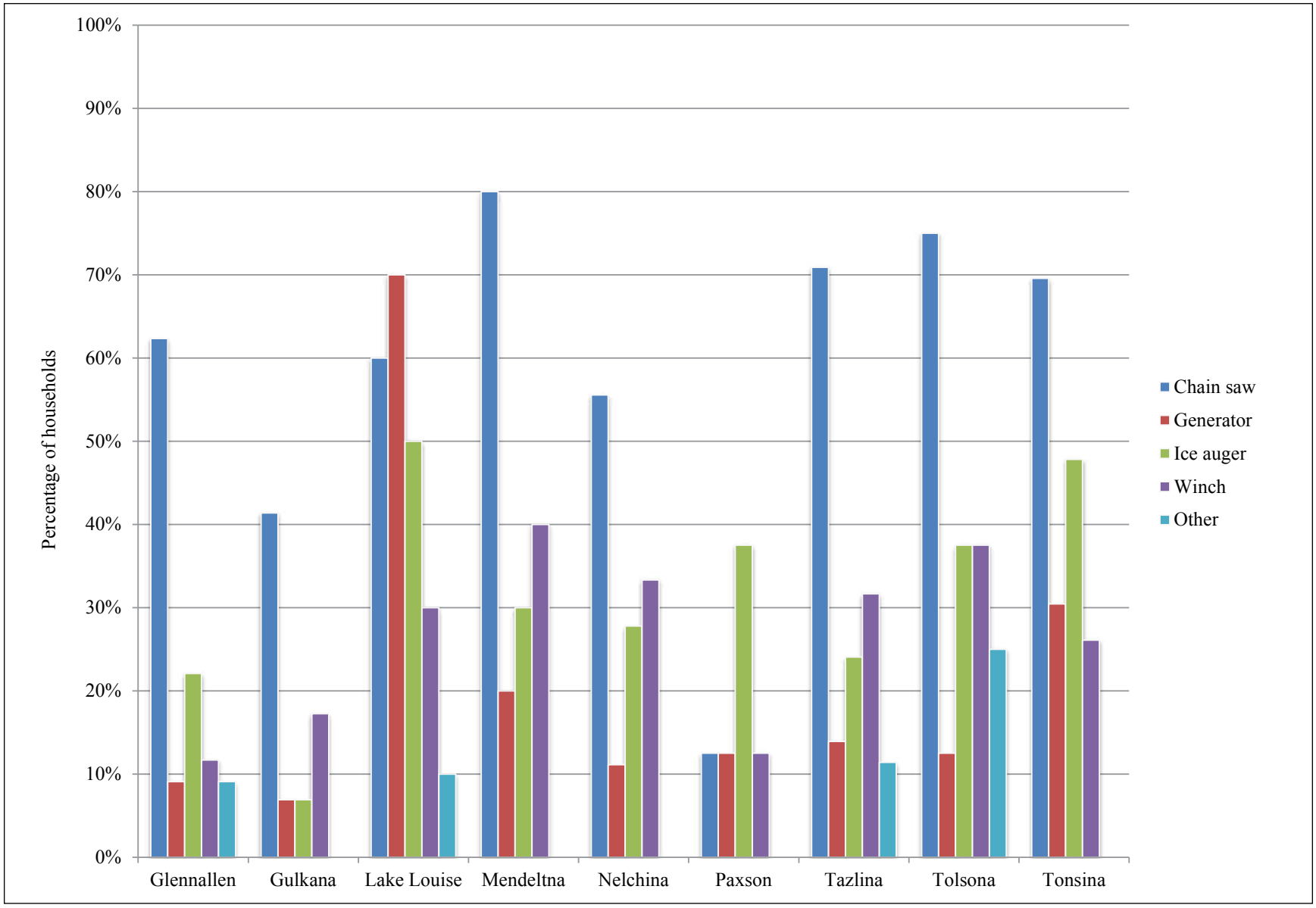


Figure 11-5.–Portable motorized equipment used by sampled households while searching for and harvesting resources, study communities, 2013.

Table 11-8.–Use of portable motors or motorized equipment when harvesting or attempting to harvest resources, study communities, 2013.

		Chain saw		Generator		Ice auger		Winch		Other	
Community	Sample size	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Glennallen	77	48	62.3%	7	9.1%	17	22.1%	9	11.7%	7	9.1%
Gulkana	29	12	41.4%	2	6.9%	2	6.9%	5	17.2%	0	0.0%
Lake Louise	10	6	60.0%	7	70.0%	5	50.0%	3	30.0%	1	10.0%
Mendeltna	10	8	80.0%	2	20.0%	3	30.0%	4	40.0%	0	0.0%
Nelchina	18	10	55.6%	2	11.1%	5	27.8%	6	33.3%	0	0.0%
Paxson	8	1	12.5%	1	12.5%	3	37.5%	1	12.5%	0	0.0%
Tazlina	79	56	70.9%	11	13.9%	19	24.1%	25	31.6%	9	11.4%
Tolsona	8	6	75.0%	1	12.5%	3	37.5%	3	37.5%	2	25.0%
Tonsina	23	16	69.6%	7	30.4%	11	47.8%	6	26.1%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2014.

Note Values in this table are based upon reported data, not estimated data.

Copper River Basin Harvest Update

The 2013 study year completes a multi-year harvest update effort led by the Alaska Department of Fish and Game in partnership with the Wrangell-St. Elias Park and Preserve and Alaska Energy Authority. This section of the report will briefly summarize and describe the combined harvest and use characteristics of all the updated communities within the time frame of the 4 recent study years (2009, 2010, 2012, and 2013) (Kukkonen and Zimpelman 2012; La Vine et al. 2013, 2014). The communities studied in those years were Chistochina, Chitina, Copper Center, Gakona, Glennallen, Gulkana, Kenny Lake/Willow Creek, Lake Louise, McCarthy, Mendeltna, Mentasta Lake, Mentasta Pass, Nelchina, Paxson, Slana, Tazlina, Tolsona, and Tonsina. In combination, these communities represent virtually the entire population of the Copper River Basin.

Table 11-9 reports selected study findings for all Copper River Basin communities combined. These communities combined had a population of 2,811 residents, of which 30% were Alaska Native; 31% of the household heads were born in Alaska and their average length of residency was 22 years. In regard to employment, the average household income was $52,863 annually, with 57% of the employed adults working year-round, and employed working-age adults (16 and older) working on average just over 9 months per year. The per capita income was $20,691. In contrast, the overall per capita income in Alaska in 2013 was $32,474 and the average household income was $88,758, which is approximately $35,000 more than the average for the Copper River Basin.[2]

The updated per capita harvest of wild resources for Copper River Basin residents for the combined 4 study years was 160 lb (408 lb per household) (Table 11-9). This is slightly less than the estimated harvest for the rural Southcentral region of 184 lb per person for 2012 but typical of rural road-connected communities in Alaska (Fall 2014).[3] The average number of wild resources used per household was 11 and the average number of resources harvested per household was 8. On average, households in the Copper River Basin received 5 types of resources and on average gave 4 resources away.

Basin-wide, salmon were the most harvested resource (58%), followed by large land mammals (25%), and nonsalmon fish (9%) (Figure 11-6). In order of decreasing importance was the harvest of vegetation (5%), small land mammals (2%), marine invertebrates (1%), and birds and eggs (less than 1%). The Copper River is an important source of salmon for many community members and this is shown by comparing the proportion of the harvest that was salmon harvested by study community residents compared to that

2. U.S. Census Bureau American Community Survey, "2013 American Community Survey 1-Year Estimates: Selected Economic Characteristics for Alaska—Income and Benefits,"
http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk (accessed December 2014).

3. Please see page 3, Figure 5, "Wild food harvests in Alaska by area, 2012."

Table 11-9.–Selected study findings, Copper River Basin study communities, 2009–2013.

Category	
Demography	
Population	2,810.9
Percentage of population that is Alaska Native	30%
Percentage of household heads born in Alaska	31%
Average length of residency of household heads (year)	21.6
Cash economy	
Average number of months employed	9.4
Percentage of employed adults working year-round	57%
Percentage of income from sources other than employment[b]	20%
Average household income[a, b]	$52,863
Per capita income[a, b]	$20,691
Resource harvest and use	
Per capita harvest, pounds usable weight	159.8
Average household harvest, pounds usable weight	408.4
Number of resources used by 50% or more households	4
Average number of resources used per household	10.8
Average number of resources attempted to be harvested per household	9.0
Average number of resources harvested per household	7.5
Average number of resources received per household	4.7
Average number of resources given away per household	3.5
Percentage of total harvest taken by top 25% ranked households	75%
Percentage of households that harvested 70% of harvest	22%
Per capita harvest by lowest ranked 50% of households	7.2
Percentage of total harvest taken by lowest ranked 50% of harvesting households	5%
Average number of resources used by lowest ranked 50% of households	7.3
Average number of resources used by top 25% ranked households	16.9

Source ADF&G Division of Subsistence household surveys, 2010–2014.

Note Communities included in this estimate: Chistochina (2009); Copper Center, Mentasta Lake, Mentasta Pass, Slana (2010); Chitina, Gakona, Kenny Lake/Willow Creek, McCarthy (2012); Glennallen, Gulkana, Lake Louise, Tazlina, Tonsina, Mendeltna, Paxson, Nelchina, Tolsona (2013).

a. Includes income from sources other than employment.

b. Estimate does not include Chistochina (2009) because of insufficient data.

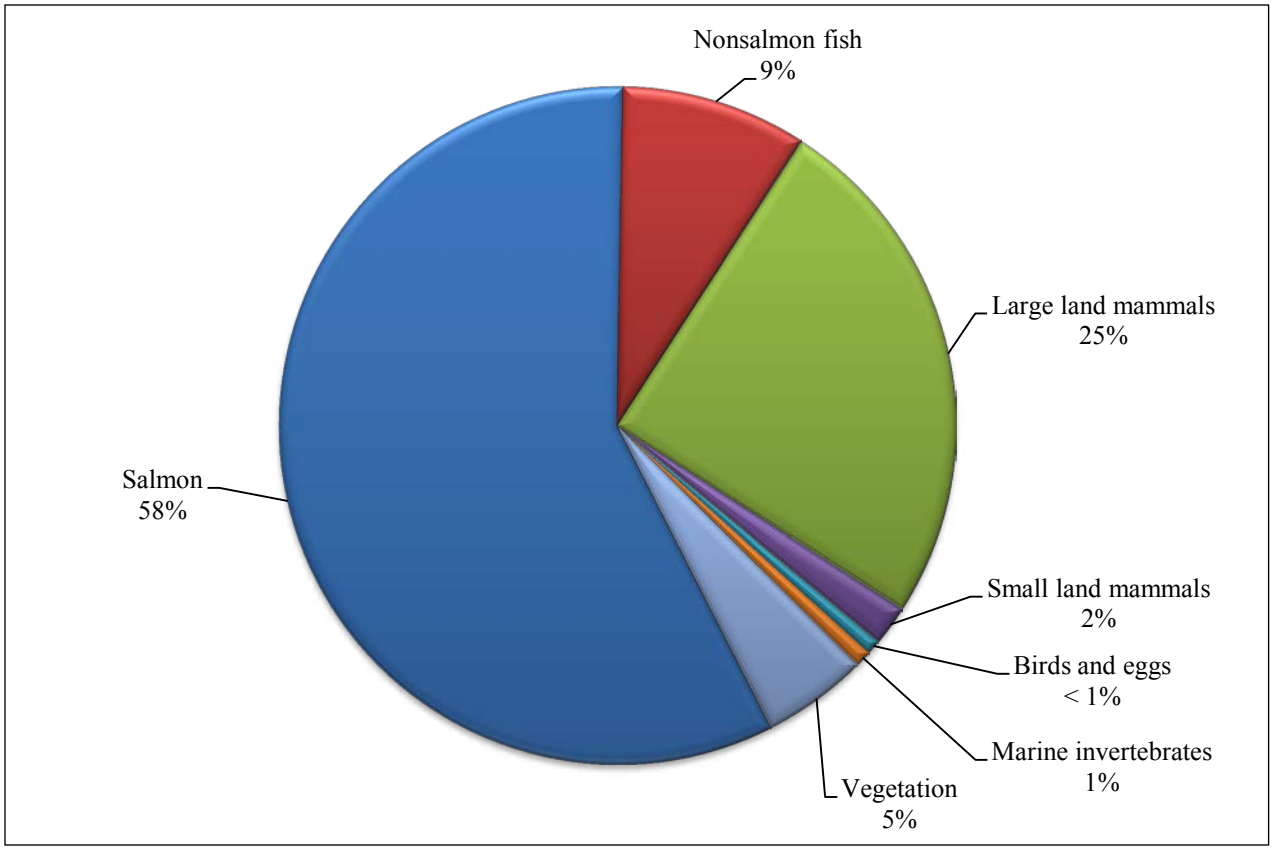


Figure 11-6.–Composition of combined harvests, by resource category, in pounds usable weight, Copper River Basin study communities, 2009, 2010, 2012, and 2013.

proportion of salmon harvested by rural areas statewide (Fall 2014).[4] For 2012, salmon composed 32% of the harvest by rural Alaska residents overall, compared to 58% for Copper River Basin households (Fall 2014; Figure 11-6). However, large land mammal and vegetation harvests were very similar (25% of harvest for Copper River Basin households versus 23% of statewide rural resident harvest for large mammals; 5% of harvest for Copper River Basin households versus 4% of statewide rural resident harvest for vegetation). From a statewide perspective, nonsalmon fish (21% of harvest) plays a much greater role in the harvest of wild resources for other Alaska rural residents, compared to Copper River Basin residents (9%).

Historical comparisons with the 1982 and 1987 study years can also shed light on wild resource harvest trends in the Copper River Basin (McMillan and Cuccarese 1988; Stratton and Georgette 1984). Overall the per capita harvest of wild resources has increased from 1982 (110 lb) to 1987 (145 lb) to the 2000s (160 lb) (Table 11-10). The harvest of salmon during that period of time has doubled from a per capita harvest of 49 lb in 1982, 62 lb in 1987, to 92 lb during the current study period. Nonsalmon fish harvests have stayed fairly similar, while large land mammal harvests have varied over that period of time from a harvest of 35 lb per capita in 1982 to 58 lb in 1987 to 40 lb in the current study period (Table 11-10).

4. Please see page 2, Figure 3, "Composition of wild food harvest by rural Alaska residents, 2012."

Table 11-10.–Historical harvest comparison, Copper River Basin study communities, 1982, 1987, and 2000s.

Combined Copper River Basin communities							
Harvests as a percentage of usable weight				Usable harvest weight per capita (lb)			
	1982	1987	2000s		1982	1987	2000s
All resources	100%	100%	100%	All resources	109.8	144.8	159.8
Salmon	44%	43%	58%	Salmon	48.7	62.4	92.3
Nonsalmon fish	13%	11%	9%	Nonsalmon fish	14.4	15.4	14.2
Large land mammals	32%	39%	25%	Large land mammals	35.0	56.7	39.9
Small land mammals	4%	2%	2%	Small land mammals	4.3	3.2	3.0
Birds and eggs	1%	1%	1%	Birds and eggs	1.2	2.0	1.1
Marine invertebrates	0%	0%	1%	Marine invertebrates	0.0	0.4	1.3
Vegetation	6%	3%	5%	Vegetation	6.2	4.7	8.1

Sources For 1982 and 1987, ADF&G Division of Subsistence Community Subsistence Information System (CSIS), accessed 2014; for results for "2000s," study communities surveyed for study years 2009–2013 were combined to represent a single study year.

Notes

1. For all 3 study periods, the combination of study communities encompasses the entire population of the Copper River Basin.
2. Communities included in this estimate for "2000s" included Chistochina (2009); Copper Center, Mentasta Lake, Mentasta Pass, Slana (2010); Chitina, Gakona, Kenny Lake/Willow Creek, McCarthy (2012); and Glennallen, Gulkana, Lake Louise, Tazlina, Tonsina, Mendeltna, Paxson, Nelchina, and Tolsona (2013).
3. Communities in the 1987 study included Chistochina, Chitina, Copper Center, East Glenn Highway, Gakona, Glennallen, Gulkana, Kenny Lake, Lake Louise, McCarthy Road, Mentasta, Mentasta Pass, Nabesna Road, Paxson, Slana, Slana Homestead North, Slana Homestead South, Sourdough, South Wrangell Mountains, Tazlina, and Tonsina.
4. Communities in the 1982 study included Chistochina, Chitina, Copper Center, East Glenn Highway, Gakona, Glennallen, Gulkana, Kenny Lake, Lake Louise, Lower Tonsina, McCarthy Road, Mentasta, Nabesna Road, Paxson-Sourdough, Slana, South Wrangell Mountains, and Tonsina.

Conclusions

This study documented the importance of the harvest of wild resources to the residents of the Copper River Basin communities of Glennallen, Gulkana, Lake Louise, Paxson, Tazlina, Tonsina, and the East Glenn Highway communities of Mendeltna, Nelchina, and Tolsona. Harvest levels, as estimated in pounds usable weight per person, differed among communities, with the highest harvests recorded for Tolsona with 311 lb per capita followed by the communities of Tonsina and Paxson with a harvest of 199 lb per person each. There was high participation by community members in the harvest and use of wild resources. In all communities, wild resource uses were generally diverse in 2013 as evidenced by the high number of resources used: on average between 8 and 14 resources per household. For all communities combined, salmon, moose, caribou, Pacific halibut, upland game birds, and berries figured prominently in the harvest of wild resources as measured in usable pounds. In addition to their own harvests, most households 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 and in the past 5 years. Residents continue to harvest wild resources locally while also taking advantage of opportunities to travel to other areas in Alaska to harvest wild foods. Many residents expressed the desire to continue to harvest resources locally, regardless of changes in abundance of resources and the increase in the population of Southcentral Alaska over time.

This study represents the completion of a multi-year and multi-partner effort to update the harvest assessment for the entire area. Information about previous Copper River Basin study years that include the communities of Chistochina, Chitina, Copper Center, Gakona, Kenny Lake/Willow Creek, McCarthy, Mentasta Lake, Mentasta Pass, and Slana are available in *"Subsistence Harvests and Uses of Wild Resources in Chistochina, Alaska, 2009"* (Kukkonen and Zimpelman 2012), *"Subsistence Harvests and Uses of Wild Resources in Copper Center, Slana/Nabesna Road, Mentasta Lake, and Mentasta Pass, Alaska, 2010"* (La Vine et al. 2013) and "*Subsistence Harvests and Uses of Wild Resources in Kenny Lake/Willow Creek, Gakona, McCarthy, and Chitina, Alaska, 2012"* (La Vine et al. 2014).

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APPENDIX A–SURVEY INSTRUMENT

SURVEY FORM FOR GULKANA

COMPREHENSIVE HARVEST SURVEY

GULKANA, ALASKA

January to December, 2013

This survey is used to estimate wild harvests and to describe community economies. We will publish a summary report, and send it to all participating organizations and community representatives. Copies will be available to you. We share the community information with the Alaska Department of Fish and Game, the U.S. Fish and Wildlife Service and the National Park Service. We work with the Federal Regional Advisory Councils and with local Fish and Game Advisory Committees to better manage resources, and to implement federal and state subsistence priorities.

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:	GULKANA	149
RESPONDENT ID:		
INTERVIEWER:		
INTERVIEW DATE:		
START TIME:		
STOP TIME:		
DATA CODED BY:		
DATA ENTERED BY:		
SUPERVISOR:		

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333 RASPBERRY ROAD
ANCHORAGE, AK 99518

907-267-2353

HDR
2525 C STREET, SUITE 305
ANCHORAGE, AK 99503

907-644-2117

HOUSEHOLD MEMBERS

HOUSEHOLD ID

Between JANUARY and DECEMBER, 2013…
…who lived in your household?

ID#	IS THIS PERSON ANSWERING QUESTIONS *ON THIS SURVEY?* (circle)	MALE OR FEMALE? (circle)	ALASKA NATIVE? (circle)	IN WHAT YEAR WAS THIS PERSON BORN? (year)	WHERE WERE PARENTS LIVING WHEN THIS PERSON WAS BORN? (ak city or state)	HOW IS THIS PERSON RELATED TO HOUSEHOLD HEAD 1? (relation)	HOW MANY YEARS HAS THIS PERSON LIVED IN GULKANA? (number)
HEAD 1	Y N	M F	Y N				YRS
01							
Enter spouse or partner next. If household has a SINGLE HEAD, leave HEAD 2 blank.							
HEAD 2	Y N	M F	Y N				YRS
02							
Enter children (oldest to youngest), grandchildren, grandparents, brothers, sisters, or anyone else living full-time in this household.							
03	Y N	M F	Y N				YRS
04	Y N	M F	Y N				YRS
05	Y N	M F	Y N				YRS
06	Y N	M F	Y N				YRS
07	Y N	M F	Y N				YRS
08	Y N	M F	Y N				YRS
09	Y N	M F	Y N				YRS
10	Y N	M F	Y N				YRS
11	Y N	M F	Y N				YRS
12	Y N	M F	Y N				YRS
13	Y N	M F	Y N				YRS
14	Y N	M F	Y N				YRS
15	Y N	M F	Y N				YRS

PERMANENT HH MEMBERS: 01 **GULKANA: 149**

HOUSEHOLD MEMBER PARTICIPATION

HOUSEHOLD ID

Between JANUARY and DECEMBER, 2013…
…did this person...

PERSON	Fish		Large Land Mammals		Small Land Mammals Furbearers		Birds & Eggs		Plants/Berries/Wood	
ID# FROM	Fish	Process	Hunt	Process	Hunt/Trap	Process	Hunt/Gather	Process	Gather	Process
Page 2	*(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
Head 2	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
03	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
04	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
05	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
06	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
07	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
08	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
09	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
10	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
11	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
12	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
13	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
14	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
15	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N

PERMANENT HH MEMBERS: 01 **GULKANA: 149**

HOUSEHOLD MEMBER PARTICIPATION

HOUSEHOLD ID

Between JANUARY and DECEMBER, 2013…
…did this person...

PERSON ID# FROM Page 2	Build Fish Wheels *(circle)*	Sew Skins/Cloth *(circle)*	Cook Wild Foods *(circle)*
Head 1	Y N	Y N	Y N
Head 2	Y N	Y N	Y N
03	Y N	Y N	Y N
04	Y N	Y N	Y N
05	Y N	Y N	Y N
06	Y N	Y N	Y N
07	Y N	Y N	Y N
08	Y N	Y N	Y N
09	Y N	Y N	Y N
10	Y N	Y N	Y N
11	Y N	Y N	Y N
12	Y N	Y N	Y N
13	Y N	Y N	Y N
14	Y N	Y N	Y N
15	Y N	Y N	Y N

PERMANENT HH MEMBERS: 01 **TONSINA:348**

HARVESTS: COMMERCIAL SALMON FISHING

HOUSEHOLD ID

Do members of your household USUALLY participate in COMMERCIAL SALMON FISHING ?..... Y N

Between JANUARY and DECEMBER, 2013…

…Did members of your household participate in commercial salmon fishing?..... Y N

IF NO, go to the next harvest page.

If YES, continue on this page…

Please estimate the number of salmon ALL MEMBERS OF YOUR HOUSEHOLD REMOVED FROM COMMERCIAL HARVEST FOR PERSONAL USE OR SHARING in 2013. INCLUDE the fish you gave away, ate fresh, fed to dogs, lost to spoilage, caught as incidental catch while fishing for another species, or got by helping others. If harvested with others, report ONLY YOUR SHARE of the catch.

	IN 2013 DID MEMBERS OF YOUR HH…		IN 2013, HOW MANY _____ WERE REMOVED FOR YOUR OWN USE?	IN 2013, HOW MANY _____ DID YOU REMOVE FROM THE CATCH & GIVE AWAY TO CREW OR OTHERS?		ID NUMBER FROM PAGE 2	
	COMMERCIAL FISH FOR _____?	CATCH AS INCIDENTAL CATCH _____?		CREW	OTHERS	PERMIT HOLDER	CREW
	(circle)	*(circle)*	*(number)*	*(number)*		*(number)*	*(number)*
CHINOOK (KING) SALMON	Y N	Y N	IND	IND	IND		
113000000							
SOCKEYE (RED) SALMON	Y N	Y N	IND	IND	IND		
115000000							
COHO (SILVER) SALMON	Y N	Y N	IND	IND	IND		
112000000							
CHUM (DOG) SALMON	Y N	Y N	IND	IND	IND		
111000000							
PINK (HUMPIES) SALMON	Y N	Y N	IND	IND	IND		
114000000							
UNKNOWN SALMON	Y N	Y N	IND	IND	IND		
119000000							

HARVESTS: COMMERCIAL NON-SALMON FISHING

HOUSEHOLD ID

Do members of your household USUALLY participate in COMMERCIAL NON-SALMON FISHING ?..... Y N

Between JANUARY and DECEMBER, 2013…

…Did members of your household participate in commercial non-salmon fishing?..... Y N

IF NO, go to the next harvest page.

If YES, continue on this page…

Please estimate the number of commercially harvested non-salmon fish ALL MEMBERS OF YOUR HOUSEHOLD REMOVED FROM COMMERCIAL HARVEST FOR PERSONAL USE OR SHARING in 2013. INCLUDE the fish you gave away, ate fresh, fed to dogs, lost to spoilage, caught as incidental catch while fishing for another species, or got by helping others. If harvested with others, report ONLY YOUR SHARE of the catch.

	IN 2013 DID MEMBERS OF YOUR HH…		IN 2013, HOW MANY _____ WERE REMOVED FOR YOUR OWN USE?	IN 2013, HOW MANY _____ DID YOU REMOVE FROM THE CATCH & GIVE AWAY TO CREW OR OTHERS?		ID NUMBER FROM PAGE 2	
	COMMERCIAL FISH FOR _____?	CATCH AS INCIDENTAL CATCH _____?		CREW	OTHERS	PERMIT HOLDER	CREW
	(circle)	*(circle)*	*(number)*	*(number)*		*(number)*	*(number)*
HALIBUT	Y N	Y N	LBS	LBS	LBS		
121800000							
HERRING	Y N	Y N	GAL	GAL	GAL		
120200000							
HERRING SPAWN ON KELP	Y N	Y N	GAL	GAL	GAL		
120306000							
HERRING SAC ROE	Y N	Y N	GAL	GAL	GAL		
120304000							
PACIFIC COD (GRAY)	Y N	Y N	IND	IND	IND		
121004000							
PACIFIC TOM COD	Y N	Y N	IND	IND	IND		
121008000							
SCULPIN	Y N	Y N	IND	IND	IND		
123000000							
STARRY FLOUNDER	Y N	Y N	IND	IND	IND		
121406000							
SMELT	Y N	Y N	GAL	GAL	GAL		
120400000							
ROCKFISH	Y N	Y N	IND	IND	IND		
122600000							
LAMPREY	Y N	Y N	IND	IND	IND		
122000000							
LINGCOD	Y N	Y N	IND	IND	IND		
121606000							

HARVESTS: COMMERCIAL MARINE INVERTEBRATE HARVEST

HOUSEHOLD ID

Do members of your household USUALLY participate in COMMERCIAL MARINE INVERTEBRATE HARVEST ?..... Y N

Between JANUARY and DECEMBER, 2013…
…Did members of your household participate in commercial marine invertebrate harvest?..... Y N

IF NO, go to the next harvest page.

If YES, continue on this page…

Please estimate the commercially harvested marine invertebrates ALL MEMBERS OF YOUR HOUSEHOLD REMOVED FROM COMMERCIAL HARVEST in 2013. INCLUDE the marine invertebrates you gave away, ate fresh, fed to dogs, lost to spoilage, caught as incidental catch while fishing for another species, or got by helping others. If harvested with others, report ONLY YOUR SHARE of the catch.

	IN 2013 DID MEMBERS OF YOUR HH…		IN 2013, HOW MANY _____ WERE REMOVED FOR YOUR OWN USE?	IN 2013, HOW MANY _____ DID YOU REMOVE FROM THE CATCH & GIVE AWAY TO CREW OR OTHERS?		ID NUMBER FROM PAGE 2	
	COMMERCIAL FISH FOR _____?	CATCH AS INCIDENTAL CATCH _____?		CREW	OTHERS	PERMIT HOLDER	CREW
	(circle)	*(circle)*	*(number)*	*(number)*		*(number)*	*(number)*
TANNER CRAB	Y N	Y N	LBS	LBS	LBS		
501012000							
DUNGENESS CRAB	Y N	Y N	LBS	LBS	LBS		
501004000							
SHRIMP	Y N	Y N	GAL	GAL	GAL		
503400000							
SQUID	Y N	Y N	GAL	GAL	GAL		
503800000							
OCTOPUS	Y N	Y N	IND	IND	IND		
502200000							
	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					

HARVESTS: SALMON (NON-COMMERCIAL)

HOUSEHOLD ID

Do members of your household USUALLY harvest SALMON ?..... Y N

Between JANUARY and DECEMBER, 2013…
…Did members of your household USE or TRY TO HARVEST salmon?..... Y N

IF NO to both questions, go to the next harvest page.

If YES, continue on this page…

Please estimate how many salmon ALL MEMBERS OF YOUR HOUSEHOLD HARVESTED in 2013, 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 2013 DID MEMBERS OF YOUR HH…					IN 2013, HOW MANY _____ DID YOUR HOUSEHOLD…					
	USE?	TRY TO HARVEST?	HARVEST?	RECEIVE?	GIVE AWAY?	…HARVEST WITH A FISH WHEEL?	…HARVEST WITH A GILL NET OR SEINE?	…HARVEST WITH A DIPNET?	…HARVEST WITH ROD AND REEL?	…HARVEST WITH OTHER GEAR?	UNITS
	(circle)					*(number taken by each gear type)*					*(ind, lbs)*
CHINOOK (KING) SALMON	Y N	Y N	Y N	Y N	Y N						IND
113000000											
SOCKEYE (RED) SALMON	Y N	Y N	Y N	Y N	Y N						IND
115000000											
COHO (SILVER) SALMON	Y N	Y N	Y N	Y N	Y N						IND
112000000											
CHUM (DOG) SALMON	Y N	Y N	Y N	Y N	Y N						IND
111000000											
PINK (HUMPIES) SALMON	Y N	Y N	Y N	Y N	Y N						IND
114000000											
LANDLOCKED SALMON *Kokanee*	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 harvests: salmon HARVESTED by members of this household in 2013.

ASSESSMENTS: SALMON

Between JANUARY and DECEMBER, 2013…

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

If LESS or MORE… *X = do not use*
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?..... …minor? (1) …major? (2) severe? (3)

SALMON :04 **GULKANA: 149**

HARVESTS: OTHER FISH (NON-COMMERCIAL)

HOUSEHOLD ID

Do members of your household USUALLY harvest OTHER FISH ?.....Y N

Between JANUARY and DECEMBER, 2013…

…Did members of your household USE or TRY TO HARVEST other fish?.....Y N

IF NO to both questions, go to the next harvest page.

If YES, continue on this page…

Please estimate how many other fish ALL MEMBERS OF YOUR HOUSEHOLD HARVESTED in 2013, 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 2013 DID MEMBERS OF YOUR HH…					IN 2013, HOW MANY _____ DID YOUR HOUSEHOLD…				
	USE?	TRY TO HARVEST?	HARVEST?	RECEIVE?	GIVE AWAY?	…HARVEST WITH GILL NET OR SEINE?	…HARVEST WITH ROD AND REEL?	…HARVEST ICE FISHING?	…HARVEST WITH OTHER GEAR?	UNITS
	(circle)					*(number taken by each gear type)*				*(ind, lbs)*
RAINBOW TROUT	Y N	Y N	Y N	Y N	Y N					IND
126204000										
LAKE TROUT	Y N	Y N	Y N	Y N	Y N					IND
125010000										
CUTTHROAT TROUT	Y N	Y N	Y N	Y N	Y N					IND
126202000										
TROUT *Unknown*	Y N	Y N	Y N	Y N	Y N					IND
126200000										
DOLLY VARDEN	Y N	Y N	Y N	Y N	Y N					IND
125006000										
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
125400000										
BURBOT *Ling Cod*	Y N	Y N	Y N	Y N	Y N					IND
124800000										
ROUND WHITEFISH	Y N	Y N	Y N	Y N	Y N					IND
126412000										
HUMPBACK WHITEFISH	Y N	Y N	Y N	Y N	Y N					IND
126408000										
BROAD WHITEFISH	Y N	Y N	Y N	Y N	Y N					IND
126404000										
LEAST CISCO	Y N	Y N	Y N	Y N	Y N					IND
126406060										
UNKNOWN WHITEFISH	Y N	Y N	Y N	Y N	Y N					IND
126400000										
SUCKER	Y N	Y N	Y N	Y N	Y N					IND
126000000										

Continue on next page

These columns should include all the harvests: other fish HARVESTED by members of this household in 2013.

…continued

Please estimate how many other fish ALL MEMBERS OF YOUR HOUSEHOLD HARVESTED in 2013 , 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 2013 DID MEMBERS OF YOUR HH…					IN 2013, HOW MANY _____ DID YOUR HOUSEHOLD…				
	USE?	TRY TO HARVEST?	HARVEST?	RECEIVE?	GIVE AWAY?	…CATCH WITH GILL NET OR SEINE?	…CATCH WITH ROD AND REEL?	…CATCH ICE FISHING?	…CATCH WITH OTHER GEAR?	UNITS
	(circle)					*(number taken by each gear type)*				*(ind, lbs)*
HALIBUT	Y N	Y N	Y N	Y N	Y N					LBS
121800000										
HERRING	Y N	Y N	Y N	Y N	Y N					GAL
120200000										
PACIFIC COD (GRAY)	Y N	Y N	Y N	Y N	Y N					IND
121004000										
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										
SMELT	Y N	Y N	Y N	Y N	Y N					GAL
120400000										
ROCKFISH	Y N	Y N	Y N	Y N	Y N					IND
122600000										
LAMPREY	Y N	Y N	Y N	Y N	Y N					IND
122000000										
LINGCOD	Y N	Y N	Y N	Y N	Y N					IND
121606000										
	Y N	Y N	Y N	Y N	Y N					

These columns should include all the harvests: other fish HARVESTED by members of this household in 2013.

OTHER FISH

Between JANUARY and DECEMBER, 2013…

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

X = do not use

If LESS or MORE…

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?..... ...minor? (1) ...major? (2) severe? (3)

HARVESTS: MARINE INVERTEBRATES/SHELLFISH

HOUSEHOLD ID

Do members of your household USUALLY harvest MARINE INVERTEBRATES/SHELLFISH ?.....Y N

Between JANUARY and DECEMBER, 2013…
…Did members of your household USE or TRY TO HARVEST marine invertebrates/shellfish ?.....Y N

IF NO to both questions, go to the next harvest page.

If YES, continue on this page…

Please estimate how many marine invertebrates/shellfish ALL MEMBERS OF YOUR HOUSEHOLD HARVESTED in 2013. INCLUDE marine invertebrates/shellfish 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.

	IN 2013 DID MEMBERS OF YOUR HH… USE?	TRY TO HARVEST?	HARVEST?	RECEIVE?	GIVE AWAY?	IN 2013, HOW MANY _____ DID YOUR HOUSEHOLD HARVEST?	UNITS
	(circle)					*(number taken)*	*(ind, lbs,gal)*
DUNGENESS CRAB	Y N	Y N	Y N	Y N	Y N		LBS
501004000							
KING CRAB	Y N	Y N	Y N	Y N	Y N		LBS
501008000							
TANNER CRAB	Y N	Y N	Y N	Y N	Y N		LBS
501012000							
RAZOR CLAMS	Y N	Y N	Y N	Y N	Y N		GAL
500612000							
FRESHWATER CLAMS	Y N	Y N	Y N	Y N	Y N		GAL
500604000							
	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		
						These columns should include all the harvests: marine invertebrates/shellfish HARVESTED by members of this household in 2013.	

MARINE INVERTEBRATES/SHELLFISH

Between JANUARY and DECEMBER, 2013…

To conclude our marine invertebrates/shellfish section, I am going to ask a few general questions about marine invertebrates/shellfish.

Last year…
…did your household use LESS, SAME, or MORE marine invertebrates/shellfish 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 marine invertebrates/shellfish?..... Y N

If NO…
What KIND of marine invertebrates/shellfish did you need?..... _____

How would you describe the impact to your household
of not getting enough marine invertebrates/shellfish last year?..... …minor? (1) …major? (2) severe? (3)

HARVESTS: LARGE LAND MAMMALS

HOUSEHOLD ID

Do members of your household USUALLY hunt for LARGE LAND MAMMALS?.....Y N

Between JANUARY and DECEMBER, 2013…
…Did members of your household USE or TRY TO HARVEST large land mammals?.....Y N

IF NO to both questions, go to the next harvest page.
If YES, continue on this page…

Please estimate how many large land mammals ALL MEMBERS OF YOUR HOUSEHOLD HARVESTED in 2013. 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 catch.

CIRCLE THE HARVEST AMOUNT THAT IS A POTLATCH MOOSE.	IN 2013 DID MEMBERS OF YOUR HH…					SEX	IN 2013, HOW MANY _____ DID MEMBERS OF YOUR HOUSEHOLD HARVEST?												UNITS
	USE?	TRY TO HARVEST?	HARVEST?	RECEIVE?	GIVE AWAY?		JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	UNKNOWN	
	(circle)						*(enter number by sex and month of take)*													*(ind)*
MOOSE	Y N	Y N	Y N	Y N	Y N	M														IND
						F														
211800000						?														
211800001						M														
211800002						F														
211800009						?														
CARIBOU	Y N	Y N	Y N	Y N	Y N	M														IND
						F														
211000000						?														
211000001						M														
211000002						F														
211000009						?														
BLACK BEAR	Y N	Y N	Y N	Y N	Y N															IND
210600000																				
BROWN BEAR	Y N	Y N	Y N	Y N	Y N															IND
210800000																				
DALL SHEEP	Y N	Y N	Y N	Y N	Y N															IND
212200000																				
GOAT	Y N	Y N	Y N	Y N	Y N															IND
211600000																				
DEER	Y N	Y N	Y N	Y N	Y N															IND
211200000																				
BISON	Y N	Y N	Y N	Y N	Y N															IND
210400000																				

LARGE LAND MAMMALS

Between JANUARY and DECEMBER, 2013…

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

X = do not use

If LESS or MORE…
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?..... ...minor? (1) ...major? (2) severe? (3)

HARVESTS: SMALL LAND MAMMALS OR FURBEARERS

HOUSEHOLD ID

Do members of your household USUALLY hunt or trap for SMALL LAND MAMMALS OR FURBEARERS for subsistence?..... Y N

Between JANUARY and DECEMBER, 2013…
…Did members of your household USE or TRY TO HARVEST small land mammals or furbearers?..... Y N

IF NO to both questions, go to the next harvest page.

If YES, continue on this page…

Please estimate how many small land mammals or furbearers ALL MEMBERS OF YOUR HOUSEHOLD HARVESTED in 2013. INCLUDE small land mammals or furbearers 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 catch.

	IN 2013 DID MEMBERS OF YOUR HH…					IN 2013, HOW MANY _____ DID MEMBERS OF YOUR HOUSEHOLD HARVEST?												HOW MANY _____ WERE USED FOR FUR ONLY?	UNITS
	USE?	TRY TO HARVEST?	HARVEST?	RECEIVE?	GIVE AWAY?	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	UNKNOWN		
	(circle)					*(enter number by month of take)*														*(ind)*
BEAVER	Y N	Y N	Y N	Y N	Y N															IND
220200000																				
PORCUPINE	Y N	Y N	Y N	Y N	Y N															IND
222600000																				
SNOWSHOE HARE	Y N	Y N	Y N	Y N	Y N															IND
221004000																				
RED FOX	Y N	Y N	Y N	Y N	Y N															IND
220804000																				
CROSS FOX	Y N	Y N	Y N	Y N	Y N															IND
220804020																				
WOLF	Y N	Y N	Y N	Y N	Y N															IND
223200000																				
WOLVERINE	Y N	Y N	Y N	Y N	Y N															IND
223400000																				
LAND OTTER	Y N	Y N	Y N	Y N	Y N															IND
221200000																				
MUSKRAT	Y N	Y N	Y N	Y N	Y N															IND
222400000																				
	Y N	Y N	Y N	Y N	Y N															IND
	Y N	Y N	Y N	Y N	Y N															IND
	Y N	Y N	Y N	Y N	Y N															IND

Continue on next page

HARVESTS: SMALL LAND MAMMALS OR FURBEARERS

HOUSEHOLD ID

....continued

Please estimate how many small land mammals or furbearers ALL MEMBERS OF YOUR HOUSEHOLD HARVESTED in 2013. INCLUDE small land mammals or furbearers 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 catch.

	IN 2013 DID MEMBERS OF YOUR HH…					IN 2013, HOW MANY _____ DID MEMBERS OF YOUR HOUSEHOLD HARVEST?												HOW MANY _____ WERE USED FOR FUR ONLY?	UNITS
	USE?	TRY TO HARVEST?	HARVEST?	RECEIVE?	GIVE AWAY?	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	UNKNOWN	
	(circle)					*(enter number by month of take)*													*(ind)*
WEASEL	Y N	Y N	Y N	Y N	Y N														IND
223000000																			
LYNX	Y N	Y N	Y N	Y N	Y N														IND
221600000																			
MARTEN	Y N	Y N	Y N	Y N	Y N														IND
222000000																			
COYOTE	Y N	Y N	Y N	Y N	Y N														IND
220400000																			
MINK	Y N	Y N	Y N	Y N	Y N														IND
222200000																			
MARMOT	Y N	Y N	Y N	Y N	Y N														IND
221800000																			
GROUND SQUIRREL	Y N	Y N	Y N	Y N	Y N														IND
222800000																			
TREE SQUIRREL	Y N	Y N	Y N	Y N	Y N														IND
222804000																			
	Y N	Y N	Y N	Y N	Y N														IND

Did you sell any furs? *If yes, remember to include income on Other Income page* ..... Y N

SMALL LAND MAMMALS OR FURBEARERS

Between JANUARY and DECEMBER, 2013…

To conclude our small land mammals or furbearers section, I am going to ask a few general questions about small land mammals or furbearers.

Last year…

…did your household use LESS, SAME, or MORE small land mammals or furbearers 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 or furbearers?..... Y N

If NO…

What KIND of small land mammals or furbearers did you need?.....

How would you describe the impact to your household of not getting enough small land mammals or furbearers last year?..... ...minor? (1) ...major? (2) severe? (3)

HARVESTS: MARINE MAMMALS

HOUSEHOLD ID

Do members of your household USUALLY hunt for MARINE MAMMALS for subsistence?..... Y N

Between JANUARY and DECEMBER, 2013…
…Did members of your household USE or TRY TO HARVEST marine mammals?..... Y N

IF NO, go to the next harvest page.
If YES, continue on this page…

Please estimate how many marine mammals ALL MEMBERS OF YOUR HOUSEHOLD HARVEST for subsistence use this year. 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 catch.

	IN 2013 DID MEMBERS OF YOUR HH…					IN 2013, HOW MANY _____ DID MEMBERS OF YOUR HOUSEHOLD HARVEST?												UNITS	WERE LESS, SAME, OR MORE _____ AVAILABLE IN 2013, THAN IN RECENT YEARS?
	USE?	TRY TO HARVEST?	RECEIVE?	GIVE AWAY?	SEX	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	UNKNOWN		
	(circle)					*(enter number by sex and month of take)*													*(ind)*	*(circle)*
HARBOR SEAL	Y N	Y N	Y N	Y N	M														IND	L S M ?
					F															
300806000					?															
300806001					M															
300806002					F															
300806009					?															
STELLER SEA LION	Y N	Y N	Y N	Y N	M														IND	L S M ?
					F															
301200000					?															
301200001					M															
301200002					F															
301200009					?															
SEA OTTER	Y N	Y N	Y N	Y N															IND	L S M ?
301000000																				
FUR SEAL	Y N	Y N	Y N	Y N															IND	L S M ?
300804000																				
300804001					M															
300804002					F															
300804009					?															
WHALE (SPECIFY)	Y N	Y N	Y N	Y N															IND	L S M ?
301600000																				
UNKNOWN SEAL *(Seal Oil)*	Y N	Y N	Y N	Y N															IND	L S M ?
300899000																				
	Y N	Y N	Y N	Y N															IND	L S M ?
																				" ? " means "I don't know"

MARINE MAMMALS

Between JANUARY and DECEMBER, 2013…

To conclude our marine mammals section, I am going to ask a few general questions about .
Last year…
…did your household use LESS, SAME, or MORE marine mammals 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 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 steller sea lion, female last year?..... ...minor? (1) ...major? (2) ...severe? (3)

MARINE MAMMALS: 12 **GULKANA: 149**

HARVESTS: MIGRATORY WATERFOWL

HOUSEHOLD ID

Do members of your household USUALLY hunt for MIGRATORY WATERFOWL?.....Y N

Between JANUARY and DECEMBER, 2013…
…Did members of your household USE or TRY TO HARVEST migratory waterfowl?.....Y N

IF NO to both questions, go to the next harvest page.

If YES, continue on this page…

Please estimate how many migratory waterfowl ALL MEMBERS OF YOUR HOUSEHOLD HARVESTED in 2013. INCLUDE migratory waterfowl you gave away, ate fresh, lost to spoilage, or got by helping others. If hunting with others, report ONLY YOUR SHARE of the catch.

	IN 2013 DID MEMBERS OF YOUR HH…					IN 2013, HOW MANY _____ DID MEMBERS OF YOUR HOUSEHOLD ?							
						Spring			Summer		Fall		
	USE?	TRY TO HARVEST?	HARVEST?	RECEIVE?	GIVE AWAY?	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	UNKNOWN
	(circle)												
CANADA GEESE (CACKLERS)	Y N	Y N	Y N	Y N	Y N								
410404040													
CANADA GEESE (BIG LESSER)	Y N	Y N	Y N	Y N	Y N								
410404080													
CANADA GEESE (UNKNOWN)	Y N	Y N	Y N	Y N	Y N								
410404000													
WHITE-FRONTED GEESE *Specklebelly*	Y N	Y N	Y N	Y N	Y N								
410410000													
SPECTACLED EIDER	Y N	Y N	Y N	Y N	Y N								
410206060													
BRANT (SEA GEESE)	Y N	Y N	Y N	Y N	Y N								
410402000													
EMPEROR GEESE	Y N	Y N	Y N	Y N	Y N								
410406000													
SNOW GEESE	Y N	Y N	Y N	Y N	Y N								
410408000													
GEESE (UNKNOWN)	Y N	Y N	Y N	Y N	Y N								
410499000													
TUNDRA SWAN (WHISTLING)	Y N	Y N	Y N	Y N	Y N								
410604000													
SANDHILL CRANE	Y N	Y N	Y N	Y N	Y N								
410802000													
MALLARD	Y N	Y N	Y N	Y N	Y N								
410214000													
NORTHERN PINTAIL	Y N	Y N	Y N	Y N	Y N								
410220000													

Continue on next page.

HARVESTS: MIGRATORY WATERFOWL

HOUSEHOLD ID

...continued

	IN 2013 DID MEMBERS OF YOUR HH…					IN 2013, HOW MANY _____ DID MEMBERS OF YOUR HOUSEHOLD ?							
						Spring			Summer		Fall		
	USE?	TRY TO HARVEST?	HARVEST?	RECEIVE?	GIVE AWAY?	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	UNKNOWN
	(circle)												
GOLDENEYE	Y N	Y N	Y N	Y N	Y N								
410210000													
GREEN WINGED TEAL	Y N	Y N	Y N	Y N	Y N								
410232060													
CANVASBACK	Y N	Y N	Y N	Y N	Y N								
410204000													
BLACK SCOTER (BLACK DUCK)	Y N	Y N	Y N	Y N	Y N								
410228020													
DUCKS (UNKNOWN)	Y N	Y N	Y N	Y N	Y N								
410200000													
	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								

MIGRATORY WATERFOWL

Between JANUARY and DECEMBER, 2013…

To conclude our migratory waterfowl section, I am going to ask a few general questions about migratory waterfowl.

Last year…

…did your household use LESS, SAME, or MORE migratory waterfowl 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 migratory waterfowl?..... Y N

If NO…

What KIND of migratory waterfowl did you need?..... _____

How would you describe the impact to your household of not getting enough migratory waterfowl last year?..... ...minor? (1) ...major? (2) severe? (3)

HARVESTS: OTHER BIRDS

HOUSEHOLD ID

Do members of your household USUALLY hunt for OTHER BIRDS?.....Y N

Between JANUARY and DECEMBER, 2013…
…Did members of your household USE or TRY TO HARVEST other birds?.....Y N

IF NO to both questions, go to the next harvest page.

If YES, continue on this page…

Please estimate how many other birds ALL MEMBERS OF YOUR HOUSEHOLD HARVESTED in 2013. INCLUDE other birds you gave away, ate fresh, lost to spoilage, or got by helping others. If hunting with others, report ONLY YOUR SHARE of the catch.

	IN 2013 DID MEMBERS OF YOUR HH…					IN 2013, HOW MANY _____ DID MEMBERS OF YOUR HOUSEHOLD HARVEST?											
						Winter			Spring			Summer		Fall		Winter		
	USE?	TRY TO HARVEST?	HARVEST?	RECEIVE?	GIVE AWAY?	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	UNKNOWN
	(circle)																	
PTARMIGAN	Y N	Y N	Y N	Y N	Y N													
421804000																		
SPRUCE GROUSE	Y N	Y N	Y N	Y N	Y N													
421802020																		
RUFFED GROUSE	Y N	Y N	Y N	Y N	Y N													
421802060																		
	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													

OTHER BIRDS

Between JANUARY and DECEMBER, 2013…

To conclude our other birds section, I am going to ask a few general questions about other birds.

Last year…
…did your household use LESS, SAME, or MORE other birds 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 birds?..... Y N

If NO…

What KIND of other birds did you need?..... _____

How would you describe the impact to your household of not getting enough other birds last year?..... ...minor? (1) ...major? (2) severe? (3)

HARVESTS: BIRD EGGS

HOUSEHOLD ID

Do members of your household USUALLY look for BIRD EGGS?.....Y N

Between JANUARY and DECEMBER, 2013…

…Did members of your household USE or TRY TO GATHER bird eggs?.....Y N

IF NO to both questions, go to the next harvest page.

If YES, continue on this page…

Please estimate how many bird eggs ALL MEMBERS OF YOUR HOUSEHOLD GATHERED in 2013. INCLUDE bird eggs you gave away, ate fresh, lost to spoilage, or got by helping others. If looking with others, report ONLY YOUR SHARE of the eggs.

	IN 2013 DID MEMBERS OF YOUR HH…					IN 2011, HOW MANY _____ DID MEMBERS OF YOUR HOUSEHOLD HARVEST?	UNITS/NOTES
	USE?	TRY TO HARVEST?	HARVEST?	RECEIVE?	GIVE AWAY?		
	(circle)					*(number)*	*(each, gallons, buckets, etc.)*
GULL EGGS	Y N	Y N	Y N	Y N	Y N		
431212000							
GEESE EGGS	Y N	Y N	Y N	Y N	Y N		
430400000							
DUCK EGGS	Y N	Y N	Y N	Y N	Y N		
430200000							
EGGS (UNKNOWN)	Y N	Y N	Y N	Y N	Y N		
430000000							
	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		

EGGS

Between JANUARY and DECEMBER, 2013…

To conclude our eggs section, I am going to ask a few general questions about resource name.

Last year…

…did your household use LESS, SAME, or MORE eggs 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 eggs?..... Y N

If NO…

What KIND of eggs did you need?..... _____

How would you describe the impact to your household of not getting enough eggs last year?..... ...minor? (1) ...major? (2) severe? (3)

BIRD EGGS: 15 **GULKANA: 149**

HARVESTS: PLANTS AND BERRIES INCLUDING WOOD

HOUSEHOLD ID

Do members of your household USUALLY harvest PLANTS AND BERRIES INCLUDING WOOD?..... Y N

Between JANUARY and DECEMBER, 2013…
…Did members of your household USE or TRY TO HARVEST plants and berries including wood?..... Y N

IF NO to both questions, go to the next harvest page.

If YES, continue on this page…

Please estimate how many plants and berries including wood ALL MEMBERS OF YOUR HOUSEHOLD HARVESTING in 2013. INCLUDE plants and berries including wood you gave away, ate fresh, lost to spoilage, or got by helping others. If harvesting with others, report ONLY YOUR SHARE of the harvest.

	IN 2013 DID MEMBERS OF YOUR HH…					IN 2013, HOW MANY _____ DID MEMBERS OF YOUR HOUSEHOLD HARVEST?	UNITS/NOTES
	USE?	TRY TO HARVEST?	HARVEST?	RECEIVE?	GIVE AWAY?		
	(circle)					*(number)*	*(each, gallons, buckets, etc.)*
BLUEBERRY	Y N	Y N	Y N	Y N	Y N		
601002000							
LOW BUSH CRANBERRY	Y N	Y N	Y N	Y N	Y N		
601004000							
HIGH BUSH CRANBERRY	Y N	Y N	Y N	Y N	Y N		
601006000							
RASPBERRY	Y N	Y N	Y N	Y N	Y N		
601020000							
OTHER BERRIES *(List)*	Y N	Y N	Y N	Y N	Y N		
601000000							
HUDSON BAY TEA *Labrador Tea*	Y N	Y N	Y N	Y N	Y N		
602018000							
MUSHROOMS	Y N	Y N	Y N	Y N	Y N		
602040000							
OTHER PLANTS *(List)*	Y N	Y N	Y N	Y N	Y N		
602000002							
WOOD *Firewood*	Y N	Y N	Y N	Y N	Y N		
604000000							
WOOD *(Specify Use)*	Y N	Y N	Y N	Y N	Y N		
604000002							
	Y N	Y N	Y N	Y N	Y N		
	Y N	Y N	Y N	Y N	Y N		

PLANTS AND BERRIES

Between JANUARY and DECEMBER, 2013…

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…
WHY was your use different?..... _____ 1
_____ 2

X = do not use

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?..... ...minor? (1) ...major? (2) severe? (3)

PLANTS AND BERRIES: 17 **GULKANA: 149**

ASSESMENTS

HOUSEHOLD ID

OVERALL HARVEST

To conclude our harvest section, I am going to ask a few general questions about ALL WILD RESOURCES. Think about your entire harvest last year.

Last year…

…overall 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

Last year…

…did your household GET ENOUGH wild resources?..... Y N

If NO…

What KIND of wild did you need?.....

Overall why do you think you did not get enough wild resources?..... 1

2

How would you describe the impact to your household of not getting enough wild resources last year?..... ...not noticable? (0) ...minor? (1) ...major? (2) severe? (3)

HEALTH IMPACT ASSESSMENTS

(circle ONE response)

In a normal week, how many times a day on average are wild foods such as salmon, non-salmon fish, moose, caribou, birds, etc. served in your household?	NONE Don't use (0)	LESS than once a day (1)	About ONCE a day (2)	2 OR 3 times a day (3)	3 OR MORE times a day (4)

If this household does NOT USEwild foods, go to the next page.

Otherwise, continue below…

Please list the TOP FIVE MOST IMPORTANT WILD FOODS members of your household eat on a regular basis. Include wild foods that may not be available now, but are important at other times of the year. Please list most important 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 WILD FOODS, what foods do members of your household eat instead? These can be general categories or more specific items you purchase or grow. Please list most important alternative foods first.

(Not necessary to fill out every line)

	Other Food	*Other Food*	*Other Food*	*Other Food*	*Other Food*
OTHER FOODS (1 TO 5)					
OTHER FOODS (6 TO 10)					

ASSESSMENTS: 66 **GULKANA: 149**

ASSESMENTS

HOUSEHOLD ID

RESOURCE HEALTH

During 2013, were there any resources that your household avoided harvesting due to poor resource health? If YES, which resources did you avoid and why?

TRANSPORTATION AND MOTORIZED EQUIPMENT

During 2013, did members of your household use the following when harvesting or attempting to harveset wild foods?

	Circle	
boat	Y N	
snowmachine	Y N	
4-wheeler/ORV	Y N	
airplane	Y N	
dogsled	Y N	

Does your household own, borrow, lease, or charter this equipment?

Circle only responses that the respondent answered yes to above.

	Own	Borrow	Lease	Charter	
boat	Y N	Y N	Y N	Y N	
snowmachine	Y N	Y N	Y N	Y N	
4-wheeler/ORV	Y N	Y N	Y N	Y N	
airplane	Y N	Y N	Y N	Y N	
dogsled	Y N	Y N	Y N	Y N	

Comments:

During 2013, did members of your household use the following portable motors or motorized equipment when harvesting or attempting to harvest wild foods?

	Circle	
chainsaw	Y N	
ice auger	Y N	
winch	Y N	
generator	Y N	
Other	Y N	

HEATING

What proportion of your household's heating comes from firewood?

	Circle
0%	
1-25%	
26-50%	
51-75%	
76-99%	
100%	

In the past 5 years has your harvest area for firewood changed? Circle: Y N

If yes, please explain why?

How much do you spend annually to heat your home?

$

HANDICRAFTS

During 2013, did members of our household participate in the making of handicrafts using the following materials?

	Circle	
birchbark	Y N	
horns	Y N	
antlers	Y N	
other natural material (specify)	Y N	

ASSESSMENTS: 66 **GULKANA: 149**

JOBS — FOR EACH PERSON IN THE HOUSEHOLD, 16 YEARS OLD AND OLDER — HOUSEHOLD ID

Between JANUARY and DECEMBER, 2013…

…Did any members of your household earn money from a JOB or from SELF EMPLOYMENT?..... Y N

For each member of this household born before 1998, please list EACH JOB held between JANUARY and DECEMBER, 2013.
For household members who did not have a job, write: "RETIRED," "UNEMPLOYED," "STUDENT," "HOMEMAKER," etc.
There should be at least ONE ROW for each member of this household born BEFORE 1998.

We ask about jobs and income because we are trying to understand all parts of the community economy. Many people use wages from jobs to support subsistence activities. If one person has more than one job, list each job on a separate line. (One person may have several lines.)

REMEMBER COMMERCIAL FISHING & TRAPPING AND ANY HANDICRAFTS IF APPLICABLE.

WORK SCHEDULE…

	WHO HAD THIS JOB?	WHAT KIND OF WORK DID HE/SHE DO IN THIS JOB?	FOR WHOM DID HE/SHE WORK IN THIS JOB?	JOB LOCATION?	IN 2013, WHAT MONTHS DID HE OR SHE WORK IN THIS JOB?	FULL TIME	PART TIME	SHIFT - FULL TIME	ON-CALL, VARIES	SHIFT - PART TIME	IN 2013, HOW MUCH DID HE/SHE EARN IN THIS JOB?
	person	*job title*	*employer, SIC*	*community*	*circle each month worked*	*circle one*					*gross income*
1ST JOB					J F M A M J J A S O N D	FT	PT	SF	OC	SP	$ / YR
1 6 910100000		SOC				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				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				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				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				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				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				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				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				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				SCHEDULE					
11TH JOB					J F M A M J J A S O N D	FT	PT	SF	OC	SP	$ / YR
11 6 910100000		SOC				SCHEDULE					
12TH JOB					J F M A M J J A S O N D	FT	PT	SF	OC	SP	$ / YR
12 6 910100000		SOC				SCHEDULE					

If a person is SELF-EMPLOYED (selling carvings, crafts, bread, etc), list that as a separate job. Enter "sewer," "carver," "baker," etc. as JOB TITLE. Work schedule usually will be "ON CALL." For gross income from self employment ("profit"), enter revenue MINUS expenses.

If a person is UNEMPLOYED, specify retired, unemployed, disabled, student, or homemaker as the JOB TITLE.

TRAPPING for barter or sale IS a job.
COMMERCIAL FISHING is recorded as "ON-CALL, VARIES" for work schedule.

WORK SCHEDULE
1 - Fulltime (35+ hours/week)
2 - Parttime (<35 hours/week)
3 - Shift (2 wks on/2 off, etc.)
4 - Irregular, on call

GROSS INCOME is the same as TAXABLE INCOME on a W-2 form.

EMPLOYMENT: 23 **GULKANA: 149**

OTHER INCOME

THIS PAGE IS ONLY FOR INCOME THAT IS NOT EARNED FROM WORKING **HOUSEHOLD ID**

Between JANUARY and DECEMBER, 2013…
…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 2013?	TOTAL amount all members of your household received from ____ in 2013.
		circle one	*dollars*
DIVIDENDS	ALASKA PERMANENT FUND DIVIDEND	Y N	$ /YR
	32		
	NATIVE CORPORATION DIVIDENDS	Y N	$ /YR
	13		

Alaska PFD IN 2013	*Regional Corporations*	*Dividend*
1 PFD = $900		
2 PFDs = $1,800		
3 PFDs = $2,700		
4 PFDs = $3,600		
5 PFDs = $4,500		
6 PFDs = $5,400	***Village Corporation(s)***	***Dividend***
7 PFDs = $6,300	*Amount per share*	*$5.27*
8 PFDs = $7,200	*Elder Dividend*	*$300.00*
9 PFDs = $8,100		
10 PFDs = $9,000		
11 PFDs = $9,900		
12 PFDs = $10,800		

Between JANUARY and DECEMBER, 2013…
…Did any members of your household receive OTHER income such as SENIOR BENEFITS or UNEMPLOYMENT?..... Y N

IF NO, go to the next 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		
	SUPPLEMENTAL SECURITY INCOME (SSI)	Y N	$ /YR
	10		
STATE BENEFI	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
	MEETING HONORARIA *(not per diem*)*	Y N	$ /YR
	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 _____ months =

for _____ weeks =
for _____ months =

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

OTHER INCOME: 24 **GULKANA: 149**

COMMENTS

HOUSEHOLD ID

DO YOU HAVE ANY QUESTIONS, COMMENTS, OR CONCERNS?

INTERVIEW SUMMARY:

BE SURE TO FILL IN THE STOP TIME ON THE FIRST PAGE!!!!

COMMENTS: 30 **GULKANA: 149**

APPENDIX B–CONVERSION FACTORS

The following table presents the conversion factors used in determining how many pounds were harvested of each resource surveyed. For instance, if respondents reported harvesting 3 qt of smelt, the quantity would be multiplied by the appropriate conversion factor (in this case 1.5) to show a harvest of 4.5 lb of smelt.

Resource name	Reported units	Conversion factor
Chum salmon	Individual	5.144
Coho salmon	Individual	6.215
Chinook salmon	Individual	13.730
Pink salmon	Individual	2.149
Sockeye salmon	Individual	4.585
Sockeye salmon	Pounds	1.000
Sockeye salmon	Pints	0.625
Landlocked salmon	Individual	1.000
Unknown salmon	Individual	4.955
Pacific herring	Gallons	6.000
Pacific herring	Quarts	1.500
Pacific herring sac roe	Gallons	7.000
Pacific herring spawn on kelp	Gallons	3.650
Pacific herring roe on hemlock branches	Gallons	3.940
Smelt	Gallons	3.250
Eulachon (hooligan, candlefish)	Individual	0.250
Eulachon (hooligan, candlefish)	Pounds	1.000
Eulachon (hooligan, candlefish)	Gallons	3.250
Unknown smelt	Gallons	3.250
Pacific (gray) cod	Individual	4.000
Pacific (gray) cod	Pounds	1.000
Pacific tomcod	Individual	0.500
Walleye pollock (whiting)	Individual	1.400
Unknown cod	Individual	3.060
Starry flounder	Individual	3.000
Unknown flounder	Individual	3.000
Lingcod	Individual	2.400
Lingcod	Pounds	1.000
Pacific halibut	Individual	18.900
Pacific halibut	Pounds	1.000
Arctic lamprey	Individual	0.600
Rockfish	Individual	4.000
Rockfish	Pounds	1.000
Black rockfish	Individual	1.500
Black rockfish	Pounds	1.000
Red rockfish	Pounds	1.000
Yelloweye rockfish	Individual	2.642
Yelloweye rockfish	Pounds	1.000
Copper rockfish	Individual	1.480
Unknown rockfish	Individual	4.000
Unknown rockfish	Pounds	1.000
Sablefish (black cod)	Individual	3.100
Sculpin	Individual	0.500
Salmon shark	Individual	9.000
Burbot	Individual	2.400

-continued-

Resource name	Reported units	Conversion factor
Arctic char	Individual	0.700
Brook trout	Individual	1.400
Dolly Varden	Individual	0.900
Lake trout	Individual	2.000
Arctic grayling	Individual	0.700
Northern pike	Individual	2.800
Northern pike	Individual	2.800
Sheefish	Individual	5.500
Longnose sucker	Individual	0.700
Cutthroat trout	Individual	1.400
Rainbow trout	Individual	1.400
Steelhead	Individual	4.200
Unknown trout	Individual	1.400
Broad whitefish	Individual	4.000
Least cisco	Individual	0.400
Humpback whitefish	Individual	1.750
Humpback whitefish	5 Gal. Buckets	1.750
Round whitefish	Individual	1.000
Unknown whitefishes	Individual	1.750
Bison	Individual	450.000
Black bear	Individual	58.000
Brown bear	Individual	141.000
Caribou	Individual	130.000
Deer	Individual	42.500
Mountain goat	Individual	72.500
Moose	Individual	450.000
Dall sheep	Individual	65.000
Beaver	Individual	15.000
Coyote	Individual	0.000
Arctic fox	Individual	0.000
Red fox	Individual	0.000
Red fox–cross phase	Individual	0.000
Red fox–red phase	Individual	0.000
Snowshoe hare	Individual	2.000
North American river (land) otter	Individual	0.000
Lynx	Individual	4.000
Marmot	Individual	0.000
Marten	Individual	0.000
Mink	Individual	0.000
Muskrat	Individual	1.800
Porcupine	Individual	4.500
Arctic ground (parka) squirrel	Individual	0.500
Red (tree) squirrel	Individual	0.500
Unknown squirrel	Individual	0.500
Least weasel	Individual	0.000
Gray wolf	Individual	0.000
Wolverine	Individual	0.000
Bufflehead	Individual	0.400
Canvasback	Individual	1.100

-continued-

Resource name	Reported units	Conversion factor
King eider	Individual	2.670
Spectacled eider	Individual	2.430
Gadwall	Individual	0.800
Goldeneye	Individual	0.800
Mallard	Individual	1.000
Merganser	Individual	0.900
Unknown merganser	Individual	0.900
Long-tailed duck	Individual	0.800
Northern pintail	Individual	0.800
Unknown scaup	Individual	0.900
Black scoter	Individual	0.900
Surf scoter	Individual	0.900
White-winged scoter	Individual	0.900
Northern shoveler	Individual	0.600
Green-winged teal	Individual	0.300
Wigeon	Individual	0.700
American wigeon	Individual	0.700
Unknown wigeon	Individual	0.700
Unknown ducks	Individual	0.700
Brant	Individual	1.200
Cackling goose	Individual	1.200
Canada goose	Individual	1.200
Unknown Canada/cackling geese	Individual	1.200
Emperor goose	Individual	2.500
Snow goose	Individual	3.000
White-fronted goose	Individual	2.400
Unknown geese	Individual	5.000
Tundra (whistling) swan	Individual	6.000
Sandhill crane	Individual	8.400
Murre	Individual	1.650
Spruce grouse	Individual	0.700
Sharp-tailed grouse	Individual	0.700
Ruffed grouse	Individual	0.700
Unknown grouse	Individual	0.500
Ptarmigan	Individual	0.500
Unknown ptarmigan	Individual	0.700
Duck eggs	Individual	0.150
Unknown duck eggs	Individual	0.150
Goose eggs	Individual	0.250
Unknown goose eggs	Individual	0.250
Gull eggs	Individual	0.300
Unknown gull eggs	Individual	0.300
Unknown eggs	Individual	0.220
Unknown chitons	Gallons	3.910
Clams	Gallons	3.000

-continued-

Resource name	Reported units	Conversion factor
Butter clams	Individual	0.120
Butter clams	Gallons	3.000
Freshwater clams	Individual	0.120
Freshwater clams	Gallons	3.000
Razor clams	Individual	0.250
Razor clams	Gallons	3.000
Razor clams	Quarts	0.750
Unknown clams	Gallons	3.000
Cockles	Individual	0.130
Cockles	Gallons	3.000
Dungeness crab	Individual	0.700
Dungeness crab	Pounds	1.000
King crab	Individual	2.300
King crab	Pounds	1.000
Unknown king crab	Pounds	1.000
Tanner crab	Individual	1.600
Tanner crab	Pounds	1.000
Unknown tanner crab	Gallons	1.600
Unknown crab	Individual	2.300
Unknown mussels	Gallons	1.500
Octopus	Individual	4.000
Unknown oyster	Individual	0.180
Shrimp	Individual	0.010
Shrimp	Pounds	1.000
Shrimp	Gallons	2.000
Squid	Gallons	8.000
Unknown marine invertebrates	Gallons	3.791
Berries	Gallons	4.000
Berries	Quarts	1.000
Blueberry	Pounds	1.000
Blueberry	5 Gal. Buckets	20.000
Blueberry	Gallons	4.000
Blueberry	Quarts	1.000
Blueberry	Plastic Bag	10.000
Blueberry	Pints	0.500
Blueberry	Cup (1/2 Pint)	0.250
Lowbush cranberry	Pounds	1.000
Lowbush cranberry	5 Gal. Buckets	20.000
Lowbush cranberry	Gallons	4.000
Lowbush cranberry	Quarts	1.000
Lowbush cranberry	Pints	0.500
Lowbush cranberry	Cup (1/2 Pint)	0.250
Highbush cranberry	Pounds	1.000
Highbush cranberry	5 Gal. Buckets	20.000
Highbush cranberry	Gallons	4.000
Highbush cranberry	Quarts	1.000
Highbush cranberry	Pints	0.500
Highbush cranberry	Cup (1/2 Pint)	0.250

-continued-

Resource name	Reported units	Conversion factor
Crowberry	Gallons	4.000
Crowberry	Quarts	1.000
Crowberry	Pints	0.500
Crowberry	Cup (1/2 Pint)	0.250
Elderberry	Gallons	6.000
Currants	Gallons	4.000
Currants	Quarts	1.000
Currants	Cup (1/2 Pint)	0.250
Huckleberry	Quarts	1.500
Huckleberry	Cup (1/2 Pint)	0.375
Cloudberry	Gallons	4.000
Cloudberry	Cup (1/2 Pint)	0.250
Nagoonberry	Gallons	4.000
Nagoonberry	Quarts	1.000
Nagoonberry	Cup (1/2 Pint)	0.250
Raspberry	Individual	0.008
Raspberry	Pounds	1.000
Raspberry	5 Gal. Buckets	20.000
Raspberry	Gallons	4.000
Raspberry	Quarts	1.000
Raspberry	Pints	0.500
Raspberry	Cup (1/2 Pint)	0.250
Salmonberry	Pounds	1.000
Salmonberry	Gallons	4.000
Salmonberry	Quarts	1.000
Salmonberry	Pints	0.500
Salmonberry	Cup (1/2 Pint)	0.250
Soapberry	Quarts	1.000
Strawberry	Gallons	4.000
Strawberry	Pints	0.500
Strawberry	Cup (1/2 Pint)	0.250
Blackberry	Gallons	4.000
Twisted stalk berry (watermelon berry)	Gallons	4.000
Serviceberry	Cup (1/2 Pint)	0.250
Other wild berry	5 Gal. Buckets	20.000
Other wild berry	Gallons	4.000
Other wild berry	Quarts	1.000
Other wild berry	Pints	0.500
Other wild berry	Cup (1/2 Pint)	0.250
Wild rhubarb	Pounds	1.000
Wild rhubarb	Gallons	1.000
Wild rhubarb	Pints	0.125
Eskimo potato	Gallons	4.000
Eskimo potato	Quarts	1.000
Eskimo potato	Cup (1/2 Pint)	0.250
Devils club	Gallons	1.000
Devils club	Cup (1/2 Pint)	0.063
Fiddlehead ferns	Gallons	1.000
Hudson's Bay (Labrador) tea	Pounds	1.000

-continued-

Resource name	Reported units	Conversion factor
Hudson's Bay (Labrador) tea	Gallons	1.000
Hudson's Bay (Labrador) tea	Quarts	0.250
Hudson's Bay (Labrador) tea	Plastic Bag	1.000
Hudson's Bay (Labrador) tea	Pints	0.125
Hudson's Bay (Labrador) tea	Cup (1/2 Pint)	0.063
Mint	Quarts	0.250
Dandelion greens	Gallons	1.000
Dandelion greens	Cup (1/2 Pint)	0.063
Sourdock	Gallons	1.000
Spruce tips	Gallons	1.000
Spruce tips	Quarts	0.250
Wild rose hips	Individual	0.005
Wild rose hips	Gallons	4.000
Wild rose hips	Quarts	1.000
Wild rose hips	Pints	0.500
Wild rose hips	Cup (1/2 Pint)	0.250
Yarrow	Gallons	1.000
Yarrow	Quarts	0.250
Other wild greens	Pounds	1.000
Other wild greens	Gallons	1.000
Other wild greens	Quarts	0.250
Other wild greens	Plastic Bag	2.500
Other wild greens	Pints	0.125
Other wild greens	Cup (1/2 Pint)	0.063
Unknown mushrooms	Individual	0.050
Unknown mushrooms	Pounds	1.000
Unknown mushrooms	Gallons	1.000
Unknown mushrooms	Quarts	0.250
Unknown mushrooms	Plastic Bag	2.500
Unknown mushrooms	Pints	0.125
Unknown mushrooms	Cup (1/2 Pint)	0.063
Fireweed	Pounds	1.000
Fireweed	Gallons	1.000
Fireweed	Quarts	0.250
Fireweed	Cords	957.506
Fireweed	Pints	0.125
Fireweed	Cup (1/2 Pint)	0.063
Plantain	Gallons	1.000
Plantain	Quarts	0.250
Plantain	Cup (1/2 Pint)	0.063
Stinkweed	Pounds	1.000
Stinkweed	Gallons	1.000
Stinkweed	Plastic Bag	2.500
Stinkweed	Cup (1/2 Pint)	0.063
Unknown greens from land	Gallons	1.000
Unknown greens from land	Quarts	0.250
Bladder wrack	Gallons	4.000
Wood	Cords	0.000

-continued-

Continued.–Page 7 of 7.

Resource name	Reported units	Conversion factor
Bark	Gallons	0.000
Bark	Quarts	0.000
Bark	Cords	0.000
Roots	Gallons	0.000
Roots	Quarts	0.000
Alder	Cords	0.000
Wood (unspecified)	Individual	0.000
Wood (unspecified)	Cords	0.000
Other wood	Cords	0.000

Source ADF&G Division of Subsistence household surveys, 2014.

APPENDIX C–KEY RESPONDENT INTERVIEW PROTOCOL

KEY INFORMANT INTERVIEW PROTOCOL

SUSITNA BASIN 2013

Name of community:

Date:

Name of interviewer:

Name of respondent:

Age of respondent:

How long have you lived in this community?

Would you like to have your name included in the report? Yes No

Notes:

PROJECT OVERVIEW

We are currently conducting a survey in your community to document the harvest and use of wild resources for the calendar year 2011. We understand that one year doesn't represent the long-term pattern of resource use. As part of this survey we ask questions about how the harvest and use of wild resources is different than in recent years, say the past five years. This interview is intended to understand long-term trends in harvest patterns over time, possibly over your lifetime. We appreciate you sharing this information with us as it will give us a much better understanding of the changes that have occurred in your area over time.

Note to interviewer. You do not have to ask all of these questions. You can simply ask the main questions and then use this protocol as a guide to understand the types of questions we are interested in.

WHERE, HOW, AND FROM WHO, DID YOU LEARN YOUR SUBSISTENCE WAY OF LIFE?

FISH (SALMON/NON-SALMON) – What kinds of fish are important to your household and community? How has this changed over your lifetime?

- Difference between salmon and non-salmon fish for your community.
- Have your harvest locations for fish changed over time?
- Has harvest timing changed?
- What kind of gear/transportation did you use in the past? What about now?
- Has environmental changes affected harvest patterns over your lifetime?

LARGE LAND MAMMALS – What large animals are most important to your household and community? Has what you harvest and how you harvest changed over your lifetime?

- Has harvest timing changed? If so why?
- How have you changed the areas you harvest over your lifetime, and why do you think this has occurred?
- What kind of transportation did you use in the past and how has this changed over time?

SMALL LAND MAMMALS/FURBEARERS – What small game and furbearers are most important to your household and community? How has your harvesting effort changed over your lifetime?

- What small game do you harvest to eat and which game do you harvest for fur?
- Has harvest timing changed? What about harvest locations?
- Do you harvest small game opportunistically or do you target small game?
- What kind of gear/transportation did you use in the past? What about now?

BIRDS AND EGGS – What birds are most important to your household and community? How has your harvesting effort changed over your lifetime?

- Are eggs important to your household or community?
- Has harvest timing changed?
- Are the places you go to find birds and eggs different now than in the past?

PLANTS/BERRIES/WOOD – What plants and berries are most important to your household and community? Has what you harvest and how you harvest changed over your lifetime?

- Has harvest timing changed?
- Do you use more or less wood for heat than in the past? Is it more or less difficult to find wood?
- Are the places you go to find plants, berries, or wood different now than in the past?
- What kind of transportation did you use in the past? What about now?
- How has environmental change affected the areas you use to harvest berries? What about the abundance of berries?

RESOURCES PARTICULAR TO YOUR COMMUNITY

- Are there resources that you feel are unique to your community, or hold a special value to your community?
- Are there particular times of year that you harvest these resources? What about sharing these resources within your community and with other communities?

FINAL COMMENTS

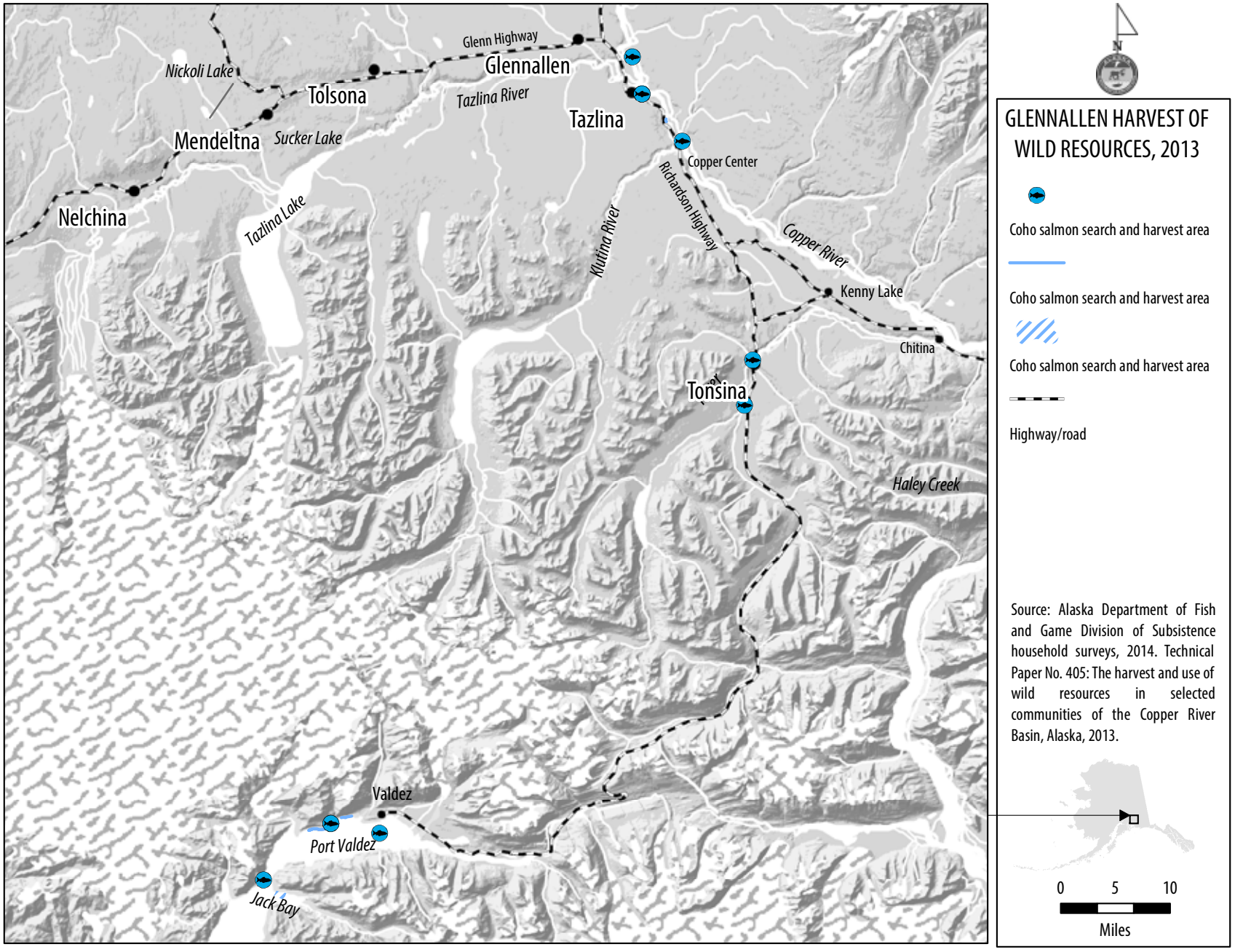
What do you feel has been the biggest change in your subsistence way of life, from the time you can remember until now?

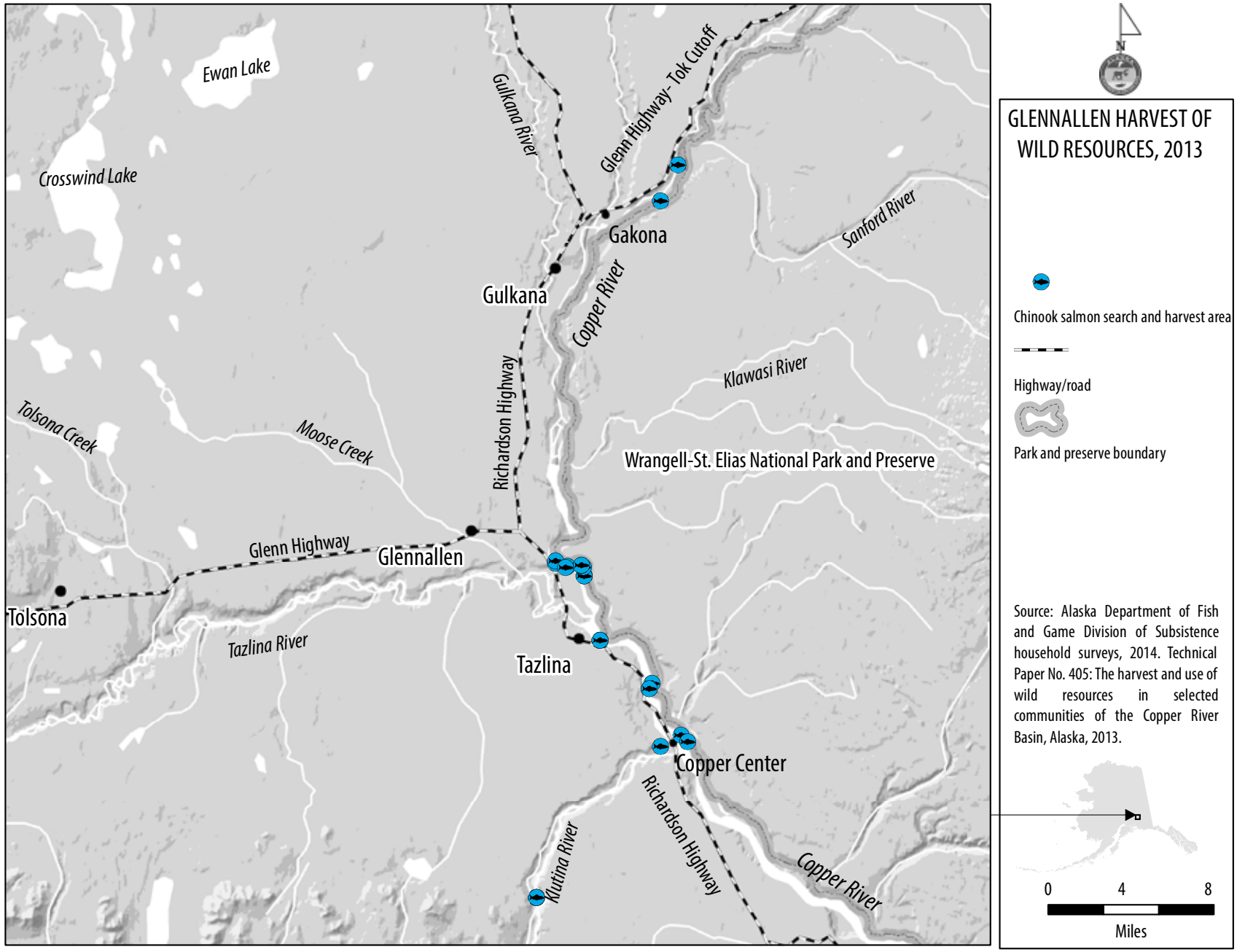
Do you recall a time before regulations were enforced? How has your harvest practice and patterns changed since that time?

Is there anything else you would like to share?

APPENDIX D–SEARCH AND HARVEST AREA MAPS BY COMMUNITY

SUPPLEMENTAL MAPS


Glenn Highway
Glennallen
Nickoli Lake
Tolsona
Tazlina River
Tazlina
Mendeltna
Sucker Lake
Copper Center
Richardson Highway
Nelchina
Tazlina Lake
Klutina River
Copper River
Kenny Lake
Chitina
Tonsina
Haley Creek
Valdez
Port Valdez
Jack Bay
GLENNALLEN HARVEST OF WILD RESOURCES, 2013
Coho salmon search and harvest area
Coho salmon search and harvest area
Coho salmon search and harvest area
Highway/road
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
0
5
10
Miles


Ewan Lake
Crosswind Lake
Gulkana River
Glenn Highway- Tok Cutoff
Gakona
Sanford River
Gulkana
Copper River
Klawasi River
Richardson Highway
Tolsona Creek
Moose Creek
Wrangell-St. Elias National Park and Preserve
Glenn Highway
Glennallen
Tolsona
Tazlina River
Tazlina
Copper Center
Richardson Highway
Klutina River
Copper River
GLENNALLEN HARVEST OF WILD RESOURCES, 2013
Chinook salmon search and harvest area
Highway/road
Park and preserve boundary
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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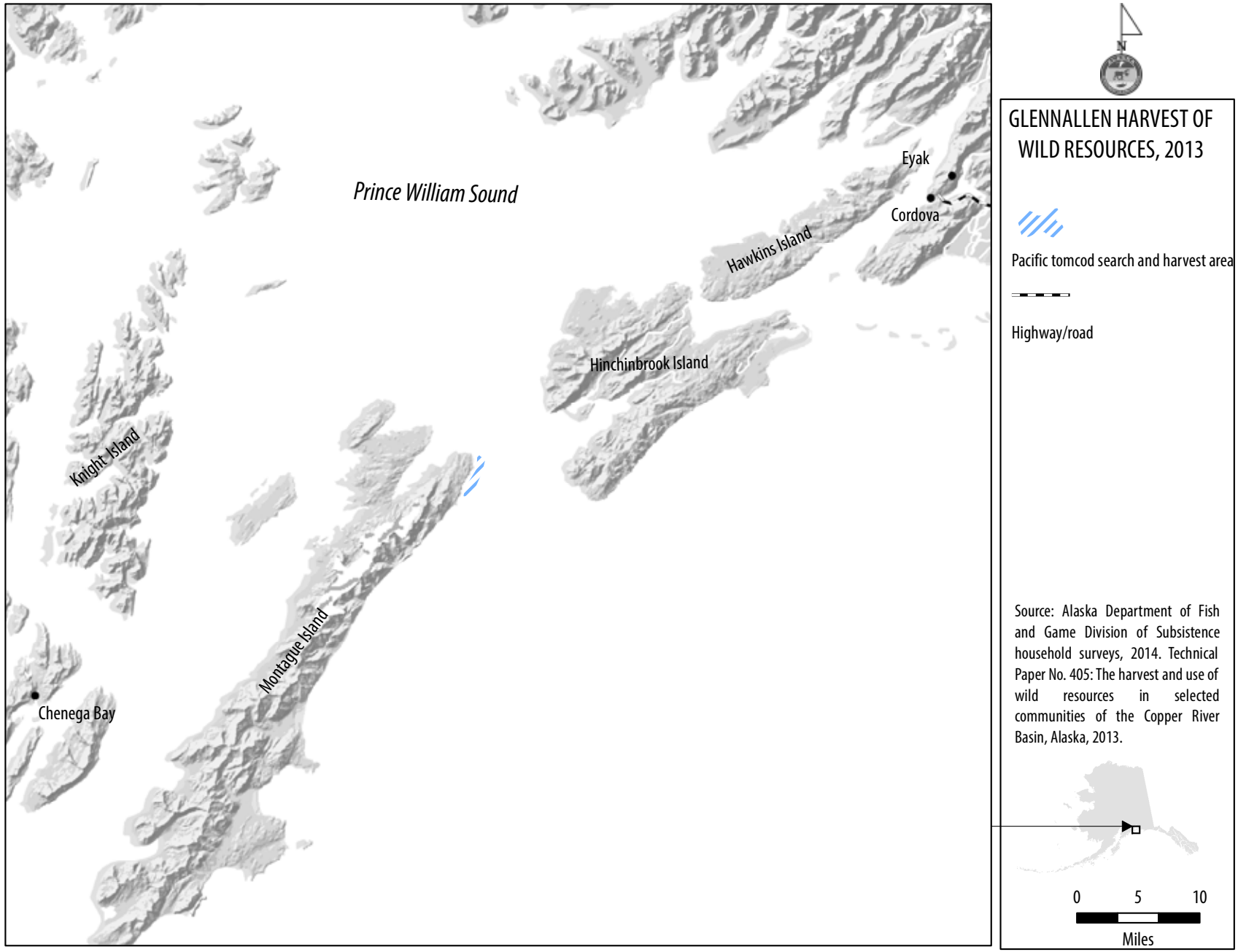
Miles


Prince William Sound
Eyak
Cordova
Hawkins Island
Hinchinbrook Island
Knight Island
Montague Island
Chenega Bay
N
GLENNALLEN HARVEST OF WILD RESOURCES, 2013
Pacific tomcod search and harvest area
Highway/road
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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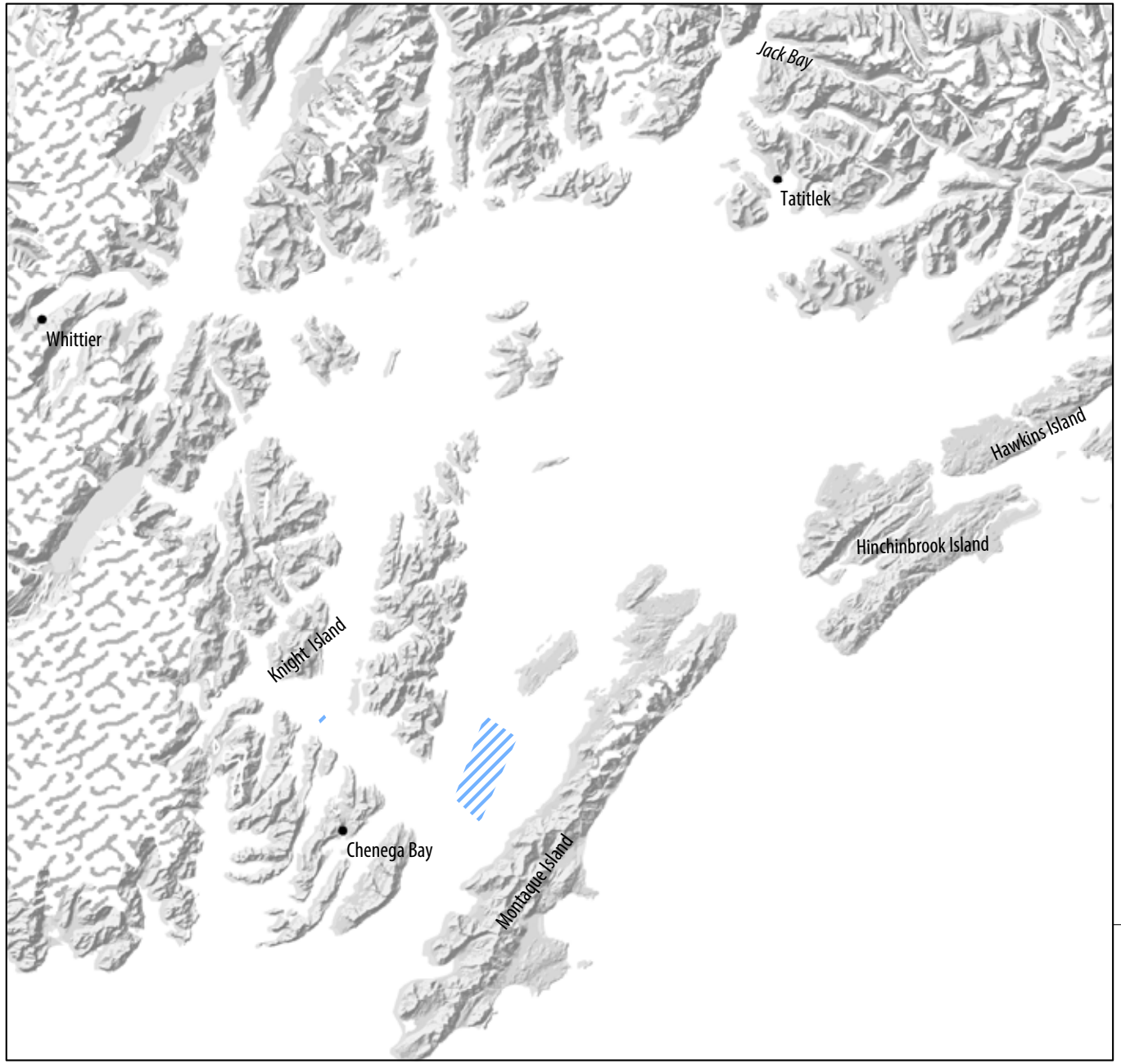
Miles

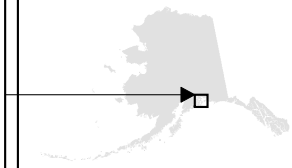


GLENNALLEN HARVEST OF WILD RESOURCES, 2013

Lingcod search and harvest area

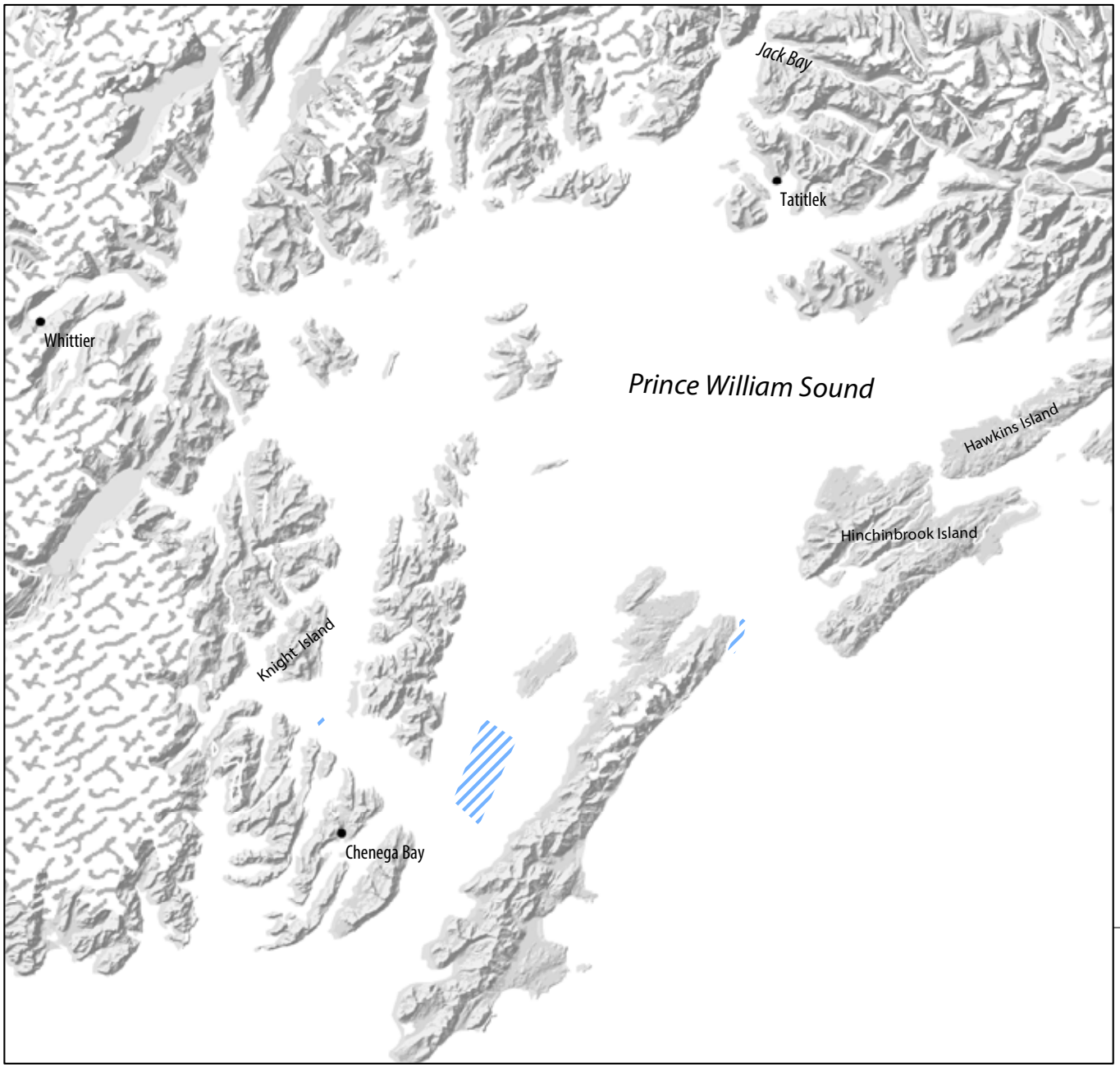
Highway/road

Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.



0 5 10

Miles

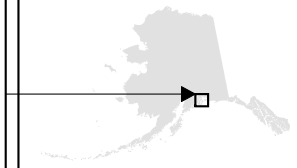


GLENNALLEN HARVEST OF WILD RESOURCES, 2013

Pacific halibut search and harvest area

Highway/road

Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.



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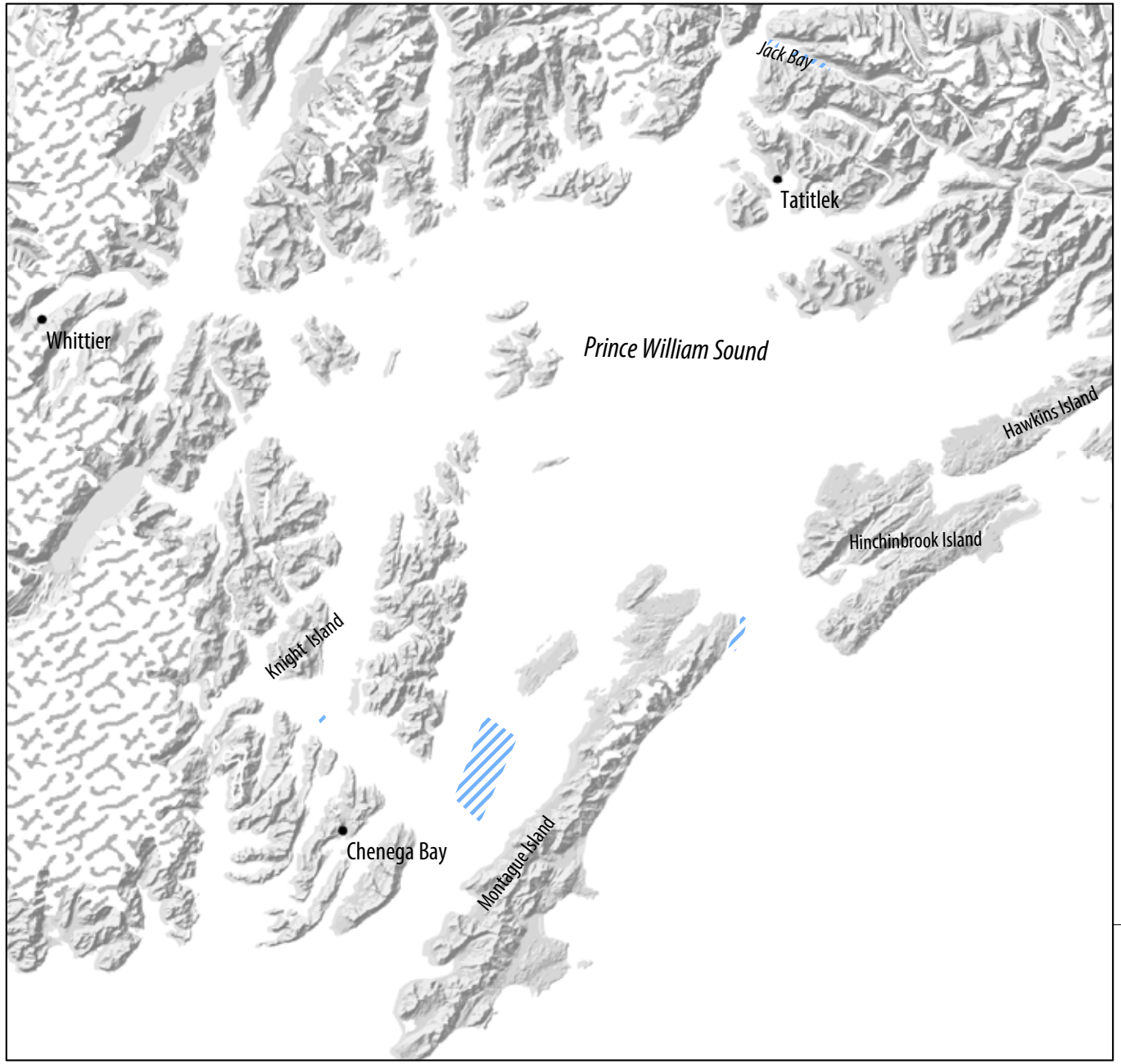


GLENNALLEN HARVEST OF WILD RESOURCES, 2013

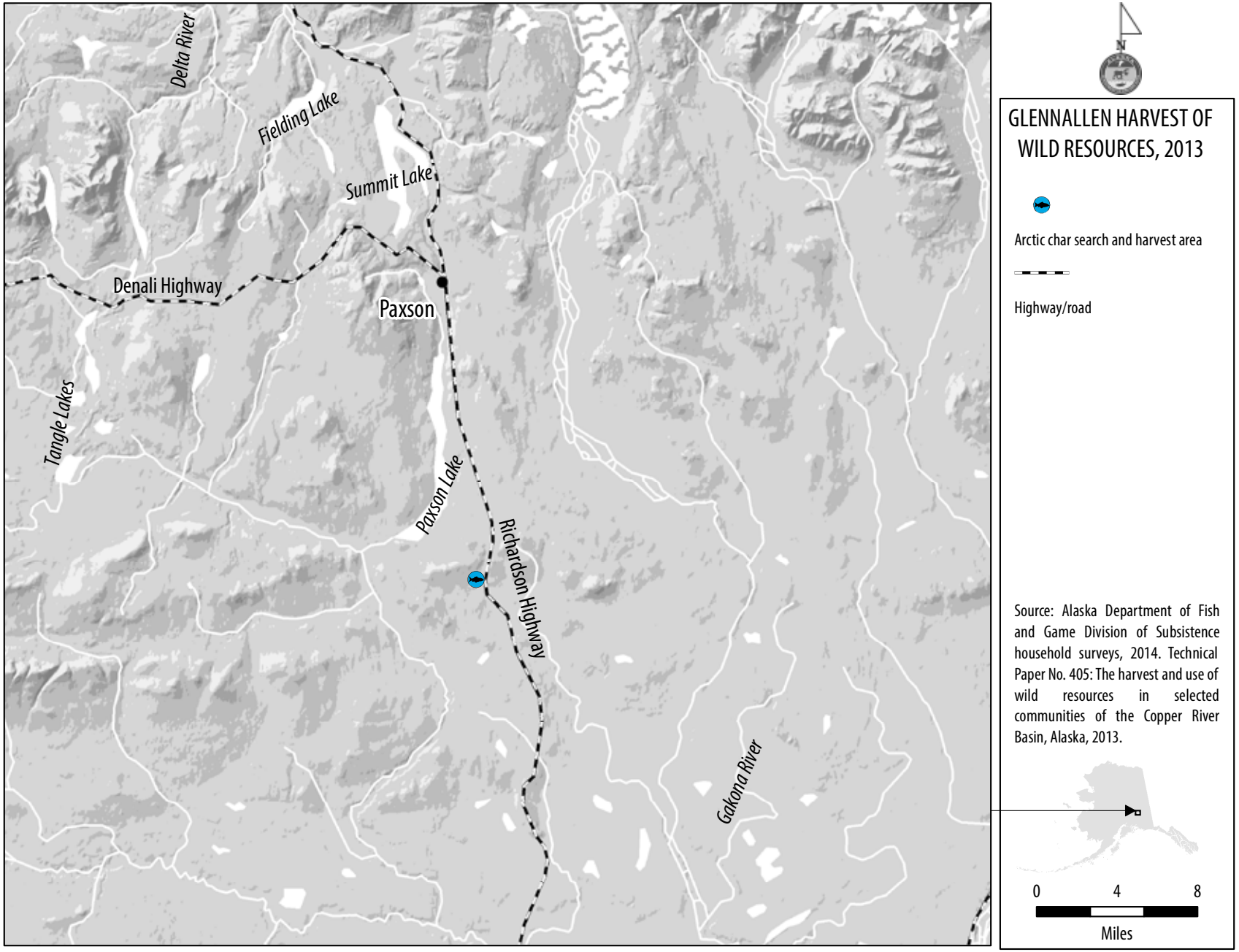
Rockfish search and harvest area

Highway/road

Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.

0 5 10

Miles


Delta River
Fielding Lake
Summit Lake
Denali Highway
Paxson
Tangle Lakes
Paxson Lake
Richardson Highway
Gakona River
N
GLENNALLEN HARVEST OF WILD RESOURCES, 2013
Arctic char search and harvest area
Highway/road
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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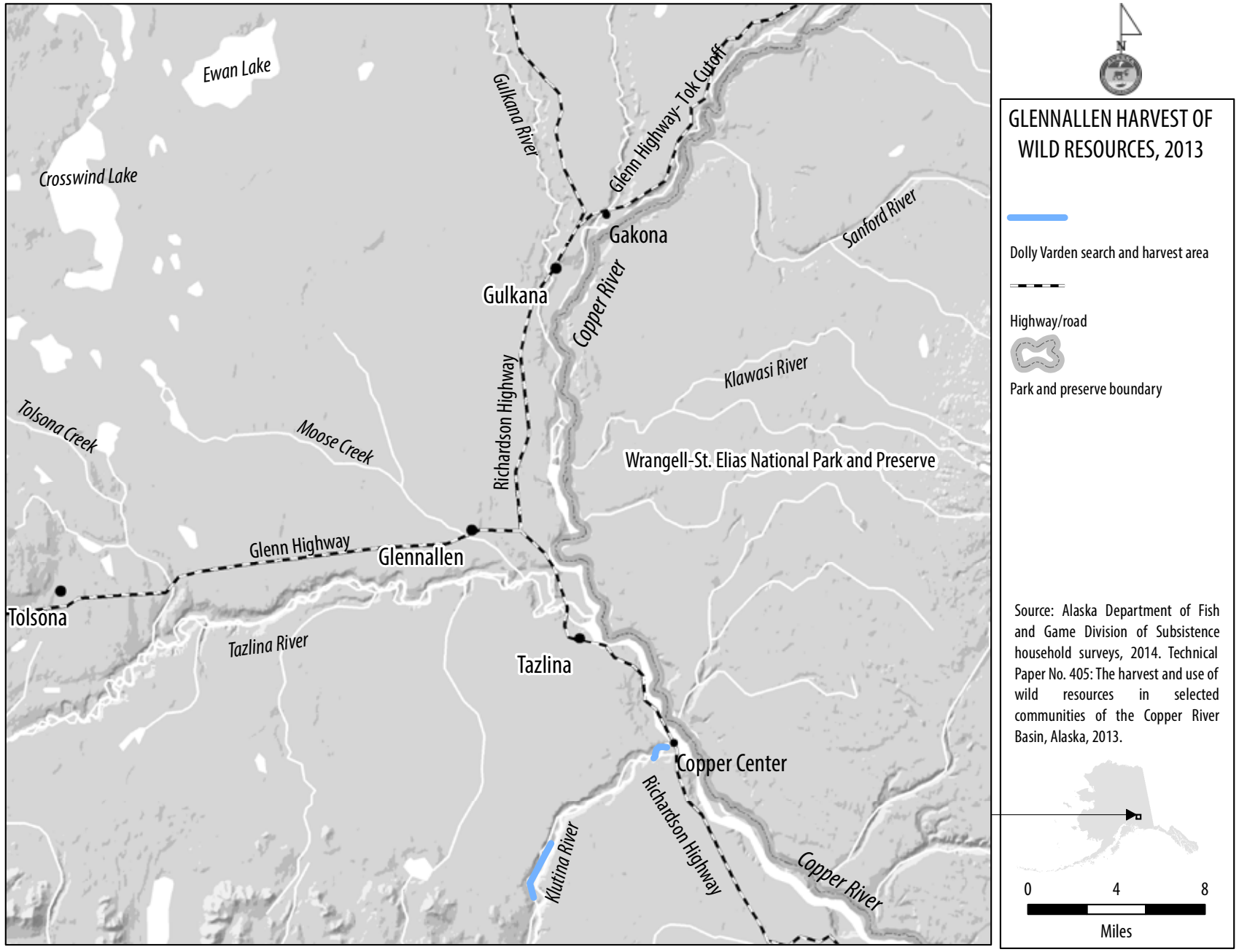
4
8
Miles


Ewan Lake
Crosswind Lake
Gulkana River
Glenn Highway- Tok Cutoff
Gakona
Sanford River
Gulkana
Copper River
Klawasi River
Richardson Highway
Tolsona Creek
Moose Creek
Wrangell-St. Elias National Park and Preserve
Glenn Highway
Glennallen
Tolsona
Tazlina River
Tazlina
Copper Center
Richardson Highway
Klutina River
Copper River
N
GLENNALLEN HARVEST OF WILD RESOURCES, 2013
Dolly Varden search and harvest area
Highway/road
Park and preserve boundary
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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4
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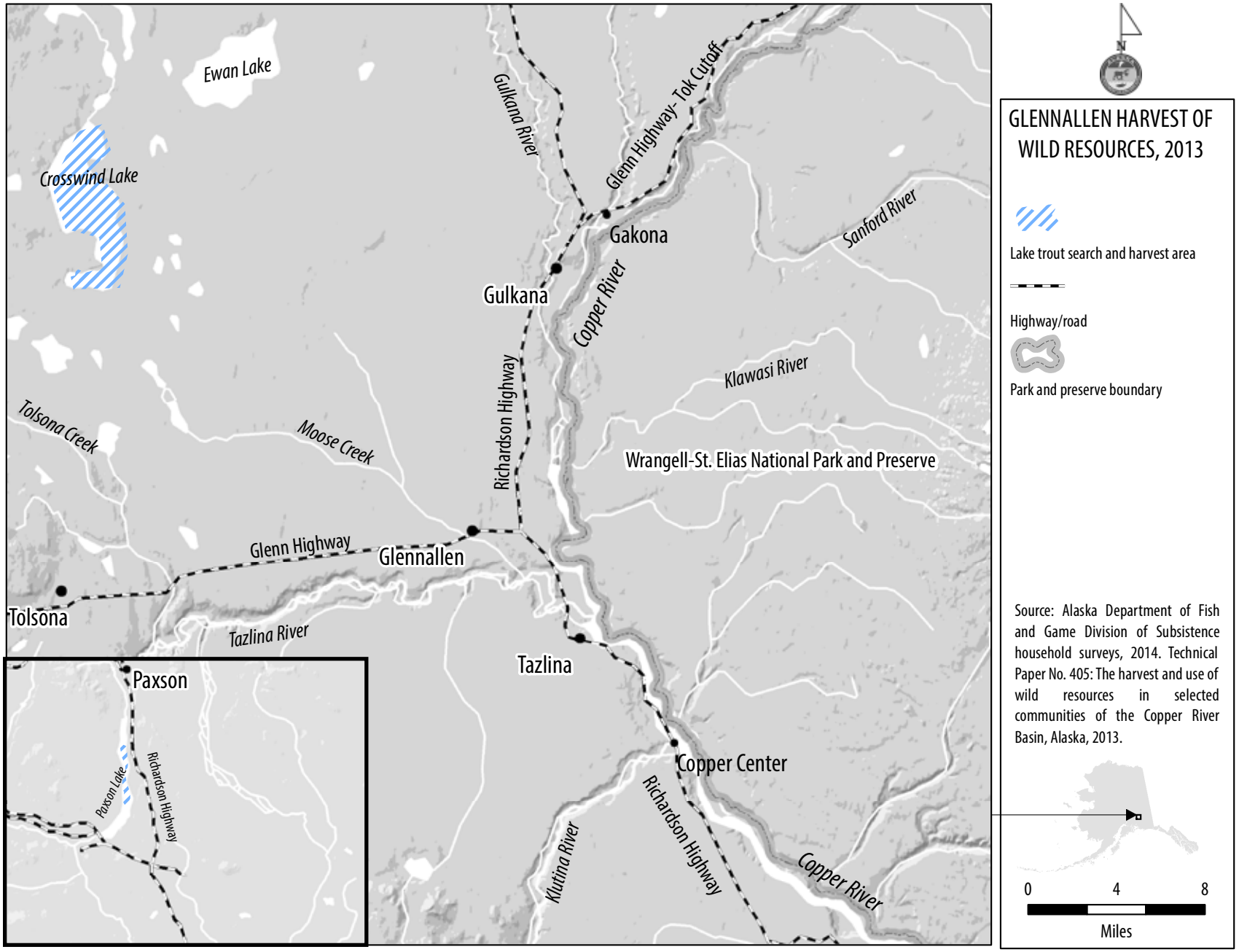
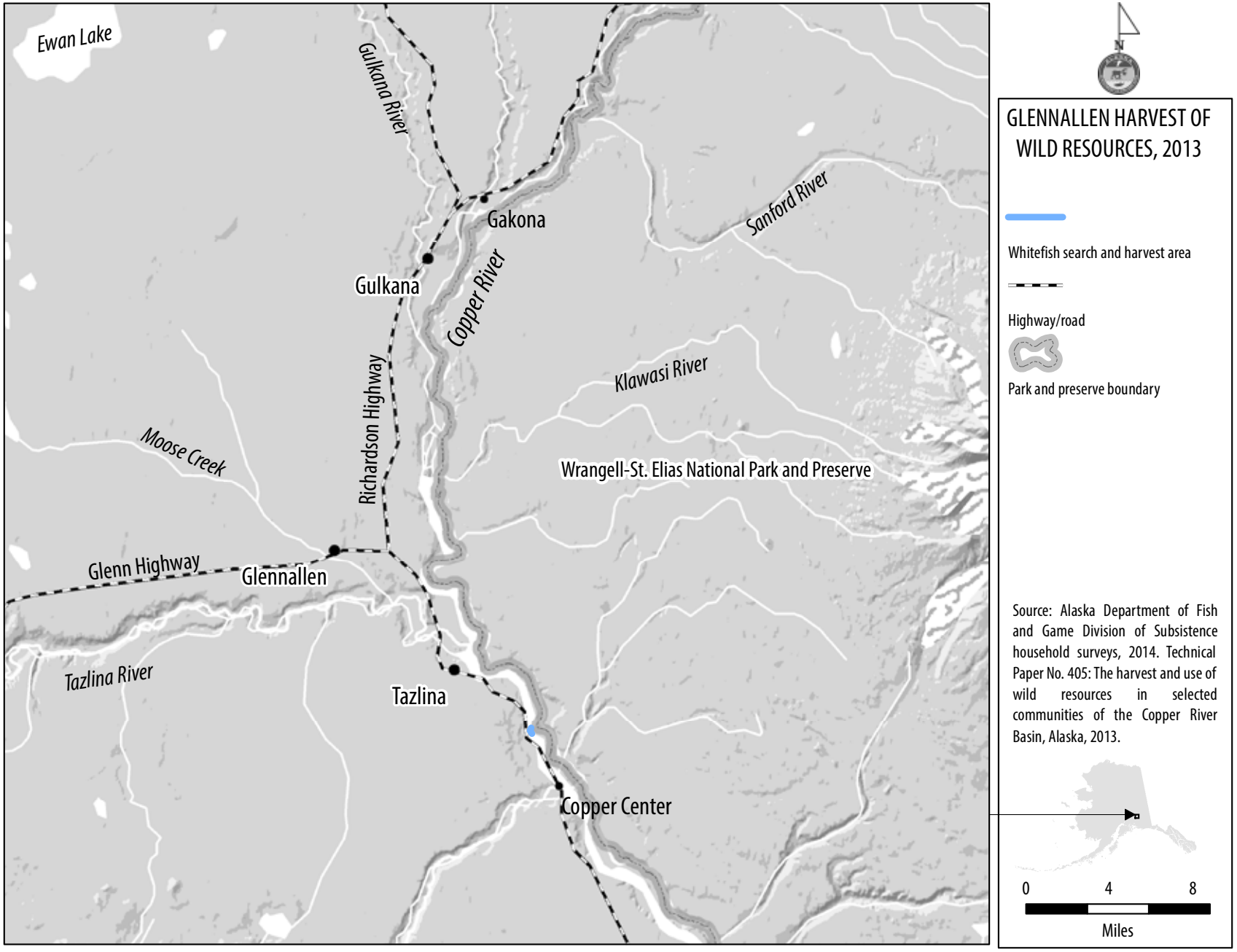

Ewan Lake
Crosswind Lake
Gulkana River
Glenn Highway- Tok Cutoff
Gakona
Sanford River
Gulkana
Copper River
Klawasi River
Richardson Highway
Tolsona Creek
Moose Creek
Wrangell-St. Elias National Park and Preserve
Glenn Highway
Glennallen
Tolsona
Tazlina River
Tazlina
Paxson
Paxson Lake
Richardson Highway
Copper Center
Klutina River
Richardson Highway
Copper River
GLENNALLEN HARVEST OF WILD RESOURCES, 2013
Lake trout search and harvest area
Highway/road
Park and preserve boundary
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
0
4
8
Miles


Ewan Lake
Gulkana River
Gakona
Sanford River
Gulkana
Copper River
Klawasi River
Richardson Highway
Moose Creek
Wrangell-St. Elias National Park and Preserve
Glenn Highway
Glennallen
Tazlina River
Tazlina
Copper Center
GLENNALLEN HARVEST OF WILD RESOURCES, 2013
Whitefish search and harvest area
Highway/road
Park and preserve boundary
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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4
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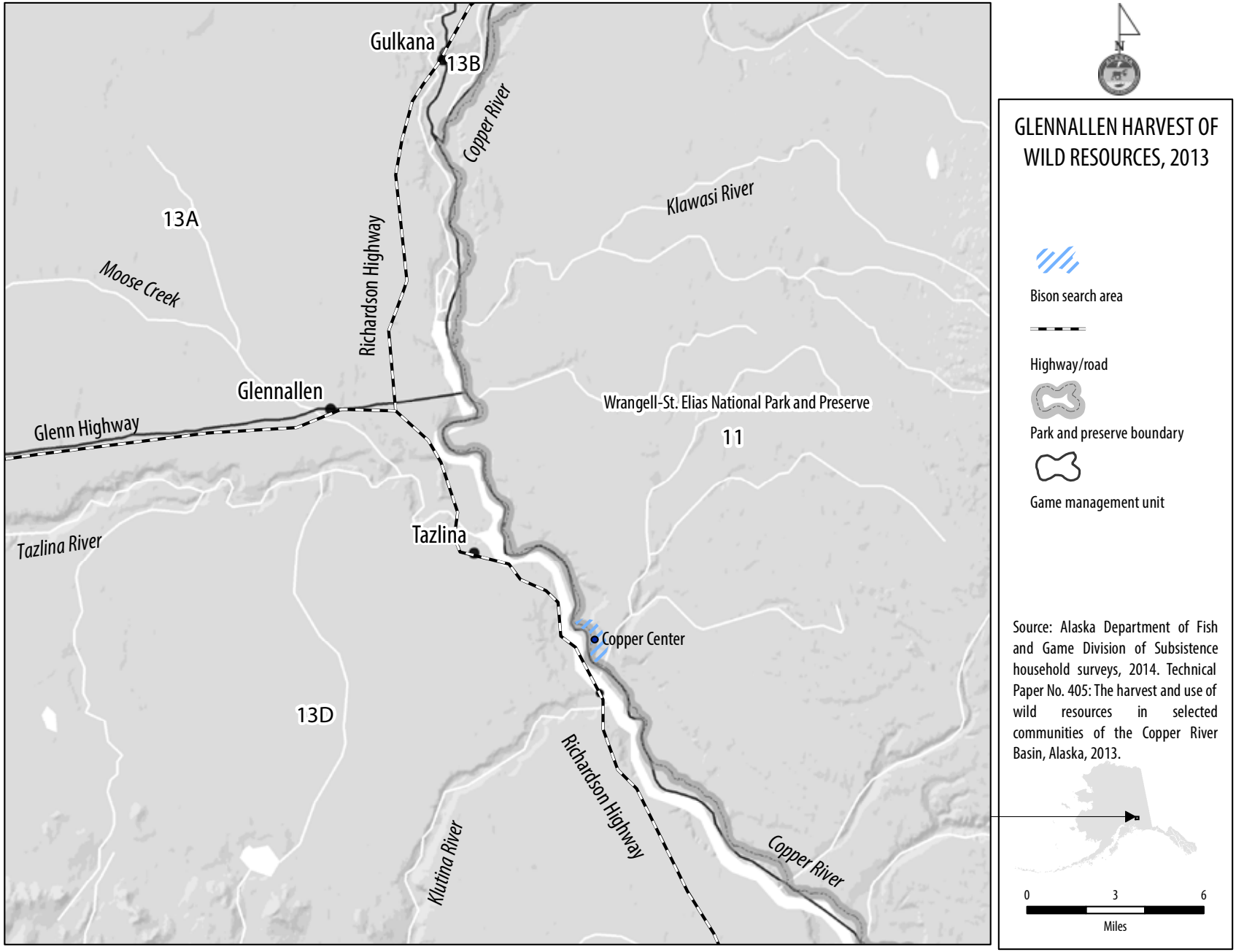
Miles


Gulkana
13B
Copper River
Klawasi River
13A
Moose Creek
Richardson Highway
Glennallen
Glenn Highway
Wrangell-St. Elias National Park and Preserve
11
Tazlina River
Tazlina
Copper Center
13D
Richardson Highway
Klutina River
Copper River
GLENNALLEN HARVEST OF WILD RESOURCES, 2013
Bison search area
Highway/road
Park and preserve boundary
Game management unit
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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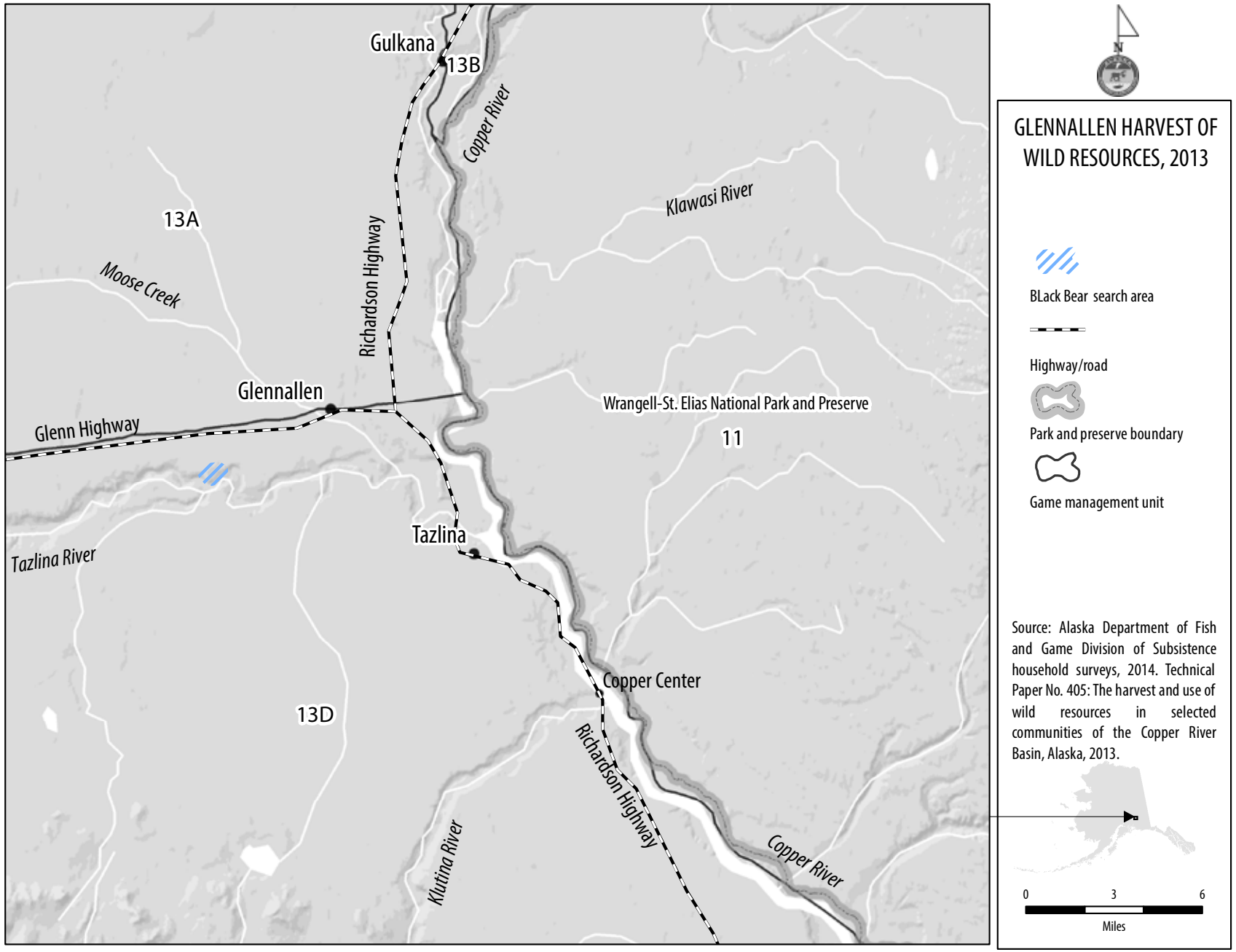
6
Miles


Gulkana
13B
Copper River
Klawasi River
13A
Moose Creek
Richardson Highway
Glennallen
Glenn Highway
Wrangell-St. Elias National Park and Preserve
11
Tazlina
Tazlina River
Copper Center
13D
Richardson Highway
Klutina River
Copper River
GLENNALLEN HARVEST OF WILD RESOURCES, 2013
BLack Bear search area
Highway/road
Park and preserve boundary
Game management unit
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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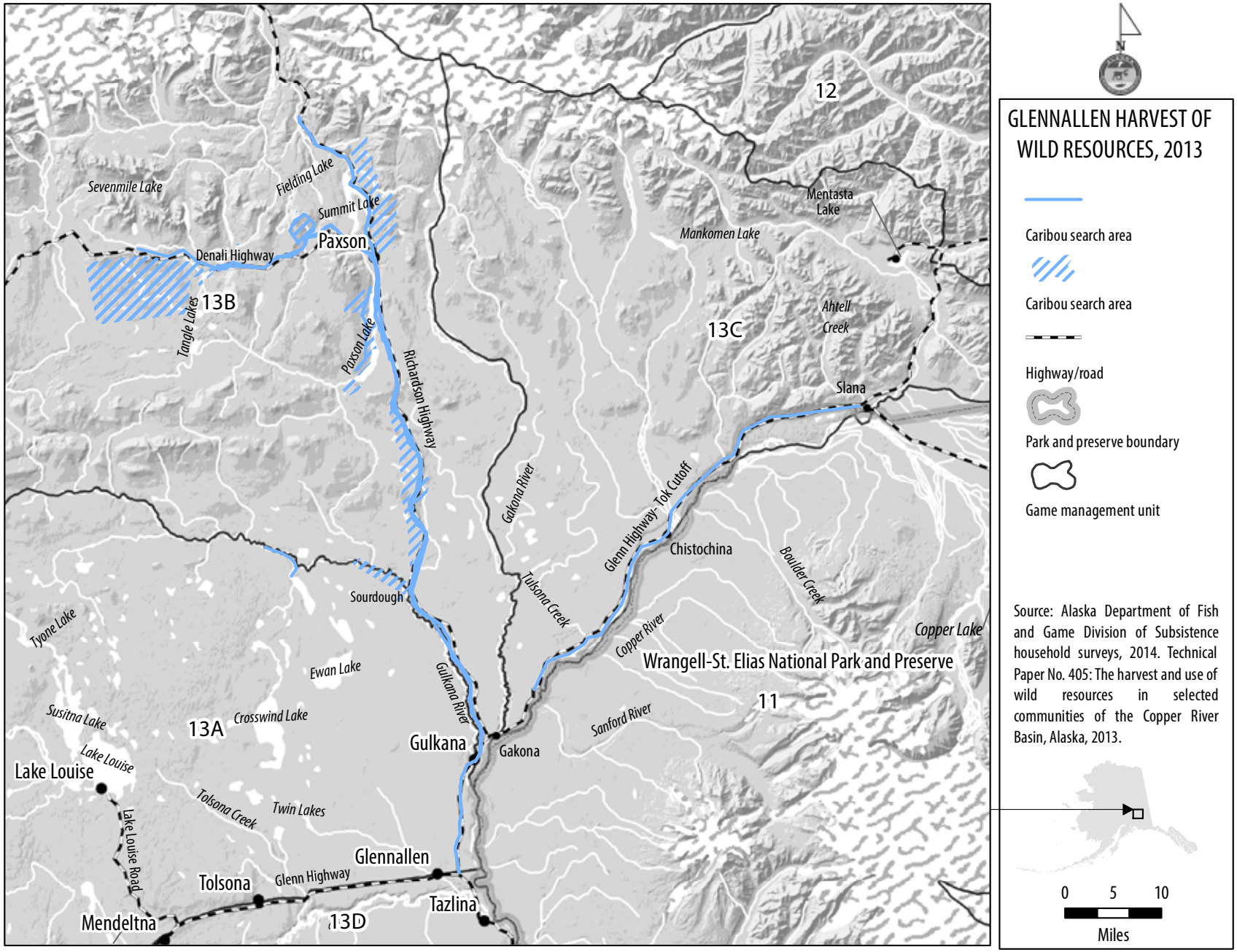
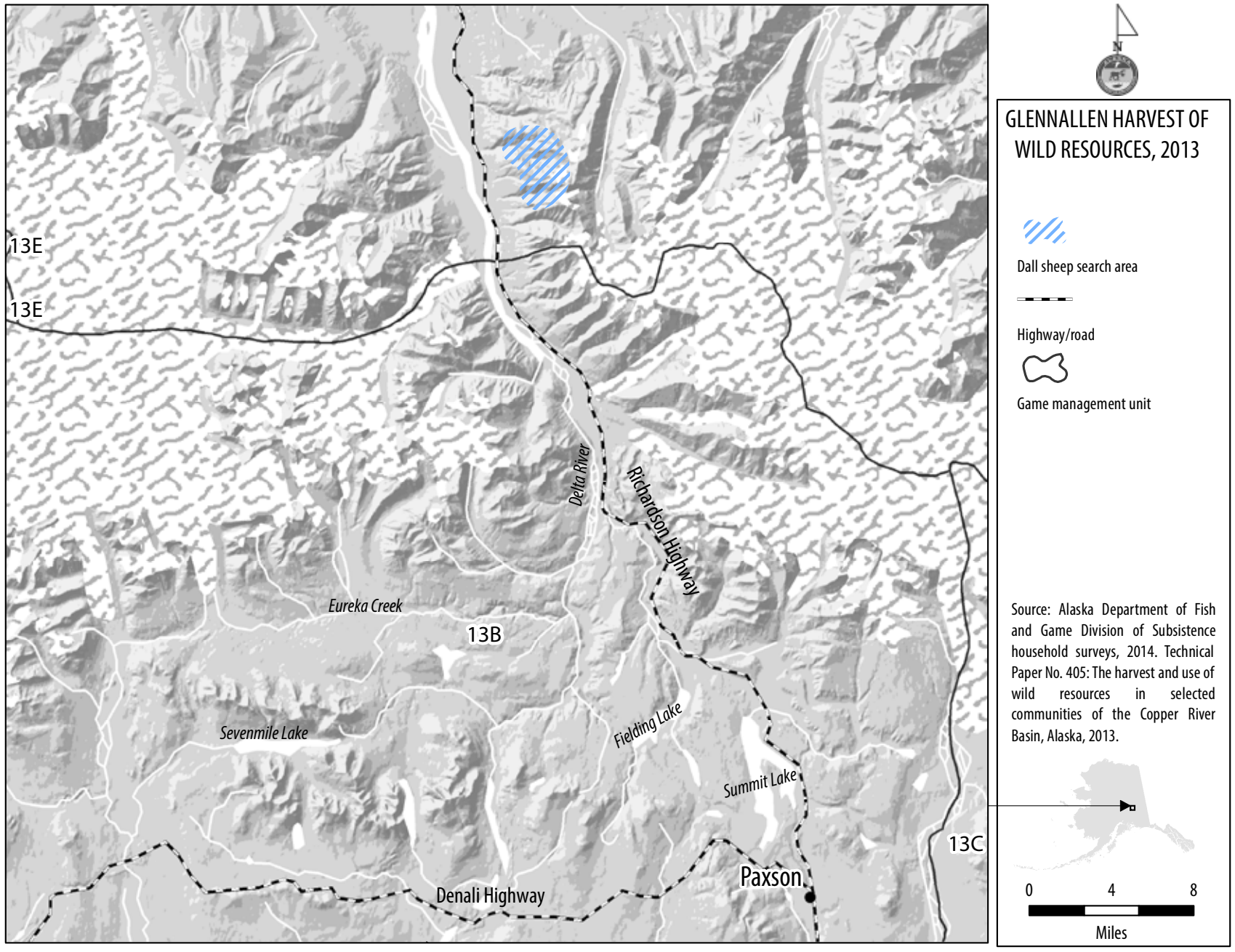
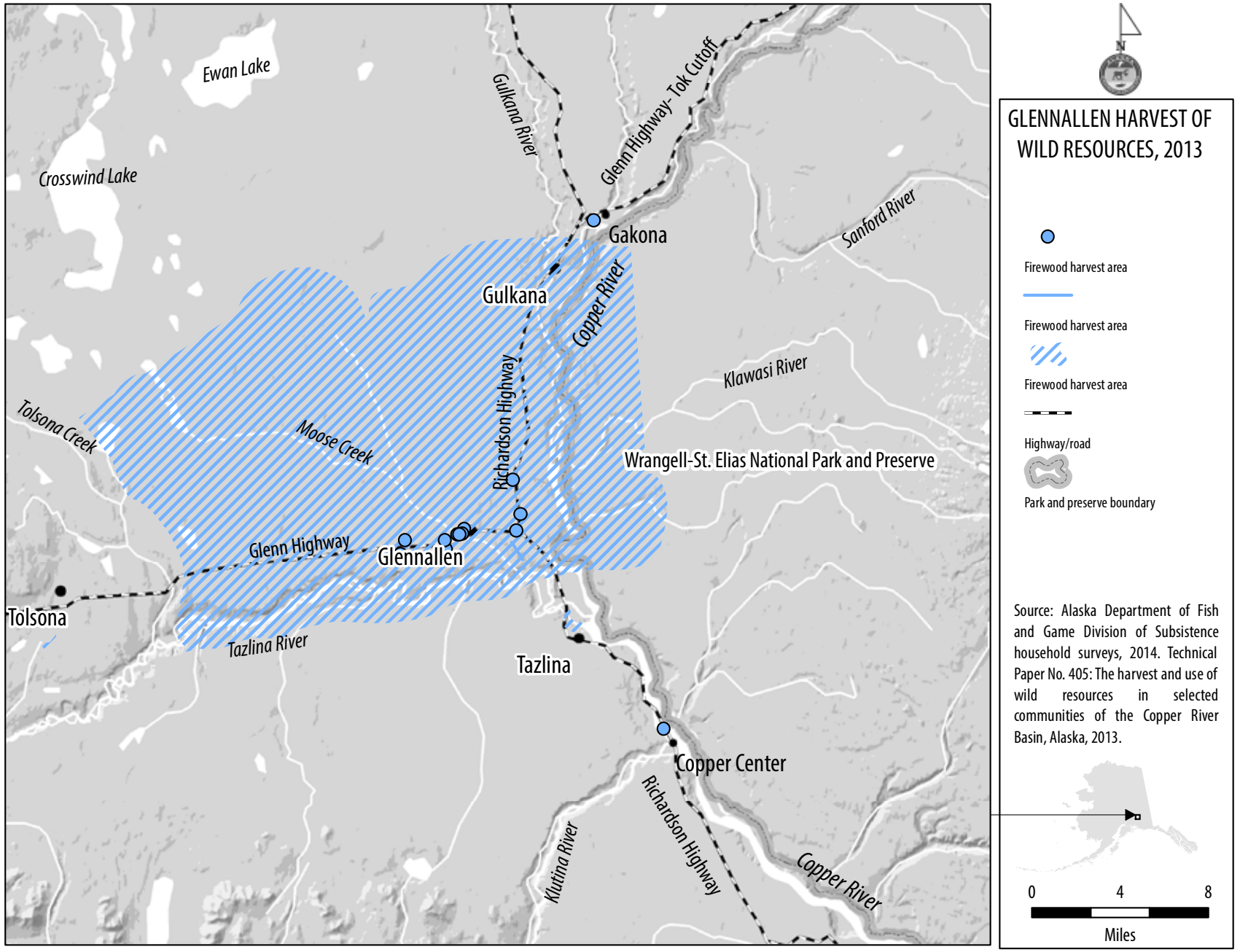
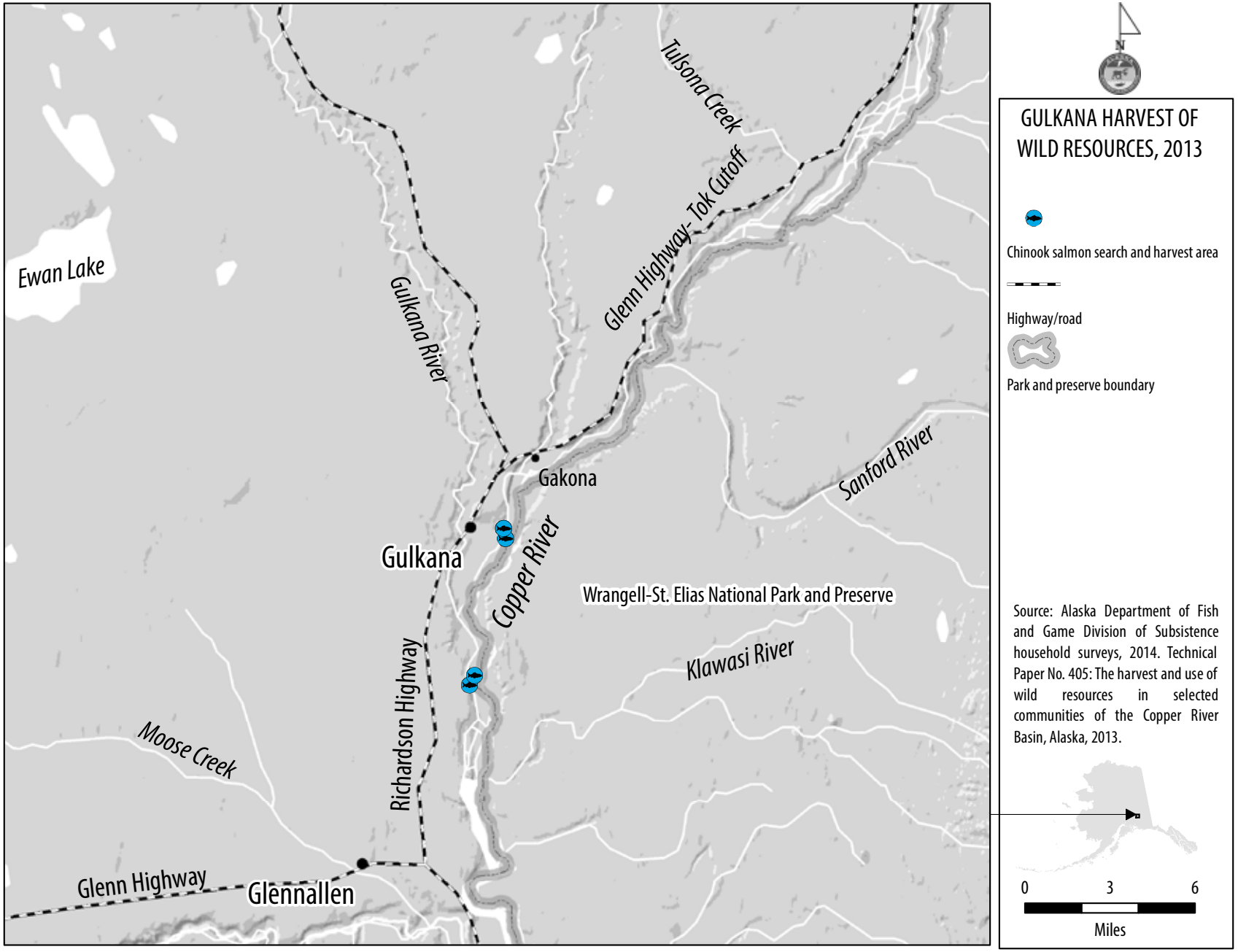
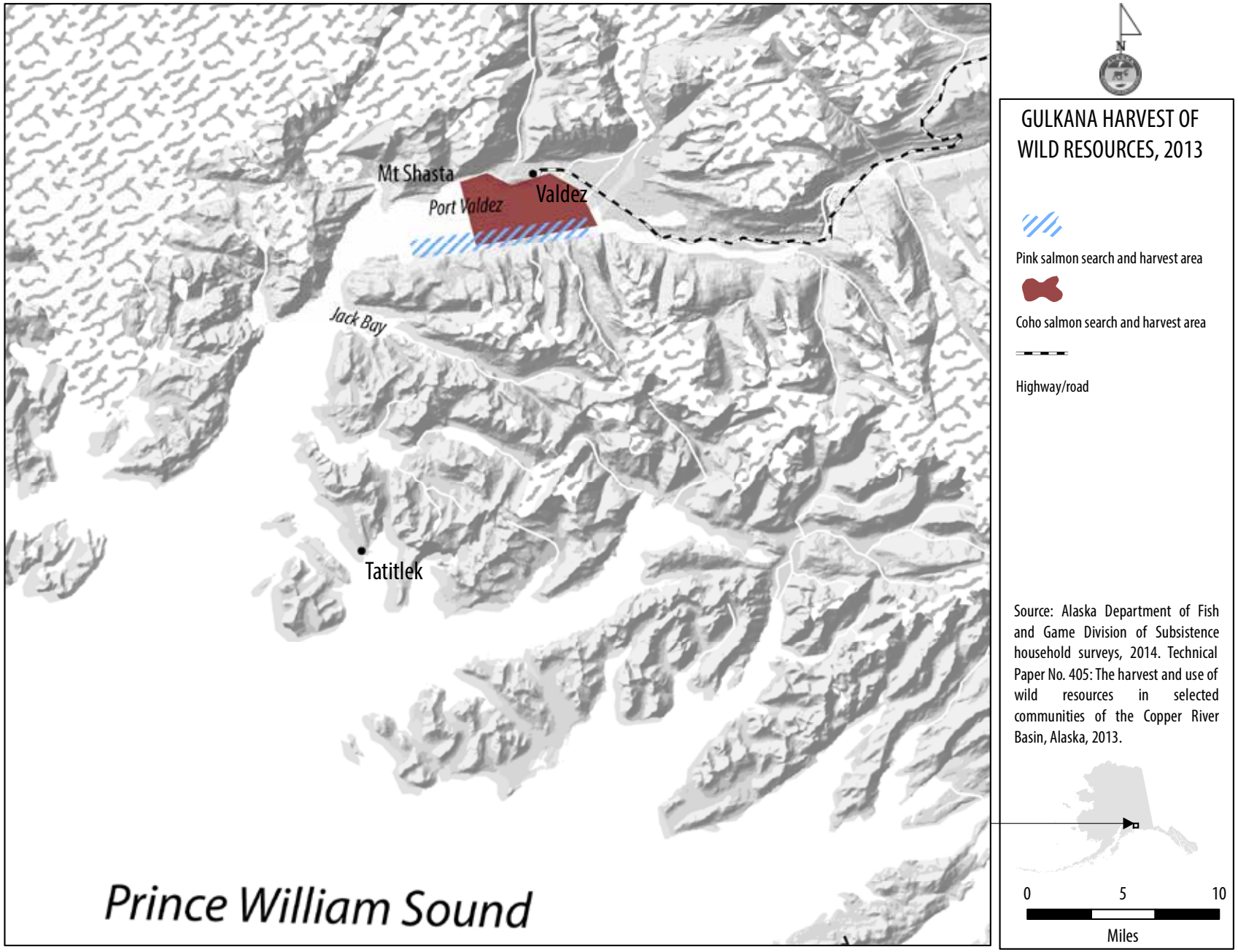
6
Miles


GLENNALLEN HARVEST OF WILD RESOURCES, 2013
Caribou search area
Caribou search area
Highway/road
Park and preserve boundary
Game management unit
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
0 5 10
Miles
12
11
13A
13B
13C
13D
Sevenmile Lake
Fielding Lake
Summit Lake
Paxson
Denali Highway
Tangle Lakes
Paxson Lake
Richardson Highway
Mentasta Lake
Mankomen Lake
Ahtell Creek
Slana
Gakona River
Glenn Highway- Tok Cutoff
Chistochina
Boulder Creek
Tulsona Creek
Copper River
Copper Lake
Wrangell-St. Elias National Park and Preserve
Sourdough
Tyone Lake
Ewan Lake
Gulkana River
Sanford River
Susitna Lake
Crosswind Lake
Gulkana
Gakona
Lake Louise
Lake Louise
Tolsona Creek
Twin Lakes
Lake Louise Road
Glennallen
Tolsona
Glenn Highway
Tazlina
Mendeltna


13E
13E
Delta River
Richardson Highway
Eureka Creek
13B
Sevenmile Lake
Fielding Lake
Summit Lake
13C
Paxson
Denali Highway
GLENNALLEN HARVEST OF WILD RESOURCES, 2013
Dall sheep search area
Highway/road
Game management unit
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
0
4
8
Miles


GLENNALLEN HARVEST OF WILD RESOURCES, 2013
Firewood harvest area
Firewood harvest area
Firewood harvest area
Highway/road
Park and preserve boundary
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
0
4
8
Miles
Ewan Lake
Crosswind Lake
Gulkana River
Glenn Highway- Tok Cutoff
Gakona
Sanford River
Gulkana
Copper River
Klawasi River
Richardson Highway
Tolsona Creek
Moose Creek
Wrangell-St. Elias National Park and Preserve
Glenn Highway
Glennallen
Tolsona
Tazlina River
Tazlina
Copper Center
Richardson Highway
Klutina River
Copper River


GULKANA HARVEST OF WILD RESOURCES, 2013
Chinook salmon search and harvest area
Highway/road
Park and preserve boundary
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
0
3
6
Miles
Ewan Lake
Gulkana River
Tulsona Creek
Glenn Highway- Tok Cutoff
Gakona
Sanford River
Gulkana
Copper River
Wrangell-St. Elias National Park and Preserve
Klawasi River
Richardson Highway
Moose Creek
Glenn Highway
Glennallen


Mt Shasta
Valdez
Port Valdez
Jack Bay
Tatitlek
Prince William Sound
N
GULKANA HARVEST OF WILD RESOURCES, 2013
Pink salmon search and harvest area
Coho salmon search and harvest area
Highway/road
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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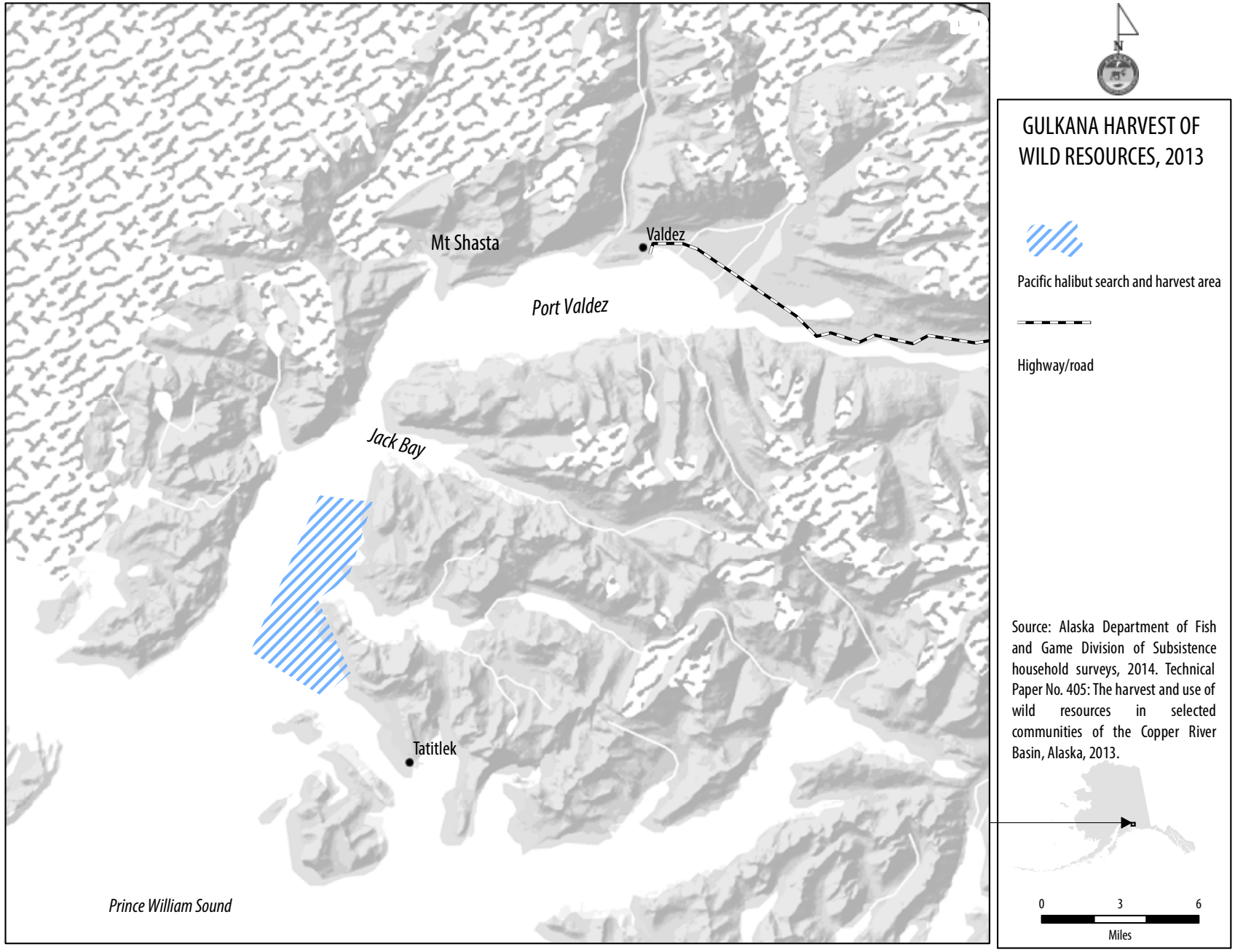
Miles


Mt Shasta
Valdez
Port Valdez
Jack Bay
Tatitlek
Prince William Sound
N
GULKANA HARVEST OF WILD RESOURCES, 2013
Pacific halibut search and harvest area
Highway/road
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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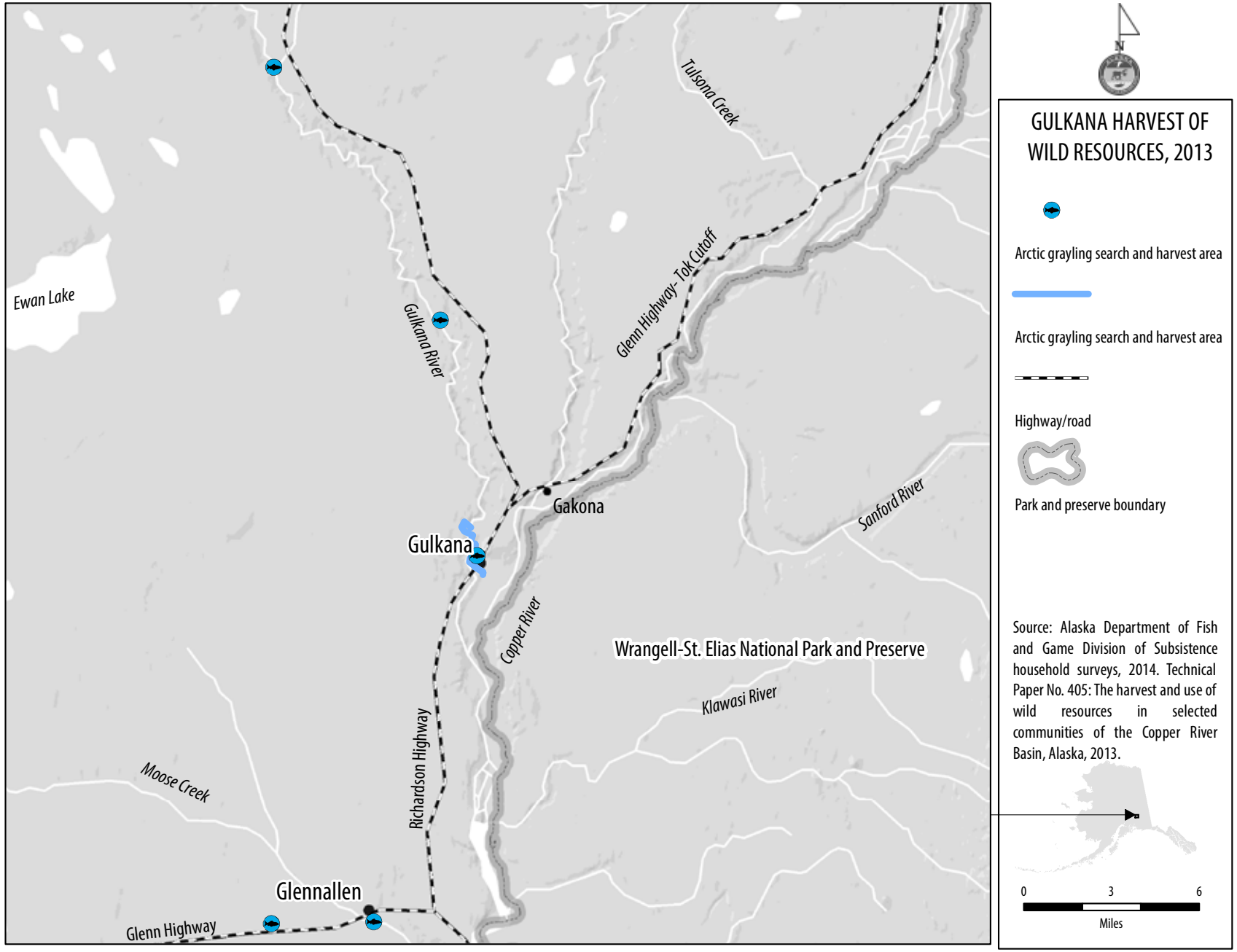
3
6
Miles


Ewan Lake
Gulkana River
Tulsona Creek
Glenn Highway- Tok Cutoff
Gakona
Gulkana
Copper River
Sanford River
Wrangell-St. Elias National Park and Preserve
Klawasi River
Richardson Highway
Moose Creek
Glennallen
Glenn Highway
GULKANA HARVEST OF WILD RESOURCES, 2013
Arctic grayling search and harvest area
Arctic grayling search and harvest area
Highway/road
Park and preserve boundary
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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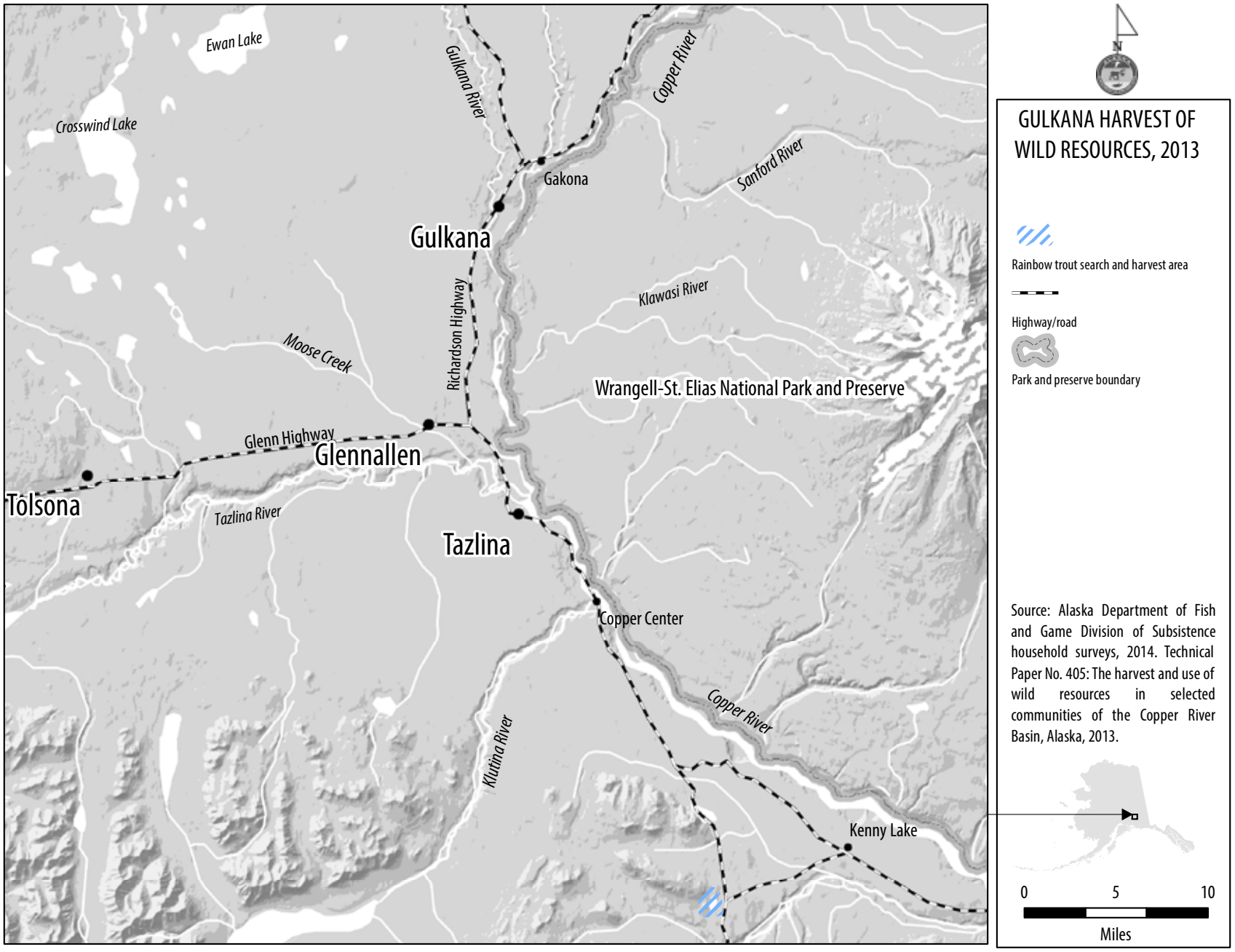
Miles


Ewan Lake
Crosswind Lake
Gulkana River
Copper River
Gakona
Sanford River
Gulkana
Klawasi River
Richardson Highway
Moose Creek
Wrangell-St. Elias National Park and Preserve
Glenn Highway
Glennallen
Tolsona
Tazlina River
Tazlina
Copper Center
Copper River
Klutina River
Kenny Lake
N
GULKANA HARVEST OF WILD RESOURCES, 2013
Rainbow trout search and harvest area
Highway/road
Park and preserve boundary
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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5
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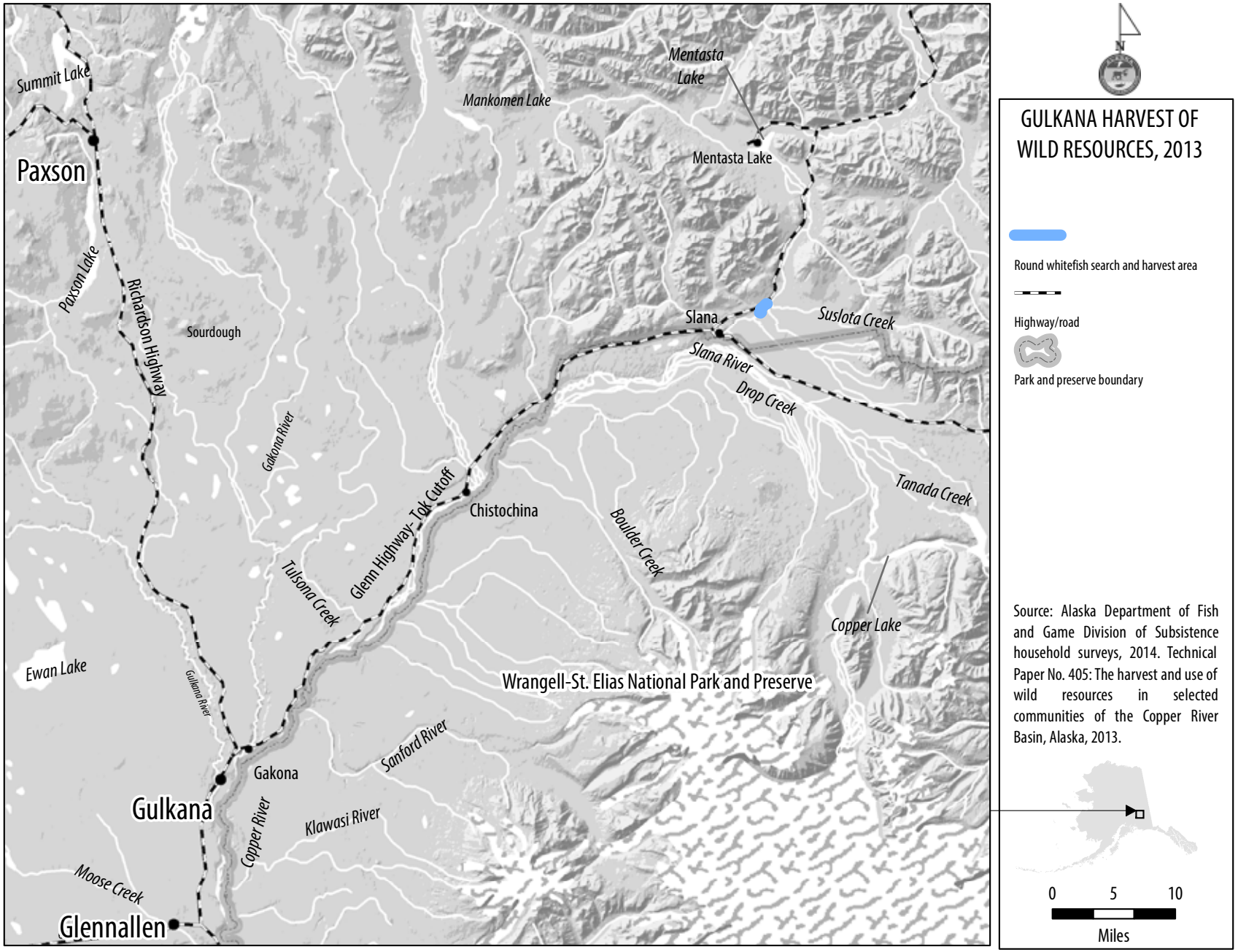
Miles


Summit Lake
Paxson
Paxson Lake
Richardson Highway
Sourdough
Gakona River
Mankomen Lake
Mentasta Lake
Mentasta Lake
Slana
Suslota Creek
Slana River
Drop Creek
Tanada Creek
Chistochina
Glenn Highway- Tok Cutoff
Boulder Creek
Tulsona Creek
Copper Lake
Ewan Lake
Gulkana River
Wrangell-St. Elias National Park and Preserve
Sanford River
Gakona
Gulkana
Copper River
Klawasi River
Moose Creek
Glennallen
GULKANA HARVEST OF WILD RESOURCES, 2013
Round whitefish search and harvest area
Highway/road
Park and preserve boundary
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
0
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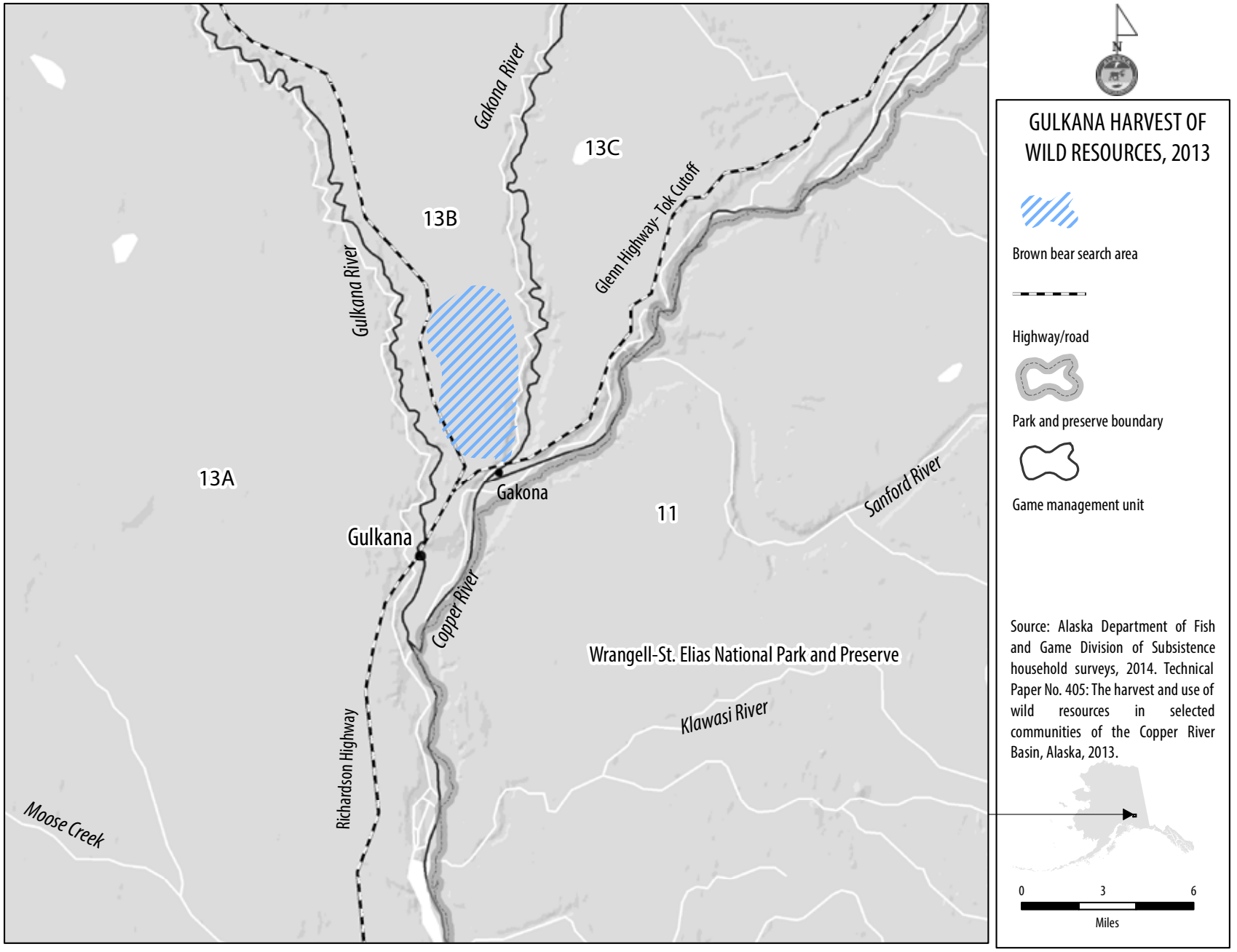
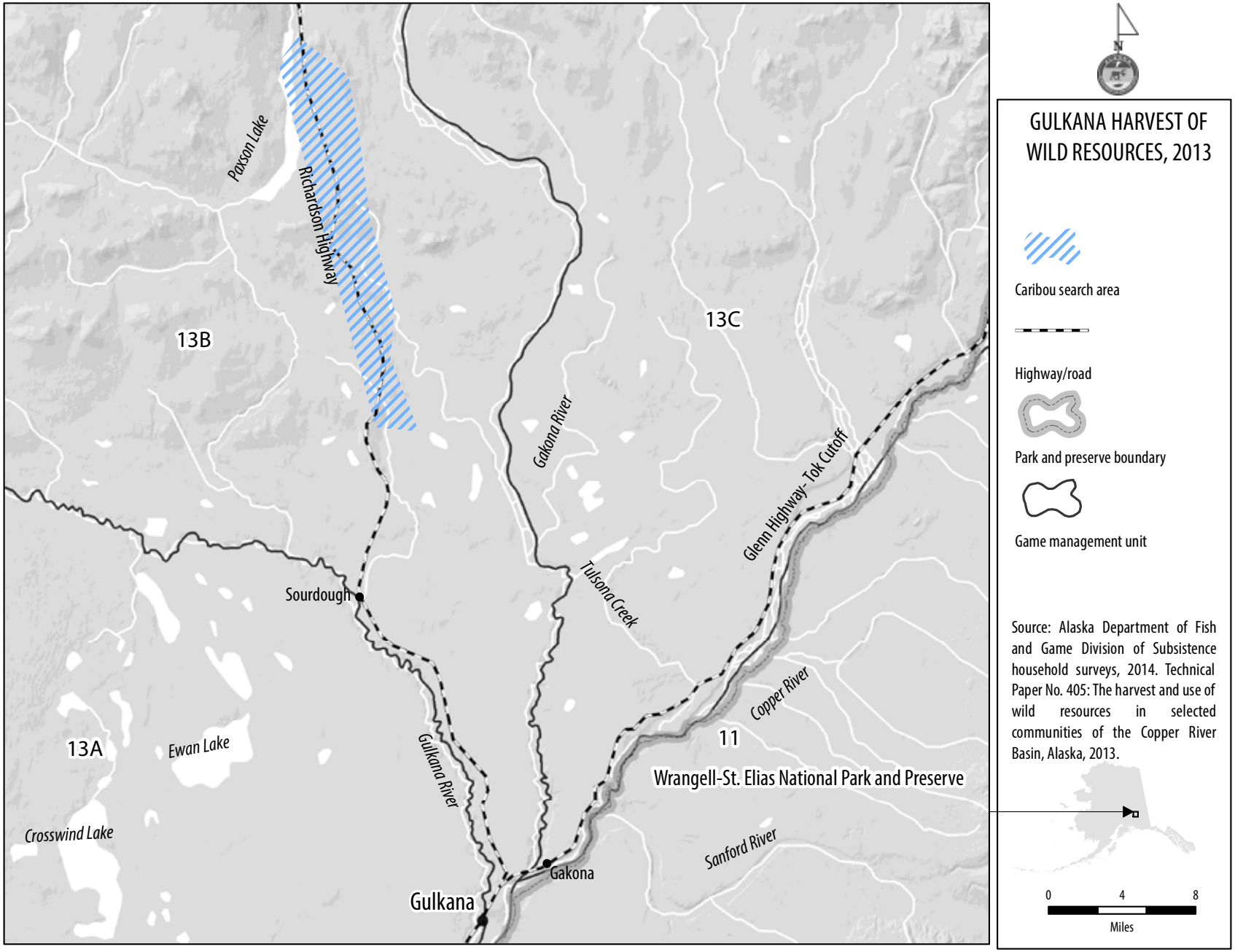
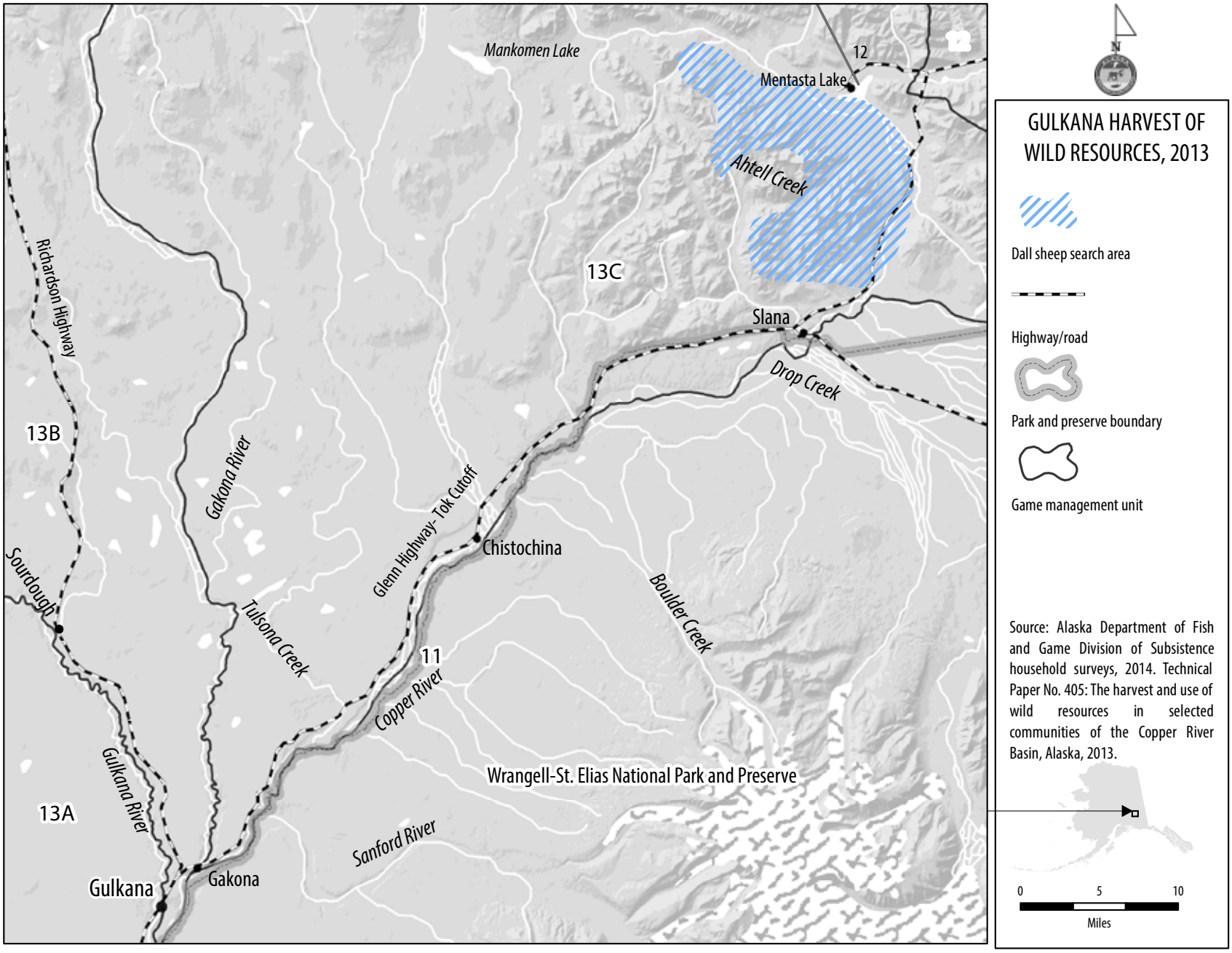
Miles


GULKANA HARVEST OF WILD RESOURCES, 2013
Brown bear search area
Highway/road
Park and preserve boundary
Game management unit
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
0
3
6
Miles
13A
13B
13C
11
Gakona River
Gulkana River
Glenn Highway- Tok Cutoff
Gakona
Gulkana
Sanford River
Copper River
Wrangell-St. Elias National Park and Preserve
Klawasi River
Richardson Highway
Moose Creek


GULKANA HARVEST OF WILD RESOURCES, 2013
Caribou search area
Highway/road
Park and preserve boundary
Game management unit
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
0
4
8
Miles
Paxson Lake
Richardson Highway
13B
13C
Gakona River
Glenn Highway - Tok Cutoff
Tulsona Creek
Sourdough
Copper River
11
13A
Ewan Lake
Gulkana River
Wrangell-St. Elias National Park and Preserve
Crosswind Lake
Sanford River
Gakona
Gulkana


Mankomen Lake
12
Mentasta Lake
Ahtell Creek
13C
Slana
Drop Creek
Richardson Highway
13B
Gakona River
Glenn Highway- Tok Cutoff
Chistochina
Sourdough
Tulsona Creek
Boulder Creek
11
Copper River
Gulkana River
Wrangell-St. Elias National Park and Preserve
13A
Sanford River
Gulkana
Gakona
GULKANA HARVEST OF WILD RESOURCES, 2013
Dall sheep search area
Highway/road
Park and preserve boundary
Game management unit
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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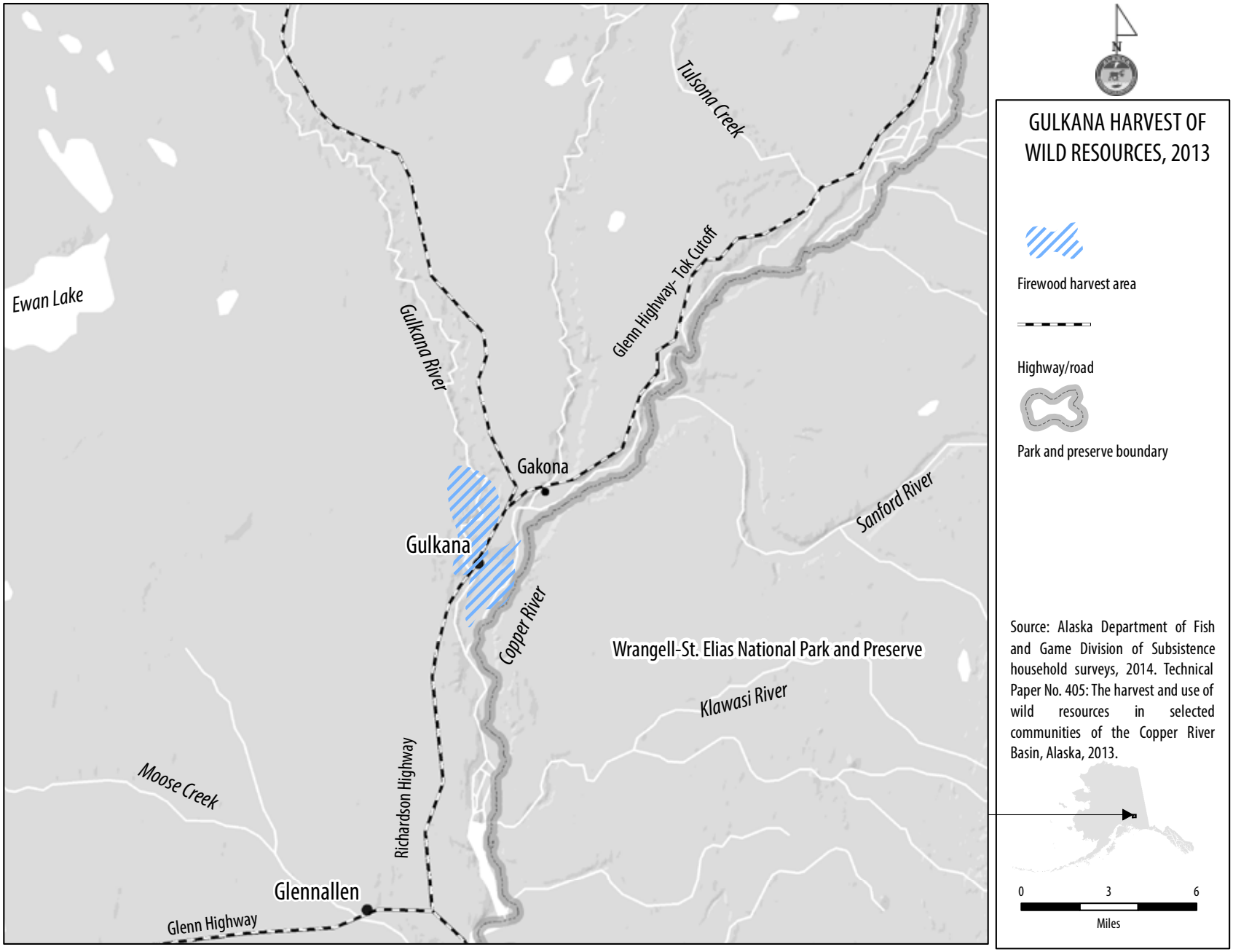
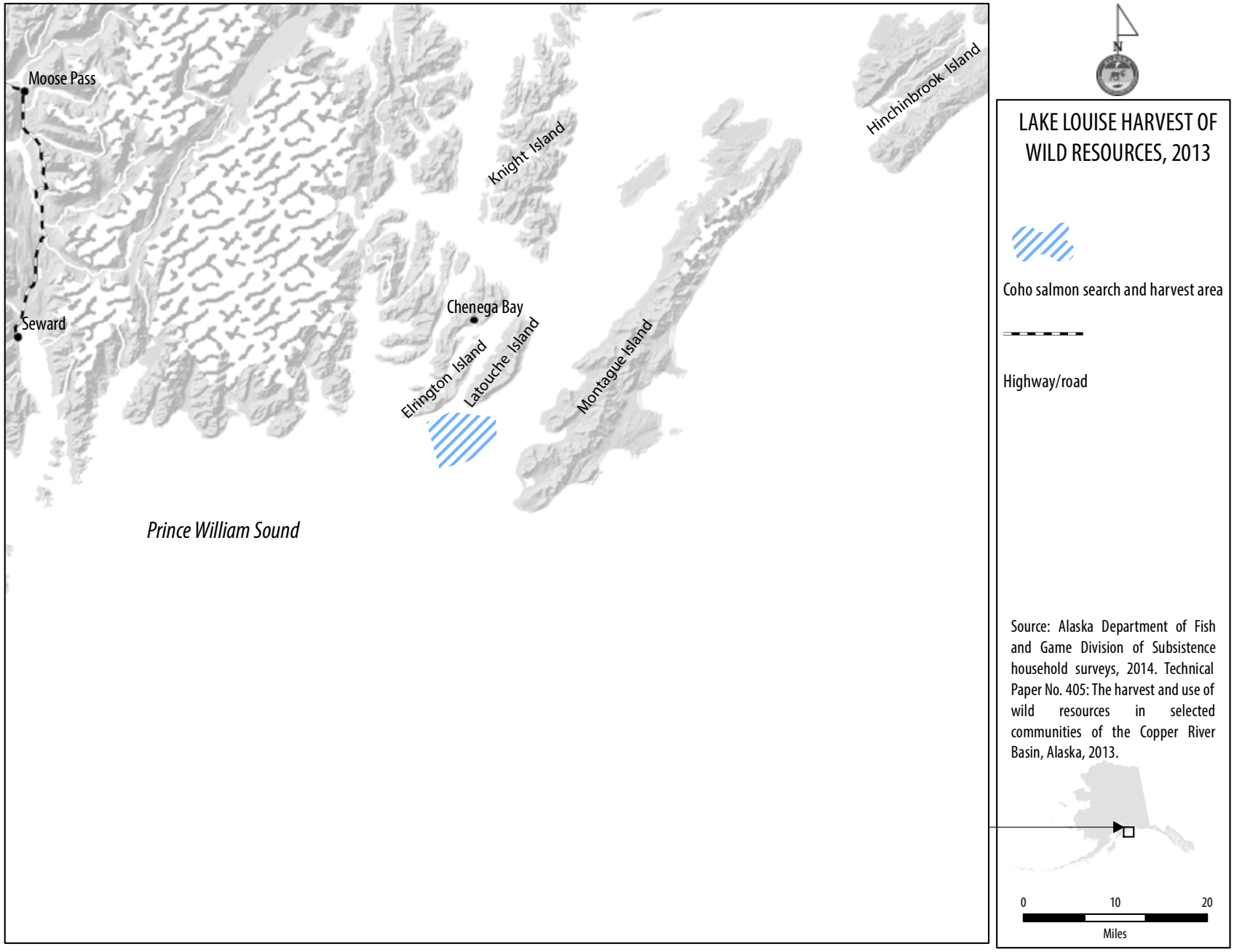
Miles


GULKANA HARVEST OF WILD RESOURCES, 2013
Firewood harvest area
Highway/road
Park and preserve boundary
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
0
3
6
Miles
Ewan Lake
Gulkana River
Tulsona Creek
Glenn Highway- Tok Cutoff
Gakona
Gulkana
Sanford River
Copper River
Wrangell-St. Elias National Park and Preserve
Klawasi River
Moose Creek
Richardson Highway
Glennallen
Glenn Highway


Moose Pass
Seward
Chenega Bay
Knight Island
Hinchinbrook Island
Elrington Island
Latouche Island
Montague Island
Prince William Sound
LAKE LOUISE HARVEST OF WILD RESOURCES, 2013
Coho salmon search and harvest area
Highway/road
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
0
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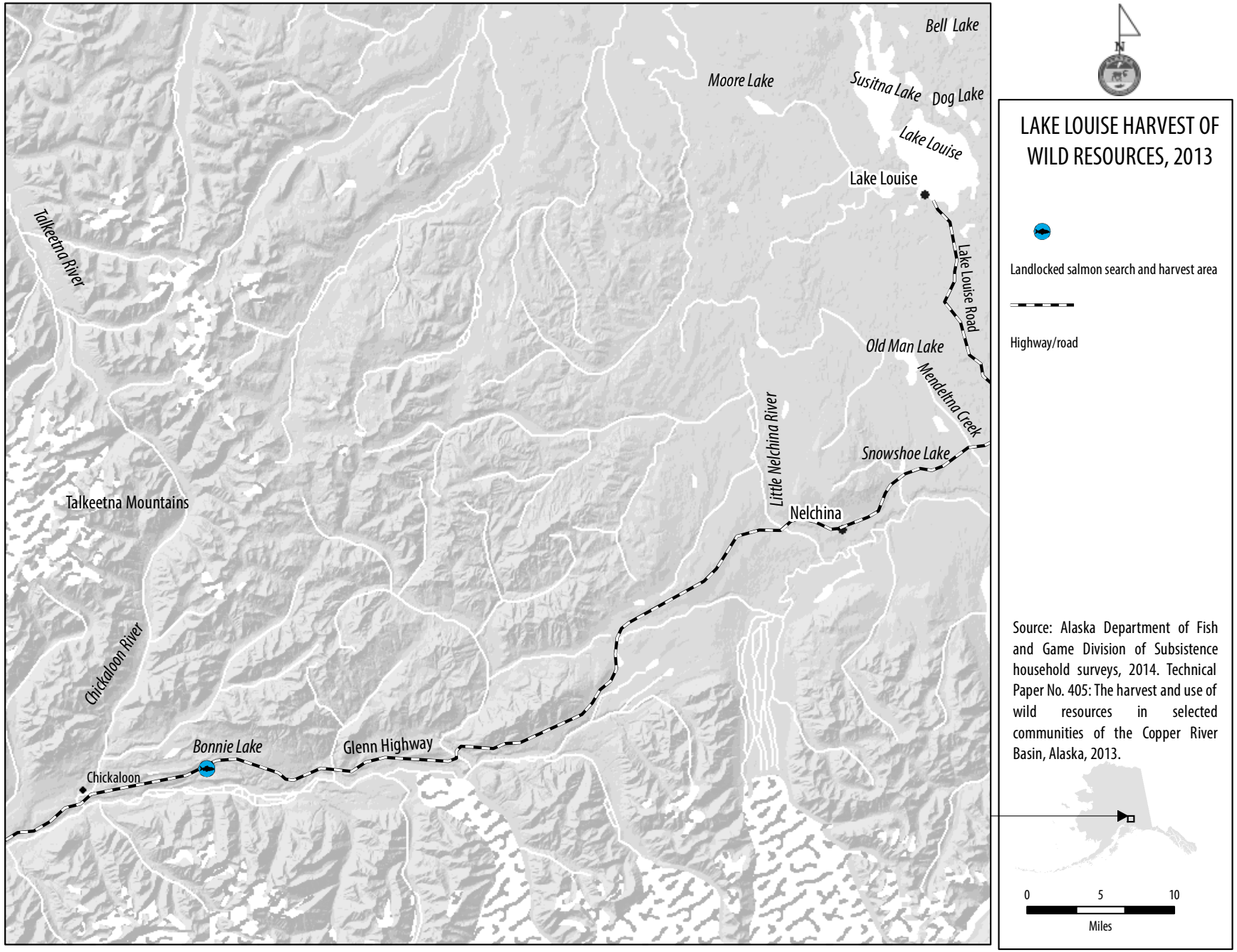
20
Miles


Bell Lake
Moore Lake
Susitna Lake
Dog Lake
Lake Louise
Lake Louise
Talkeetna River
Lake Louise Road
Old Man Lake
Mendeltna Creek
Little Nelchina River
Snowshoe Lake
Talkeetna Mountains
Nelchina
Chickaloon River
Bonnie Lake
Glenn Highway
Chickaloon
LAKE LOUISE HARVEST OF WILD RESOURCES, 2013
Landlocked salmon search and harvest area
Highway/road
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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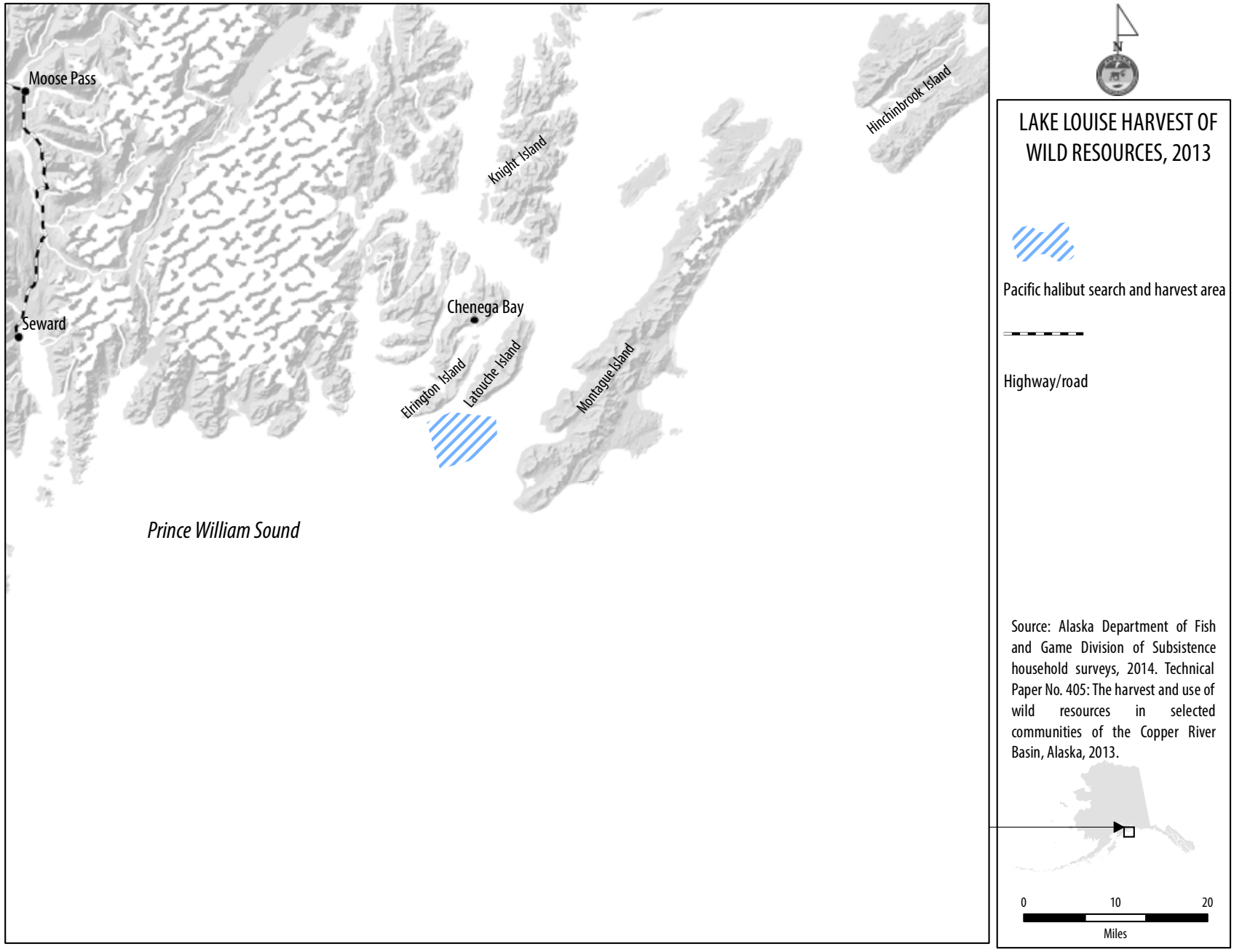
10
Miles


Moose Pass
Seward
Chenega Bay
Knight Island
Hinchinbrook Island
Elrington Island
Latouche Island
Montague Island
Prince William Sound
N
LAKE LOUISE HARVEST OF WILD RESOURCES, 2013
Pacific halibut search and harvest area
Highway/road
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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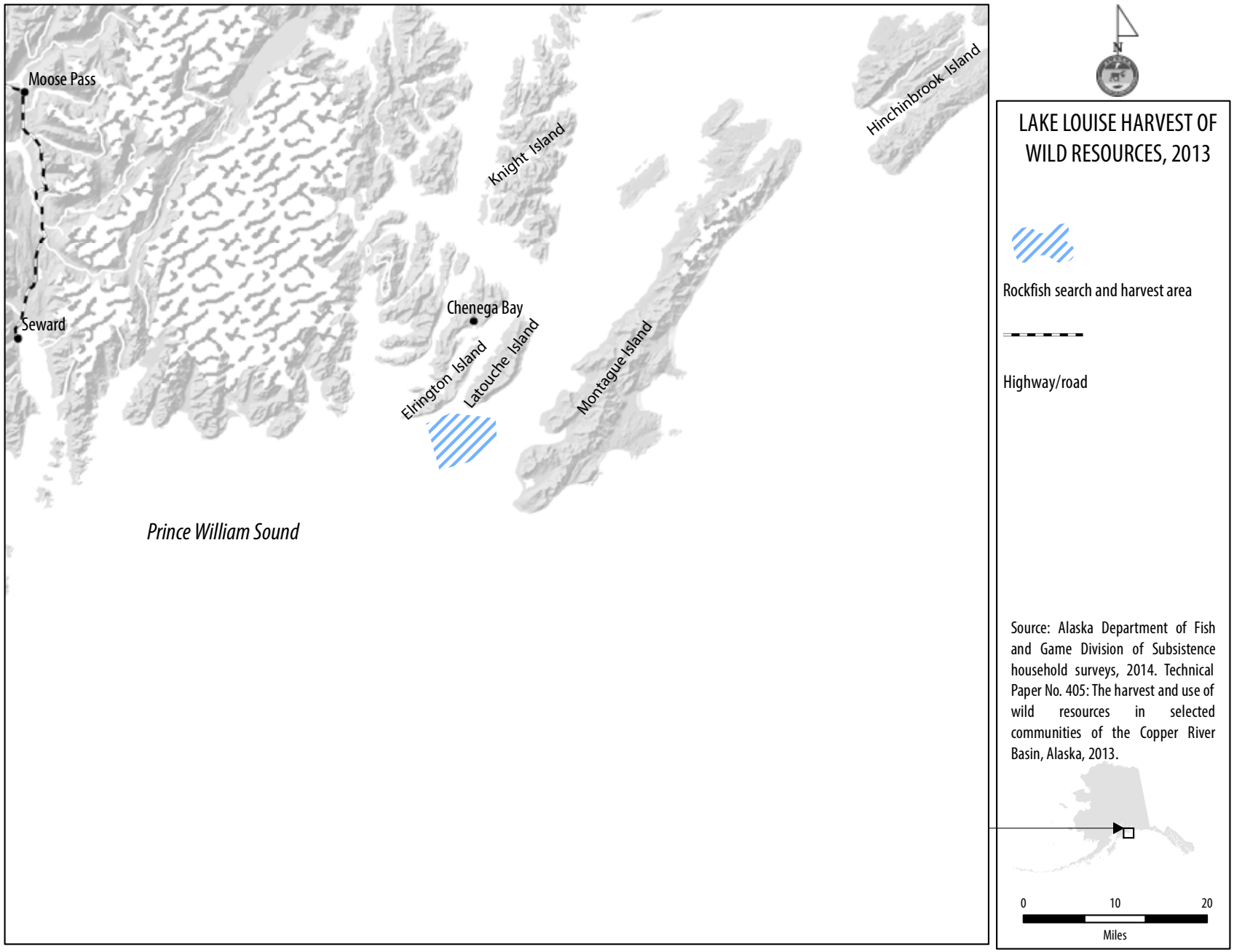
20
Miles


Moose Pass
Seward
Chenega Bay
Knight Island
Hinchinbrook Island
Elrington Island
Latouche Island
Montague Island
Prince William Sound
N
LAKE LOUISE HARVEST OF WILD RESOURCES, 2013
Rockfish search and harvest area
Highway/road
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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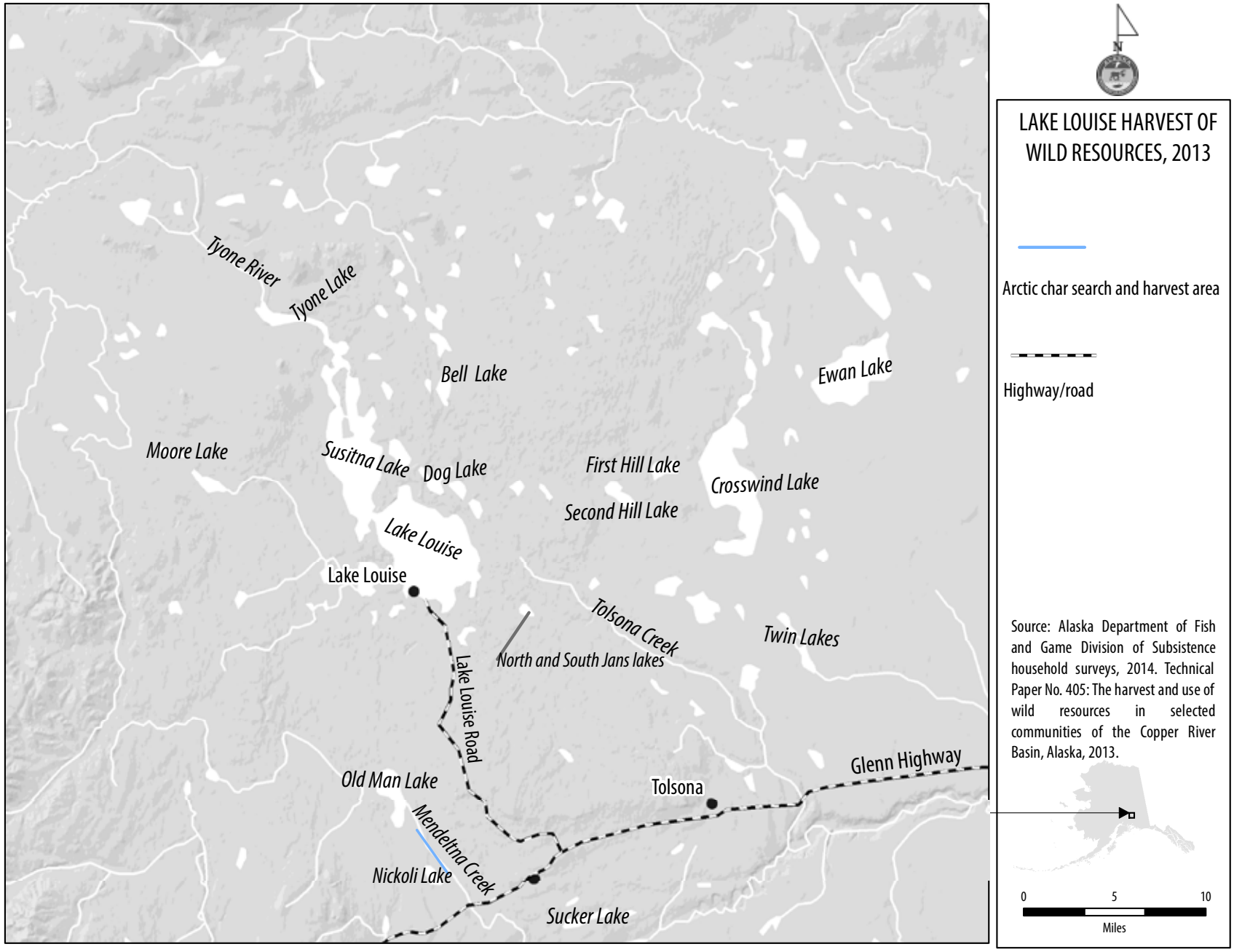
20
Miles


Tyone River
Tyone Lake
Bell Lake
Ewan Lake
Moore Lake
Susitna Lake
Dog Lake
First Hill Lake
Crosswind Lake
Second Hill Lake
Lake Louise
Lake Louise
Tolsona Creek
Twin Lakes
North and South Jans lakes
Lake Louise Road
Glenn Highway
Old Man Lake
Tolsona
Mendeltna Creek
Nickoli Lake
Sucker Lake
LAKE LOUISE HARVEST OF WILD RESOURCES, 2013
Arctic char search and harvest area
Highway/road
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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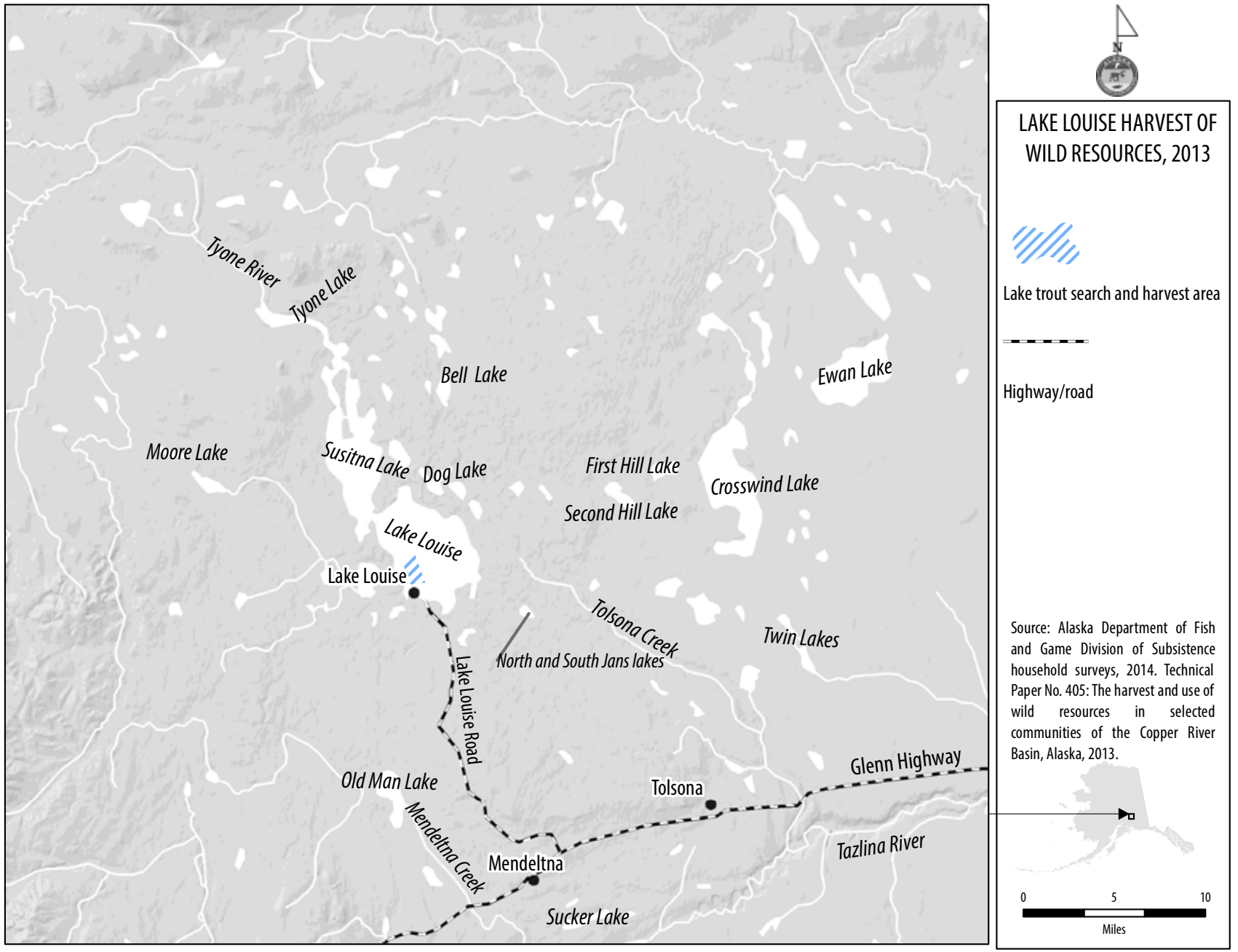
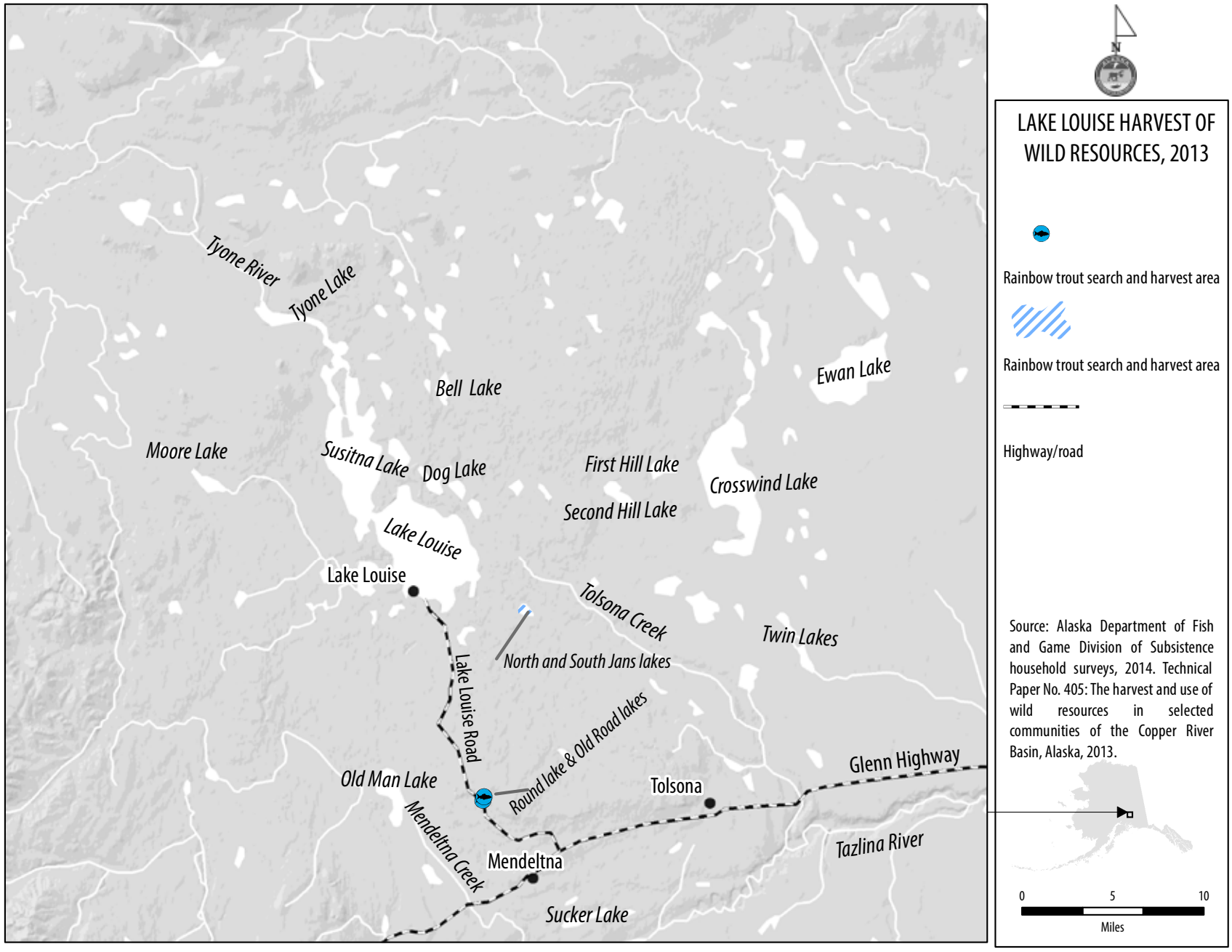
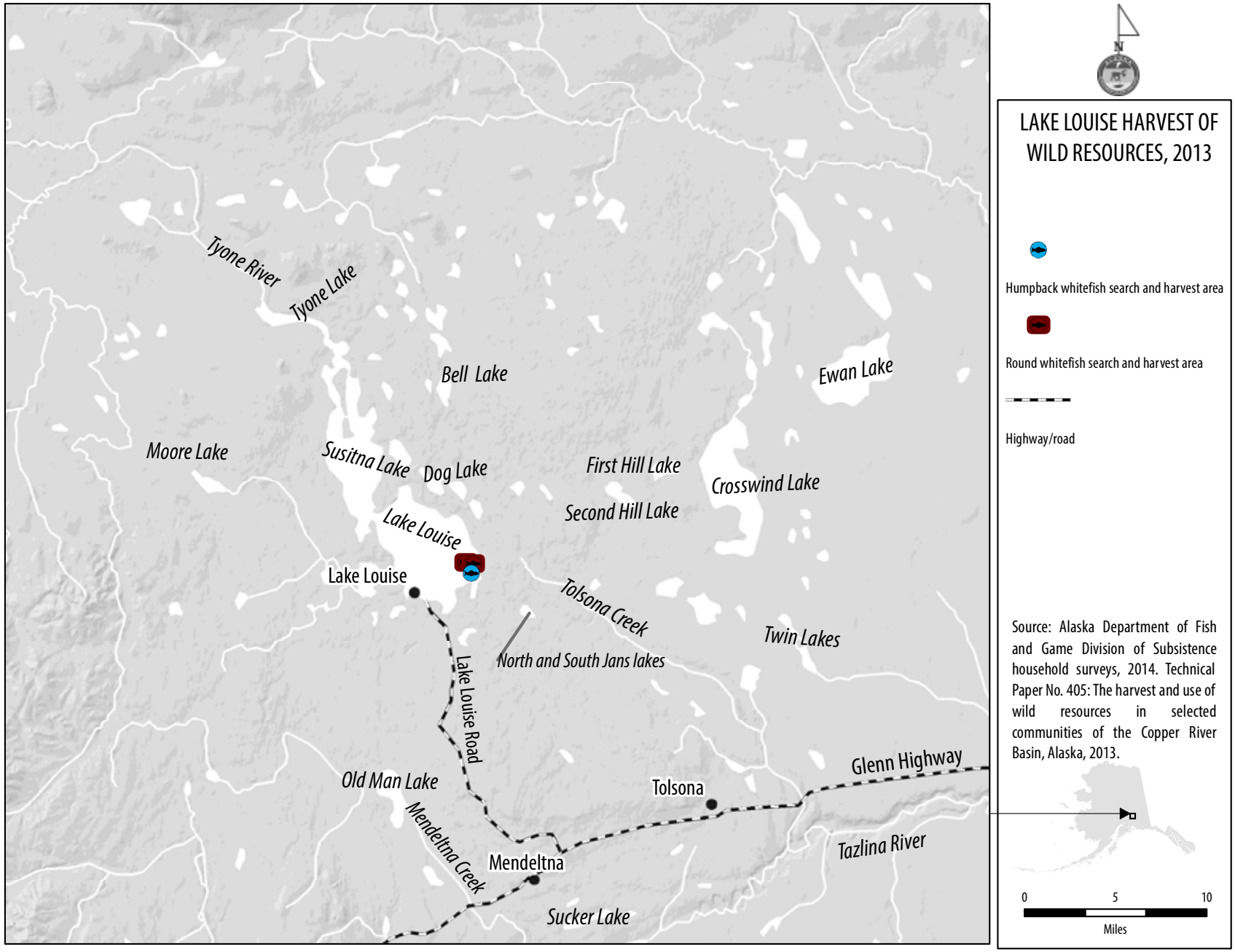
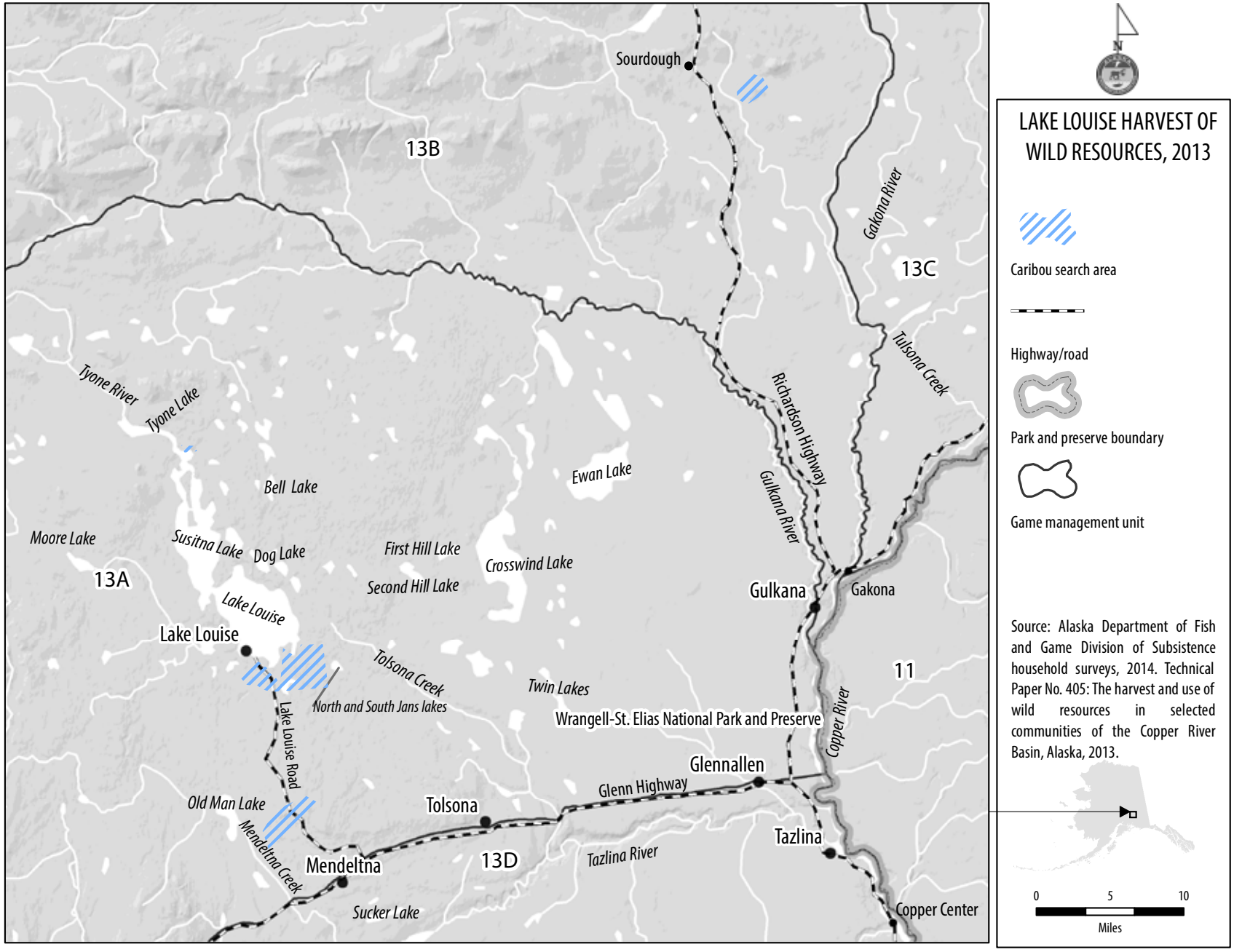
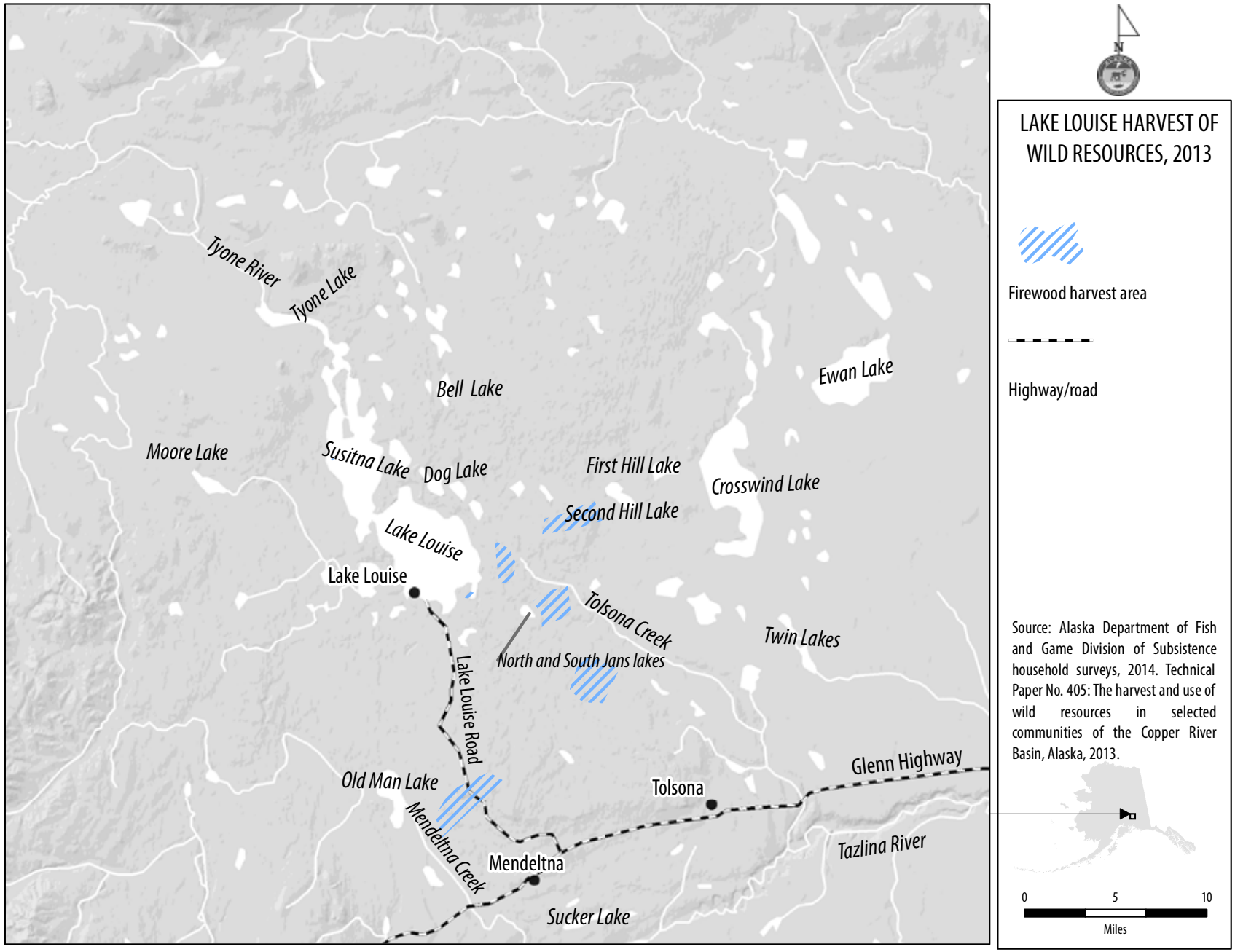
Miles


LAKE LOUISE HARVEST OF WILD RESOURCES, 2013
Lake trout search and harvest area
Highway/road
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
0
5
10
Miles
Tyone River
Tyone Lake
Bell Lake
Ewan Lake
Moore Lake
Susitna Lake
Dog Lake
First Hill Lake
Crosswind Lake
Second Hill Lake
Lake Louise
Lake Louise
Tolsona Creek
Twin Lakes
North and South Jans lakes
Lake Louise Road
Glenn Highway
Old Man Lake
Tolsona
Mendeltna Creek
Tazlina River
Mendeltna
Sucker Lake


LAKE LOUISE HARVEST OF WILD RESOURCES, 2013
Rainbow trout search and harvest area
Rainbow trout search and harvest area
Highway/road
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
0
5
10
Miles
Tyone River
Tyone Lake
Bell Lake
Ewan Lake
Moore Lake
Susitna Lake
Dog Lake
First Hill Lake
Crosswind Lake
Second Hill Lake
Lake Louise
Lake Louise
Tolsona Creek
Twin Lakes
North and South Jans lakes
Lake Louise Road
Round lake & Old Road lakes
Glenn Highway
Old Man Lake
Tolsona
Mendeltna Creek
Tazlina River
Mendeltna
Sucker Lake


LAKE LOUISE HARVEST OF WILD RESOURCES, 2013
Humpback whitefish search and harvest area
Round whitefish search and harvest area
Highway/road
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
0
5
10
Miles
Tyone River
Tyone Lake
Bell Lake
Ewan Lake
Moore Lake
Susitna Lake
Dog Lake
First Hill Lake
Crosswind Lake
Second Hill Lake
Lake Louise
Lake Louise
Tolsona Creek
Twin Lakes
North and South Jans lakes
Lake Louise Road
Glenn Highway
Old Man Lake
Tolsona
Mendeltna Creek
Tazlina River
Mendeltna
Sucker Lake


LAKE LOUISE HARVEST OF WILD RESOURCES, 2013
Caribou search area
Highway/road
Park and preserve boundary
Game management unit
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
0
5
10
Miles
13A
13B
13C
13D
11
Sourdough
Gakona River
Tulsona Creek
Richardson Highway
Gulkana River
Tyone River
Tyone Lake
Bell Lake
Ewan Lake
Moore Lake
Susitna Lake
Dog Lake
First Hill Lake
Second Hill Lake
Crosswind Lake
Lake Louise
Lake Louise
Gulkana
Gakona
Tolsona Creek
North and South Jans lakes
Twin Lakes
Wrangell-St. Elias National Park and Preserve
Copper River
Lake Louise Road
Glennallen
Glenn Highway
Old Man Lake
Tolsona
Tazlina
Mendeltna Creek
Mendeltna
Tazlina River
Sucker Lake
Copper Center


LAKE LOUISE HARVEST OF WILD RESOURCES, 2013
Firewood harvest area
Highway/road
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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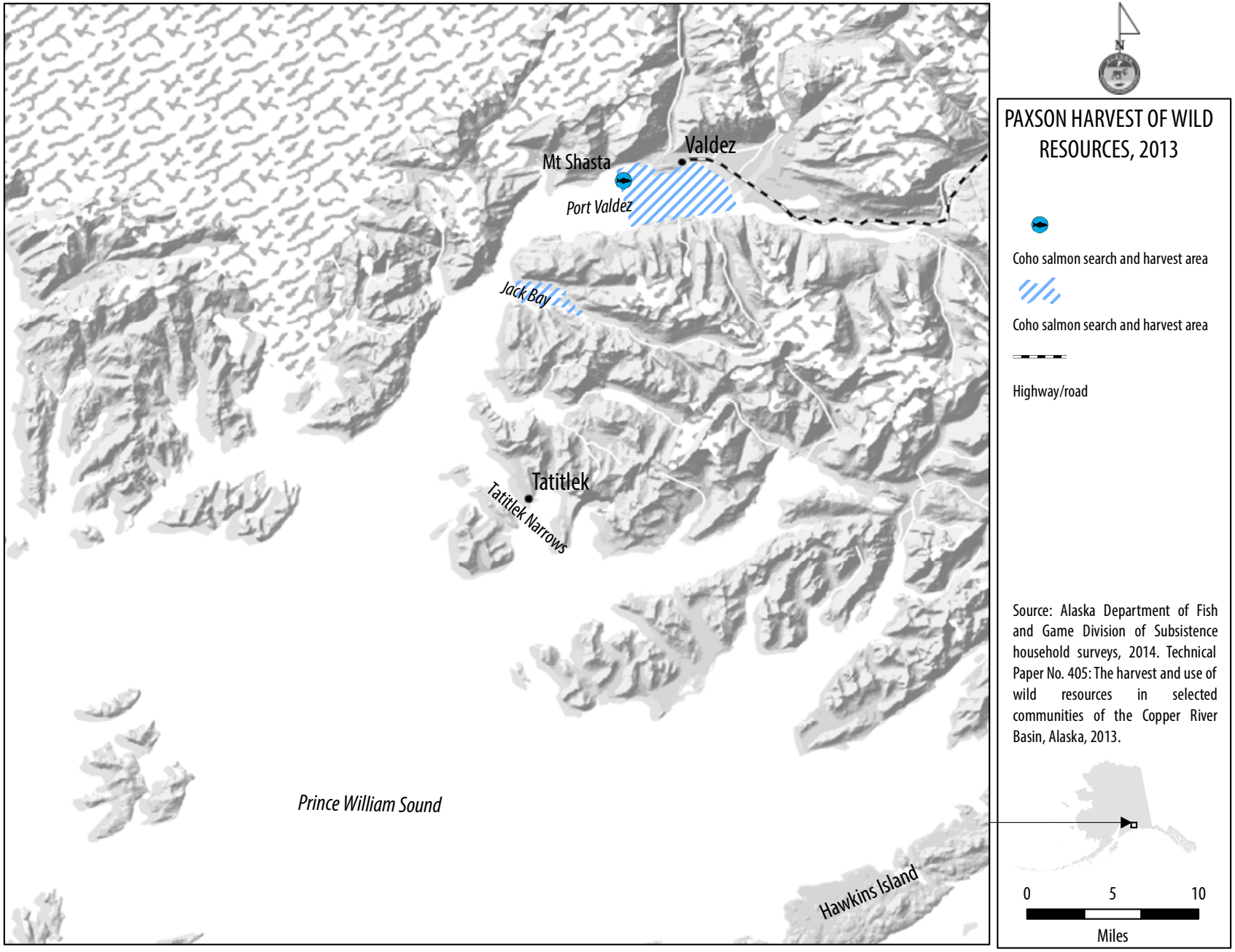
Miles
Tyone River
Tyone Lake
Bell Lake
Ewan Lake
Moore Lake
Susitna Lake
Dog Lake
First Hill Lake
Crosswind Lake
Second Hill Lake
Lake Louise
Lake Louise
Tolsona Creek
Twin Lakes
North and South Jans lakes
Lake Louise Road
Glenn Highway
Old Man Lake
Tolsona
Mendeltna Creek
Tazlina River
Mendeltna
Sucker Lake


Valdez
Mt Shasta
Port Valdez
Jack Bay
Tatitlek
Tatitlek Narrows
Prince William Sound
Hawkins Island
N
PAXSON HARVEST OF WILD RESOURCES, 2013
Coho salmon search and harvest area
Coho salmon search and harvest area
Highway/road
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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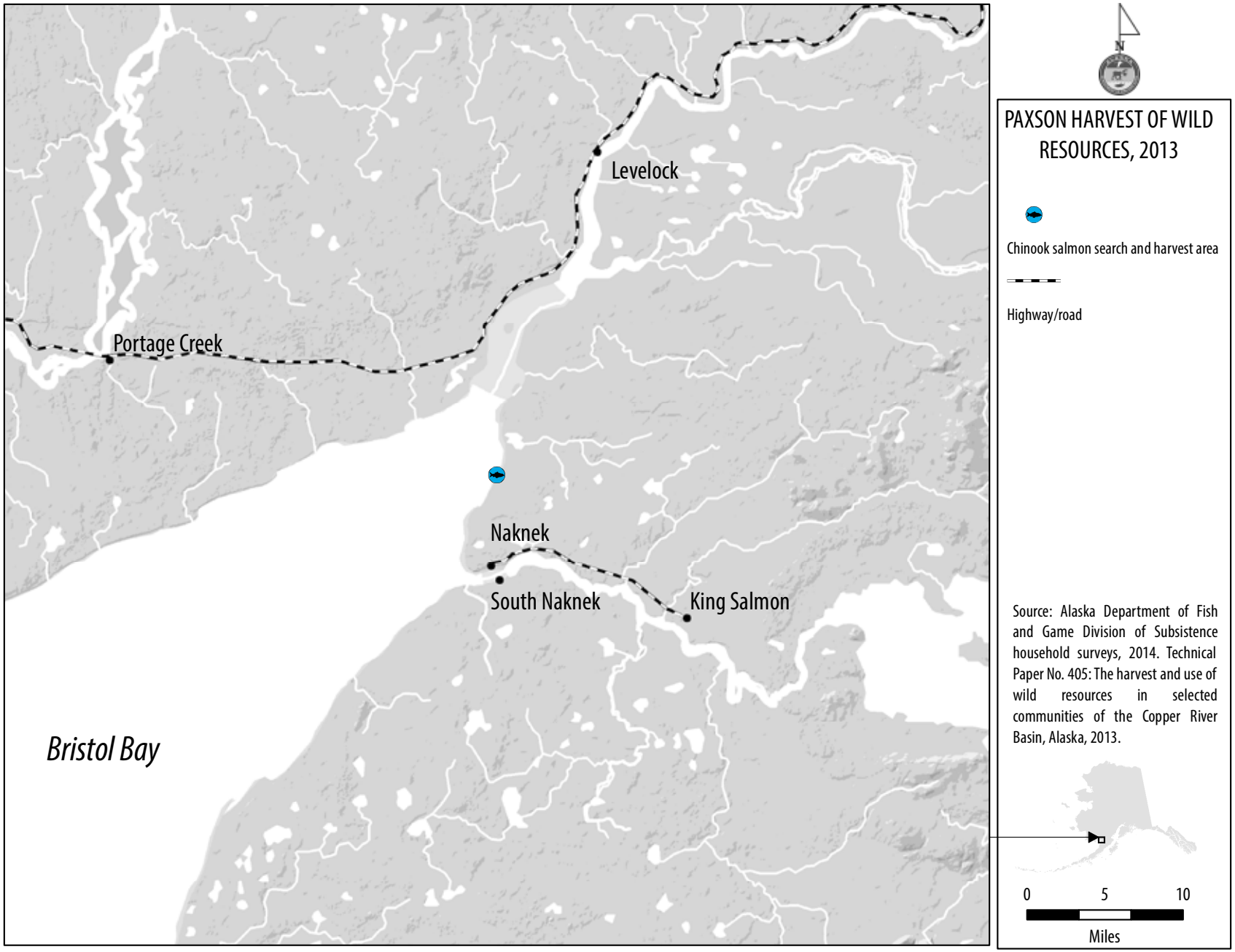
Miles


Levelock
Portage Creek
Naknek
South Naknek
King Salmon
Bristol Bay
N
PAXSON HARVEST OF WILD RESOURCES, 2013
Chinook salmon search and harvest area
Highway/road
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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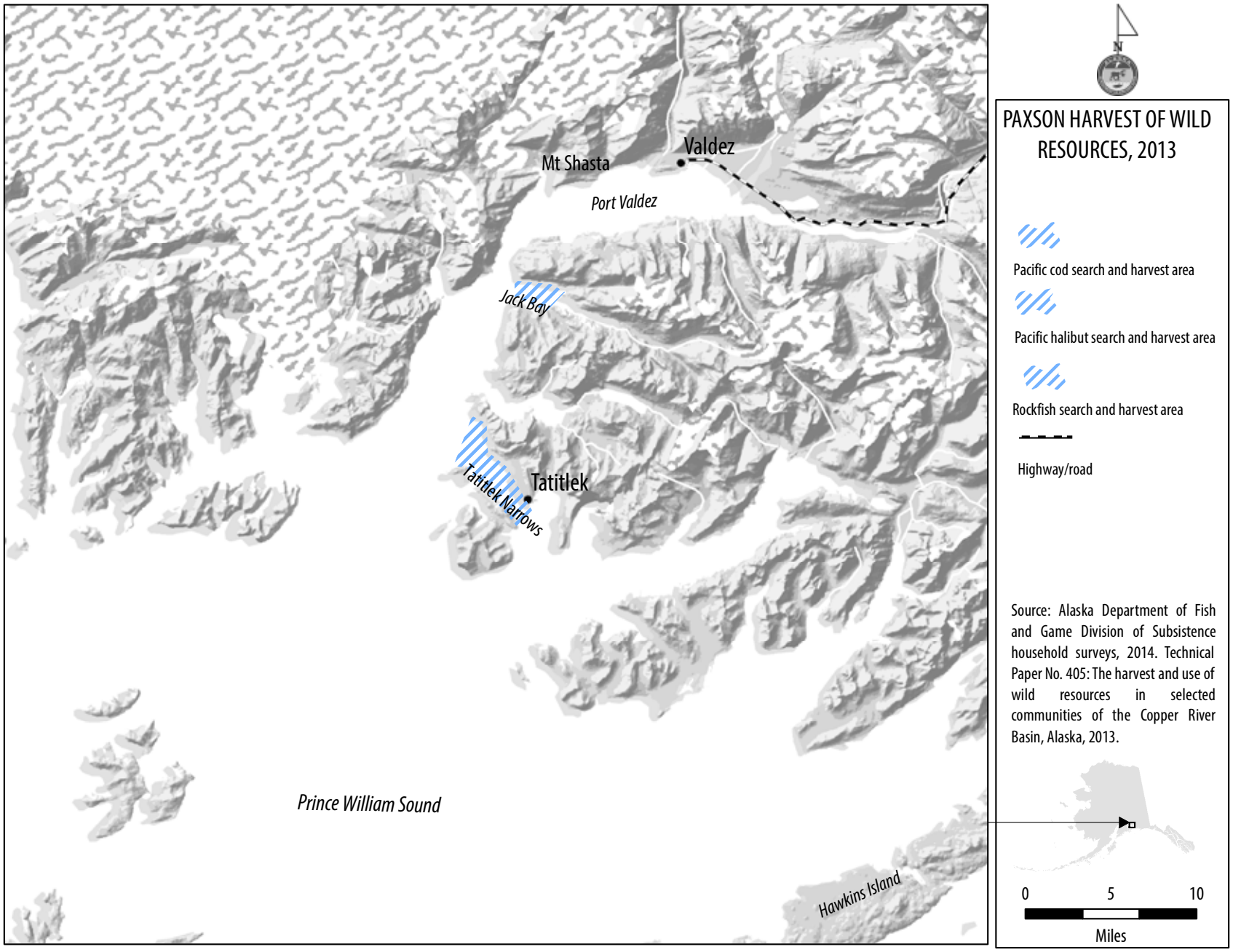
Miles


Valdez
Mt Shasta
Port Valdez
Jack Bay
Tatitlek
Tatitlek Narrows
Prince William Sound
Hawkins Island
PAXSON HARVEST OF WILD RESOURCES, 2013
Pacific cod search and harvest area
Pacific halibut search and harvest area
Rockfish search and harvest area
Highway/road
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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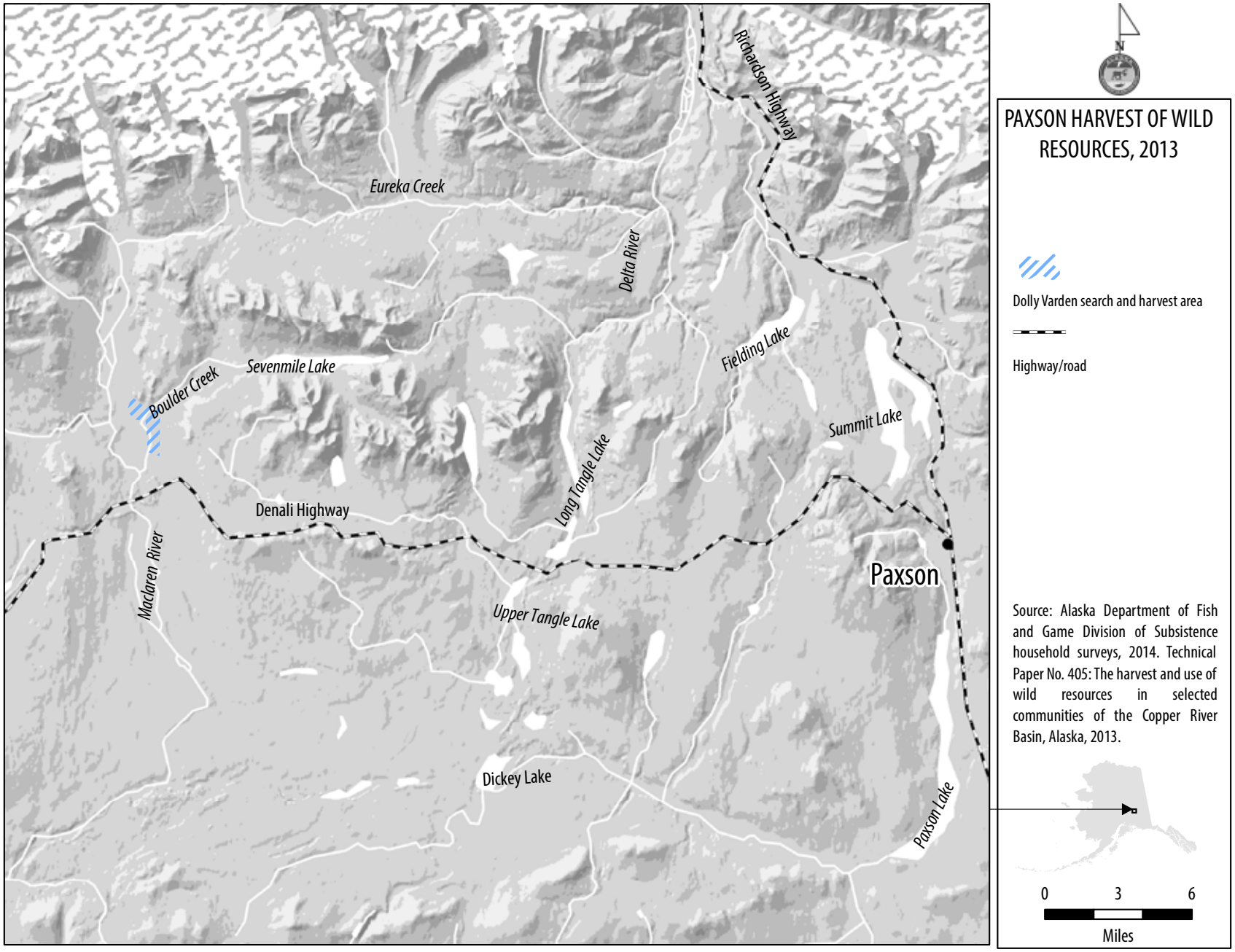
Miles


Richardson Highway
Eureka Creek
Delta River
Fielding Lake
Sevenmile Lake
Boulder Creek
Summit Lake
Long Tangle Lake
Denali Highway
Maclaren River
Paxson
Upper Tangle Lake
Dickey Lake
Paxson Lake
PAXSON HARVEST OF WILD RESOURCES, 2013
Dolly Varden search and harvest area
Highway/road
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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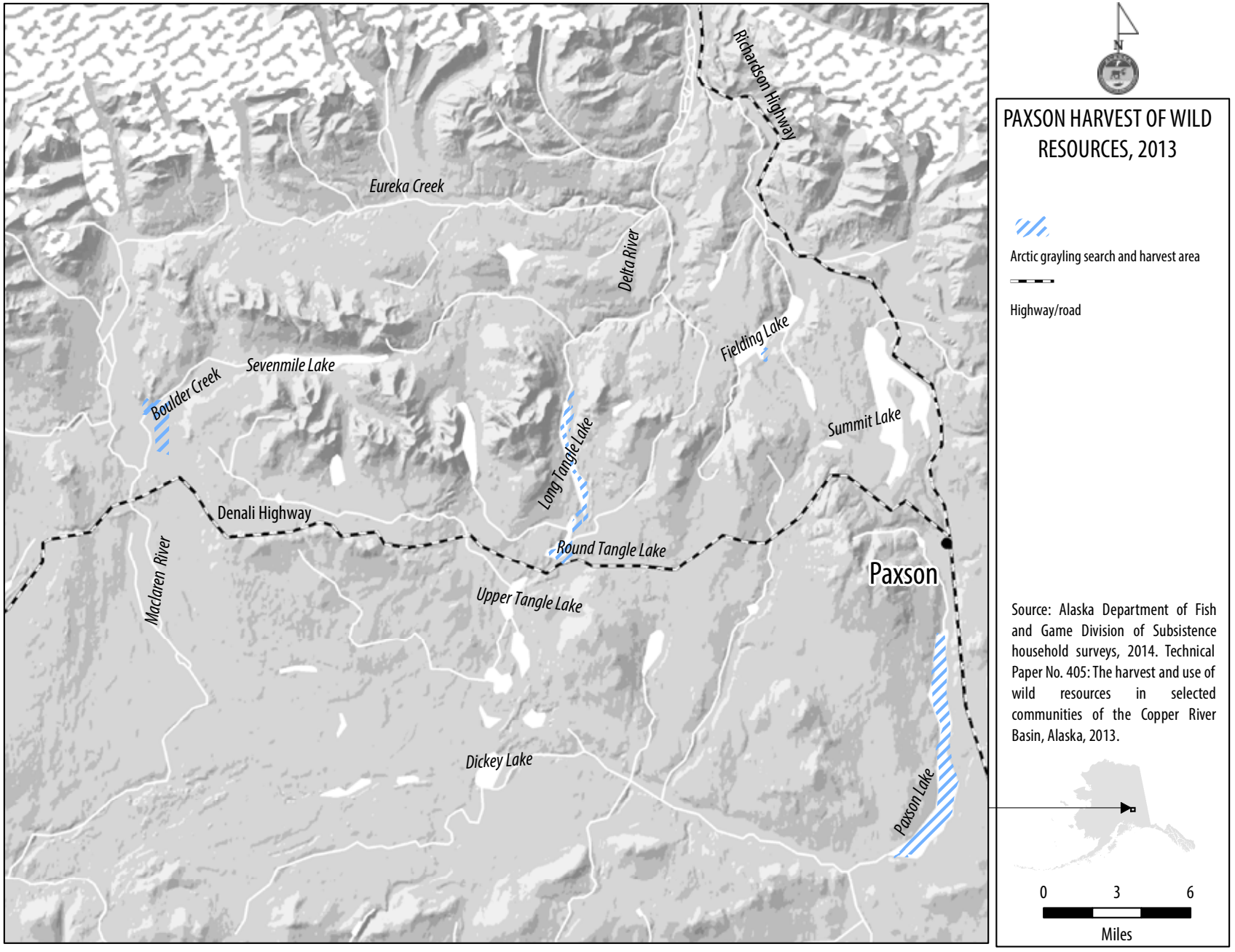
Miles


Richardson Highway
Eureka Creek
Delta River
Fielding Lake
Sevenmile Lake
Boulder Creek
Summit Lake
Long Tangle Lake
Denali Highway
Round Tangle Lake
Paxson
Maclaren River
Upper Tangle Lake
Dickey Lake
Paxson Lake
PAXSON HARVEST OF WILD RESOURCES, 2013
Arctic grayling search and harvest area
Highway/road
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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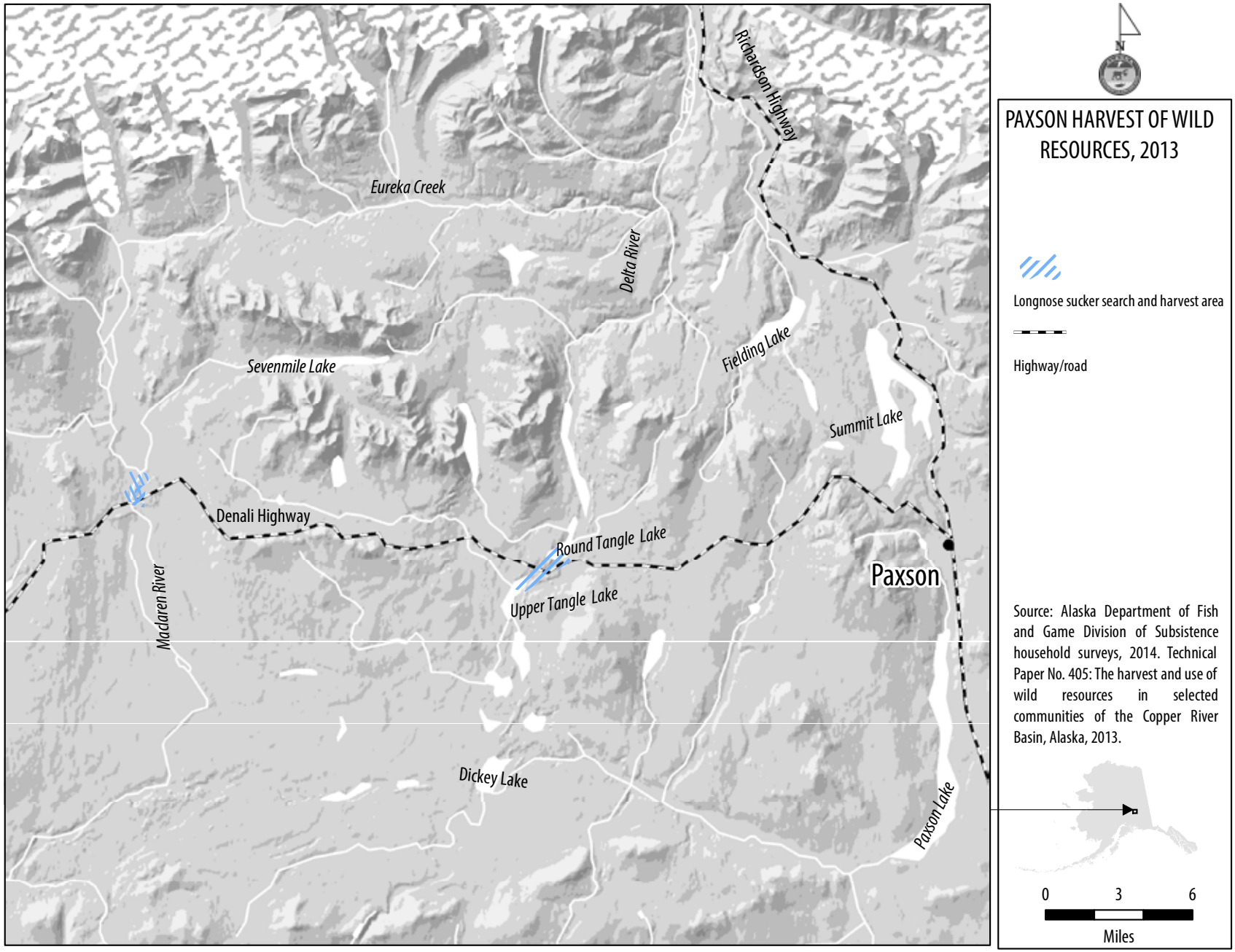
Miles


Richardson Highway
Eureka Creek
Delta River
Fielding Lake
Sevenmile Lake
Summit Lake
Denali Highway
Round Tangle Lake
Paxson
Upper Tangle Lake
Maclaren River
Dickey Lake
Paxson Lake
PAXSON HARVEST OF WILD RESOURCES, 2013
Longnose sucker search and harvest area
Highway/road
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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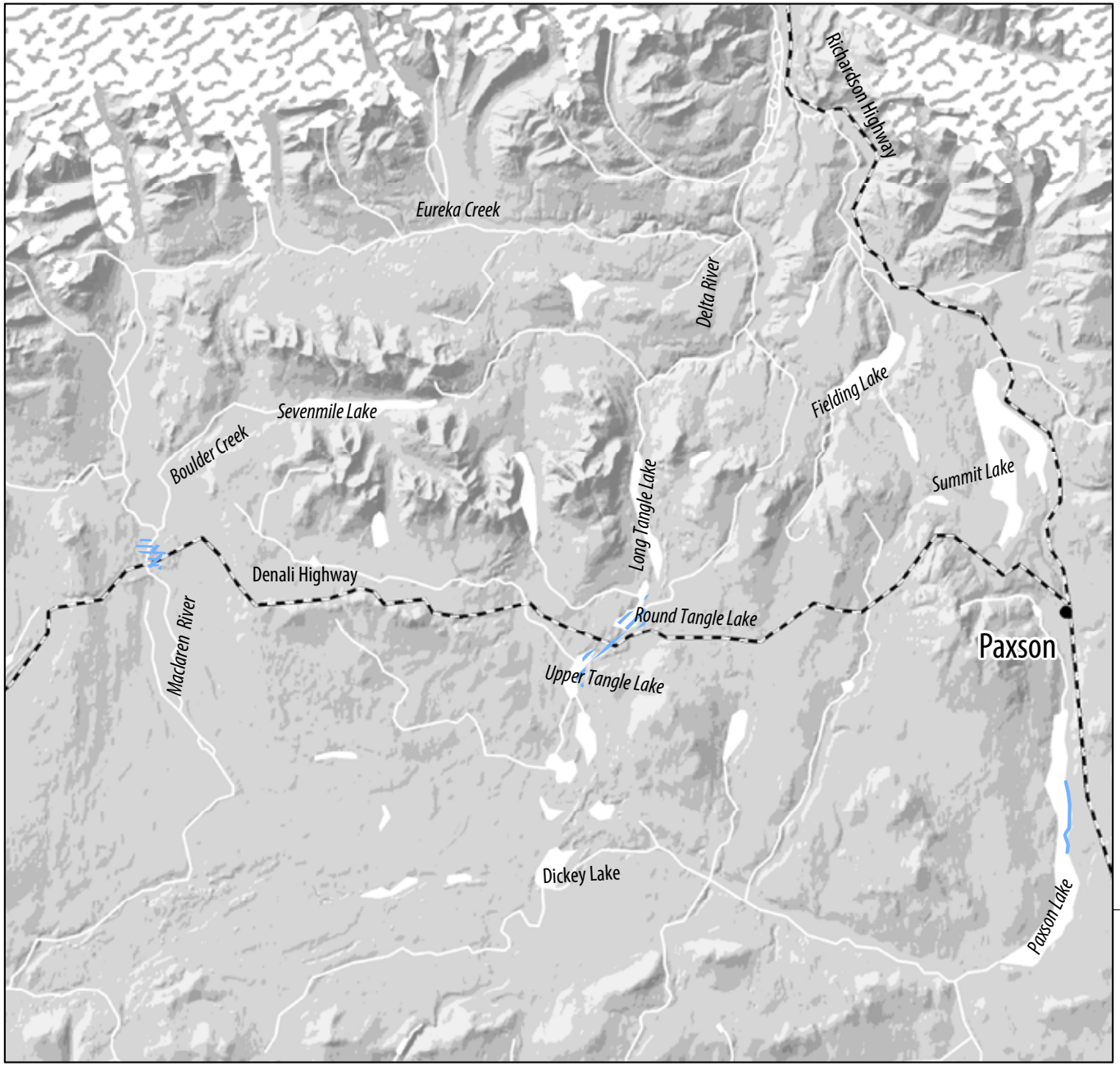


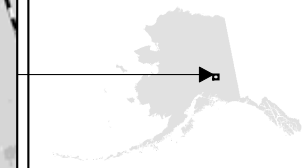
PAXSON HARVEST OF WILD RESOURCES, 2013

Least cisco search and harvest area

Least cisco search and harvest area

Highway/road

Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.



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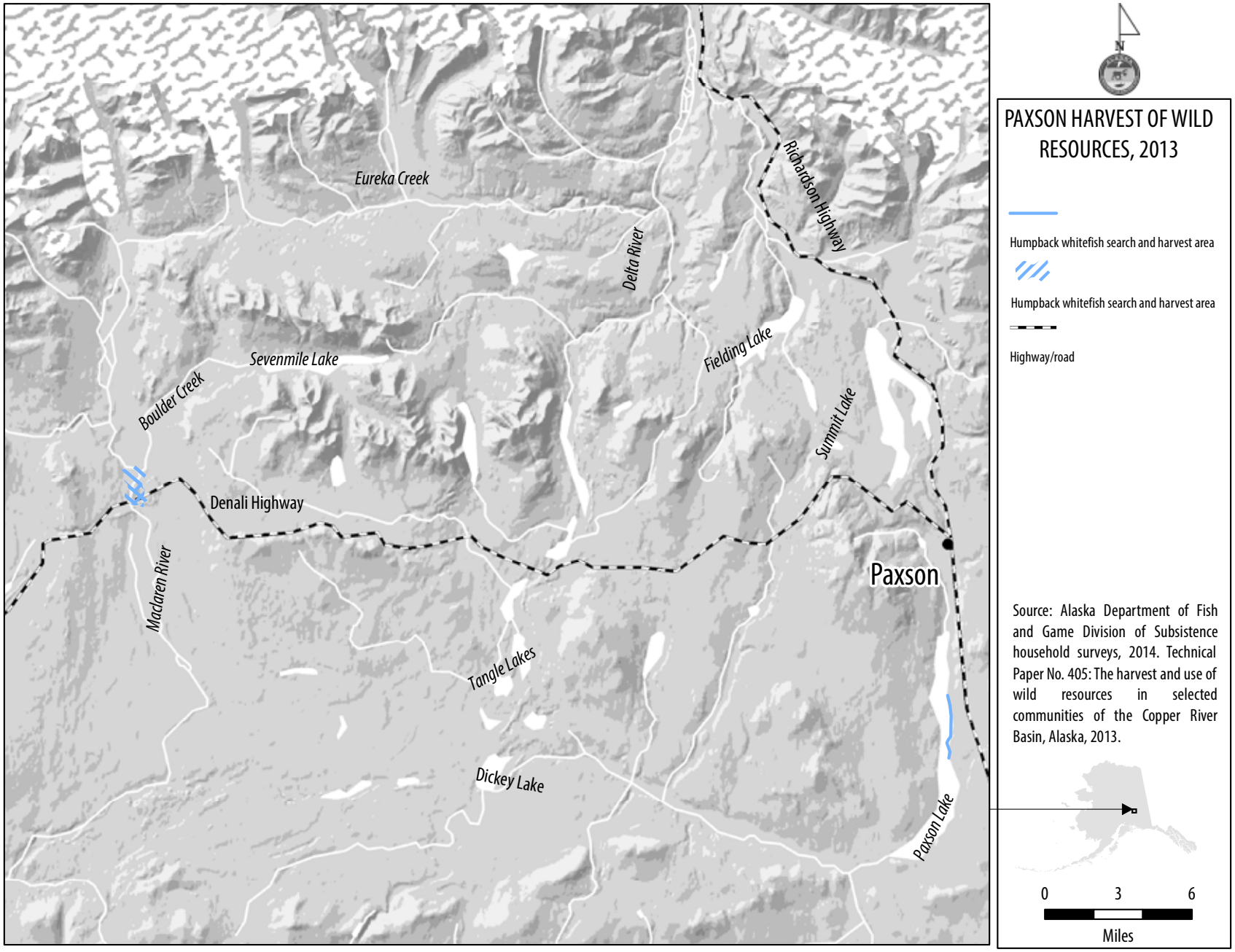
Eureka Creek
Richardson Highway
Delta River
Fielding Lake
Sevenmile Lake
Boulder Creek
Summit Lake
Denali Highway
Maclaren River
Paxson
Tangle Lakes
Dickey Lake
Paxson Lake
N
PAXSON HARVEST OF WILD RESOURCES, 2013
Humpback whitefish search and harvest area
Humpback whitefish search and harvest area
Highway/road
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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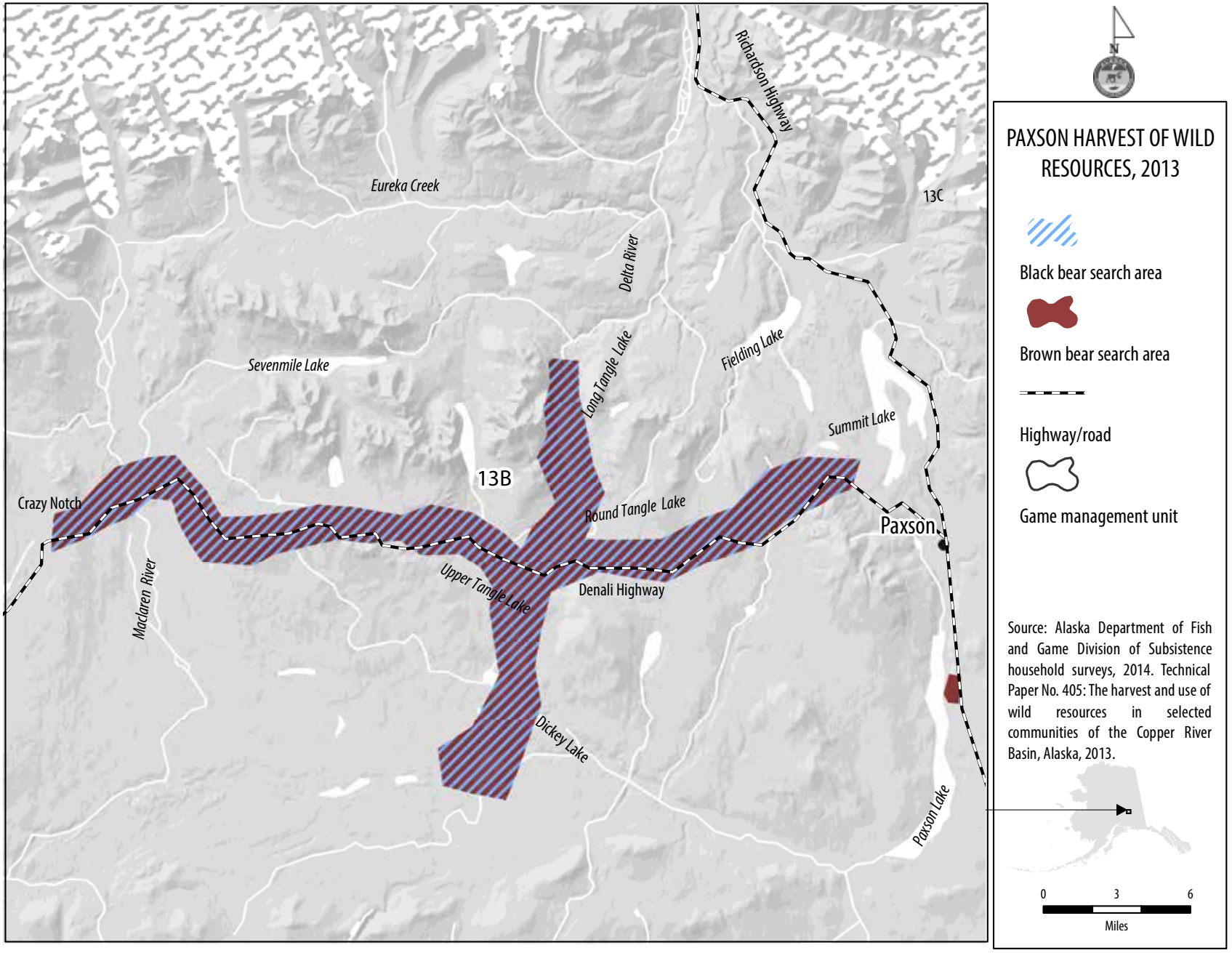
Richardson Highway
Eureka Creek
13C
Delta River
Fielding Lake
Sevenmile Lake
Long Tangle Lake
Summit Lake
13B
Crazy Notch
Round Tangle Lake
Paxson
Maclaren River
Upper Tangle Lake
Denali Highway
Dickey Lake
Paxson Lake
PAXSON HARVEST OF WILD RESOURCES, 2013
Black bear search area
Brown bear search area
Highway/road
Game management unit
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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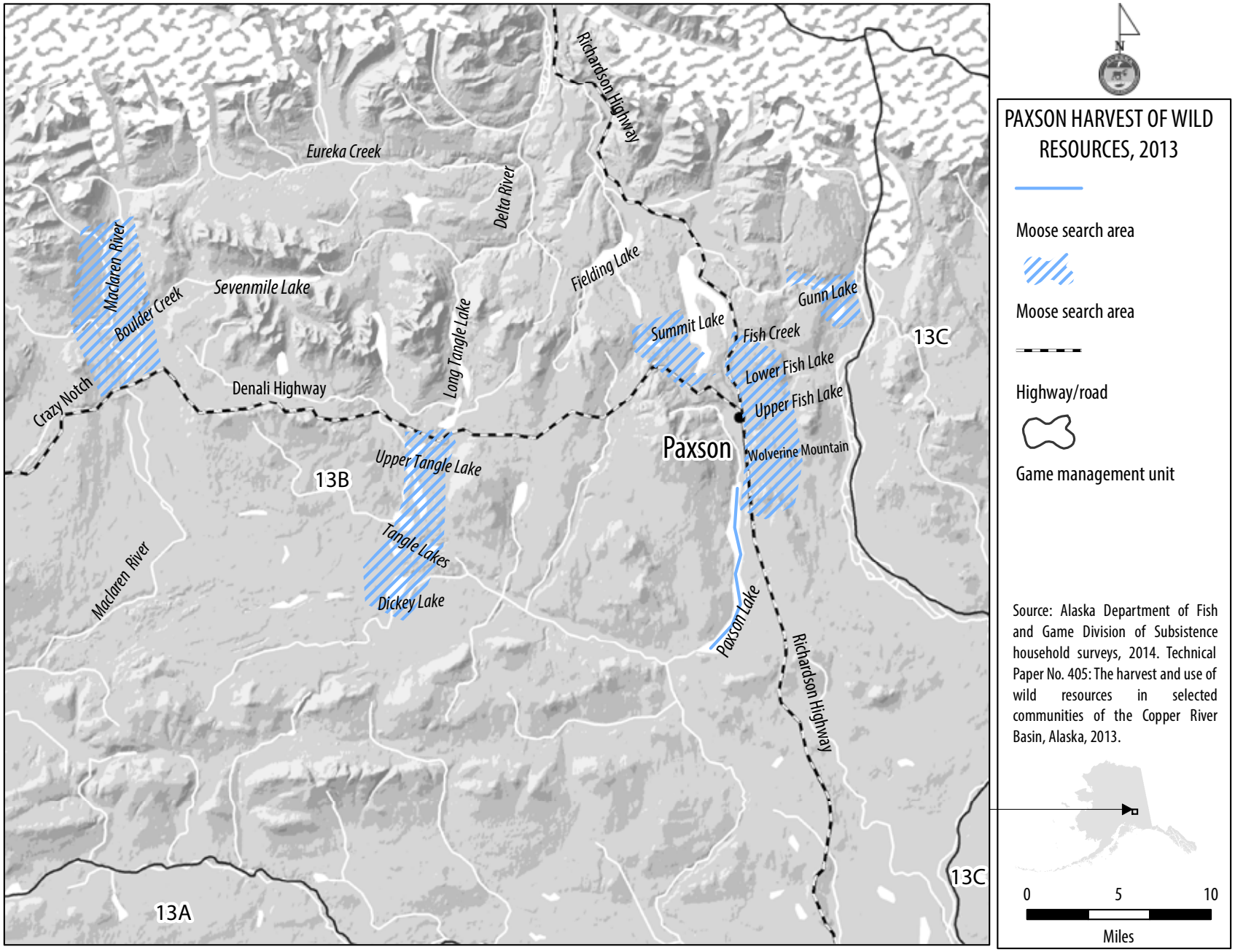
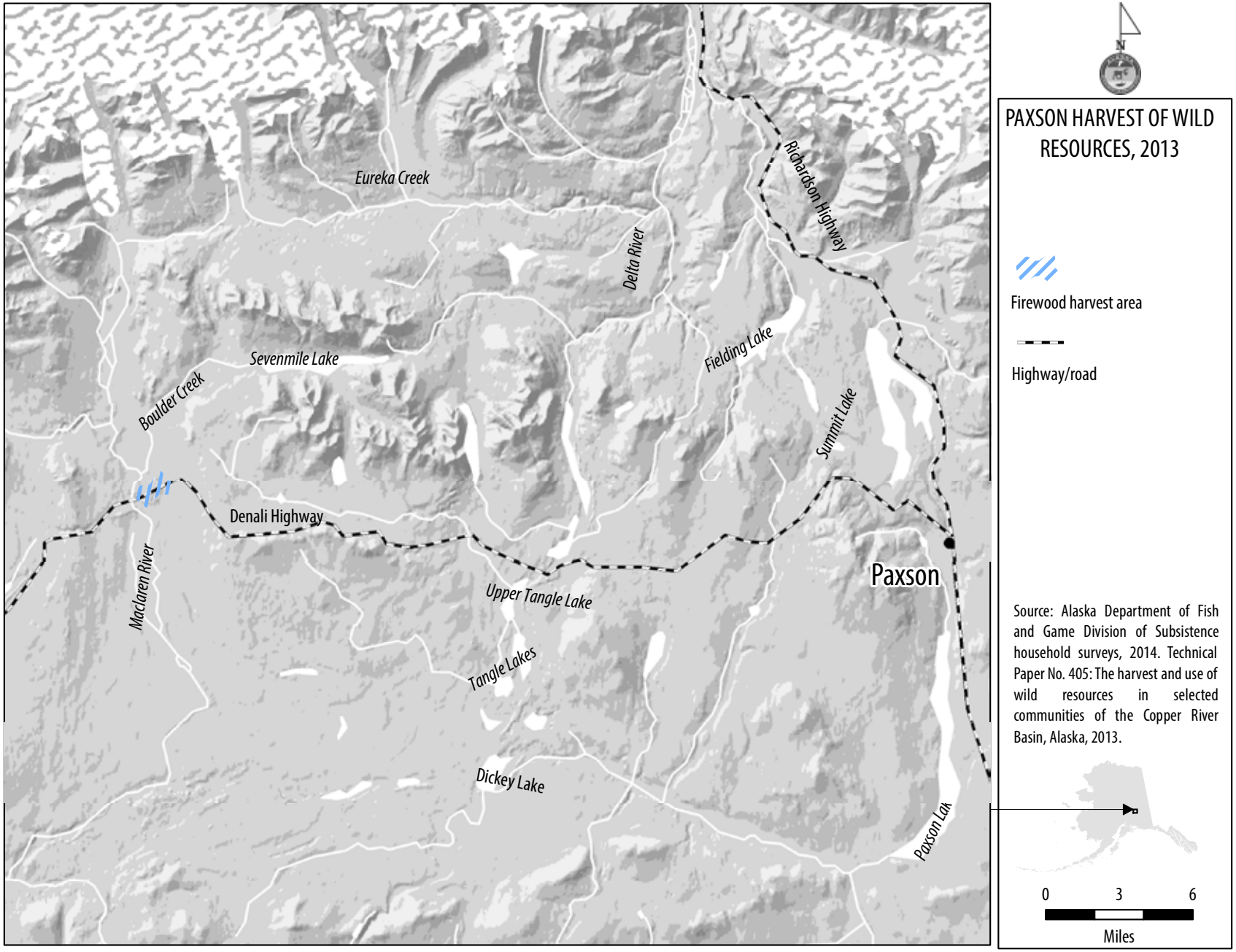

PAXSON HARVEST OF WILD RESOURCES, 2013
Moose search area
Moose search area
Highway/road
Game management unit
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
0
5
10
Miles
Eureka Creek
Delta River
Richardson Highway
Maclaren River
Boulder Creek
Sevenmile Lake
Fielding Lake
Gunn Lake
Summit Lake
Fish Creek
Lower Fish Lake
Upper Fish Lake
Wolverine Mountain
Long Tangle Lake
Crazy Notch
Denali Highway
Paxson
13C
13B
Upper Tangle Lake
Tangle Lakes
Dickey Lake
Maclaren River
Paxson Lake
Richardson Highway
13C
13A


Eureka Creek
Richardson Highway
Delta River
Fielding Lake
Sevenmile Lake
Boulder Creek
Summit Lake
Denali Highway
Maclaren River
Paxson
Upper Tangle Lake
Tangle Lakes
Dickey Lake
Paxson Lak
PAXSON HARVEST OF WILD RESOURCES, 2013
Firewood harvest area
Highway/road
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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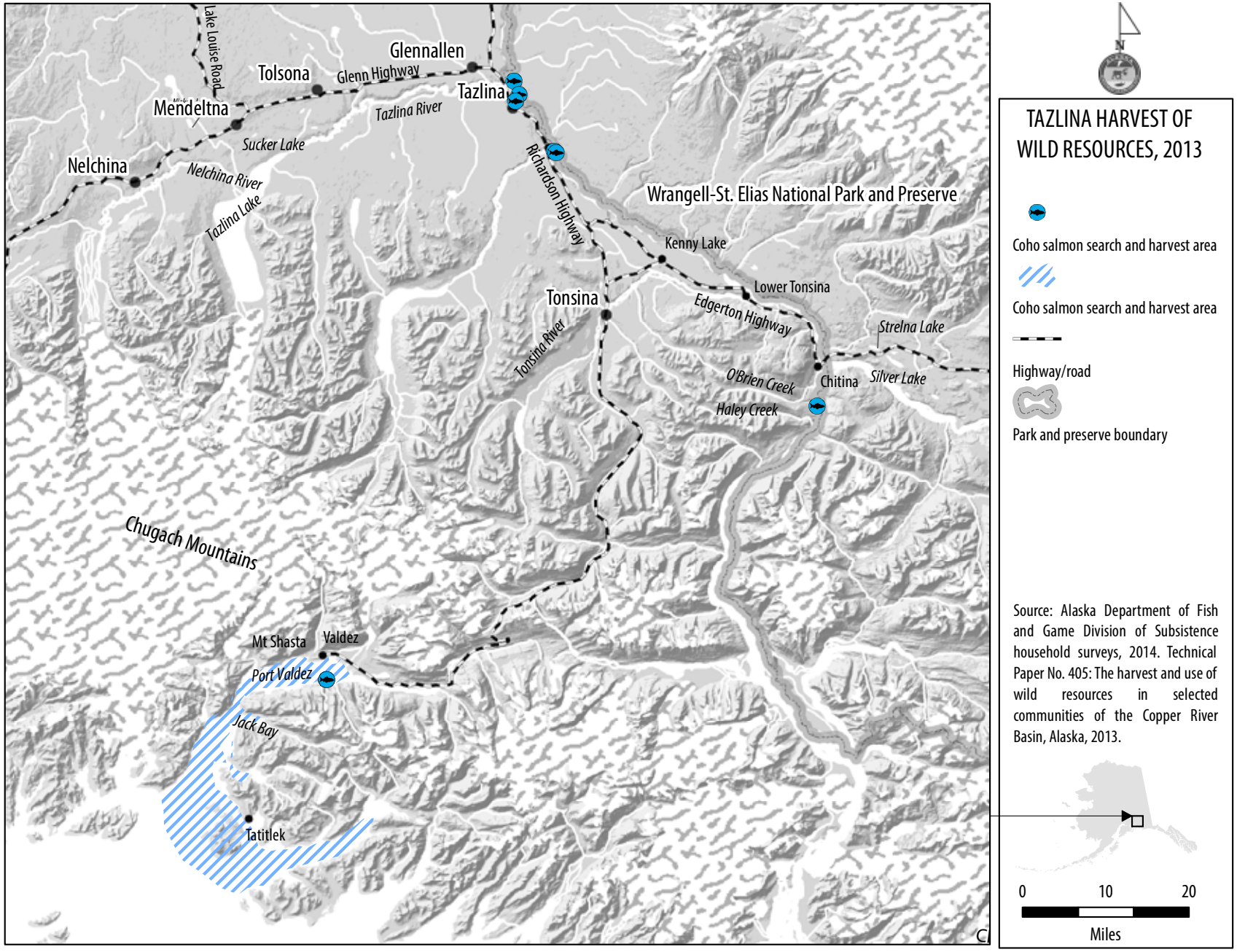
Lake Louise Road
Glennallen
Tolsona
Glenn Highway
Tazlina
Mendeltna
Tazlina River
Sucker Lake
Nelchina
Nelchina River
Tazlina Lake
Richardson Highway
Wrangell-St. Elias National Park and Preserve
Kenny Lake
Lower Tonsina
Edgerton Highway
Tonsina
Tonsina River
Strelna Lake
O'Brien Creek
Chitina
Silver Lake
Haley Creek
Chugach Mountains
Mt Shasta
Valdez
Port Valdez
Jack Bay
Tatitlek
TAZLINA HARVEST OF WILD RESOURCES, 2013
Coho salmon search and harvest area
Coho salmon search and harvest area
Highway/road
Park and preserve boundary
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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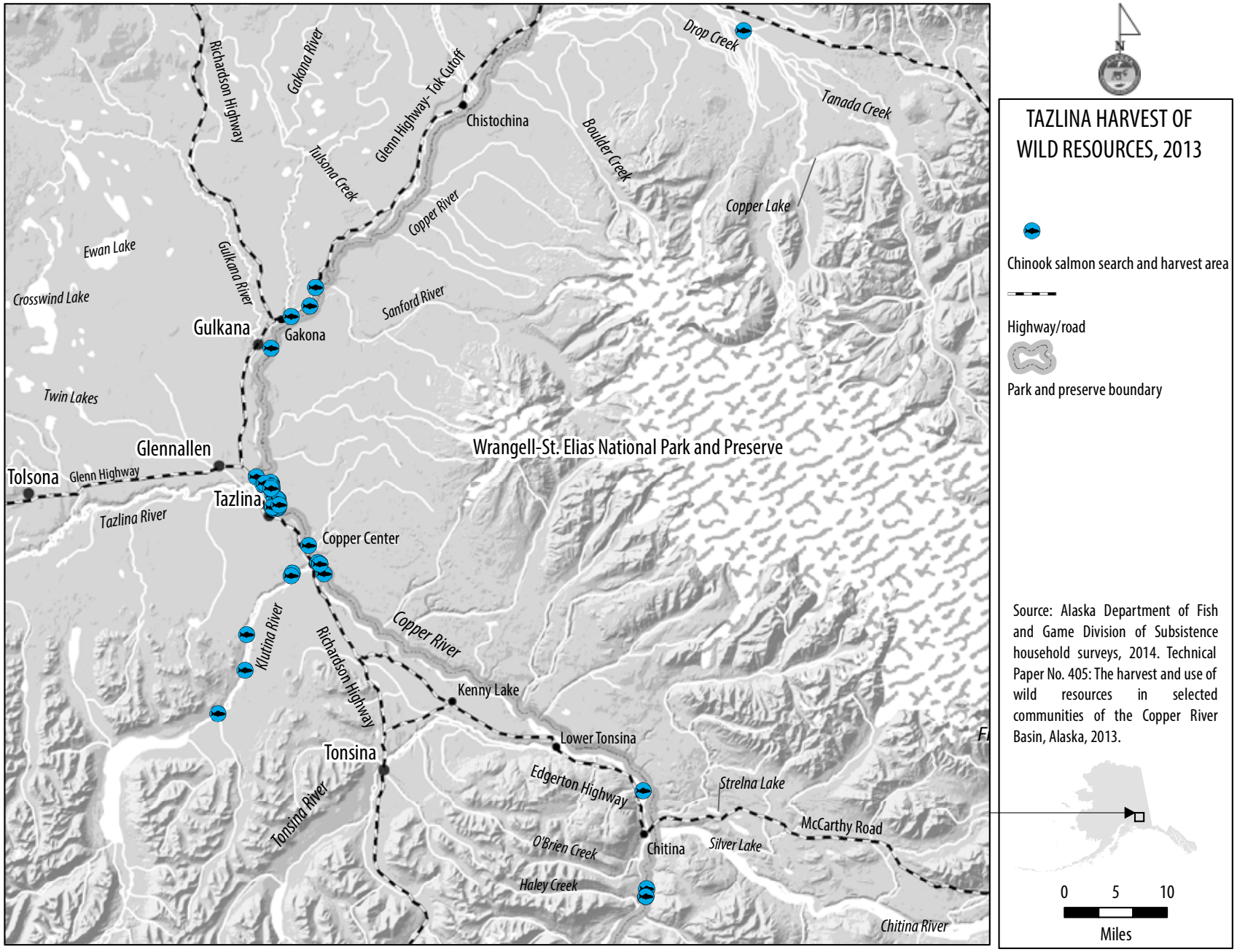
Richardson Highway
Gakona River
Glenn Highway- Tok Cutoff
Chistochina
Drop Creek
Tanada Creek
Boulder Creek
Copper Lake
Tulsana Creek
Copper River
Ewan Lake
Gulkana River
Crosswind Lake
Sanford River
Gulkana
Gakona
Twin Lakes
Glennallen
Wrangell-St. Elias National Park and Preserve
Tolsona
Glenn Highway
Tazlina
Tazlina River
Copper Center
Klutina River
Richardson Highway
Copper River
Kenny Lake
Lower Tonsina
Tonsina
Edgerton Highway
Strelna Lake
McCarthy Road
Tonsina River
O'Brien Creek
Chitina
Silver Lake
Haley Creek
Chitina River
N
TAZLINA HARVEST OF WILD RESOURCES, 2013
Chinook salmon search and harvest area
Highway/road
Park and preserve boundary
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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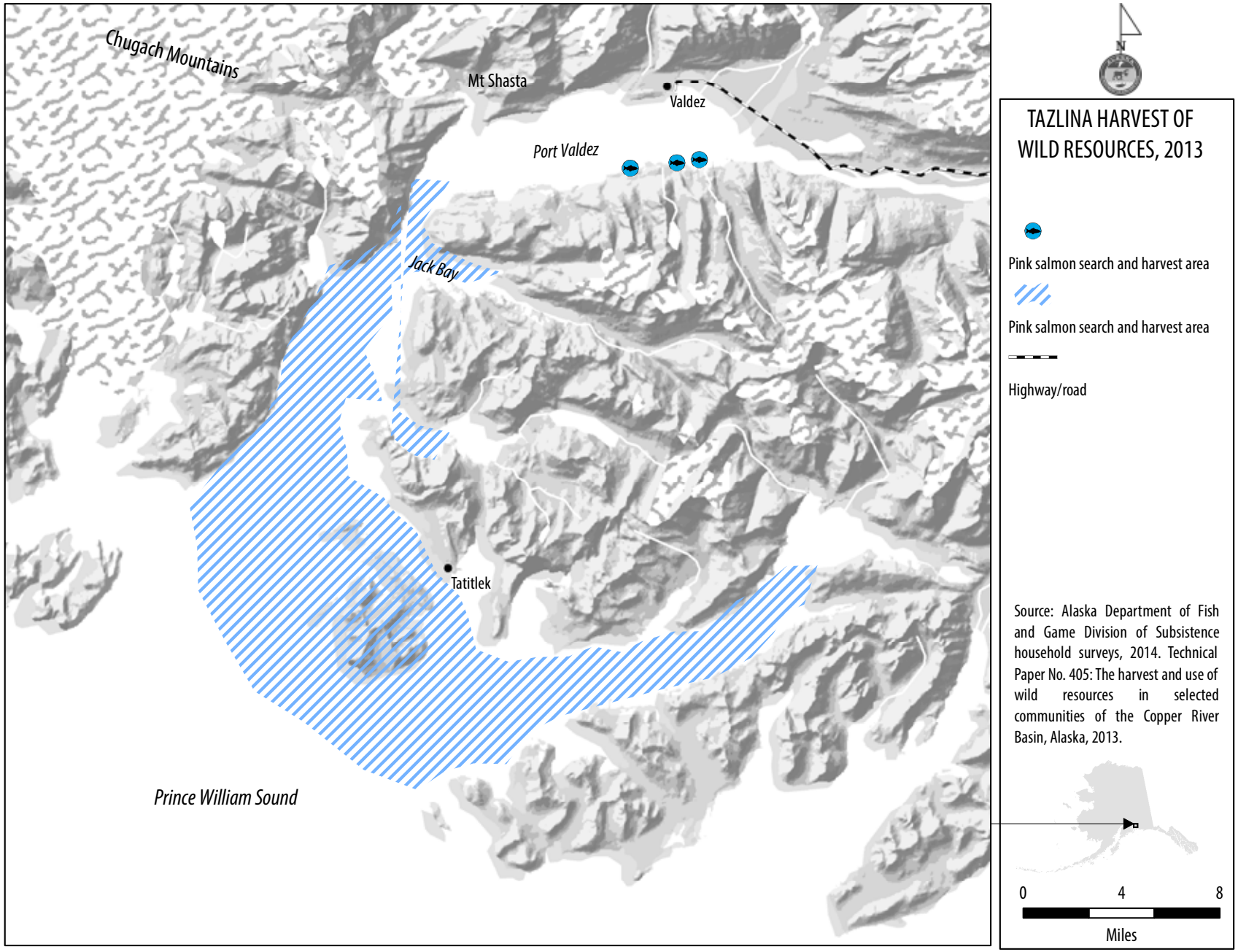
Chugach Mountains
Mt Shasta
Valdez
Port Valdez
Jack Bay
Tatitlek
Prince William Sound
N
TAZLINA HARVEST OF WILD RESOURCES, 2013
Pink salmon search and harvest area
Pink salmon search and harvest area
Highway/road
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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Miles

TAZLINA HARVEST OF WILD RESOURCES, 2013

Hooligan search and harvest area

Highway/road

Park and preserve boundary

Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.

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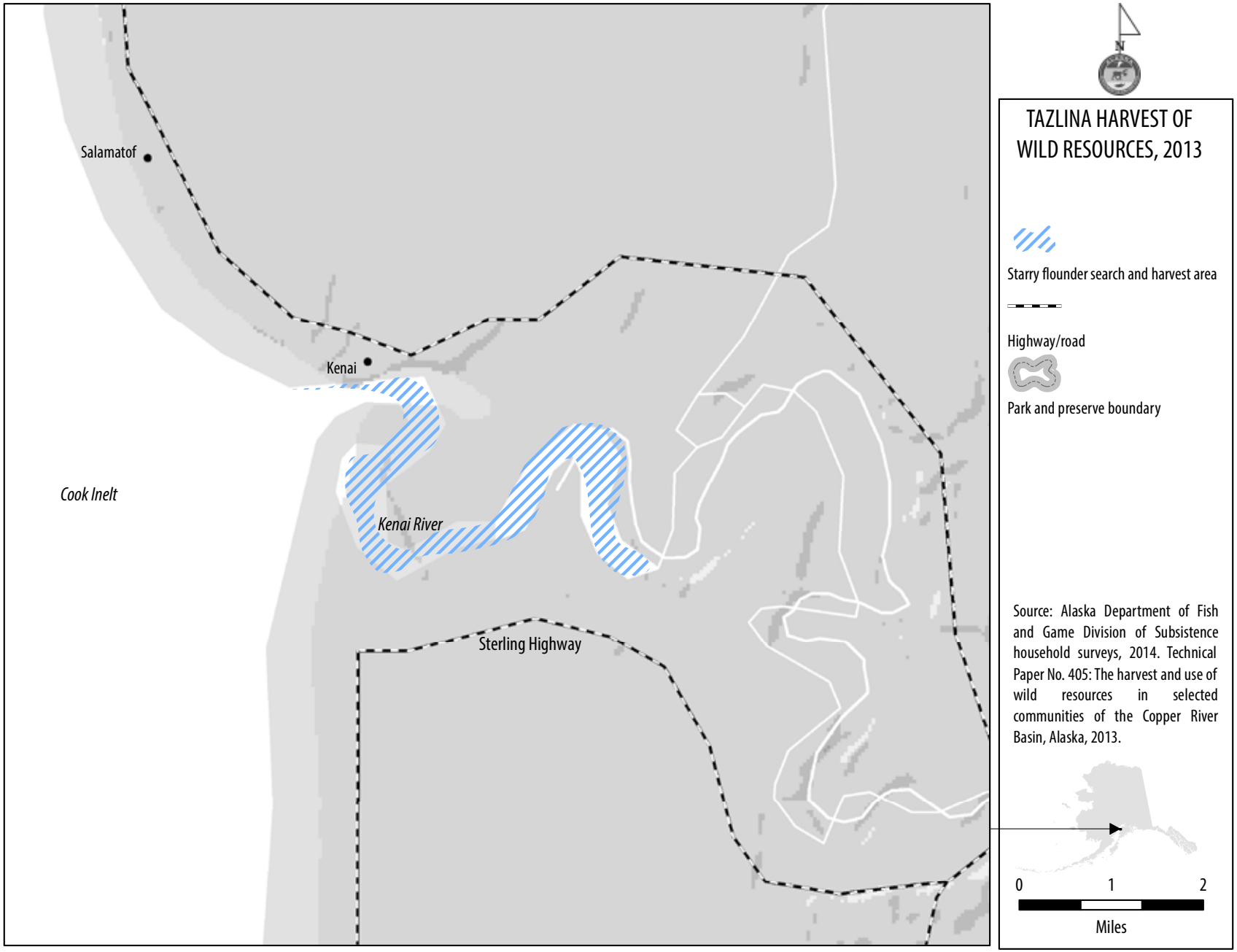
Miles


Salamatof
Kenai
Cook Inelt
Kenai River
Sterling Highway
N
TAZLINA HARVEST OF WILD RESOURCES, 2013
Starry flounder search and harvest area
Highway/road
Park and preserve boundary
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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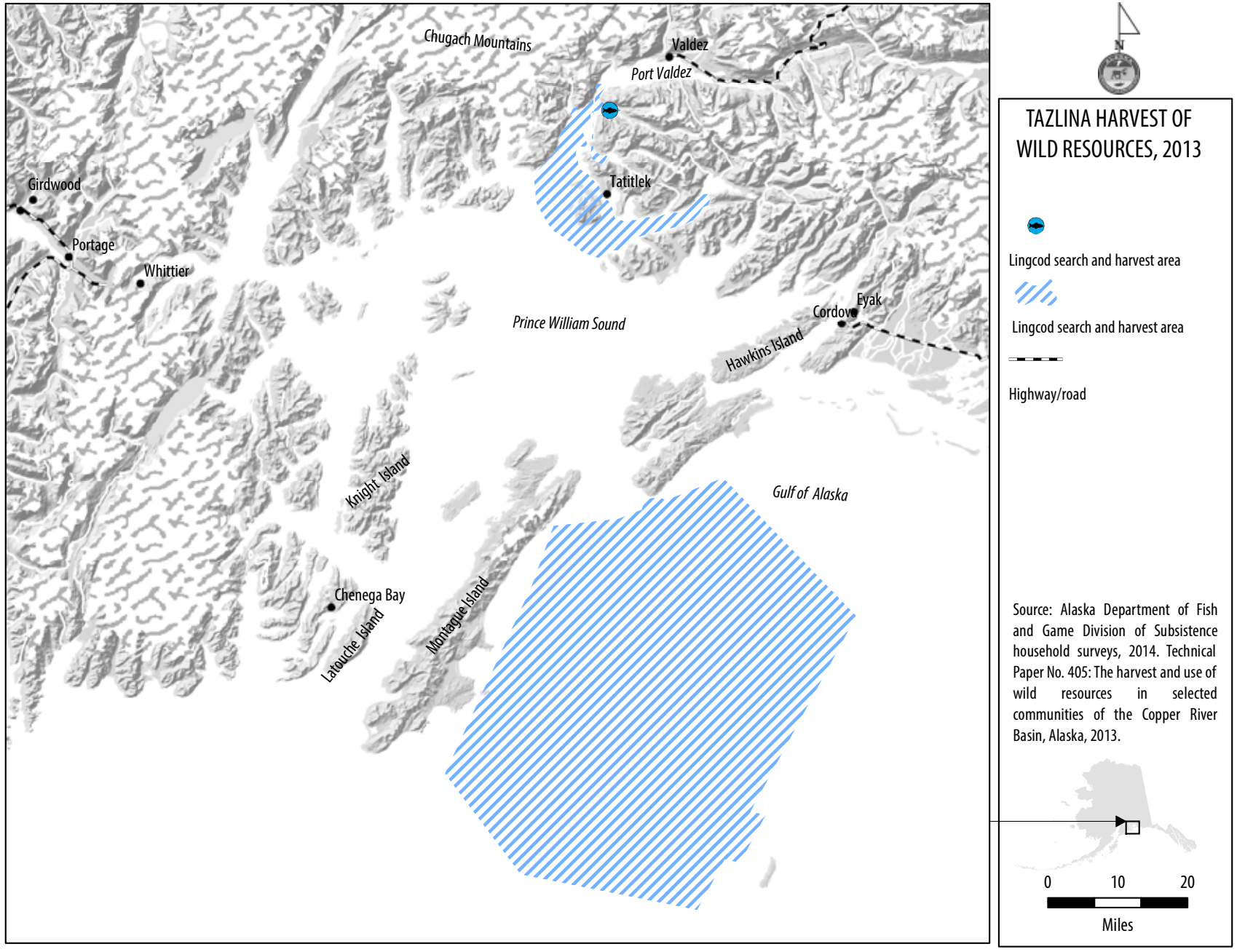
Chugach Mountains
Valdez
Port Valdez
Tatitlek
Girdwood
Portage
Whittier
Prince William Sound
Eyak
Cordova
Hawkins Island
Knight Island
Gulf of Alaska
Chenega Bay
Latouche Island
Montague Island
N
TAZLINA HARVEST OF WILD RESOURCES, 2013
Lingcod search and harvest area
Lingcod search and harvest area
Highway/road
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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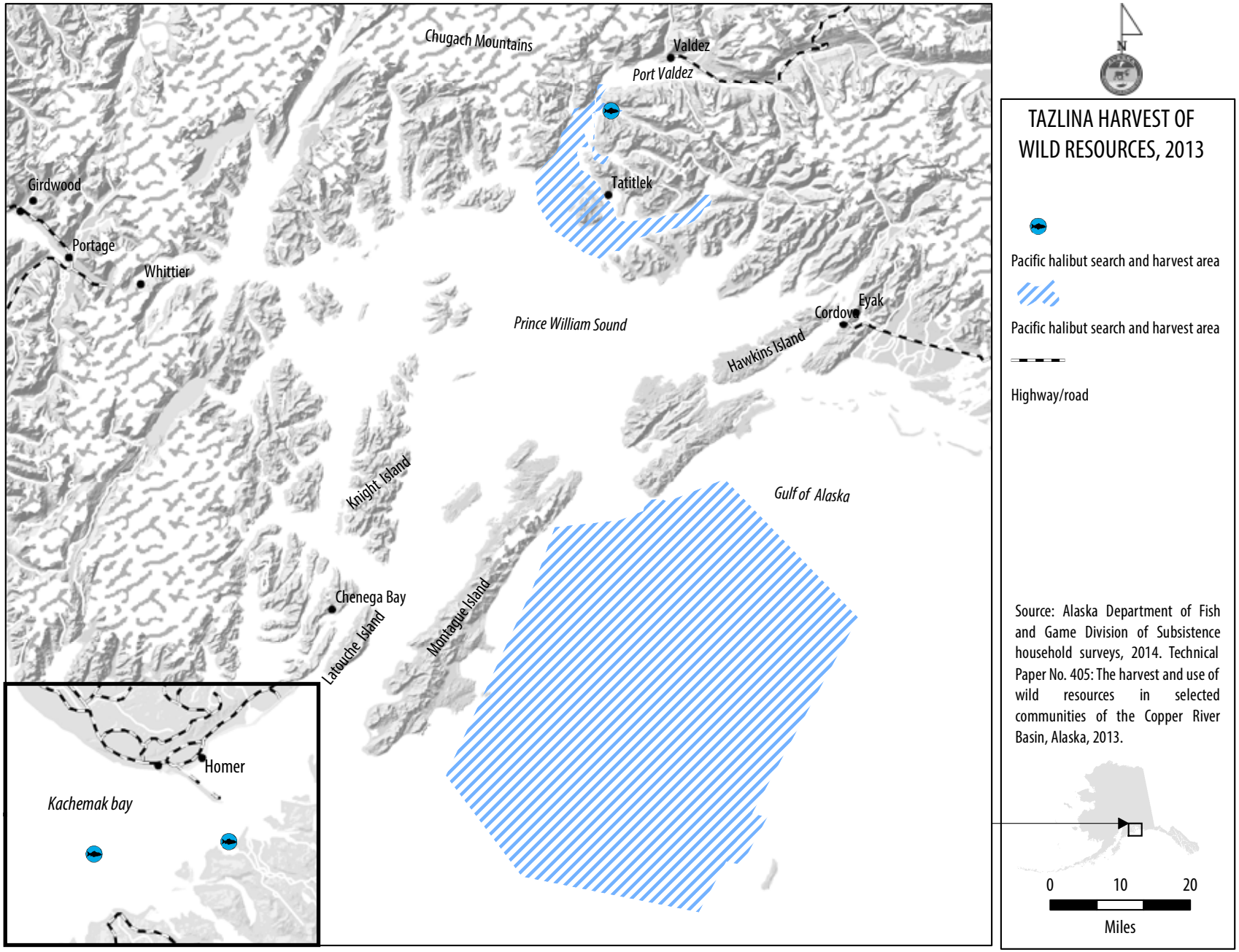
Miles


Chugach Mountains
Valdez
Port Valdez
Tatitlek
Girdwood
Portage
Whittier
Prince William Sound
Cordova
Eyak
Hawkins Island
Knight Island
Gulf of Alaska
Chenega Bay
Latouche Island
Montague Island
Homer
Kachemak bay
N
TAZLINA HARVEST OF WILD RESOURCES, 2013
Pacific halibut search and harvest area
Pacific halibut search and harvest area
Highway/road
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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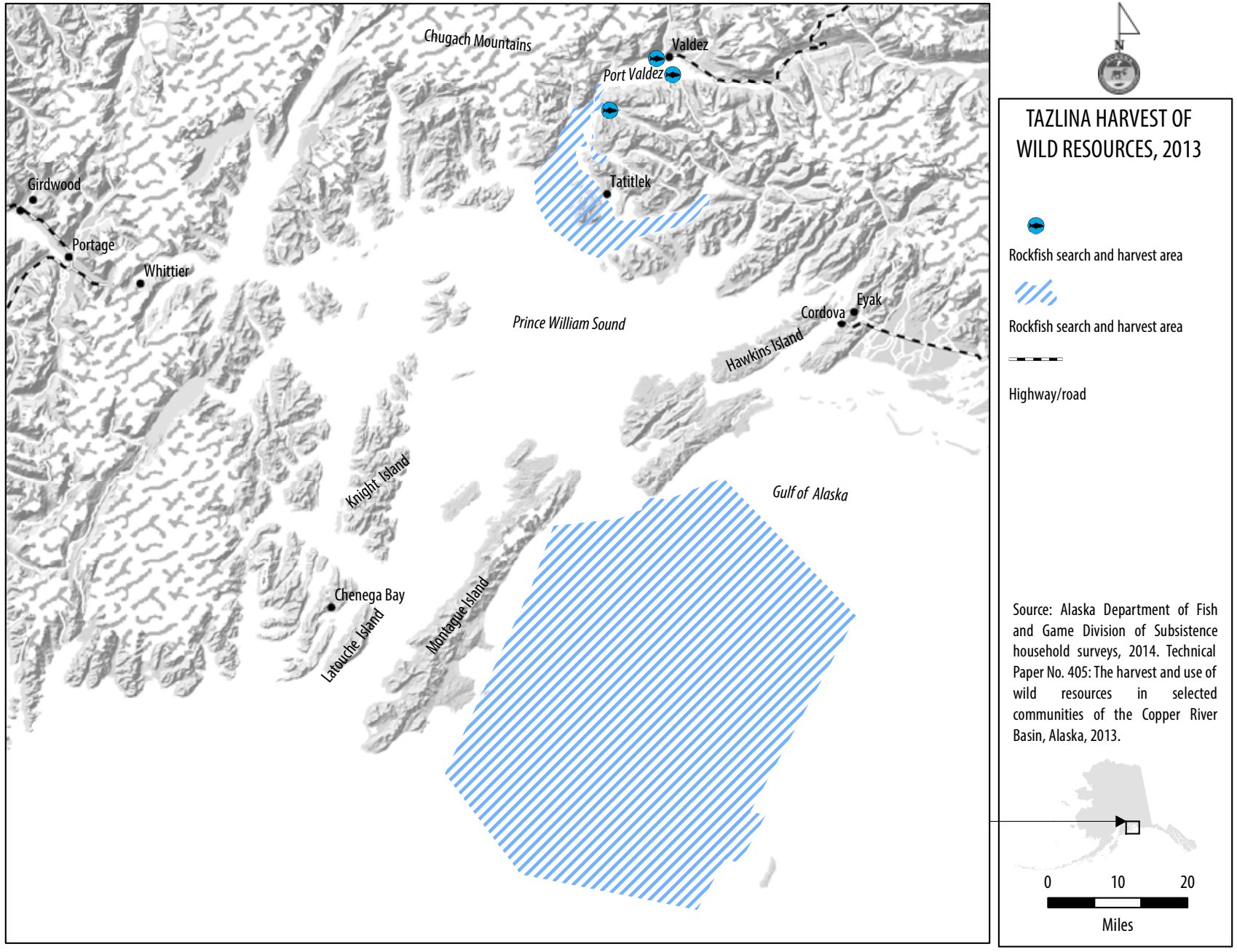
Miles


Chugach Mountains
Valdez
Port Valdez
Tatitlek
Girdwood
Portage
Whittier
Prince William Sound
Cordova
Eyak
Hawkins Island
Knight Island
Gulf of Alaska
Chenega Bay
Latouche Island
Montague Island
N
TAZLINA HARVEST OF WILD RESOURCES, 2013
Rockfish search and harvest area
Rockfish search and harvest area
Highway/road
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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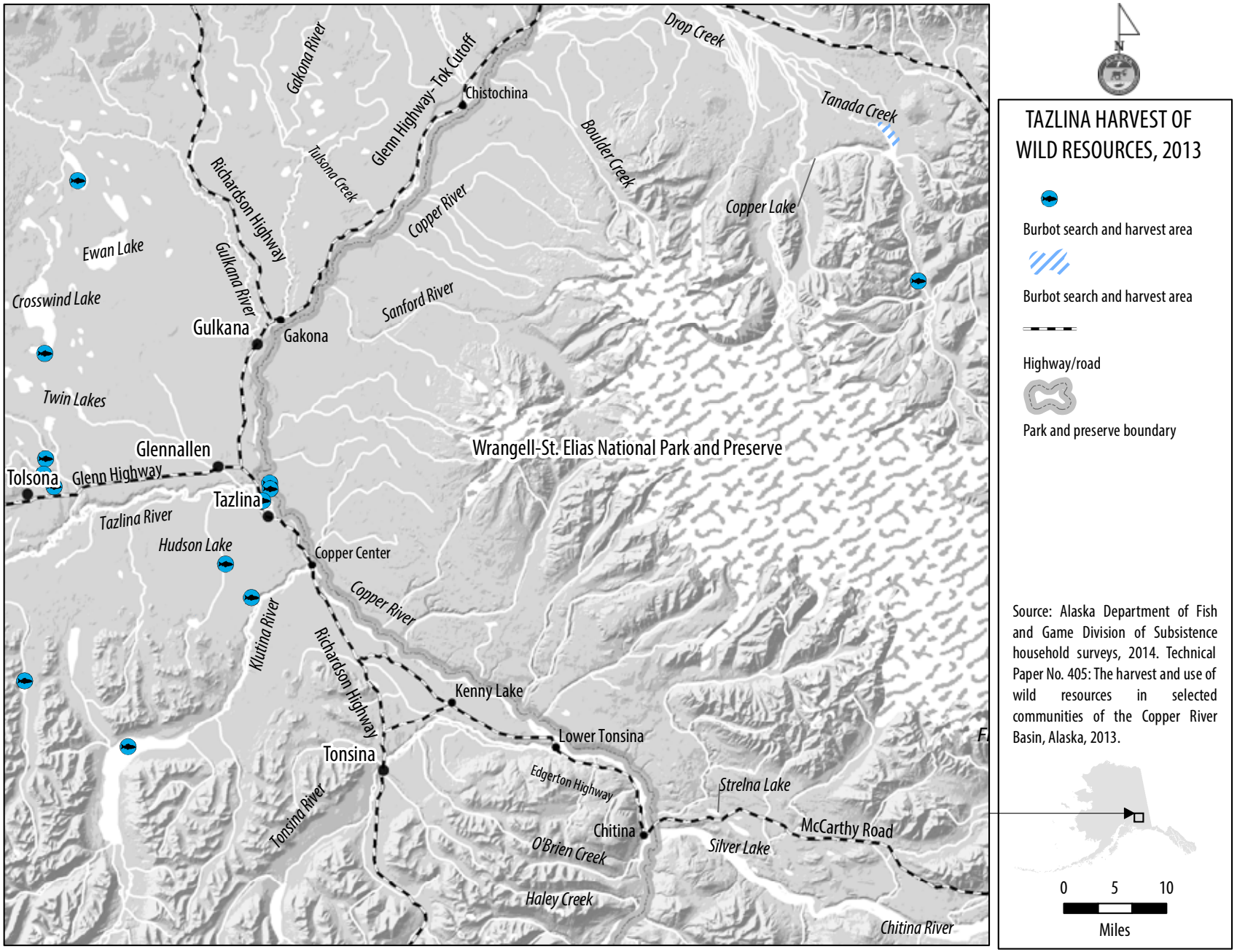
Miles



TAZLINA HARVEST OF WILD RESOURCES, 2013

Burbot search and harvest area

Burbot search and harvest area

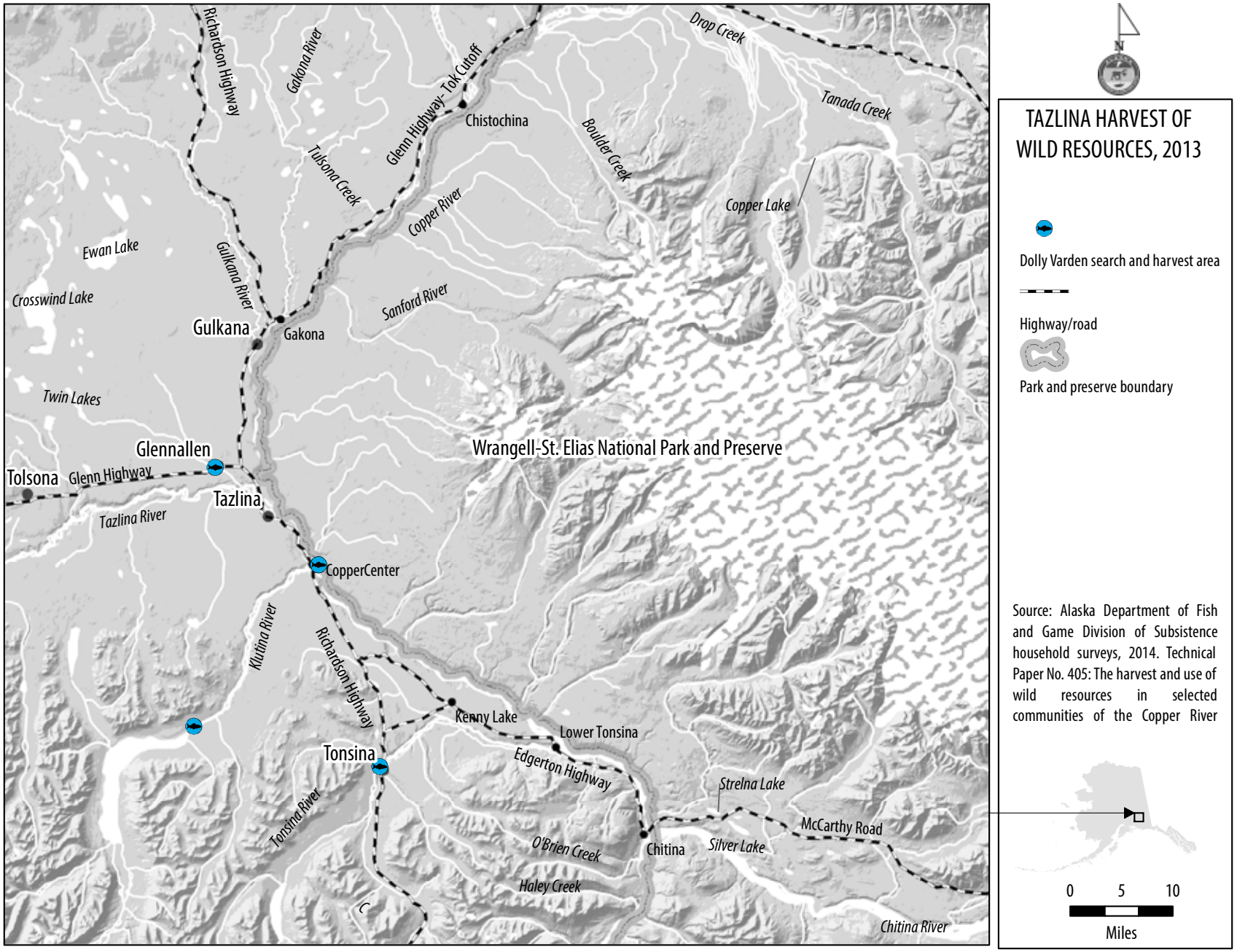
Highway/road

Park and preserve boundary

Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.

0 5 10

Miles


Richardson Highway
Gakona River
Glenn Highway - Tok Cutoff
Chistochina
Drop Creek
Tanada Creek
Boulder Creek
Tulsona Creek
Copper River
Copper Lake
Ewan Lake
Gulkana River
Crosswind Lake
Sanford River
Gulkana
Gakona
Twin Lakes
Glennallen
Wrangell-St. Elias National Park and Preserve
Tolsona
Glenn Highway
Tazlina
Tazlina River
CopperCenter
Klutina River
Richardson Highway
Kenny Lake
Lower Tonsina
Tonsina
Edgerton Highway
Strelna Lake
McCarthy Road
Tonsina River
O'Brien Creek
Chitina
Silver Lake
Haley Creek
Chitina River
N
TAZLINA HARVEST OF WILD RESOURCES, 2013
Dolly Varden search and harvest area
Highway/road
Park and preserve boundary
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River
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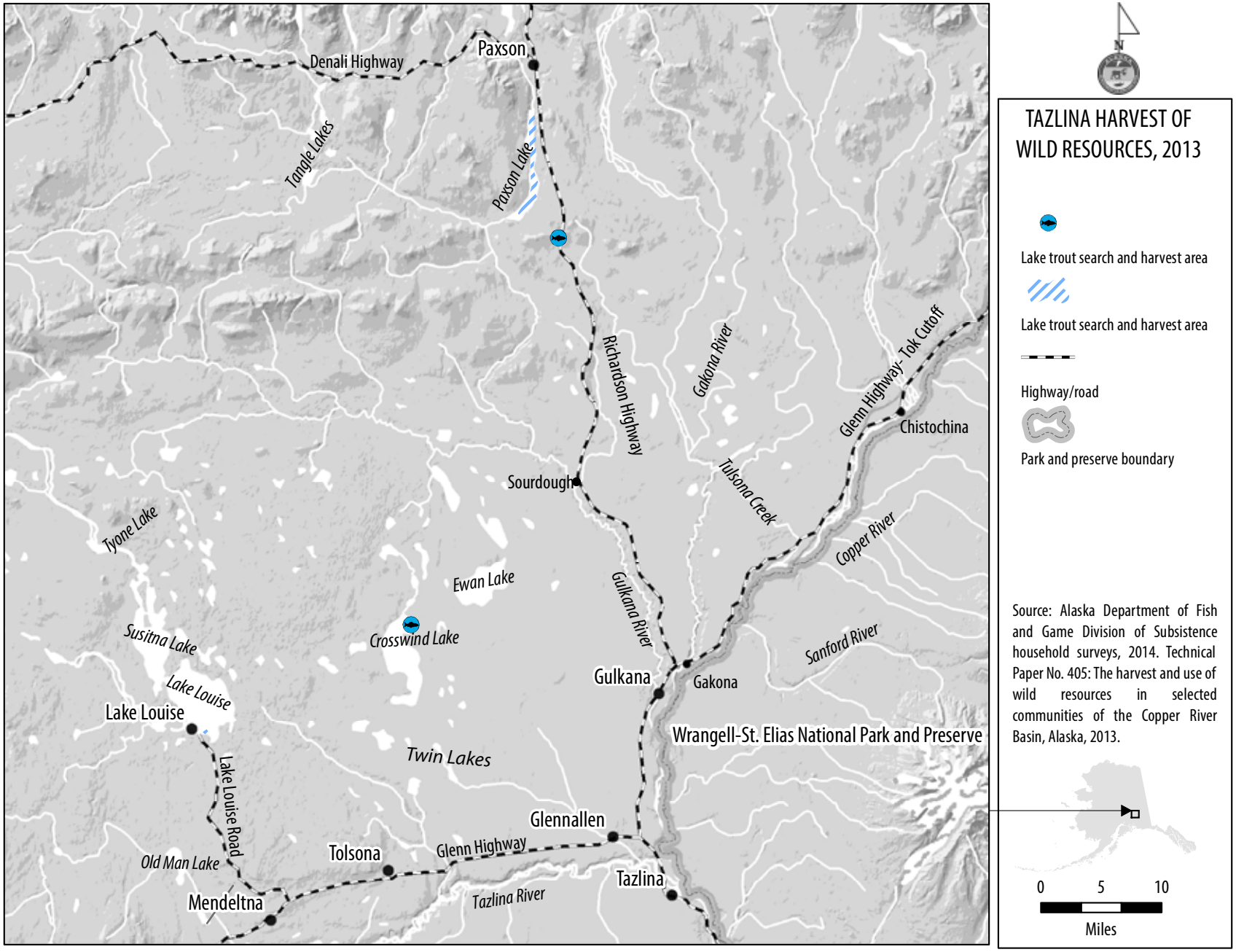
Miles


Denali Highway
Paxson
Tangle Lakes
Paxson Lake
Richardson Highway
Gakona River
Glenn Highway- Tok Cutoff
Chistochina
Sourdough
Tulsona Creek
Copper River
Tyone Lake
Ewan Lake
Gulkana River
Crosswind Lake
Susitna Lake
Lake Louise
Gulkana
Gakona
Sanford River
Wrangell-St. Elias National Park and Preserve
Twin Lakes
Glennallen
Lake Louise Road
Old Man Lake
Tolsona
Glenn Highway
Tazlina
Mendeltna
Tazlina River
TAZLINA HARVEST OF WILD RESOURCES, 2013
Lake trout search and harvest area
Lake trout search and harvest area
Highway/road
Park and preserve boundary
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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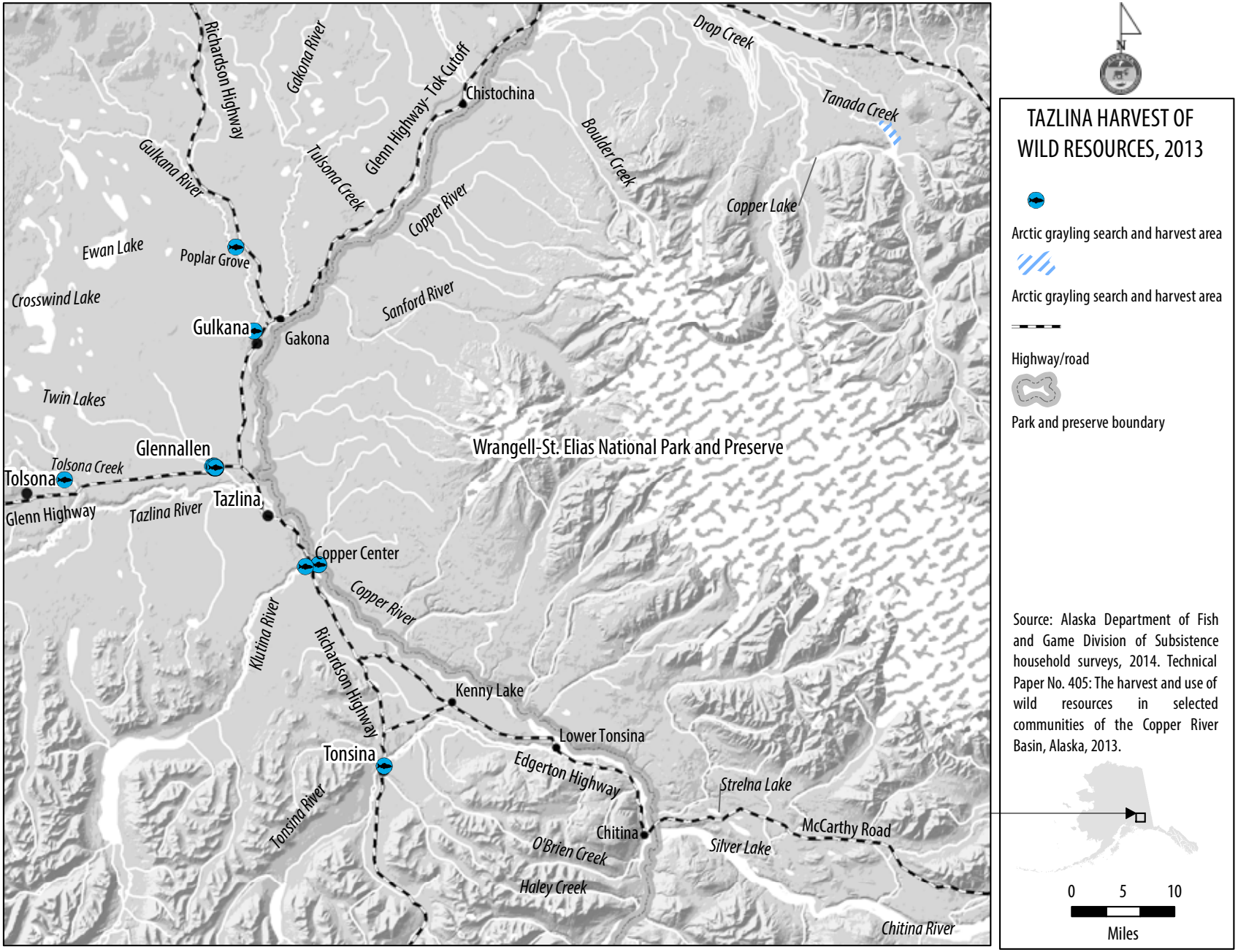
Miles


Richardson Highway
Gakona River
Glenn Highway- Tok Cutoff
Chistochina
Drop Creek
Tanada Creek
Boulder Creek
Gulkana River
Tulsona Creek
Copper River
Copper Lake
Ewan Lake
Poplar Grove
Crosswind Lake
Sanford River
Gulkana
Gakona
Twin Lakes
Wrangell-St. Elias National Park and Preserve
Glennallen
Tolsona Creek
Tolsona
Glenn Highway
Tazlina River
Tazlina
Copper Center
Copper River
Klutina River
Richardson Highway
Kenny Lake
Lower Tonsina
Tonsina
Edgerton Highway
Strelna Lake
Tonsina River
Chitina
McCarthy Road
O'Brien Creek
Silver Lake
Haley Creek
Chitina River
N
TAZLINA HARVEST OF WILD RESOURCES, 2013
Arctic grayling search and harvest area
Arctic grayling search and harvest area
Highway/road
Park and preserve boundary
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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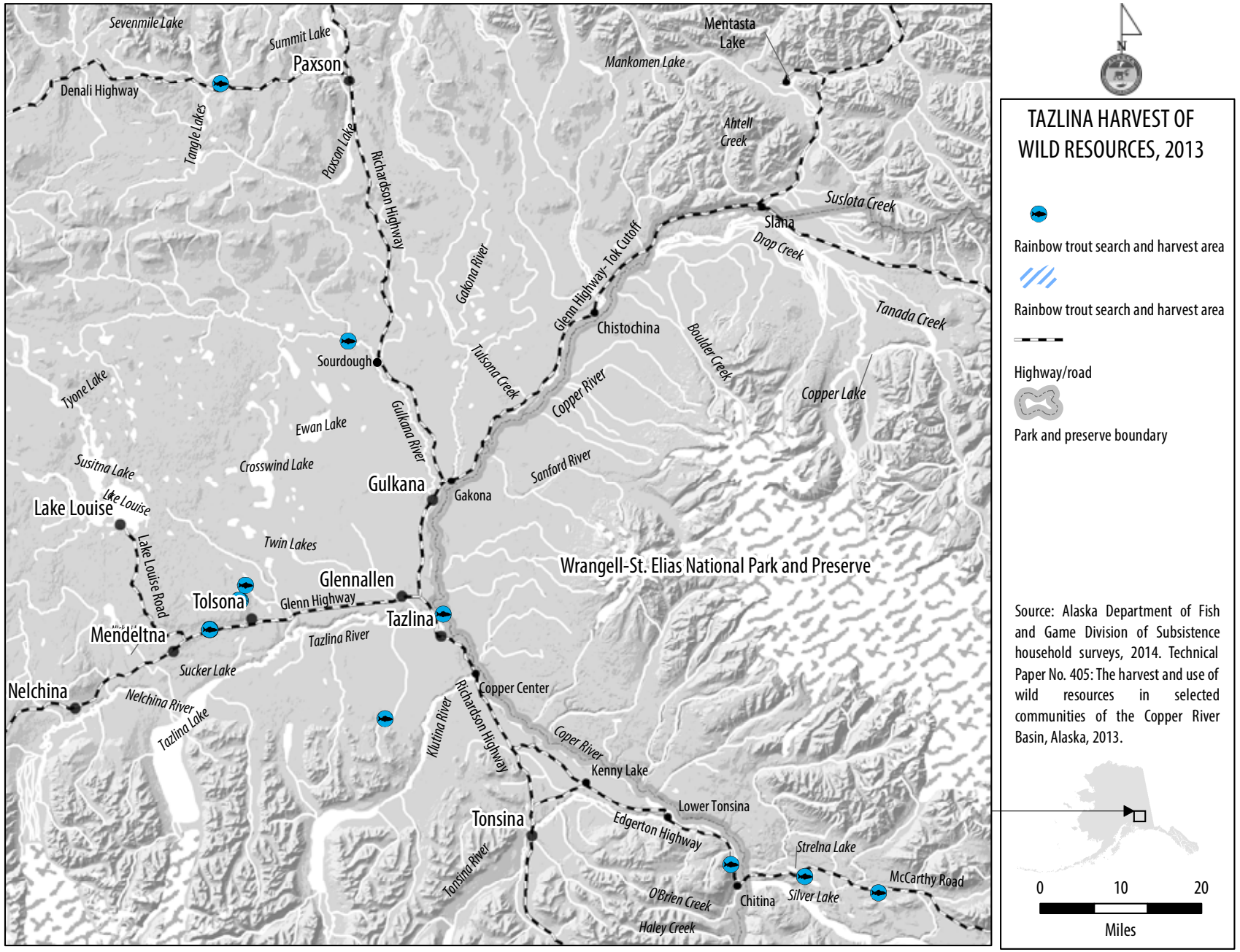
Sevenmile Lake
Summit Lake
Paxson
Denali Highway
Tangle Lakes
Paxson Lake
Richardson Highway
Mentasta Lake
Mankomen Lake
Ahtell Creek
Suslota Creek
Slana
Drop Creek
Gakona River
Glenn Highway-Tok Cutoff
Chistochina
Boulder Creek
Tanada Creek
Copper Lake
Sourdough
Tulsona Creek
Copper River
Tyone Lake
Ewan Lake
Gulkana River
Susitna Lake
Crosswind Lake
Gulkana
Gakona
Sanford River
Lake Louise
Lake Louise
Twin Lakes
Lake Louise Road
Glennallen
Tolsona
Glenn Highway
Tazlina
Wrangell-St. Elias National Park and Preserve
Mendeltna
Tazlina River
Sucker Lake
Nelchina
Nelchina River
Tazlina Lake
Klutina River
Richardson Highway
Copper Center
Copper River
Kenny Lake
Lower Tonsina
Tonsina
Edgerton Highway
Strelna Lake
McCarthy Road
Tonsina River
O'Brien Creek
Chitina
Silver Lake
Haley Creek
N
TAZLINA HARVEST OF WILD RESOURCES, 2013
Rainbow trout search and harvest area
Rainbow trout search and harvest area
Highway/road
Park and preserve boundary
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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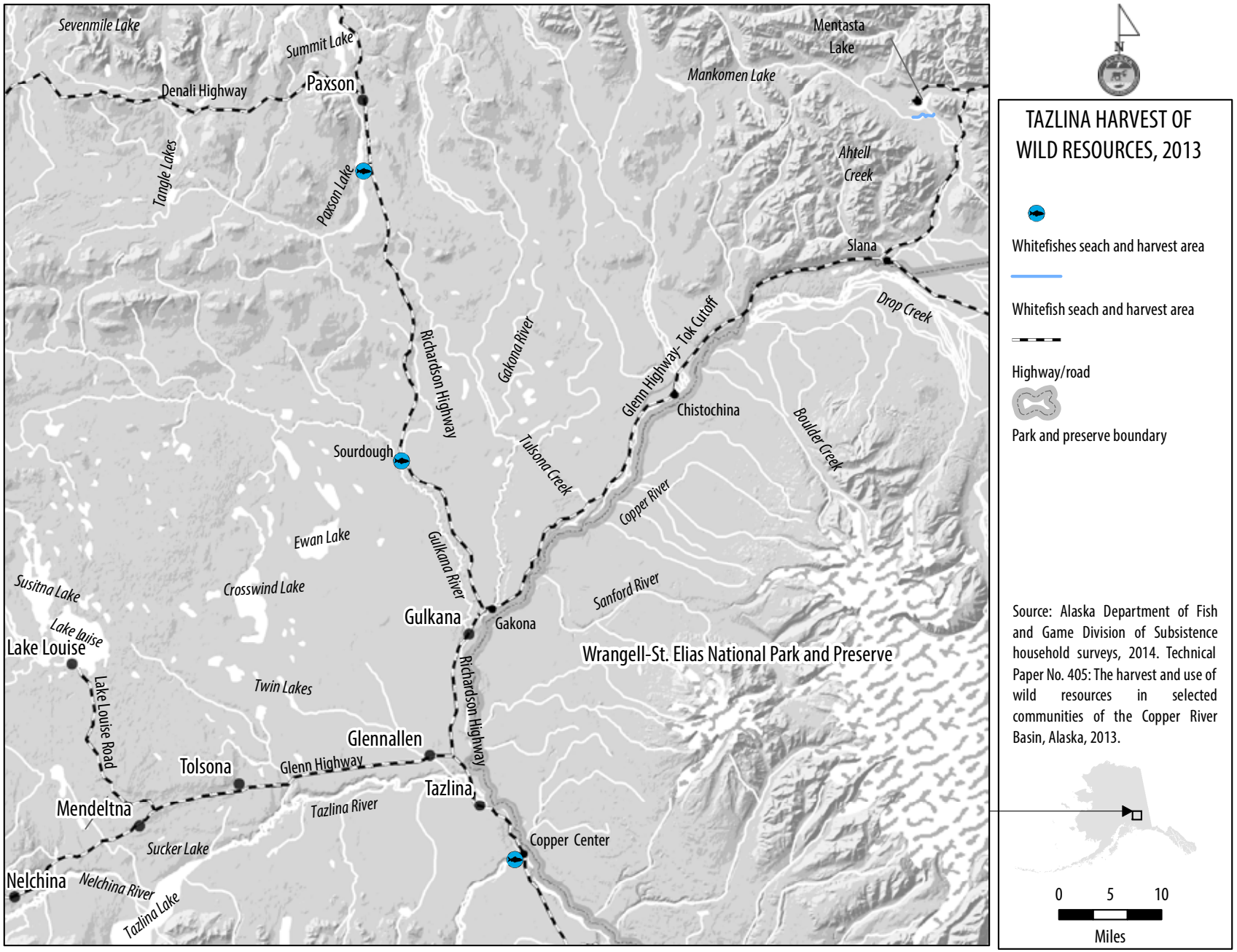
Sevenmile Lake
Summit Lake
Denali Highway
Paxson
Tangle Lakes
Paxson Lake
Mentasta Lake
Mankomen Lake
Ahtell Creek
Slana
Drop Creek
Richardson Highway
Gakona River
Glenn Highway- Tok Cutoff
Chistochina
Boulder Creek
Sourdough
Tulsona Creek
Copper River
Ewan Lake
Gulkana River
Susitna Lake
Crosswind Lake
Sanford River
Gulkana
Gakona
Lake Louise
Lake louise
Wrangell-St. Elias National Park and Preserve
Twin Lakes
Lake Louise Road
Glennallen
Tolsona
Glenn Highway
Richardson Highway
Tazlina
Mendeltna
Tazlina River
Copper Center
Sucker Lake
Nelchina
Nelchina River
Tazlina Lake
N
TAZLINA HARVEST OF WILD RESOURCES, 2013
Whitefishes seach and harvest area
Whitefish seach and harvest area
Highway/road
Park and preserve boundary
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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Miles

TAZLINA HARVEST OF WILD RESOURCES, 2013

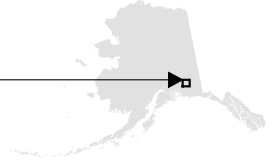
Bison search and harvest area

Highway/road

Park and preserve boundary

Game management unit

Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.



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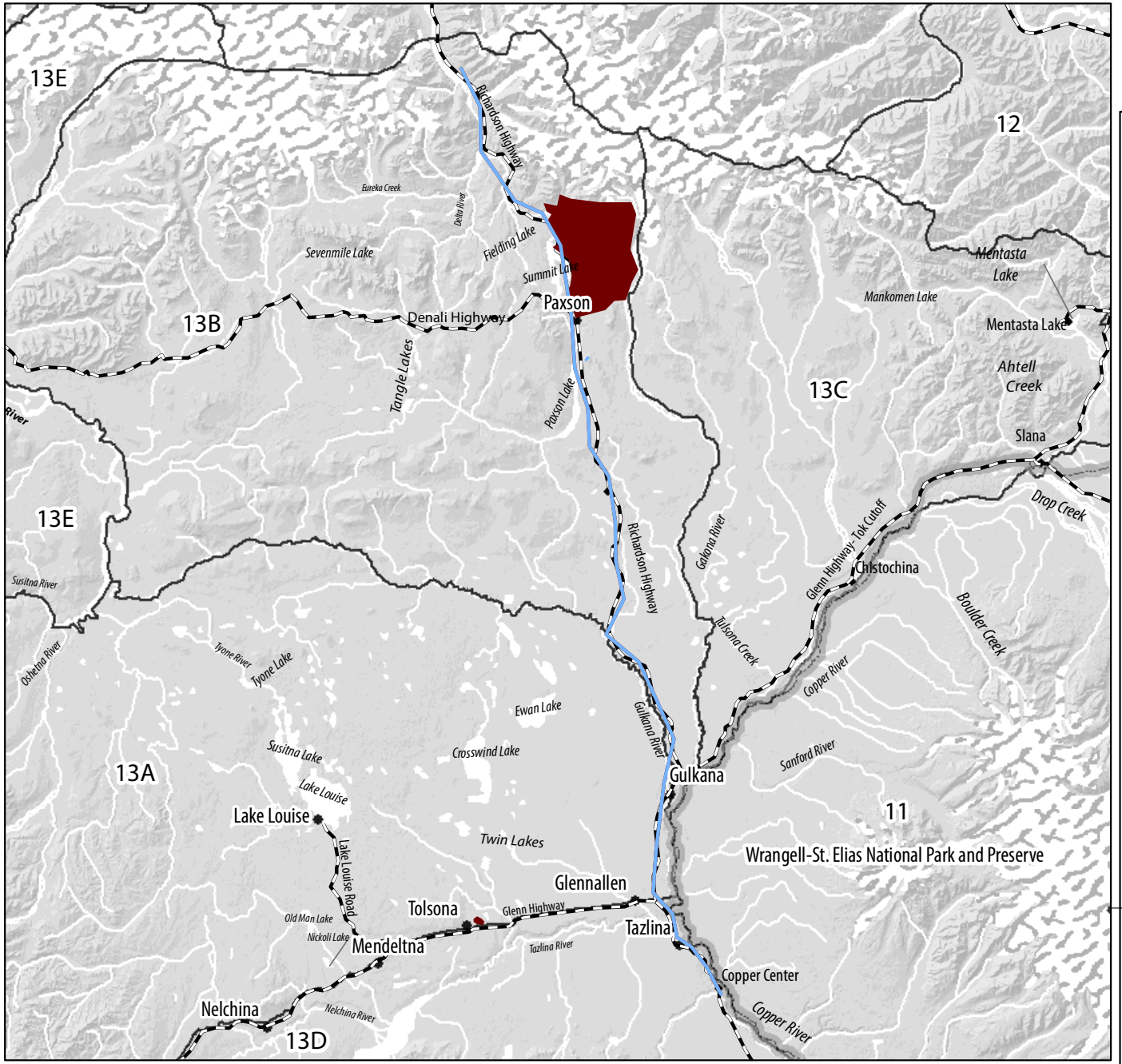


TAZLINA HARVEST OF WILD RESOURCES, 2013

Black bear search and harvest area

Black bear search and harvest area

Brown bear search and harvest area

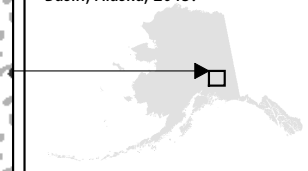
Brown bear search and harvest area

Highway/road

Park and preserve boundary

Game management unit

Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.



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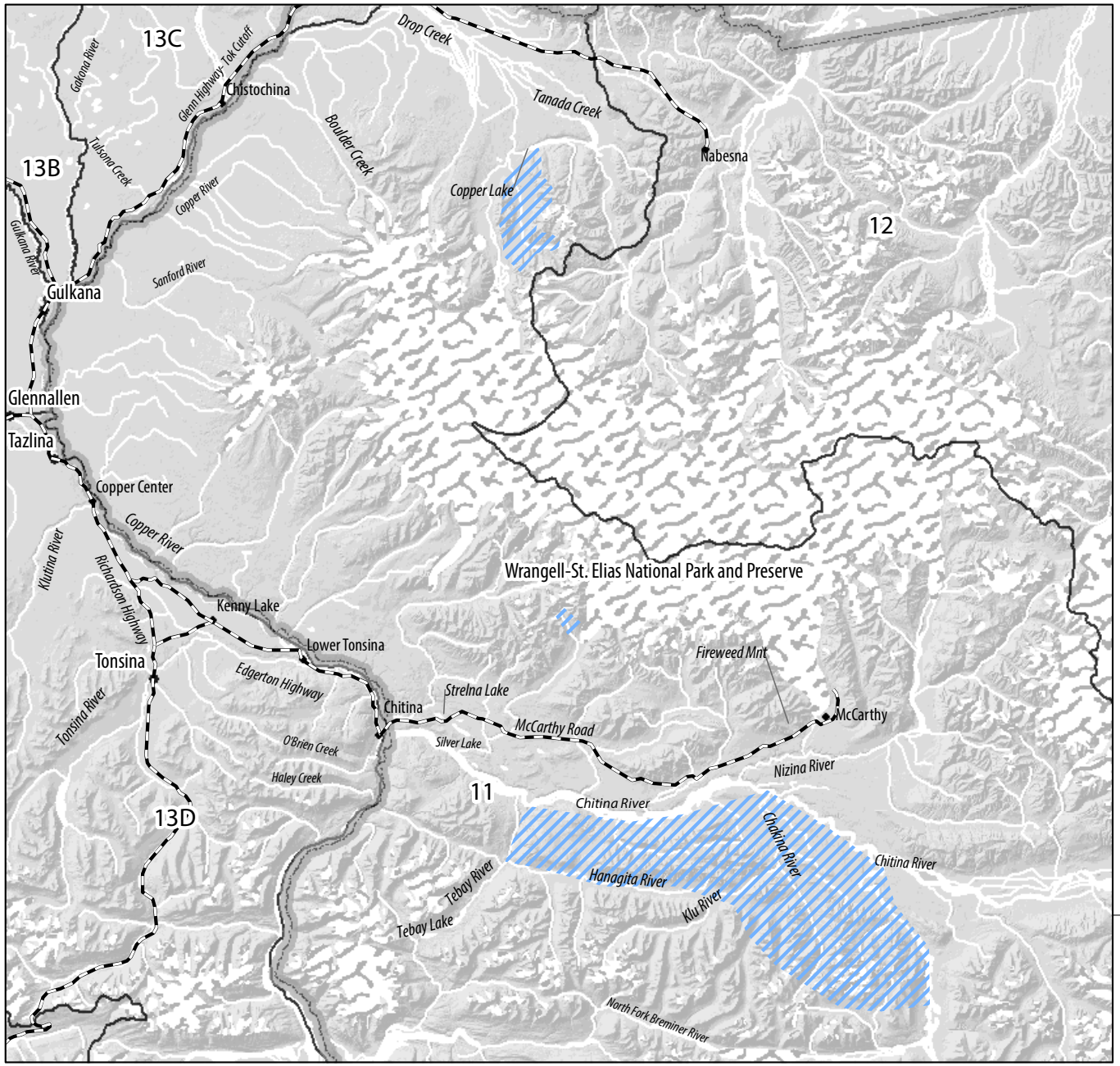

TAZLINA HARVEST OF WILD RESOURCES, 2013

Dall sheep search and harvest area

Highway/road

Park and preserve boundary

Game management unit

Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.

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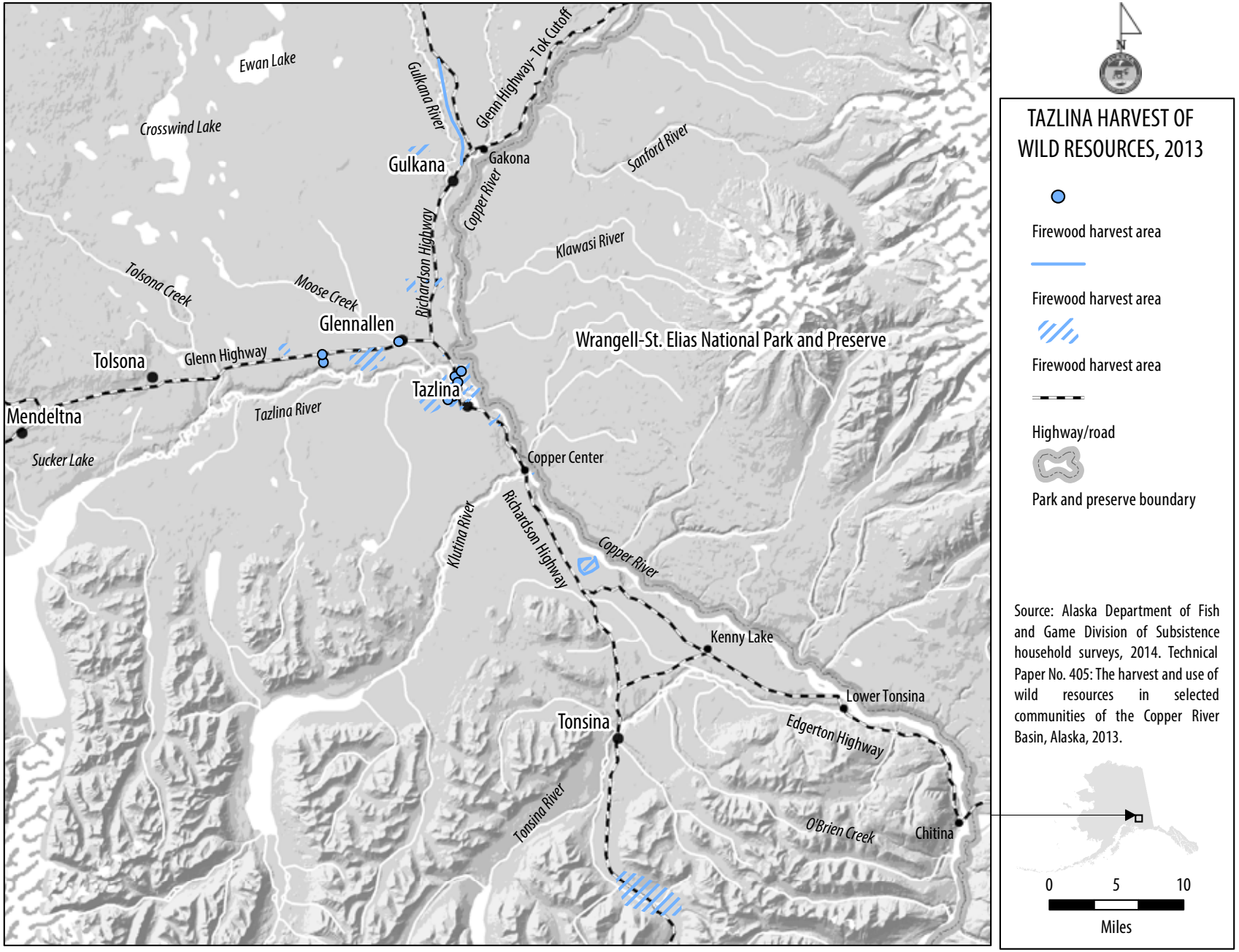
Ewan Lake
Crosswind Lake
Gulkana River
Glenn Highway- Tok Cutoff
Gulkana
Gakona
Sanford River
Copper River
Richardson Highway
Klawasi River
Tolsona Creek
Moose Creek
Glennallen
Wrangell-St. Elias National Park and Preserve
Tolsona
Glenn Highway
Tazlina
Mendeltna
Tazlina River
Sucker Lake
Copper Center
Klutina River
Richardson Highway
Copper River
Kenny Lake
Lower Tonsina
Tonsina
Edgerton Highway
Tonsina River
O'Brien Creek
Chitina
TAZLINA HARVEST OF WILD RESOURCES, 2013
Firewood harvest area
Firewood harvest area
Firewood harvest area
Highway/road
Park and preserve boundary
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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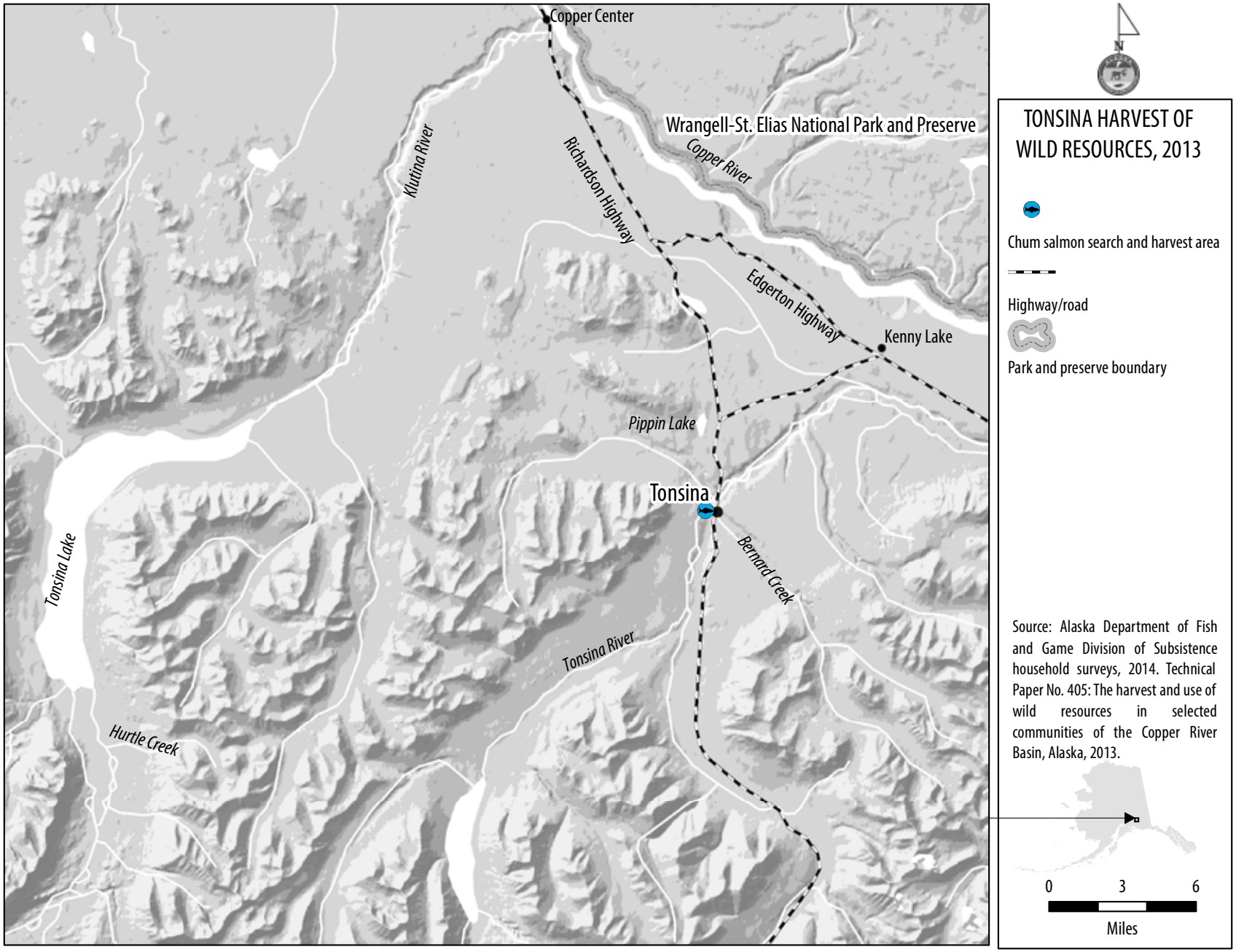
Copper Center
Wrangell-St. Elias National Park and Preserve
Klutina River
Richardson Highway
Copper River
Edgerton Highway
Kenny Lake
Pippin Lake
Tonsina
Bernard Creek
Tonsina Lake
Tonsina River
Hurtle Creek
TONSINA HARVEST OF WILD RESOURCES, 2013
Chum salmon search and harvest area
Highway/road
Park and preserve boundary
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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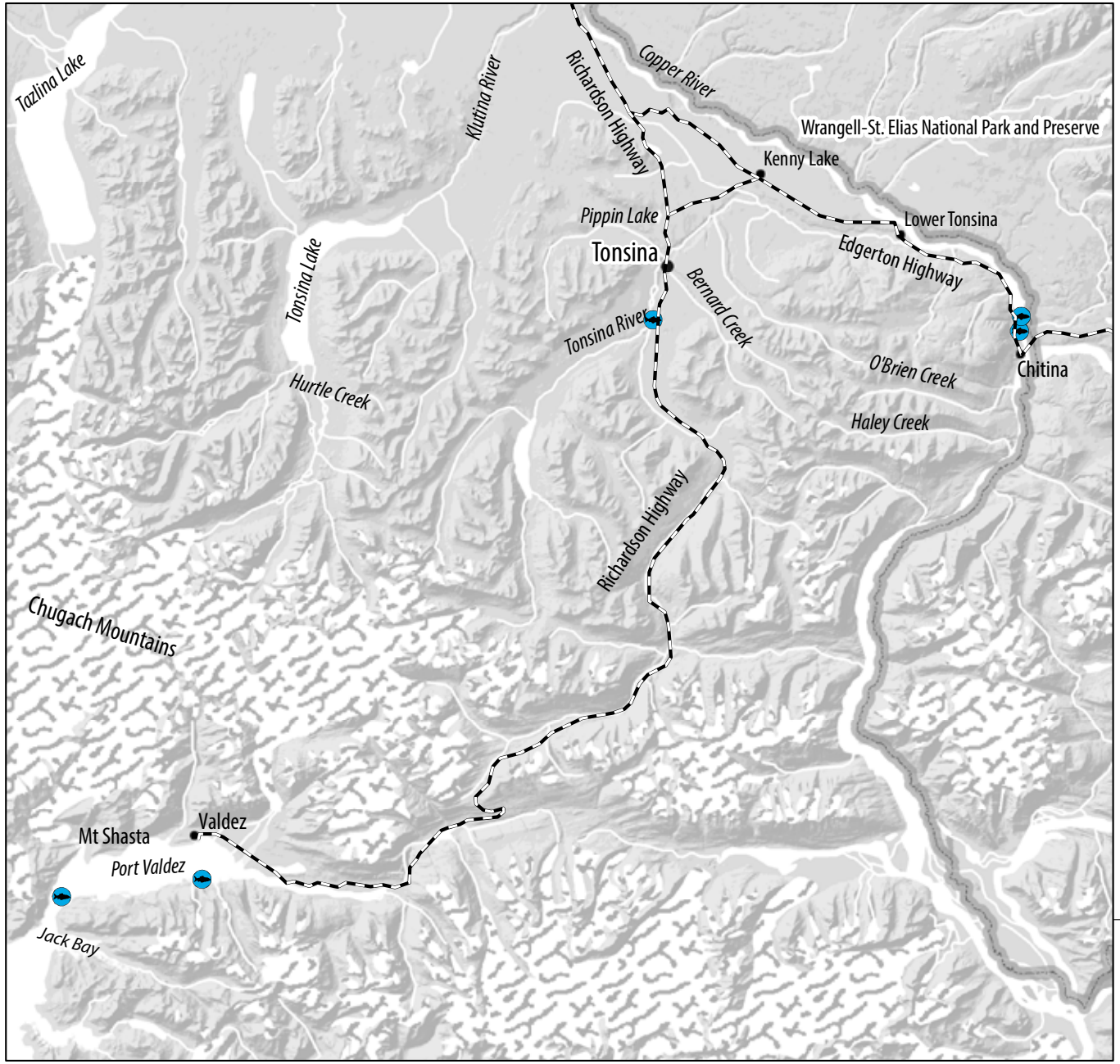
Miles



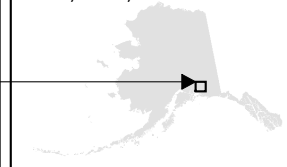
TONSINA HARVEST OF WILD RESOURCES, 2013

Coho salmon search and harvest area

Highway/road

Park and preserve boundary

Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.



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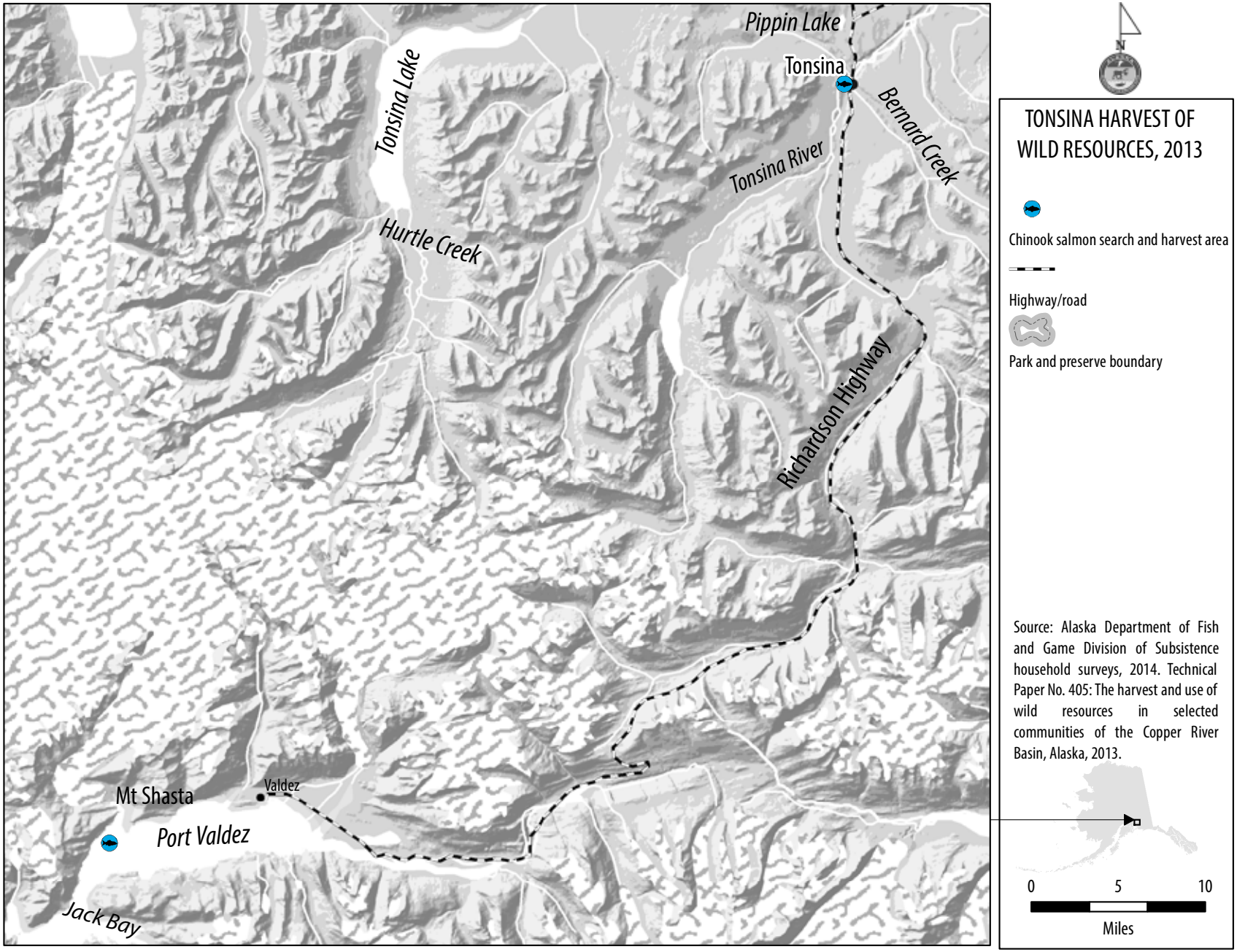
Pippin Lake
Tonsina
Tonsina Lake
Bernard Creek
Tonsina River
Hurtle Creek
Richardson Highway
Valdez
Mt Shasta
Port Valdez
Jack Bay
TONSINA HARVEST OF WILD RESOURCES, 2013
Chinook salmon search and harvest area
Highway/road
Park and preserve boundary
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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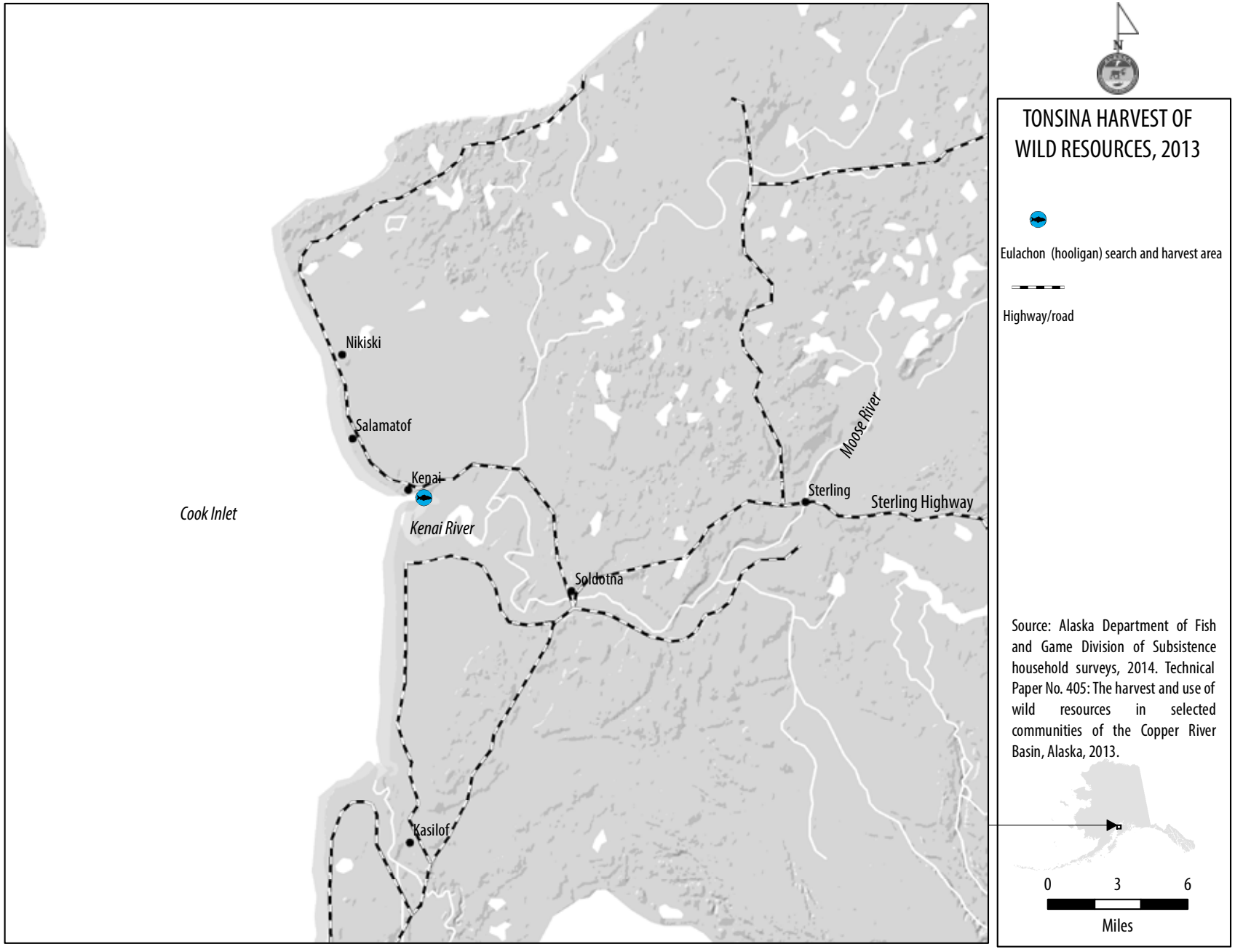
TONSINA HARVEST OF WILD RESOURCES, 2013
Eulachon (hooligan) search and harvest area
Highway/road
Nikiski
Salamatof
Kenai
Cook Inlet
Kenai River
Moose River
Sterling
Sterling Highway
Soldotna
Kasilof
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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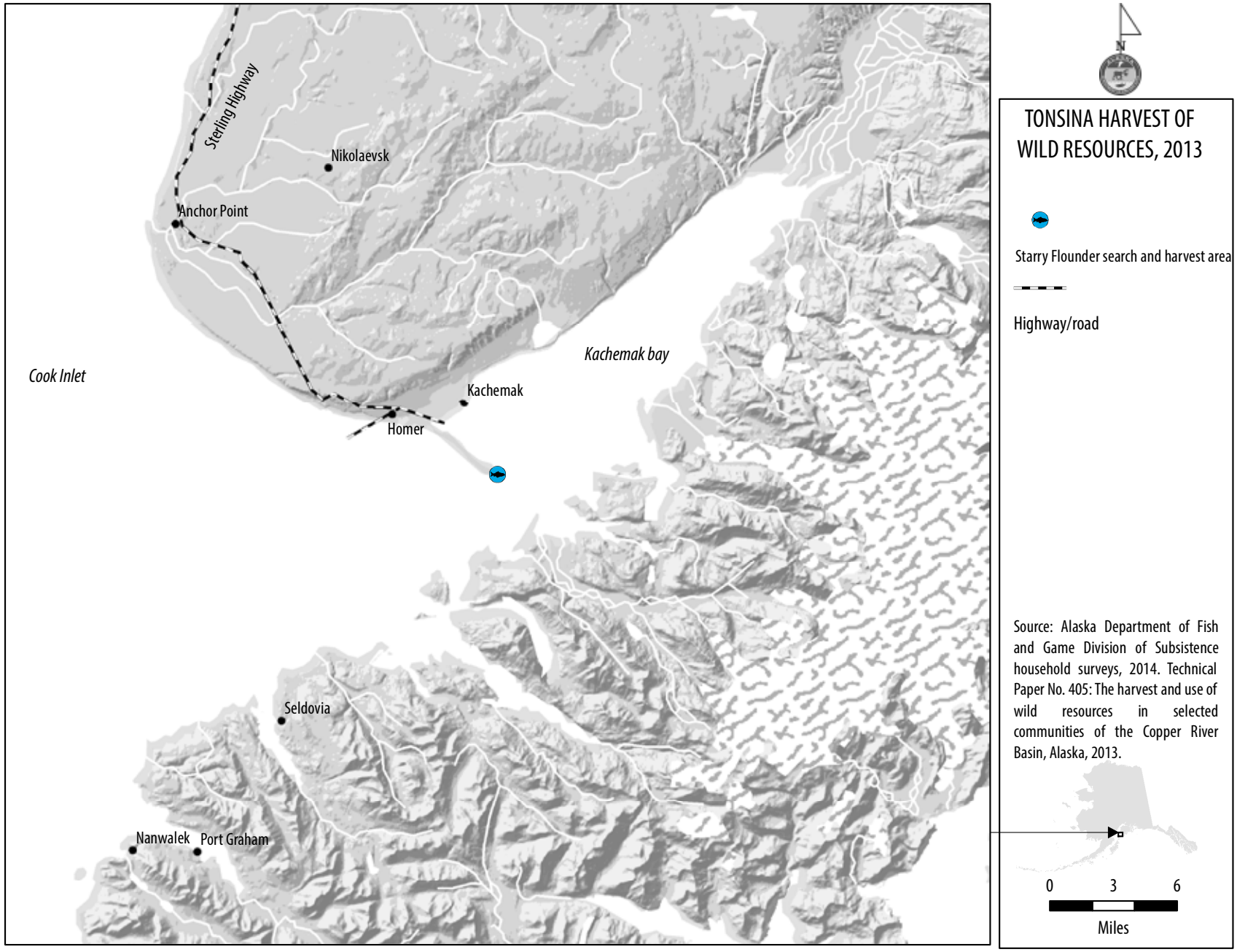
Miles


Sterling Highway
Nikolaevsk
Anchor Point
Cook Inlet
Kachemak bay
Kachemak
Homer
Seldovia
Nanwalek
Port Graham
N
TONSINA HARVEST OF WILD RESOURCES, 2013
Starry Flounder search and harvest area
Highway/road
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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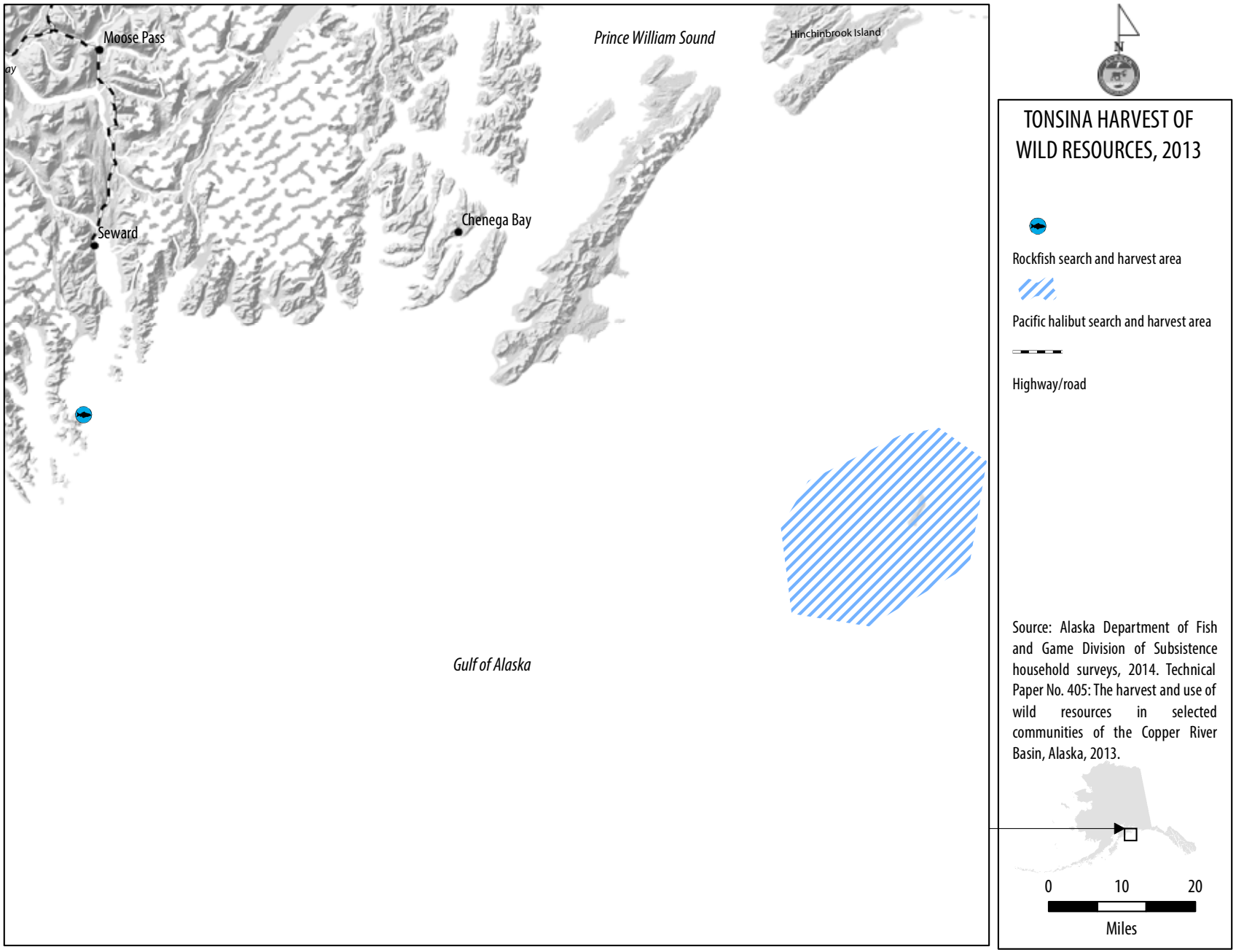
Moose Pass
Seward
Chenega Bay
Prince William Sound
Hinchinbrook Island
Gulf of Alaska
N
TONSINA HARVEST OF WILD RESOURCES, 2013
Rockfish search and harvest area
Pacific halibut search and harvest area
Highway/road
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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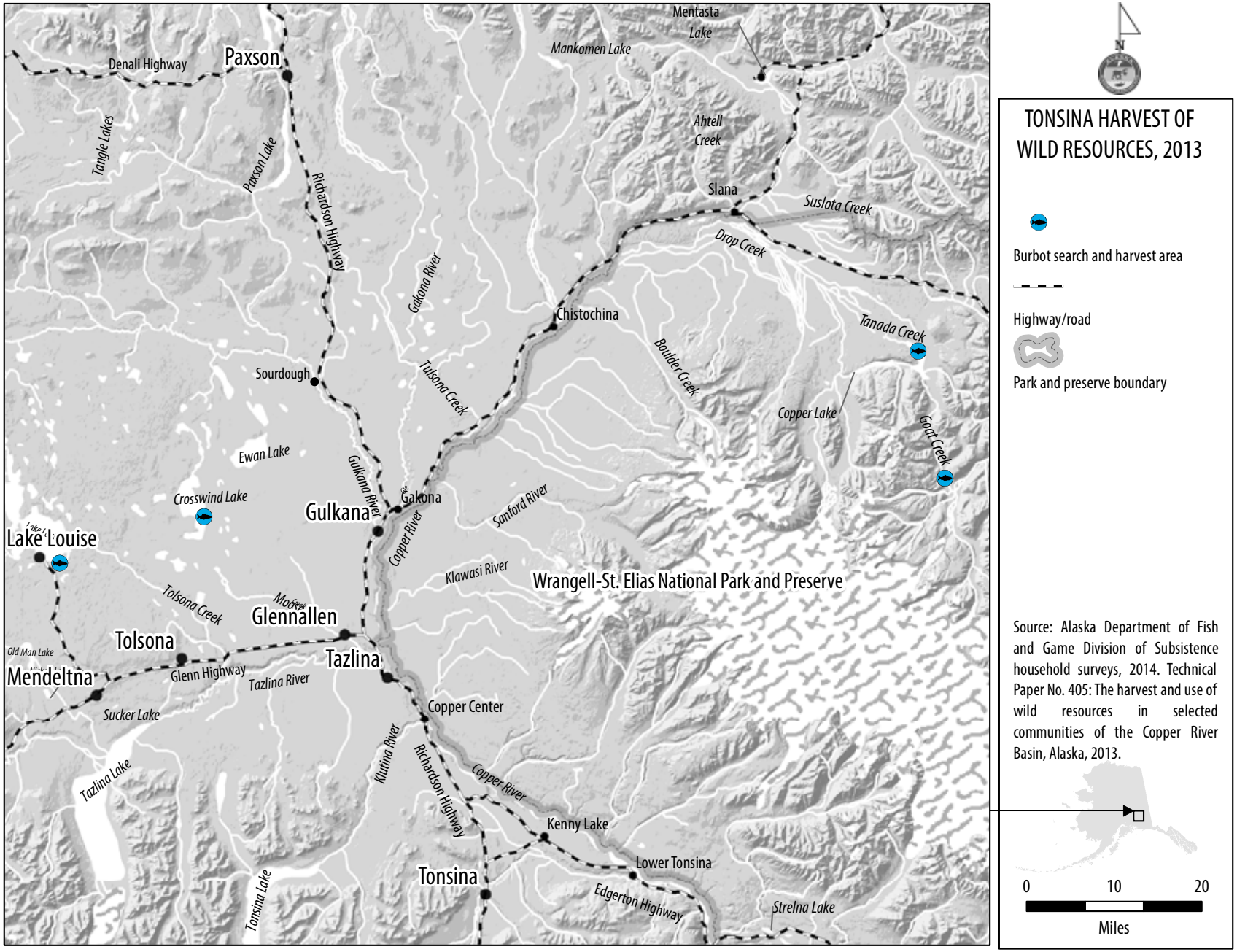
Miles


Mentasta Lake
Mankomen Lake
Denali Highway
Paxson
Tangle Lakes
Paxson Lake
Richardson Highway
Ahtell Creek
Slana
Suslota Creek
Drop Creek
Gakona River
Chistochina
Tanada Creek
Boulder Creek
Sourdough
Tulsona Creek
Copper Lake
Goat Creek
Ewan Lake
Gulkana River
Gakona
Crosswind Lake
Gulkana
Sanford River
Lake Louise
Copper River
Klawasi River
Wrangell-St. Elias National Park and Preserve
Tolsona Creek
Moose Creek
Glennallen
Tolsona
Old Man Lake
Tazlina
Mendeltna
Glenn Highway
Tazlina River
Copper Center
Sucker Lake
Klutina River
Richardson Highway
Copper River
Tazlina Lake
Kenny Lake
Lower Tonsina
Tonsina
Edgerton Highway
Tonsina Lake
Strelna Lake
N
TONSINA HARVEST OF WILD RESOURCES, 2013
Burbot search and harvest area
Highway/road
Park and preserve boundary
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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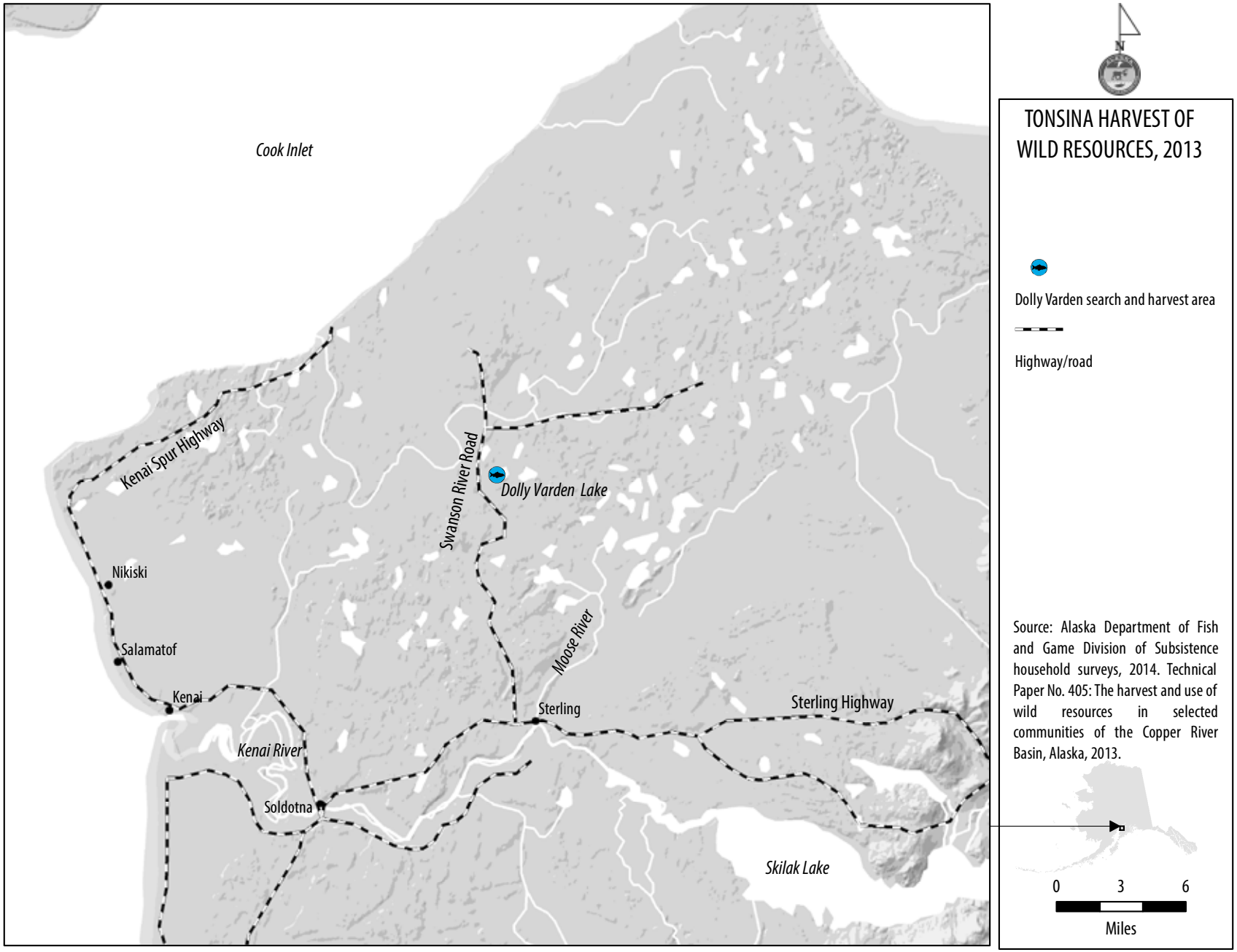
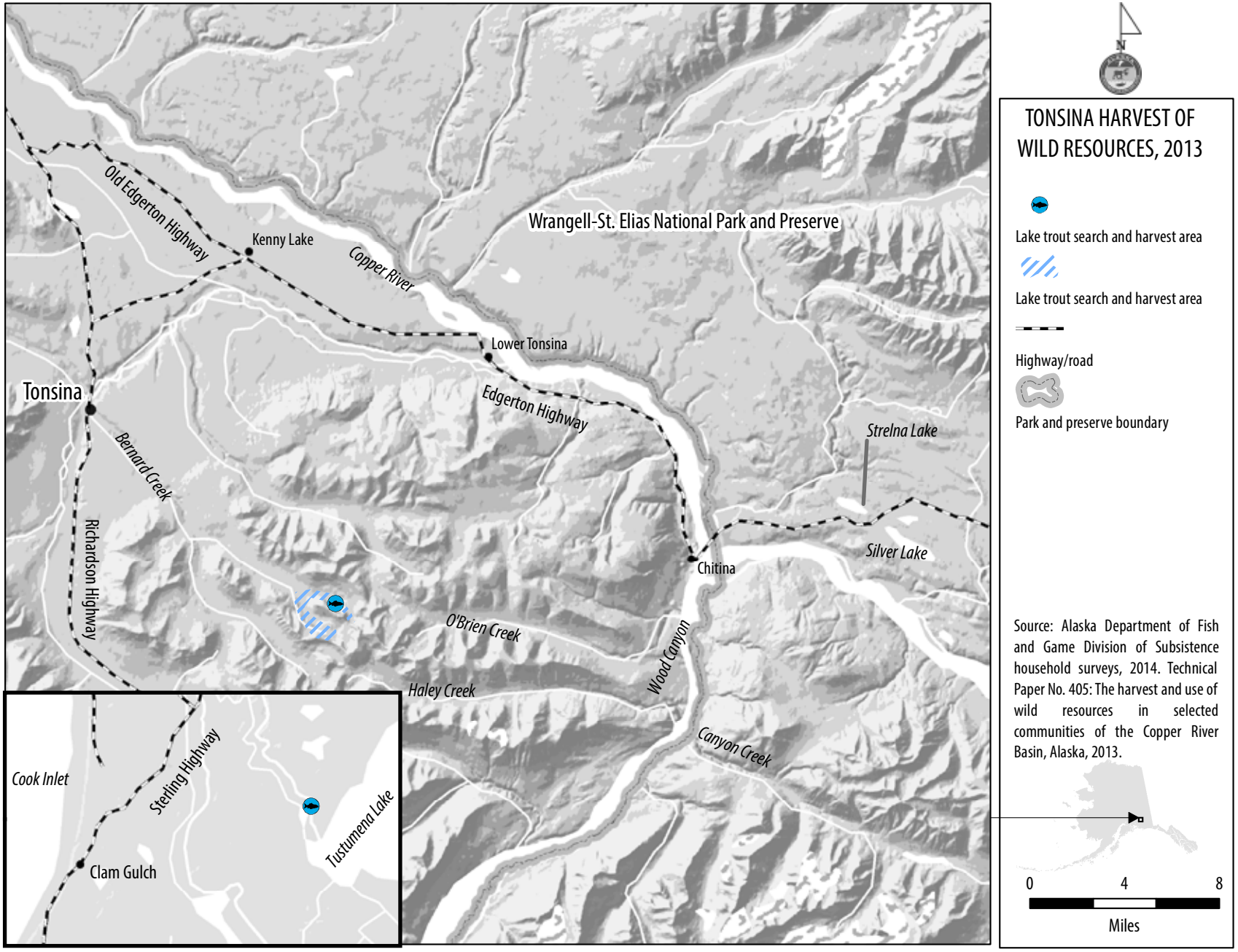
Miles


TONSINA HARVEST OF WILD RESOURCES, 2013
Dolly Varden search and harvest area
Highway/road
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
0
3
6
Miles
Cook Inlet
Kenai Spur Highway
Swanson River Road
Dolly Varden Lake
Nikiski
Salamatof
Kenai
Moose River
Sterling
Sterling Highway
Kenai River
Soldotna
Skilak Lake


Wrangell-St. Elias National Park and Preserve
Old Edgerton Highway
Kenny Lake
Copper River
Lower Tonsina
Tonsina
Edgerton Highway
Bernard Creek
Richardson Highway
Strelna Lake
Silver Lake
Chitina
O'Brien Creek
Haley Creek
Wood Canyon
Canyon Creek
Cook Inlet
Sterling Highway
Tustumena Lake
Clam Gulch
TONSINA HARVEST OF WILD RESOURCES, 2013
Lake trout search and harvest area
Lake trout search and harvest area
Highway/road
Park and preserve boundary
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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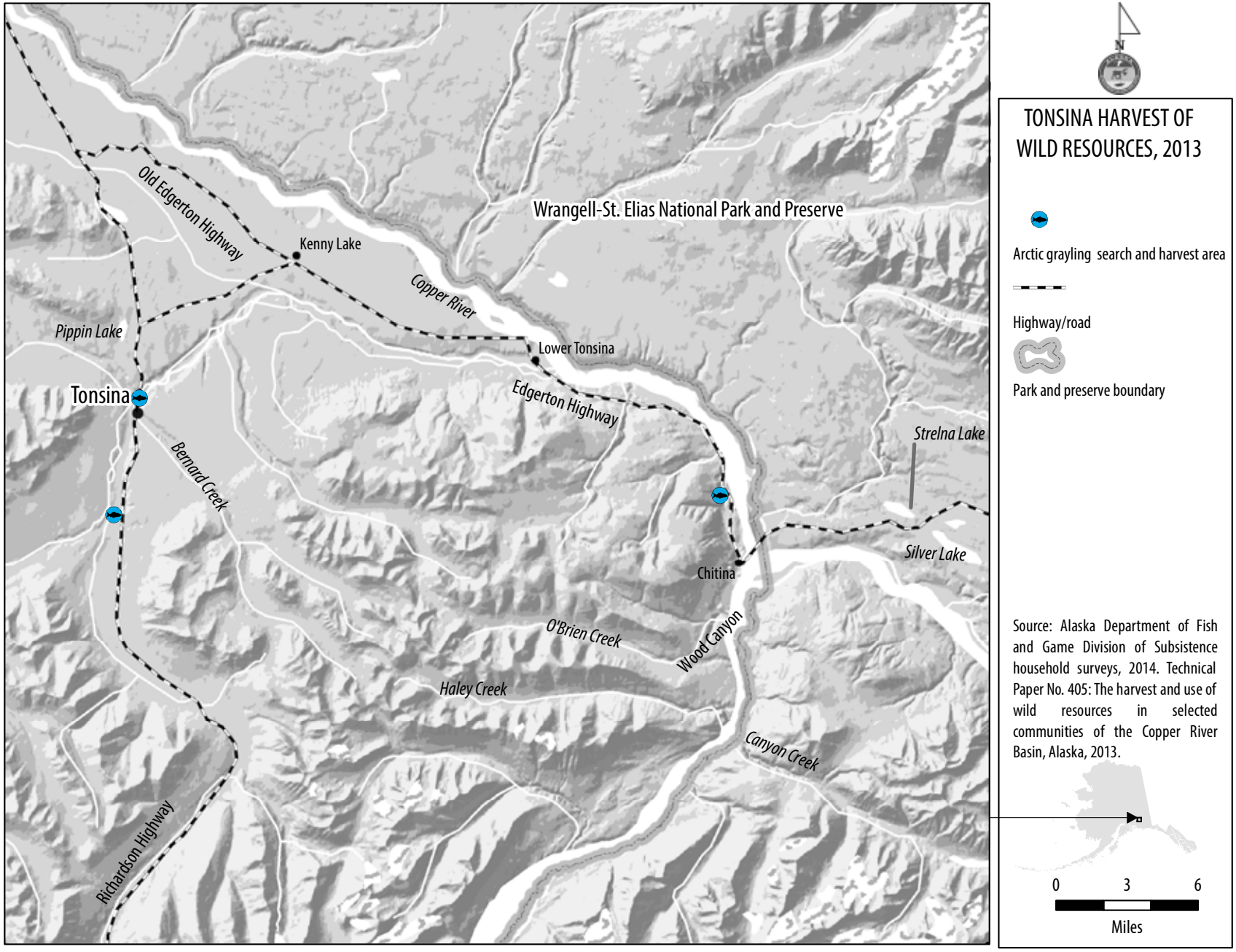
Miles


Wrangell-St. Elias National Park and Preserve
Old Edgerton Highway
Kenny Lake
Copper River
Pippin Lake
Lower Tonsina
Tonsina
Edgerton Highway
Strelna Lake
Bernard Creek
Silver Lake
Chitina
O'Brien Creek
Wood Canyon
Haley Creek
Canyon Creek
Richardson Highway
TONSINA HARVEST OF WILD RESOURCES, 2013
Arctic grayling search and harvest area
Highway/road
Park and preserve boundary
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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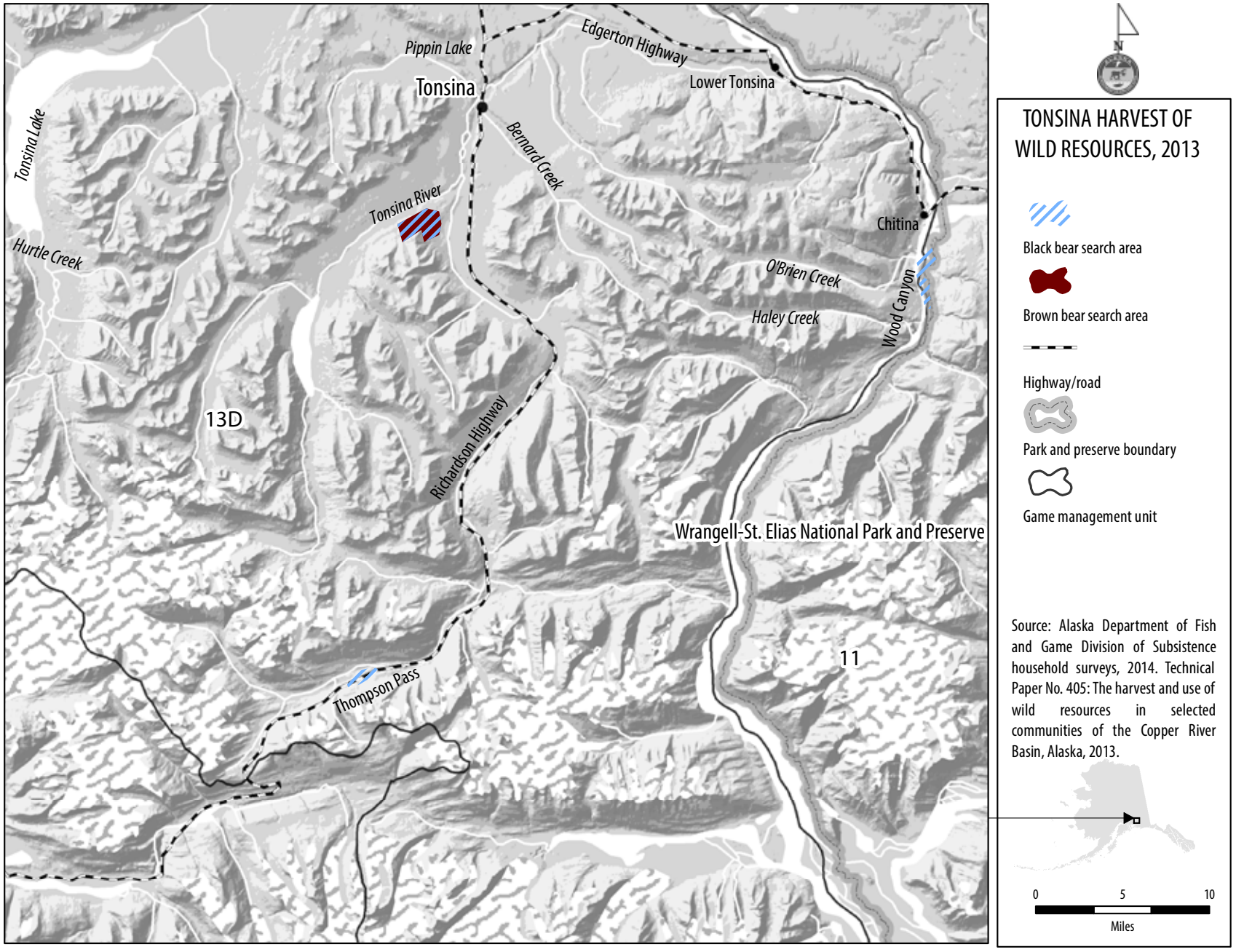
6
Miles


Pippin Lake
Edgerton Highway
Tonsina
Lower Tonsina
Tonsina Lake
Bernard Creek
Tonsina River
Chitina
Hurtle Creek
O'Brien Creek
Haley Creek
Wood Canyon
13D
Richardson Highway
Wrangell-St. Elias National Park and Preserve
11
Thompson Pass
TONSINA HARVEST OF WILD RESOURCES, 2013
Black bear search area
Brown bear search area
Highway/road
Park and preserve boundary
Game management unit
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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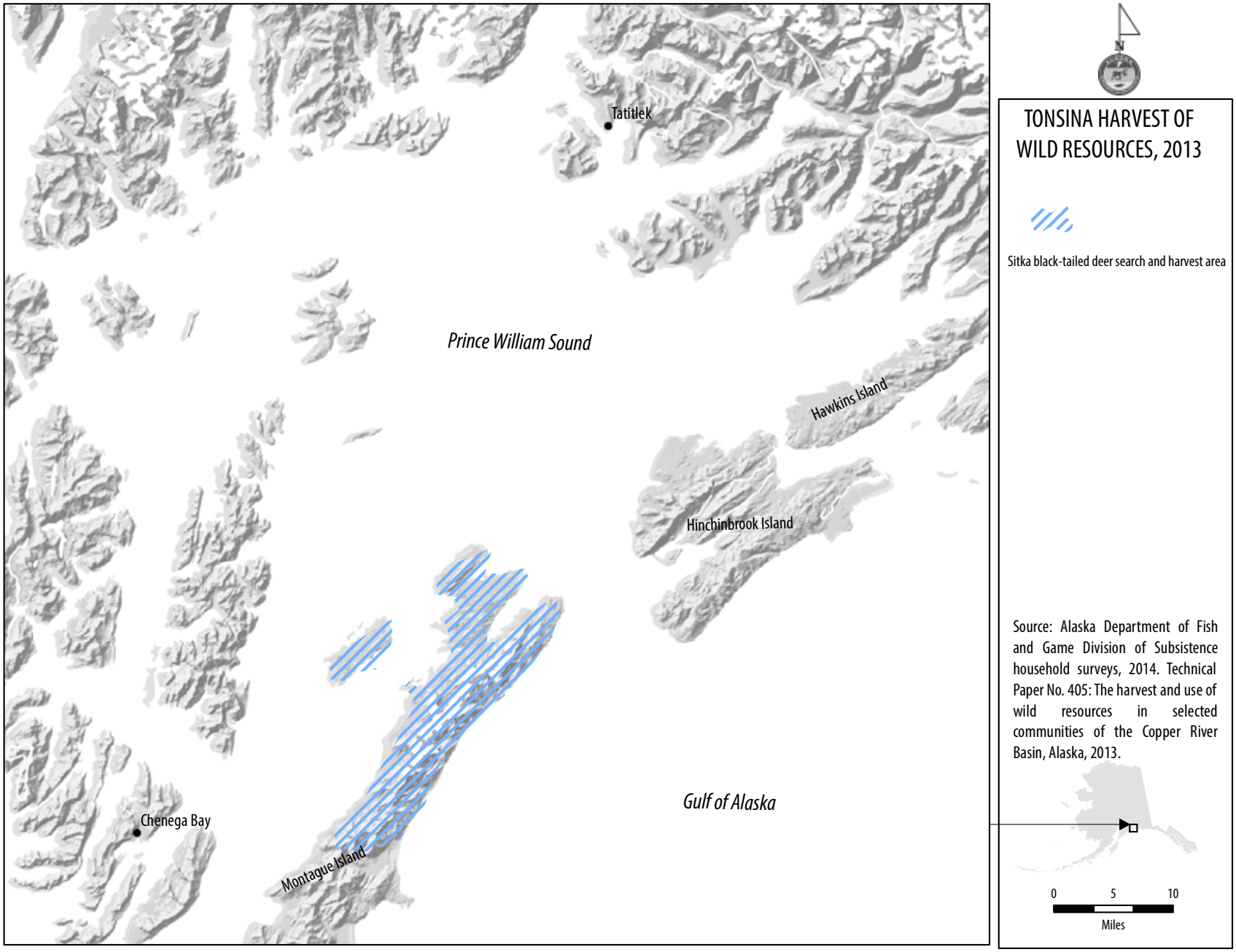
Miles


Tatitlek
Prince William Sound
Hawkins Island
Hinchinbrook Island
Gulf of Alaska
Chenega Bay
Montague Island
N
TONSINA HARVEST OF WILD RESOURCES, 2013
Sitka black-tailed deer search and harvest area
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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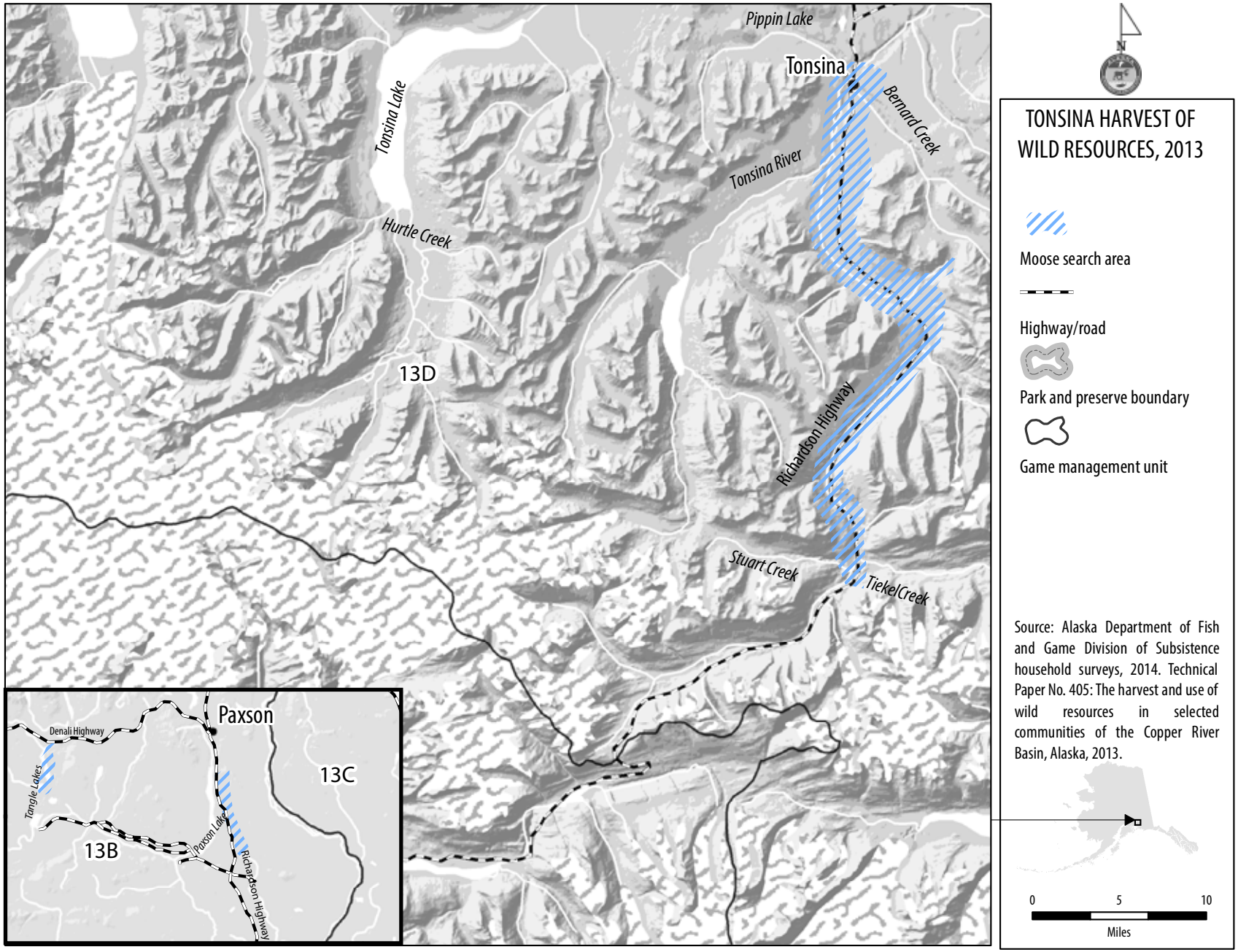
Miles


Pippin Lake
Tonsina
Tonsina Lake
Bernard Creek
Tonsina River
Hurtle Creek
13D
Richardson Highway
Stuart Creek
Tiekel Creek
Paxson
Denali Highway
13C
Tangle Lakes
Paxson Lake
13B
Richardson Highway
N
TONSINA HARVEST OF WILD RESOURCES, 2013
Moose search area
Highway/road
Park and preserve boundary
Game management unit
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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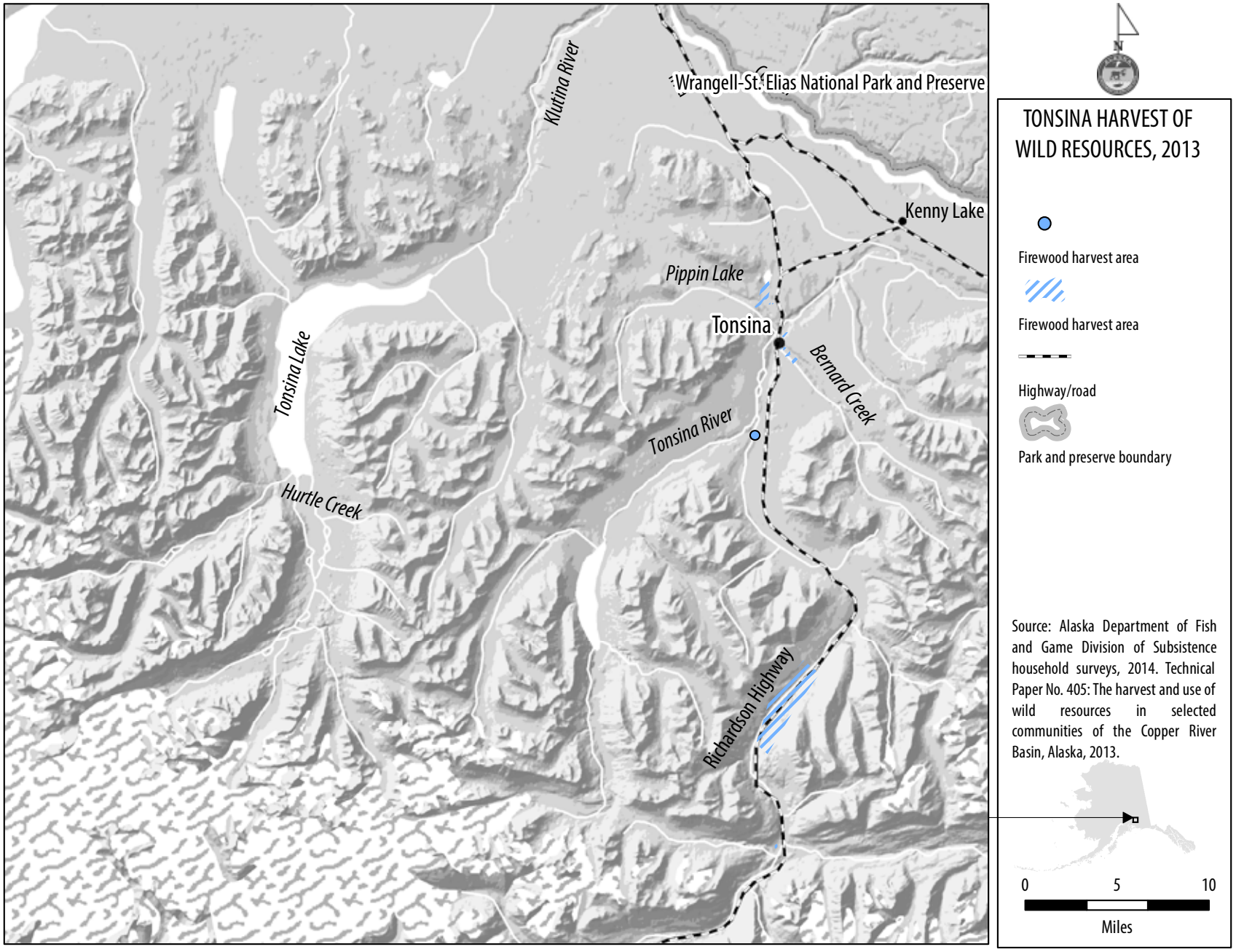
Miles


Klutina River
Wrangell-St. Elias National Park and Preserve
Kenny Lake
Pippin Lake
Tonsina
Tonsina Lake
Bernard Creek
Tonsina River
Hurtle Creek
Richardson Highway
N
TONSINA HARVEST OF WILD RESOURCES, 2013
Firewood harvest area
Firewood harvest area
Highway/road
Park and preserve boundary
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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5
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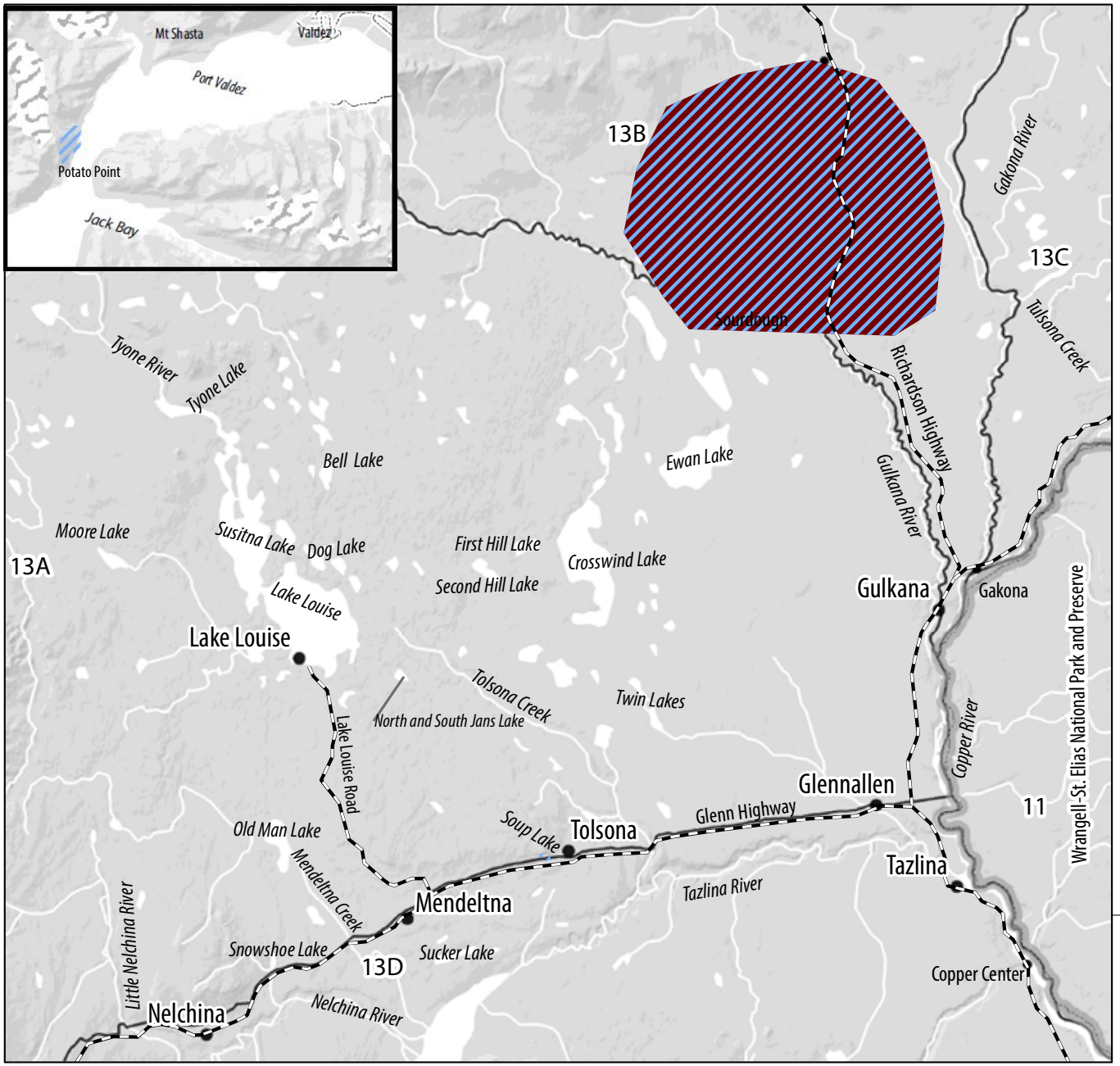
Miles



MENDELTNA, NELCHINA AND TOLSONA HARVEST OF WILD RESOURCES, 2013

Black bear search and harvest area

Brown bear search and harvest area

Highway/road

Park and preserve boundary

Game management unit

Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.

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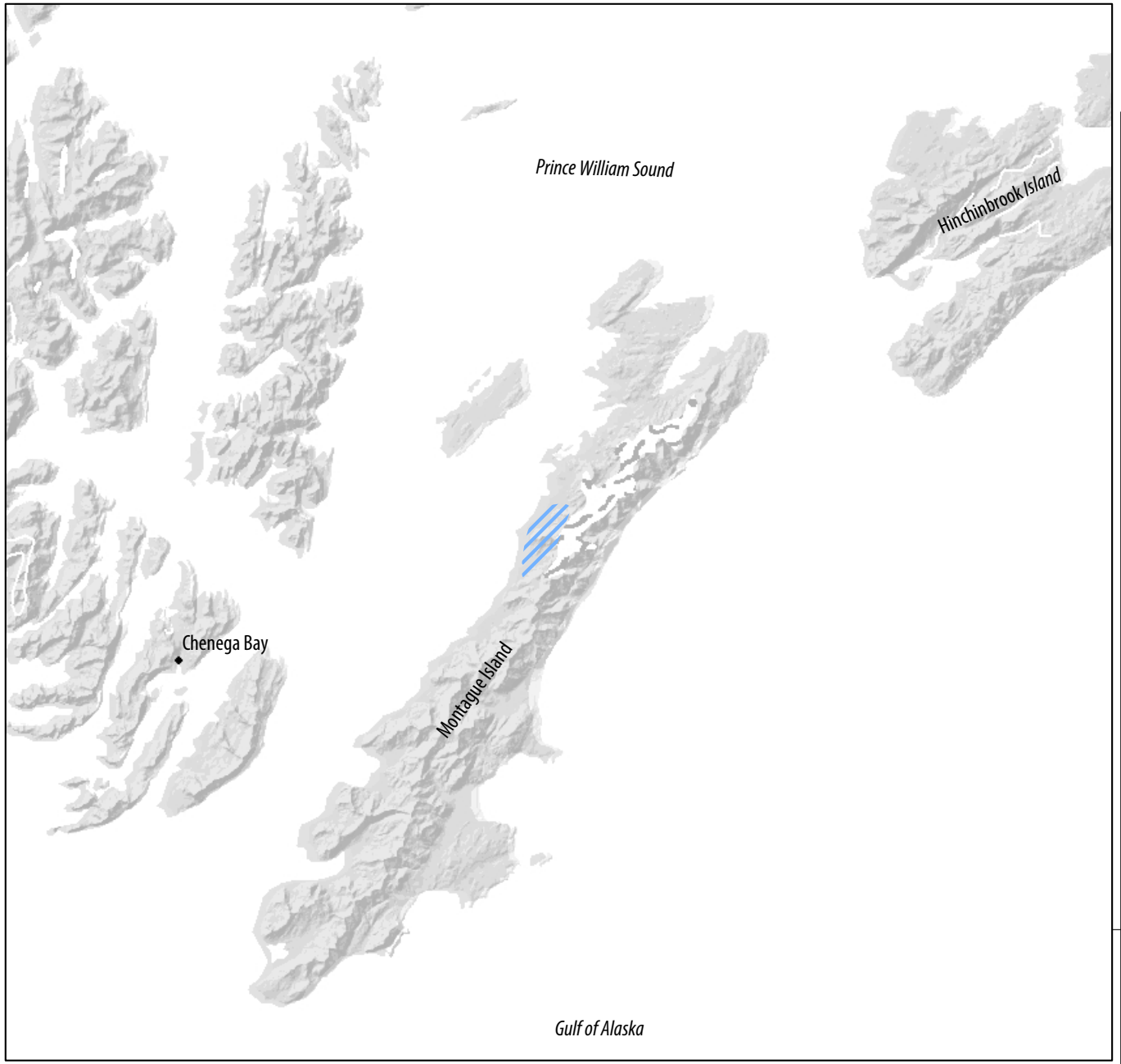
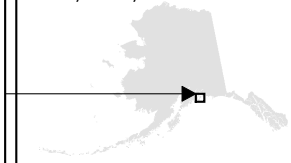
Miles



MENDELTNA, NELCHINA AND TOLSONA HARVEST OF WILD RESOURCES, 2013

Sitka black-tailed deer search and harvest area

Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.



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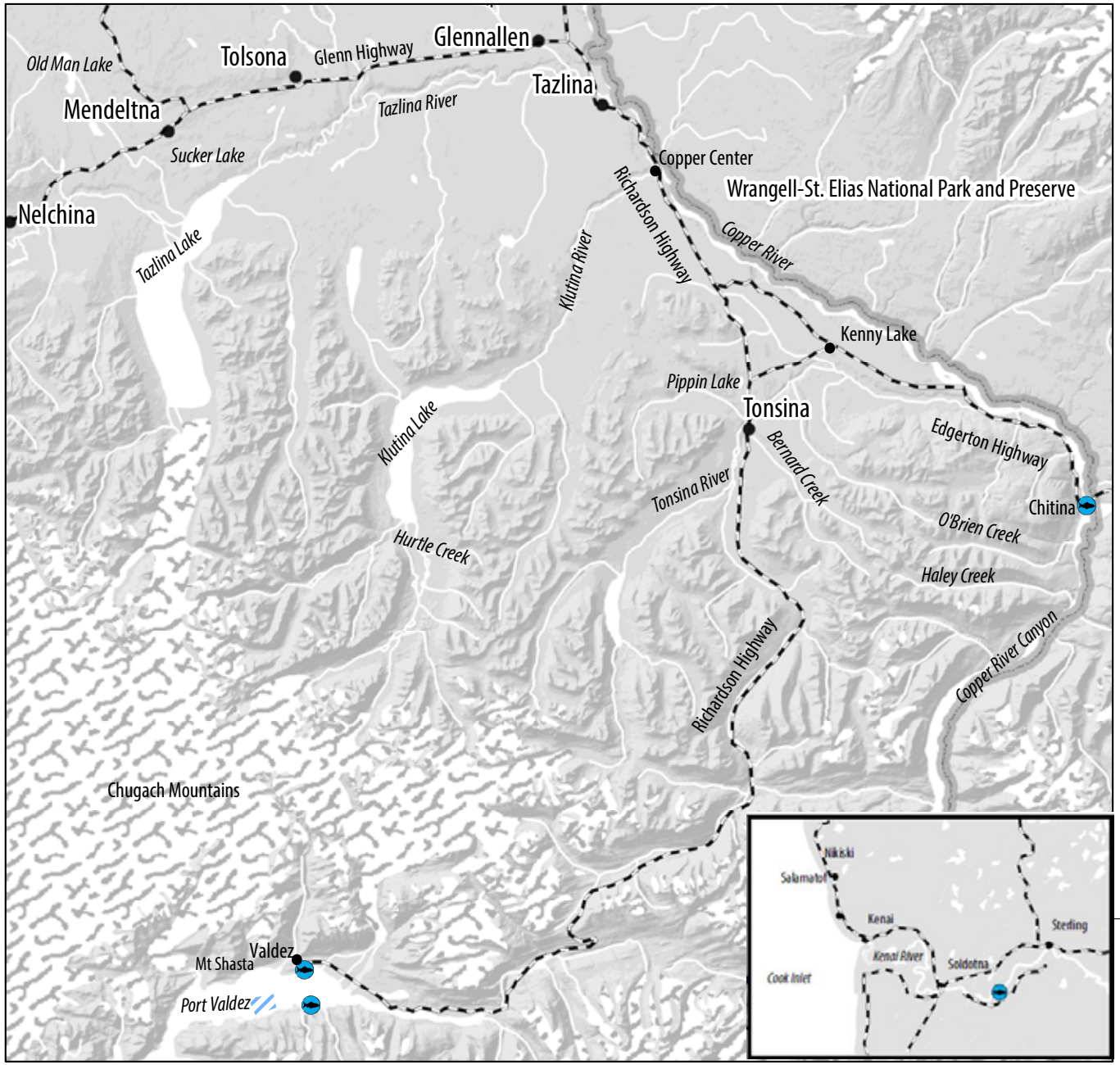

MENDELTNA, NELCHINA AND TOLSONA HARVEST OF WILD RESOURCES, 2013

Coho salmon search and harvest area

Coho salmon search and harvest area

Highway/road

Park and preserve boundary

Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.

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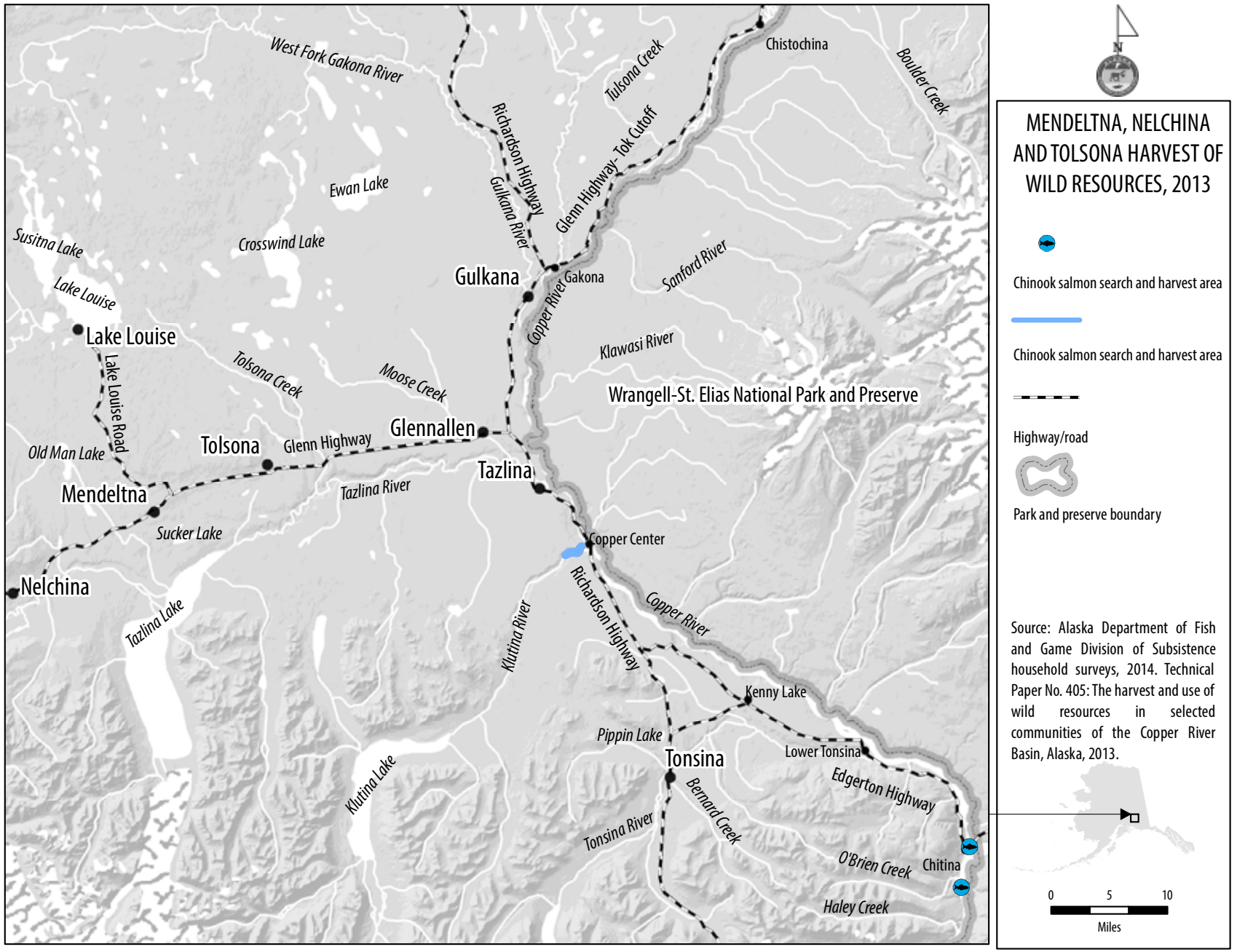
Miles


West Fork Gakona River
Richardson Highway
Tulsona Creek
Chistochina
Boulder Creek
Glenn Highway- Tok Cutoff
Ewan Lake
Gulkana River
Susitna Lake
Crosswind Lake
Gulkana
Copper River
Gakona
Sanford River
Lake Louise
Lake Louise
Klawasi River
Tolsona Creek
Moose Creek
Wrangell-St. Elias National Park and Preserve
Lake Louise Road
Glennallen
Old Man Lake
Tolsona
Glenn Highway
Tazlina
Mendeltna
Tazlina River
Sucker Lake
Copper Center
Nelchina
Tazlina Lake
Klutina River
Richardson Highway
Copper River
Kenny Lake
Pippin Lake
Lower Tonsina
Tonsina
Edgerton Highway
Klutina Lake
Bernard Creek
Tonsina River
O'Brien Creek
Chitina
Haley Creek
MENDELTNA, NELCHINA AND TOLSONA HARVEST OF WILD RESOURCES, 2013
Chinook salmon search and harvest area
Chinook salmon search and harvest area
Highway/road
Park and preserve boundary
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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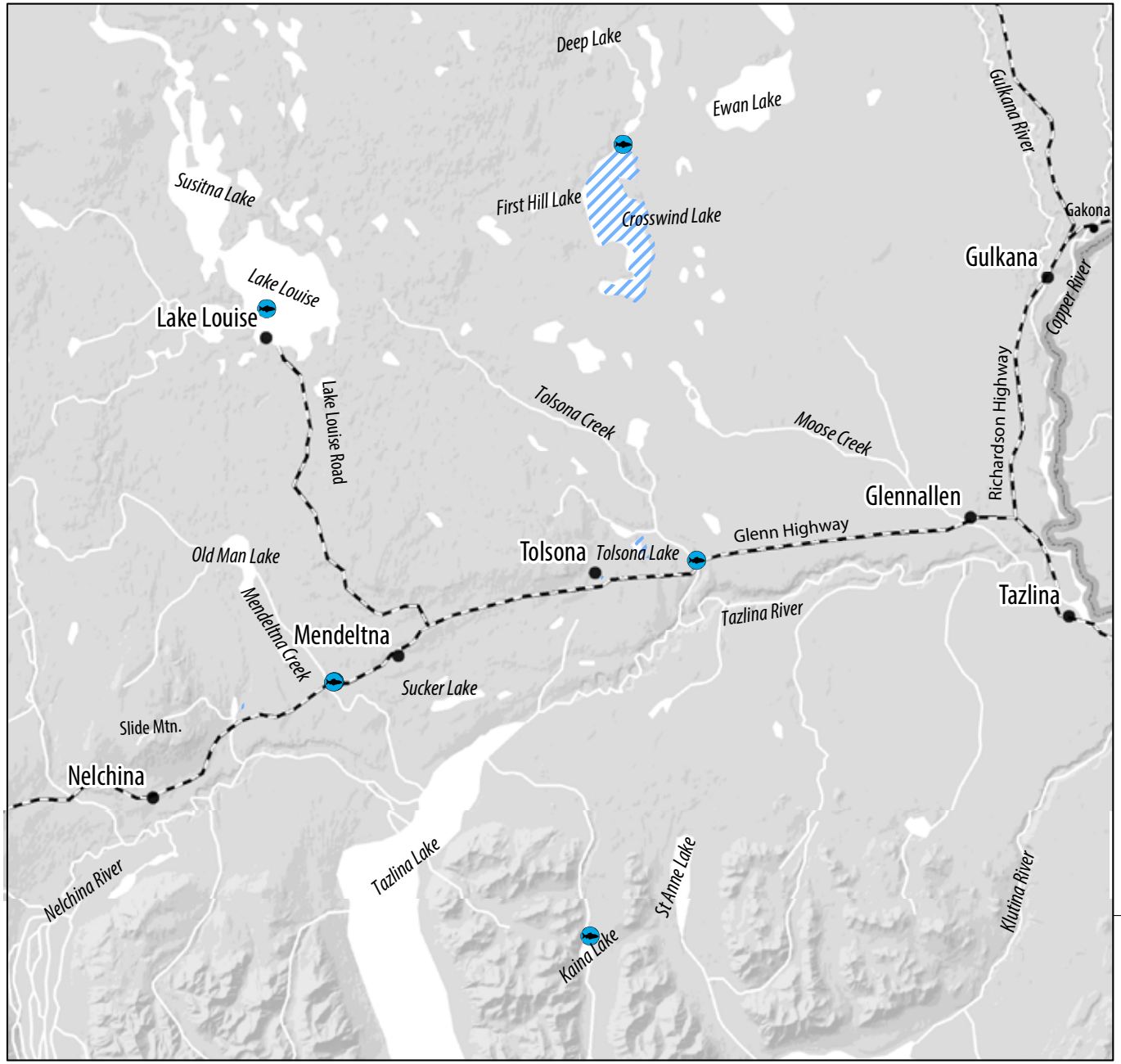
Miles



MENDELTNA, NELCHINA AND TOLSONA HARVEST OF WILD RESOURCES, 2013

Arctic grayling search and harvest area

Arctic grayling search and harvest area

Highway/road

Park and preserve boundary

Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.

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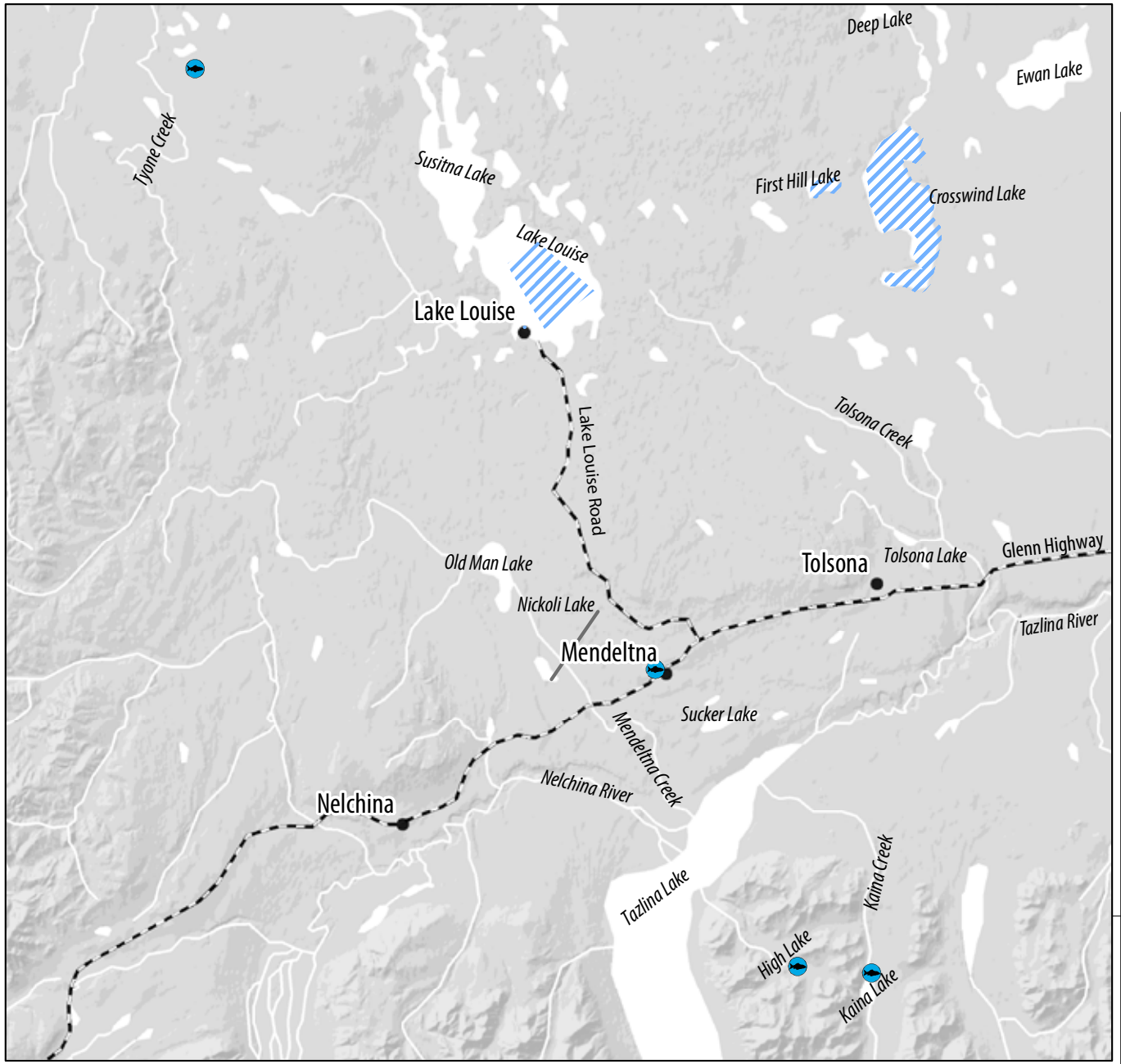


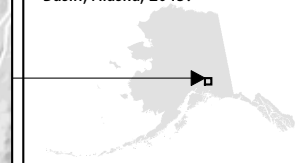
MENDELTNA, NELCHINA AND TOLSONA HARVEST OF WILD RESOURCES, 2013

Lake trout search and harvest area

Lake trout search and harvest area

Highway/road

Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.



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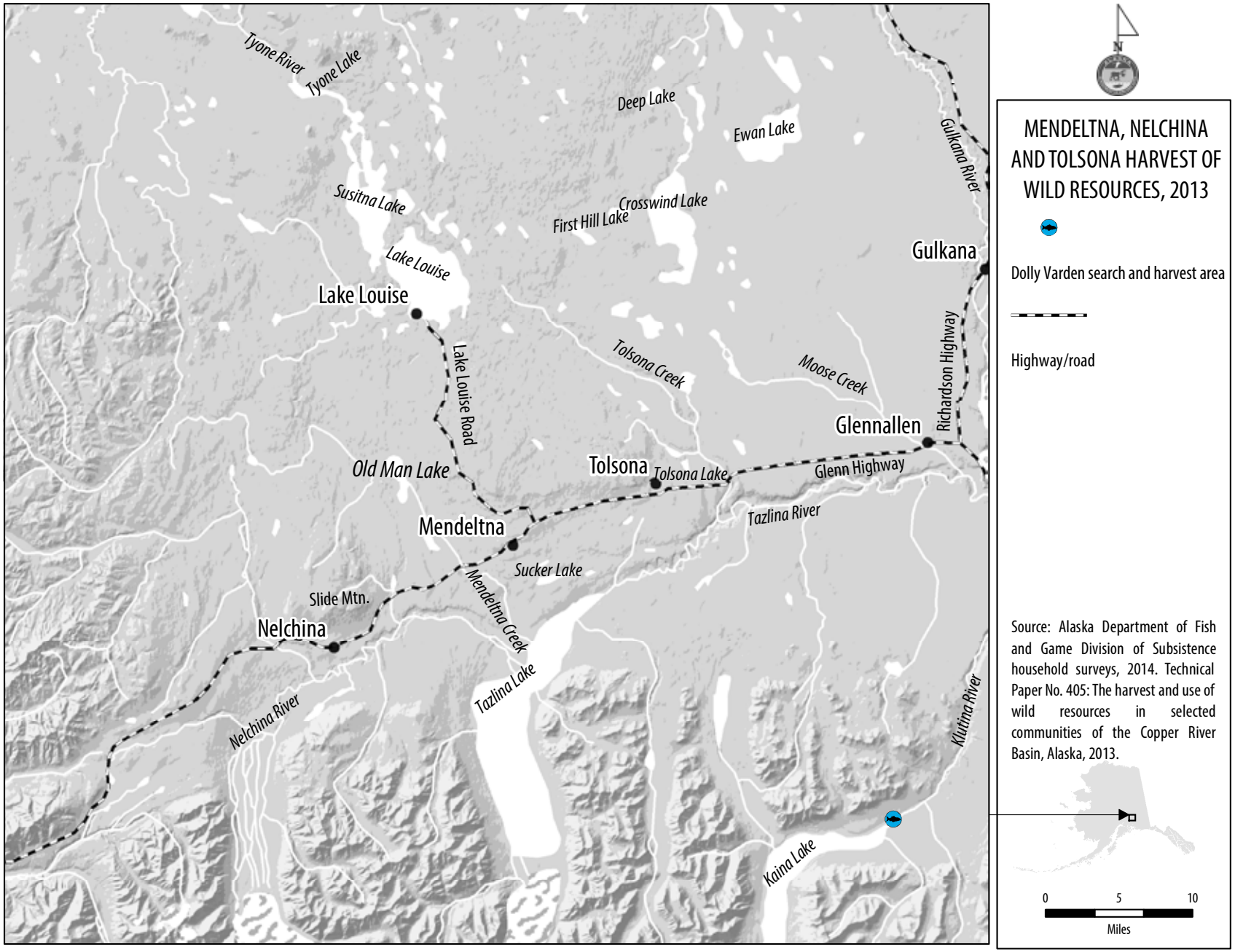
Tyone River
Tyone Lake
Deep Lake
Ewan Lake
Gulkana River
Susitna Lake
Crosswind Lake
First Hill Lake
Gulkana
Lake Louise
Lake Louise
Lake Louise Road
Tolsona Creek
Moose Creek
Richardson Highway
Glennallen
Old Man Lake
Tolsona
Tolsona Lake
Glenn Highway
Tazlina River
Mendeltna
Sucker Lake
Slide Mtn.
Mendeltna Creek
Nelchina
Tazlina Lake
Nelchina River
Klutina River
Kaina Lake
MENDELTNA, NELCHINA AND TOLSONA HARVEST OF WILD RESOURCES, 2013
Dolly Varden search and harvest area
Highway/road
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
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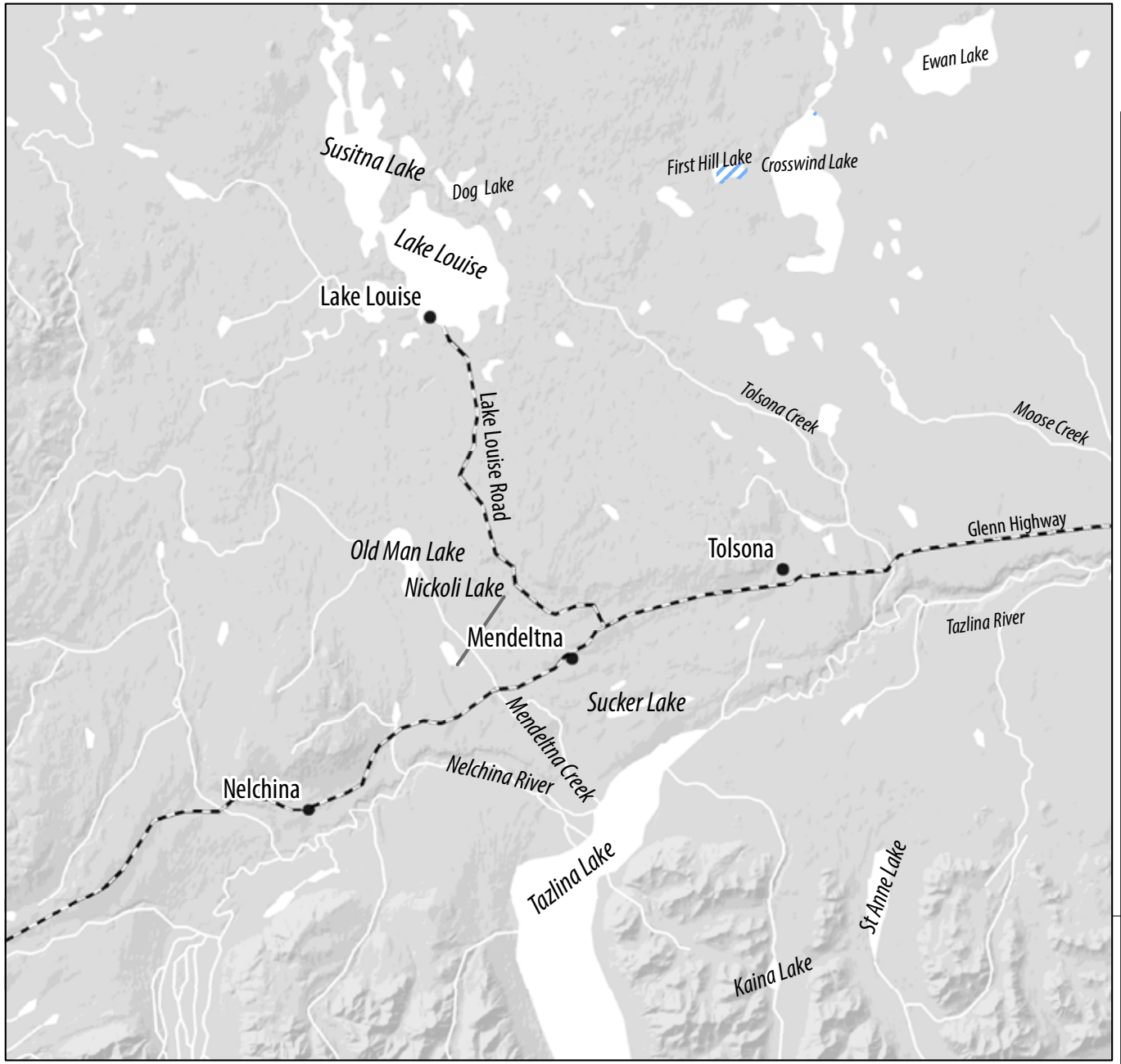
Miles



MENDELTNA, NELCHINA AND TOLSONA HARVEST OF WILD RESOURCES, 2013

Broad whitefish search and harvest area

Humpback whitefish search and harvest area

Highway/road

Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.

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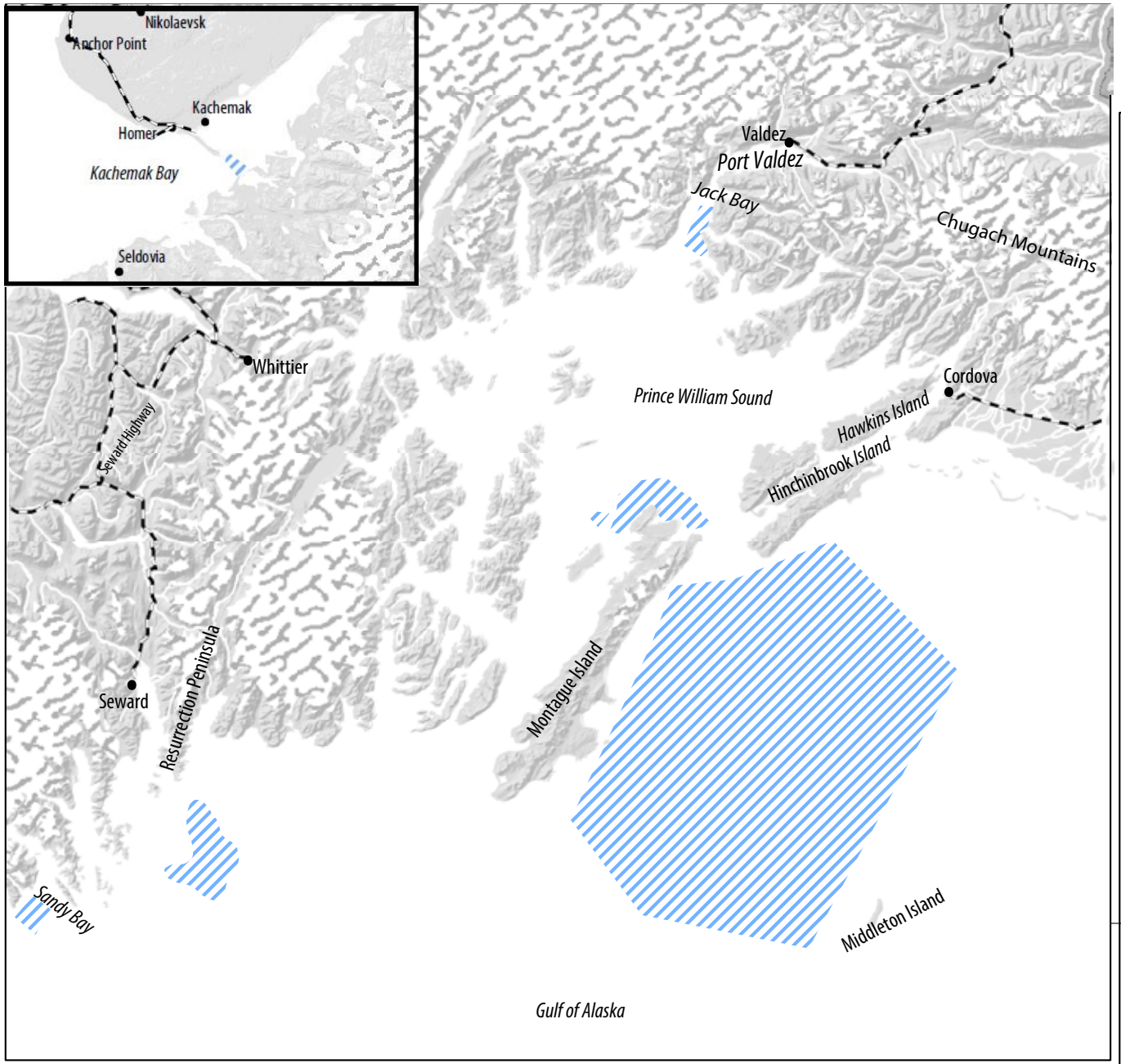


MENDELTNA, NELCHINA AND TOLSONA HARVEST OF WILD RESOURCES, 2013

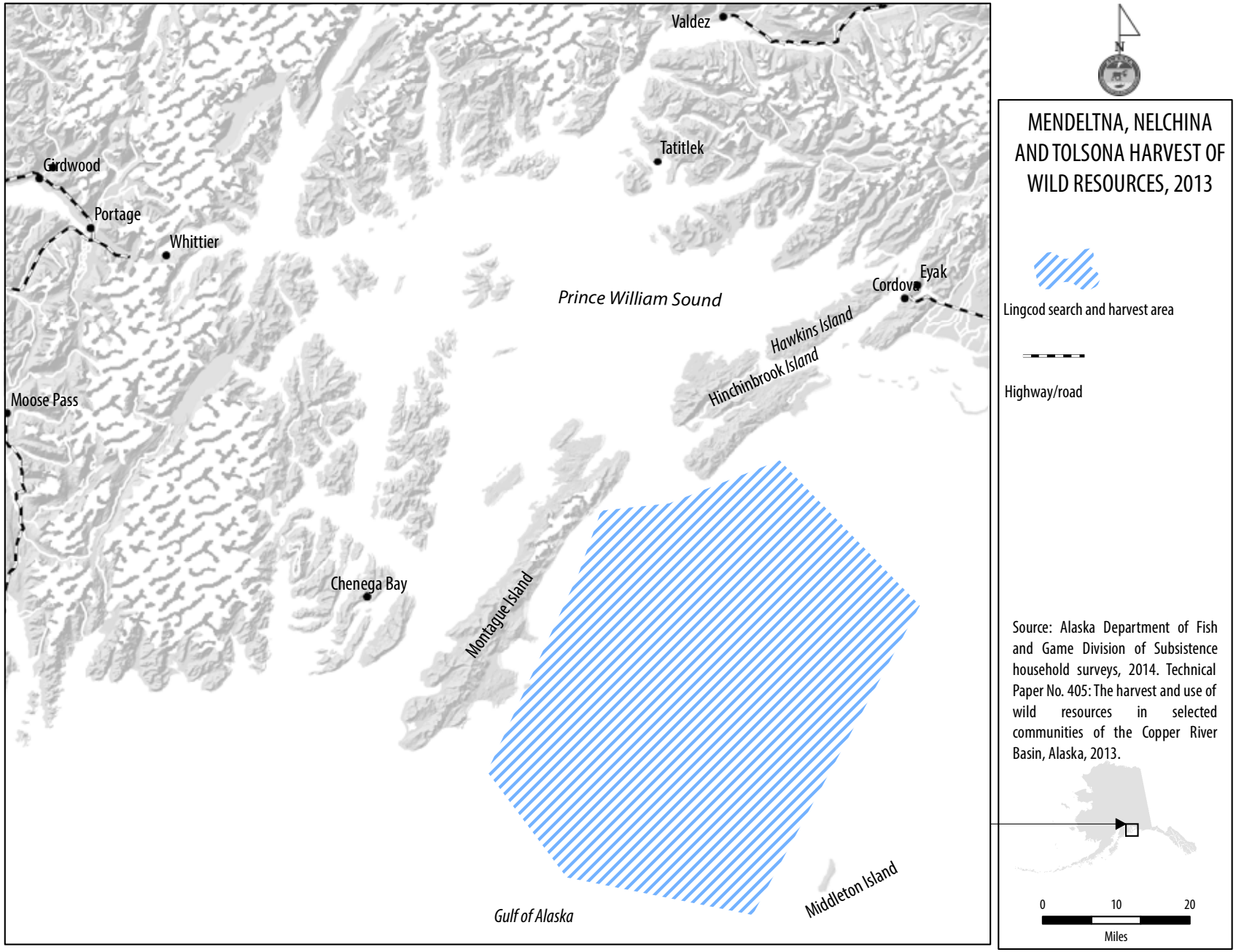
Pacific halibut search and harvest area

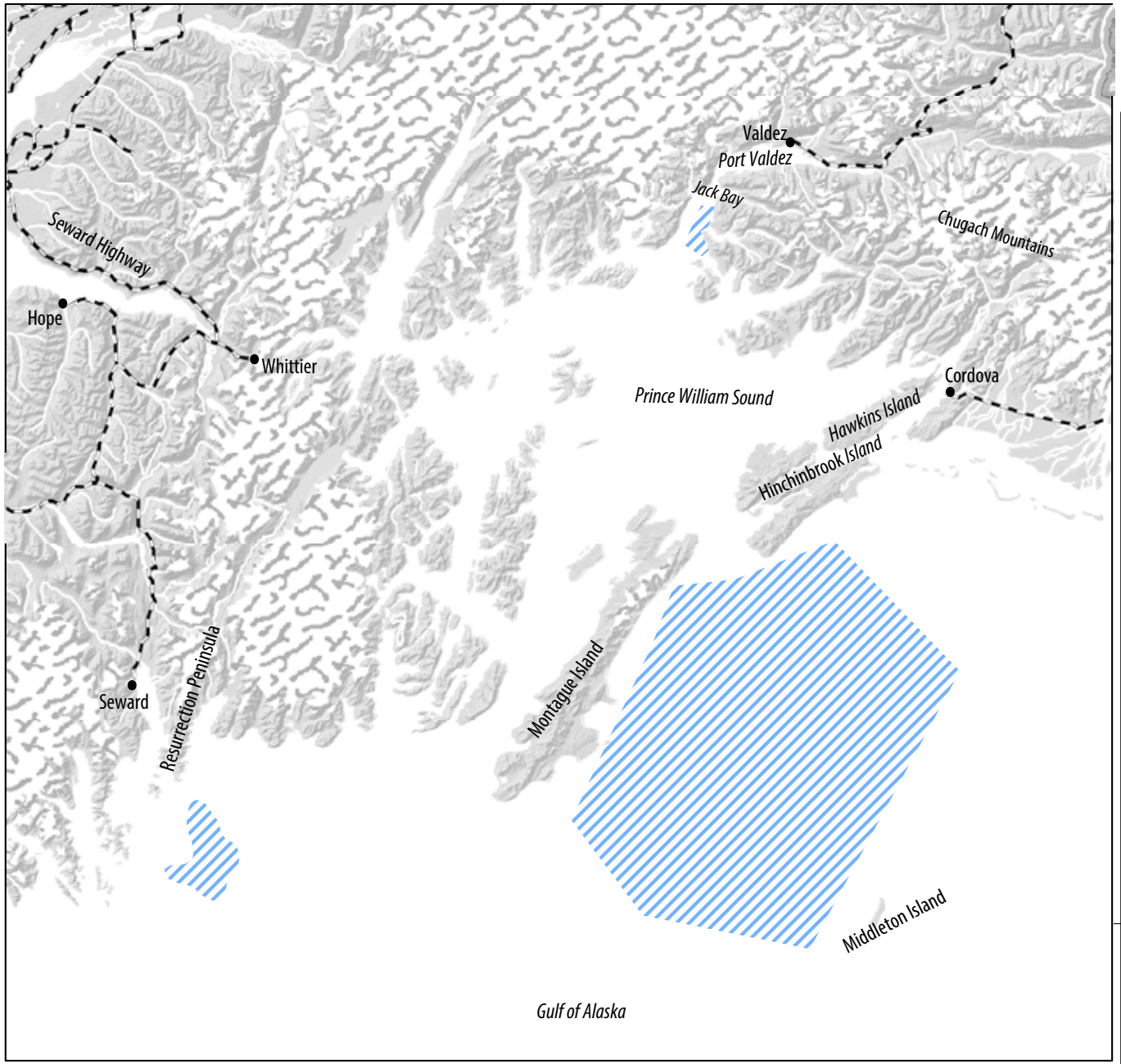
Highway/road

Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.

0 10 20

Miles


Valdez
Tatitlek
Girdwood
Portage
Whittier
Prince William Sound
Eyak
Cordova
Hawkins Island
Hinchinbrook Island
Moose Pass
Chenega Bay
Montague Island
Middleton Island
Gulf of Alaska
MENDELTNA, NELCHINA AND TOLSONA HARVEST OF WILD RESOURCES, 2013
Lingcod search and harvest area
Highway/road
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
0
10
20
Miles



MENDELTNA, NELCHINA AND TOLSONA HARVEST OF WILD RESOURCES, 2013

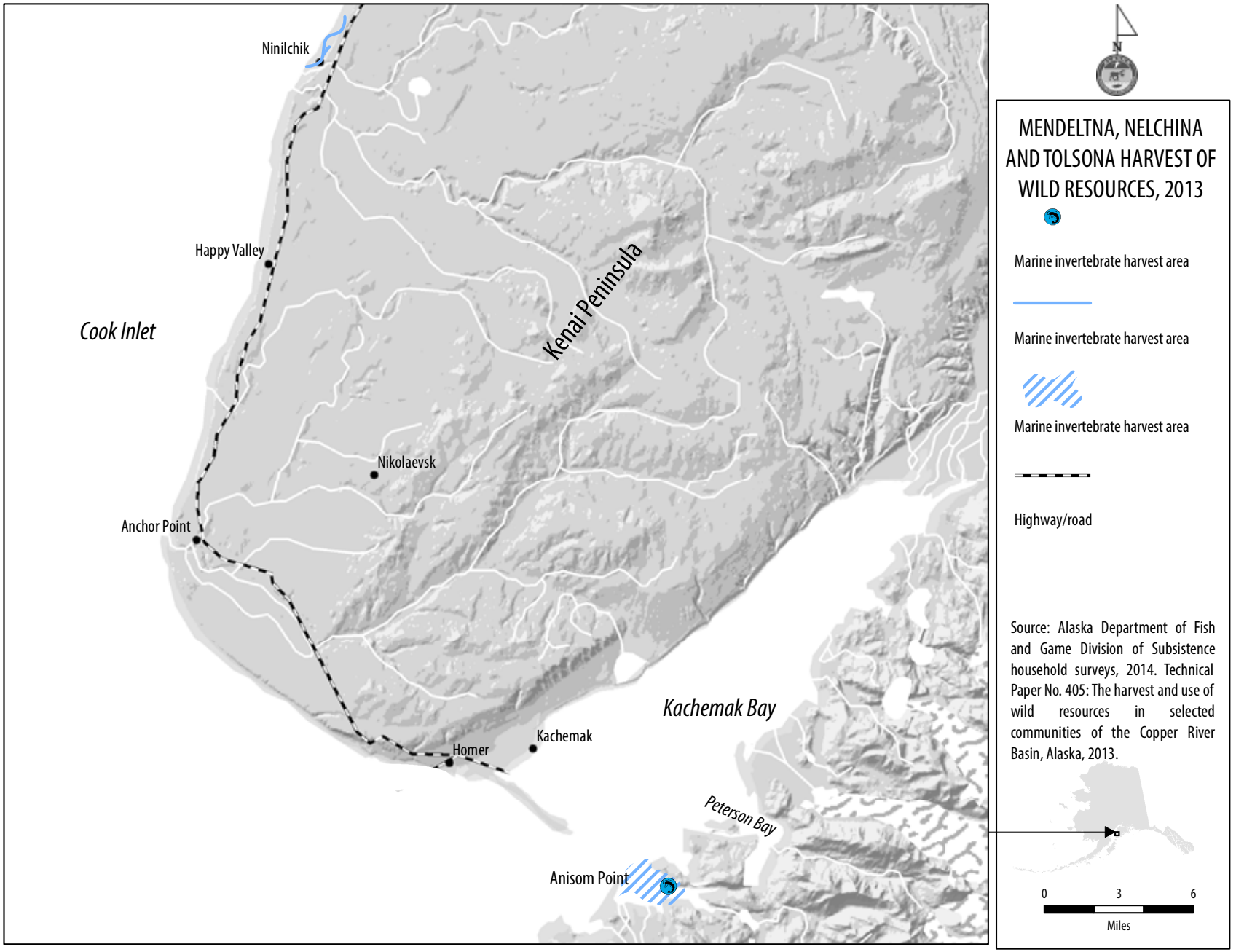
Rockfish search and harvest area

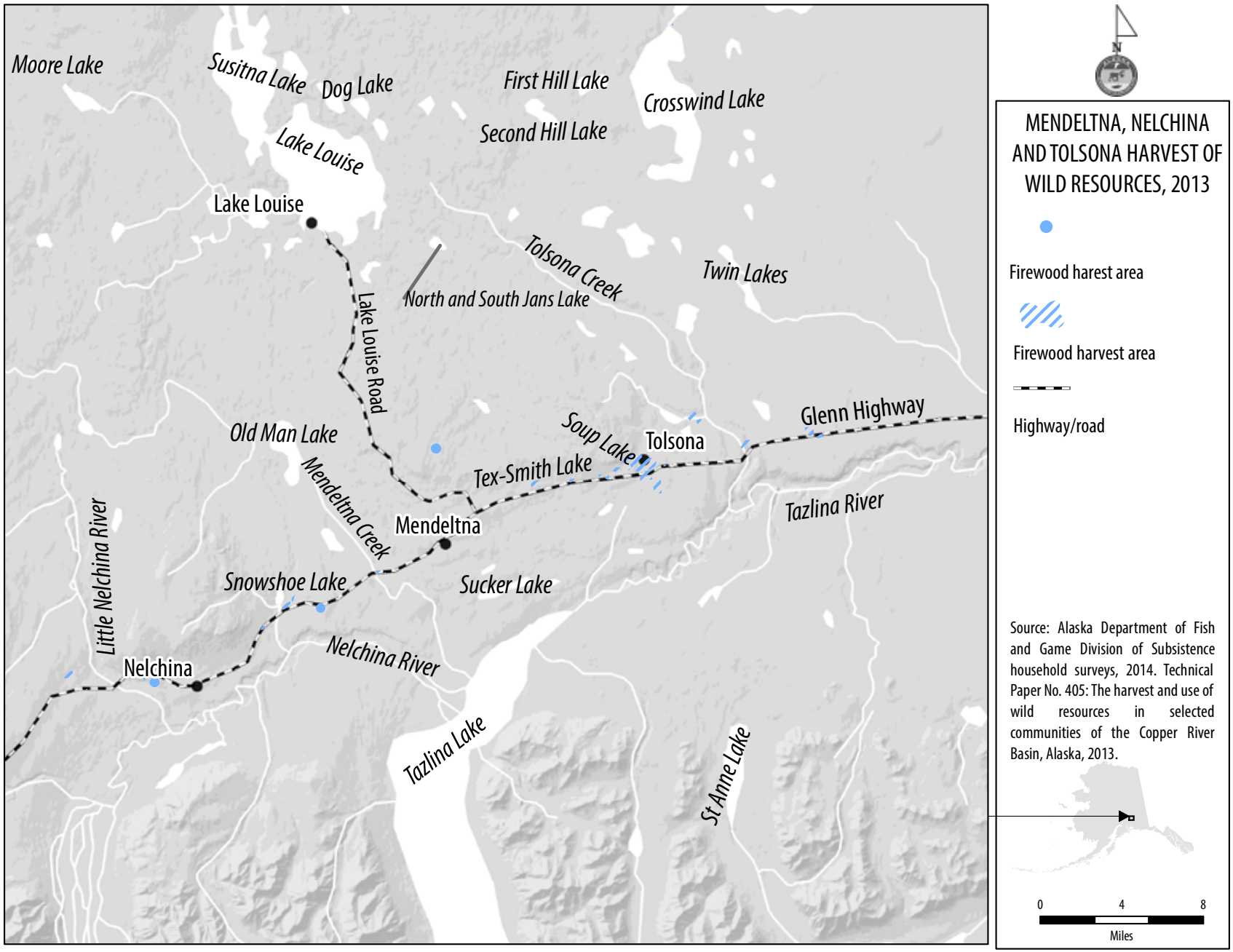
Highway/road

Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.

0 10 20

Miles


Ninilchik
Happy Valley
Cook Inlet
Kenai Peninsula
Nikolaevsk
Anchor Point
Kachemak Bay
Kachemak
Homer
Peterson Bay
Anisom Point
N
MENDELTNA, NELCHINA AND TOLSONA HARVEST OF WILD RESOURCES, 2013
Marine invertebrate harvest area
Marine invertebrate harvest area
Marine invertebrate harvest area
Highway/road
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
0
3
6
Miles


Moore Lake
Susitna Lake
Dog Lake
First Hill Lake
Crosswind Lake
Second Hill Lake
Lake Louise
Lake Louise
Tolsona Creek
Twin Lakes
North and South Jans Lake
Lake Louise Road
Old Man Lake
Soup Lake
Tolsona
Glenn Highway
Tex-Smith Lake
Mendeltna Creek
Tazlina River
Mendeltna
Little Nelchina River
Snowshoe Lake
Sucker Lake
Nelchina River
Nelchina
Tazlina Lake
St Anne Lake
MENDELTNA, NELCHINA AND TOLSONA HARVEST OF WILD RESOURCES, 2013
Firewood harest area
Firewood harvest area
Highway/road
Source: Alaska Department of Fish and Game Division of Subsistence household surveys, 2014. Technical Paper No. 405: The harvest and use of wild resources in selected communities of the Copper River Basin, Alaska, 2013.
0
4
8
Miles

APPENDIX E–ADDITIONAL TABLES

Table E2-1. – Birthplaces of population, Glennallen, 2013.

Birthplace	Percentage
Anchorage	5.2%
Chistochina	0.5%
Circle	0.5%
Copper Center	1.9%
Fairbanks	2.4%
Gakona	0.5%
Glennallen	21.3%
Haines	0.9%
Juneau	0.9%
Kenny Lake	0.5%
Ketchikan	0.5%
Mentasta Lake	3.3%
Petersburg	1.4%
Soldotna	0.5%
Other Alaska	0.5%
Other U.S.	55.0%
Foreign	4.3%

Source ADF&G Division of Subsistence household surveys, 2014.
Note "Birthplace" means the place of residence of the parents of the individual when the individual was born.

Table E3-1. – Birthplaces of population, Gulkana, 2013.

Birthplace	Percentage
Anchorage	5.5%
Bethel	1.1%
Bristol Bay	1.1%
Copper Center	12.1%
Crosswind Lake	1.1%
Cube Cove	4.4%
Eureka Roadhouse	1.1%
Ewan Lake	1.1%
Fairbanks	3.3%
Gakona	1.1%
Glennallen	1.1%
Gulkana	39.6%
Kodiak City	1.1%
Northway	2.2%
Paxson	1.1%
Pedro Bay	1.1%
Tazlina	1.1%
Valdez	1.1%
Other U.S.	17.6%
Missing	2.2%

Source ADF&G Division of Subsistence household surveys, 2014.
Note "Birthplace" means the place of residence of the parents of the individual when the individual was born.

Table E4-1. – Birthplaces of population, Lake Louise, 2013.

Birthplace	Percentage
Eagle River	15.8%
Palmer	5.3%
Other U.S.	73.7%
Foreign	5.3%

Source ADF&G Division of Subsistence household surveys, 2014.
Note "Birthplace" means the place of residence of the parents of the individual when the individual was born.

Table E5-1. – Birthplaces of population, Paxson, 2013.

Birthplace	Percentage
Anchorage	13.0%
Delta Junction	4.3%
Paxson	8.7%
Other U.S.	69.6%
Foreign	4.3%

Source ADF&G Division of Subsistence household surveys, 2014.
Note "Birthplace" means the place of residence of the parents of the individual when the individual was born.

Table E6-1. – Birthplaces of population, Tazlina, 2013.

Birthplace	Percentage
Anchorage	7.3%
Aniak	0.9%
Atka	0.4%
Chistochina	0.9%
Chitina	2.2%
Chuathbaluk	0.4%
Copper Center	6.9%
Copperville	0.9%
Cordova	0.4%
Crooked Creek	0.4%
Fairbanks	3.4%
Glennallen	6.5%
Kenai	0.4%
Kenny Lake	1.7%
Mendeltna	0.4%
Mentasta Lake	4.7%
Nuiqsut	0.4%
Sanak	0.4%
Slana	0.4%
Tazlina	17.7%
Tok	0.4%
Tolsona	0.4%
Wasilla	0.4%
Wrangell	0.4%
Other U.S.	40.9%
Foreign	0.4%

Source ADF&G Division of Subsistence household surveys, 2014.
Note "Birthplace" means the place of residence of the parents of the individual when the individual was born.

Table E7-1. – Birthplaces of population, Tonsina, 2013.

Birthplace	Percentage
Anchorage	1.9%
Glennallen	1.9%
Juneau	1.9%
Kenny Lake	3.8%
Petersburg	1.9%
Tonsina	18.9%
Other U.S.	52.8%
Foreign	13.2%
Missing	3.8%

Source ADF&G Division of Subsistence household surveys, 2014.
Note "Birthplace" means the place of residence of the parents of the individual when the individual was born.

Table E8-1. – Birthplaces of population, Mendeltna, 2013.

Birthplace	Percentage
Anchorage	4.2%
Glennallen	8.3%
Mendeltna	4.2%
Nikiski	4.2%
Palmer	4.2%
Tolsona	8.3%
Other Alaska	4.2%
Other U.S.	62.5%

Source ADF&G Division of Subsistence household surveys, 2014.
Note "Birthplace" means the place of residence of the parents of the individual when the individual was born.

Table E9-1. – Birthplaces of population, Nelchina, 2013.

Birthplace	Percentage
Anchorage	4.3%
Chickaloon	6.4%
Chugiak	4.3%
Cube Cove	2.1%
Nelchina	19.1%
Other Alaska	2.1%
Other U.S.	59.6%
Missing	2.1%

Source ADF&G Division of Subsistence household surveys, 2014.
Note "Birthplace" means the place of residence of the parents of the individual when the individual was born.

Table E10-1. – Birthplaces of population, Tolsona, 2013.

Birthplace	Percentage
Fairbanks	6.3%
Tolsona	12.5%
Wasilla	6.3%
Other U.S.	75.0%

Source ADF&G Division of Subsistence household surveys, 2014.
Note "Birthplace" means the place of residence of the parents of the individual when the individual was born.

APPENDIX F–PROJECT SUMMARY

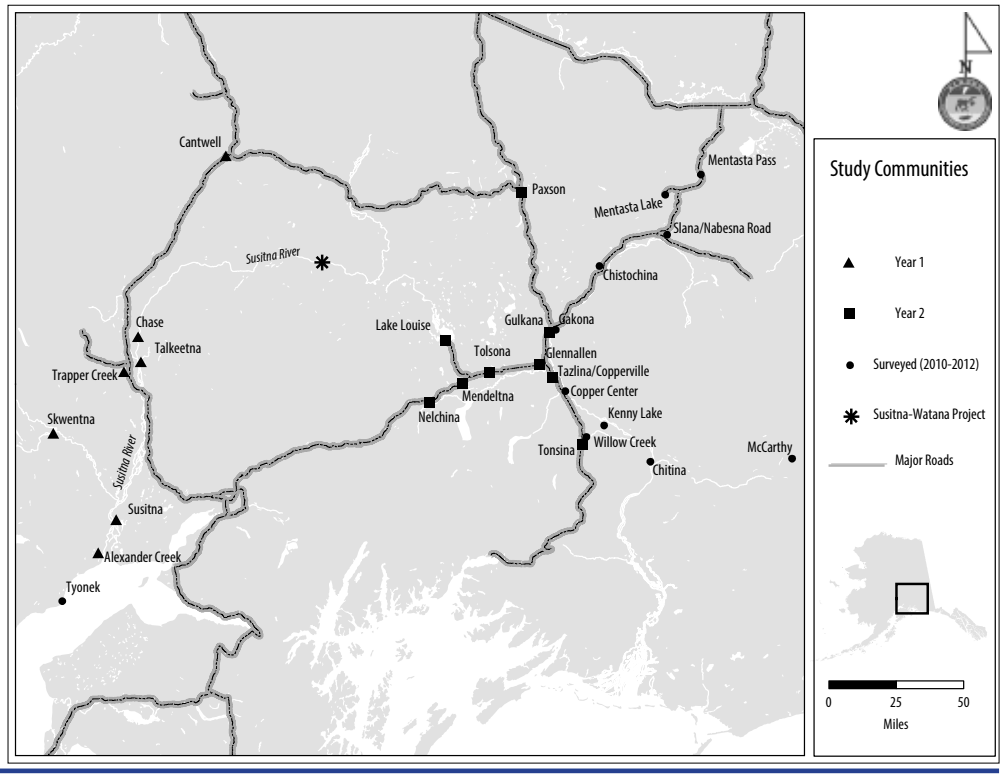
Summary Findings: Copper River Basin Comprehensive Harvest Update

Project to update wild harvest and use information for communities in the Copper River Basin

Project The following is a brief overview of research conducted by the Alaska Department of Fish and Game (ADF&G) to provide comprehensive harvest and use data for fish, wildlife, and wild plant resources in the Copper River Basin (see Figure 1). The study period covers January 1 through December 31, 2013. Funding for this project was provided by the Alaska Energy Authority. The project was a partnership between ADF&G and Stephen R. Braund and Associates, Alaska Department of Health and Social Services, and HDR Alaska, Inc. The purpose of the project was to provide updated harvest and use data of wild resources for a feasibility study for the potential Susitna-Watana Hydroelectric Project. The potential development required updated baseline information about the full range of wild resource harvests, uses, and areas of harvest, as well as demographic and economic information to understand the role of these harvests in the economy and way of life of community residents in the project area. As shown on the map, this study was the second of 2 study years. Year 1 was conducted in Susitna River Basin communities. In addition, some Copper River Basin communities were recently surveyed as part of a joint Division of Subsistence/Wrangell-St. Elias National Park and Preserve project.

Methods The primary data gathering method was a systematic household survey. The surveys were conducted face-to-face and mostly in residents' homes. The goal was to interview a representative of each year-round household in all study communities, except for the larger community of Glennallen where the goal was a 50% sample. In total, 262 households in the 9 study communities were interviewed with the assistance of local researchers. Harvest mapping was also conducted for each household to document search areas and harvest locations of wild resources, including harvest amount, month of harvest, and how harvesters accessed the resource. Additionally, to understand long-term trends in the area and local knowledge of resources, 3–5 key respondent interviews were conducted in each of the study communities.

Figure 1

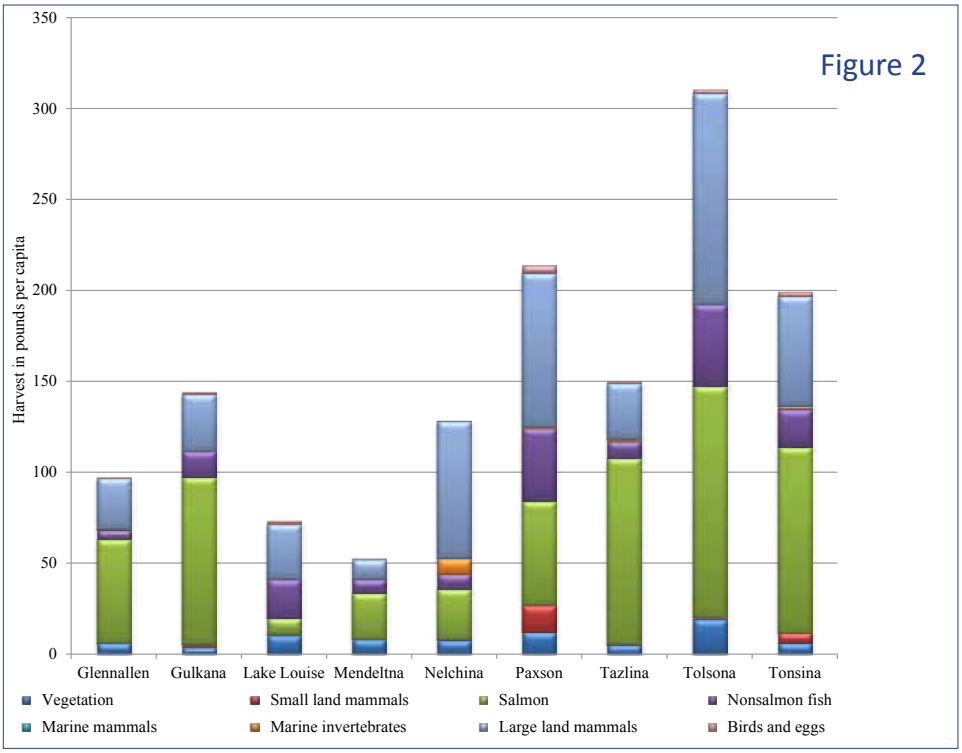


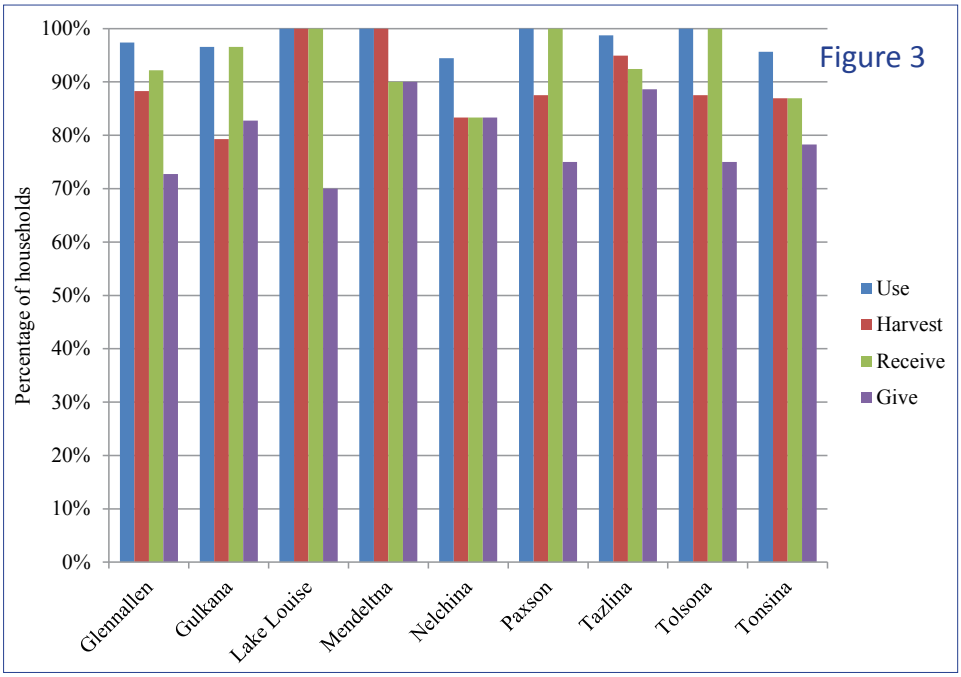
Findings

Figure 2 shows the harvest of wild resources as estimated in pounds usable weight per capita. Harvests of wild foods ranged from 53 lb per person in Mendeltna to 311 lb per person in Tolsona. Salmon were especially important in most communities as well as large land mammals, including moose and caribou.

Figure 3 illustrates the percentage of households in each community that were using, attempting to harvest, harvesting, receiving, and giving away wild resources in 2013. In all 9 communities approximately 95% of households used wild resources and around 80% or more harvested wild resources. Many households received or gave away resources, thus demonstrating sharing of resources between households.

For the complete study findings see the technical paper listed below that is available to download from the ADF&G website. Technical papers for other recent studies in the Copper River Basin are also available from this searchable database.





Holen, D., S. M. Hazell, and G. Zimpelman, editors. 2015. *The Harvest and Use of Wild Resources in Selected Communities of the Copper River Basin and East Glenn Highway, Alaska, 2013.* Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 405. Anchorage.

Available at: http://www.adfg.alaska.gov/sf/publications/

DIVISION OF SUBSISTENCE

For a copy of our OEO statement, see www.adfg.alaska.gov