Technical Paper No. 396

Subsistence Harvests in 8 Communities in the Kuskokwim River Drainage and Lower Yukon River, 2011

Edited by
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May 2014

Alaska Department of Fish and Game **Division of Subsistence**

Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the Système International d'Unités (SI), are used without definition in the following reports by the Divisions of Sport Fish and of Commercial Fisheries: Fishery Manuscripts, Fishery Data Series Reports, Fishery Management Reports, and Special Publications. All others, including deviations from definitions listed below, are noted in the text at first mention, as well as in the titles or footnotes of tables, and in figure or figure captions.

Weights and measures (metric)	
centimeter	cm
deciliter	dL
gram	g
hectare	ha
kilogram	kg
kilometer	km
liter	L
meter	m
milliliter	mL
millimeter	mm

Weights and measures (English)	
cubic feet per second	ft^3/s
foot	ft
gallon	gal
inch	in
mile	mi
nautical mile	nmi
ounce	oz
pound	lb
quart	qt
yard	yd

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

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

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

Measures (fisheries)	
fork length	FL
mideye-to-fork	MEF
mideye-to-tail-fork	METF
standard length	SL
total length	TL

Mathematics, statistics	
all standard mathematical signs, symbols and abbreviations	
alternate hypothesis	H_A
base of natural logarithm	e
catch per unit effort	CPUE
coefficient of variation	CV
common test statistics	(F, t, χ^2, etc.)
confidence interval	CI
correlation coefficient (multiple)	R
correlation coefficient (simple)	r
covariance	cov
degree (angular)	°
degrees of freedom	df
expected value	E
greater than	>
greater than or equal to	?
harvest per unit effort	HPUE
less than	<
less than or equal to	?
logarithm (natural)	ln
logarithm (base 10)	log
logarithm (specify base)	$\log_2$, etc.
minute (angular)	'
not significant	NS
null hypothesis	H_O
percent	%
probability	P
probability of a type I error (rejection of the null hypothesis when true)	α
probability of a type II error (acceptance of the null hypothesis when false)	β
second (angular)	"
standard deviation	SD
standard error	SE
variance	
population	Var
sample	var

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Alaska Department of Fish and Game
Division of Subsistence
Fairbanks, Alaska

May 2014

The Division of Subsistence Technical Paper Series was established in 1979 and represents the most complete collection of information about customary and traditional uses of fish and wildlife resources in Alaska. The papers cover all regions of the state. Some papers were written in response to specific fish and game management issues. Others provide detailed, basic information on the subsistence uses of particular communities which pertain to a large number of scientific and policy questions.

Technical Paper series reports are available through the Alaska Resources Library and Information Services (ARLIS), the Alaska State Library and on the Internet: http://www.adfg.alaska.gov/sf/publications/. This publication has undergone editorial and professional review.

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ERRATA

The original publication of Technical Paper No. 396, *Subsistence Harvests in 8 Communities in the Kuskokwim River Drainage and Lower Yukon River, 2011*, contained incorrect maps on pages 149 and 150, which duplicated those found on pages 195 and 196. Corrected pages 149 and 150 have been inserted into this publication.

Table of Contents

Table of Contents, continued

Table of Contents, continued

Table of Contents, continued

List of Tables

Table

List of Tables, continued

Table

List of Tables, continued

Table

List of Figures

Figure

List of Figures, continued

Figure

List of Figures, continued

Figure

List of Figures, continued

Figure

List of Figures, continued

Figure

List of Figures, continued

Figure

List of Figures, continued

Figure

List of Figures, continued

Figure

Figure

List of Appendices

List of Appendix D Tables

Appendix Table

List of Appendix D Tables, continued

Appendix Table

List of Appendix D Tables, continued

Appendix Table

List of Appendix D Tables, continued

List of Appendix D Tables, continued

Abstract

This report summarizes the results of research conducted in 2012 on the subsistence harvest and uses of wild foods for the study year of 2011 in 8 Kuskokwim and Yukon River communities: Napakiak and Napaskiak in the Lower Kuskokwim; McGrath, Takotna, and Nikolai in the Upper Kuskokwim; and Russian Mission, Anvik, and Grayling in the lower-middle Yukon River. The total estimated population of all study communities was 2,023.

The principal questions addressed by the Donlin Gold Subsistence Research Program were how many wild foods were harvested for subsistence, the harvest amounts, and how these foods were distributed within and between communities. Related questions addressed the role of wild foods in Alaska's economy, the role of cash in subsistence economies, the use of lands and waters for subsistence practices, and the impacts of competition with other users.

Between January and May 2012, ADF&G Division of Subsistence researhers surveyed about wild resource harvests and use between January and December in the 8 Kuskokwim and Yukon River communities. The Lower Kuskokwim communities of this study (Napakiak and Napaskiak) reported harvesting an estimated total of 351,548 edible pounds of subsistence resources, with an average estimated harvest rate of 442 lb per capita. The harvest patterns of lower river communities largely mirrored historical patterns characterized by heavy reliance on salmon *Oncorhynchus* and nonsalmon fish species. The importance of salmon was evident, in that 5 salmon species—Chinook *O. tshawytscha*, chum *O. keta*, coho *O. kisutch*, sockeye *O. nerka*, and pink *O. gorbuscha*—comprised 45% of the annual subsistence harvest by weight (157,233 lb) for the region as a whole. Nonsalmon species made up of 27% of total harvest (97,993 lb). Moose *Alces alces* made up 8.5% of the total subsistence harvest by weight (29,928 lb) in 2011.

In contrast, the Upper Kuskokwim study communities (McGrath, Takotna, and Nikolai) reported harvesting an estimated total of 151,053 edible pounds of subsistence resources, with an average estimated harvest rate of 288 lb per capita. The harvest patterns of upper river communities largely mirrored historical patterns characterized by heavy reliance on moose, which composed 48% of the annual subsistence harvest by weight (71,869 lb) for the region as a whole. Salmon, on the other hand, made up 26% of the total subsistence harvest by weight (38,924 lb) and nonsalmon species composed 12% (18,451 lb) of the total harvest in 2011.

The lower-middle Yukon River communities (Russian Mission, Anvik, and Grayling) reported harvesting an estimated total of 218,784 edible pounds of subsistence resources, with an average estimated harvest rate of 312 lb per capita. The harvest patterns of the Yukon communities showed almost equal reliance on fish and moose: salmon accounted for 41% of the annual subsistence harvest by weight (90,597 lb), moose 28% (61,607 lb), and nonsalmon 21% (46,908 lb) in 2011.

The results of the 2011study year subsistence harvest survey are a significant step toward filling a major data gap regarding subsistence in western Alaska. Analyses of harvest levels of specific species, demographics, harvest areas, village economies, harvest assessments, food security, and wild food networks help to characterize contemporary subsistence economies in western Alaska and contribute to our knowledge of subsistence statewide.

Key words: subsistence fishing, subsistence hunting, Anvik, Grayling, McGrath, Napakiak, Napaskiak, Nikolai, Russian Mission, Takotna, Kuskokwim River, Yukon River, Chinook salmon, chum salmon, coho salmon, sockeye salmon, nonsalmon, moose, seasonal round, demographics, jobs, income, subsistence expenses, harvest area, social network, food security, Donlin Creek, Donlin Gold

Chapter 1: Introduction

Hiroko Ikuta, Caroline L. Brown, James J. Simon, David M. Runfola, and Andrew R. Brenner

This report summarizes the results of research conducted in 2012 on the subsistence harvest and uses of wild foods in 8 communities in the Kuskokwim River drainage and Yukon River: Napakiak and Napaskiak in the Lower Kuskokwim; McGrath, Takotna, and Nikolai in the Upper Kuskokwim; and Russian Mission, Anvik, and Grayling in the Yukon (Figure 1-1). Residents of Western Alaska rely substantially on subsistence hunting, fishing, and gathering for nutrition and to support their customary and traditional ways of life. Subsistence harvests of wild foods along the Kuskokwim River drainage and Yukon River are taken from diverse ecosystems and habitats, from the marine environments of the coastal regions to the boreal forests of Interior Alaska. Harvests vary from community to community and may also fluctuate through time in the amounts and species harvested in response to varied circumstances such as species availability, regulations, socioeconomic factors (e.g., cost of fuel), personal tastes, and many others. The 8 Western Alaska study communities in this study harvested and used a variety of species, including, but not limited to, moose, caribou, salmon, whitefish, northern pike, burbot, geese, ducks, wild berries, and greens.

Over several decades, ADF&G has conducted multiple research programs in the Kuskokwim River and Lower Yukon areas, including comprehensive subsistence surveys and other species-specific research. In the past 5 years, ADF&G Division of Subsistence has conducted comprehensive subsistence harvest baseline projects in numerous communities in the Kuskokwim River drainage and Yukon River: the Lower Yukon River community of Emmonak in 2009 (Fall et al. 2012); 8 Central Kuskokwim River communities including Aniak, Chuathbaluk, Crooked Creek, Lower Kalskag, Red Devil, Sleetmute, Stony River, and Upper Kalskag in 2010 (C. L. Brown et al. 2012); 5 Yukon River communities including Marshall and Mountain Village in the lower river and Ruby, Galena, and Nulato in the middle river in 2011[1]; 6 Kuskokwim River communities including Akiak, Kwethluk, Oscarville, and Tuluksak in the lower river and Georgetown and Napaimute in the middle river in 2012 (C. L. Brown et al. 2013); and the Lower Kuskokwim River community of Bethel in 2013[2]. In order to understand socioeconomic patterns and trends of subsistence Chinook salmon fishing, the Division of Subsistence has conducted ethnographic projects in 5 Kuskokwim River communities including Tuntutuliak, Kwethluk, Kalskag, Sleetmute, and Nikolai in 2009 and in the Bethel area in 2012 (Ikuta et al. 2013) as well as 5 Yukon River communities including Emmonak, Marshall, Nulato, Beaver, and Eagle in 2010–2011[3]. Additionally, the Division of Subsistence has also conducted large mammal subsistence harvest

1. Brown, Caroline L.et al. *In prep*. "Subsistence harvests in 5 Yukon River communities, 2010: an index approach." Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. NNN, Fairbanks.
2. Ikuta, Hiroko et al. *In prep*. "Bethel subsistence, 2012: wild resource harvests and uses, land use patterns, and subsistence economy in the hub community of the Yukon–Kuskokwim Delta." Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 393, Fairbanks.
3. Brown, Caroline L. et al. *In prep*. "Socioeconomic effects of declining salmon runs on the Yukon River." Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 398, Fairbanks.

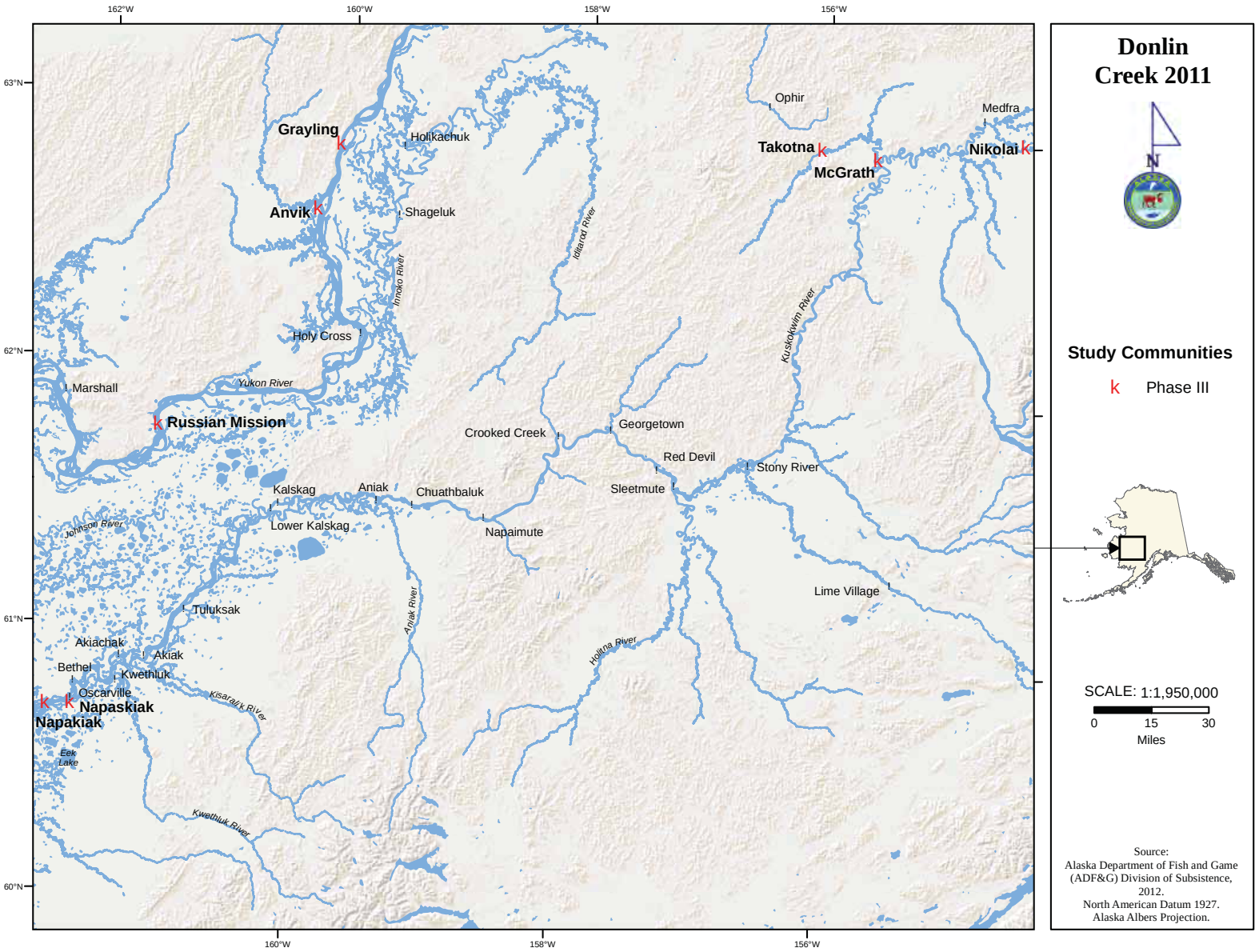


Figure 1-1.–Map of lower Kuskokwim River drainage, showing 8 communities.

surveys in Bethel in 2012[4] and Nunapitchuk in 2013[5]. Harvest data for the projects listed above, except Georgetown and Napaimute[6], are available online at the Community Subsistence Information System (CSIS[7]) website maintained by the ADF&G Division of Subsistence. ADF&G has also produced annual salmon harvest estimates by community, based on fish rack or household surveys, since 1960. Other harvest data, primarily for large game, exist in the hunter–harvest database maintained by ADF&G (WinfoNet[8]); however, because of the remoteness of many communities and of lack of outreach regarding reporting requirements, it often fails to capture a significant component of the harvest, especially in rural Alaska (Andersen and Alexander 1992).

This study represents a significant contribution to the available data on the harvest and uses of subsistence foods in the 2 Lower Kuskokwim River communities of Napakiak and Napaskiak, 3 Upper Kuskokwim River communities of McGrath, Takotna, and Nikolai, and 3 Yukon River communities of Russian Mission, Anvik, and Grayling. Community support for this harvest documentation effort was strong: the tribal councils in each of the 8 communities were contacted and approved the research in their respective communities. Indeed, many residents had long been calling for increased data collection to corroborate their own local observations of hunting and fishing trends. This harvest documentation program relied on the public support of the residents of the Yukon–Kuskokwim Delta and the cooperating organizations, as well as on the continued financial support of Donlin Gold Limited Liability Company.

Background

The Lower Kuskokwim River region stretches roughly from the mouth to the community of Tuluksak, and the Lower Yukon River region stretches from the mouth to the community of Russian Mission. Napakiak and Napaskiak in the Lower Kuskokwim River and Russian Mission in the Lower Yukon River are entirely encompassed by ADF&G Game Management Unit (GMU) 18. The Upper Kuskokwim River region stretches roughly from the community of Stony River to its headwaters. McGrath, Nikolai, and Takotna, the Upper Kuskokwim River communities included in this study, are located in GMU 19. Other Yukon River communities in this study, Anvik and Grayling, are located in GMU 21. A variety of political boundaries are also part of the Kuskokwim River area, including the Calista Corporation service area (Calista Corporation is an Alaska Native corporation), the Yukon–Kuskokwim Delta Region and Western Interior Region (federal subsistence management areas), the Association of Village Council Presidents (AVCP, a nonprofit Alaska Native corporation), the Kuskokwim Management Area (a fishing regulatory area), and ADF&G GMUs 18 (Napakiak, Napaskiak, and Russian Mission), 19D (McGrath, Takotna, and Nikolai) and 21E (Anvik and

4. Runfola, David M. and Andrew R. Brenner. 2014. "Subsistence harvests of land mammals in Bethel, Alaska 2011. Alaska Department of Fish and Game, Division of Subsistence Special Publication No. 2014-01, Fairbanks.
5. Park, Jeff. *In prep*. Subsistence harvests of land mammals in Nunapitchuk, Alaska, 2012. Alaska Department of Fish and Game, Division of Subsistence Special Publication No. XXXX-NN, Fairbanks.
6. Survey results from Georgetown and Napaimute are not included in the CSIS. All known Georgetown tribal members and all Napaimute community members except for 1 individual were permanent residents of other communities during the study year; as a result, the results from these households are reported in the community of residence aggregates.
7. ADF&G Division of Subsistence, Community Subsistence Information System (CSIS): http://www.adfg.alaska.gov/sb/CSIS.
8. ADF&G, WinfoNet: http://winfonet.alaska.gov/

Grayling). Anvik and Grayling on the Yukon River, as well as McGrath, Nikolai, and Takotna on the upper Kuskokwim River, are also served by the federal Western Interior subsistence management area; they are further represented by Doyon, the regional for-profit Alaska Native Claims Settlement Act (ANCSA) corporation, and the Tanana Chiefs Conference, the regional nonprofit Alaska Native corporation. Napakiak, Napaskiak, and Russian Mission are also served by the federal Yukon–Kuskokwim Delta subsistence management area; they are further represented by the Calista Corporation and the Association of Village Council Presidents. Anvik, Grayling, and Russian Mission are located in the Yukon Fisheries Management Area. The project areas include both state and federal waters used for subsistence fishing.

Central Yup'ik people have historically occupied the Lower Kuskokwim and Lower Yukon river areas. Two distinct Athabascan groups, Dena'ina Athabascans, who also live in the Cook Inlet and Lake Clark areas, and Upper Kuskokwim Athabascans also inhabited the upper Kuskokwim basin in the late 1700s and early 1800s. Around 1830, Yup'ik people maintained larger winter villages (approximately 7 residential structures each with a *qasgiq*, or men's communal house), sometimes jointly, as well as seasonal camps, which were usually occupied by a few families (C. M. Brown 1983). Historically, Deg Hit'an and Doy Hit'an or Holikachuk Athabascans inhabited the lower–middle Yukon area around Anvik and Grayling (Wheeler 1998; Nelson 1978). The joint forces of economic development, primarily commercial fishing, fur trapping, mining, and missionization ultimately consolidated these settlements into the more permanent villages of the Kuskokwim and Yukon rivers in the early 1900s. These seasonal settlements were characterized by a long-established pattern of moving across the land in pursuit of wild resources that is still followed today, though modified by the existence of permanent communities and new technologies.

Historically, the seasonal round began in spring, before breakup, when families moved to spring camps to trap, fish for various nonsalmon species, and hunt migratory birds. Ice breakup on the mainstem and associated tributaries of the Kuskokwim and Yukon rivers brought families to summer fish camps, usually on the mainstem, to process large quantities of salmon as food for both humans and dogs. In early fall, families traveled to fall camps, which were often the same sites as their spring camps, to fish for nonsalmon species and hunt ducks and geese before heading to winter villages to hunt for moose, caribou, and bears, trap small game, and fish under the ice. These seasonal activities continue, usually based out of the permanent communities, but some summer fish camps are still in operation. As a result, the residents in the Yukon–Kuskokwim Delta continue to rely heavily on hunting, fishing, and gathering to provide for both their nutritional and their cultural needs.

The regulation of hunting and fishing for subsistence practices has a unique history in Alaska. As noted by Magdanz et al. (2007), both state and federal laws provide priorities for customary and traditional subsistence hunting and fishing over other consumptive uses, such as commercial fishing. In 1971, ANCSA extinguished aboriginal hunting and fishing rights. However, recognizing the importance of subsistence as well as the lack of legal protection for Alaska's subsistence traditions, both the Alaska State Legislature and the U.S. Congress subsequently adopted laws intended to preserve opportunities for customary and traditional uses

of fish and wildlife in Alaska. In 1978, the Alaska State Legislature adopted priorities for subsistence over other consumptive uses of fish and game, including a subsistence fishing priority under AS 16.05.251(b) and a subsistence hunting priority under AS 16.05.255(b). In 1980, the U.S. Congress adopted a similar subsistence priority in the Alaska National Interest Lands Conservation Act (ANILCA), including a rural priority. Between 1985 and 1992, aspects of Alaska's subsistence statutes—primarily those dealing with the definition of a subsistence user and the role of a priority for rural residents in times of shortage—were amended, such that state and federal subsistence laws became incongruent. Since then, the Alaska Board of Fisheries (BOF) and the Alaska Board of Game (BOG) have managed subsistence on state and private lands following procedures outlined in AS 16.05.258 "Subsistence use and allocation of fish and game" while the Federal Subsistence Board (FSB) has managed subsistence on federal public lands (about 60% of the state) for federally qualified users.

Other federal regulations provide for the subsistence harvests of specific species. In 1972, the Marine Mammal Protection Act provided that "coastal Alaska Natives" could continue to hunt marine mammals for subsistence. In 2003, the Alaska Migratory Bird Co-Management Council (AMBCC) adopted regulations establishing spring and summer subsistence hunts for migratory birds by permanent residents of villages within eligible subsistence harvest areas. Also in 2003, the North Pacific Fisheries Management Council adopted regulations recognizing subsistence harvests of Pacific halibut by eligible members of Alaska Native tribes and eligible residents of rural Alaska communities.

To support the regulatory requirements of defining and prioritizing the customary and traditional uses of fish and wildlife resources, the ADF&G Division of Subsistence conducts systematic social science research "on all aspects of the role of subsistence hunting and fishing in the lives of the residents of the state" (AS 16.05.094). The duties of the division as an agency of state government include assisting the department and regulatory bodies "in determining what uses of fish and game, as well as which users and what methods, should be termed subsistence uses, users, and methods" (AS 16.05.094). The division also conducts research to contribute to the development of "statewide and regional management plans so that those plans recognize and incorporate the needs of subsistence users of fish and game" (AS 16.05.094).

Regulatory Context of the Kuskokwim and Yukon River Areas

The regulation of subsistence harvests of fish and wildlife in Alaska is administered by the State of Alaska under Title 5 of the *Alaska Administrative Code* and by the federal government under Title 50, parts 92 and 100, of the *Code of Federal Regulations*. The federal government designates the Kuskokwim and Yukon rivers as rural subsistence regions (50 CFR §100.22 and 50 CFR §100.23). All federal subsistence regulations apply to theses region, and specify that individuals practicing subsistence harvests of fish and wildlife on federal public lands must be permanent rural residents of the area (50 CFR §100.5). State of Alaska regulations cannot require that subsistence harvesters be only rural residents: all Alaskans are eligible

to participate in state subsistence hunting, fishing, and trapping opportunities. Customary and traditional use determinations for subsistence resources are administered by Alaska under AS 16.05.258 and by the federal government under 50 CFR §100.24. This section focuses on regulations of 3 major subsistence resources in the Kuskokwim as well as Lower and Middle Yukon areas: salmon, moose, and caribou, because of their prominence in the annual subsistence harvests of the study communities.

SALMON

Recent sharp declines in Chinook salmon abundance have caused severe hardship for fishery-dependent communities in the Kuskokwim and Yukon fisheries management areas. In the Kuskokwim River drainage, ADF&G has not provided commercial harvest opportunity for Chinook salmon since 1987 and imposed significant restrictions on the subsistence fishery in 2010–2012. In 2012, a poor king salmon run and 35 days of management restrictions resulted in low harvests of Chinook salmon that were approximately 70% below the recent 10-year average. As a result, the U.S. Department of Commerce declared a resource disaster for the Kuskokwim River Chinook salmon fishery on September 13.[9] In the Yukon River drainage, where the Chinook salmon run initially failed in 2000 and has yet to recover, the State of Alaska Board of Fisheries designated Chinook salmon as a stock of yield concern in 2000 because it failed to produce expected returns. The federal government declared an economic fish disaster in 2009. ADF&G has not provided a commercial harvest opportunity on Chinook salmon since 2008, and the subsistence fishery experienced restrictions in 2008–2009 and 2011–2013. 2013 witnessed the lowest subsistence harvest on record. Despite conservative management and subsistence restrictions, border passage obligations outlined in the Pacific Salmon Treaty have not been met 5 of the last 9 years (2007, 2008, 2010, 2012, and 2013). While the study year for this report is 2011, this section includes regulatory information in 2012 and 2013 in order to provide the most current context of low Chinook salmon abundance and their impacts on the subsistence fishers in the Yukon and Kuskokwim regions.

Regulatory authority for Kuskokwim and Yukon rivers salmon management is shared by the Federal Subsistence Board (FSB) and the State of Alaska Board of Fisheries (BOF). On the Kuskokwim, ADF&G is responsible for implementing regulations in accordance with the Kuskokwim River Salmon Management Plan (5 AAC 07.365) and also has inseason discretionary management authority of salmon in Alaska navigable waters. Waters of the lower Kuskokwim River are largely within or adjacent to federal public lands, namely the Yukon Delta National Wildlife Refuge. As such, the U.S. Fish and Wildlife Service (USFWS) shares inseason subsistence fishing management decision making with ADF&G. USFWS holds final decision-making authority over management of salmon in these waters only in the event that the federal subsistence program determines that all non-federally qualified subsistence uses must be eliminated in order to meet the federal subsistence priority. The Kuskokwim River Salmon Management Working Group (KRSMWG) is

9. Shelden, Christopher A. et al. *In prep*. Subsistence salmon harvests in the Kuskokwim Area, 2011 and 2012. Annual Report for Study 10-352 USFWS Office of Subsistence Management, Fisheries Resource Monitoring Program. ADF&G Division of Sport Fish and Commercial Fisheries, Anchorage.

composed of knowledgeable stakeholders acting in a representative fashion for communities throughout the Kuskokwim River drainage, processors, sport fishery representatives, as well as an ADF&G management biologist. The working group advises state and federal managers through an established process and is currently the primary forum through which management decisions are made regarding Kuskokwim River subsistence, commercial, and sport salmon fisheries (Smith and Linderman Jr. 2008:1). On the Yukon River, ADF&G is responsible for implementing regulations in accordance with multiple species and tributary specific management plans (5 AAC 05.360, 5 AAC 05.362, 5 AAC 05.365, 5 AAC 05.367, 5 AAC 05.368, 5 AAC 05.369) and also has inseason discretionary management authority over salmon in Alaska navigable waters. The same dual federal–state regulatory structures are in place on the Yukon River. However, Yukon River salmon fisheries are also managed in accordance with the Pacific Salmon Treaty; the Yukon River Panel, a board of appointed members from both Alaska and Canada, meets twice a year to negotiate annual aspects of the treaty, such as escapement goals and border passage goals, and to approve funding of scientific research addressing salmon biology and use patterns.

The highest priority in state and federal management of the Kuskokwim and Yukon rivers' salmon populations is biological sustainability of the resources based on principles of sustained yield. In the event that returning salmon numbers are not sufficient to meet established escapement goals that will allow for the maintenance of future generations of salmon populations, consumptive uses of salmon may be restricted. Under conditions that there is a harvestable surplus beyond these minimum escapement levels, consumptive uses of salmon are prioritized for different user groups.

Alaska Statute 16.05.258, "Subsistence use and allocation of fish and game," establishes the subsistence use priority (above sport, commercial, and personal uses) when resources are not abundant enough to provide for all consumptive uses, while remaining in accordance with principles of sustained yield. Subsistence uses protected by the subsistence priority are those practices identified as customary and traditional practices, as determined by the BOF. In 1993, the BOF made positive findings for customary and traditional uses of all salmon species in the entire Kuskokwim Area[10] and the Yukon Area.[11] As part of these findings, the BOF then determined the amount reasonably necessary for subsistence (ANS) in these respective areas as one means to provide reasonable opportunities for subsistence uses. Based on historical harvest information, an ANS of 192,000–242,000 for salmon of all species in the Kuskokwim Area was determined (5 AAC 01.286). For the Yukon Area, the BOF set the ANS at 348,000–503,000 for all salmon species.

In 2001, the BOF amended these ANS ranges for both rivers using subsistence harvest data from the years 1990 to 1999. After reviewing various options, the BOF made new customary and traditional use and ANS findings for the Kuskokwim and Yukon areas by species. Although not in effect during the study year of 2011, in January 2013, the board again reconsidered ANS ranges by species for each river system. The current ANS ranges for salmon in the Kuskokwim River drainage, determined by the BOF in 2013, are as

10. The Kuskokwim Area includes the Kuskokwim River drainage, all waters of Alaska that flow into the Bering Sea between Cape Newenham and the Naskonat Peninsula, and Nunivak and St. Matthew islands. 38 communities are located within this area.
11. The Yukon Area includes all waters of Alaska between the latitude of Point Romanof and the latitude of the westernmost point of the Naskonat Peninsula, including those waters draining into the Bering Sea (5 AAC 05.100).

follows: 67,200–109,800 Chinook salmon; 41,200–116,400 chum salmon; 32,200–58,700 sockeye salmon; 27,400–57,600 coho salmon; and 500–2,000 pink salmon; in districts 4 and 5 combined: 6,900–17,000 salmon; and in the reminder of the Kuskokwim area: 12,500–14,400 salmon (5 AAC 01.286).[12] The BOF chose not to change ANS ranges for Yukon River salmon species, with the exception of adding an ANS for pink salmon. As such, the current ANS ranges for salmon in the Yukon River drainage are 45,500–66,704 king salmon; 83,500–142,192 summer chum salmon; 89,500–167,900 fall chum salmon, 20,500–51,980 coho salmon, and 2,100–9,700 pink salmon.

Subsistence harvest of Pacific salmon species in the Kuskokwim River is allowed without a permit (5 AAC 01.280) and with no closed season (5 AAC 01.260), unless otherwise noted for conservation purposes. Alaska law allows a variety of gear types to be used in the Kuskokwim River for subsistence salmon fishing, and includes specifications regarding the use of gillnets (5 AAC 01.270) and hook and line gear (5 AAC 01.295). There are no federal or state bag or possession limits for subsistence salmon harvests in the Kuskokwim River, except from June 1 through August 31, when subsistence fishing with a hook and line attached to a rod or pole, in that portion of the Aniak River drainage upstream of Doestock Creek, the bag and possession limit is 2 Chinook salmon (5 AAC 01.295). Federal regulations of all subsistence fish harvests in Alaska federal public lands and waterways are administered under 50 CFR §100.27, including seasons, gear types, and bag and possession limits on all salmon and nonsalmon species.

Subsistence harvest of Pacific salmon species in the Yukon River is allowed without a permit except for in a few locations, most of which are accessible by road (5 AAC 01.230). Fishing in the Yukon Area is allowed at any time with the exceptions of those times outlined in 5 AAC 01.210, referring to what is commonly called the “windows” schedule, and unless otherwise noted for conservation purposes. Alaska law allows a variety of gear types to be used in the Yukon River drainage for subsistence salmon fishing and includes specifications regarding the use of gillnets and fishwheels (5 AAC 01.220). There are no federal or state bag possession limits for subsistence salmon harvests in the Yukon River.

By regulation, then, the subsistence salmon fishing season is open unless a subsistence fishing schedule closure is implemented. If closures to the fishery are necessary, they are implemented by emergency order prior to, during, and after commercial fishing periods, or closures to the fishery are implemented by emergency order for conservation purposes (see 5 AAC 01.260, and 5 AAC 07.365 for the Kuskokwim and 5 AAC 01.310 and 5 AAC 05.360 for the Yukon River). On the Kuskokwim River, a subsistence fishing schedule with periodic fishing closures (openings between these closures were often referred to as “windows” or “openers”) was implemented from 2001–2006 and has since been discontinued. On the Yukon River, a

12. In January 2013, ADF&G submitted a proposal to the BOF to provide an opportunity for the BOF and public to revisit the ANS for salmon stocks in the Kuskokwim area. Such ANS revisions may be justified due to revised historical harvest data. A new harvest estimation method was deployed retroactively by ADF&G Division of Commercial Fisheries for years 1990–2009 (Hamazaki 2011). This new method attempts to provide a better estimation of subsistence salmon harvests than previous methods, and currently is being used by ADF&G Division of Commercial Fisheries, which reassumed control of the Kuskokwim subsistence salmon harvest monitoring program in 2008. Kuskokwim Area subsistence salmon harvests have been estimated by ADF&G Division of Commercial Fisheries since 1960 (except for the period 1988–2007 when the Division of Subsistence implemented the program), although harvest estimation methods have changed over time. The ANS findings in codified regulations were set by the BOF in 2001 based upon harvest estimates for years of 1990–1999.

windows schedule was implemented by the Board in 2001 and remains in place. Fall et al. (2013) contains a description of these windows by district.

In 2013, the BOF implemented additional regulatory changes for both areas. The BOF adopted sustainable escapement goal (SEG) ranges for Kuskokwim River Chinook salmon as follows: 65,000-120,000 drainagewide; 4,100–7,500 in the Kwethluk River; 4,800–8,800 in the Kogrukluk River; and 1,800–3,300 in the George River. The BOF also updated the Kuskokwim River Salmon Management Plan to include several major changes: 1) management of the Chinook fishery will be based on preseason and in-season escapement projections; and 2) when the projected escapement of Chinook salmon is within the drainagewide escapement goal range, harvest opportunity might be limited or liberalized depending on available surplus. If there is limited surplus, a fishing period may open during which Chinook salmon may only be taken by individuals 60 years of age or older. When it is necessary to conserve Chinook salmon, the subsistence fishery may be restricted to gillnets with 4″ or less mesh size until sockeye and chum salmon abundance exceeds Chinook salmon abundance.

On the Yukon River, area managers implemented a 2010 Board of Fisheries' decision to reduce the maximum stretched mesh net size to 7.5″. Prior to this, Yukon Area fishers widely used 8″–8.5″ mesh nets to target Chinook salmon. This change was considered a conservation tool that should allow more of the older and larger Chinook salmon, especially females, to escape to the spawning grounds. At their 2013 Arctic-Yukon-Kuskokwim (AYK) meeting, the BOF required first pulse protection, or the prohibition of fishing on the first Chinook salmon pulse entering the river, in order to account for the uncertainty in the preseason Chinook salmon run projection. This prohibition may be relaxed in districts 3–6 if run assessment information suggests sufficient abundance.

MOOSE

The history of moose hunting regulations throughout GMU 18 has been dynamic, and often restrictive, largely due to variability in the abundance and distribution of the region's moose population. From 1960 through the 2003–2004 regulatory year, hunters were permitted to harvest 1 bull moose under general hunt provisions throughout most of GMU 18 including the lower Kuskokwim River area.[13] During this period, heavy hunting pressure from residents of lower Kuskokwim River communities limited moose population growth in the area (Perry 2010). By 2003, ADF&G, in conjunction with the BOG, identified moose population growth in the lower Kuskokwim River area as a primary management goal (Perry 2010). Therefore, beginning in the 2004–2005 regulatory year, the BOG established a moratorium on moose hunting in the lower Kuskokwim River drainage roughly extending from the boundary with GMU 19. This moratorium continued until the 2009–2010 regulatory year, when ADF&G administered a registration permit hunt for the same area with a quota of 75 bull moose, which was to be closed by emergency order once hunters reached the quota. In the 2011–2012 regulatory year, ADF&G increased this quota to 100 bull moose. While there

13. In the lowest Yukon river region, the BOG established a moose hunting moratorium from the 1988–1989 regulatory year through the 1993–1994 regulatory year. The purpose of the moratorium was to allow for recovery of the moose population in the area.

are other opportunities for residents to harvest moose in GMU 18, including a winter hunt for any moose in the lower Yukon River region, accessing these areas from communities of the lower Kuskokwim River area often requires long-distance travel by snowmachine.

As in GMU 18, the management of moose populations in GMUs 19 and 21 centers around rebuilding low-density moose populations (Perry 2010; Seavoy 2010). Moose hunting in the Upper Kuskokwim region around McGrath, Takotna, and Nikolai (GMU 19D) occurs partially in a controlled use area, and a resident is allowed to hunt 1 antlered bull by registration permit. By the early 1990s, the moose population began declining throughout Unit 19, resulting in intensive user conflicts. Predation control programs in GMUs 19A and 19D are critical for compliance with the intensive management[14] mandates found in regulations (5 AAC 92.106 and 5 AAC 92.108), which identify the GMU 19 moose populations as important for providing high levels of harvest for human consumptive use and set moose population harvest objectives (Seavoy 2010). In 2001, the department established the Experimental Micro Management Area, a 528-mi² area of eastern Unit 19D within an approximately 20-mi radius of McGrath. The area, which encompasses the highest density of moose in GMU 19D East, was established as a treatment area to test and implement predator population manipulations and other management actions.

In GMU 21E, where Anvik and Grayling are situated, and GMU 21A (Upper Innoko River), residents may harvest 1 antlered bull between September 5–25 on a harvest ticket under state regulations. Additional federal hunts in GMU 21A open from August 20 through September 25 and November 1–30 for 1 bull (50 CFR §100.26). Moose populations in Units 21 A and 21E appear to be stable (Peirce and Seavoy 2010). The biologists observed high twinning rates on the lower Innoko River in Unit 21E, indicating that nutritional status is adequate to support population growth. In summary, variable moose densities in different parts of Interior Alaska and the Yukon River Delta have led to very different hunt structures.

CARIBOU

State of Alaska caribou hunting regulations for GMU 18 have varied considerably since 1960. Beginning with the 1997–1998 regulatory year, the registration permit hunt was ended, and from then through the 2005–2006 regulatory year hunters were allowed to harvest 5 caribou per year in GMU 18 south of the Yukon River under general harvest regulations. The caribou bag limit for all of GMU 18 was decreased to 3 caribou per year in the 2006–2007 regulatory year, and to 2 caribou per year the following season where it remained through the 2011–2012 regulatory year. The federal subsistence hunting regulations on federal public lands in GMU 18 are the same as State of Alaska hunting regulations for the region; however, only federally qualified subsistence hunters are permitted to hunt caribou under these regulations on federal public lands in GMU 18. Federally recognized subsistence hunters residing in the lower Kuskokwim River area likely comprise the majority of caribou hunters in the region and harvest a significant portion of the

14. Intensive management is a term used to describe the 1994 statute (AS 16.05.255(d-g, k) and associated regulations intended to achieve or maintain wild ungulate harvests in defined areas at elevated but sustainable levels through some combination of management practices including predation control, habitat enhancement, and others.

Mulchatna caribou herd, particularly during winter (Perry 2009). The Mulchatna caribou herd, a portion of which winters south of the Kuskokwim River, is under intensive management to increase its population.

Historically, the Mulchatna caribou herd roamed and has played an important role in GMU 19, especially the McGrath area (Seavoy 2011:116). In the late 1990s, however, the population of the herd significantly declined and they retreated to the south. Several small herds are still located in the region, including Tonzona, Big River–Farewell, and Rainy Pass herds in the area south of the Kuskokwim River as well as the Beaver Mountains and Sunshine Mountains herds in the area north of the river. In GMU 19D, which includes McGrath, Takotna, and Nikolai, the regulation limits harvest opportunity to 1 bull between August 10 and September 20 in the drainages of the Nixon Fork River and 1 bull (August 10-September 20) or one caribou (November 1 – January 31) for the remainder of the subunit.

In GMU 21E, where Anvik and Grayling are located, a large number of caribou from the Western Arctic and Mulchatna herds were present during the early 1990s (Seavoy 2011:116–117). By the late 1990s, however, the caribou population significantly declined in the region. Currently, under both the state and federal regulations, a hunter can harvest one caribou through a harvest ticket between August 10 and September 30.

Research Questions

The principal questions addressed by the Donlin Gold Subsistence Research Program were how much wild foods were harvested for subsistence and how these foods were distributed within and between communities. The answers to these questions have provided baseline information about the contemporary subsistence uses of fish, wildlife, and plant resources in Napakiak and Napaskiak in the Lower Kuskokwim, McGrath, Takotna, and Nikolai in the Upper Kuskokwim, as well as Russian Mission, Anvik, and Grayling in the Yukon region. Related questions involved the role of wild foods in the region's economy, the role of cash in subsistence economies, the lands and waters used for subsistence practices in the Kuskokwim and Yukon river drainages, the impacts of competition with other users, the role of nonsubsistence uses of fish and wildlife, the sharing distribution networks for subsistence foods within and between communities, assessments of harvests over time, and the impacts of climate or other environmental changes.

Most fish stocks and wildlife populations in the Kuskokwim and Yukon regions, although variable over time, were considered healthy at the time of the study, with the exception of Chinook salmon. As of 2009, both the BOF and the BOG had found that harvestable surpluses of all fish and wildlife species were sufficient to provide the amounts reasonably necessary for subsistence uses and to provide for most other nonsubsistence uses, with the notable exceptions of Chinook salmon throughout the Kuskokwim and Yukon rivers and moose in GMU 19 and part of GMU 18, which are currently managed for limited subsistence uses only.

The management of fish and wildlife resources is a complicated calculus of factors. Supplies of and demand for fish and wildlife change over time, sometimes dramatically and rapidly. To allocate fish and wildlife sustainably, regulatory bodies need periodic harvest data over time that can account for normal

variations in harvests, which for some species can mean decades of research. Matters are further complicated by climate-related changes, proposed and occurring resource extraction, and industrial development, all of which will potentially impact not only renewable natural resources through habitat alteration, but also social and economic systems by providing increased employment and dividend income to residents of the region.

The dynamic environment and economy of rural Alaska has created a need for frequently updated information about subsistence harvests, demographics, employment, and income for the region as a whole, and especially for communities adjacent to proposed developments. In order of increasing scope, research topics have included:

- managing species where demand exceeds supply;
- sustainably allocating species among competing uses;
- documenting subsistence economies;
- assessing and mitigating impacts from development; and
- monitoring long term ecological conditions.

To improve documentation of Alaska's subsistence economy, policymakers need substantially complete estimates of harvests and better descriptions of subsistence socioeconomic systems. To assess impacts or to monitor long term changes, investigators need an initial comprehensive survey to collect baseline subsistence harvest, social, and economic data. They also need postimpact surveys to measure changes and assess impacts.

Impact assessment and ecological monitoring are more complex than harvest monitoring because the nature and scope of potential impacts and the course of human adaptations are not known in advance. For example, residents of Western Alaska might adapt to persistent and adverse changes in moose populations by increasing subsistence salmon harvests or by purchasing imported foods. The latter adaptation would imply increased reliance on wage labor or on transfer payments. Fully evaluating the impact of changes in moose populations would require information on moose populations and health, moose harvests, moose harvest locations, the harvests of other species, employment, wages, other types of income, and perhaps household spending patterns. Thus, impact assessment and ecological monitoring require a greater range of data than basic harvest assessment.

General Study Objectives

The objectives of this harvest assessment project were to:

- estimate subsistence harvests and uses of wild fish, game, and plant resources in a 12-month study year (2011);
- map areas used for hunting, fishing, and gathering during the study year;
- produce historical use area maps for subsistence hunting, fishing, and gathering;

- collect demographic information about each community, including population size and composition, ethnicity, birthplace, and length of residency in the study community;
- characterize each community's involvement in the cash economy, including jobs, other sources of cash income, living costs, and expenses for subsistence activities;
- evaluate trends in subsistence harvests;
- document traditional knowledge observations regarding resources used for subsistence purposes; and
- document local concerns related to subsistence hunting and fishing.

Within this harvest assessment project, the Division of Subsistence and cooperating organizations selected study communities, trained community residents in administration of the survey instruments, and administered surveys to occupied households in each study community. After data collection, the researchers reviewed and interpreted survey findings and published reports of survey findings. Study findings were shared with the communities in community review meetings that were held in every participating community. Summary results are published online at the CSIS website.

Rationale and Literature Review

During the past 50 years, 2 different methods have been used to collect subsistence data in Western Alaska. Both methods—mandatory reporting and voluntary surveys—have had substantial limitations. For big game species such as moose, ADF&G has relied on a system of mandatory harvest reports and permits since statehood. Before hunting, individual hunters must purchase a hunting license and, for selected species, obtain a report or permit that indicates their intent to hunt that species. After hunting, or at the end of the season, hunters are required to mail a postage-paid postcard to ADF&G reporting their efforts and harvest, if any. Andersen and Alexander (1992) found that, on average, this method captured approximately 30% of the moose harvests in Interior Alaska. It is reasonable to assume that reporting rates in other rural areas of the state are similar to those in the Interior, given the factors that contributed most to these patterns, such as community population size, distance from a road system, presence of a regulatory agent, and community reliance on subsistence foods.

For comprehensive estimates of subsistence harvests, ADF&G and other researchers have relied on household surveys. However, these efforts have been minimal in Lower and Upper Kuskokwim and Yukon river communities and are usually limited in that they represent a few years rather than providing longitudinal data sets. Nonetheless, household surveys do collect a wide range of data and are best suited to fulfill the multiple data needs of resource management agencies, user communities, and industry. Consequently, this program used survey methods.

In the early 1980s, the Division of Subsistence conducted limited research in the Lower Kuskokwim communities. The Division of Subsistence documented the subsistence uses of Tuluksak residents including the variety of species used, use areas, seasonality of harvest, and local observations of resource abundance (Andrews and Peterson 1983). This study did not, however, collect quantitative data except for Chinook, sockeye, and chum salmon harvests. In 1983, the Division of Subsistence gathered wild resource harvest and use data as well as ethnographic information in Nunapitchuk for the purpose of documenting subsistence harvest and use patterns and for mapping subsistence harvest and search areas (Andrews 1989). In 1986, the division also conducted comprehensive baseline surveys and documented harvest and use patterns, search area maps, and ethnographic data for the residents in Kwethluk (Coffing 1991) and Tununak (CSIS). However, these data are now more than 25 years old. In 1998, Coffing et al. (2001) documented subsistence harvests in Akiachak.

The AMBCC conducted migratory bird harvest surveys in the Lower Kuskokwim and Yukon River communities, including Napakiak, Napaskiak, and Russian Mission, in 2004–2008 (Naves 2010a; 2010b). These harvests are reported on the subregional level and community-specific data are not available.

More recently, the Division of Subsistence conducted large mammal harvest surveys with 473 households (sample size: 25%) in Bethel in 2012[15] and with 96 households (sample size: 82%) in Nunapitchuk in 2013[16]. Pete (1984; 1991a; 1991b; 1992), Pete and Kreher (1986), and Pete et al. (1987) documented the subsistence herring fishery in the Nelson Island District and northern Kuskokwim Bay. Ray et al. (2010) documented the harvest and use of nonsalmon fish harvests in Eek, Nunapitchuk, and Tuntutuliak. The Division of Subsistence collected ethnographic data of subsistence salmon fishing in the Kuskokwim River communities, Tuntutuliak, Kwethluk, Kalskag, Sleetmute, and Nikolai in 2009 (Ikuta et al. 2013). The major objective of this study was to understand the historical and contemporary social organization of fishing within each community and what sociocultural, economic, and environmental factors influenced variations in subsistence salmon harvests of Kuskokwim River salmon. In addition, the follow-up study was conducted in the Bethel area in 2012, responding to the very low returns of king salmon, which resulted in subsistence fishing closures and restrictions in the Kuskokwim Management Area during the summer (Ikuta et al. 2013).

The subsistence harvest surveys in Russian Mission, Anvik, and Grayling on the Yukon River are contextualized by several earlier studies. Pete (1986) documented subsistence patterns by Russian Mission residents in 1985 with specific quantitative attention to salmon species and moose harvests. In 1990–1991, Wheeler (1998) collected baseline estimates of subsistence harvests in the 4 communities of Grayling, Anvik, Shageluk, and Holy Cross. Between 2002–2005, Brown et al. (2004) and Brown and Koster (2005)[17] documented harvests of big game species, including moose, caribou, black bears, brown bears, and wolves,

15. Runfola, David M. and Andrew R. Brenner. 2014. Subsistence harvests of land mammals in Bethel, Alaska 2011." Alaska Department of Fish and Game, Division of Subsistence Special Publication No. 2014-01, Fairbanks.
16. Park, Jeff. *In prep*. "Subsistence harvests of land mammals in Nunapitchuk, Alaska, 2012." Alaska Department of Fish and Game, Division of Subsistence Special Publication No. XXXX, Fairbanks.
17. See also Brown, Caroline and David S. Koster. *In prep*. The 2004–2005 harvest of moose, caribou, and bear in the lower–middle Yukon River communities of Grayling, Anvik, Shageluk, and Holy Cross. Alaska Department of Fish and Game, Division of Subsistence Technical Paper 305, Fairbanks.

in the same 4 villages in support of the Yukon–Innoko Moose Management Plan. Finally, Brown et al. (2005) documented traditional ecological knowledge and harvest reports of nonsalmon fish species in Grayling, Anvik, Shageluk, and Holy Cross in 2002.

These limited efforts generally have been driven by the data needs and funding situations of individual agencies and not by a coordinated strategy. Neither mandatory harvest reporting systems nor voluntary community household surveys have provided data sufficient to estimate regionwide subsistence harvests of fish and wildlife with reasonable confidence, nor to monitor trends in subsistence harvests and use patterns. This study was designed specifically to fill data needs in Western Alaska, as well as to respond to particular policy objectives and current research directions.

One of the policy objectives in Alaska subsistence management is determining the amounts reasonably necessary for subsistence uses. This is achieved primarily through reviews of historical harvests, the assumption being that a series of harvest data through time should provide a reasonable range of harvests needed for subsistence. Historical data are not always available, and sometimes harvests are limited by factors other than subsistence demand, however, so subsistence surveys have long included a series of harvest assessment questions (e.g., "Did your household get enough salmon last year for your needs?").

Extensive, comprehensive survey efforts are possible, as demonstrated between 2009 and 2011 when the Division of Subsistence successfully conducted comprehensive surveys in 20 communities in the Kuskokwim and Yukon river areas. The keys to these intensive efforts are well-designed survey instruments, efficient data entry, and standardized approaches.

Relationships with Alaska Native Communities

A majority of the residents of Western Alaska are Alaska Native who have maintained the subsistence customs and traditions practiced throughout their ancestors' history. This project was intended to encourage a collaborative, working relationship among state and federal agencies, tribes, communities, nongovernmental organizations, and industries. The ethical conduct of all researchers was guided by the principles of conduct adopted by the Alaska Federation of Natives in 1993 and the Interagency Arctic Research Policy Committee on June 28, 1990. All personnel were directed to work in a manner that developed, rather than jeopardized, relations among the cooperators, and between the cooperators and the public.

Chapter 2: Methods

Hiroko Ikuta and David S. Koster

In 2012, comprehensive subsistence surveys were conducted in 8 communities: Napakiak and Napaskiak in the Lower Kuskokwim River; McGrath, Takotna, and Nikolai in the Upper Kuskokwim River; and Russian Mission, Anvik, and Grayling on the Yukon River. Division of Subsistence gathered wild resource harvest and use data in McGrath and Takotna in the early 1980s (Stokes 1985) and Nikolai in 2001–2002 (Williams et al. 2005; Holen et al. 2006). In the early 1990s, the Tanana Chiefs Conference conducted comprehensive surveys in Anvik and Grayling (Wheeler et al. 1992). In 2008, Wolfe and Scott (2010) conducted comprehensive surveys in Anvik and Grayling as part of an examination of continuity and change in salmon harvest patterns on the Yukon River. Comprehensive subsistence harvest surveys have never been conducted in the study communities of Napakiak, Napaskiak, and Russian Mission.

This survey asked about all species harvested for subsistence in these areas, divided into 6 large resource categories (e.g., large land mammals, vegetation, etc.) The research relied on a standard survey instrument based on a series of studies conducted by the Division of Subsistence since the 1980s. Many survey questions are the same as, or similar to, questions in prior harvest assessment tools, so recent results are comparable with past results and can be compared to results from other regions.

There is a continuing need for harvest estimates for high-demand species, particularly salmon. Several recent poor runs of salmon—especially Chinook salmon—on the Kuskokwim and Yukon rivers have raised significant concern about this important subsistence resource.

In 2009, ADF&G learned of a specific need for subsistence information to assist in the preparation of an environmental impact statement (EIS) for the proposed Donlin Gold Mine near Crooked Creek. In the first phase, which began in 2010, the Division of Subsistence conducted comprehensive surveys in 8 communities in the Central Kuskokwim River area: Aniak, Chuathbaluk, Crooked Creek, Lower Kalskag, Red Devil, Sleetmute, Stony River, and Upper Kalskag (Brown et al. 2012). During the second phase of the study (2011), researchers focused on the Lower Kuskokwim communities of Akiak, Kwethluk, Oscarville, and Tuluksak, as well as Georgetown and Napaimute in the Central Kuskokwim River area (Brown et al. 2013). In this third phase, conducted in 2012, eight comunities participated in the study: Napakiak and Napaskiak on the Lower Kuskokwim River, McGrath, Takotna, and Nikolai on the Upper Kuskokwim River, and Russian Mission, Grayling, and Anvik on the Yukon River.

General Research Design

The ADF&G Division of Subsistence utilizes a number of social science research methods to fulfill its mission, including both quantitative and qualitative methods. This study used a combination of harvest surveys (Appendix A) and ethnographic, semi-structured key respondent interviews (Appendix B) to document historical and contemporary subsistence practices.

Ethnographic interviews followed a semi-structured protocol (Appendix B) designed to capture a thorough understanding of broad patterns of local harvest and use for all subsistence resources. The interviews were generally structured around a seasonal round of subsistence activities; respondents were asked about typical patterns of subsistence activities during particular times of the year, and to describe any changes in these subsistence activities that had been observed over their lifetimes. Mapping exercises during the interviews recorded locations of historical and contemporary subsistence use areas. Respondents were also asked to discuss any recent concerns in their communities related to subsistence resources, particularly those concerns related to environmental, management, or socio-economic conditions affecting patterns of subsistence harvest and use. Interviews were audio-recorded then individually transcribed and analyzed by individual chapter authors.

In addition to interviews, extensive field notes were taken during informal communications with community residents and during harvest surveys when respondents offered information not collected on the survey form. Community members provided further ethnographic information and reviewed researchers' interpretations of ethnographic data during scheduled community review meetings open to all community residents.

Quantitative harvest data were collected through harvest surveys. As characterized by Trotter II and Schensul (1998:702–703).

> Applied projects must be designed to create the highest level of confidence in the research results. To provide this confidence, quantitative social sciences have most commonly favored probabilistic (random) sampling techniques that allow for statistical analysis of the data collected. These techniques work well when the universe from which the sample is to be drawn can be identified and where everyone in a population … has an equal chance of being chosen to express their viewpoint. It does not work for qualitative approaches, where other conditions apply.

Much of the research conducted by the Division of Subsistence is quantitative in nature and involves documenting the amount of fish and wildlife resources harvested by a community of users with the principal unit of analysis being the household. In these cases, probabilistic sampling or census approaches are used to develop estimates of harvests for an entire community or series of communities.

In small communities, sampling designs often strive for a complete census to survey each household regarding subsistence resource harvest and use activities. In larger communities, simple random samples (or

stratified random samples) are used to estimate a community's harvest and use patterns. Survey results are expanded to the whole community based upon the patterns identified in the sample of surveyed households. It is essential that sampled households be representative of the study population.

Confidentiality is maintained through the use of identification codes in place of residents' names or addresses. Households and individuals are assigned numerical codes before surveys begin. The household code sheet is maintained by the principal investigators during survey administration and remains in their custody after the survey is complete. Surveyors have codes only for the households they are assigned to survey. Household code sheets do not accompany surveys when surveys are submitted for data entry and analysis.

Survey Instrument

The primary purpose of the household survey was to collect information about the harvest and uses of edible wild foods. In its simplest form, this type of survey includes a core harvest module that collects, for example, caribou or salmon harvest reports on a single sheet (Appendix A). By adding more core harvest modules, a single-species survey can evolve into a comprehensive survey, while maintaining comparability with single-species efforts. Additional modules can be added to collect demographic, economic, spatial, assessment, or social network data as needed. For this project, researchers collected information from each household about permanent household residents, amounts of wild food harvested, wages earned, and other income received by household members. Researchers also asked questions to assess household food security, networks of food sharing, and to determine whether households were able to harvest sufficient wild foods.

The demography section included questions about the gender, kin relationships, age, birthplace, education, and ethnicity of each household member. The harvest section asked which wild foods were used and harvested and how much was harvested by the household. The employment section asked respondents to list each job held by each member of the household and, for each job, the months employed, the schedule worked, and the amount earned in the study year. Respondents were asked to estimate household income from other nonemployment sources, such as the Alaska Permanent Fund dividend, Social Security, and public assistance programs. Income information can be better understood in the context of living expenses in the communities. ADF&G staff also asked the respondents to estimate basic living expenses, including housing, utilities, and groceries, as well as equipment used for subsistence activities.

A "food security" section used a standard national questionnaire to assess whether or not the household had enough food to eat, whether from subsistence sources or from market sources. The protocol used in this survey was a modified version of the 12-month food security scale questionnaire developed by the U.S. Department of Agriculture (USDA). This questionnaire is administered nationwide each year as part of the annual Current Population Survey (CPS). In 2007, approximately 125,000 U.S. households were interviewed,

including 1,653 in Alaska (Nord et al. 2008:20). From CPS data, the USDA prepares an annual report on food security in the United States.

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

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

The survey included a series of harvest assessment questions (e.g., "Did your household get enough salmon last year for your needs?") The section also asked whether households harvested less, more, or the same amount of particular subsistence foods, and whether they got enough of that food. In the event that harvests changed or were insufficient, respondents were asked why this occurred.

A "network" section asked households to document who harvested and processed the resources that the household used, even if household members did not harvest the resources themselves. It also asked household members to document to which households or other communities they gave resources and from which households they received resources. In this way, data analyzed from the network module provide a graphic representation of resource distribution webs by community.

To document the areas used for subsistence, the survey asked households to locate on a map the areas where they searched for and where they actually harvested selected subsistence resources. Maps were available at 3 different scales or extents to accommodate both local and distant searches and harvests.

Limitations and Assumptions

The harvest survey collected information on subsistence activities during a single year. This assumed that respondents could remember their important activities during the previous year. To minimize recall problems, surveys were conducted with household heads on the assumption that household heads were most likely to be aware of all household members' activities. Respondent recall bias was not expected to change significantly over time or from community to community. It was also not expected to affect comparisons of data from this study with other studies employing similar methods.

Some respondents were reluctant to provide information about personal and household incomes, especially earned income. Some community researchers were personally reluctant to ask respondents about income. As a consequence, employment and income data are sometimes missing. However, 481 surveyed households in Napakiak, Napaskiak, McGrath, Takotna, Nikolai, Russian Mission, Anvik, and Grayling (87% of all households surveyed in the 8 communities) reported income information. Eight hundred ninety eight adults were employed in the 8 study communities.

Data for this project were collected for the study year 2011 in the spring of 2012. The ADF&G Division of Commercial Fisheries also collected salmon harvest data in its annual postseason survey, conducted in fall 2011 for the summer salmon season. The estimates for salmon harvests resulting from these 2 data collection efforts differed somewhat from community to community and by salmon species. In some cases, the differences were significant. Analysts and principal investigators from the 2 projects met on several occasions to discuss the differences. In some cases, the differences were the result of sampling strategies: the Division of Subsistence attempted a census of all households in a community while the postseason salmon survey used a stratified sample in the same communities. In other cases, especially when compared on the household level, the reasons for the differences were not identifiable. For coho salmon specifically, some differences in harvest estimates were likely the result of how questions on the surveys were asked or how the answers were documented, especially when addressing particular gear types.

Standardization in data collection procedures was important because many different people gathered data. One or more principal investigators were present throughout the administration of the surveys and administered surveys themselves with additional help from local surveyors. Standardization and quality control were accomplished through an initial orientation process, daily reviews of surveys as they were completed, and a post-administration review of all surveys. ADF&G staff coded all of the surveys, and coded surveys were reviewed by principal investigators before data entry.

Procedures

In 2012, the principal investigators were Hiroko Ikuta and Caroline Brown; both were subsistence resource specialists with the Division of Subsistence based in Fairbanks. They were assisted by 2 residents of Anvik, 2 residents of Grayling, 7 residents of McGrath, 6 residents of Napakiak, 4 residents of Napaskiak, 3 residents of Nikolai, 2 residents of Russian Mission, and 3 residents of Takotna, and 11 Division of Subsistence employees based in Fairbanks and Bethel (Table 2-1).

Between November 2011 and May 2012, ADF&G staff traveled to the communities to meet with tribal councils to review survey instruments (both surveys and interview protocols), prepare updated household lists, and obtain community approvals. From January through May 2012, research teams traveled to the communities to implement the surveys. Working with the ADF&G principal investigator assigned as the lead

Table 2-1. – Project staff.

Task	Name	Organization
Environmental and Permitting Manager	Nick Enos	Barrick Gold Corporation, Donlin Gold Project
Northern Regional Program Manager	James Simon	ADF&G Division of Subsistence
Principal Investigator	Hiroko Ikuta and Caroline Brown	ADF&G Division of Subsistence
Project Lead	Hiroko Ikuta	ADF&G Division of Subsistence
Data Management Lead	David S. Koster	ADF&G Division of Subsistence
Data Management Assistant	Jim Magdanz	ADF&G Division of Subsistence
Administrative support	Pam Amundson	ADF&G Division of Subsistence
	Tamsen Coursey-Willis	ADF&G Division of Subsistence
	DeAnne Lincoln	ADF&G Division of Subsistence
Programmer	Garrett Zimpelman	ADF&G Division of Subsistence
Data entry	Margaret Cunningham	ADF&G Division of Subsistence
	Rebecca Fink	ADF&G Division of Subsistence
	Hollie Wynne	ADF&G Division of Subsistence
	Garrett Zimpelman	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
	Pat Fox	ADF&G Division of Subsistence
	Garrett Zimpelman	ADF&G Division of Subsistence
Cartography	Terri Lemons	ADF&G Division of Subsistence
Editorial Review Lead	Adam Knight	ADF&G Division of Subsistence
Production Lead	Anita Humphries	ADF&G Division of Subsistence
Field research staff	Andrew R. Brenner (Nikolai lead)	ADF&G Division of Subsistence
	Choya Davis	ADF&G Division of Subsistence
	Michelle Gillette	ADF&G Division of Subsistence
	Hiroko Ikuta	ADF&G Division of Subsistence
	Elizabeth Mikow (Russian Mission lead)	ADF&G Division of Subsistence
	Jeff Park (McGrath lead)	ADF&G Division of Subsistence
	Brittany Retherford (Grayling lead)	ADF&G Division of Subsistence
	David Runfola (Napakiak lead)	ADF&G Division of Subsistence
	Lisa J. Slayton (Napaskiak lead)	ADF&G Division of Subsistence
	Alida Trainor (Anvik lead)	ADF&G Division of Subsistence
	Katya Wassillie	ADF&G Division of Subsistence
	Seth J. Wilson (Takotna lead)	ADF&G Division of Subsistence
Local research assistants	Kristen Kruger	Anvik
	Sherry Kruger	Anvik
	Stephanie Deacon	Grayling
	Hannah Maillelle	Grayling
	Jordan Alexie	McGrath
	Phillip Edwards, Jr.	McGrath
	Renae Egrass	McGrath
	Katrina Jewell	McGrath
	Frank Miller	McGrath
	Roberta Moeller	McGrath
	Candace Waruch	McGrath
	George Berry	Napakiak
	Mabel Constantine	Napakiak
	Nathan Evan	Napakiak
	Kaleb Kusayak	Napakiak
	Wassillie Pavilla	Napakiak
	Miranda White	Napakiak
	Ishmael Andrew	Napaskiak

-continued-

Table 2-1.–Project staff.–Page 2 of 2

Task	Name	Organization
Local research assistants, continued	Francine Larson	Napaskiak
	Adrian Wassillie	Napaskiak
	Carl Williams	Napaskiak
	Rebecca Alexia	Nikolai
	Daniel Esai	Nikolai
	Angela Tony	Nikolai
	Nick Changsak Jr.	Russian Mission
	James Housler	Russian Mission
	Amanda Goods	Takotna
	Tyler Goods	Takotna
	Robert Perkins	Takotna

for each community, the tribal councils of each community selected local surveyors for the research in their community. These community contractors were paid for their time in orientation and survey review and by the number of surveys they completed. In the study communities, an ADF&G employee acted as the community lead for the data collection, and conducted an orientation and training session with community assistants. At the end of training, each researcher selected a group of households to survey and made appointments by phone, VHF radio, and in person to conduct surveys. Surveyors worked in teams of two: 1 community surveyor and 1 ADF&G staff member. Surveys were conducted in person, usually at the respondent's home, at a time selected by the respondent. Community workers administered the surveys in most cases. ADF&G employees conducted all of the mapping.

Either the male or female head of each household answered questions about the household as a whole. Sometimes, both heads of the household or other family members would assist the respondent by providing information.

Researchers attempted to survey all occupied households in the study communities. Across the region, surveys were completed for 371 of 554 households (67%) (Table 2-2).

Key respondents for the ethnographic interviews were selected based on a combination of household level harvest survey results and recommendations by other community members using a snowball method. Researchers attempted to interview a representative cross-section of the community with attention to gender, age, and subsistence experience. For all communities, in total, researchers conducted 33 richly informative interviews with 37 key respondents. Interviews were on average approximately 1 hour in duration. Respondents were given an honorarium for their time and the wealth of information they shared with researchers.

At the conclusion of the survey administration and interviewing process, researchers convened again for project evaluation meetings. They discussed the performance of the instrument, subjectively assessed the quality of the data, and made suggestions to improve the survey process in the future.

Surveys were coded for data entry by ADF&G staff during fieldwork. After survey data and map data were entered, analyzed, and summarized, ADF&G community leads returned to each community between No-

Table 2-2. – Sample achievement for 8 communities on the Kuskokwim and Yukon rivers, 2011.

	Anvik	Grayling	McGrath	Napakiak	Napaskiak	Nikolai	Russian Mission	Takotna
Households in community	32	55	142	89	96	39	79	22
Sampled households	24	41	108	56	56	26	46	14
Percentage of households sampled	75.0%	74.5%	76.1%	62.9%	58.3%	66.7%	58.2%	63.6%
Households unable to be contacted	5	10	22	8	28	6	16	5
Households declined to be interviewed	3	4	12	25	12	7	17	3
Sampled population	66	158	271	199	280	78	234	33
Estimated population	88.0	212.0	356.3	316.3	480.0	117.0	401.9	51.9

Source ADF&G Division of Subsistence household surveys, 2012.

vember 2012 and May 2013 to conduct community review meetings. They provided attendees with summary tables of harvest and income estimates and showed each community a Microsoft PowerPoint presentation summarizing the results, including mapped data. During these visits, community leads conducted follow-up ethnographic interviews where necessary. Any follow-up information was integrated into the overall analysis of harvest and use practices within each community.

Data Analysis

Survey responses were coded following standardized codebook conventions used by the Division of Subsistence to facilitate data entry. Data were stored within a Microsoft SQL Server[1] at ADF&G in Anchorage. Database structures included rules, constraints, and referential integrity to ensure that data were entered completely and accurately. Data entry screens were available on a secure Internet site. Daily incremental backups of the database occurred, and transaction logs were backed up hourly. Full backups of the database occurred twice weekly. This ensured that no more than 1 hour of data entry would be lost in the unlikely event of a failure. All survey data were entered twice and each set was compared to minimize data entry errors.

Once data were entered and confirmed, information was processed with the use of the Statistical Package for the Social Sciences (SPSS), Version 16. Initial processing included standardized logic checking 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 in units of numbers of animals, gallons, or buckets were converted to pounds usable weight using standard factors (Appendix C).

SPSS was also used 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 situationally. The Division of Subsistence has standardized practices for dealing with missing information, such as minimal value substitution or use of an average response for similarly characterized households. Typically, missing data are an uncommon,

1. Product names are given because they are established standards for the State of Alaska or for scientific completeness; they do not constitute product endorsement.

randomly occurring phenomenon in household surveys conducted by the division. In unusual cases where a substantial amount of survey information is missing, the household survey is treated as a "nonresponse" and not included in community estimates.

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

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

where:

$$\bar{h}_i = \frac{h_i}{n_i} \tag{2}$$

H_i = the total estimated harvest (numbers of resource or pounds) for the community *i*,
$\bar{h}_i$ = the mean harvest per returned survey
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 SE 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 a SD, V, and SE:

$$CL\%(\pm) = \frac{t_{\alpha/2} \times \frac{s}{\sqrt{n}} \times \sqrt{\frac{N-n}{N-1}}}{\bar{x}} \tag{3}$$

where:
S = sample standard deviation,
n = sample size,
N = population size,

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

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 away from the sampled mean.

Summaries of results for each community surveyed were added to the Division of Subsistence CSIS. This publicly accessible database includes community-level findings only, not household-level information. Food security responses were analyzed following USDA procedures identified in Bickel et al. (2000) to provide comparability between the Central Kuskokwim Subsistence Research Study results and USDA results for Alaska and the nation.

Chapter 3: Comprehensive Survey Results McGrath, 2011

Jeff Park

For 10 days in March and April of 2012, ADF&G researchers surveyed 108 of 142 households (76%) in McGrath. Expanding for the 34 unsurveyed households, the residents of McGrath's estimated total harvest of edible pounds (lb) of wild foods between January and December 2011 was 84,255 lb (±10%). The average harvest per household was 593 lb; the average harvest per person was 237 lb. During the study year McGrath residents harvested 83 different species of fish, wildlife, and vegetation.

Three species—moose, Chinook salmon, and coho salmon—accounted for 67% of the total harvest in 2011 (Figure 3-1). Moose was by far the most used resource, accounting for 45% (38,130 lb) of McGrath's 2011 harvest of wild food. McGrath residents harvested an estimated 76 moose in 2011. Chinook and coho salmon together accounted for an additional 22% (18,272 lb). Sheefish accounted for approximately 4% of the harvest; chum salmon accounted for 4%, and northern pike, sockeye salmon, black bear, and blueberries each accounted for 3% of the total harvest. A wide range of other wild resources made up the remaining harvest for 2011.

This chapter summarizes findings from the household surveys, including demographic characteristics, responses to harvest assessment questions, harvest estimates, employment characteristics, household income, and food security. Harvest numbers are expanded estimates. Additional tables appear in Appendix D. Results

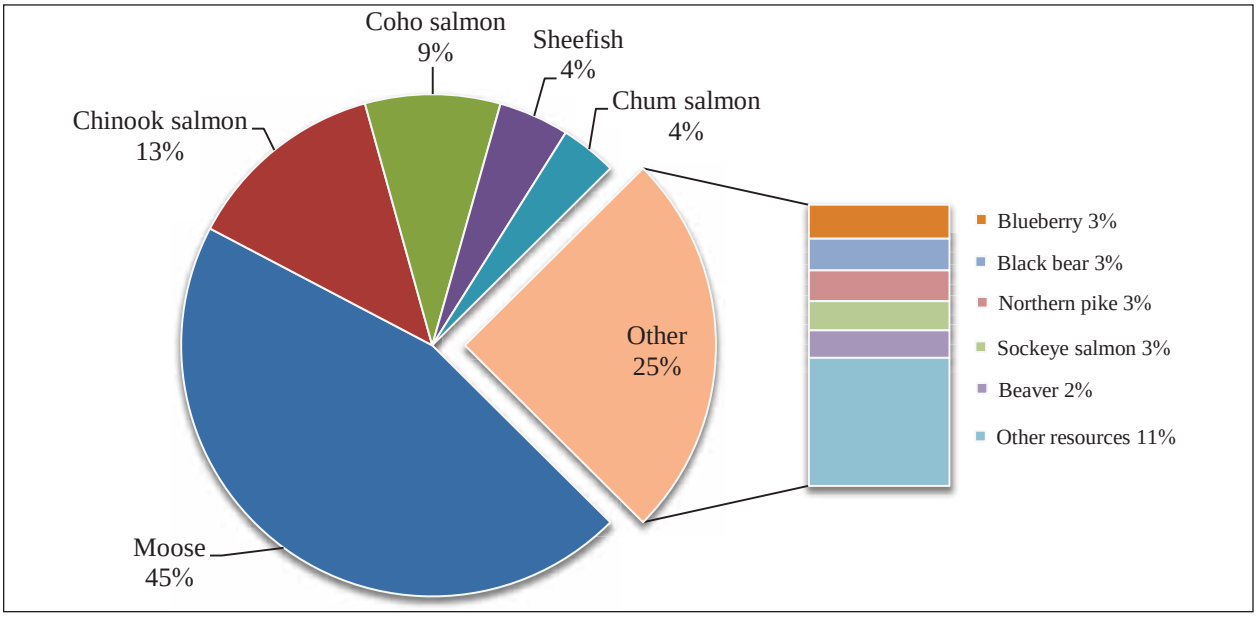


Figure 3-1.–Top 10 species harvests ranked by estimated edible weight, McGrath, 2011.

from this survey are available online in the Division of Subsistence Community Subsistence Information System (CSIS).

While in McGrath, researchers also conducted 8 ethnographic interviews involving 8 men and 1 woman. All respondents were knowledgeable, active subsistence harvesters, ranging in age from 38 to 78. Most respondents had life long experience subsistence fishing, hunting, and gathering in the region. These interviews documented specific knowledge regarding harvest effort, processing and preservation, gear types, and species used, over the seasons and throughout time.

About McGrath

McGrath is located on the south bank of the Upper Kuskokwim River at the mouth of the Takotna River, about 221 miles northwest of Anchorage and approximately 300 air miles from Kuskokwim Bay. McGrath functions as a transportation, communications, and supply center for the region, which includes the villages of Takotna, Nikolai, and Telida.

Now referred to as Old McGrath or "Old Town," the original location of the village was on the north bank of the Kuskokwim River. This location was known as "Tochak," an Upper Kuskokwim Athabascan word meaning "Takotna mouth," which described the confluence of the Takotna River with the Kuskokwim River. The original residents of this region, the Upper Kuskokwim Athabascans or *Dichinanek' Hwt'ana*, used this site as a meeting place to trade with Tanana Athabascans of Lake Minchumina to the northeast (Oswalt 1980:55). Unified by the Upper Kuskokwim Athabascan language, these people lived in small, dispersed families or clans of only a few households without forming large, permanent settlements in the region (Zagoskin 1967:272). Prior to Russian contact, families were mobile and traveled throughout the region over the different seasons to harvest a variety of resources—primarily land mammals such as caribou, bears, sheep, beaver, and small game. Some families traveled to downstream fish camps in the fall to harvest salmon and whitefish, however fishing was secondary to hunting in the region (Hosley 1981:618–619). Trading networks were extensive, with overland trails and river routes that allowed the Upper Kuskokwim people to exchange goods with people from the Yukon River, elsewhere on the Kuskokwim River, and as far away as Cook Inlet (Deaphon 2004:68).

Several Russian expeditions led by Fedor Kolmakov in the 1830s likely represent the first direct trade between local inhabitants and Russian explorers. The Kolmakov Redoubt at the mouth of the Holitna River, approximately 150 miles downriver from McGrath, became the primary base of Russian operations on the Kuskokwim River. From there, traders made annual trips upriver to extend the fur trade to Upper Kuskokwim groups (C. M. Brown 1983:57–60). After the purchase of Alaska in 1867, Russian fur traders were replaced by American representatives of the Hutchinson & Cole Company, which eventually became the Alaska Commercial Company (Oswalt 1980:11).

In addition to fur trading, the area attracted prospectors in search of gold and other minerals around the

turn of the 20th century. In 1904 Abraham Appel established a small trading post at the mouth of the Takotna River, trading for furs and supplying provisions for passing prospectors (Kitchener 1954:177). Two gold strikes on Innoko River tributaries—Ganes Creek in 1906 and Ophir Creek in 1908—led to a great influx of people passing through the area. Though these strikes were on Yukon River tributaries they were only 25 miles west of McGrath, and access to them was much easier from the Kuskokwim River (Oswalt 1980:14). Hundreds of people came into a region that, prior to this period, had only seen an occasional prospector or trapper passing through. Routine riverboat deliveries were established to meet the demand for supplies and mail. McGrath's location made it a logical spot for a regional hub to sprout because it was at the uppermost part on the Kuskokwim River that was navigable by riverboats with up to a 4 foot draft (Oswalt 1980:55). In 1907, another trading post was built by the town's namesake, Peter McGrath, a former U.S. Marshal from Nome. McGrath was appointed as U.S. Commissioner of the Kuskokwim by the Nome judge and was sent to the site to record new mining claims in the Innoko District (Deaphon 2004:72). However, even at this time, it appears that the site was still primarily a meeting place for trading and purchasing supplies and did not yet have a significant year round population (C. M. Brown 1983:171). The Northern Commercial Company built a store in McGrath in 1909. In addition to using furs and gold as a medium of exchange, the store used a local currency in the form of trade tokens, known as bingles. Bingles, used throughout Alaska, became popular as a result of a shortage of United States currency. More convenient than paying with furs or gold, these tokens also had the benefit of guaranteeing a return customer (Gould and Bressett 1965).

With more people drawn to the region by the possibilities of resource extraction, there was increased focus on access. Because the riverboats were not able to travel the Kuskokwim and Innoko rivers from October to May, travelers relied on trails for access to the region during winter (Deaphon 2004:73). In 1908, in an effort to increase access to the lands between the upper Kuskokwim and Yukon rivers, now commonly known as western Interior Alaska, the Alaska Road Commission sent a party to survey the Seward to Nome trail, which passed through McGrath. In 1910 a small crew completed marking what would come to be known as the Iditarod Trail. Roadhouses, which provided food and rest for travelers and their dogs, were quickly established and were soon spaced no more than a day's travel apart (Collins 2004:74–76). The Iditarod Trail eventually brought hundreds of miners through McGrath on their way to the Innoko gold districts during this period and contributed to McGrath becoming a regional supply center.

In February 1924 Carl Ben Eielson made the first airmail flight in Alaska. McGrath was the first stop in a 10 hour circuit that would have previously taken up to 2 weeks by dog team (Deaphon 2004:78). This historic flight signaled the end of the reliance on trails to access the region. The roadhouses began to disappear, and trails were only used for intraregional travel. After a major flood in 1933, some residents began moving across the Kuskokwim River to the present day town site of McGrath. Recurrent floods and gradual changes in the course of the river left the old town site useless as a supply stop, and eventually led to the move to the town's present location by the 1950s (Stokes 1985:35). In 1940, the Federal Aviation Administration built a runway, and McGrath was used as a strategic airplane refueling site for the Lend–Lease Program between

the United States and Russia during World War II.[1] In the early 1940s an Alaska Territorial Guard unit was established in McGrath (Oswalt 1980:16). Military medical facilities as well as housing for 181 men were built in 1942 (Bush 1944:113).

McGrath was incorporated as a second class city in 1975 and is now the location of a wide variety of community and regional services. The Iditarod School District is centralized in McGrath's K–12 public school. McGrath is also home to the United States Fish and Wildlife Service Innoko National Wildlife Refuge headquarters. Much of the region's emergency services are centralized in McGrath. This includes the Alaska State Troopers, a state wildlife trooper, Kuskokwim Valley Rescue Squad, and a village public safety officer. Also, McGrath has a subregional community health care center managed by Southcentral Foundation in Anchorage. Fire services are provided by a city managed volunteer fire department and the Alaska Department of Natural Resources, Division of Forestry, whose Southwest Area District headquarters are located in McGrath. This district contains 86 million acres and has experienced an average wildfire burn of 165,000 acres per year over the past 23 years (Baumgartner et al. 2010). Water service is provided by the City of McGrath and is piped to nearly all households in the community. Sewage is mostly accounted for by individual septic systems, however the city does provide sewage service to about 20% of the households. Freight is supplied to McGrath through a state operated runway and routine barge deliveries throughout the summer.

Doyon, Limited is the regional corporation for the villages of McGrath, Takotna, Nikolai, and Telida. These 4 villages combined to create the village corporation MTNT, Limited, which is centralized in McGrath. MTNT, Limited provides McGrath with diesel fuel generated electricity through the McGrath Light and Power Company. Finally, the McGrath Native Village Council, under the regional Native nonprofit Tanana Chiefs Conference, is the local tribal government.

Seasonal Round

Those who rely on subsistence resources in McGrath, as in the rest of Alaska, must take advantage of the opportunities that each season provides. Also, efficiency is necessary to minimize the intense effort and monetary cost associated with living off the land. Every subsistence hunting or fishing trip can be a chance to harvest a variety of resources; a fall moose hunter is also an opportunist, ready to harvest birds, fish, and berries along the way. One McGrath key respondent summarized his subsistence lifestyle:

> If you don't do something you pay for it down the road. So you get into the rhythm of what goes on in Alaska, whether its spring or fall or mid-summer, 'cause there's always something to be harvested to make sure that you have enough for the next part of the year. (040212MCG1)

March and April are ideal months for many subsistence activities, because the weather is growing milder, the days are longer, and there is still snow and ice to allow for easy travel by snowmachine. March is a popu-

1. Alaska Department of Commerce, Community, and Economic Development (ADCCED) Division of Community and Regional Affairs, Juneau: "Alaska Community Database Online: Community Information." Accessed August 2013. http://commerce.alaska.gov/cra/DCRAExternal/community.

lar time for beaver trapping because the trap holes in the ice do not freeze as solidly as they do in the colder winter months, so they require less work to maintain (040212MCG1). Gathering wood for the coming winter is also common at this time because trees can be transported directly from the forest to the wood shed using a snowmachine and sled. Also, in late March the water on the Kuskokwim River begins to rise under the ice and grayling and whitefish begin to move from the main river into the smaller tributaries (040312MCG3). April is an ideal time for ice fishing because the fish are moving, ice fishing holes do not re-freeze as rapidly, and it is not yet so warm that there is standing melt water on the river ice. By mid-April the first geese begin to show up and the spring bird hunt is welcomed as the first opportunity since early winter to get fresh meat for many of those who did not harvest whitefish or beaver (040512MCG6).

Breakup in McGrath usually happens in mid-May. An ice-free river opens up several new opportunities for subsistence harvesting. Some residents collect driftwood logs that were dislodged from the river bank during breakup by towing them to shore with their boat. Beaver, commonly used for both their meat and fur, are hunted from boats at this time. Also, the harvest of ducks and geese continues throughout May and June, during the spring migration to their nesting grounds (040512MCG6). Fish nets are set in May to catch whitefish. Broad whitefish, humpback whitefish, and sheefish, the largest whitefish species and also known as inconnu, are caught as they begin to move from the main river into their feeding areas in the lower portions of the Kuskokwim tributaries (R. J. Brown et al. 2012:177). These nets also catch northern pike as they migrate from spawning sites lower in the drainage upstream to smaller tributaries and lakes. Round whitefish, which were once caught using traps and used to feed dogs (Stokes 1985), are no longer a commonly utilized resource in McGrath.

Whitefish continue to be caught in setnets through early and mid-summer (040212MCG1). Many residents also target whitefish by rod and reel during this period:

> [Sheefish] would be to me the most readily available good meat fish…and, yeah, we just go down river here there is a little creek…when it runs clear, the sheefish stack in…If you catch that when the water is clear, you just go down there and slay them with the mixing run with the rod n reel. (040512MCG6)

Salmon is an important subsistence food for most McGrath households. Many respondents reported that they regularly go downriver, often to the Swift or Takluitsik rivers, to fish for salmon; by the time salmon reach McGrath, they are past their prime and have a low oil content, which makes them less nutritious as well as less palatable to some residents:

> The salmon really are terrible by the time they get to McGrath. If anybody has told you different… that's not the case. They are fish that people in other parts of the state wouldn't even dream of eating. (040512MCG6

A few residents maintain salmon setnets at the mouth of the Takotna River and catch a few chum, Chinook,

and coho salmon throughout the summer. The Chinook salmon run typically begins in early to mid-June, peaks around the end of June or early July, and continues until late July. One McGrath resident maintains a fish wheel on the Kuskokwim River near McGrath. This respondent reported catching 7 or 8 Chinook salmon per day at the peak of the run. Chum salmon and an occasional sockeye show up in early July (040612MCG7). Chum salmon, also called dog salmon, are not utilized in McGrath nearly as much as they were prior to the popularization of snowmachines and the resulting decrease in the number of sled dog teams:

> …if I catch [chum salmon], I give them away to the people who have dogs. When I was growing up on the Yukon, we would catch a bunch of dogs [chum salmon] and we would just cut 'em up and just you know, just split 'em and dry 'em for the dogs. We don't eat dog fish, very little. (040412MCG5)

Finally, the coho salmon run grows strong by mid-August and continues until late September.
In addition to salmon, berries are harvested throughout summer and early fall. Berry picking begins in July with scattered patches of cloudberries (locally known as salmonberries) and continues into August and September with an abundance of blueberries and lowbush cranberries, which are picked primarily along the road east of town. August also brings shaggy mane mushrooms, which many residents pick from their yards. Some respondents reported getting ducks, primarily mallard and pintail, in September when the migratory waterfowl season re-opens. However one key respondent stated, "by September 1st, when the normal duck and goose season is on here in McGrath on the Kuskokwim, most of the geese have already flown south" (040212MCG1).

Moose, once uncommon in the Upper Kuskokwim area (Collins 2004:132–133), is now a very important subsistence resource for McGrath residents (Figure 3-2). The moose population has fluctuated throughout the 20th century. The 1960s and early 1970s was a time of moose abundance that one respondent attributed to predator control:

> In about the mid-sixties [2 McGrath residents] went out and cleaned out a bunch of wolves… They were getting a 50 dollar bounty for them…I remember 200 wolves stacked out in front of town…Shortly after that the moose population just went up…we were allowed 2 moose per person. (040612MCG7)

The State of Alaska began predator control again in the 1990s in response to low moose numbers, and moose are currently abundant in the region (040612MCG7). During the fall season—September 1st through October 1st—the majority of McGrath households hunt for moose, which is often their subsistence staple in successful years.

> …the weather is cold enough that you can hang your moose, and he freezes solid in your shed… traditionally he just goes into the shed and you bring a quarter in at a time, or a chunk in at a time. (040212MCG1)

Black bear are taken opportunistically throughout the fall and are occasionally used as an alternate meat

Figure 3-2.–During the fall season, the majority of households hunt for moose, McGrath, 2011.

source in case a household does not have enough moose meat. Caribou are not a reliable replacement meat source for moose since the caribou population declined and migration patterns shifted away from the region in the 1920s (Stokes 1985:84). Caribou are now only a reasonable source of meat for McGrath residents with an airplane (040512MCG6).

Whitefish are targeted with setnets again in the fall as they move from the tributaries into the Kuskokwim River where they will overwinter (R. J. Brown et al. 2012:191). Also, the respondent who maintains the fish wheel reported catching a large number of whitefish in the fall. "Whitefish in the fall, you can catch… hundreds of them, if you get in the right spot. But, I would say 50 or 60 per day, whitefish." (040612MCG7)

Freeze up typically occurs in early November. Soon after this time setnets can be placed under the ice. This is a valuable opportunity to get a large amount of fish without expending a lot of time and effort in preserving them—fish caught at this time of year can remain frozen outdoors all winter. Whitefish are caught in these nets as they move away from their spawning grounds back toward the main river. Burbot, also moving at this time of year, are caught in these setnets as well (040312MCG3).

Several McGrath residents supplement their income by trapping furbearers throughout the winter. The most profitable species is marten because they tend to be plentiful, and the fur has a relatively high value. McGrath trappers also target wolverine, wolves, red fox, river otter, and lynx, and may incidentally catch mink, weasels, and coyotes. While all of these species are almost solely used for their fur, 1 family reported

that lynx is one of their favorite meats. Upland birds, primarily spruce and ruffed grouse, are also hunted throughout the winter, as well as snowshoe hares, which are hunted or occasionally snared (040512MCG6).

Summer and fall are the most important times of year for most McGrath households, as that is the time of year that they harvest their most important subsistence resources: moose and salmon. However, McGrath residents also rely on a wide range of other resources, which keeps them busy throughout the year.

Demographics

The 108 surveyed households included 271 people. Expanded for the 34 unsurveyed households, this study estimates the population of McGrath to be 356 individuals. The mean household size was recorded as 2.5 occupants per dwelling with a maximum number of 7 individuals. The mean age in McGrath was 36 years old, and the eldest resident was 84 years of age. The average length of residency in McGrath was 19 years. Our study estimated the population of McGrath to be 59% Alaskan Native. For comparison, the United States Census Bureau's decennial estimate for 2010 was 346 individuals in McGrath. The U.S. Census shows McGrath's population growing steadily from 241 in 1960 to a peak of 528 in 1990 (Figure 3-3). One key respondent suggested that a decrease in McGrath's population in the 1990s was due to the closing of a large Federal Aviation Administration communications complex that had been there since 1940.

Figure 3-4 is a population profile expanded from the respondent households that reflects a more even distribution of population age than is seen in most other Kuskokwim villages. This figure also shows a relatively older population when compared with other Kuskokwim river communities, with approximately 47% of the population age 40 or greater. The genders are fairly balanced with 52% of the population male and 48% female (Appendix Table D1-1; Appendix Table D1-2).

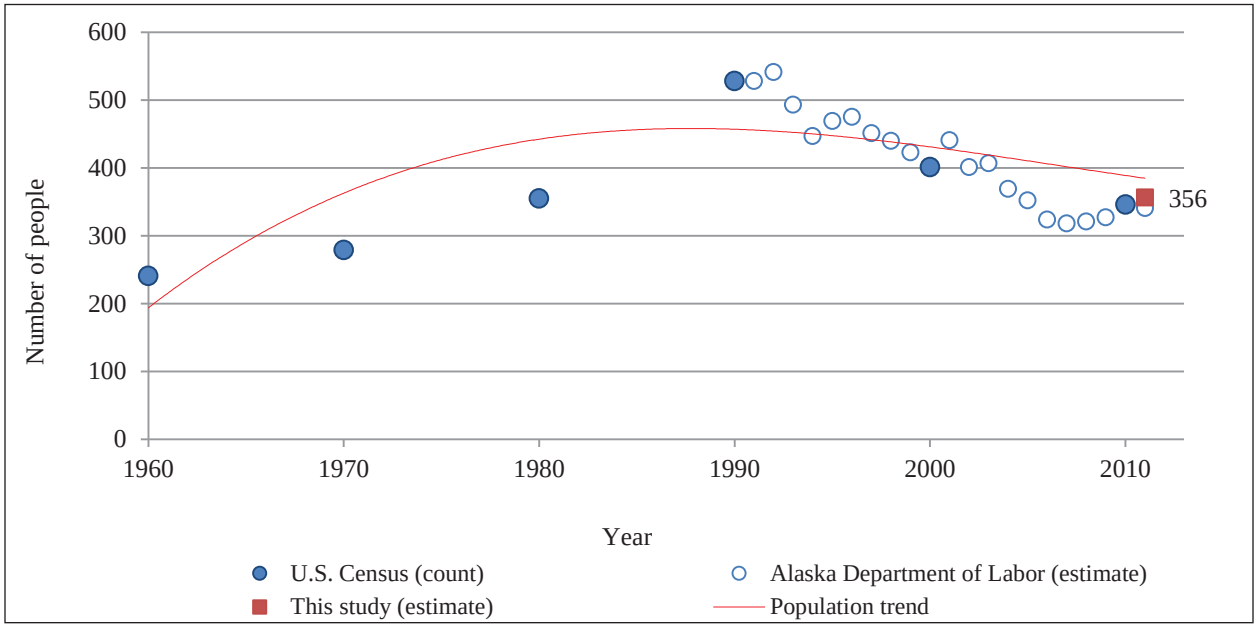


Figure 3-3.–Population history, McGrath, 2011.

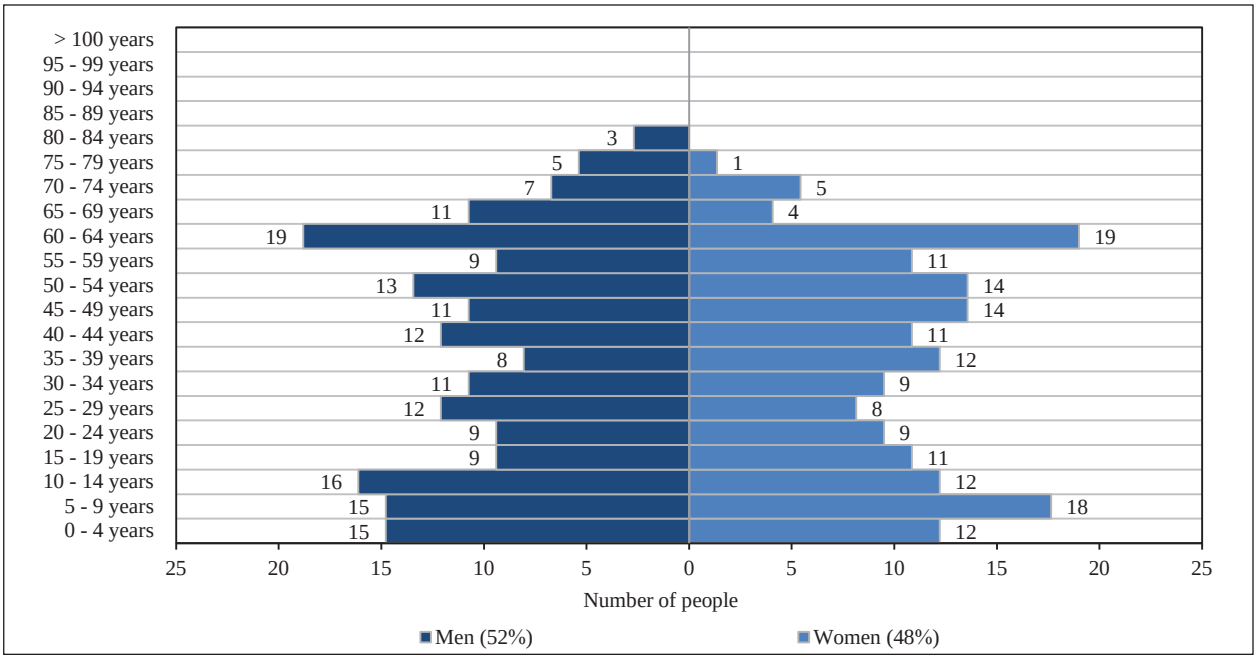


Figure 3-4.–Population profile, McGrath, 2011.

Wild Food Uses and Harvests

The primary purpose of the household survey was to collect information about the harvest and uses of edible wild foods. Tables and figures in this section summarize responses to the harvest and use questions expanded for unsurveyed households. Respondents were asked whether their household used or tried to harvest each resource during the 2011 study year. If a household tried to harvest a resource, they were asked how much they harvested, and depending on the resource category, they were asked for additional details of the harvest, such as gear type used, sex of the animal, or month of harvest. Households were also asked if they received or gave away any wild foods. Tables 3-1 through 3-6 show the results of these survey questions in the amount of estimated edible pounds harvested for each category in addition to the percentages of households reporting harvesting activities, receiving wild foods, or giving them away.

Ninety-six percent of McGrath households harvested at least 1 subsistence resource during the study year and 99% reported using at least 1 resource. Households on average harvested 12 different subsistence resources and used 14 (Appendix Table D2-1). Collectively, the community used 109 different wild resources, the most of any study community in this project. McGrath residents harvested 83 different resources, which demonstrates that 26 different subsistence resources were received only from outside the community—this too is the largest number of any community studied in this project. The most widely used single resource was moose (91% of households). Moose also accounted for nearly half of the community's subsistence harvest by weight (38,130 lb or 45%).

Figures 3-5 and 3-6 summarize harvest and use by resource category. McGrath residents reported that salmon (89%) was the most widely used resource category; the most commonly used salmon species be-

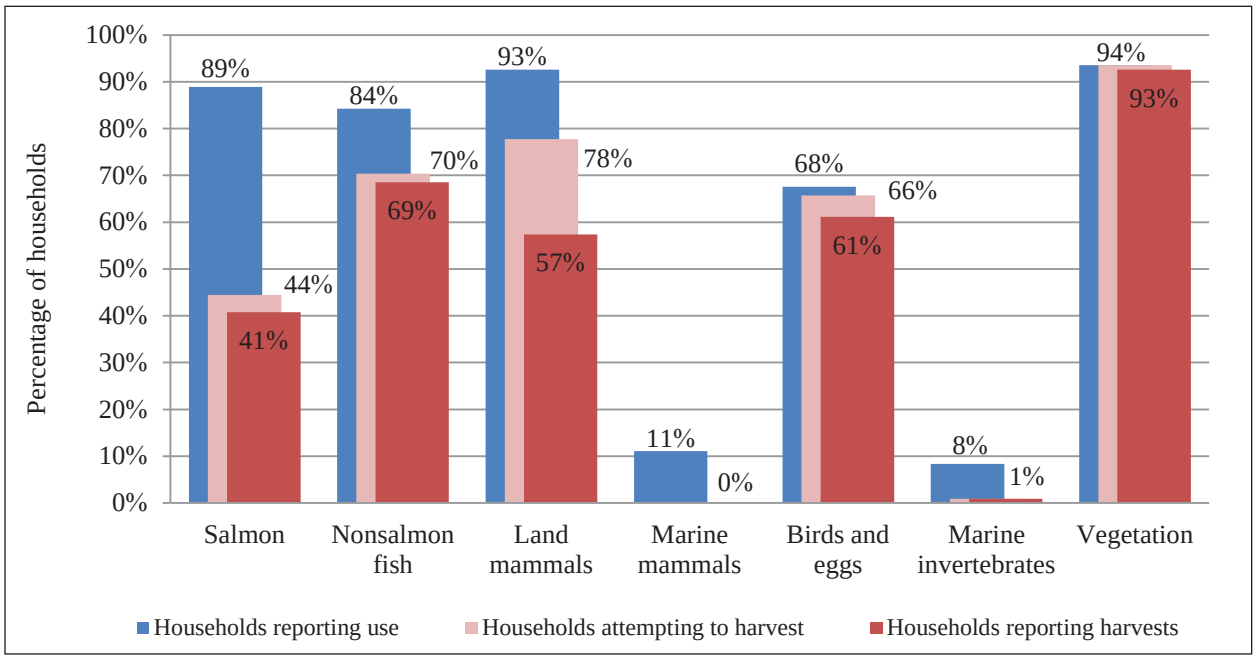


Figure 3-5.–Percentages of households using, attempting to harvest, or harvesting subsistence resources by category, McGrath, 2011.

ing Chinook (71%). Also, fish account for 6 of the 10 most heavily harvested species by edible pounds. Ninety-three percent of households harvested some berry or other edible plants, making vegetation the most commonly harvested resource category in McGrath. McGrath residents harvested more blueberries (2,536 lb) and cranberries (1,487 lb) than any other vegetation resource.

Sharing, roughly measured by instances of households giving away and receiving subsistence foods, was high for many resource categories, particularly fish, land mammals, and vegetation. An estimated 77% of McGrath households reported receiving fish, primarily Chinook salmon (54% of households). Sixty-seven percent received land mammals, most commonly moose (60%) and black bear (12%). Finally, 51% of McGrath residents reported receiving and giving away some type of vegetation. Birds were shared considerably less, with 21% of households reporting that they received birds.

Significant numbers of households reported harvesting 4 of the 5 species of Pacific salmon: Chinook, coho, chum, and sockeye salmon (Table 3-1). McGrath harvested an estimated 23,517 lb of salmon in 2011. This amounts to an average of 166 lb of salmon per household and 66 lb per McGrath resident. Only 1% of McGrath households reported using pink salmon. While 89% of households used salmon in 2011, a little less than half (41%) reported harvesting salmon. Forty-six percent of the salmon harvested by McGrath residents were Chinook (10,933 lb). McGrath harvested an estimated 77 lb of Chinook salmon per household, which equates to an average of 31 lb per capita. Coho salmon contributed an additional 7,339 edible pounds (31%) to McGrath's total salmon harvest, followed by chum salmon (3,059 lb, 13%), and sockeye salmon (2,176 lb, 9%). Less than half of the households that used sockeye, coho, and Chinook salmon actu-

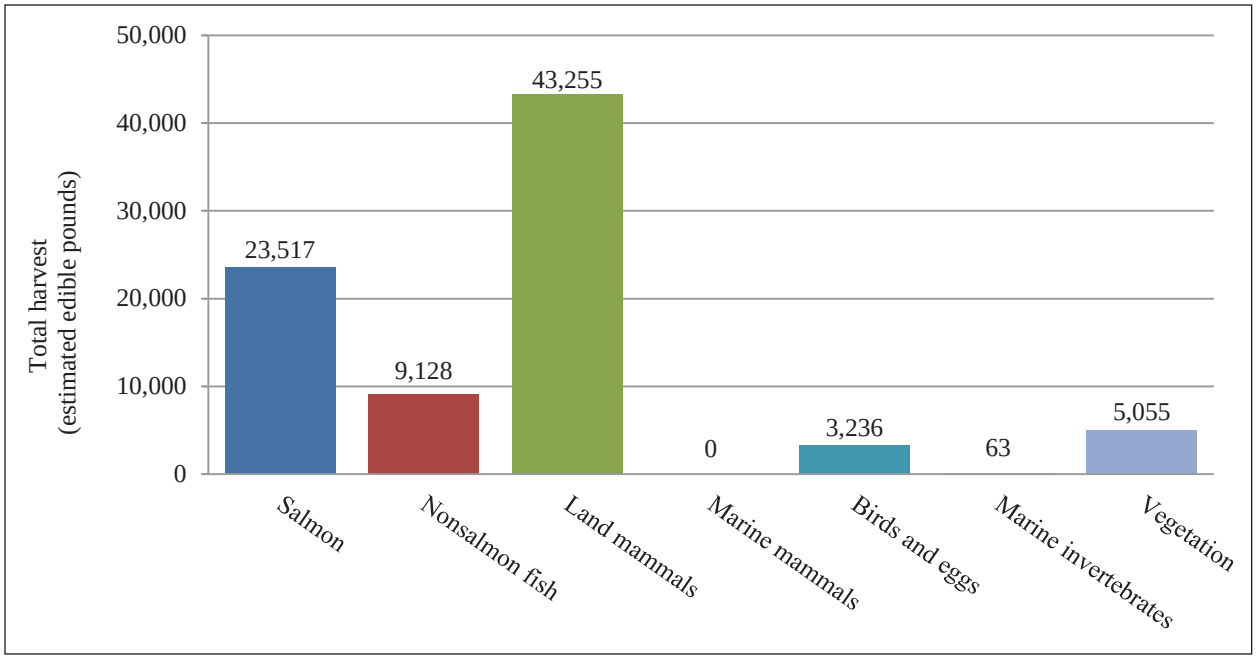


Figure 3-6.–Total estimated edible pounds harvested by the community by resource category, McGrath,2011.

ally harvested these salmon. This demonstrates that a large number of McGrath households relied solely on other households for the salmon they used in 2011. Of the salmon harvest, 501 coho (36%) and 463 chum salmon (77%) were used to feed dogs—likely the few dog mushing teams that remain in the community. Considerably fewer Chinook salmon [2] (33 individuals or 3%) and zero sockeye salmon were given to dogs (Appendix Table D2-2).

Fishers harvested salmon using drift and set gillnets, as well as by fishing with rod and reel (Figure 3-7). The primary method of harvesting salmon in the McGrath area is with a set net, however many McGrath residents fish with a driftnet lower on the Kuskokwim River just above Stony River. Set gillnets accounted for 74% (17,515 lb) of the salmon harvested and particularly dominated the chum and coho salmon harvest, accounting for 96% and 83% of the harvest respectively. Subsistence driftnets were responsible for a much smaller percentage of the salmon harvest (11% or 2,559 lb). Harvest by rod and reel accounted for 21% of the fish taken, and most notably accounted for 16% of the Chinook salmon taken by the community.

Some McGrath respondents reported descending the Kuskokwim River to fish because salmon on the lower river have a higher fat content and taste better than those caught on the Upper Kuskokwim River.

> To eat fish strips from fish caught in McGrath or between McGrath and Nikolai, compared with fish strips with anywhere else in the state, it's amazing. It's a piece of dry beef jerky with zero oil to it. And they are light colored instead of that nice orange color that fish strips from everywhere else have. (040512MCG6)

2. Chinook salmon used for dog food are often unfit for human consumption due to conditions such as fish spoilage or disease.

Table 3-1. – Estimated use and harvest of fish, McGrath, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Fish										
Salmon										
Chum salmon	28.7%	23.1%	22.2%	10.2%	9.3%	3,059.2 lb	21.5 lb	8.6 lb	600.9 ind	± 24%
Coho salmon	52.8%	27.8%	24.1%	36.1%	19.4%	7,338.9 lb	51.7 lb	20.6 lb	1,387.3 ind	± 33%
Chinook salmon	71.3%	35.2%	30.6%	53.7%	20.4%	10,932.6 lb	77.0 lb	30.7 lb	1,156.9 ind	± 24%
Pink salmon	0.9%	0.9%	0.9%	0.0%	0.0%	11.1 lb	0.1 lb	0.0 lb	3.9 ind	± 97%
Sockeye salmon	30.6%	13.0%	11.1%	24.1%	12.0%	2,175.6 lb	15.3 lb	6.1 lb	431.7 ind	± 38%
Unknown salmon	0.9%	0.0%	0.0%	0.9%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**88.9%**	**44.4%**	**40.7%**	**68.5%**	**35.2%**	**23,517.3 lb**	**165.6 lb**	**66.0 lb**	**3,580.7 ind**	**± 20%**
Char										
Dolly Varden	5.6%	4.6%	3.7%	2.8%	0.9%	69.9 lb	0.5 lb	0.2 lb	50.0 ind	± 65%
Lake trout	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**5.6%**	**4.6%**	**3.7%**	**2.8%**	**0.9%**	**69.9 lb**	**0.5 lb**	**0.2 lb**	**50.0 ind**	**± 65%**
Trout										
Rainbow trout	0.9%	0.9%	0.9%	0.0%	0.0%	78.9 lb	0.6 lb	0.2 lb	39.4 ind	± 97%
Subtotal	**0.9%**	**0.9%**	**0.9%**	**0.0%**	**0.0%**	**78.9 lb**	**0.6 lb**	**0.2 lb**	**39.4 ind**	**± 97%**
Whitefishes										
Sheefish	50.9%	41.7%	36.1%	20.4%	17.6%	3,823.3 lb	26.9 lb	10.7 lb	682.7 ind	± 23%
Broad whitefish	25.0%	14.8%	14.8%	14.8%	11.1%	257.8 lb	1.8 lb	0.7 lb	184.1 ind	± 34%
Bering cisco	0.9%	0.0%	0.0%	0.9%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Least cisco	5.6%	4.6%	2.8%	2.8%	2.8%	59.7 lb	0.4 lb	0.2 lb	59.7 ind	± 86%
Humpback whitefish	21.3%	15.7%	14.8%	10.2%	7.4%	455.9 lb	3.2 lb	1.3 lb	227.9 ind	± 43%
Round whitefish	1.9%	0.9%	0.9%	0.9%	0.9%	98.6 lb	0.7 lb	0.3 lb	65.7 ind	± 97%
Unknown whitefishes	3.7%	0.9%	0.9%	2.8%	0.0%	2.1 lb	0.0 lb	0.0 lb	1.3 ind	± 97%
Subtotal	**63.9%**	**49.1%**	**45.4%**	**34.3%**	**26.9%**	**4,697.3 lb**	**33.1 lb**	**13.2 lb**	**1,221.5 ind**	**± 22%**
Anadromous/marine fish										
Pacific herring	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Eulachon (hooligan, candlefish)	0.9%	0.0%	0.0%	0.9%	0.9%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Unknown smelt	5.6%	0.9%	0.9%	4.6%	0.9%	118.3 lb	0.8 lb	0.3 lb	19.7 gal	± 97%
Pacific tomcod	1.9%	0.0%	0.0%	1.9%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Saffron cod	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Lingcod	0.9%	0.0%	0.0%	0.9%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Pacific halibut	27.8%	5.6%	4.6%	24.1%	3.7%	17.3 lb	0.1 lb	0.0 lb	17.3 lb	± 51%
Arctic lamprey	0.9%	0.0%	0.0%	0.9%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Black rockfish	1.9%	0.9%	0.9%	0.9%	0.9%	11.8 lb	0.1 lb	0.0 lb	7.9 ind	± 97%
Yelloweye rockfish	1.9%	0.0%	0.0%	1.9%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Stickleback (needlefish)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Subtotal	**32.4%**	**6.5%**	**5.6%**	**27.8%**	**5.6%**	**147.4 lb**	**1.0 lb**	**0.4 lb**		**± 79%**
Other freshwater fish										
Alaska blackfish	4.6%	4.6%	4.6%	0.0%	2.8%	319.5 lb	2.3 lb	0.9 lb	319.5 lb	± 64%
Burbot	2.8%	2.8%	2.8%	0.0%	0.9%	56.8 lb	0.4 lb	0.2 lb	23.7 ind	± 62%
Arctic grayling	54.6%	46.3%	41.7%	27.1%	16.8%	1,399.7 lb	9.9 lb	3.9 lb	1,999.5 ind	± 24%
Northern pike	38.9%	40.7%	36.1%	10.2%	13.9%	2,294.4 lb	16.2 lb	6.4 lb	458.9 ind	± 18%
Longnose sucker	2.8%	2.8%	2.8%	0.0%	1.9%	64.4 lb	0.5 lb	0.2 lb	92.0 ind	± 63%
Subtotal	**65.7%**	**59.3%**	**55.6%**	**32.4%**	**24.1%**	**4,134.8 lb**	**29.1 lb**	**11.6 lb**		**± 16%**
All fish	**96.3%**	**75.0%**	**72.2%**	**76.9%**	**48.1%**	**32,645.7 lb**	**229.9 lb**	**91.6 lb**		**± 17%**
All resources	**99.1%**	**96.3%**	**96.3%**	**92.6%**	**76.9%**	**84,254.7 lb**	**593.3 lb**	**236.5 lb**		**± 10%**

Source ADF&G Division of Subsistence household surveys, 2012.

Note "All resources" include all species of fish, wildlife, and plants reported on the survey.

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

One McGrath key respondent regularly maintains a fish wheel on the Kuskokwim River near town, but did not use it in 2011. This respondent described harvesting salmon throughout a typical summer and sharing with other households, or allowing other families to monitor the wheel and remove fish from the live trap that is connected to the fish wheel.

> During the week if somebody wants to check it I'll tell them, "You check it," and I'll leave it running. But they are responsible for taking all the fish out and keeping it clean. If they don't want to use it we just stop it and we don't catch any fish. (040612MCG7)

McGrath residents reported harvesting 16 different species of nonsalmon fish totaling 9,128 lb, and comprising approximately 11% of total wild food harvests by weight (Table 3-1). A few nonsalmon fish species, such as halibut, smelt, and black rockfish, were harvested far from the community of McGrath by a very limited number of households. However, several resident species were harvested by a very high percentage of households and make up a significant portion of McGrath's subsistence diet.

Sheefish, the largest whitefish in the Kuskokwim River, accounted for the most edible pounds of all nonsalmon fish (3,823 lb). Sheefish are harvested in set nets along the river banks and with rod and reel at the mouths of Kuskokwim River tributaries (040512MCG6). Half of McGrath households used sheefish in 2011 and the average amount harvested per household was 27 lb. Sheefish were primarily caught with rod and reel (1,959) and set gillnet (1,799) (Figure 3-7). One key respondent expressed how prized sheefish were to his family:

> …they are really oily and so if you make strips, we made strips out of them one year in Aniak, and they had as much or more oil than king salmon…we just fillet them, skin the fillets, then vacuum seal and freeze. And just take it out all winter and eat it. (040512MCG6)

Four other whitefish species were harvested by McGrath residents, however only 2—broad and humpback whitefish—were harvested by more than 3% of households. Broad and humpback whitefish were each harvested by 15% of households and together amounted to an average of 5 edible pounds of fish per household. Survey respondents indicated that these fish were caught by set gillnets and by jigging. One key respondent agreed:

> Whitefish are pretty readily available here year round to guys with a big net out. Pretty quick the ice fishing will get good and everybody in town will have whitefish, you know, catching them through the ice. And those are equally good for akutaq [Eskimo ice cream]. (040512MCG6)

After sheefish, northern pike was the second most harvested nonsalmon fish by weight. Thirty-nine percent of McGrath households harvested a total of 2,294 lb of northern pike. Respondents indicated that northern pike are caught using set gillnets under the ice in the spring, and by rod and reel fishing in sloughs and lakes throughout the summer. Arctic grayling, the third most harvested nonsalmon fish by weight (1,400 lb), was the most commonly harvested (by 42% of households) nonsalmon fish in McGrath, which also make it the

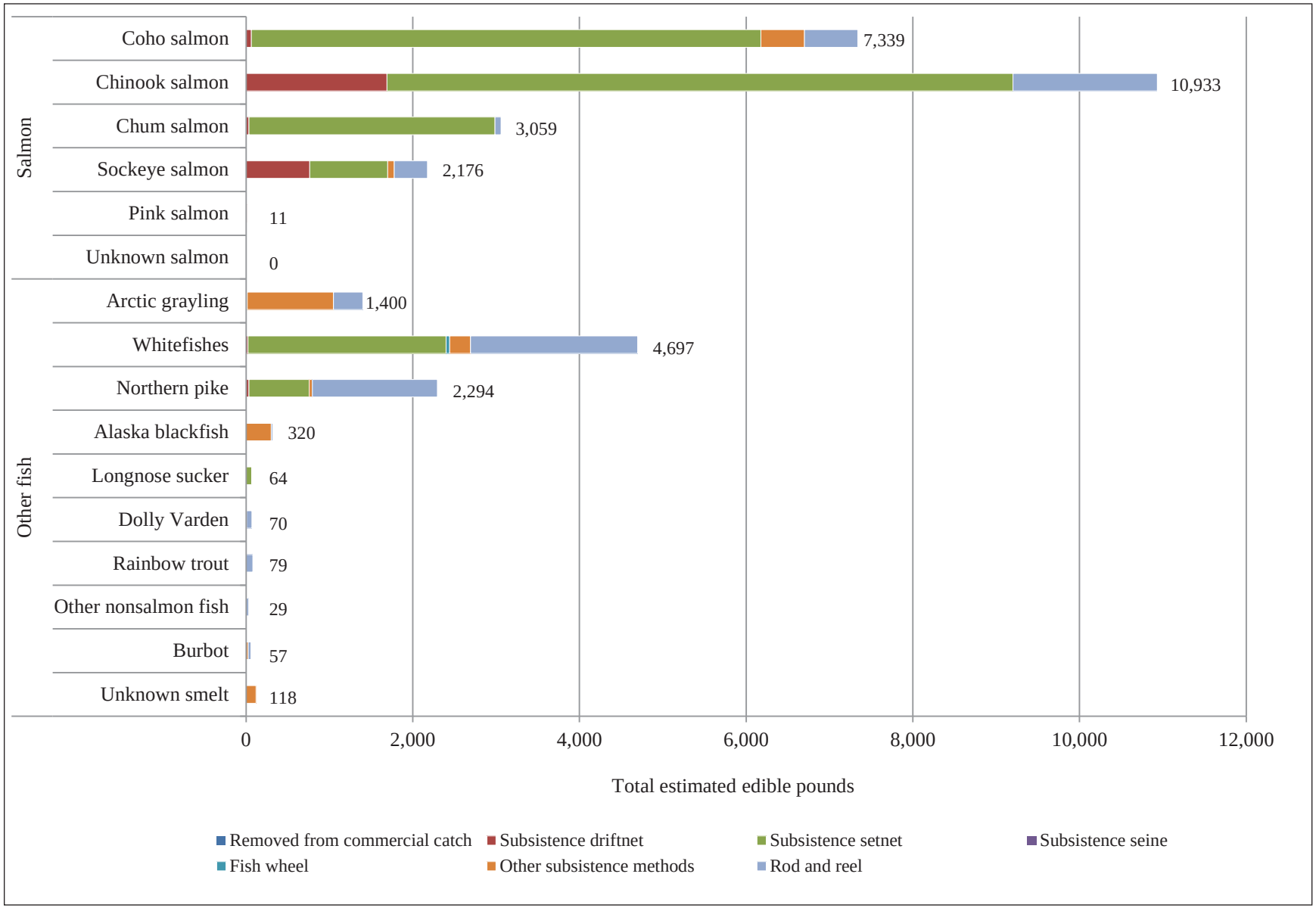


Figure 3-7.–Fish harvest by gear type, McGrath, 2011.

fourth most commonly harvested of all resources. Respondents reported harvesting the majority of grayling by jigging through the river ice in the spring. Others harvested grayling with rod and reel on Kuskokwim River tributaries throughout late spring and summer. Other nonsalmon fish used to a lesser degree include Alaska blackfish, which are caught in fish traps in the spring, and Dolly Varden and rainbow trout, both of which were caught with rod and reel. Together these species contributed, on average, less than 4 lb of food per household.

Land mammals made up an estimated 51% of McGrath's 2011 subsistence harvest, with moose comprising the majority of the edible weight (38,130 lb or 88%) (Table 3-2). Forty-six percent of the community's households harvested an estimated total of 76 moose, which provided an average of 269 lb of meat per household. Half of McGrath's households reported giving away moose meat, and 60% reported receiving it. The 108 households that attempted to harvest moose had a success rate of 60%. This rate demonstrates that the previously low moose population in the region is currently at a point of relative abundance. Though a 60% success rate shows an improvement over the 1990s, a period of low moose numbers, it does not guarantee a hunter's success. However, one key respondent had the opinion that "There are more moose; anybody who really wants to go out and hunt, they can get a moose" (040412MCG5). An estimated 165 McGrath residents hunted moose in 2011. Hunters reported a total effort of 1,307 moose hunting days for the community, which equates to approximately 8 hunting days per hunter (Appendix Table D1-3). Only bull moose were harvested in 2011, approximately 74 moose in September, and 3 in February (Appendix Table D2-3).

Black bear was used by one-quarter of McGrath households and provided 2,364 edible pounds of food to the community. Respondents described black bear meat as being good for variety in their diets and as a supplement to other resources. One respondent described their family's use of black bear: "We don't count on black bear meat. We count on moose meat … The bear meat, we eat some back straps and some hindquarter meat but give the rest away" (040512MCG6). Twenty-four percent of households attempted to harvest black bear, and 15% were successful. Key respondents reported that black bear are often not specifically targeted; instead they are taken when the opportunity arises—often during bird or moose hunting.

Beaver was the 3rd most harvested land mammal by edible pounds (2,051 lb, 180 individuals). Seventeen percent of McGrath's households harvested beaver and 25% of households reported using them for food. In addition to eating the meat, many households who harvest beaver use the meat for trapping bait and use or sell the pelt:

> … the beaver is versatile, big time … you could sell the meat; you could sell the hides. You could feed your dogs or your family on the meat, you know, and you get clothes … myself I use it for bear trapping ... And then the hides, of course the hides get tanned so you make mitts and hats. (040212MCG1)

Table 3-2. – Estimated use and harvest of land and marine mammals, McGrath, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Land mammals										
Large land mammals										
Bison	1.9%	0.0%	0.0%	1.9%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Black bear	25.0%	24.1%	14.8%	12.0%	13.0%	2,364.0 lb	16.6 lb	6.6 lb	40.8 ind	± 27%
Brown bear	0.9%	4.6%	0.9%	0.0%	0.0%	76.3 lb	0.5 lb	0.2 lb	1.3 ind	± 97%
Caribou	8.3%	1.9%	0.9%	8.3%	1.9%	394.4 lb	2.8 lb	1.1 lb	2.6 ind	± 97%
Deer	0.9%	0.0%	0.0%	0.9%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Moose	90.7%	75.9%	46.3%	60.2%	50.0%	38,129.6 lb	268.5 lb	107.0 lb	76.3 ind	± 11%
Muskox	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Dall sheep	3.7%	0.9%	0.0%	3.7%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**92.6%**	**76.9%**	**50.0%**	**63.9%**	**54.6%**	**40,964.4 lb**	**288.5 lb**	**115.0 lb**	**121.0 ind**	**± 11%**
Small land mammals										
Beaver	25.0%	16.7%	16.7%	9.3%	12.0%	2,051.1 lb	14.4 lb	5.8 lb	180.1 ind	± 36%
Coyote	1.9%	1.9%	1.9%	0.0%	0.0%	*Not usually eaten*			5.3 ind	± 76%
Arctic fox	0.9%	0.0%	0.0%	0.9%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Red fox	7.4%	6.5%	6.5%	2.8%	2.8%	*Not usually eaten*			40.8 ind	± 42%
Snowshoe hare	10.2%	10.2%	10.2%	0.0%	0.9%	195.3 lb	1.4 lb	0.5 lb	148.6 ind	± 54%
Jackrabbit	0.9%	0.9%	0.9%	0.0%	0.0%	5.3 lb	0.0 lb	0.0 lb	2.6 ind	± 97%
River (land) otter	2.8%	0.9%	0.9%	1.9%	0.0%	*Not usually eaten*			1.3 ind	± 97%
Lynx	9.3%	9.3%	7.4%	3.7%	2.8%	*Not usually eaten*			52.6 ind	± 38%
Marmot	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Marten	21.3%	16.7%	15.7%	7.4%	2.8%	*Not usually eaten*			760.0 ind	± 34%
Mink	4.6%	4.6%	4.6%	0.0%	0.9%	*Not usually eaten*			10.5 ind	± 48%
Muskrat	6.5%	6.5%	6.5%	0.0%	2.8%	8.9 lb	0.1 lb	0.0 lb	22.4 ind	± 49%
Porcupine	6.5%	6.5%	6.5%	0.9%	3.7%	29.6 lb	0.2 lb	0.1 lb	9.3 ind	± 50%
Arctic ground (parka) squirrel	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Red (tree) squirrel	3.7%	3.7%	3.7%	0.0%	0.0%	1.0 lb	0.0 lb	0.0 lb	132.8 ind	± 97%
Weasel	1.9%	1.9%	1.9%	0.0%	0.9%	*Not usually eaten*			2.6 ind	± 68%
Wolf	5.6%	5.6%	3.7%	2.8%	0.9%	*Not usually eaten*			28.9 ind	± 64%
Wolverine	6.5%	7.4%	5.6%	2.8%	1.9%	*Not usually eaten*			21.0 ind	± 49%
Subtotal	**41.7%**	**31.5%**	**31.5%**	**15.7%**	**14.8%**	**2,291.1 lb**	**16.1 lb**	**6.4 lb**	**1,418.8 ind**	**± 34%**
Marine mammals										
Bearded seal	0.9%	0.0%	0.0%	0.9%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Ringed seal	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Spotted seal	0.9%	0.0%	0.0%	0.9%	0.9%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown seal	10.2%	0.0%	0.0%	10.2%	1.9%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Walrus	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Beluga whale	0.9%	0.0%	0.0%	0.9%	0.9%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Bowhead whale	2.8%	0.0%	0.0%	2.8%	1.9%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown whale	0.9%	0.0%	0.0%	0.9%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**11.1%**	**0.0%**	**0.0%**	**11.1%**	**2.8%**	**0.0 lb**	**0.0 lb**	**0.0 lb**	**0.0 ind**	**± 0%**
All land mammals	**92.6%**	**77.8%**	**57.4%**	**66.7%**	**56.5%**	**43,255.4 lb**	**304.6 lb**	**121.4 lb**		**± 11%**
All marine mammals	**11.1%**	**0.0%**	**0.0%**	**11.1%**	**2.8%**	**0.0 lb**	**0.0 lb**	**0.0 lb**		**± 0%**
All resources	**99.1%**	**96.3%**	**96.3%**	**92.6%**	**76.9%**	**84,254.7 lb**	**593.3 lb**	**236.5 lb**		**± 10%**

Source ADF&G Division of Subsistence household surveys, 2012.

Note "All resources" include all species of fish, wildlife, and plants reported on the survey.

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

McGrath residents also reported small harvests of a few other land mammal species (Table 3-2; Appendix Table D2-4). The community harvested a total of 3 caribou in 2011, and 8% of McGrath households reported using caribou. One percent of households harvested and used brown bear. After beaver, the most commonly eaten small land mammal was snowshoe hare; 149 individuals or 195 lb were harvested and used by 10% of households. Porcupine and muskrat were also harvested and used in very small quantities by 6% of respondents.

While only a small minority of households reported attempting to harvest furbearers in response to survey questions, several of these households described spending a great deal of time and effort in trapping activities and harvested large numbers of furbearers when compared to the community average. Marten was by far the most commonly harvested furbearer (by 16% of households) and were harvested in greater number (760 individuals). This translates into an average of 33 marten per trapping household. One key respondent described the importance of targeting marten on a trap line:

> … the marten is the mainstay of trappers because they're the easier thing … they do fluctuate somewhat on the market, but they're always consistent; there's always a demand for marten. They may go all the way down to forty dollars apiece … but we've had a lot of hundred and ninety-five, hundred and ten dollar average years. Which makes you think forty isn't very good, but for the critter and the work that it takes to catch them, the time to skin them, dress them, care for their hides, so they do pay for your trap line. You know on top of that you get your wolf and fox and otter. (040212MCG1)

The next most commonly trapped animals were lynx (7% of households harvested, 53 individuals), and red fox (6% of households harvested, 41 individuals). Finally, 4% of the households reported harvesting a total of 29 wolves, and 6% of the households harvested 21 wolverines. Furbearers are most frequently harvested for sale to external markets or for personal use and were rarely reported to be exchanged between households.

Sixty-one percent of McGrath households harvested birds in 2011 (Table 3-3; Appendix Table D2-5). This resource category collectively contributed 3,236 edible pounds to the estimated total community harvest (4%), and amounted to 9 edible pounds per capita. Most frequently harvested were upland birds (other birds) which contributed 1,818 edible pounds to the estimated community harvest. Of these birds, a large majority were spruce grouse (1,291 lb), which were harvested by 58% of households. This makes them the 3rd most commonly harvested of all resources in McGrath. Respondents described spruce grouse as being plentiful and easy to hunt. However, one key respondent felt that many people mistake sharp tailed grouse for spruce grouse:

> Sharp-tails are on the increase here because of the recovering burn. Just a habitat change. [Other McGrath residents] are shooting them and throwing them in with spruce chickens is what they are doing. Somebody commented this fall, "Oh I shot a funny spruce chicken with no tail." Ahhh, that's a sharp-tail. (040512MCG6)

Table 3-3. – Estimated use and harvest of birds, McGrath, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Migratory birds										
Ducks										
Bufflehead	0.0%	3.7%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Canvasback	0.0%	2.8%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Common eider	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown eider	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Goldeneye	1.9%	6.5%	1.9%	0.0%	0.0%	4.2 lb	0.0 lb	0.0 lb	5.3 ind	± 76%
Harlequin	0.9%	4.6%	0.9%	0.0%	0.0%	2.0 lb	0.0 lb	0.0 lb	1.3 ind	± 97%
Mallard	17.6%	20.4%	15.7%	1.9%	3.7%	282.0 lb	2.0 lb	0.8 lb	144.6 ind	± 30%
Common merganser	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Red-breasted merganser	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown merganser	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Long-tailed duck	0.9%	3.7%	0.9%	0.0%	0.0%	9.9 lb	0.1 lb	0.0 lb	6.6 ind	± 97%
Northern pintail	10.2%	13.9%	10.2%	0.9%	0.9%	112.4 lb	0.8 lb	0.3 lb	74.9 ind	± 41%
Scaup	0.9%	4.6%	0.9%	0.0%	0.0%	5.9 lb	0.0 lb	0.0 lb	6.6 ind	± 97%
Black scoter	0.9%	1.9%	0.0%	0.9%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Surf scoter	0.0%	1.9%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
White-winged scoter	0.0%	1.9%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Northern shoveler	2.8%	7.4%	2.8%	0.0%	0.0%	20.1 lb	0.1 lb	0.1 lb	18.4 ind	± 72%
Green-winged teal	6.5%	10.2%	5.6%	0.9%	0.0%	33.5 lb	0.2 lb	0.1 lb	64.4 ind	± 49%
Wigeon	3.7%	8.3%	2.8%	0.9%	0.9%	31.0 lb	0.2 lb	0.1 lb	23.7 ind	± 60%
Unknown ducks	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**22.2%**	**23.1%**	**19.4%**	**3.7%**	**3.7%**	**501.0 lb**	**3.5 lb**	**1.4 lb**	**345.8 ind**	**± 31%**
Geese										
Brant	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Cackling goose	0.9%	4.6%	0.9%	0.0%	0.0%	4.7 lb	0.0 lb	0.0 lb	3.9 ind	± 97%
Canada goose	14.8%	15.7%	9.3%	5.6%	5.6%	188.4 lb	1.3 lb	0.5 lb	47.3 ind	± 34%
Unknown Canada goose	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Emperor goose	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Snow goose	0.9%	2.8%	0.9%	0.0%	0.9%	10.5 lb	0.1 lb	0.0 lb	2.6 ind	± 97%
White-fronted goose	19.4%	17.6%	13.0%	6.5%	4.6%	551.9 lb	3.9 lb	1.5 lb	130.2 ind	± 43%
Unknown goose	1.9%	0.9%	0.0%	1.9%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**27.8%**	**21.3%**	**15.7%**	**13.0%**	**8.3%**	**755.5 lb**	**5.3 lb**	**2.1 lb**	**184.1 ind**	**± 34%**
Other migratory birds										
Tundra (whistling) swan	1.9%	3.7%	1.9%	0.0%	0.0%	29.5 lb	0.2 lb	0.1 lb	2.6 ind	± 68%
Sandhill crane	4.6%	5.6%	4.6%	0.0%	0.0%	131.5 lb	0.9 lb	0.4 lb	13.1 ind	± 51%
Whimbrel	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**4.6%**	**6.5%**	**4.6%**	**0.0%**	**0.0%**	**161.0 lb**	**1.1 lb**	**0.5 lb**	**15.8 ind**	**± 46%**
Other birds										
Spruce grouse	63.0%	63.0%	58.3%	11.1%	17.6%	1,291.4 lb	9.1 lb	3.6 lb	1,291.4 ind	± 15%
Sharp-tailed grouse	7.4%	14.8%	7.4%	0.0%	2.8%	32.9 lb	0.2 lb	0.1 lb	32.9 ind	± 37%
Ruffed grouse	27.8%	39.8%	27.8%	3.7%	5.6%	398.1 lb	2.8 lb	1.1 lb	398.1 ind	± 25%
Ptarmigan	10.2%	13.9%	10.2%	0.9%	1.9%	95.8 lb	0.7 lb	0.3 lb	95.8 ind	± 35%
Subtotal	**63.9%**	**63.9%**	**60.2%**	**12.0%**	**20.4%**	**1,818.2 lb**	**12.8 lb**	**5.1 lb**	**1,818.2 ind**	**± 15%**
All migratory birds	**34.3%**	**27.8%**	**23.1%**	**13.0%**	**10.2%**	**1,417.4 lb**	**10.0 lb**	**4.0 lb**		**± 33%**
All other birds	**63.9%**	**63.9%**	**60.2%**	**12.0%**	**20.4%**	**1,818.2 lb**	**12.8 lb**	**5.1 lb**		**± 15%**
All resources	**99.1%**	**96.3%**	**96.3%**	**92.6%**	**76.9%**	**84,254.7 lb**	**593.3 lb**	**236.5 lb**		**± 10%**

Source ADF&G Division of Subsistence household surveys, 2012.

Note "All resources" include all species of fish, wildlife, and plants reported on the survey.

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

Table 3-4. – Estimated use and harvest of bird eggs, McGrath, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Bird eggs										
Duck eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown goose eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Swan eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown shorebird eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown gull eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0 lb**	**0.0 lb**	**0.0 lb**	**0.0 ind**	**± 0%**
All birds and eggs	**67.6%**	**65.7%**	**61.1%**	**21.3%**	**25.0%**	**3,235.6 lb**	**22.8 lb**	**9.1 lb**		**± 22%**
All resources	**99.1%**	**96.3%**	**96.3%**	**92.6%**	**76.9%**	**84,254.7 lb**	**593.3 lb**	**236.5 lb**		**± 10%**

Source ADF&G Division of Subsistence household surveys, 2012.

Note "All resources" include all species of fish, wildlife, and plants reported on the survey.

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

This suggests that McGrath residents may have harvested fewer spruce grouse than reported and more than the 33 sharp tailed grouse that were reported. The 2nd most harvested upland bird species was the ruffed grouse (398 lb), followed by ptarmigan (96 lb).

Migratory birds made up the remainder of the bird harvest, with an estimated 23% of households harvesting 1,417 edible pounds in total. Thirty-five percent of the migratory bird harvest was ducks, primarily mallards (282 lb) and northern pintail (112 lb). Much fewer numbers of green winged teal (34 lb), wigeon (31 lb), and northern shoveler (20 lb) were harvested. Geese (756 lb) made up 53% of the migratory bird harvest. Nearly all of the geese harvested were white-fronted geese (552 lb) and lesser Canada geese (188 lb). Sandhill crane (132 lb) and tundra swan (30 lb) made up the remainder of the migratory bird harvest. McGrath residents did not report any harvest or use of bird eggs (Table 3-4).

Berries and edible plants accounted for 6% (5,055 lb) of the total community harvest of subsistence food, and amounted to 14 lb per capita in 2011 (Table 3-5). Blueberries (2,536 lb) and lowbush cranberries (1,487 lb) made up a great majority of the food harvested in this category. Of all subsistence resources, blueberries were harvested by the greatest percentage of households (78%). Other berries, such as highbush cranberries, crowberries, salmonberries, currants, and raspberries, were picked in much more limited quantities. McGrath residents harvested several other plant species including wild rhubarb, fireweed, mushrooms, and rosehips. Firewood was used by 71% of households and harvested by 68%. Because of its importance as a source of fuel for heating homes, residents harvested an estimated 666 cords.

No McGrath household reported harvesting marine mammals. However, 3% of households reported using bowhead whale, and 10% reported using unknown seal—likely in the form of seal oil given to them from coastal communities (Table 3-2; Appendix Table D2-6). McGrath households reported limited use (8%) and very little harvest (1%) of marine invertebrates in 2011. Sixty-three pounds of Tanner crabs made up the

Table 3-5. – Estimated use and harvest of vegetation, McGrath, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Berries										
Blueberry	85.2%	80.6%	77.8%	33.3%	39.8%	2,535.8 lb	17.9 lb	7.1 lb	633.9 gal	± 16%
Lowbush cranberry	63.9%	59.3%	58.3%	16.7%	24.1%	1,487.1 lb	10.5 lb	4.2 lb	371.8 gal	± 15%
Highbush cranberry	18.5%	16.7%	15.7%	3.7%	2.8%	120.0 lb	0.8 lb	0.3 lb	30.0 gal	± 29%
Crowberry	13.0%	13.0%	12.0%	2.8%	2.8%	53.6 lb	0.4 lb	0.2 lb	13.4 gal	± 43%
Gooseberry	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Currants	4.6%	4.6%	4.6%	0.0%	2.8%	30.2 lb	0.2 lb	0.1 lb	7.6 gal	± 51%
Raspberry	23.1%	22.2%	22.2%	3.7%	2.8%	90.2 lb	0.6 lb	0.3 lb	22.6 gal	± 27%
Salmonberry	13.9%	14.8%	13.0%	3.7%	0.9%	75.9 lb	0.5 lb	0.2 lb	19.0 gal	± 39%
Subtotal	**88.9%**	**85.2%**	**83.3%**	**40.7%**	**41.7%**	**4,392.8 lb**	**30.9 lb**	**12.3 lb**	**1,098.2 gal**	± 14%
Plants/greens/mushrooms										
Wild rhubarb	18.5%	18.5%	18.5%	3.7%	2.8%	266.6 lb	1.9 lb	0.7 lb	66.6 gal	± 35%
Eskimo potato	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Fiddlehead ferns	2.8%	2.8%	2.8%	0.0%	0.0%	3.3 lb	0.0 lb	0.0 lb	3.3 gal	± 58%
Nettle	0.9%	0.9%	0.9%	0.0%	0.0%	0.3 lb	0.0 lb	0.0 lb	0.3 gal	± 97%
Hudson's Bay (Labrador) tea	11.1%	10.2%	10.2%	1.9%	0.9%	11.4 lb	0.1 lb	0.0 lb	11.4 gal	± 35%
Mint	6.5%	6.5%	6.5%	0.9%	0.9%	6.9 lb	0.0 lb	0.0 lb	6.9 gal	± 46%
Sourdock	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Spruce tips	4.6%	4.6%	4.6%	0.0%	0.0%	3.6 lb	0.0 lb	0.0 lb	3.6 gal	± 53%
Willow leaves	1.9%	0.9%	0.9%	0.9%	0.0%	0.7 lb	0.0 lb	0.0 lb	0.7 gal	± 97%
Wild celery	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Wild rose hips	19.4%	17.6%	17.6%	1.9%	2.8%	76.0 lb	0.5 lb	0.2 lb	19.0 gal	± 27%
Yarrow	2.8%	2.8%	2.8%	0.0%	0.9%	1.2 lb	0.0 lb	0.0 lb	1.2 gal	± 63%
Unknown mushrooms	28.7%	28.7%	28.7%	0.0%	4.6%	64.7 lb	0.5 lb	0.2 lb	64.7 gal	± 22%
Fireweed	9.3%	7.4%	7.4%	2.8%	2.8%	130.1 lb	0.9 lb	0.4 lb	32.5 gal	± 54%
Stinkweed	5.6%	5.6%	5.6%	0.0%	0.9%	17.6 lb	0.1 lb	0.0 lb	17.6 gal	± 74%
Punk	7.4%	7.4%	5.6%	0.0%	2.8%	0.0 lb	0.0 lb	0.0 lb	68.4 gal	± 60%
Puffballs	13.9%	13.9%	13.9%	0.0%	1.9%	72.2 lb	0.5 lb	0.2 lb	18.0 gal	± 36%
Unknown vegetation	4.6%	4.6%	4.6%	0.0%	0.0%	7.6 lb	0.1 lb	0.0 lb	7.6 gal	± 48%
Subtotal	**53.7%**	**52.8%**	**51.9%**	**7.4%**	**15.7%**	**662.1 lb**	**4.7 lb**	**1.9 lb**	**321.8 gal**	± 21%
Wood										
Wood	71.3%	67.6%	67.6%	13.0%	15.7%	0.0 lb	0.0 lb	0.0 lb	666.3 cord	± 12%
Subtotal	**71.3%**	**67.6%**	**67.6%**	**13.0%**	**15.7%**	**0.0 lb**	**0.0 lb**	**0.0 lb**	**666.3 cord**	± 12%
All vegetation	**93.5%**	**93.5%**	**92.6%**	**50.9%**	**50.9%**	**5,054.9 lb**	**35.6 lb**	**14.2 lb**		**± 13%**
All resources	**99.1%**	**96.3%**	**96.3%**	**92.6%**	**76.9%**	**84,254.7 lb**	**593.3 lb**	**236.5 lb**		**± 10%**

Source ADF&G Division of Subsistence household surveys, 2012.
Note "All resources" include all species of fish, wildlife, and plants reported on the survey.
a. Summary rows that include incompatible units of measure have been left blank.

entire marine invertebrate harvest. Six percent of households reported using subsistence caught shrimp, 4% used king crab, and 2% used Tanner crab (Table 3-6).

Harvest Areas

As part of the survey, households were asked to mark on a map the areas where they harvested or searched for resources. From these data, maps were produced for each community depicting the harvest and search areas that were reported within each region for 6 resource categories: berries and greens, birds, large land mammals, nonsalmon fish, salmon, and small land mammals. Figure 3-8 summarizes all areas used for

Table 3-6. – Estimated use and harvest of marine invertebrates, McGrath, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Marine invertebrates										
Unknown clams	0.9%	0.0%	0.0%	0.9%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
King crab	3.7%	0.0%	0.0%	3.7%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Snow crab	0.9%	0.0%	0.0%	0.9%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown Tanner crab	1.9%	0.9%	0.9%	0.9%	0.0%	63.1 lb	0.4 lb	0.2 lb	39.4 ind	± 97%
Unknown crab	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown mussels	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Shrimp	5.6%	0.0%	0.0%	5.6%	0.9%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Unknown marine invertebrates	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Subtotal	**8.3%**	**0.9%**	**0.9%**	**8.3%**	**0.9%**	**63.1 lb**	**0.4 lb**	**0.2 lb**		**± 97%**
All marine invertebrates	**8.3%**	**0.9%**	**0.9%**	**8.3%**	**0.9%**	**63.1 lb**	**0.4 lb**	**0.2 lb**		**± 97%**
All resources	**99.1%**	**96.3%**	**96.3%**	**92.6%**	**76.9%**	**84,254.7 lb**	**593.3 lb**	**236.5 lb**		**± 10%**

Source ADF&G Division of Subsistence household surveys, 2012.
Note "All resources" include all species of fish, wildlife, and plants reported on the survey.
a. Summary rows that include incompatible units of measure have been left blank.

subsistence activities within approximately 120 miles of McGrath. This includes areas used to hunt, fish, gather, and search for all subsistence resources that were utilized by McGrath residents in 2011. However, many factors, including annual variations in weather and resource availability, require hunters, fishers, and gatherers to vary the areas that are utilized from year to year. Therefore, information gathered for any single year is unlikely to capture all of the important subsistence harvest and use areas.

Households in the community reported using a total of 3,857 square miles for subsistence activities in 2011. McGrath respondents reported searching for and harvesting subsistence resources along the Kuskokwim River from the mouth of Swift Fork, approximately 80 miles upstream of McGrath, down to the community of Stony River. McGrath residents also used a large area surrounding the village, as well as many nearby tributaries including the Takotna River, Fourth of July Creek, Nixon Fork, Carl Creek, and the Stony River, for harvesting subsistence resources in 2011. Figure 3-9 shows salmon harvest and search areas. Drift gillnet fishing areas are indicated by a continuous line on the rivers. Set gillnet sites are indicated by a dot. The drift gillnet sites nearest McGrath were on the lower portions of Big River and Pitka Fork, a tributary of Middle Fork. These rivers are located approximately 25 miles up the Kuskokwim River from McGrath. McGrath residents reported driftnet fishing from the mouth to approximately 10 miles up each of these rivers. All other drift gillnet fishing took place lower on the Kuskokwim River near the village of Stony River. Some households reported driftnet fishing for salmon as far as 20 miles up the Tatlawiksuk River and on the Kuskokwim River from the Tatlawiksuk River downstream to the mouth of Stony River. Finally, at least 1 respondent reported drift gillnet fishing on the Kuskokwim River between Red Devil and Sleetmute.

Several respondents reported setting gillnets on the Kuskokwim River at McGrath and nearby at the mouth of the Takotna River. There were a few setnets placed along the Kuskokwim River between McGrath and the Big River approximately 20 miles upstream. There were also set gillnet sites along the lower Takotna

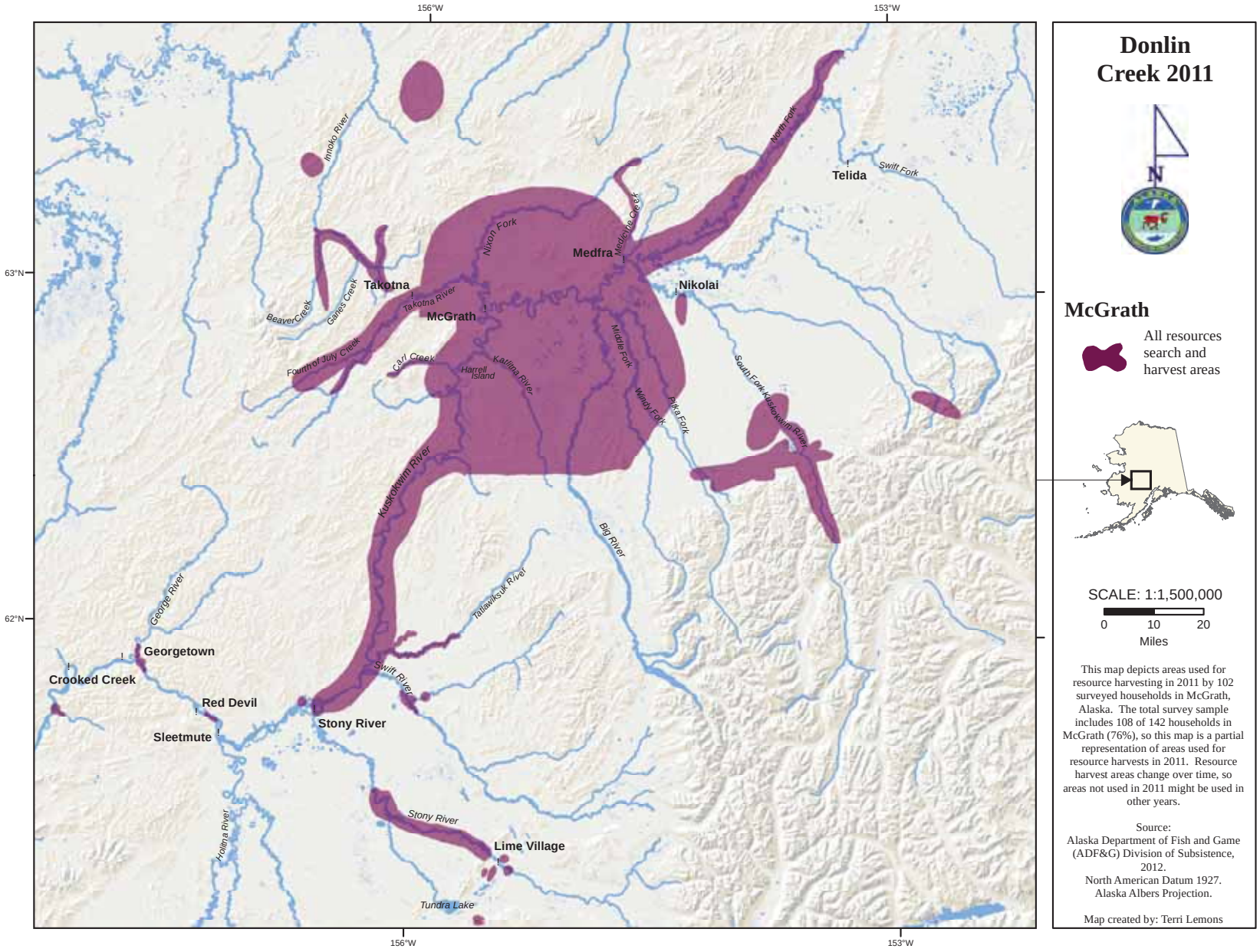


Figure 3-8.–All resources search and harvest areas, McGrath, 2011.

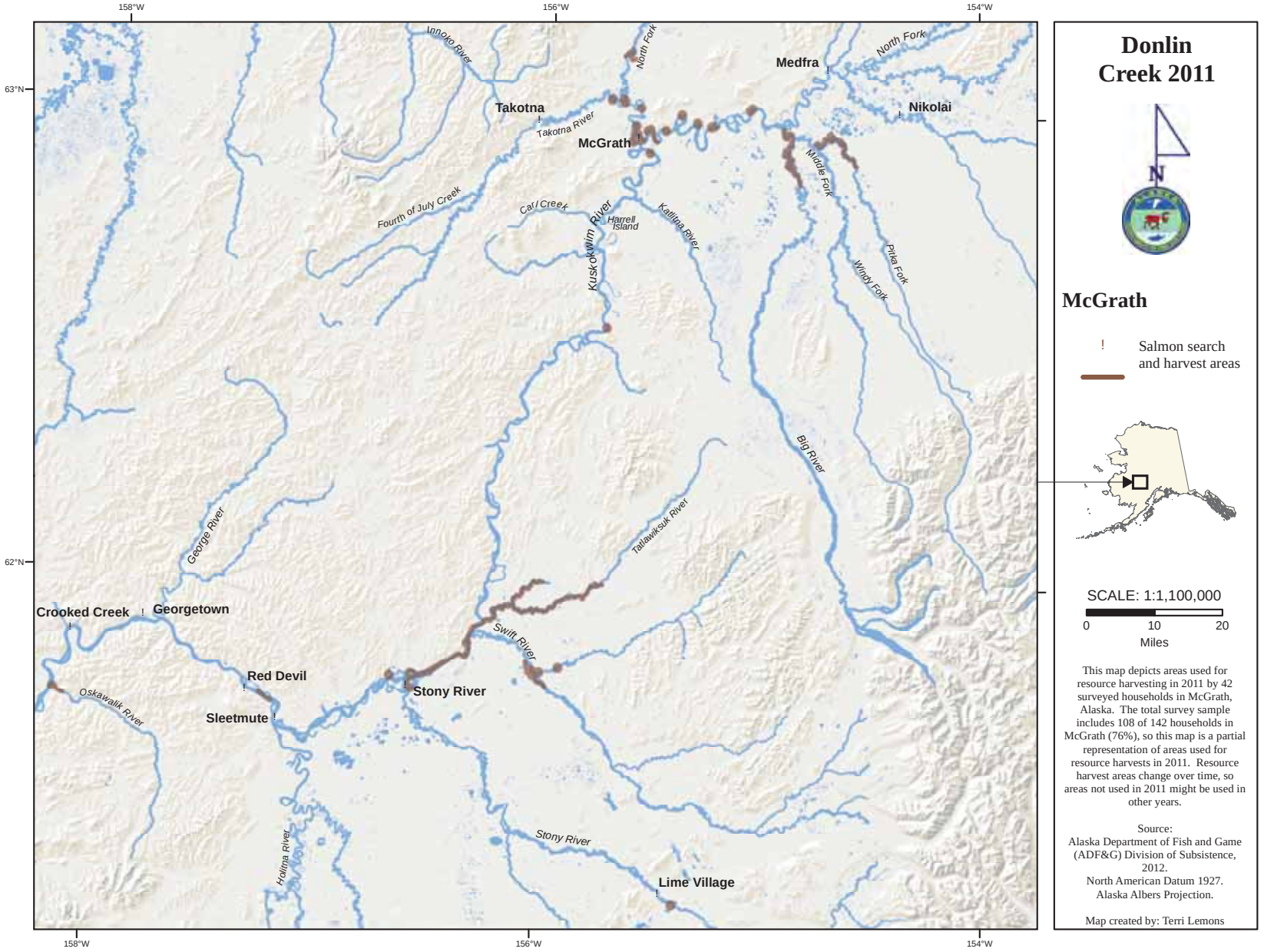


Figure 3-9.–Salmon search and harvest areas, McGrath, 2011.

River as far as 10 miles from McGrath and a few sites on the Nixon Fork approximately 8 miles from its junction with the Takotna River. All other set gillnet sites for salmon were much further downstream on the Kuskokwim River near the village of Stony River; some respondents set gillnets on the Kuskokwim River just outside the village, and a few people reported setting nets on the lower Cheeneetnuk River, a tributary of the Swift River.

Harvest and search areas for whitefishes, burbot, sheefish, and northern pike are indicated in Figure 3-10. Respondents fished for northern pike with rod and reel along the Kuskokwim River from McGrath to an area approximately 15 air miles upstream. They also fished for northern pike along the Takotna River from McGrath to the village of Takotna and on the Nixon Fork from its mouth to approximately 7 miles upstream. Respondents reported an additional primary area for rod and reel harvesting of northern pike on the Kuskokwim River beginning 10 miles south of McGrath and extending approximately 13 miles downstream. Fishing along this stretch of the Kuskokwim River also extended into the lower sections of Carl Creek and Beaver Creek as well as into 2 prominent sloughs on the east side of the Kuskokwim. Finally, the lower 5 miles of the Katlitna River, which meets the Kuskokwim River approximately 9 miles below McGrath, was used for harvesting northern pike with rod and reel. Northern pike were also harvested with set gillnets. Respondents reported setting gillnets along the Takotna River below Takotna. Respondents also reported catching northern pike in set gillnets on the Kuskokwim River, south of McGrath, along the same stretch of river that was used for rod and reel fishing, particularly along the slough that surrounds Harrell Island.

Search and harvest areas for other nonsalmon species were less extensive than those for northern pike. Harvest of sheefish, with set gillnet or rod and reel, was focused in 3 areas: on the Takotna River beginning at the mouth of Nixon Fork and extending 3 miles upstream, on a section of the Nixon Fork extending from approximately 5 miles to 8 miles from the mouth, and on the lower 2 miles of the Katlitna River. Whitefish were harvested with rod and reel or with set gillnets on the Kuskokwim River approximately 16 miles upriver and 3 miles downriver from McGrath. Whitefish were also harvested on the Takotna River within a few miles of McGrath. Burbot were harvested with rod and reel, on the Takotna River, within a mile of McGrath and along the Kuskokwim River, between McGrath and the mouth of Grayling Creek approximately 11 miles upriver.

The large mammal map (Figure 3-11) includes search and harvest areas for moose, black bear, brown bear, and caribou. The moose search area was by far the widest ranging and covered the most territory. This search area is indicated in yellow on the map, because much of the moose search area was also used for black bear hunting. Respondents reported hunting moose along the Kuskokwim River from Stony River, approximately 87 air miles downriver of McGrath, to just upstream of the mouth of the Swift Fork, 88 miles above McGrath. Respondents also hunted more than 50 river miles up the Nixon Fork and on the Takotna River from McGrath to approximately 50 miles upstream of the village of Takotna. Some McGrath residents travelled to the upper tributaries of the Yukon River, approximately 20 miles to the north west of McGrath. This area was likely accessed by snowmachine for hunting along Ganes Creek and approximately

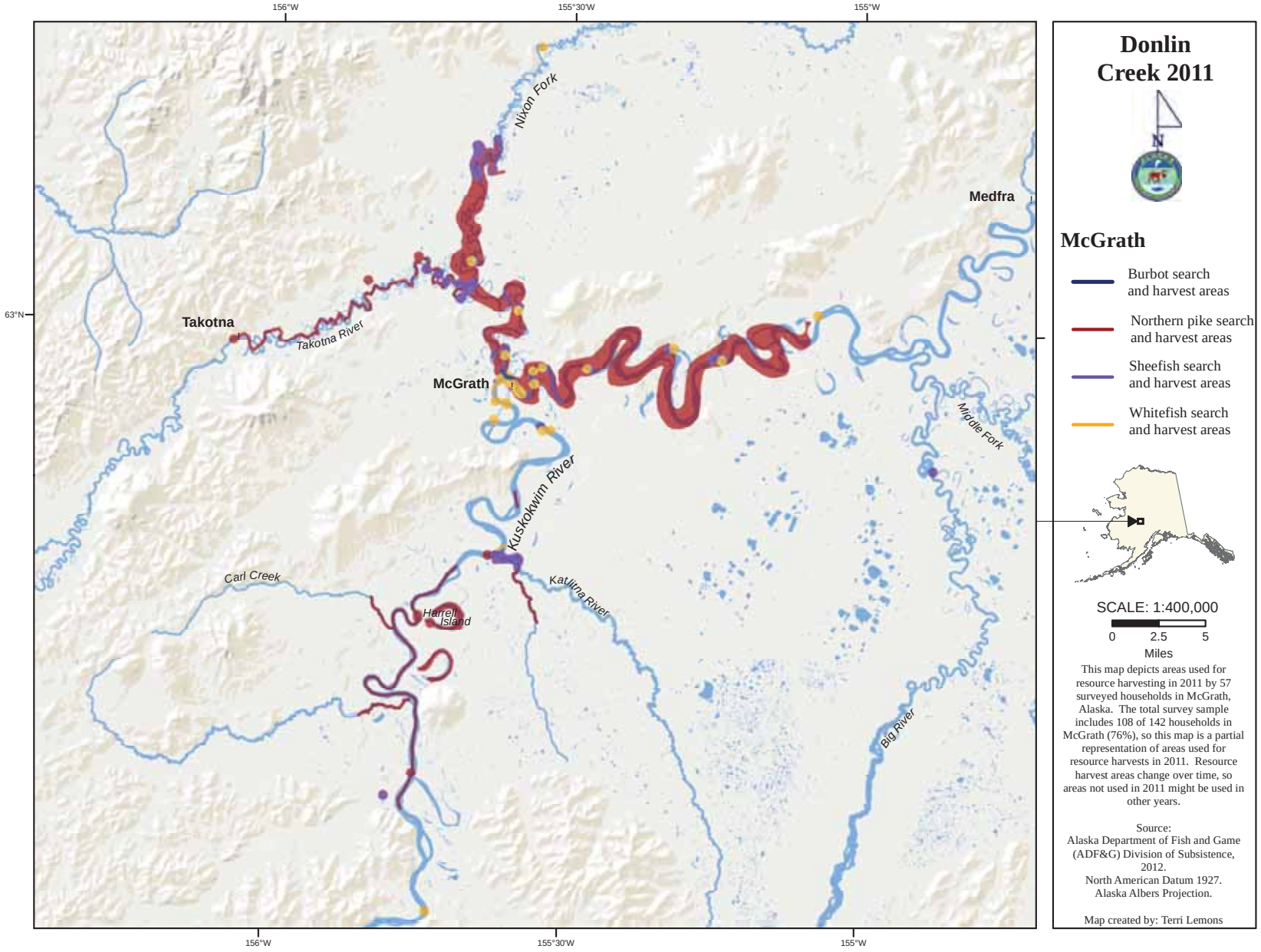


Figure 3-10.–Burbot, northern pike, sheefish, and whitefishes search and harvest areas, McGrath, 2011.

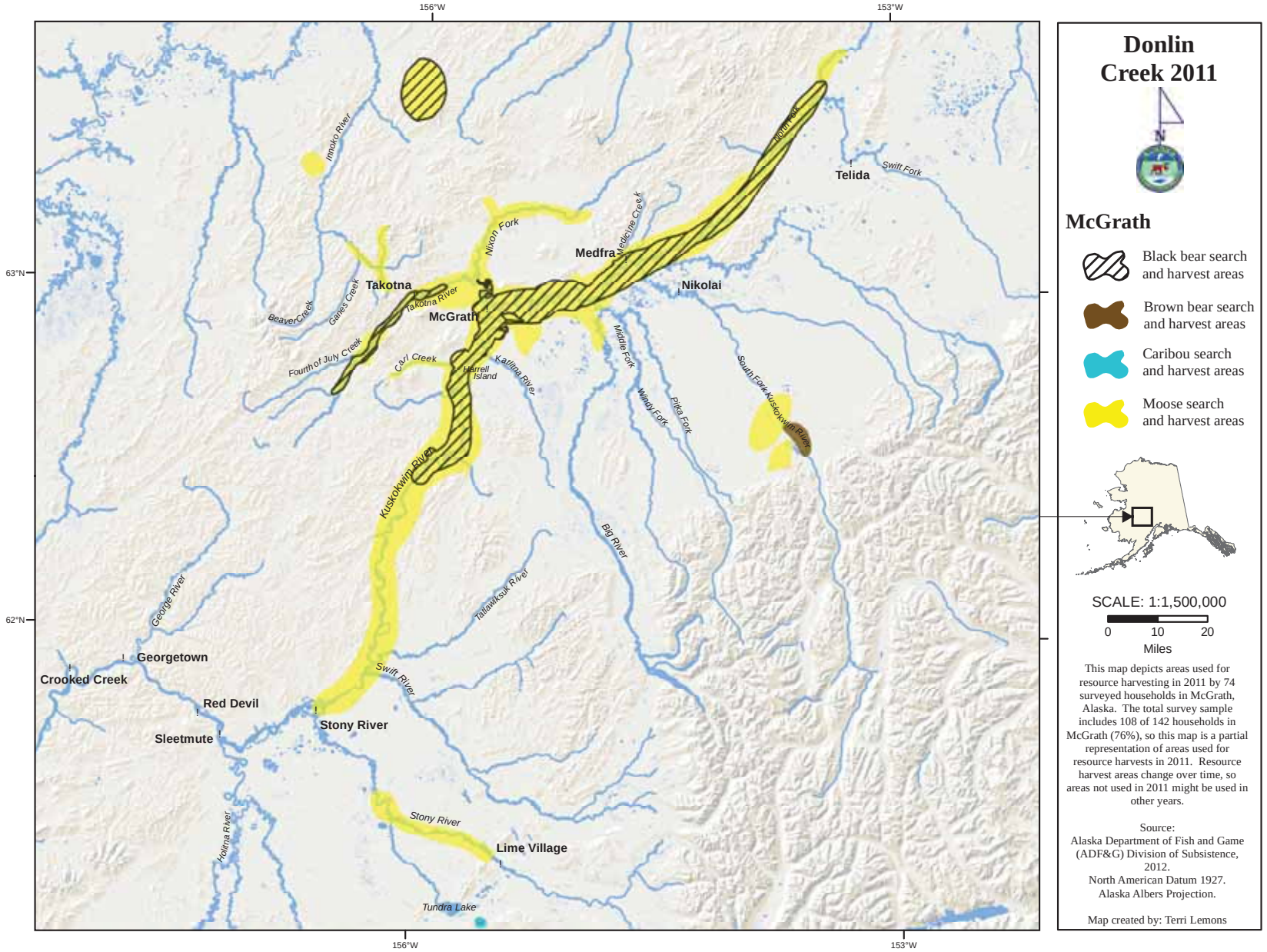


Figure 3-11.–Black bear, brown bear, caribou, and moose search and harvest areas, McGrath, 2011.

10 miles of the upper Innoko River. Respondents also reported hunting for moose in a few small areas near the Innoko River, approximately 60 miles northeast of McGrath and near the South Fork Kuskokwim River, approximately 70 miles southwest of McGrath. These overland areas did not follow a waterway and were likely accessed by snowmachine.

All black bear search and harvest took place within the moose search and harvest area, and are therefore indicated by a crosshatched area on the map. Respondents described hunting black bear along the Kuskokwim River from the mouth of Swift Fork, downstream to approximately 35 air miles below McGrath. All remaining black bear hunting took place on more than 50 miles of the upper Takotna River and in a 10 mile radius area approximately 60 miles north of McGrath. The only brown bear hunting that was reported in the region took place on a 10 mile section of the South Fork Kuskokwim River, approximately forty miles from its mouth. Finally, 1 small area near Tundra Lake, 13 miles southwest of Lime Village was identified for caribou search and harvest in the region.

Small land mammal search areas (Figure 3-12), primarily snowshoe hare hunting and furbearer hunting and trapping, were mapped in an approximately 60 mile diameter area surrounding McGrath, primarily to the east of the community. Other search areas, likely in the form of trap lines, followed portions of the Innoko River, and Ganes Creek to the northwest, and the upper Nixon Fork and the lower Medicine Creek extending from the village of Medfra. Some respondents reported hunting small land mammals from approximately 35 air miles up the South Fork Kuskokwim River, extending approximately 20 miles upstream into the Alaska Range and extending approximately 20 miles west along the Alaska Range.

The search and harvest area for birds is shown in Figure 3-13. Duck and goose search and harvest on the Kuskokwim River extended from McGrath downstream approximately 25 miles and upstream approximately 80 miles to the mouth of Swift Fork. Duck and goose harvest areas also included the Takotna River and the lower Nixon Fork, which mirrors the search area for moose on those rivers. Respondents commonly reported hunting for grouse and ptarmigan within walking distance of town as well as along the road that leads 11 miles out of town to the southeast. Other grouse and ptarmigan search areas closely matched moose search areas, including the Kuskokwim River from McGrath downstream to Stony River and upstream approximately 55 air miles, as well as along the Takotna River between McGrath and the village of Takotna, and along the Innoko River and Ganes Creek.

The areas used for plant and berry search and harvests are shown in Figure 3-14. Respondents reported harvesting berries primarily along the road that extends from McGrath to approximately 11 miles to the southeast of town. A recent fire along this road has created excellent habitat for blueberry bushes. As one key respondent described it, “That burn has created a berry farm out there. Really, it’s amazing the berries that are out there” (040612MCG8). Others reported harvesting plants and berries along the Kuskokwim River from McGrath to approximately 10 miles upstream and along a 10 mile section of upper Ganes Creek where waterfowl and moose hunting was also reported.

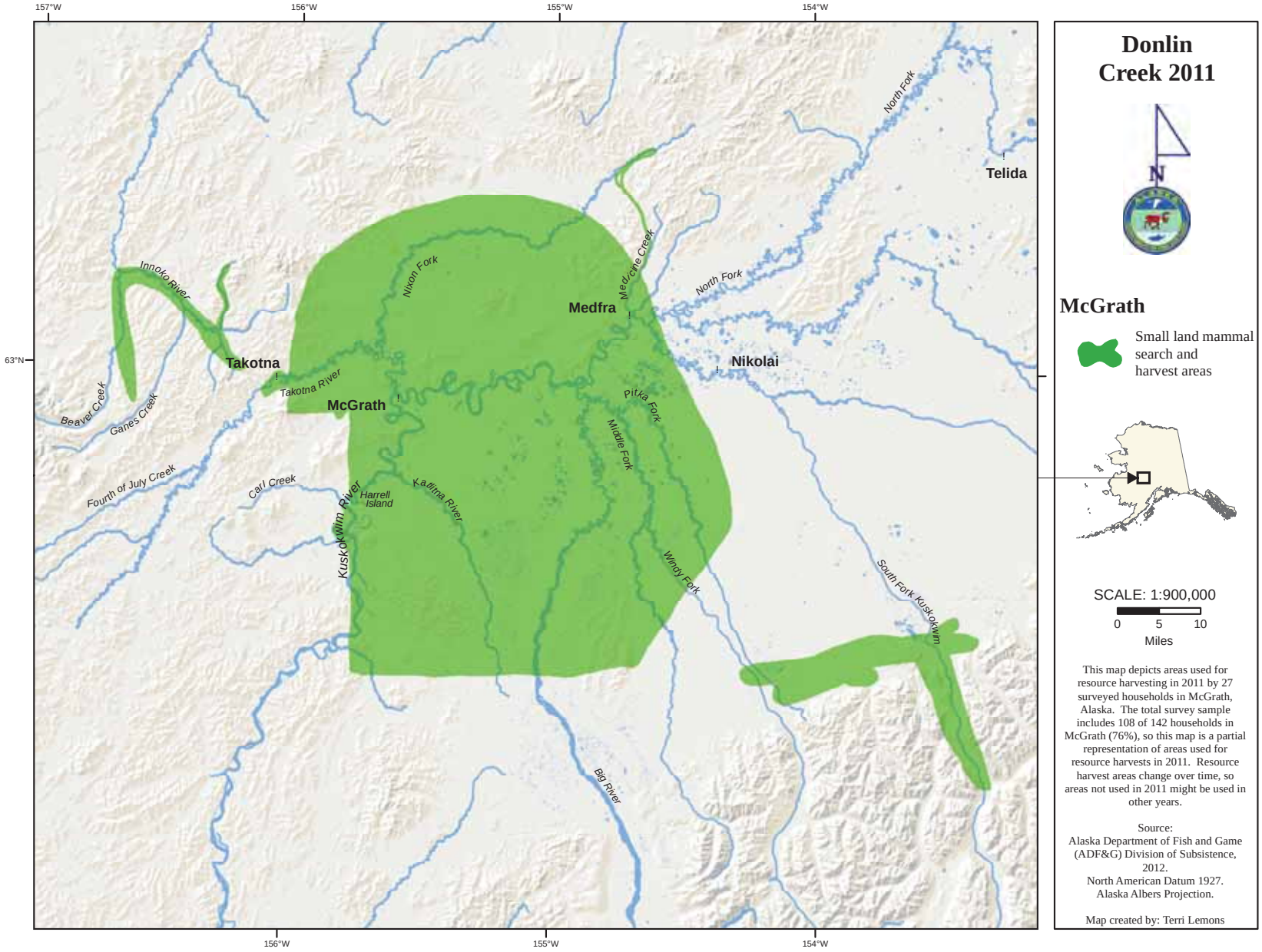


Figure 3-12.–Small land mammal search and harvest areas, McGrath, 2011.

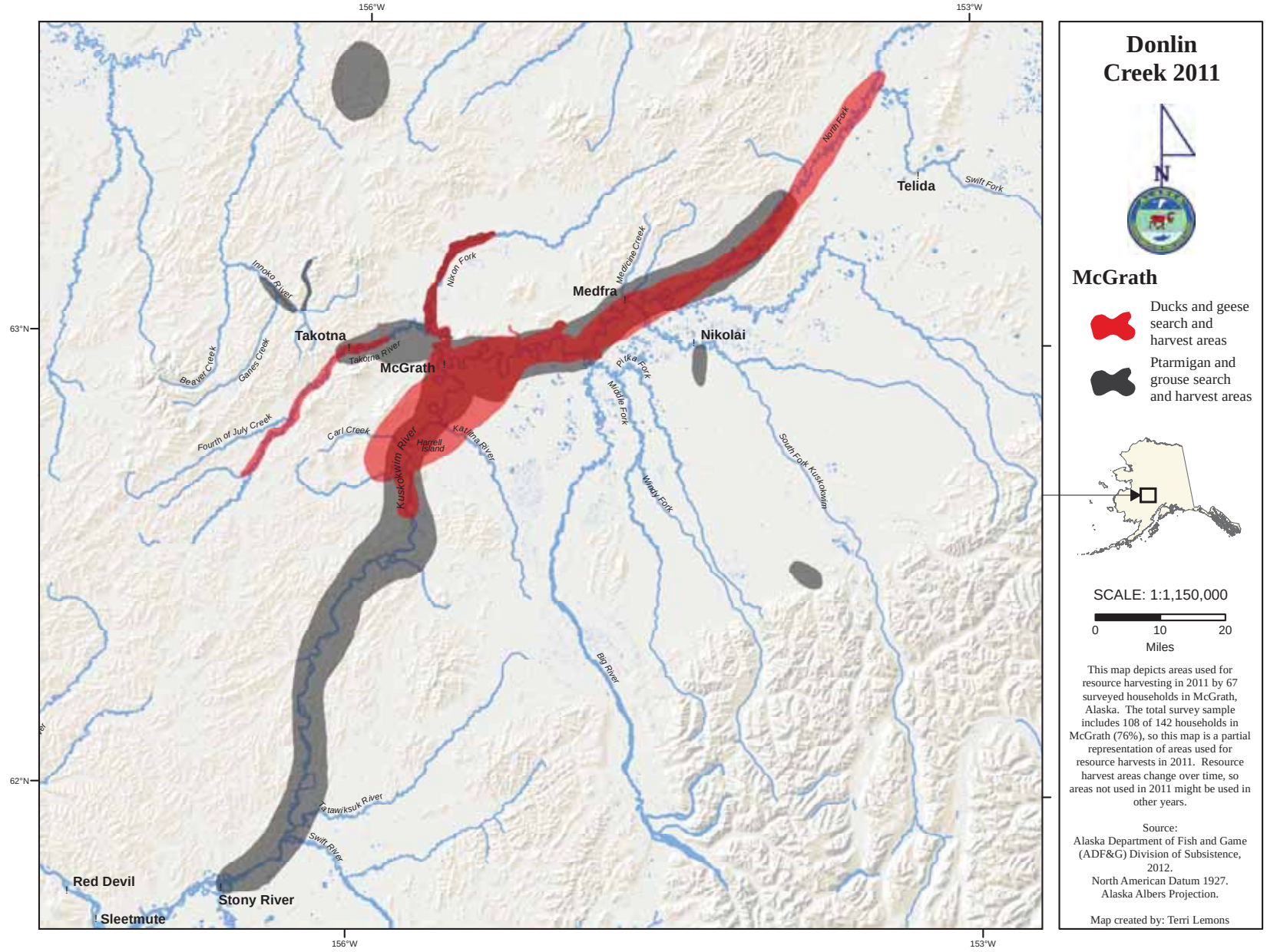


Figure 3-13.–Ducks, geese, ptarmigan, and grouse search and harvest areas, McGrath, 2011.

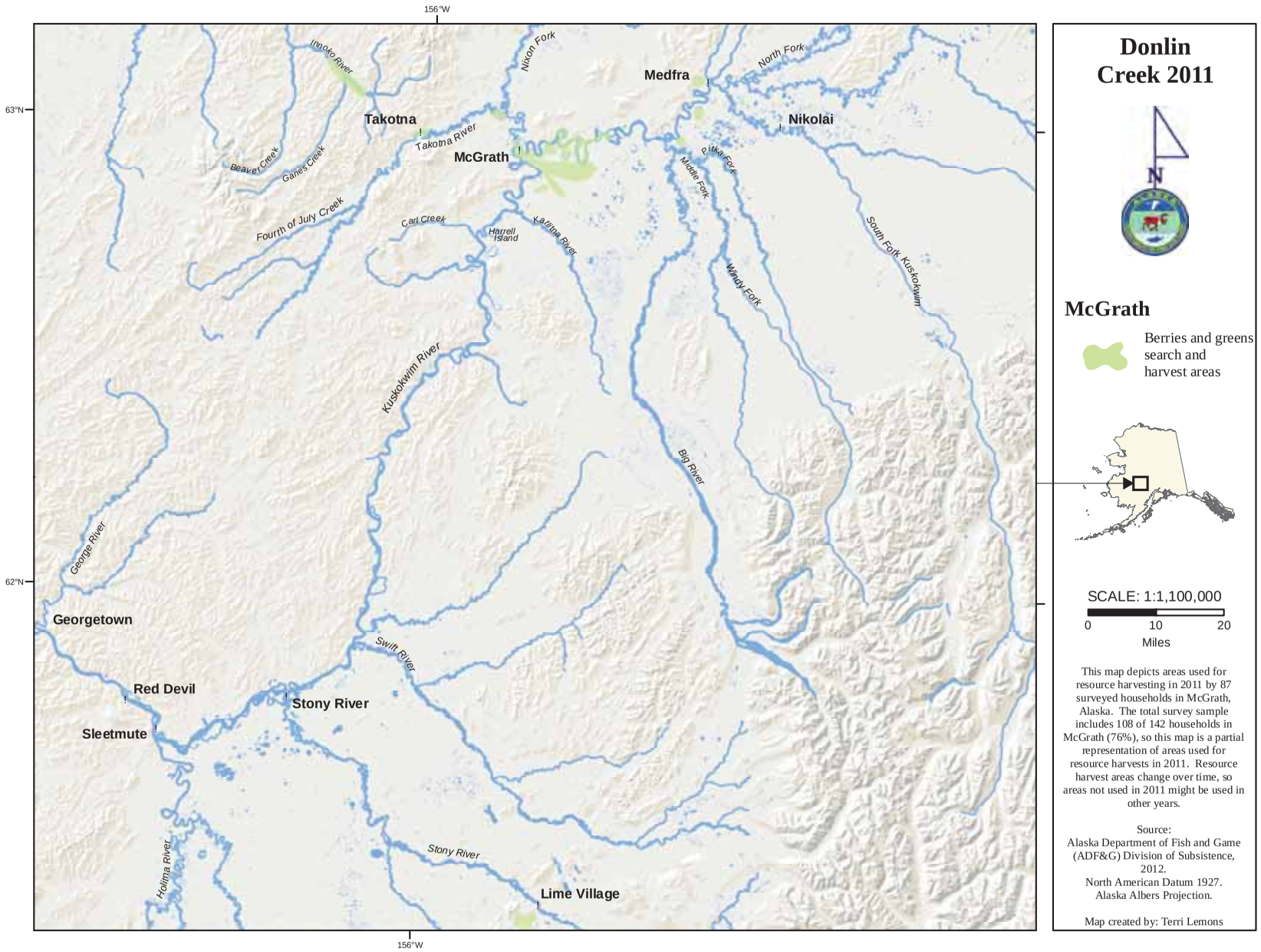


Figure 3-14.–Berries and greens search and harvest areas, McGrath, 2011.

Harvest Assessments

Researchers asked respondents to assess their own harvests in 2 ways: whether they got more, less, or about the same amount of 7 resource categories in 2011 as in recent years (Figure 3-15), and whether they got enough of each of the 7 resource categories (Figure 3-16). Households were also asked to provide reasons for using less or more of a certain resource category compared to recent years (Appendix tables D2-7 through D2-10). If they did not get enough of a resource, they were asked to evaluate the severity of the impact to their household as a result of not getting enough (Appendix Table D2-11). They were further asked whether they did anything differently (such as supplement with store-bought food or switch to a different subsistence resource) because they did not get enough of a resource category (Appendix tables D2-12 and D2-13). This section discusses responses to those questions.

Together, figures 3-15 and 3-16 provide a broad overview of households' harvests. Because not everyone uses all resource categories, some households did not respond to the assessment questions. Additionally, some households that do typically use a resource category simply did not answer questions. While the percentages displayed in these figures were calculated including all surveyed households (including those that did not respond to the question), the bars specifically highlight responses provided by households reporting that they typically use the resource category. Generally, the results are presented in this section as they appear in the figures, but it is important to remember that they are not limited to only households that ordinarily use the resource. Additional details are provided in cases where further analysis lends clarity to the discussion of use patterns.

Figures 3-15 and 3-16 show consistency in the reported usage of major resource categories in 2011. For example, 57% of households reported that they used about the same or more salmon in 2011, which is consistent with the 60% of households that reported that they got enough salmon in 2011. Thirty-one percent of households reported that they did not get enough salmon, with the majority of these households (79%) describing the impact of not getting enough as being minor or not noticeable, and 18% describing the impact as major or severe. Thirty-four percent of households reported that they used less salmon in 2011. The most commonly cited reasons for using less salmon were lack of resource availability and not receiving salmon from other households (Appendix Table D2-7). Approximately 67% of households used the same amount or more land mammals, which is consistent with the 73% that reported getting enough. Twenty-two percent of households reported not getting enough land animals. Though this number is smaller than in other resource categories, this deficiency likely impacted the community the most. It is very likely that respondents were largely describing moose when nearly half (48%) reported that not getting enough land mammals had a major or severe impact on their household in 2011 (Appendix Table D2-11). Of the households that reported doing something different due to a deficiency in land mammal harvest, 95% used more commercial foods (Appendix Table D2-13). Further consistency is seen between figures 3-15 and 3-16 in the 2011 harvest of plants and berries in McGrath—with approximately 63% of households using the same or more in 2011 compared

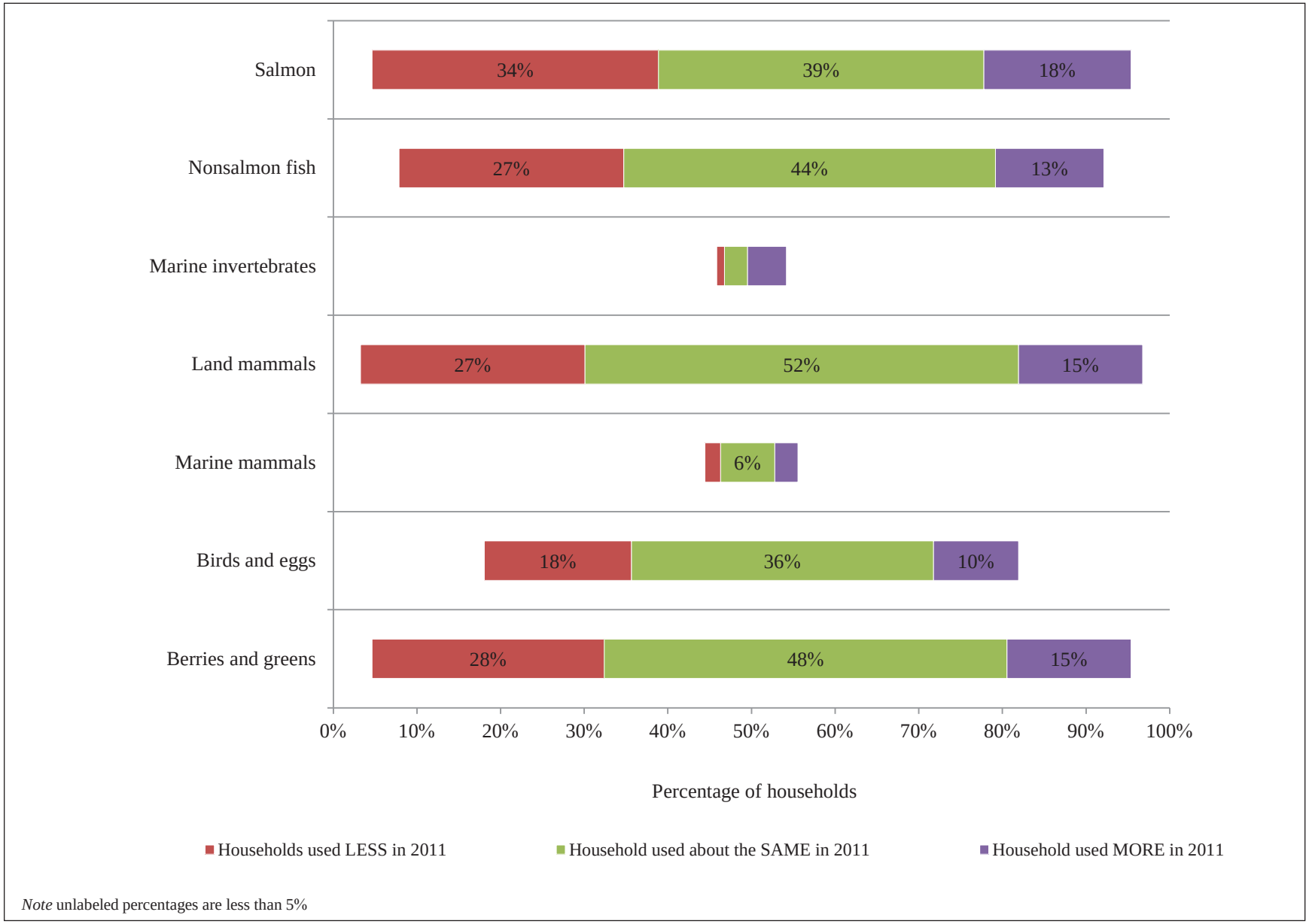


Figure 3-15.–Number of households using a resource and reporting LESS, SAME, or MORE use as compared to previous years, McGrath, 2011.

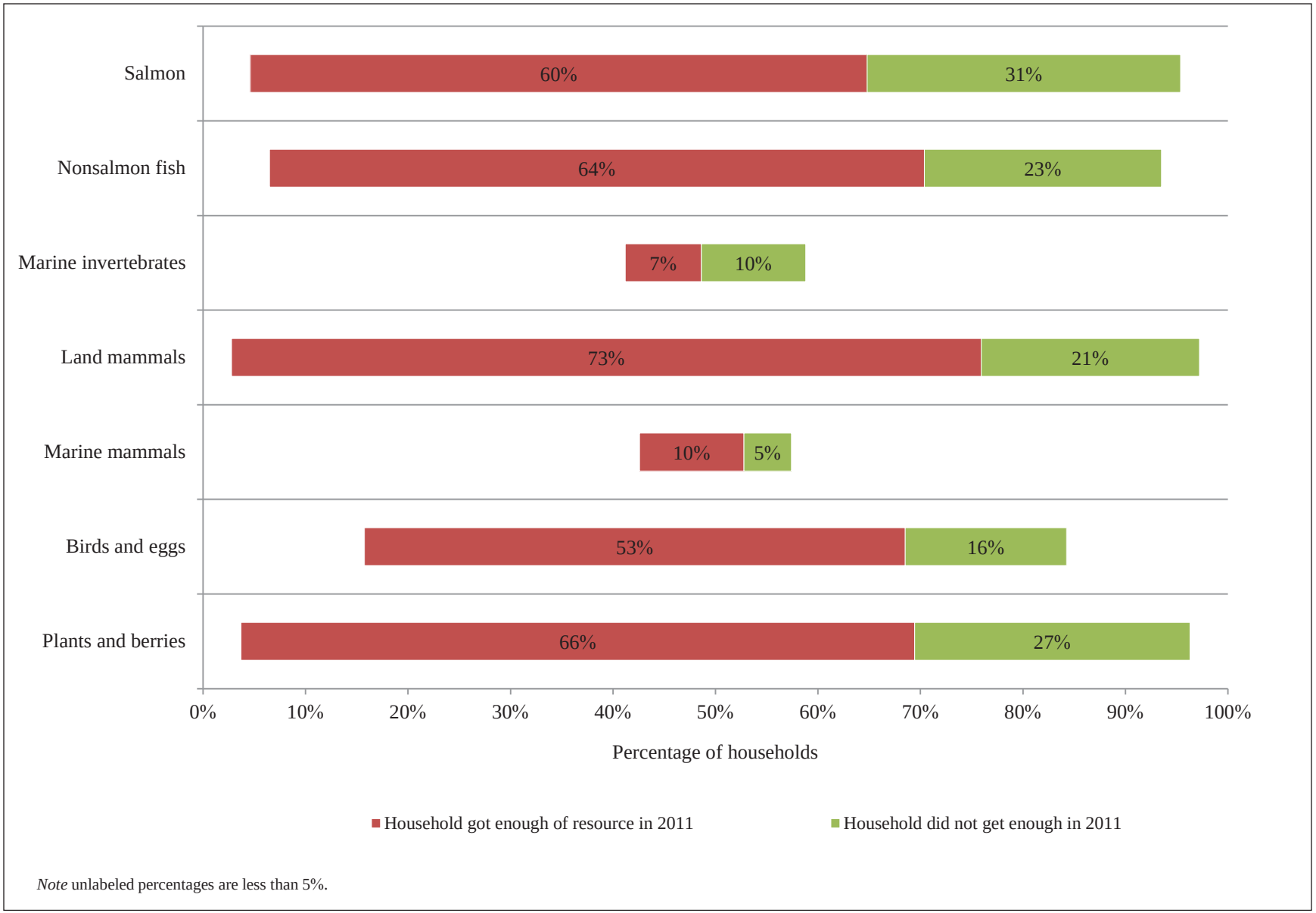


Figure 3-16.–Number of households reporting getting enough resources, McGrath, 2011.

to recent years and 66% reporting that they got enough. Twenty-eight percent of households reported not getting enough berries and greens. Of these households, 24% reported the impact as being major or severe.

Jobs, Income, and Expenses

Respondents were asked about both earned income (jobs held and wages earned by all household members 16 years old and older) and unearned income (Alaska Permanent Fund dividend, Social Security, public assistance etc.). The survey also asked about months worked and individual work schedules. In order to contextualize income information, respondents were asked about household expenses (such as housing, utilities, food, and subsistence-related expenses) and also about the cost and replacement rate of subsistence equipment (such as motors, boats, ATVs, etc.).

In 2011 McGrath households earned or received an estimated $8,560,516, of which $7,032,069 (82%) came from wage employment and $1,528,447 (18%) came from other sources (Table 3-7). Per household income in 2011 was $60,285, much higher than any other community in this study. Figure 3-17 shows the percentage of the top 10 estimated sources of income. Service occupations including health care, social services, education, and tourism or guiding related businesses were the highest contributors (17%) to McGrath's income. Local government was the 2nd largest contributor of income (16%). Federal government, including the Innoko National Wildlife Refuge headquarters and the Federal Aviation Administration, was the 3rd largest contributor of income (13%), and state government, largely Alaska Department of Natural Resources Division of Forestry was the 4th largest (12%). Local, federal, and state governments combined made up 41% of the community's total income in 2011. Federal and state government accounted for a much higher percentage of McGrath's income when compared to any other community in this study. Federal or state government incomes were not in the top 10 highest income contributors in any other community in this study.

An estimated 216 of 266 adults (81%) held at least 1 job in 2011 (Appendix Table D1-4). Of the jobs reported by McGrath, 54% were full time and 25% were part time (fewer than 35 hours per week) and 17% were on-call (Appendix Table D2-15). This high percentage of full time positions in McGrath compared to other communities is likely due to the large number of government jobs available in the community. The mean number of jobs per employed adult was 1.4, which indicates that many McGrath residents hold more than 1 job. On average, employed adults worked 10 months of the year, and 57% of McGrath residents worked year round. Ninety-three percent of households had at least 1 employed adult. The maximum number of jobs held in a household was 6 while the minimum was 1.

Income information is best understood in terms of the expense of living in rural Alaska. McGrath residents spent an estimated $3,253,033 on basic living expenses, including housing, utilities, and groceries (Table 3-8). Rent/mortgages were the highest of the housing and utility related expenses. Households spent an average of $5,031 on rent/mortgages in 2011. Stove oil followed at $2,284 per household. Store-bought

Table 3-7. – Estimated earned and other income, McGrath, 2011.

Income source	Number of people	Number of households	Total for community	Mean per household[a]	Percentage of total[b]
Earned income					
Services	60.5	58.2	$1,479,145	$10,417	17.3%
Local government	57.9	52.5	$1,410,373	$9,932	16.5%
Federal government	21.0	21.3	$1,082,967	$7,627	12.7%
State government	39.4	35.5	$1,059,361	$7,460	12.4%
Transportation, communication, and utilities	30.2	29.8	$748,265	$5,269	8.7%
Construction	17.1	18.5	$563,519	$3,968	6.6%
Mining	9.2	9.9	$394,569	$2,779	4.6%
Retail trade	5.3	4.3	$161,690	$1,139	1.9%
Agriculture, forestry, and fishing	9.2	9.9	$65,965	$465	0.8%
Other employment	2.6	2.8	$59,952	$422	0.7%
Manufacturing	1.3	1.4	$6,263	$44	0.1%
Earned income subtotal	**215.7**	**132.1**	**$7,032,069**	**$49,522**	**82.1%**
Other income					
Alaska Permanent Fund dividend		123.6	$386,119	$2,719	4.5%
Pension/retirement		19.7	$369,670	$2,603	4.3%
Social Security		26.3	$281,342	$1,981	3.3%
Food stamps		15.8	$97,719	$688	1.1%
Native corporation dividend		78.9	$93,502	$658	1.1%
Unemployment		23.7	$76,869	$541	0.9%
Child support		10.5	$54,679	$385	0.6%
Supplemental Security income		3.9	$52,035	$366	0.6%
Veterans assistance		1.3	$41,022	$289	0.5%
Energy assistance		31.6	$26,756	$188	0.3%
Adult public assistance		2.6	$14,594	$103	0.2%
Meeting honoraria		5.3	$10,443	$74	0.1%
Longevity bonus		3.9	$7,494	$53	0.1%
Foster care		1.3	$5,259	$37	0.1%
Workers' compensation/insurance		1.3	$4,602	$32	0.1%
Citgo fuel voucher		5.3	$3,973	$28	0.0%
Rental income		1.3	$2,367	$17	0.0%
TANF (temporary cash assistance for needy families)		0.0	$0	$0	0.0%
Disability		0.0	$0	$0	0.0%
Other		0.0	$0	$0	0.0%
Other income subtotal		**128.9**	**$1,528,447**	**$10,764**	**17.9%**
Community income total			**$8,560,516**	**$60,285**	**100.0%**

Source ADF&G Division of Subsistence household surveys, 2012.

a. The mean is calculated using the total number of households in the community, not the number of households for this income category.

b. Income by category as a percentage of the total community income from all sources (wage-based income and non-wage-based income.)

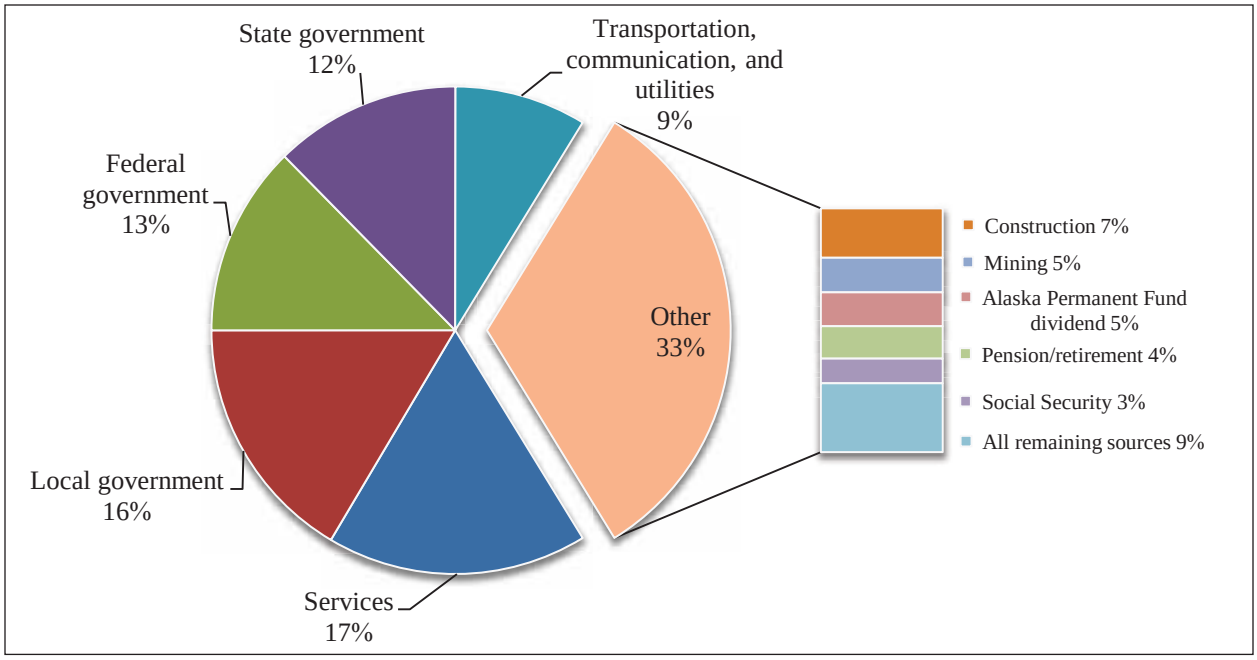


Figure 3-17.–Top 10 income sources ranked by estimated amount, McGrath, 2011.

Table 3-8. – Estimated annual expenses, McGrath, 2011.

Household expenses	Number of households	Total for community	Mean per household	Percentage of category	Percentage of total
Total expenses	**142.0**	**$3,253,033**	**$22,909**	**100.0%**	**100.0%**
Housing	142.0	$1,714,395	$12,073	100.0%	52.7%
Rent/mortgage	81.5	$714,372	$5,031	41.7%	22.0%
Stove oil	102.6	$324,326	$2,284	18.9%	10.0%
Firewood	50.0	$51,400	$362	3.0%	1.6%
Electricity	124.9	$224,204	$1,579	13.1%	6.9%
Propane	81.5	$45,264	$319	2.6%	1.4%
Water/sewer/garbage	110.4	$152,870	$1,077	8.9%	4.7%
Telephone	128.9	$121,821	$858	7.1%	3.7%
Television	98.6	$80,138	$564	4.7%	2.5%
Groceries	142.0	$1,233,549	$8,687	100.0%	37.9%
Store-bought groceries	142.0	$1,199,960	$8,450	97.3%	36.9%
Subsistence–customary trade	59.2	$33,589	$237	2.7%	1.0%
Subsistence	142.0	$305,090	$2,149	100.0%	9.4%
Gasoline	127.5	$179,384	$1,263	58.8%	5.5%
Ammunition	90.7	$9,920	$70	3.3%	0.3%
Equipment parts	73.6	$85,488	$602	28.0%	2.6%
Other supplies	59.2	$30,297	$213	9.9%	0.9%

Source ADF&G Division of Subsistence household surveys, 2012.

groceries made up 37% of household expenses. Subsistence costs consisting of gasoline, ammunition, and equipment parts totaled $305,090 for the community or $2,149 per household.

Subsistence equipment expenses constituted a large portion of costs incurred by McGrath households. Boats (82% of households) and motors (80% of households) were the 2 most frequently used pieces of equipment used for subsistence (Table 3-9). Trucks, snowmachines, and 4-wheelers were all commonly used for subsistence activities as well (60%, 59%, and 59% respectively). Households that owned a boat and motor spent an average of $6,406 for the boat and $6,221 for the motor. Boats were reported to last an average of 16 years and motors lasted approximately 10. Households that reported owning snowmachines spent an average of $8,746 on the original purchase and tended to replace their snowmachine every 9 years.

Food Security

Respondents were asked a short series of questions to assess their household's food security, defined as "access by all people at all times to enough food for an active, healthy life" (Nord et al. 2009). Modeled on a method developed by the USDA, survey questions were modified by ADF&G to account for differences in access to subsistence and store-bought foods. The severity of food insecure conditions increases as the food security questions are read in descending order on the left hand side of Figure 3-18. Based on their responses to these questions, households were categorized as being food secure or food insecure following a USDA protocol (Bickel et al. 2000). Households were then designated as having high, marginal, low, or very low food security. In this analysis, households that reported high or marginal food security were considered food secure. These households expressed no more than 2 limitations in obtaining food, but did not reduce the quality or quantity of their food intake. The limitations expressed by food secure households were less severe and manifested as anxiety or worry about having enough food. Food insecure households were classified as having either low food security or very low food security. Households with low food security reduced the quality, variety, or desirability of their food, but the quantity remained the same. Households characterized as having very low food security were those that reported multiple instances of disrupted eating patterns and reduced food intake (Coleman-Jensen and Nord 2013).

In 2011, 92% of the surveyed households in McGrath were food secure, having either high or marginal food security (Figure 3-19). In the analysis, food secure households reported food insecurity that often manifested as concern over food availability for at least part of the year or a food shortage that did not disrupt their eating pattern. Five percent of McGrath households had low food security. These are households in which heads of households, at some point during the year, had trouble providing enough food for their family. The remaining households (4%) reported conditions of very low food security. These households reported a disruption in their eating pattern for at least 7 months of the calendar year. Overall assessment of food security for McGrath was higher than both the Alaska and United States averages. Also, McGrath was among the most food secure communities in the current study.

Table 3-9. – Estimated equipment costs and household use, McGrath, 2011.

	Equipment used for subsistence					
	Boats	Boat motors	Nets	Snowmachines	4-wheelers (ATVs)	Trucks/cars
All households						
Using						
Estimated number	116.7	113.9	45.0	84.4	83.8	85.8
Percentage	82.2%	80.2%	31.7%	59.4%	59.0%	60.4%
Owning						
Estimated number	90.9	91.3	40.8	80.1	73.8	74.5
Percentage	64.0%	64.3%	28.7%	56.4%	52.0%	52.5%
Mean owned	0.8	0.8	0.6	1.1	0.7	0.6
Total estimated owned in the community	110.8	114.5	88.6	150.4	99.4	91.4
Mean original cost per household	$4,100	$3,999	$112	$4,936	$3,318	$5,954
Total estimated community cost	$582,200	$567,917	$15,963	$700,924	$471,136	$845,529
Estimated annual community cost	$28,319	$41,993	$2,889	$62,585	$36,021	$47,637
Only households owning						
Mean owned	1.2	1.3	2.2	1.9	1.3	1.2
Maximum owned	3	5	6	6	5	3
Mean original purchase cost	$6,406	$6,221	$392	$8,746	$6,380	$11,347
Minimum original purchase cost	$100	$450	$35	$500	$200	$500
Maximum original purchase cost	$42,000	$16,000	$1,500	$11,000	$12,500	$35,000
Median original purchase cost	$3,500	$5,000	$160	$5,250	$4,425	$8,250
Mean replacement time (years)	16.2	10.4	4.9	9.1	10.8	14.5
Minimum replacement time (years)	0	0	0	0	3	0
Maximum replacement time (years)	50	40	10	25	25	35
Median replacement time (years)	20.0	10.0	5.0	9.5	10.0	12.5

Source ADF&G Division of Subsistence household surveys, 2012.

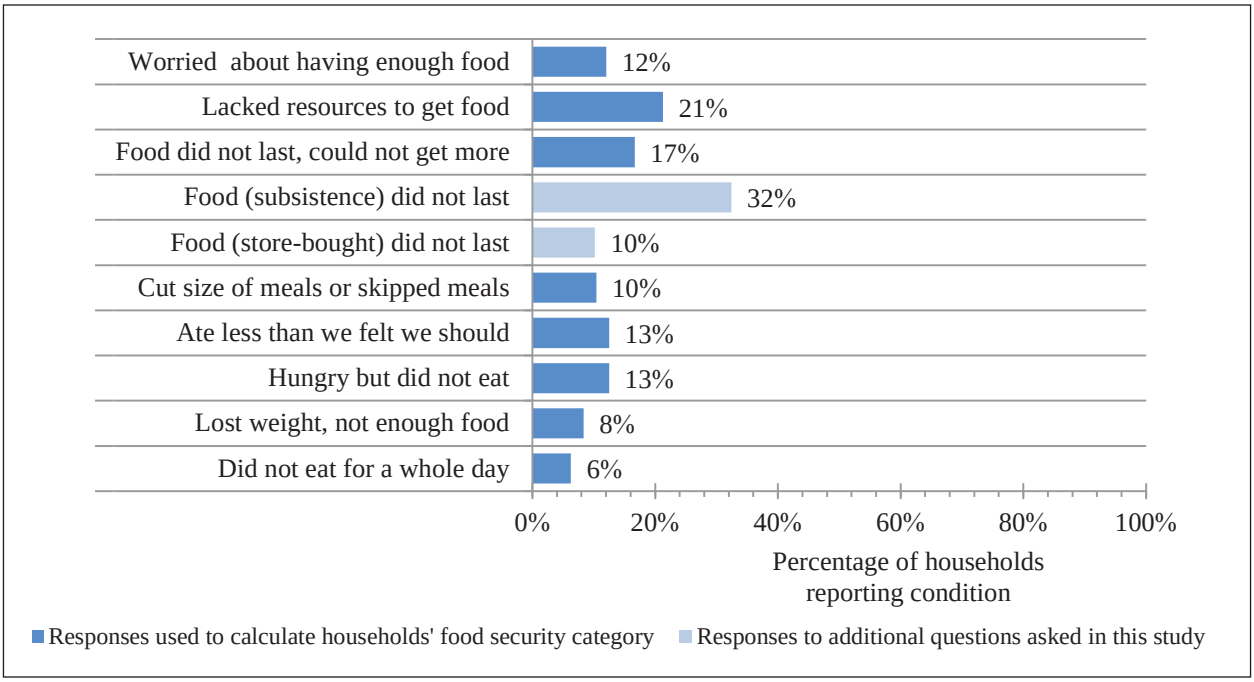


Figure 3-18.–Food insecure conditions results, McGrath, 2011.

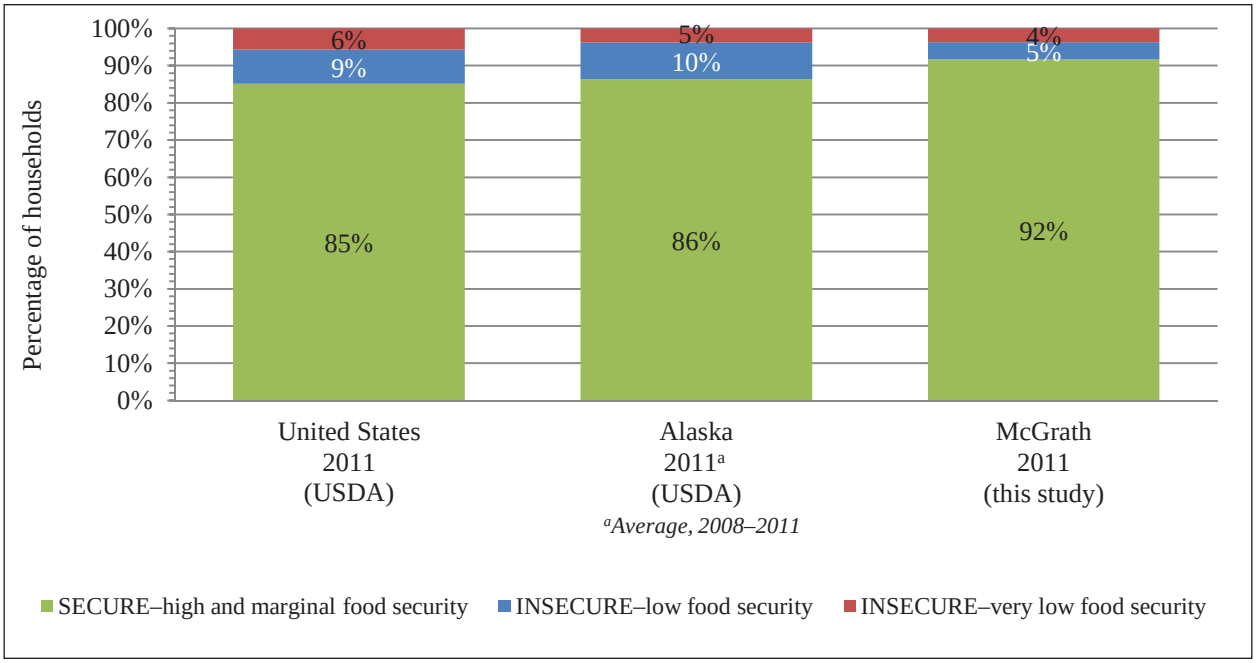


Figure 3-19.–Food security categories, McGrath, 2011.

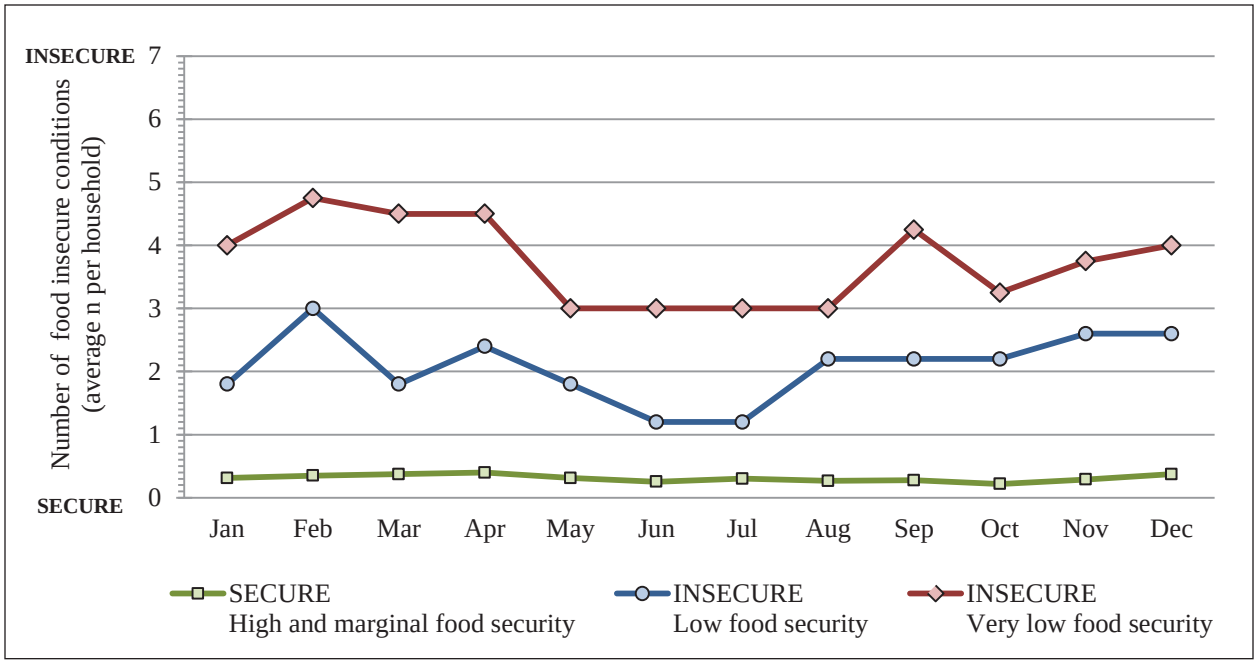


Figure 3-20.–Food insecure conditions by month and by household category, McGrath, 2011.

Households were also asked questions addressing the apparent reasons why each may have experienced conditions of food insecurity. Responses to these questions showed that 21% of McGrath households lacked the resources they needed to get food at some time in 2011. Resources needed could have included gasoline, transportation equipment, fish nets, firearms, ammunition, or cash needed to purchase or maintain any or all of these. Also, resources could have included cash needed to purchase food from stores or to purchase wild foods from another household or community as well as the time needed to harvest subsistence foods. Responses to other questions showed that 32% of households reported that their subsistence foods did not last and they could not get more; 12% of households worried about having enough food sometime during the year, and 6% did not eat for an entire day in 2011 because they did not have the food they needed (Figure 3-18). These percentages stand in contrast to several other Kuskokwim River communities that reported far less food security in 2011. For example, while 21% of McGrath households reported not having the resources they needed to get food, 38% of Napakiak residents reported lacking these resources. Also, 50% of Nikolai respondents reported that their subsistence food did not last, compared to 32% of McGrath respondents, and 18% of Nikolai households said that they did not eat for a whole day in 2011, compared to only 6% in McGrath.

Figure 3-20 portrays the responses to food security questions, or reports of instances of food insecure conditions, throughout the year. The food secure households collectively indicated that they remained steadily secure through the whole year. Households labeled as food insecure, those with low or very low food security, experienced the most seasonal variability as a group. Food security for these households was lowest in

the winter months—December through April. Food security was also low in September, possibly because of the uncertainty associated with attempting to harvest a moose that will be needed throughout the winter.

Wild Food Networks

Subsistence hunting, fishing, and gathering are highly cooperative endeavors that few individuals undertake alone. Furthermore, the food and materials gained through a person's efforts are usually distributed along kinship lines or through other social relationships. In 2011, 93% of McGrath households reported that they received wild food resources and 77% reported that they gave wild food resources to another household. Sixty-four percent of McGrath households received large land mammals such as moose, caribou, and black bears, and 55% gave them to other households. A majority of households reported that they shared fish, with 77% receiving the resource and 48% giving fish to other households. Other resources that residents commonly shared included plants (51% received and 51% gave away) and birds (21% received and 25% gave away).

This survey also collected information on distribution networks for individual resource categories from the point of view of the household unit. Respondents were asked "Last year, who harvested the ___ your household used?" and "Last year, who processed the ___ your household used?" For each resource used, every respondent was asked if they gave that resource to another household, and if they received that resource from another household.

Figure 3-21 depicts a network of wild food exchanges between McGrath households and with households in other communities. The nodes are shaped according to the demographic structure of the household (couple, single male, single female) and colored according to the age of the head or heads of household. A developing household head is less than 40 years old, a mature household head is 40 to 59 years old, and an elder household head is 60 years old or older. Gray boxes are unsurveyed households. Blue circles connote a household in another community. The size of each node is scaled to represent the household's total subsistence harvest; the larger the node, the greater that household's total harvest. Arrowed lines show the direction of the exchange and are weighted to show multiple exchanges. However, arrowed lines only indicate resources flowing into an individual household; the network diagram cannot imply patterns of reciprocity. Likewise, the diagram does not illustrate other relationships which occur in subsistence sharing networks such as providing financial support for the harvesting effort or receiving food from an intermediary instead of directly from those harvesting or processing the resources. The movement of these wild foods within or between communities is also an integral part of the distribution network. Households near the center of the network diagram are more connected than others. Households (represented by nodes) migrate to the center of the diagram as they receive more resources from other households; those households closer to the periphery of the diagram receive fewer resources. Every household in McGrath had at least 1 connection to another household in the community—no household was entirely isolated from McGrath's sharing network.

The highest harvesting households tended to be headed by mature and elder couples who shared with

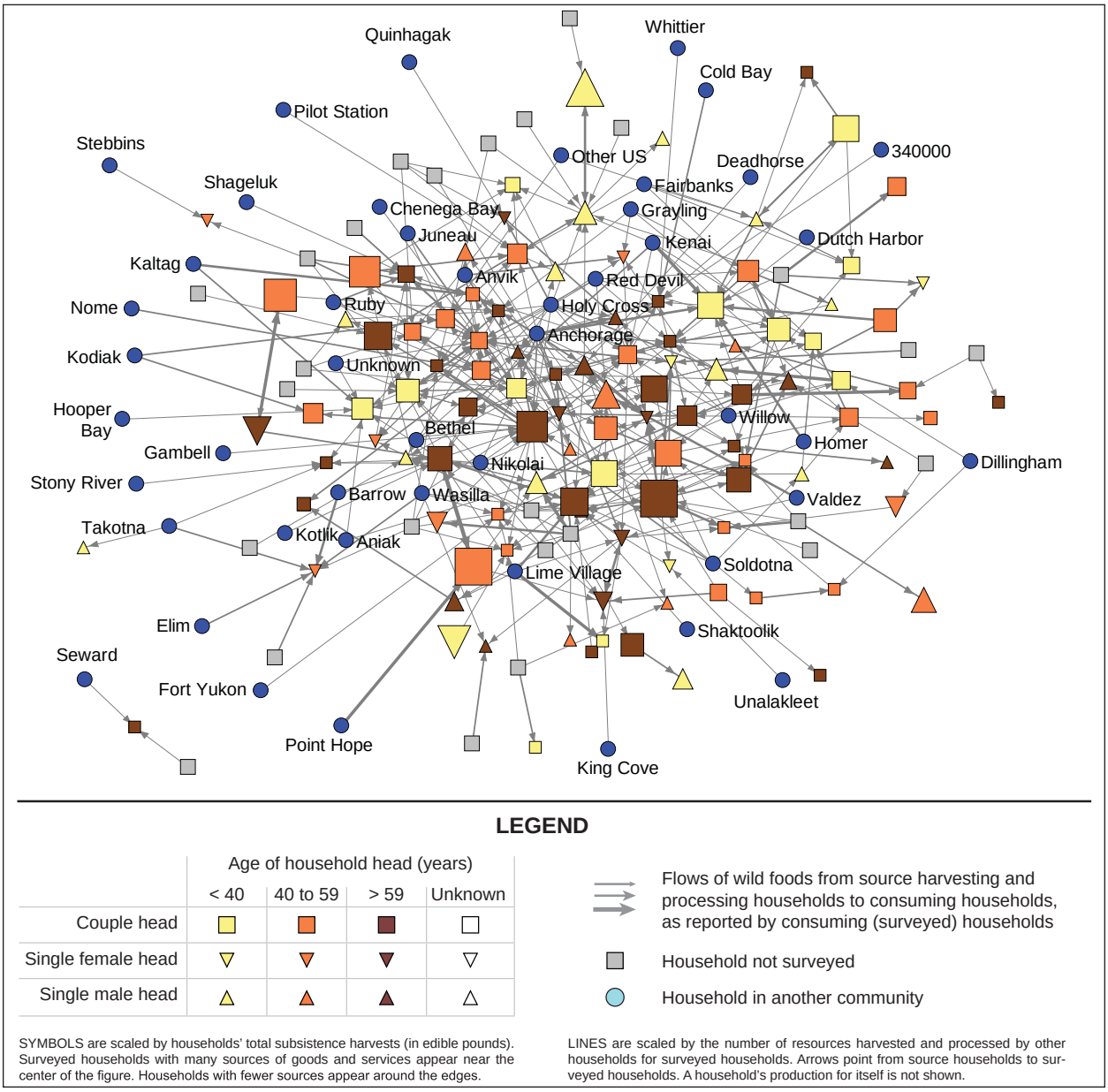


Figure 3-21.–Wild food harvesting and processing network, McGrath, 2011.

a large number of households throughout the community, represented by the large squares centered in the middle of the graph and off to the right side. There were a smaller number of high harvesting developing households that also shared a large amount of resources within McGrath. This reflects the pattern described in other studies, which showed that mean harvests increase with the maturity of households in a community (Magdanz et al. 2002:61). Low harvesters who received a large amount of resources from other households tended to be headed by elder couples and elder single males or females. McGrath residents also reported a vast network of exchange of wild foods, involving 46 communities from every region of the state. Hub communities such as Anchorage and Bethel, as well as communities that are geographically close to McGrath,

such as Nikolai, Holy Cross, Red Devil, and Anvik, are found near the center of Figure 3-21, which reflects a high degree of resource exchange between those communities and McGrath. Resources that McGrath households received from other communities likely included seal, shrimp, king crab, and bowhead whale.

Comparisons with Prior Results

This section compares the major findings of this 2011 study with previously collected data. This is the second study to publish comprehensive subsistence harvest data for McGrath. In 1984 Jeff Stokes, a staff researcher with ADF&G, documented harvest and use patterns for McGrath and 3 other villages on the Upper Kuskokwim River. Though no household survey was performed, this report (Stokes 1985) provided harvest numbers for all resource categories. These numbers were estimated through participant observation and ethnographic interviews conducted by Stokes while residing in the village of Nikolai during the study year (1984). Stokes also mapped harvest areas during interviews with 33 McGrath households. These 33 households were specifically suggested by knowledgeable community leaders and included locally known trappers, fishers, and hunters. ADF&G has also conducted annual subsistence salmon surveys (gathering information on both salmon and nonsalmon species) in McGrath annually since 1960. These postseason surveys were conducted by the Division of Subsistence from 1988 to 2007 and by the Division of Commercial Fisheries from 1960 to 1987 and from 2008 to the present.

Figure 3-22 shows the estimated subsistence salmon harvests for all species except pink salmon, from 1990 through 2011. This figure shows 2 data points for 2011, one represents the harvest estimated by the annual post season survey conducted by the Division of Commercial Fisheries; the other represents the survey data gathered in this study. These data shows that no one salmon species has been relied upon, and though salmon harvest has varied from year to year, when averaged over 21 years, the harvest numbers of all 4 salmon species are comparable. Overall chum salmon had the highest average annual harvest (941), however, the least harvested species, sockeye, averaged only a few hundred less per year (681). Harvest numbers of chum, sockeye, and Chinook salmon have declined over the last 20 years. Coho salmon harvest numbers however, show a slight increasing trend.

Stokes (1985) estimated the harvest of 4 nonsalmon fish species—Arctic grayling, northern pike, sheefish, and whitefish (Stokes does not include sheefish in the whitefish category)—by McGrath residents. McGrath residents reported harvesting more nonsalmon fish overall in 2011 (26 lb per capita) than in 1984 (19 lb per capita). Whitefish (excluding sheefish) were the only nonsalmon species that were reported to be harvested in greater numbers in 1984. The average McGrath household harvested 14 lb of whitefish in 1984 compared to 6 lb in the current study. This difference may be due to fewer McGrath residents specifically targeting whitefish with setnets. While many respondents of the 2011 study reported catching whitefish incidentally in set gillnets intended for salmon or sheefish, Stokes (1985) reported that many people specifically targeted whitefish in the spring by setting nets at the mouth of the Takotna River.

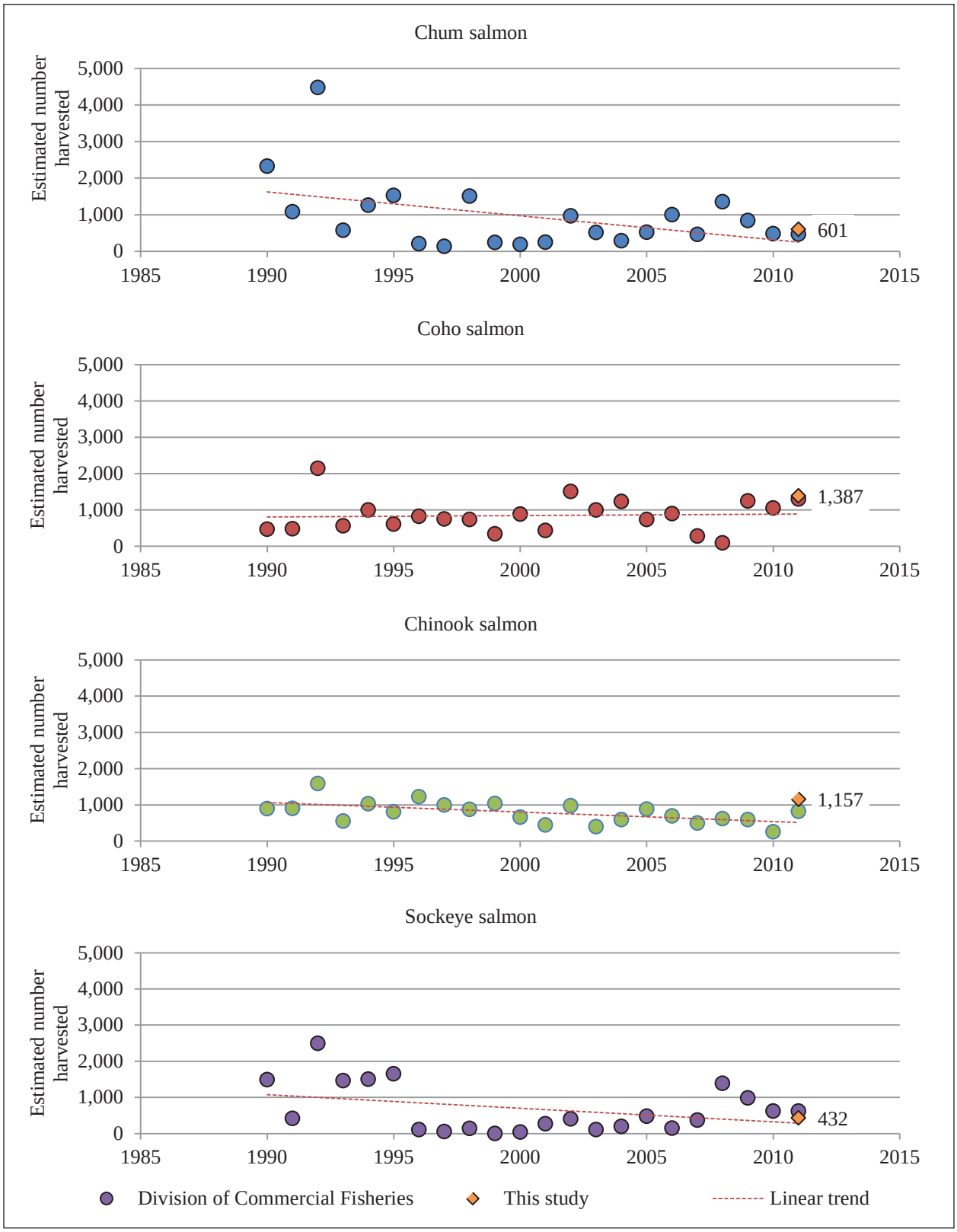


Figure 3-22.–Estimated total number of chum, coho, Chinook, and sockeye salmon harvested by residents, McGrath, 1990–2011.

Northern pike and Arctic grayling were harvested in greater numbers in 2011 than in 1984. One McGrath resident, during the community data review presentation, suggested that this trend indicated an increase in the popularity of targeting these species for recreation with rod and reel and by jigging. Sheefish were also harvested in greater numbers in 2011 (11 lb per capita) compared to 1984 (3 lb per capita). These numbers may also indicate an increase in the popularity of sport fishing, with 51% of the sheefish in 2011 harvested with rod and reel.

The data reported by Stokes in 1984 and the results of this 2011 comprehensive survey show that reliance on moose has been constant since the decrease of the caribou population in the 1920s. McGrath's estimated moose harvest in 2011 (76) was comparable to the moose harvest documented in 1984 (75). Considering the decrease in population, this indicates a greater moose harvest per capita: 70 lb of moose harvested per person in 1984, and 107 lb per person in 2011. This small increase is likely explained by an increase in the availability of moose. While McGrath currently has a healthy moose population as a result of recent predator control efforts, the 1980s were a period of more conservative management in response to a low moose population in the region. The moose hunting areas reported in Stokes (1985) are consistent with the results of the current study, with most respondents reporting that they hunted on the Nixon Fork, Kuskokwim, and Takotna rivers.

Harvest data for black bear, brown bear, caribou, and Dall sheep were also reported by Stokes (1985). Black bear harvest increased from 15 bears (2 lb per capita) in 1984 to 41 bears (7 lb per capita) in 2011. Some key respondents indicated that several of the black bear taken in 2011 were a direct result of the current predator control program in the region, suggesting an explanation for the increase in black bear harvest. Black bear hunting practices reported in 1984 are consistent with those of McGrath residents today. The areas used for hunting and harvesting black bear in 1984 were very similar to those used in 2011. Black bear continue to be primarily harvested opportunistically while engaging in some other subsistence harvesting activity or at fish camp as a result of bear/human encounters. Black bears inhabit the same areas as moose, along the riparian corridor, and many are taken in conjunction with fall moose hunting. Dall sheep harvest decreased from 6 sheep taken in 1984 to zero in 2011. This is likely due to a decrease in the Dall sheep population in GMU 19C, as indicated in the 2005 Alaska Department of Fish and Game Dall Sheep Management Report of Survey-Inventory Activities 1 July 2001–30 June 2004:

> Harvest data and survey work indicate that the ARW [Alaska Range West] sheep population was relatively stable prior to regulatory year 1998…However, numbers of sheep observed during aerial surveys and reported harvest of rams have declined since that time. (ADF&G 2005)

Key respondents in the current study indicated that, while occasionally a McGrath pilot will fly to the Alaska Range to hunt for Dall sheep, they are not a common source of subsistence meat due to low population numbers and hunting restrictions. The current regulations require that a sheep, for it to be legally harvested, must be a ram with horns that have grown into 1 complete curl.

Caribou harvest by McGrath residents has decreased from an estimated 10 caribou in 1984 (3 lb per capita) to 3 caribou in 2011 (1 lb per capita) in 2011. Stokes (1985) described the caribou hunting effort in 1984:

> Contemporary caribou populations are comparatively low and the range of these animals has decreased from those characteristic of earlier times. However, many area residents continue to apply appreciable amounts of time, effort, and money to the harvest of this big game species.

This level of hunting effort is not consistent with hunting reported by respondents of the current study. Only 2 percent of McGrath households attempted to harvest caribou in 2011. The small caribou herds near McGrath, including the Farewell–Big River herd to the south and the Sunshine Mountains herd to the north, have continued to disperse since 1984, making the harvest of caribou more difficult. Stokes (1985) identified several areas near McGrath that were used for caribou hunting in 1984. None of these areas were used in 2011. All caribou hunting areas in 2011 were located much further away from the community and were most likely accessed by airplane.

Brown bear harvests were reported to be less than 1lb per person in both 1984 and 2011. Stokes described brown bears as having "…little food value among contemporary Upper Kuskokwim inhabitants, most grizzly bears are hunted for 'sport' and for the 'trophy' value associated with the skin." This is consistent with the results of the current study—only 1% of McGrath households reported eating brown bear, and many other respondents indicated that they do not eat it because of cultural taboos or because the meat is unpalatable.

Stokes (1985) reported 1984 harvest data for 2 small land mammals: beaver and snowshoe hare. The report did not include data on other furbearers or small mammals such as porcupine or squirrels. Both beaver and snowshoe hare were harvested in far greater numbers in the present study than in 1984. Only 10 beaver were harvested in 1984 compared to 180 in 2011. The average per capita consumption of beaver meat was less than 1 pound in 1984 and 6 lb in 2011. One key respondent indicated that beaver trapping has increased in popularity due to an increase in beaver fur value compared to recent decades. All attendees of the community review presentation were very surprised at the large amount of beaver eaten by McGrath residents in 2011 (2,051 lb). More snowshoe hare were harvested in 1984 (3 lb per household) than in 2011 (1 lb per household). McGrath respondents in the current study did not indicate a trend of decreasing snowshoe hare harvesting over time. Because snowshoe hare population numbers are known to be very cyclical, no conclusions can be drawn about the decrease in the number of snowshoe hares harvested.

Fewer ducks were harvested in 2011 (501) than in 1984 (1,448). This shows a significant decrease of use of ducks per capita: edible pounds of ducks per capita in 1984 (4 lb) was 4 times that of 2011 (1 lb). Similarly, far fewer geese were harvested in 2011 (184) compared to 1984 (362). Harvest areas reported in the 2 study years were very similar, both years showing concentration of waterfowl hunting effort on the Nixon Fork, Takotna, and the Kuskokwim rivers. Stokes described a level of waterfowl hunting intensity that did not seem to be matched by respondents in the current study:

> In anticipation of spring hunting, aluminum river boats are sometimes transported by snowmobiles to locations along area rivers historically known to open up early. Left in place until after break-up, hunters are able to seek waterfowl along stretches of river which do open early. (Stokes 1984:168)

Upland game birds were harvested in far greater numbers in 2011 (1,818) compared to 1984 (200). In the present study, no indication of an increase over time in game bird population or harvest effort was given by the key respondents or community review attendees.

Conclusion

Moose and salmon made up nearly three-quarters of McGrath's subsistence harvest and contributed approximately 107 lb of food to the average residents' diet in 2011. McGrath residents also harvested 77 other species of wild food, including sheefish, black bear, northern pike, grouse, and blueberries, which played a vital role in their diet. Exchange and sharing of resources also played a vital role in McGrath's subsistence, with 93% receiving and 77% giving away some resource. Also, the diversity of McGrath's residents is reflected in the fact that 46 communities all over the state were involved in sharing subsistence resources with McGrath. Key respondents reported changes in harvest patterns of certain species over time—caribou are no longer available, therefore moose is more important; a wildfire near town has made berry picking more convenient; technology has made dog teams obsolete, therefore chum salmon are far less important as dog food. However, no one indicated that subsistence as a whole is any less important in McGrath than it has ever been. On the contrary, many residents voiced the growing importance of subsistence with the increasing cost of living and fuel prices.

McGrath's diverse population, average household income, and role as a regional hub make it unique among Kuskokwim River communities. However, McGrath does not differ from other villages in the importance that its residents place on living off the land. Subsistence in McGrath, as in other villages, is a way of life.

Chapter 4: Comprehensive Survey Results Napakiak, 2011

David Runfola and Lisa J. Slayton

In May 2012, ADF&G researchers surveyed 56 of 89 households (63%) in Napakiak, Alaska. Expanding for the unsurveyed households, the residents of Napakiak's estimated total harvest of edible weight of wild foods between January and December 2011 was 154,784 lb (± 21%). The average harvest per household was 1,739 lb; the average harvest per person was 489 lb. During the study year, Napakiak's residents harvested 81 different types of wild resources.

Five fish species—Chinook salmon, chum salmon, northern pike, sockeye salmon, and coho salmon—accounted for 64% of the total harvest in 2011 (Figure 4-1). In 2011, an estimated 12,206 individual salmon were taken for an estimated total harvest of 73,449 edible pounds or 47% of the total community harvest of wild foods. Northern pike was also a principal subsistence species in 2011. Napakiak residents harvested 25,491 lb of northern pike, composing 16% of all subsistence resources harvested.

This chapter summarizes findings from the household surveys, including demographic characteristics, responses to harvest assessment questions, harvest estimates, employment, income, and food security. Har-

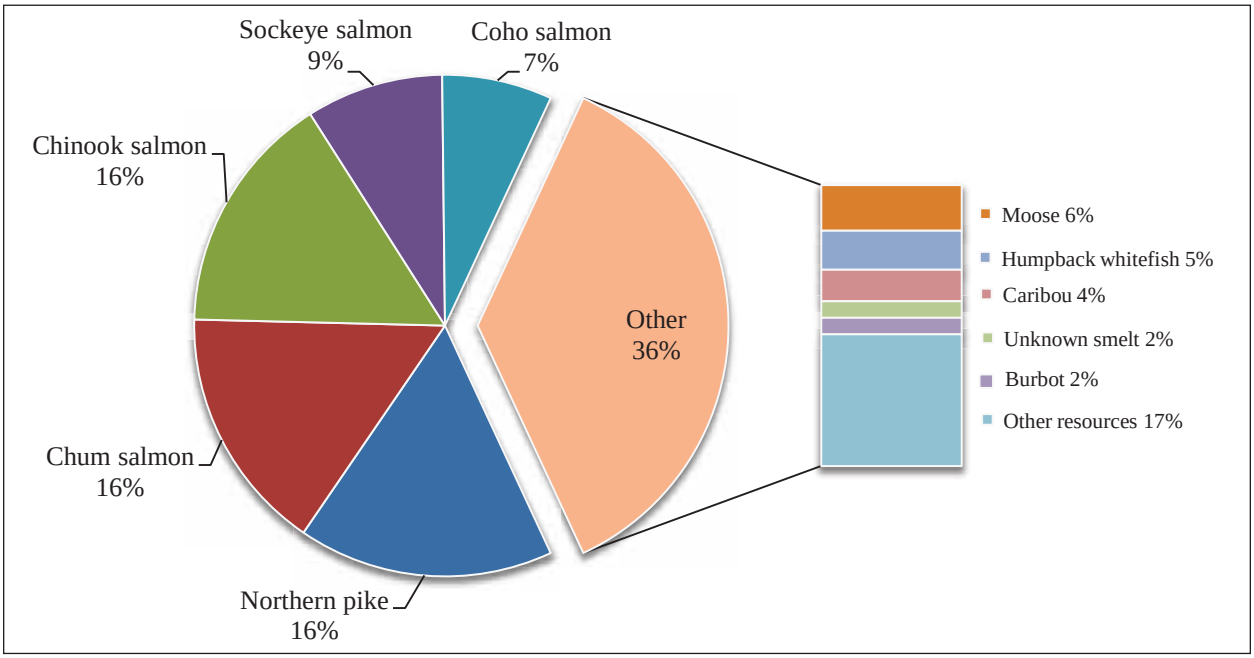


Figure 4-1.–Top 10 species harvests ranked by estimated edible weight, Napkiak, 2011.

vest numbers are expanded estimates. Additional tables appear in Appendix D. Results from this survey are available online in the Division of Subsistence Community Subsistence Information System (CSIS).

In addition to the 2011 comprehensive survey, 1 ethnographic interview was conducted with a married couple. The ethnographic interview helps to provide context for the quantitative data presented in this chapter. Findings from this interview, historical background information, and comparisons to earlier studies are presented throughout the chapter.

About Napakiak

Napakiak is a Yup'ik Eskimo community located on the north bank of the Kuskokwim River and is situated on an island between the Kuskokwim River and Johnson Slough. It lies approximately 15 miles southwest of Bethel, the regional hub community of the Yukon–Kuskokwim delta, and 407 miles west of Anchorage. Residents utilize many of the services and supplies available in Bethel, which is accessed primarily by boat in summer and by snowmachine, all-terrain vehicle (ATV), or automobile in winter. There are no overland roads connecting Napakiak with other communities; however, between freeze-up and break-up, residents of the region use an ice road on the lower Kuskokwim River. The winter ice road is maintained by Alaska Department of Transportation and Public Facilities (AKDOT) when feasible and supports motor vehicle traffic between communities in the region. The community is located within the Yukon Delta National Wildlife Refuge (YDNWR). The general climate of the region is characterized by relatively cool summers and moderately cold winters. Winter high temperatures average 11 to 19˚F and summer high temperatures average from 59 to 62˚F, with an average precipitation of 16 inches per year.[1] August is generally the wettest month with an average of about 4 inches of precipitation. Average annual snowfall is approximately 50 inches (AKDOT/PF et al. 1981). The weather is influenced by both an inland continental climate and by maritime storms from the Bering Sea. The Kuskokwim River at Napakiak experiences tides and is typically free of ice from mid-June through October.[2]

Napakiak lies within the Kuskokwim River Flood Plain, with seasonal flooding often occurring each year during spring break-up. Flood levels vary each year, but residents report that the highest flood level above ground surface ranges generally between 2 and 4 feet. The major vegetation in the area consists of grasses, sedges, mosses, and lichens. Alder and willow thickets occur in areas along stream channels, with small birch and spruce found in some protected drainages. The tundra surrounding the Kuskokwim River near Napakiak is dominated by marshes and lakes (AKDOT/PF et al. 1981). Resident terrestrial animal species include moose, red fox, muskrat, river otter, mink, snowshoe hare, Alaska hare, short-tailed weasel, least

1. Alaska Department of Commerce, Community, and Economic Development (ADCCED) Division of Community and Regional Affairs, Juneau: "Alaska Community Database Online: Community Information." Accessed August 2013. http://commerce.alaska.gov/cra/DCRAExternal/community.
2. Alaska Department of Commerce, Community, and Economic Development (ADCCED) Division of Community and Regional Affairs, Juneau: "Alaska Community Database Online: Community Information." Accessed August 2013. http://commerce.alaska.gov/cra/DCRAExternal/community.

weasel, willow ptarmigan, spruce grouse, common raven, gray jay, and several small mammal species (e.g., shrews, voles, and lemmings). Other resident mammal species include wolf, wolverine, lynx, brown bear, and black bear, usually in low densities. During winter months, a portion of the Mulchatna caribou herd often migrates within hunting distance of the community. Resident and migratory fish species present in the aquatic environment include 5 species of Pacific salmon, 6 species of whitefishes, northern pike, burbot, Alaska blackfish, rainbow smelt[3], and 2 species of sticklebacks (Mecklenburg et al. 2002).

Historical Seasonal Round

In the lower Kuskokwim River areaat the time of Euro-American contact in the mid-19th Century, ancestors of the Central Yup'ik people of the region moved throughout the landscape in small family groups hunting, fishing, trapping, and gathering for the majority of the year as they followed seasonally available wild resources. Salmon were the major subsistence focus, followed by furbearers and large land mammals (Oswalt 1963). In spring, the time of the year when stores of frozen and dried foods gathered the previous summer became depleted, people depended on small mammals such as hares, and birds such as willow ptarmigan for food. In late April, before break-up, whole families moved to tundra camps to set fish traps under the ice for Alaska blackfish and whitefishes and to hunt for muskrat, beaver, river otter, hares, and willow ptarmigan. Ducks and geese were hunted at this time as well (Oswalt 1963). In late spring, families would move to fish camps along the Kuskokwim River in preparation for summer salmon harvests. The entire summer was devoted primarily to harvesting and processing salmon. After the fishing season ended in early September, families moved to their tundra camps to set traps for Alaska blackfish as well as whitefishes that were migrating from tundra lakes. Residents also hunted ducks and geese at this time. By October, families returned to their winter camps when groups of men would make hunting trips for moose, caribou, and sometimes black bear and brown bear. In the winter months, families trapped furbearers and fished through the ice for northern pike, burbot, whitefishes, and Alaska blackfish. Trapping continued through December and then resumed in late February to April. Fishing occurred with fish traps and with jigging gear in nearby streams throughout the winter and early spring (Oswalt 1963).

The village of Napakiak was first documented in the historical record in 1878 by E.W. Nelson of the U.S. Signal Service. At that time, the settlement was located further downriver at the mouth of the Johnson River and was recorded as "Napahaiagamute" (Orth 1971). The Yup'ik name of the community, *Naparyarraq*, refers to a solitary, large tree that grew at the historic village site. The residents of the period used this tree

3. In survey results described in this report (Table 4-1) harvests of fishes of the family Osmeridae are referred to as "unknown smelts." This is due to the fact that several species of Osmeridae are present in Alaska, including at least 2 in the lower Kuskokwim River: Arctic rainbow smelt *Osmerus mordax* and pond smelt *Hypomesus olidus* (Scott and Crossman 1973:308–317; Mecklenburg et al. 2002:169–176). Each spring immediately following ice-out in the lower Kuskokwim River, subsistence fishers (including those in Napakiak) use dip nets to harvest large quantities of smelt. Mecklenburg et al. (2002) describe the large annual upriver spawning migrations of the anadromous rainbow smelt in Alaskan rivers and distinguish these from other species such as pond smelt that do not demonstrate this behavior. While pond smelt do make spawning migrations in western Alaskan rivers and are present in the Kuskokwim River mouth, their abundance is much lower than that of Arctic rainbow smelt. Therefore, it is likely that these Kuskokwim River subsistence harvests are composed primarily of Arctic rainbow smelt.

as a landmark that aided travelers in locating the community (Walter Nelson, Tribal Housing Administrator, Native Village of Napakiak, personal communication, May 2012). The exact year that the village was moved to its present location is unknown; however, the move is thought to have occurred prior to 1884 when Moravian explorers mentioned Napakiak as being "close to" the village of Napaskiak. In 1926, a lay worker with the Moravian Church under the auspices of the Ohio Moravian Association began constructing the first chapel in Napakiak.[4] By 1940 the village was large enough for a BIA school to be constructed. A Native-owned village cooperative store was opened in 1946 as the community continued to grow. The Napakiak post office was established in 1951, and a U.S. Army National Guard Armory was built in 1960. Following the incorporation of the community in 1970, the first airstrip was completed in 1973.[5] In the early 1980s AKDOT proposed to develop an approximately 10 mile long road linking Napakiak with Bethel. Research was conducted, but this road project did not occur (AKDOT/PF et al. 1981). Like other communities in Alaska, Napakiak is experiencing riverbank erosion. Since 2009, a priority of the city has been to relocate public facilities and residences to more stable ground on a bluff across Johnson Slough.

Napakiak's current economy is based on a mix of cash income and subsistence activities. Most families maintain long-established fish camps and hunt for large and small game. The primary employers for the community include local, state, and federal government, and the K–12 school. Construction projects, trapping, craft production, and seasonal commercial fishing also provide income. Commercial fishing permits were held by 23 residents in 2011, mostly for salmon gillnet fisheries.[6]

Contemporary Seasonal Round

Similar to many communities in rural Alaska, Napakiak is a home base from which individuals, or hunting and fishing partners, depart for subsistence activities on day trips or short camping trips throughout the year. Most families no longer spend all summer living at their fish camps. Technological changes in transportation methods have made traveling for subsistence activities faster and more efficient in modern times. Foot travel, dog teams, and motorless watercraft have mostly been replaced by snow machines, ATVs, and boats with high power motors. One key respondent explained the changes in his lifetime that have resulted in drastically different modes of transportation and less travel between seasonal camps:

> Mostly with my grandparents, I started out with a dog team. From Kasigluk to where my grandparents lived over... 60 miles [away]. So, [we would] start out with whitefish in the springtime, birds or

4. Alaska Department of Commerce, Community, and Economic Development (ADCCED) Division of Community and Regional Affairs, Juneau: "Alaska Community Database Online: Community Information." Accessed August 2013. http://commerce.alaska.gov/cra/DCRAExternal/community.
5. Alaska Department of Commerce, Community, and Economic Development (ADCCED) Division of Community and Regional Affairs, Juneau: "Alaska Community Database Online: Community Information." Accessed August 2013. http://commerce.alaska.gov/cra/DCRAExternal/community.
6. Alaska Department of Commerce, Community, and Economic Development (ADCCED) Division of Community and Regional Affairs, Juneau: "Alaska Community Database Online: Community Information." Accessed August 2013. http://commerce.alaska.gov/cra/DCRAExternal/community.

> eggs, after that we moved onto the Kuskokwim, then we used to travel a couple of days to get there. That's how slow the motors were back then. [After that we would] come down for king salmon and chums for subsistence. (05082012WNA1)

While technology has changed the pursuit of subsistence resources considerably over the years, the seasonal availability of those resources remains relatively the same. Spring is still the time Napakiak residents hunt for ducks and geese on their annual spring migrations, gather eggs, fish for whitefishes with nets placed under the ice, jig for northern pike, and travel to coastal areas to hunt for seals and other marine mammals. A key respondent described the process of setting a net under river ice, explaining the extensive amount of work that is required to do so (05082012WNA1). Fishers still pursue this efficient method of harvesting whitefishes and other fish throughout the months between freeze-up and breakup.

Summer continues to be one of the most intensely busy times of the year, as fishing for and processing salmon becomes the focus of subsistence activities. Chinook salmon is the first species of salmon to arrive in June, followed by runs of sockeye, chum, and finally coho salmon. Fall is the beginning of large mammal hunting, continued fishing for nonsalmon fishes, hunting ducks and geese on their fall migrations, and berry picking. In winter, hunting for large mammals and ice fishing for nonsalmon fishes continues. Trapping still occurs at low levels, though the absence of a robust commercial market limits it. One key respondent described his own opinions as to why trapping has declined in Napakiak. He stated, "I don't see anyone trapping since [we got] jobs. Different kinds of projects started showing up in the village. Men started to work in the village. Some go to school." (05082012WNA1)

As in the past, sharing subsistence foods is an important part of all aspects of the seasonal round. Subsistence harvests are shared first with elders and others who cannot pursue subsistence activities for themselves, then with extended family and friends. Key respondents discussed the importance of sharing with others who may not have access to enough subsistence resources. He explained:

> Sometimes if we catch [more than] we need, we'll give [some] to somebody that needs [it]. Like… next door. They're getting old. And the husband doesn't [harvest food] anymore. So we gotta see who doesn't have some. [We] ask around. (05082012WNA1)

Demographics

The 56 surveyed households in Napakiak included 199 residents. Household sizes ranged from 1 to 9 persons, with an average of 3.6 persons per household. The average age was 32; the oldest person included in the survey effort was 92. On average, residents had lived in Napakiak approximately 27 years. Household heads had lived in Napakiak an average of 43 years. Expanding for the 33 unsurveyed households, the

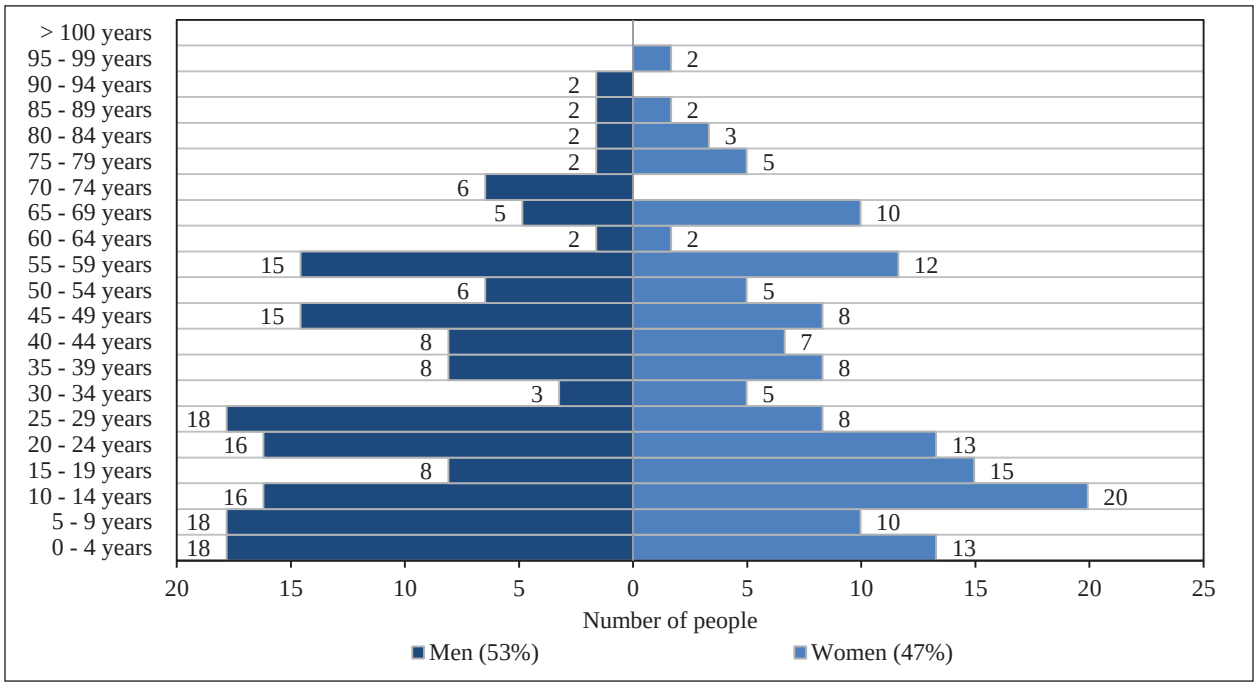


Figure 4-2.–Population profile, Napakiak, 2011.

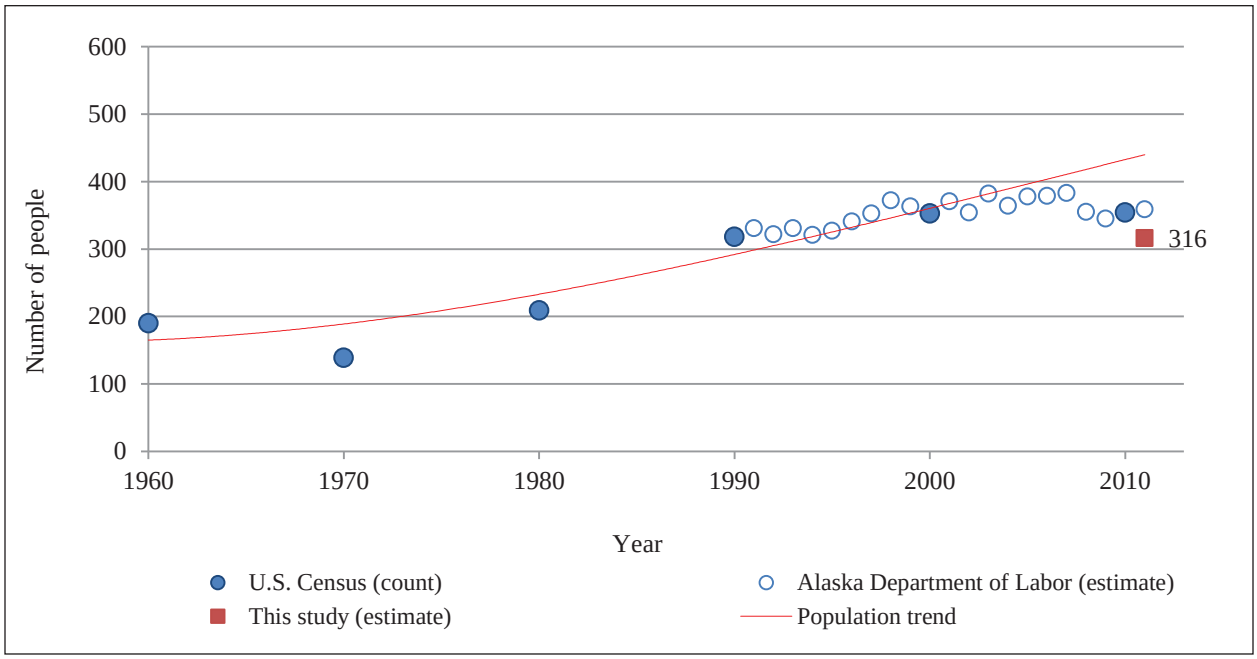


Figure 4-3.–Population history, Napakiak, 2011.

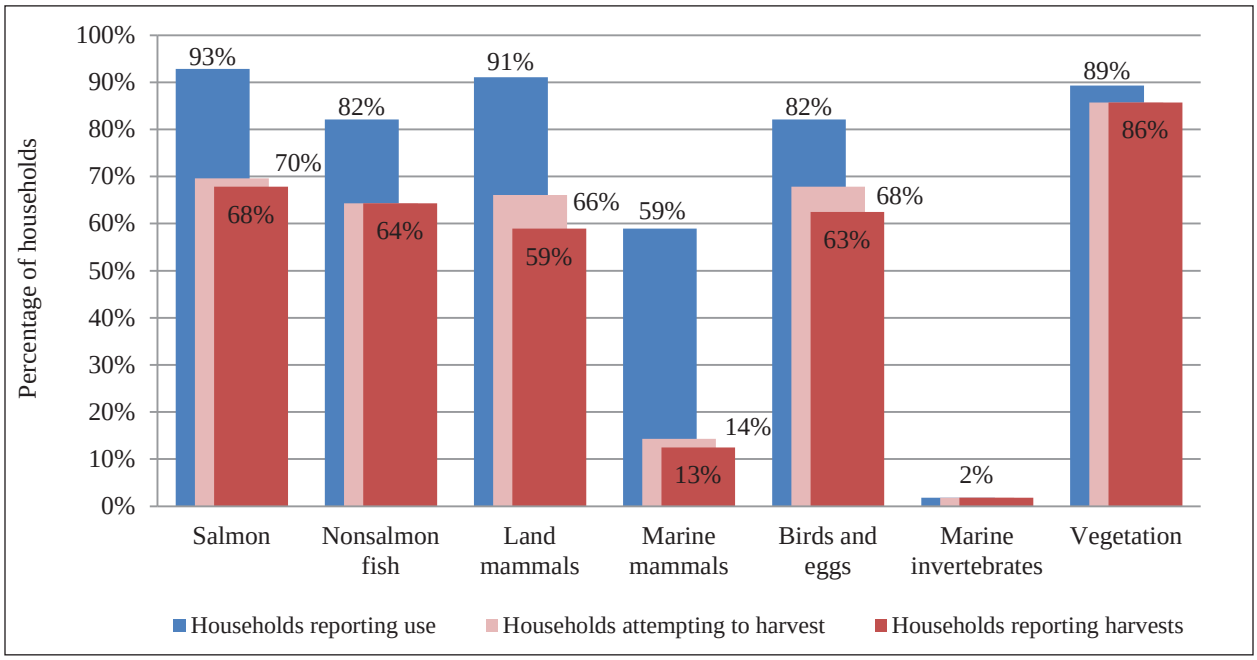


Figure 4-4.–Percentages of households using, attempting to harvest or harvesting subsistence resources by category, Napakiak, 2011.

estimated total population for Napakiak in 2011 was 316 residents (53% male, 47% female) as shown in Figure 4-2. Eighty-nine percent of the population self-identified as Alaska Native.

Napakiak has historically been occupied primarily by Yup'ik Eskimos. The 1880 U.S. Census reported a community population of 98. By 1920 the population had risen to 199, and by 1980 it was recorded as 262. For population comparisons, the U.S. Census Bureau reported a total population of 353 people residing in Napakiak in 2000 and 354 in 2010. It is difficult to determine the source of the difference between this study's population estimate and that of the 2010 Census; however, it is possible that the analysis of responses from a 63% sample of households may have underestimated the total population of Napakiak. Population trends from 1960 to 2011 are shown in Figure 4-3. The overall population trend for Napakiak at this time is that of limited but steady population growth.

Wild Food Uses and Harvests

The primary purpose of the household survey was to collect information about the harvest and uses of edible wild foods. Respondents were asked whether their household used or attempted to harvest each resource during the study year. If they attempted to harvest a resource, they were asked how much they harvested and for additional details of their effort, such as gear type, sex of the animal, or month of harvest.

Tables and figures in this section summarize responses to the harvest and use questions. Ninety-six percent

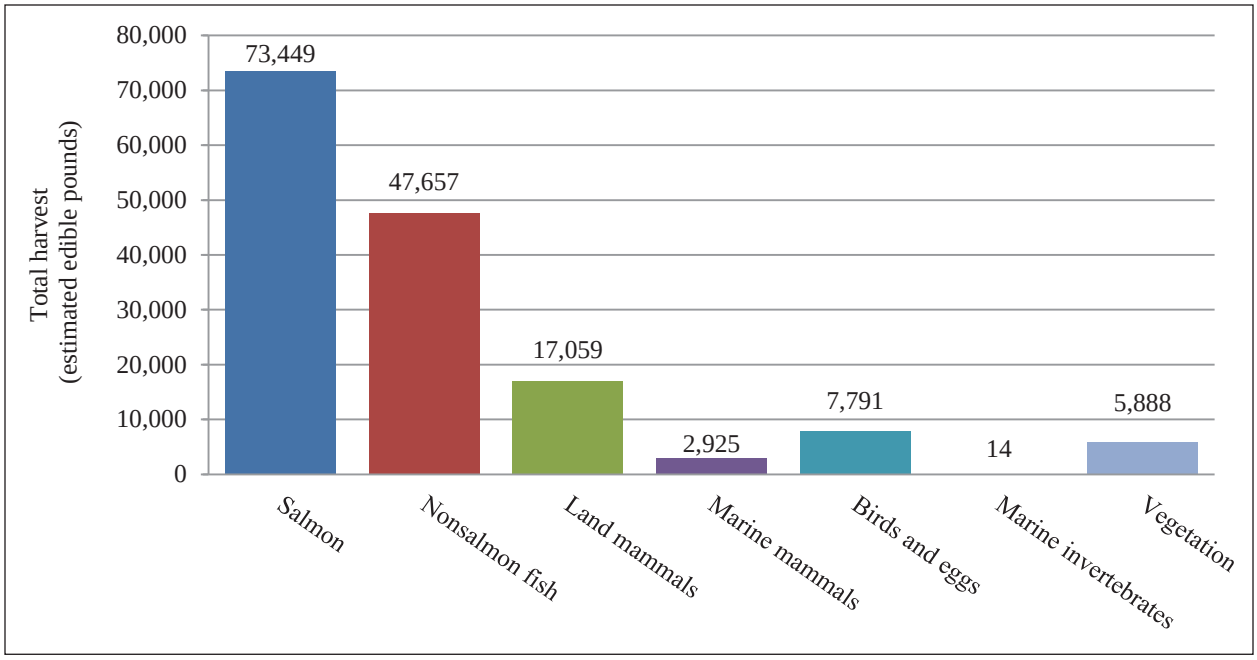


Figure 4-5.–Total estimated edible pounds harvested by the community by resource category, Napakiak, 2011.

of Napakiak households used at least 1 wild food resource, and 91% reported that a member harvested some type of wild food in 2011. Salmon was the most widely used resource category (by 93% of households), followed by land mammals (91%), vegetation (89%), nonsalmon fishes (82%), and birds and eggs (82%) (Figure 4-4). More than half of Napakiak households reported using marine mammals (59%) in 2011, with 14% reporting harvesting marine mammals. A small portion of all Napakiak households (2%) reported using marine invertebrates in 2011.

Chinook salmon, coho salmon, and salmonberries were the most widely used resources by individual species in 2011 in Napakiak. The percentage of households recorded as using a particular resource includes both households that actively harvested the resource as well as households that received the resource from other households during the study year. Chinook salmon was used by 77% of households and harvested by 59% of households. Similarly, coho salmon was used by 77% and harvested by 55% of households. Salmonberries were also used by 77% and harvested by 68% of households. Additional wild food resources used by most (>50%) households in Napakiak during the study year included caribou (75%), moose (71%), northern pike (68%), chum salmon (68%), sockeye salmon (64%), ptarmigans (64%), crowberries (64%), burbot (63%), humpback whitefish (57%), broad whitefish (54%), smelts (57%), and blueberries (52%). In addition, 48% of Napakiak households reported using black scoters and 43% reported using greater white-fronted geese.

In addition to documenting percentages of Napakiak households using and harvesting wild food resources, researchers asked respondents to describe the quantity (typically recorded as individual animals or gallons of vegetation) of each resource that their household harvested in 2011. These quantities were then converted to estimated edible weights for each species and resource category and compiled to give estimates of the

Table 4-1. – Estimated use and harvest of fish, Napakiak, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Fish										
Salmon										
Chum salmon	67.9%	51.8%	50.0%	26.8%	23.2%	24,520.5 lb	275.5 lb	77.5 lb	4,816.3 ind	± 42%
Coho salmon	76.8%	53.6%	55.4%	30.4%	30.4%	10,995.4 lb	123.5 lb	34.8 lb	2,078.5 ind	± 33%
Chinook salmon	76.8%	58.9%	58.9%	35.7%	30.4%	24,120.1 lb	271.0 lb	76.3 lb	2,552.4 ind	± 21%
Pink salmon	5.4%	5.4%	5.4%	0.0%	1.8%	116.1 lb	1.3 lb	0.4 lb	41.3 ind	± 96%
Sockeye salmon	64.3%	51.8%	51.8%	19.6%	23.2%	13,697.1 lb	153.9 lb	43.3 lb	2,717.7 ind	± 39%
Unknown salmon	1.8%	1.8%	0.0%	1.8%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**92.9%**	**69.6%**	**67.9%**	**51.8%**	**37.5%**	**73,449.3 lb**	**825.3 lb**	**232.2 lb**	**12,206.2 ind**	**± 30%**
Char										
Dolly Varden	1.8%	1.8%	1.8%	0.0%	0.0%	7.2 lb	0.1 lb	0.0 lb	4.8 ind	± 122%
Lake trout	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**1.8%**	**1.8%**	**1.8%**	**0.0%**	**0.0%**	**7.2 lb**	**0.1 lb**	**0.0 lb**	**4.8 ind**	**± 122%**
Trout										
Rainbow trout	5.4%	3.6%	3.6%	3.6%	0.0%	24.5 lb	0.3 lb	0.1 lb	17.5 ind	± 102%
Subtotal	**5.4%**	**3.6%**	**3.6%**	**3.6%**	**0.0%**	**24.5 lb**	**0.3 lb**	**0.1 lb**	**17.5 ind**	**± 102%**
Whitefishes										
Sheefish	17.9%	17.9%	17.9%	1.8%	8.9%	1,095.0 lb	12.3 lb	3.5 lb	168.5 ind	± 62%
Broad whitefish	53.6%	33.9%	33.9%	25.0%	21.4%	2,518.2 lb	28.3 lb	8.0 lb	1,798.7 ind	± 37%
Bering cisco	1.8%	0.0%	0.0%	1.8%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Least cisco	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Humpback whitefish	57.1%	39.3%	39.3%	23.2%	23.2%	7,772.1 lb	87.3 lb	24.6 lb	2,590.7 ind	± 34%
Round whitefish	3.6%	1.8%	1.8%	1.8%	1.8%	52.4 lb	0.6 lb	0.2 lb	52.4 ind	± 122%
Unknown whitefishes	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**66.1%**	**42.9%**	**42.9%**	**28.6%**	**26.8%**	**11,437.8 lb**	**128.5 lb**	**36.2 lb**	**4,610.3 ind**	**± 31%**
Anadromous/marine fish										
Pacific herring	14.3%	3.6%	3.6%	10.7%	1.8%	1,954.8 lb	22.0 lb	6.2 lb	325.8 gal	± 119%
Pacific herring roe	16.1%	5.4%	3.6%	12.5%	3.6%	192.3 lb	2.2 lb	0.6 lb	35.0 gal	± 112%
Unknown smelt	57.1%	37.5%	37.5%	25.0%	18.2%	3,295.1 lb	37.7 lb	10.4 lb	867.0 gal	± 40%
Pacific tomcod	1.8%	0.0%	0.0%	1.8%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Saffron cod	12.5%	0.0%	0.0%	12.5%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Flounder	1.8%	1.8%	1.8%	1.8%	0.0%	5.2 lb	0.1 lb	0.0 lb	4.8 ind	± 122%
Pacific halibut	21.4%	1.8%	1.8%	19.6%	0.0%	336.9 lb	3.8 lb	1.1 lb	336.9 lb	± 122%
Arctic lamprey	1.8%	0.0%	0.0%	1.8%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Stickleback (needlefish)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Subtotal	**66.1%**	**44.6%**	**44.6%**	**42.9%**	**21.4%**	**5,784.4 lb**	**65.0 lb**	**18.3 lb**		**± 45%**
Other freshwater fish										
Alaska blackfish	42.9%	25.0%	23.2%	26.8%	19.6%	1,615.2 lb	18.1 lb	5.1 lb	1,615.2 lb	± 52%
Burbot	62.5%	39.3%	39.3%	30.4%	17.9%	3,292.2 lb	37.0 lb	10.4 lb	731.6 ind	± 38%
Arctic grayling	3.6%	3.6%	3.6%	0.0%	0.0%	4.9 lb	0.1 lb	0.0 lb	3.2 ind	± 121%
Northern pike	67.9%	53.6%	53.6%	17.9%	26.8%	25,491.3 lb	286.4 lb	80.6 lb	5,664.7 ind	± 22%
Longnose sucker	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**75.0%**	**57.1%**	**57.1%**	**39.3%**	**37.5%**	**30,403.5 lb**	**341.6 lb**	**96.1 lb**		**± 21%**
All fish	**96.4%**	**78.6%**	**76.8%**	**69.6%**	**55.4%**	**121,106.6 lb**	**1,360.7 lb**	**382.9 lb**		**± 23%**
All resources	**96.4%**	**92.9%**	**91.1%**	**85.7%**	**73.2%**	**154,784.6 lb**	**1,739.2 lb**	**489.4 lb**		**± 21%**

Source ADF&G Division of Subsistence household surveys, 2012.

Note "All resources" include all species of fish, wildlife, and plants reported on the survey.

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

total edible weight of wild foods harvested in Napakiak. Figure 4-5 summarizes estimated edible weights of wild food harvests for 7 resource categories: salmon, nonsalmon fishes, land mammals, marine mammals, birds and eggs, marine invertebrates, and vegetation.

Napakiak residents harvested an estimated 121,107 edible pounds of fish in 2011, which was 78% of all wild food harvests by the community. The total harvest of salmon was 73,449 lb in 2011, composing 47% of all wild food resources by edible weight at 232 lb per capita (Table 4-1). Five species of salmon were harvested; however, at a total of 116 lb, pink salmon represented less than 1% of the salmon harvest. Eighteen species of nonsalmon fishes contributed 48,427 lb (151 lb per capita) to Napakiak residents' total wild food harvest in 2011, composing 31% of all resources by edible weight. Northern pike composed 53% of the total nonsalmon fish harvested by edible weight and contributed 286 edible pounds per household or 81 lb per capita. Northern pike harvests contributed more to the total harvest of nonsalmon fish species than did the remaining 7 principal species together. These seven fish species in order of greatest amount harvested to least were humpback whitefish, smelts, burbot, broad whitefish, Pacific herring (including harvests of spawned roe), Alaska blackfish, and sheefish. Together these species contributed 21,735 edible pounds, or 244 lb per household. Napakiak fishers also harvested an estimated 3.8 lb per household of Pacific halibut, less than 1% of the total nonsalmon fish harvest. Dolly Varden, rainbow trout, round whitefish, Arctic grayling, and flounders formed the remaining portion of Napakiak residents' nonsalmon fish harvest, with each species contributing less than 1 edible pound per household. Some Napakiak households reported using fish for dog food. Estimated subsistence fish harvests used for dog food were composed of 744 lb of salmon, including 150 lb of Chinook salmon and 164 lb of chum salmon, as well as 381 lb of whitefishes.

Napakiak fishers deployed several different types of gear in order to harvest fish (Figure 4-6). Drift gillnets were primarily used to harvest salmon, as well as Pacific herring and whitefishes.[7] Set gillnets were used to harvest salmon, the majority of whitefishes, and some burbot. In late winter and early spring 2011, Napakiak fishers primarily used jigs with hook and line under the ice to harvest almost all of the northern pike and approximately half of the burbot. Residents of Napakiak used fish traps to harvest Alaska blackfish and dip nets to harvest smelts. Rod and reel gear was also used to take small portions of northern pike, burbot, and whitefish. Napakiak residents harvested Pacific herring roe by gathering it in coastal areas at low tide after the eggs had been spawned on kelp that grows affixed to rocks.

Land mammals constituted the second largest portion of Napakiak residents' wild food harvest by resource category, contributing an estimated 17,059 lb or 11% of the total harvest by weight. Large land mammals composed an estimated 10% (15,834 lb), and small land mammals represented approximately 1% (1,225 lb) of Napakiak residents' total wild food harvest during 2011 (Table 4-2). Large land mammals represented 50 lb per capita for Napakiak residents in 2011. Caribou was the most widely used (75% of households) land mammal resource; however, moose formed the largest percentage of the land mammal harvest by ed-

7. Total sheefish harvests by gear type are included in the category of whitefishes in Figure 4-6.

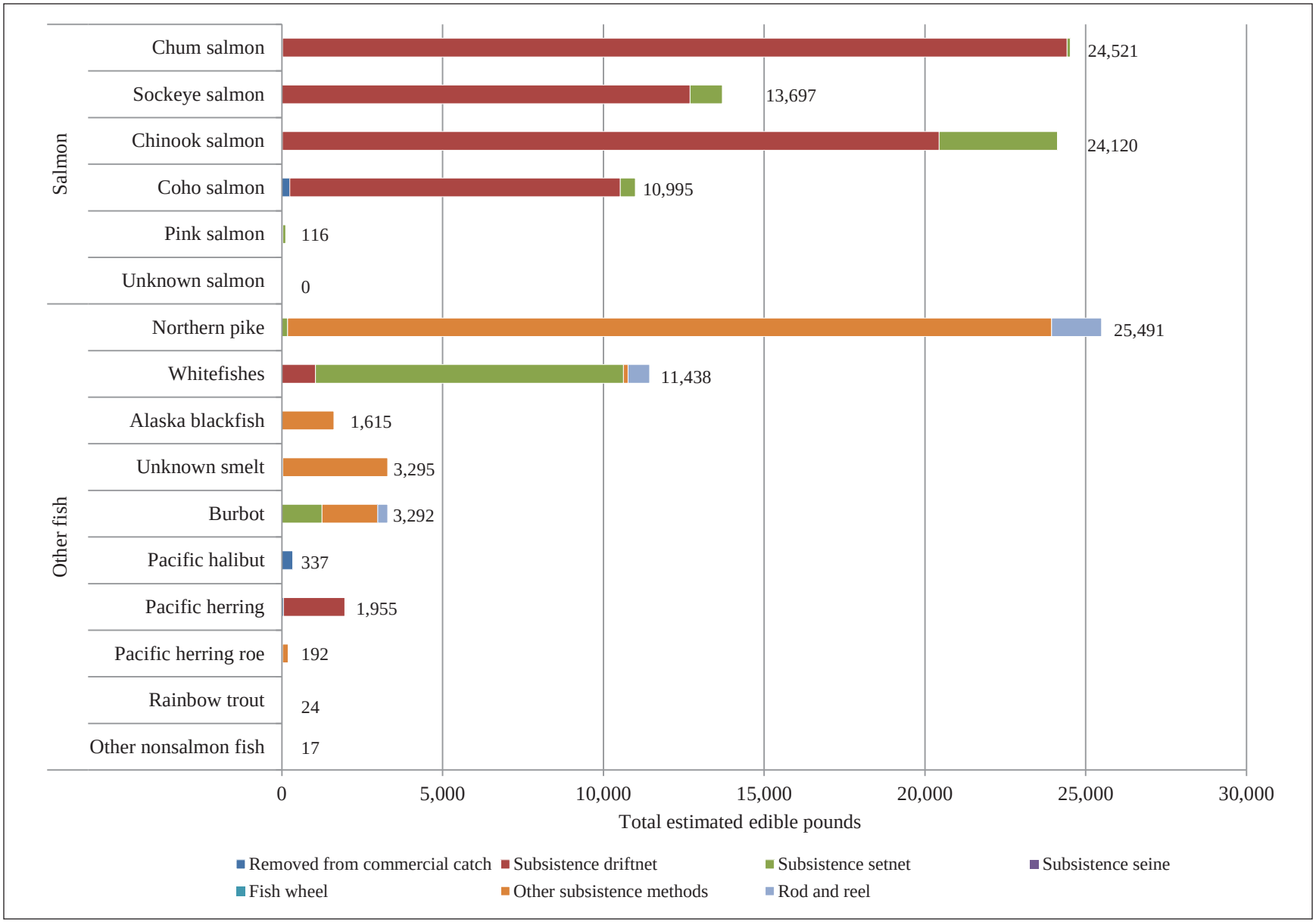


Figure 4-6.–Fish harvest by gear type, Napakiak, 2011.

Table 4-2. – Estimated use and harvest of land and marine mammals, Napakiak, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Land mammals										
Large land mammals										
Bison	0.0%	0.0%	0.0%	0.0%	0.0%	0.00 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Black bear	1.8%	1.8%	0.0%	1.8%	0.0%	0.00 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Brown bear	0.0%	0.0%	0.0%	0.0%	0.0%	0.00 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Caribou	75.0%	35.7%	32.1%	44.6%	30.4%	6274.50 lb	70.5 lb	19.8 lb	44.5 ind	± 27%
Moose	71.4%	46.4%	14.3%	64.3%	19.6%	9090.71 lb	102.1 lb	28.7 lb	12.7 ind	± 40%
Muskox	1.8%	1.8%	1.8%	0.0%	1.8%	468.84 lb	5.3 lb	1.5 lb	1.6 ind	± 122%
Dall sheep	0.0%	0.0%	0.0%	0.0%	0.0%	0.00 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**87.5%**	**53.6%**	**39.3%**	**73.2%**	**37.5%**	**15834.05 lb**	**177.9 lb**	**50.1 lb**	**58.8 ind**	**± 27%**
Small land mammals										
Beaver	8.9%	8.9%	7.1%	1.8%	5.4%	190.71 lb	2.1 lb	0.6 lb	46.1 ind	± 67%
Coyote	0.0%	0.0%	0.0%	0.0%	0.0%	*Not usually eaten*			0.0 ind	± 0%
Red fox	1.8%	1.8%	1.8%	0.0%	1.8%	*Not usually eaten*			11.1 ind	± 122%
Alaska hare	12.5%	12.5%	10.7%	1.8%	5.4%	128.73 lb	11.6 lb	0.4 lb	42.9 ind	± 14%
Snowshoe hare	35.7%	25.0%	23.2%	16.1%	10.7%	896.36 lb	10.1 lb	2.8 lb	306.7 ind	± 53%
Jackrabbit	0.0%	0.0%	0.0%	0.0%	0.0%	0.00 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
River (land) otter	1.8%	1.8%	1.8%	0.0%	0.0%	9.54 lb	0.1 lb	0.0 lb	3.2 ind	± 122%
Lynx	0.0%	0.0%	0.0%	0.0%	0.0%	0.00 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Marmot	0.0%	0.0%	0.0%	0.0%	0.0%	0.00 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Marten	0.0%	0.0%	0.0%	0.0%	0.0%	0.00 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Mink	0.0%	0.0%	0.0%	0.0%	0.0%	0.00 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Muskrat	1.8%	1.8%	1.8%	0.0%	1.8%	*Not reported as eaten*			1.6 ind	± 122%
Porcupine	3.6%	1.8%	1.8%	1.8%	1.8%	*Not reported as eaten*			1.6 ind	± 122%
Arctic parka	0.0%	0.0%	0.0%	0.0%	0.0%	0.00 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Red (tree) squirrel	0.0%	0.0%	0.0%	0.0%	0.0%	0.00 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Weasel	1.8%	1.8%	1.8%	0.0%	0.0%	*Not usually eaten*			1.6 ind	± 122%
Wolf	0.0%	0.0%	0.0%	0.0%	0.0%	*Not usually eaten*			0.0 ind	± 0%
Wolverine	0.0%	0.0%	0.0%	0.0%	0.0%	*Not usually eaten*			0.0 ind	± 0%
Subtotal	**50.0%**	**39.3%**	**37.5%**	**21.4%**	**17.9%**	**1225.34 lb**	**13.8 lb**	**3.9 lb**	**414.8 ind**	**± 44%**
Feral mammals										
Reindeer–feral	1.8%	0.0%	0.0%	1.8%	0.0%	0.00 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**1.8%**	**0.0%**	**0.0%**	**1.8%**	**0.0%**	**0.00 lb**	**0.0 lb**	**0.0 lb**	**0.0 ind**	**± 0%**
Marine mammals										
Beard seal	14.3%	7.1%	3.6%	12.5%	3.6%	679.64 lb	7.6 lb	2.1 lb	1.6 ind	± 121%
Ringed seal	17.9%	8.9%	8.9%	8.9%	7.1%	1702.13 lb	19.1 lb	5.4 lb	27.0 ind	± 75%
Spotted seal	19.6%	7.1%	7.1%	12.5%	5.4%	543.71 lb	6.1 lb	1.7 lb	9.7 ind	± 74%
Unknown seal	41.1%	7.1%	0.0%	37.5%	8.9%	0.00 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Walrus	16.1%	1.8%	0.0%	16.1%	0.0%	0.00 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Beluga whale	3.6%	0.0%	0.0%	3.6%	0.0%	0.00 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Bowhead whale	1.8%	0.0%	0.0%	1.8%	0.0%	0.00 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**58.9%**	**14.3%**	**12.5%**	**51.8%**	**14.3%**	**2925.47 lb**	**32.9 lb**	**9.2 lb**	**38.3 ind**	**± 62%**
All land mammals	**91.1%**	**66.1%**	**58.9%**	**73.2%**	**44.6%**	**17059.39 lb**	**191.7 lb**	**53.9 lb**		**± 26%**
All marine mammals	**58.9%**	**14.3%**	**12.5%**	**51.8%**	**14.3%**	**2925.47 lb**	**32.9 lb**	**9.2 lb**		**± 62%**
All resources	**96.4%**	**92.9%**	**91.1%**	**85.7%**	**73.2%**	**154784.61 lb**	**1,739.2 lb**	**489.4 lb**		**± 21%**

Source ADF&G Division of Subsistence household surveys, 2012.

Note "All resources" include all species of fish, wildlife, and plants reported on the survey.

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

ible weight (9,091 total edible pounds, 102 lb per household). Napakiak residents harvested an estimated 13 moose in 2011. Forty-six percent of households attempted to harvest, and 14% successfully harvested moose. In 2011, 45 Napakiak hunters attempted to harvest moose and together spent an estimated total of 178 days hunting for an average of 4 days hunted per hunter. There were 12 successful moose hunters who harvested an average of 1 moose per hunter. Successful moose hunters spent an average of 3 days hunting for each moose that they harvested. In 2011, 32% of Napakiak households harvested 45 caribou, for an estimated community harvest of 6,275 edible pounds or 71 lb per household. Napakiak residents harvested an estimated 2 muskoxen[8], which yielded 469 total edible pounds, or 5.3 lb per household.

Small land mammal harvests composed less than 1% of total edible pounds of wild food harvests, or 14 lb per capita (Table 4-2). Snowshoe hare was Napakiak households' most used small mammal species in 2011, with a total harvest of 307 snowshoe hares contributing 896 lb. An estimated 36% of households reported use of snowshoe hare. Residents harvested an estimated 46 beavers (totaling 191 lb in edible weight) and 43 Alaska hares (129 lb edible weight). The only other small mammal species reported as being harvested for food was river otter, with 3 individuals contributing approximately 10 lb of edible weight. Other species of furbearers harvested included red fox (11 individuals) and small numbers of muskrats, porcupines, and weasels.

Marine mammal harvests contributed 2% to the total harvest at an estimated 2,926 lb, or 9 lb per capita. Harvests included 27 ringed seals, 10 spotted seals, and 2 bearded seals (Table 4-2). Forty-one percent of Napakiak households reported use of unknown seal, which is possibly the result of many households receiving seal oil from other households in Napakiak as well as from other communities. All harvests of marine mammals by Napakiak residents in 2011 took place relatively distant from Napakiak because the community is generally too far from the coast for marine mammals to appear commonly in the Kuskokwim River. Napakiak marine mammal hunters traveled to Kuskokwim Bay and other coastal areas to harvest these 3 species of seal.

Birds and eggs composed 5% of the total harvest (7,791 lb or 25 lb per capita); however, the widespread use (82% of households) of birds and eggs, and in particular migratory birds, suggests that their percentage of the total weight of wild food harvests likely underrepresents their value to the community as an important seasonal resource. Twenty-three species of migratory birds including 15 duck species, 6 goose species, tundra swan, sandhill crane (Table 4-3), and 624 lb of bird eggs formed the majority (77%) of harvested birds by edible weight. This resulted in 67 lb per household of migratory birds and bird egg harvests. Ducks comprised the largest portion by weight of all migratory bird harvests in 2011, with Napakiak households harvesting a total of 1,903 lb, or 21 lb per household. Black scoter was the most harvested duck species in terms of

8. Historical wild populations of muskoxen were extirpated from Alaska by the middle or late 1800s. Beginning in 1936, researchers from the U.S. Bureau of Biological Survey and the University of Alaska released 31 muskoxen from Greenland to Nunivak Island in Game Management Unit 18. In 1967 and 1968, the U.S. Fish and Wildlife Service and the University of Alaska translocated a number of muskoxen from Nunivak Island to Nelson Island, establishing a herd there. Individuals from the Nelson Island herd have since expanded into the mainland Yukon-Kuskokwim Delta (Jones and Perry 2011:1). Harvests of muskoxen by Napakiak residents in 2011 could have occurred from potentially any of these herds.

Table 4-3. – Estimated use and harvest of birds, Napakiak, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Migratory birds										
Ducks										
Bufflehead	7.1%	8.9%	7.1%	1.8%	7.1%	19.4 lb	0.2 lb	0.1 lb	48.5 ind	± 74%
Canvasback	5.4%	7.1%	5.4%	1.8%	1.8%	17.5 lb	0.2 lb	0.1 lb	15.9 ind	± 74%
Common eider	1.8%	3.6%	1.8%	0.0%	0.0%	35.1 lb	0.4 lb	0.1 lb	15.9 ind	± 122%
Unknown eider	0.0%	1.8%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Goldeneye	12.5%	12.5%	10.7%	3.6%	8.9%	77.6 lb	0.9 lb	0.2 lb	96.9 ind	± 76%
Harlequin duck	1.8%	3.6%	1.8%	1.8%	1.8%	1.6 lb	0.0 lb	0.0 lb	3.2 ind	± 122%
Mallard	32.1%	25.0%	23.2%	8.9%	14.3%	171.5 lb	1.9 lb	0.5 lb	171.5 ind	± 36%
Common merganser	0.0%	1.8%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Red-breasted merganser	0.0%	1.8%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown merganser	0.0%	1.8%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Long-tailed duck	5.4%	7.1%	5.4%	1.8%	5.4%	45.8 lb	0.5 lb	0.1 lb	57.2 ind	± 71%
Northern pintail	32.1%	26.8%	25.0%	10.7%	17.9%	177.4 lb	2.0 lb	0.6 lb	221.7 ind	± 35%
Scaup	26.8%	25.0%	23.2%	7.1%	17.9%	391.6 lb	4.4 lb	1.2 lb	435.1 ind	± 38%
Black scoter	48.2%	37.5%	35.7%	14.3%	19.6%	465.5 lb	5.2 lb	1.5 lb	517.2 ind	± 29%
Surf scoter	17.9%	14.3%	12.5%	7.1%	7.1%	189.3 lb	2.1 lb	0.6 lb	210.4 ind	± 57%
White-winged scoter	14.3%	12.5%	10.7%	5.4%	7.1%	167.5 lb	1.9 lb	0.5 lb	186.1 ind	± 61%
Northern shoveler	10.7%	10.7%	8.9%	3.6%	8.9%	30.1 lb	0.3 lb	0.1 lb	50.2 ind	± 61%
Green-winged teal	8.9%	8.9%	7.1%	5.4%	7.1%	15.7 lb	0.2 lb	0.0 lb	52.4 ind	± 63%
Wigeon	12.5%	14.3%	12.5%	1.8%	10.7%	60.0 lb	0.7 lb	0.2 lb	85.8 ind	± 54%
Unknown ducks	5.4%	5.5%	5.4%	0.0%	1.8%	37.0 lb	0.4 lb	0.1 lb	42.1 ind	± 108%
Subtotal	**66.1%**	**51.8%**	**51.8%**	**23.2%**	**32.1%**	**1,902.6 lb**	**21.4 lb**	**6.0 lb**	**2,210.1 ind**	**± 30%**
Geese										
Brant	7.1%	1.8%	1.8%	7.1%	1.8%	19.1 lb	0.2 lb	0.1 lb	15.9 ind	± 122%
Cackling goose	41.1%	35.7%	33.9%	8.9%	28.6%	473.8 lb	5.3 lb	1.5 lb	394.8 ind	± 29%
Canada goose	26.8%	16.1%	14.3%	16.1%	8.9%	370.5 lb	4.2 lb	1.2 lb	176.4 ind	± 54%
Canada/cackling goose	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Emperor goose	3.6%	3.6%	3.6%	1.8%	1.8%	95.4 lb	1.1 lb	0.3 lb	38.1 ind	± 87%
Snow goose	3.6%	1.8%	1.8%	1.8%	1.8%	18.3 lb	0.2 lb	0.1 lb	7.9 ind	± 122%
White-fronted goose	42.9%	26.8%	26.8%	19.6%	19.6%	714.6 lb	8.0 lb	2.3 lb	297.7 ind	± 34%
Unknown geese	7.1%	1.9%	5.4%	1.9%	0.0%	18.0 lb	0.2 lb	0.1 lb	9.9 ind	± 120%
Subtotal	**73.2%**	**48.2%**	**50.0%**	**32.1%**	**33.9%**	**1,709.6 lb**	**19.2 lb**	**5.4 lb**	**940.9 ind**	**± 30%**
Other migratory birds										
Tundra (whistling) swan	37.5%	30.4%	30.4%	10.7%	16.1%	810.5 lb	9.1 lb	2.6 lb	81.1 ind	± 33%
Sandhill crane	33.9%	26.8%	26.8%	8.9%	17.9%	937.7 lb	10.5 lb	3.0 lb	93.8 ind	± 33%
Whimbrel	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown loon	0.0%	1.8%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**46.4%**	**37.5%**	**37.5%**	**12.5%**	**21.4%**	**1,748.2 lb**	**19.6 lb**	**5.5 lb**	**174.8 ind**	**± 27%**
Other birds										
Spruce grouse	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Sharp-tailed grouse	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Ruffed grouse	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Ptarmigan	64.3%	51.8%	50.0%	19.6%	32.1%	1,807.3 lb	20.3 lb	5.7 lb	1,807.3 ind	± 28%
Subtotal	**64.3%**	**51.8%**	**50.0%**	**19.6%**	**32.1%**	**1,807.3 lb**	**20.3 lb**	**5.7 lb**	**1,807.3 ind**	**± 27%**
All migratory birds	**78.6%**	**58.9%**	**60.7%**	**37.5%**	**41.1%**	**5,360.4 lb**	**60.2 lb**	**16.9 lb**		**± 25%**
All other birds	**64.3%**	**51.8%**	**50.0%**	**19.6%**	**32.1%**	**1,807.3 lb**	**20.3 lb**	**5.7 lb**		**± 27%**
All Resources	**96.4%**	**92.9%**	**91.1%**	**85.7%**	**73.2%**	**154,784.6 lb**	**1,739.2 lb**	**489.4 lb**		**± 21%**

Source ADF&G Division of Subsistence household surveys, 2012.

Note "All resources" include all species of fish, wildlife, and plants reported on the survey.

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

Table 4-4. – Estimated use and harvest of bird eggs, Napakiak, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Bird eggs										
Duck eggs	8.9%	14.3%	7.1%	0.0%	1.8%	13.8 lb	0.2 lb	0.0 lb	92.2 ind	± 72%
Unknown goose eggs	19.6%	23.2%	16.1%	3.6%	8.9%	86.8 lb	1.0 lb	0.3 lb	289.2 ind	± 57%
Swan eggs	10.7%	16.1%	8.9%	0.0%	1.8%	31.0 lb	0.3 lb	0.1 lb	49.3 ind	± 61%
Sandhill crane eggs	1.8%	1.8%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown shorebird eggs	7.1%	8.9%	5.4%	0.0%	1.8%	2.5 lb	0.0 lb	0.0 lb	50.9 ind	± 83%
Unknown gull eggs	16.1%	21.4%	16.1%	0.0%	7.1%	483.0 lb	5.4 lb	1.5 lb	1,609.9 ind	± 92%
Ptarmigan eggs	3.6%	3.6%	3.6%	0.0%	0.0%	6.4 lb	0.1 lb	0.0 lb	63.6 ind	± 96%
Unknown eggs	3.6%	3.7%	0.0%	1.8%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**35.7%**	**37.5%**	**26.8%**	**5.4%**	**12.5%**	**623.5 lb**	**7.0 lb**	**2.0 lb**	**2,155.1 ind**	**± 72%**
All birds and eggs	**82.1%**	**67.9%**	**62.5%**	**42.9%**	**42.9%**	**7,791.3 lb**	**87.5 lb**	**24.6 lb**		**± 21%**
All resources	**96.4%**	**92.9%**	**91.1%**	**85.7%**	**73.2%**	**154,784.6 lb**	**1,739.2 lb**	**489.4 lb**		**± 21%**

Source ADF&G Division of Subsistence household surveys, 2012.

Note "All resources" include all species of fish, wildlife, and plants reported on the survey.

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

weight (466 lb), followed by scaup (392 lb), surf scoter (189 lb), northern pintail (177 lb), mallard (172 lb), and white-winged scoter (168 lb). Napakiak households harvested 9 other duck species, which totaled 303 lb of edible weight. Survey results also indicated that Napakiak hunters harvested a total of 37 lb of ducks that respondents did not identify by species. Harvests of tundra swan (811 lb) and sandhill crane (938 lb) comprised 22% of all bird and egg harvests in 2011 and contributed 20 lb per household; similarly, geese formed 22% of bird and egg harvests and 19 lb per household. Greater white-fronted goose was the most harvested species of goose by weight (715 lb), followed by cackling goose (474 lb), lesser Canada goose (371 lb), emperor goose (95 lb), and smaller harvests of brant and snow goose. The 2011 harvest of wild bird eggs by Napakiak residents was estimated to be 2,155 eggs, totaling 624 lb (Table 4-4). The majority of eggs were from harvests of various species of gull eggs (483 lb), but also included duck, goose, swan, shorebird, and ptarmigan eggs. Residents of Napakiak also harvested 1,807 edible pounds of ptarmigans in 2011, which was 23% of all bird and egg harvests and contributed 20 lb per household in total harvests.

Vegetation harvests totaled 5,888 lb or 4% of the total harvest of wild foods by weight and 19 lb per capita. The survey asked about the harvest and uses of different species of vegetation including berries and edible or medicinal greens by Napakiak residents (Table 4-5). Nearly all households used (89%) and harvested (86%) at least 1 vegetation resource. Salmonberry was the most commonly harvested (68% of households) and used (77%) resource in this category, and was the plant species with the highest harvest by edible pounds (2,916 lb). Crowberry (locally known as blackberry in English) had the second highest harvest in this category with 1,592 edible pounds. Napakiak residents also harvested blueberries (574 lb) and low bush cranberries (350 lb) as well as small amounts of wild raspberries and high bush cranberries. Several species of greens were reported as harvested in 2011, totaling 424 lb. These included sour dock (151 lb), wild rhubarb (84 lb),

Table 4-5. – Estimated use and harvest of vegetation, Napakiak, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Berries										
Blueberry	51.8%	48.2%	44.6%	8.9%	8.9%	574.4 lb	6.5 lb	1.8 lb	143.6 gal	± 28%
Lowbush cranberry	33.9%	32.1%	32.1%	7.1%	8.9%	349.5 lb	3.9 lb	1.1 lb	87.4 gal	± 32%
Highbush cranberry	1.8%	1.8%	1.8%	0.0%	0.0%	12.7 lb	0.1 lb	0.0 lb	3.2 gal	± 122%
Crowberry	64.3%	57.1%	57.1%	12.5%	14.3%	1,592.3 lb	17.9 lb	5.0 lb	398.1 gal	± 21%
Gooseberry	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Currants	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Raspberry	3.6%	3.6%	3.6%	0.0%	0.0%	19.1 lb	0.2 lb	0.1 lb	4.8 gal	± 90%
Salmonberry	76.8%	67.9%	67.9%	14.3%	25.0%	2,916.0 lb	32.8 lb	9.2 lb	729.0 gal	± 18%
Subtotal	**80.4%**	**75.0%**	**75.0%**	**23.2%**	**28.6%**	**5,463.9 lb**	**61.4 lb**	**17.3 lb**	**1,366.0 gal**	**± 17%**
Plants/greens/mushrooms										
Wild rhubarb	12.5%	12.5%	12.5%	1.8%	1.8%	84.1 lb	0.9 lb	0.3 lb	21.0 gal	± 58%
Eskimo potato	1.8%	3.6%	0.0%	1.8%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Fiddlehead ferns	12.5%	12.5%	12.5%	0.0%	0.0%	26.6 lb	0.3 lb	0.1 lb	26.6 gal	± 64%
Nettle	0.0%	1.8%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Hudson's Bay	41.1%	41.1%	41.1%	0.0%	3.6%	51.0 lb	0.6 lb	0.2 lb	51.0 gal	± 28%
Mint	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Sourdock	39.3%	35.7%	35.7%	5.4%	1.8%	150.6 lb	1.7 lb	0.5 lb	150.6 gal	± 44%
Spruce tips	0.0%	1.8%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Willow leaves	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Wild celery	7.1%	7.1%	7.1%	0.0%	0.0%	44.9 lb	0.5 lb	0.1 lb	44.9 gal	± 82%
Wild rose hips	3.6%	3.6%	3.6%	0.0%	0.0%	9.7 lb	0.1 lb	0.0 lb	2.4 gal	± 121%
Yarrow	0.0%	1.8%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Unknown mushrooms	0.0%	1.8%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Fireweed	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Stinkweed	7.1%	7.1%	7.1%	0.0%	0.0%	16.2 lb	0.2 lb	0.1 lb	16.2 gal	± 89%
Punk	12.5%	5.4%	0.0%	8.9%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Puffballs	0.0%	1.8%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Unknown greens	8.9%	7.1%	7.1%	1.9%	1.9%	8.3 lb	0.1 lb	0.0 lb	8.3 gal	± 118%
Mousefoods	16.1%	8.9%	8.9%	10.7%	1.8%	32.2 lb	0.4 lb	0.1 lb	32.2 gal	± 67%
Subtotal	**66.1%**	**60.7%**	**60.7%**	**25.0%**	**8.9%**	**423.6 lb**	**4.8 lb**	**1.3 lb**		**± 33%**
Wood										
Wood	51.8%	51.8%	51.8%	1.8%	0.0%	0 lb	0.0 lb	0.0 lb	86 cord	± 31%
Subtotal	**51.8%**	**51.8%**	**51.8%**	**1.8%**	**0.0%**	**0 lb**	**0.0 lb**	**0.0 lb**	**86 cord**	± 31%
All vegetation	**89.3%**	**85.7%**	**85.7%**	**37.5%**	**32.1%**	**5,887.6 lb**	**66.2 lb**	**18.6 lb**		**± 17%**
All resources	**96.4%**	**92.9%**	**91.1%**	**85.7%**	**73.2%**	**154,784.6 lb**	**1,739.2 lb**	**489.4 lb**		**± 21%**

Source ADF&G Division of Subsistence household surveys, 2012.

Note "All resources" include all species of fish, wildlife, and plants reported on the survey.

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

Hudson Bay tea (51 lb), wild celery (45 lb), fiddlehead ferns (27 lb), stinkweed or common wormwood (16 lb), wild rose hips (10 lb), several other species of greens (8 lb), and approximately 32 lb of mouse foods. The resource known in English as mouse foods are comprised of the roots, tubers, and stalks of several different tundra plant species. In the tundra of the Yukon–Kuskokwim delta region, voles, lemmings, and meadow jumping mouse gather edible parts of several plant species throughout summer and fall and store them in underground food caches. People locate the caches on the tundra in late summer and early fall, pull the turf back to expose the cache, and gather the mouse foods stored within. The harvest is often used as an ingredient in soups and certain types of *akutaq*, or Eskimo ice cream.

Napakiak residents' harvest of marine invertebrates in 2011 was negligible; estimates indicate that clams

Table 4-6. – Estimated use and harvest of marine invertebrates, Napakiak, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Marine invertebrates										
Unknown clams	1.8%	1.8%	1.8%	1.8%	1.8%	14.3 lb	0.2 lb	0.0 lb	4.8 gal	± 122%
King crab	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown Tanner crab	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown crab	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown mussels	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Shrimp	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Unknown marine invertebrates	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Subtotal	**1.8%**	**1.8%**	**1.8%**	**1.8%**	**1.8%**	**14.3 lb**	**0.2 lb**	**0.0 lb**		**± 122%**
All marine invertebrates	**1.8%**	**1.8%**	**1.8%**	**1.8%**	**1.8%**	**14.3 lb**	**0.2 lb**	**0.0 lb**		**± 122%**
All resources	**96.4%**	**92.9%**	**91.1%**	**85.7%**	**73.2%**	**154,784.6 lb**	**1,739.2 lb**	**489.4 lb**		**± 21%**

Source ADF&G Division of Subsistence household surveys, 2012.
Note "All resources" include all species of fish, wildlife, and plants reported on the survey.
a. Summary rows that include incompatible units of measure have been left blank.

harvested by Napakiak households provided 14 edible pounds total for the entire community (Table 4-6). At least 1 survey respondent indicated that in the past some families have traveled to coastal areas to harvest clams, among other species. Although the survey data indicated that the harvest of marine invertebrates by Napakiak residents was minimal during the study year, it is possible that harvests could be higher for some community members in other years.

Harvest Areas

As part of the survey, Napakiak households were asked to mark on a map the areas where they harvested or searched for subsistence resources. From these data, maps were produced for each community depicting the harvest and search areas in 2011 for the following species or resource categories: salmon, whitefishes, sheefish, Northern pike, burbot, moose, caribou, small land mammals, ptarmigans, grouses, ducks, geese, and berries and greens. Figure 4-7 summarizes all the mapped data collected from Napakiak households for 2011. Households reported using a total of 4,452 square miles for subsistence activities in 2011, all within GMU 18. Circumstances such as regulatory changes, environmental changes, animal population trends, technological advances, and economic considerations have continuously affected Napakiak subsistence users' geographic ranges and areas of use over time. As a result, the overall geographic extent of the area considered to be traditionally important for subsistence to the community has not changed according to respondents and is represented by a much broader area than was actually documented in 2011.

In 2011, Napakiak fishers searched for and harvested Pacific salmon primarily in the mainstem of the Kuskokwim River from approximately 1.5 mi downriver from Napaskiak downstream to a point near Fowler Island. Additional areas of search and harvest for salmon species were in the Johnson River approximately

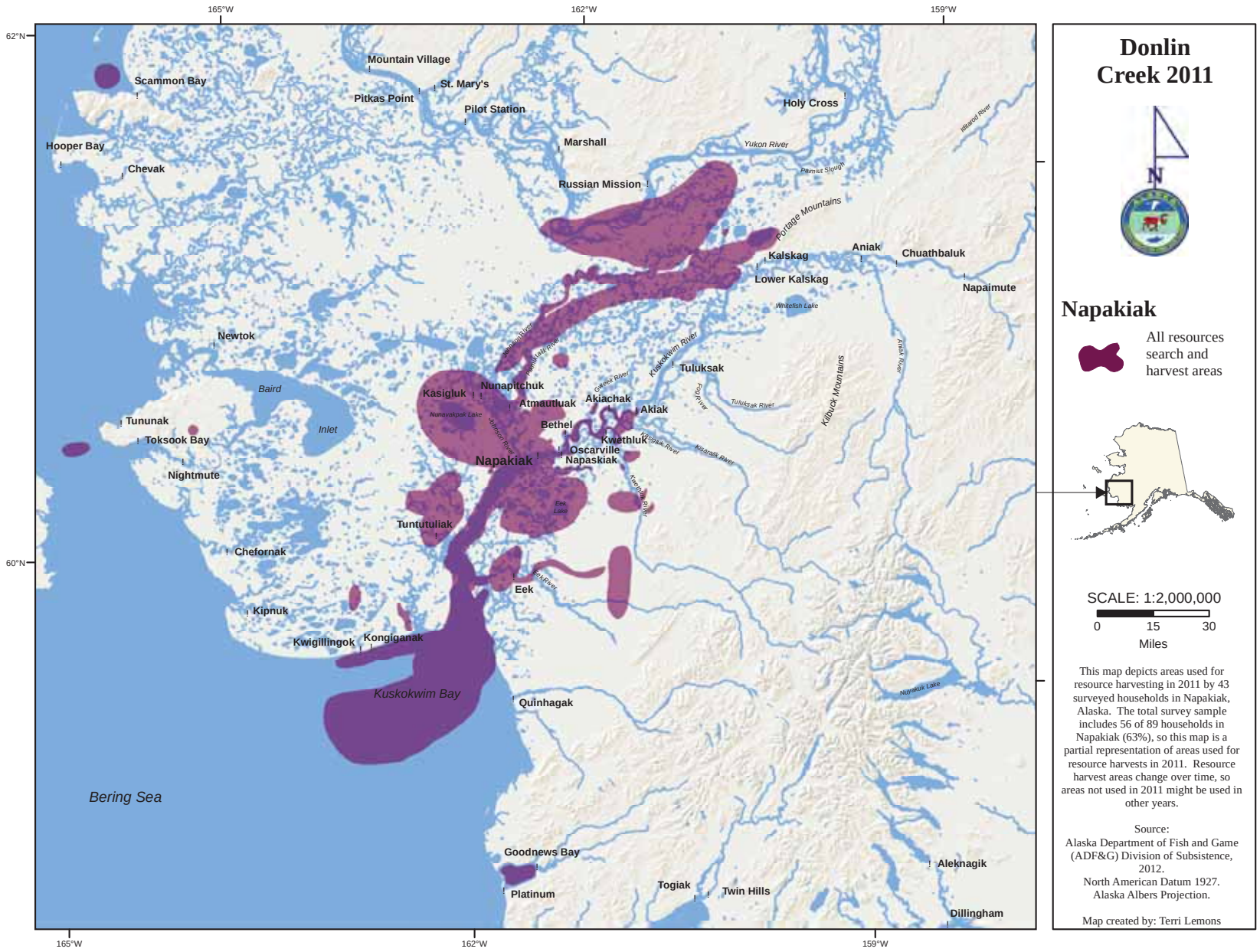


Figure 4-7.–All resources search and harvest areas, Napakiak, 2011.

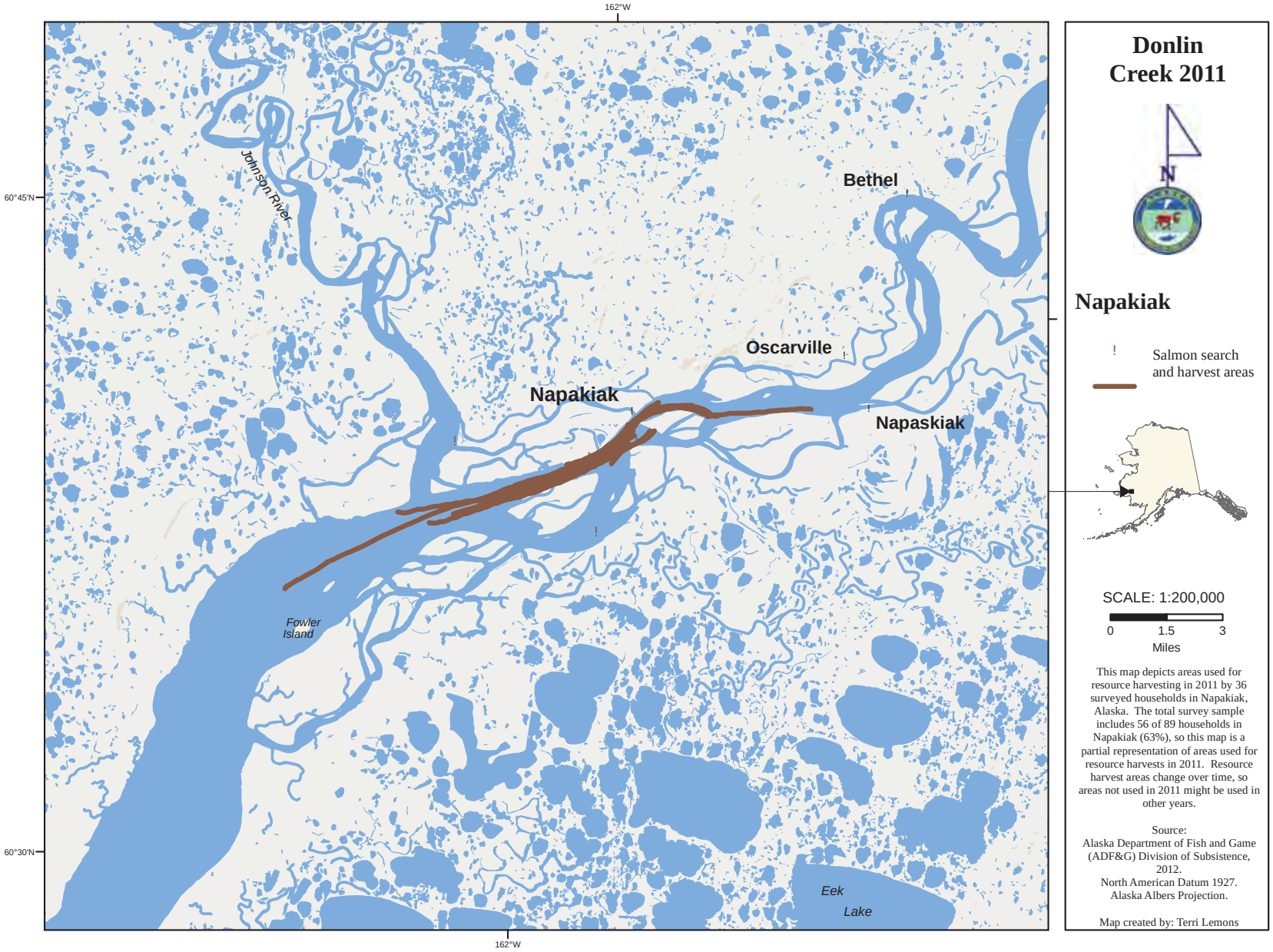


Figure 4-8.–Salmon search and harvest areas, Napakiak, 2011.

2 miles upriver from the mouth. Figure 4-8 shows harvest and search areas for all salmon species, indicated as set gillnet sites (i.e. points) and gillnet drift locations (i.e. lines). Many households maintain family fish camps located in or near the community

In addition to the mainstem Kuskokwim River, the search and harvest areas for nonsalmon fishes extended from the Johnson River drainage north of the community to an area of tundra lakes in the vicinity of Eek Lake south of Napakiak (Figure 4-9). This map depicts general nonsalmon harvest and search areas as polygons and specific set gillnet and jigging sites as points. Napakiak fishers searched for and harvested whitefishes in lakes of the Kongeruk River drainage approximately 7 to 8 mi north of the community, in the Johnson River mouth, in the mainstem Kuskokwim River, and in tundra lakes approximately 8 mi south of the community. Sheefish search and harvest areas were located in the Johnson River mouth, the mainstem Kuskokwim River, and in a tundra lake approximately 4 mi southeast of Napakiak. For harvests of northern pike, Napakiak households accessed the Johnson River mouth and searched from there in the mainstem Kuskokwim River downstream to an area near and around Fowler Island. Napakiak fishers searched for and harvested burbot in sloughs on the north bank of the Kuskokwim River between Napakiak and the Johnson River mouth.

Moose and caribou harvest and search areas are depicted in Figure 4-10. Napakiak hunters searched for and harvested moose in the mainstem Kuskokwim River from Akiak downstream to sloughs adjacent to the Eek River mouth, in the Eek River drainage, and in the sloughs and lakes of both banks of the Kuskokwim River and adjacent territory in the vicinity of Napakiak. Hunters also searched for and harvested moose from the territory surrounding Arhymot Lake north of Upper Kalskag and into the upper Johnson and Pikmiktalik river drainages to the Johnson River mouth. Hunters also searched for and harvested moose in the area between the upper Johnson River drainage and the Yukon River, including the Tabliksok River drainage downstream to the area surrounding Devil's Elbow. Napakiak's search and harvest areas for caribou were in the Eek lake area, the territory between the Eek and Kwethluk rivers approximately 30 miles from Eek, and an area in the vicinity of Three Step Mountain, approximately 20 miles up the Kwethluk River from its mouth.

Napakiak households searched for and harvested small land mammals primarily within a 5 mile radius of Napakiak on both sides of the mainstem Kuskokwim River, in sloughs between Napakiak and the mouth of the Johnson River, and along the Kongeruk River. An additional area was located just north of the Eek River approximately 5 miles from the community of Eek (Figure 4-11).

Napakiak hunters searched for and harvested seals in the mainstem Kuskokwim River downstream to and in Kuskokwim Bay, including the coastal waters in the area of Kongiganak and Kwigillingok (Figure 4-12). Hunters also harvested marine mammals west of the coast of Nelson Island and in Scammon Bay.

The search and harvest area for ducks and geese encompassed the lake and stream system surrounding Eek Lake, in the Johnson River drainage to the communities of Atmautluak, Nunapitchuk, Kasigluk and the Nunavakpak Lake area, the area between the community of Tuntutuliak and the Kialik River, and an

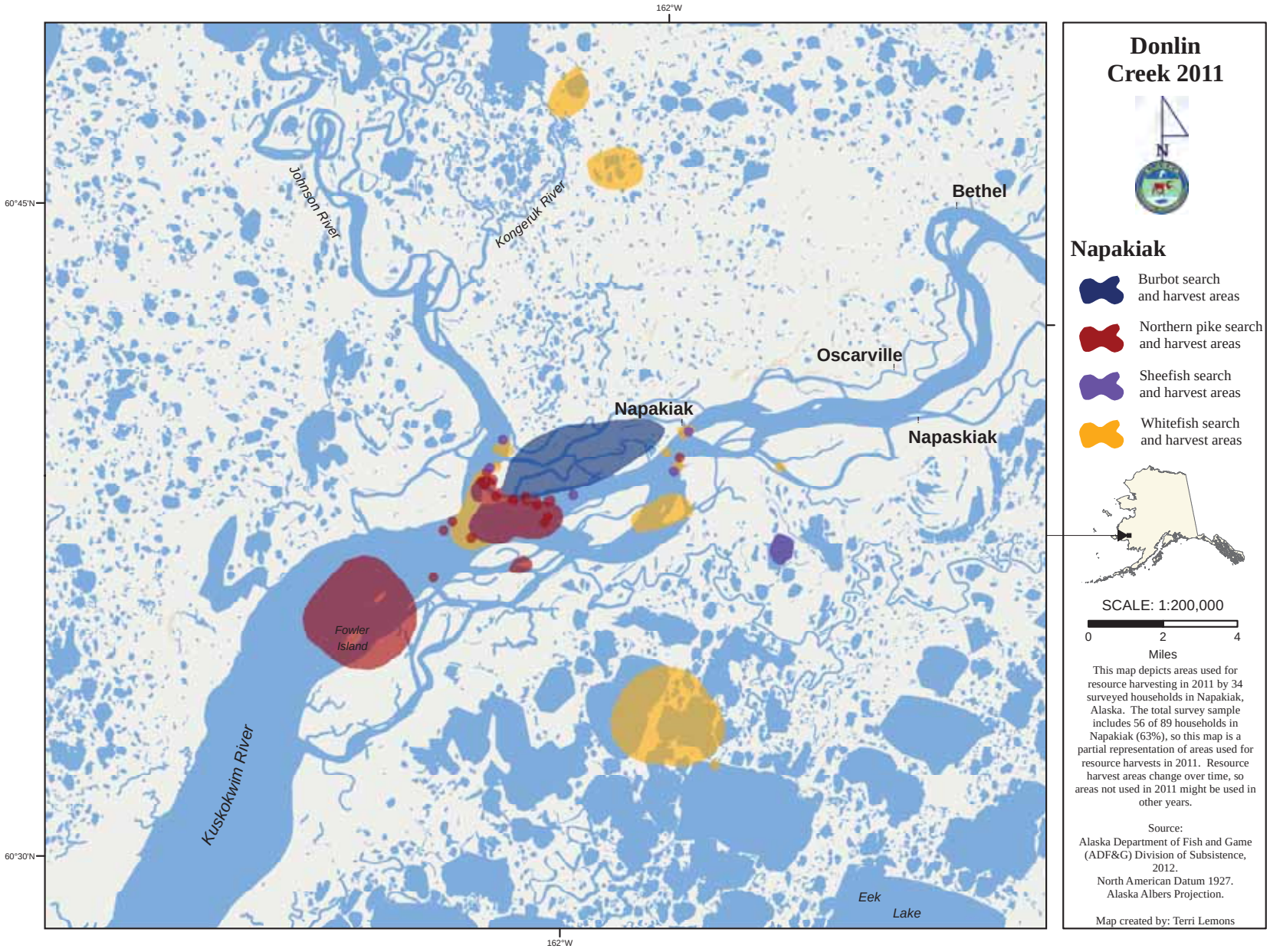


Figure 4-9.–Burbot, northern pike, sheefish, and whitefishes search and harvest areas, Napakiak, 2011.

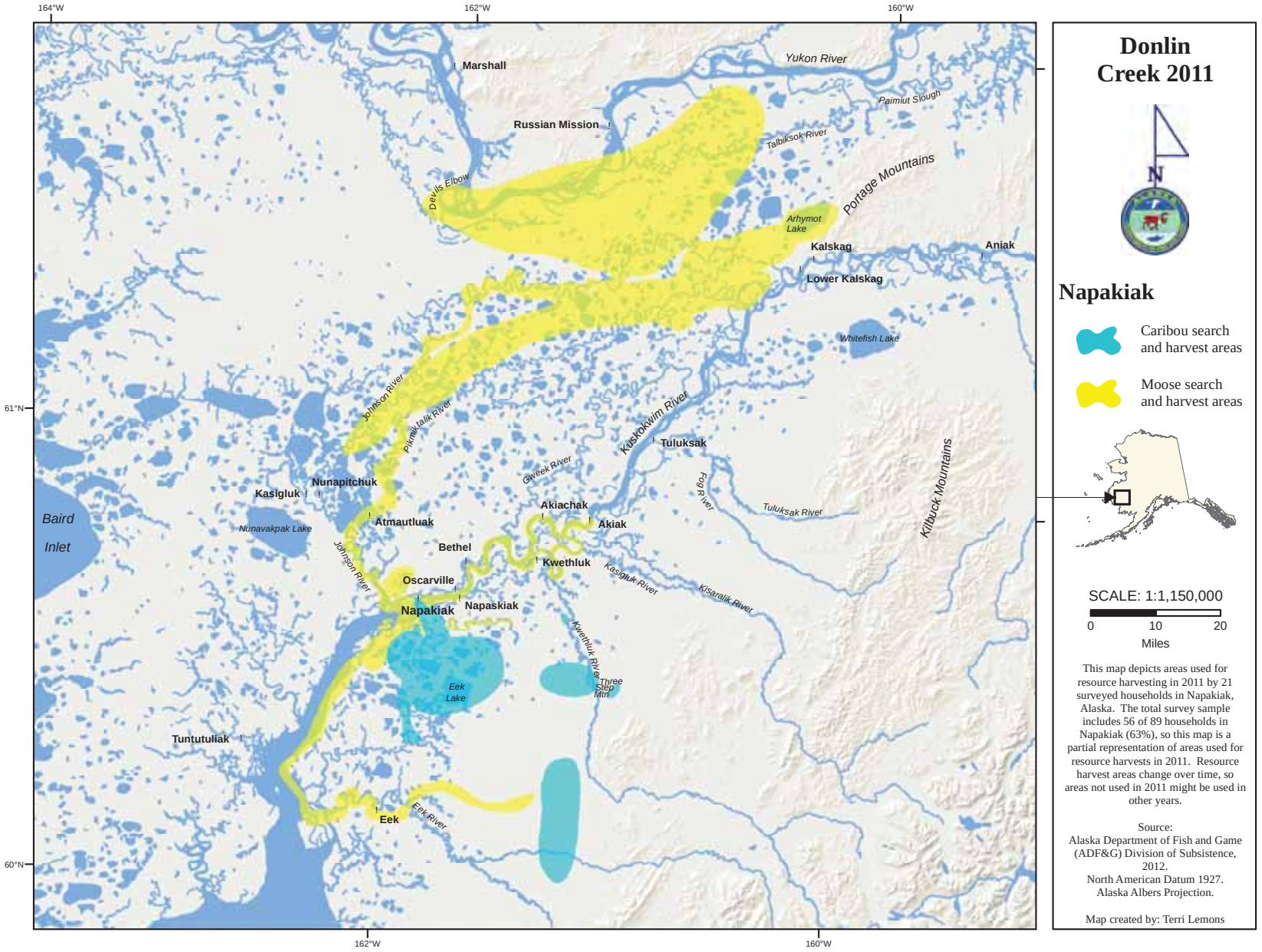


Figure 4-10.–Caribou and moose search and harvest areas, Napakiak, 2011.

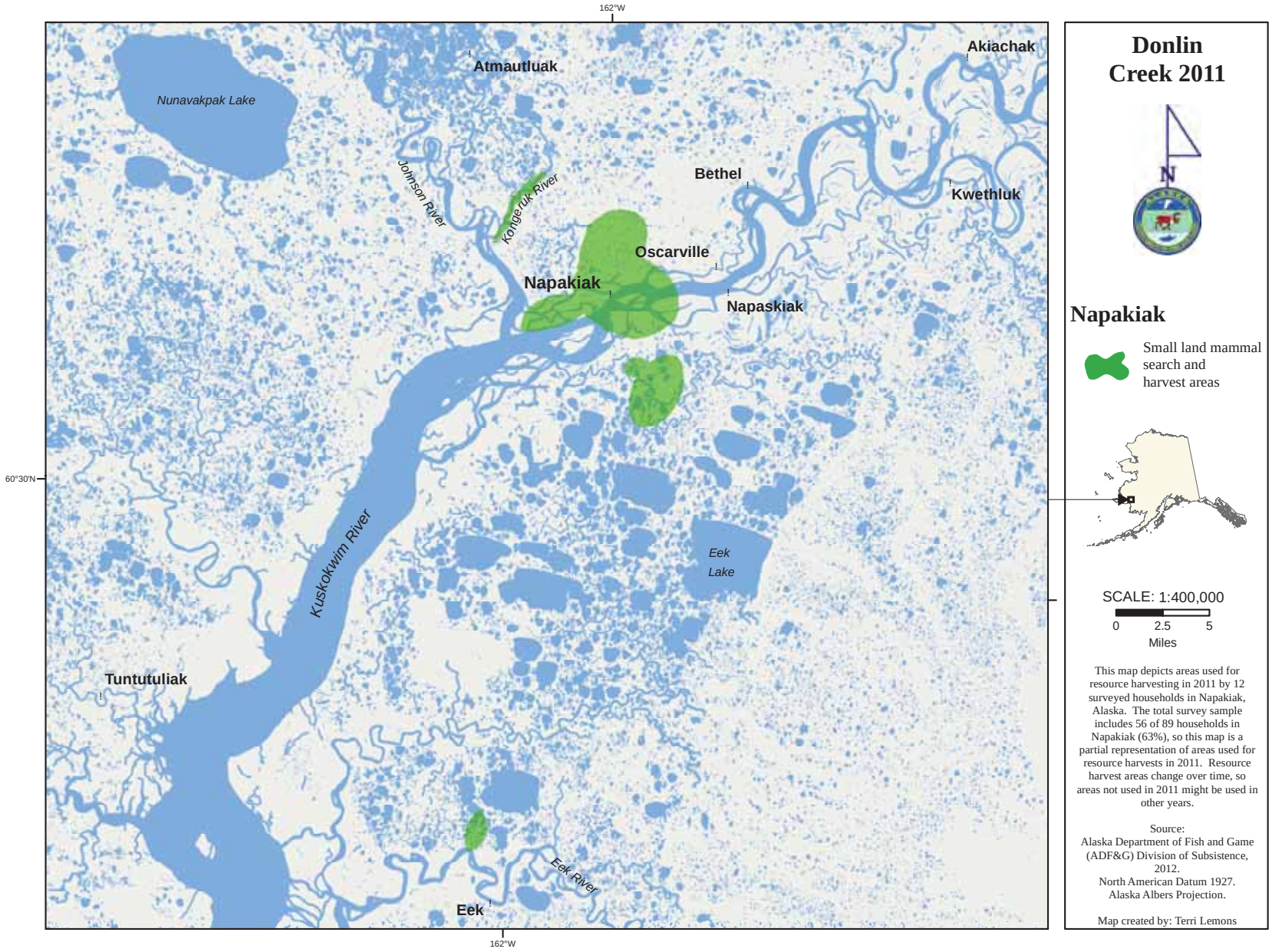


Figure 4-11.–Small land mammal search and harvest areas, Napakiak, 2011.

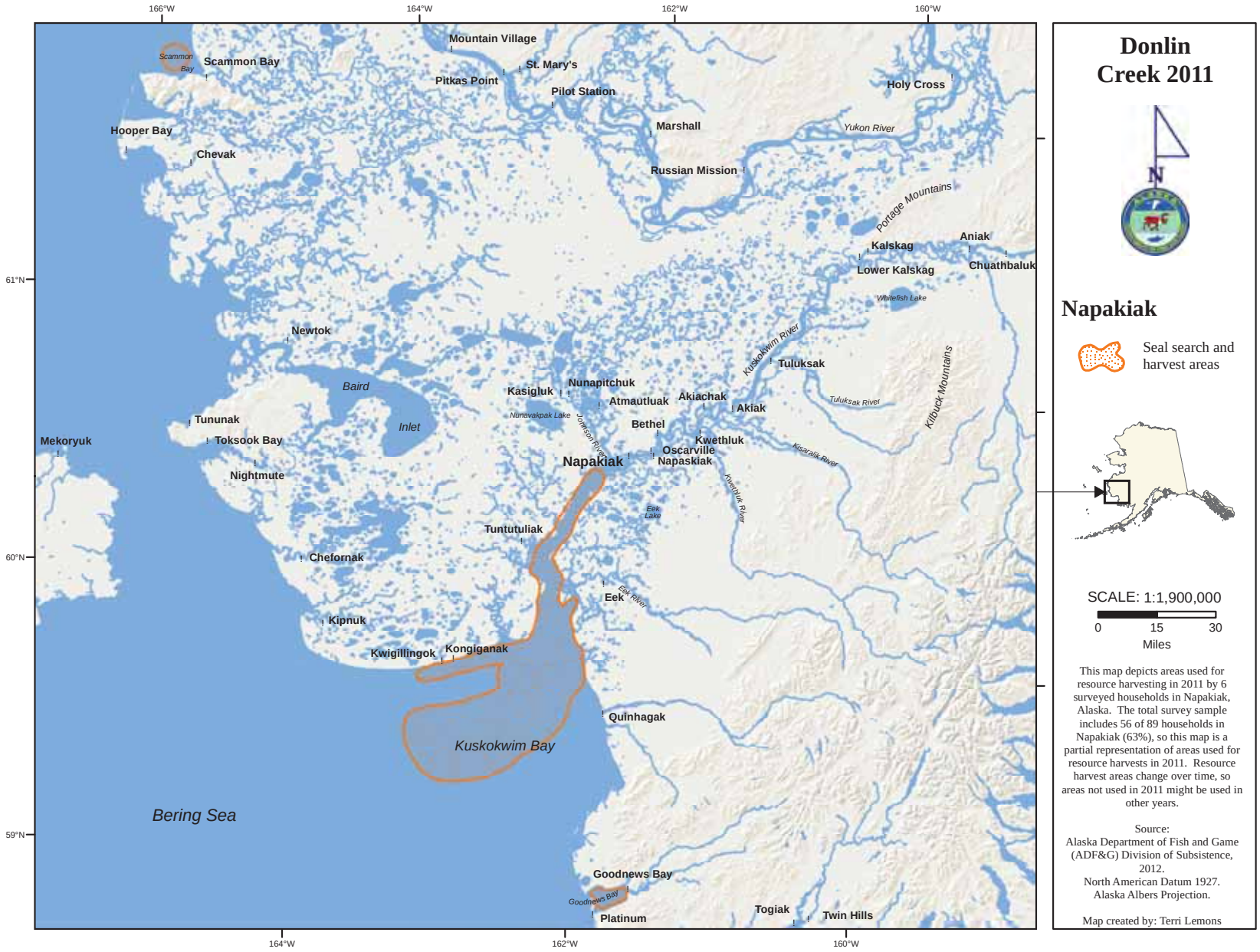


Figure 4-12.–Seal search and harvest areas, Napakiak, 2011.

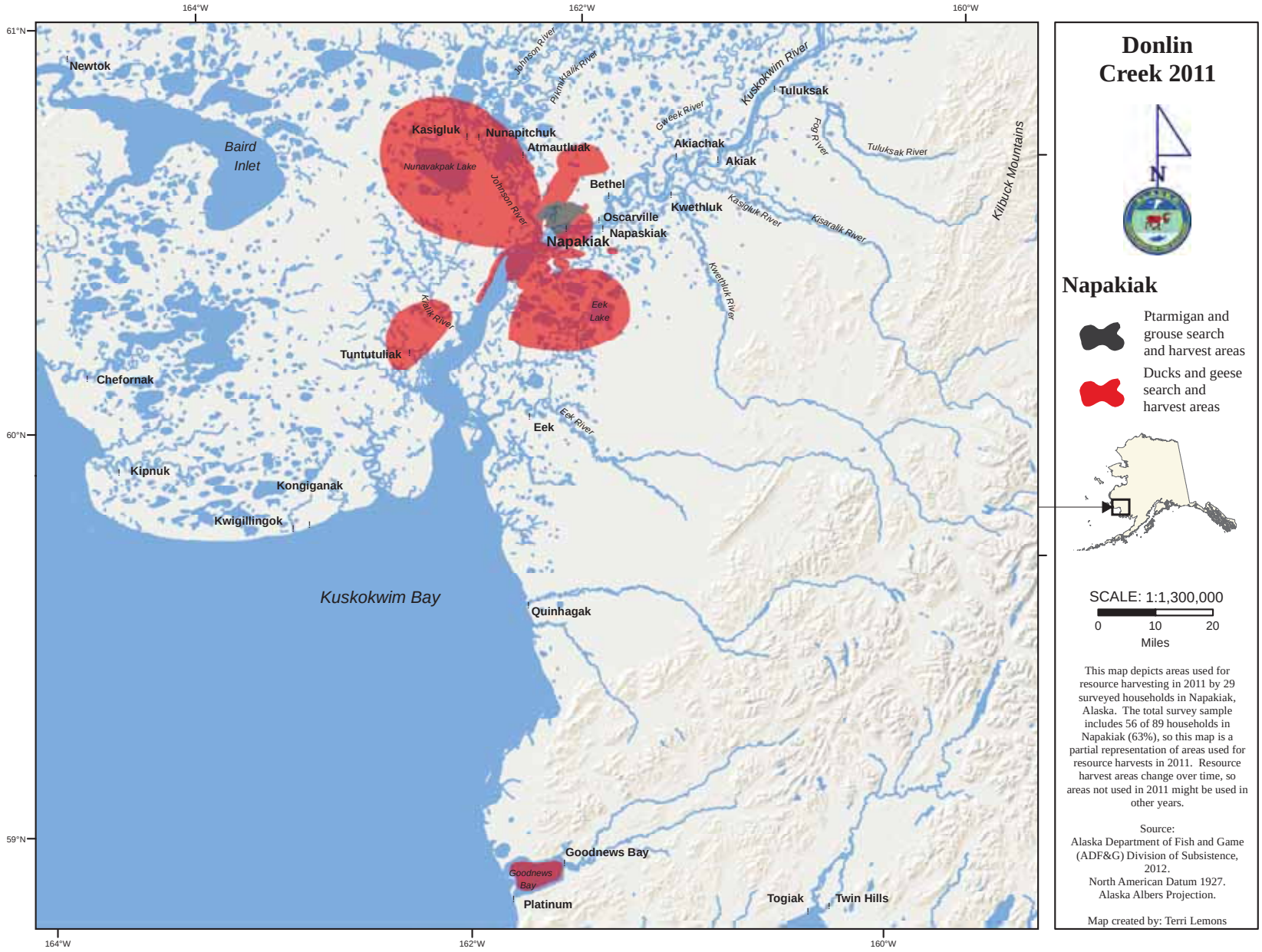


Figure 4-13.–Ptarmigan, grouse, ducks, and geese search and harvest areas, Napakiak, 2011.

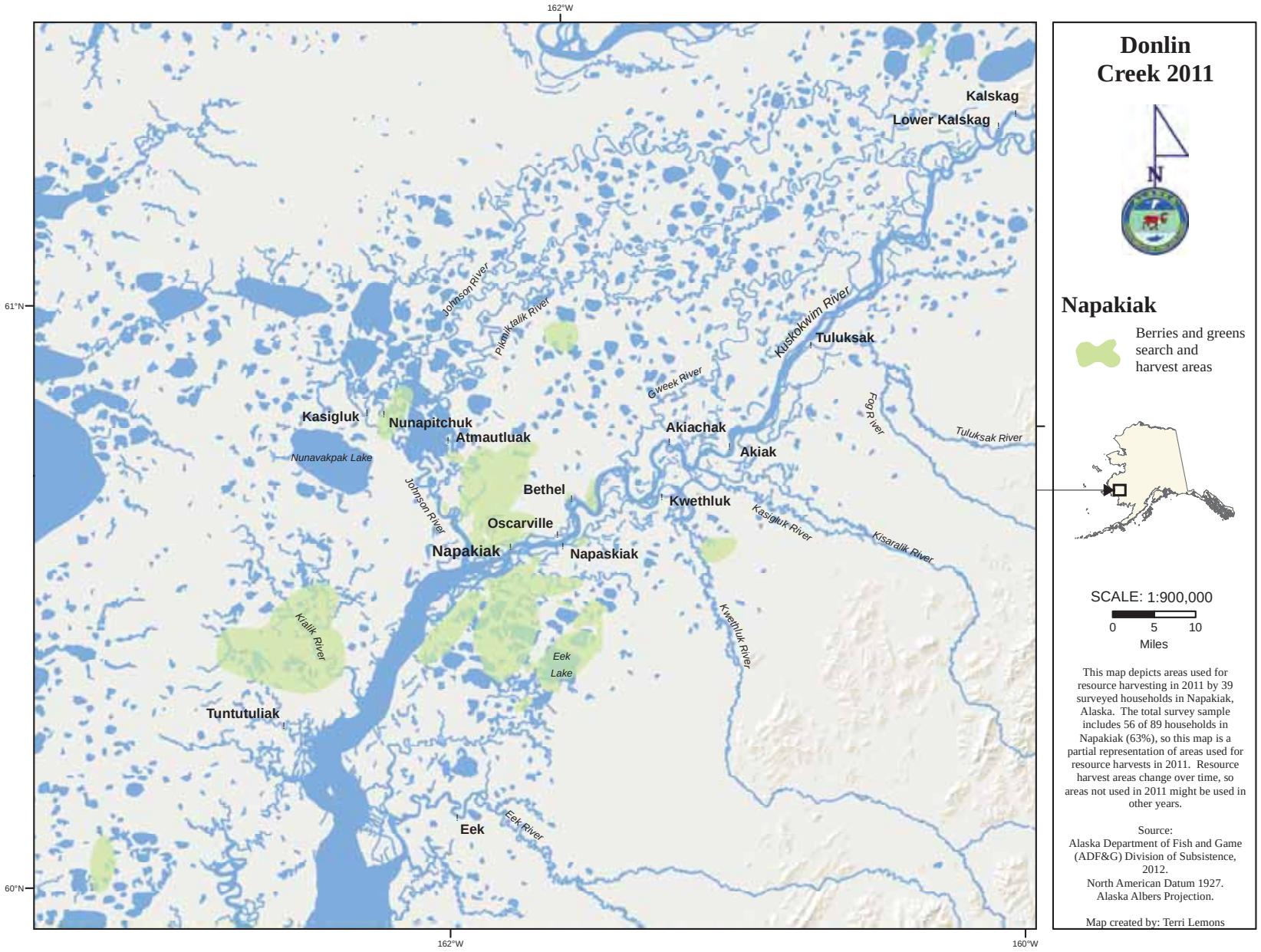


Figure 4-14.–Berries and greens search and harvest areas, Napakiak, 2011.

area between the communities of Bethel and Atmautluak. In addition, Napakiak households also accessed Goodnews Bay to search for and harvest ducks and geese. Napakiak households searched for and harvested ptarmigans and grouse within approximately 3 miles of their community (Figure 4-13).

Napakiak households searched for and harvested berries and greens in several different areas (Figure 4-14). Most berry and greens search and harvest areas were concentrated near Napakiak and other communities. They were located throughout the tundra lakes and streams of the Eek Lake area, the Kialik River, the Kwethluk River drainage, the wetlands area to the north of Napakiak and Oscarville, areas along the Johnson River, the area surrounding the community of Nunapitchuk, an area approximately 30 miles southwest of the community of Tuntutuliak, and an area along a 4 to 5 mile stretch of the mainstem Kuskokwim River immediately upriver of Bethel.

Harvest Assessments

Researchers asked respondents to assess their own harvests in 2 ways: whether they got more, less, or about the same amount of 7 resource categories in 2011 as in past years, and whether they got "enough" of each of the 7 resource categories. Households also were asked to provide reasons if their use was different or if they were unable to get enough of a resource. If they did not get enough of a resource, they were asked to evaluate the severity of the impact to their household as a result of not getting enough. They were further asked whether they did anything differently (such as supplement with store-bought food or switch to a different subsistence resource) because they did not get enough. This section discusses responses to those questions.

Together, Figure 4-15 and Figure 4-16 provide a broad overview of households' harvests. Because not everyone uses all resource categories, some households did not respond to the assessment questions. Additionally, some households that do typically use a resource category simply did not answer questions. While the percentages displayed in these figures were calculated including all surveyed households (including those that did not respond to the question), the bars specifically highlight responses provided by households reporting that they typically use the resource category. Generally, the results are presented in this section as they appear in the figures, but it is important to remember that they are not limited only to households that ordinarily use the resource. Additional details are provided in cases where further analysis lends clarity to the discussion of use patterns.

Some harvest assessment questions asked respondents to consider in total all of the subsistence resources that they used as well as those that they felt they would have wanted in order to satisfy their household needs. When asked if they used the same, more, or less of all subsistence resources as compared to recent years, 45% of respondents reported using the same. Also, 13% of households reported using more, and 38% said they used less. Of the households that reported using less, 40% of them cited a lack of equipment as the reason they used less. They also reported that they did not invest the effort necessary to harvest all resources (20%

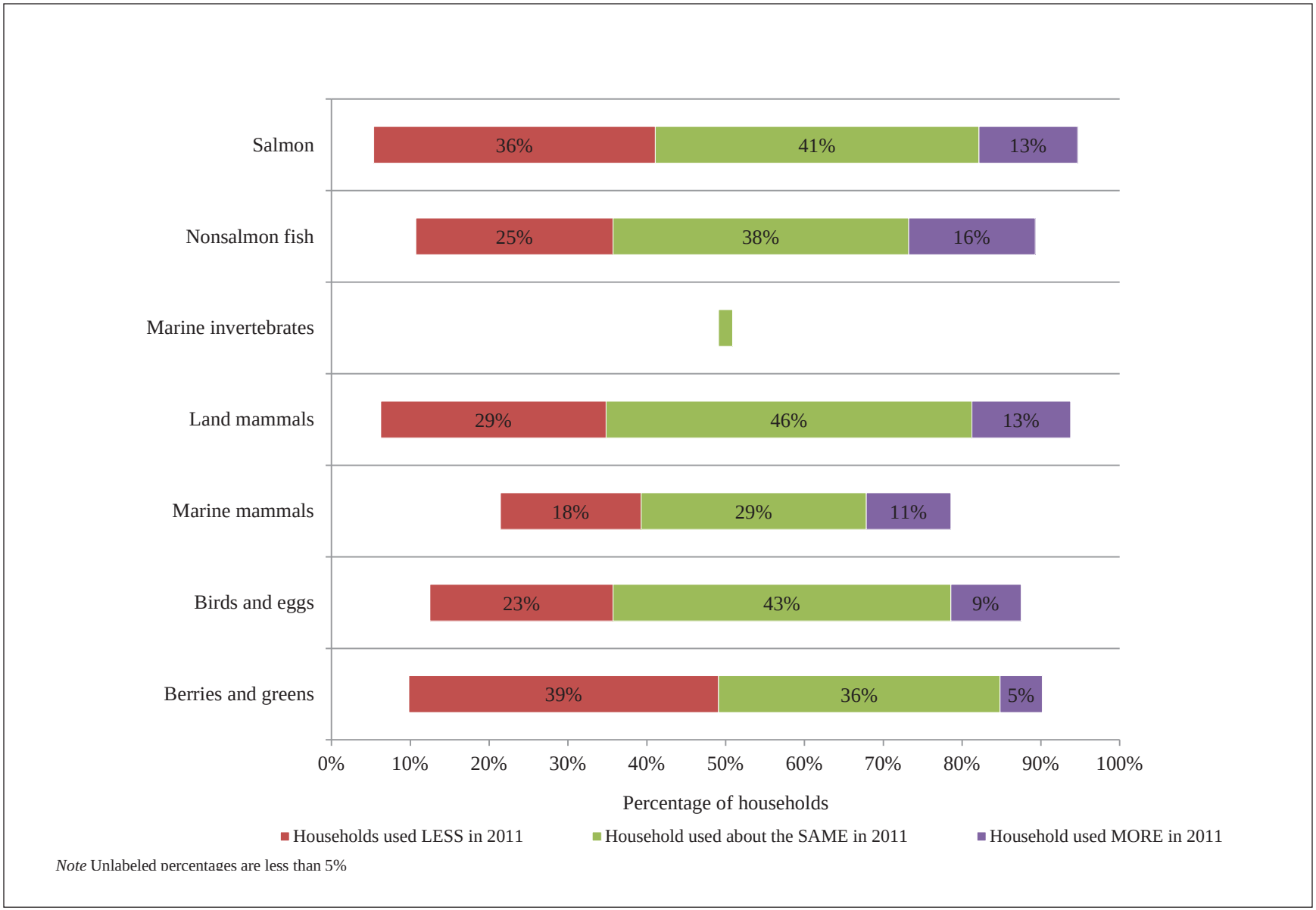


Figure 4-15.–Number of households using a resource and reporting LESS, SAME, or MORE use as compared to previous years, Napakiak, 2011.

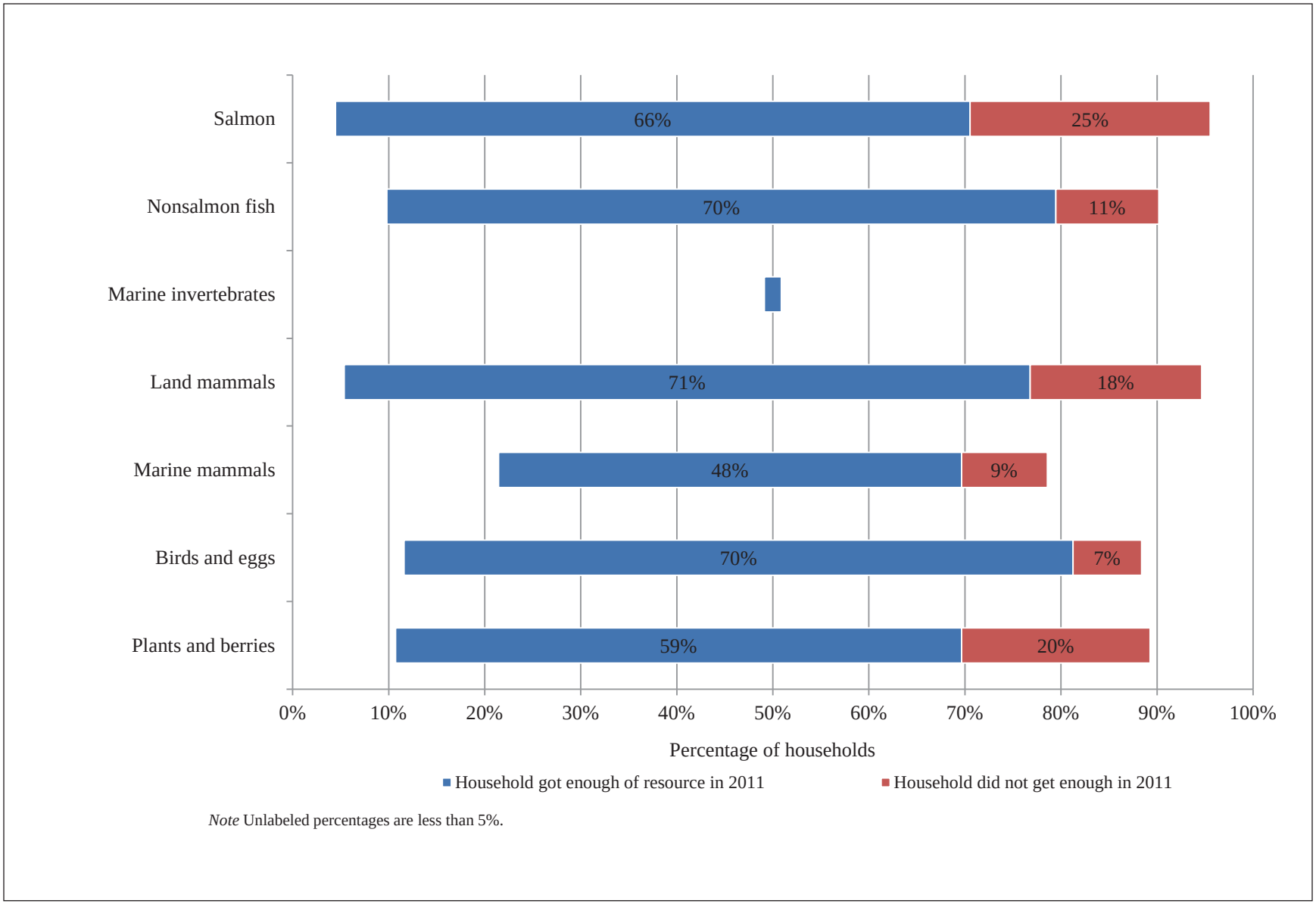


Figure 4-16.–Households reporting getting enough resources, Napakiak, 2011.

of respondents) or that they did not need the resources (15%) or that the resources were not available (10%). Survey results indicated that 70% of responding households that used subsistence resources got enough in 2011 when considering all of their resources together. Twenty-five percent of households that used subsistence resources reported that they did not get enough of all resources. Fourteen percent of households described the impact of not getting enough of all subsistence resources as severe, with 50% reporting a major impact, and 36% describing impacts as minor. Of the households that did not get enough of all subsistence resources, 69% reported doing something differently as a result. The majority of these households (90%) reported using more commercial foods and 20% reported asking others for help. Some households explained that they decided to purchase or barter for subsistence resources to obtain the wild foods they needed.

Researchers also asked respondents whether their households got enough of specific resource categories, such as salmon, nonsalmon fishes, land mammals, and others. Salmon is the most harvested of all subsistence resource categories used by Napakiak households. Forty-one percent of responding households explained that they used the same amount of salmon in 2011 as they did in previous years, and 36% reported that they used less. When asked why they used less, 24% of respondents reported that they did so due to difficulties with equipment used for subsistence harvest activities (e.g., boats, motors, snowmachines, nets, etc.). Others stated reasons such as lack of success in harvesting, lack of effort trying to harvest salmon, or that the salmon were not available; still, 12% claimed they did not need salmon in 2011. In Napakiak, 25% of respondents stated that they did not get enough salmon. When asked to evaluate the impact of not getting enough salmon, 21% described it as not noticeable, 43% described the impact as minor, 29% explained that not getting enough salmon had a major effect on their household, and 7% stated that the impact was severe. Households that did not get enough salmon adapted by purchasing more food, both commercial and subsistence. They also explained that they changed their normal behavior by asking for help from others, replaced salmon with other subsistence foods, or just lived without the salmon they felt they needed.

Nonsalmon fishes are also very important to Napakiak households, and they composed a significant portion of their total subsistence harvest in 2011. When asked to assess the amount of nonsalmon fishes they used in comparison with earlier years, 25% of respondents used less, 38% used the same as in previous years, and 16% used more. Respondents who reported more use in 2011 cited increased effort and increased success in harvesting nonsalmon fishes as reasons for getting more of this resource category. It is possible that some Napakiak fishers chose to increase their effort for nonsalmon fishes after not receiving enough salmon. Among the households that used less in 2011, 27% explained that they did not make enough of an effort to harvest nonsalmon fishes, 13% did not have the time available, and 13% reported having personal reasons why they used less. There were a number of households that reported not getting enough, but the majority of respondents (70%) described that they got enough nonsalmon fishes. For some this lack of nonsalmon fishes had a major effect (17% of respondents), and the same percentage described the effect as severe. In

order to supplement the lack of nonsalmon fishes, some households increased their use of commercial foods, and some asked other households for help.

Twenty-nine percent of respondents described using less land mammals in 2011, while 46% used about the same, and 13% used more. Households using less land mammals described their lack of success in harvesting land mammals as the cause of their change in use. Respondents also explained that challenges with their equipment, a lack of effort and time spent hunting, and other households not giving them processed food from land mammal harvests caused a reduction in use. While 18% of respondents stated that they did not get the land mammals they needed in 2011, a large majority of respondents (71%) claimed that they got enough of the resources. Some households explained that they used less marine mammals in 2011 (18%), while 27% used about the same amount of marine mammals as they did in previous years, and 11% used more. Those who used less marine mammals described they did not get enough marine mammal resources (including processed products such as seal oil) because other households did not give them any in 2011, indicating the importance of trade and sharing of marine mammal resources in communities not situated on the sea coast, such as Napakiak.

Among all respondents, a majority (52%) used the same amount or more birds and eggs and 70% described getting enough; however, 23% used less birds and eggs in 2011. When asked why they used less, 31% of respondents reported that they did so due to a decreased effort in hunting birds or gathering eggs. Others stated reasons such as not having enough time due to their work schedule or problems with equipment. In Napakiak, 7% of respondents stated that they did not get enough birds and eggs. When asked to assess the impact of not getting enough birds and eggs, 25% described it as not noticeable and 50% described the impact as minor. No respondents stated that not getting enough birds and eggs had a major effect on their household; however, 25% stated that the impact was severe. Households that did not get enough birds and eggs adapted by purchasing more commercial foods or simply lived without the resource.

While many households may have experienced sufficient bird harvests, many survey respondents described that harvests of vegetation were lower than typical years due to the limited abundance of berries in the region. As a result of smaller harvests of berries for many residents, 36% of respondents reported experiencing a major impact on their households, with 27% describing the impact as severe. While berries and greens may not represent a major portion of the total weight of annual subsistence harvests for the typical household, these highly valued resources are very important sources of nutrition for many families. In addition, the ephemeral qualities of berries and greens add to the delight that many Alaskans take in harvesting and sharing such precious wild foods.

In 2011, a majority of Napakiak households described using the same or more and getting enough of all subsistence resource categories; however, some survey respondents described using less of these resources. Napakiak respondents discussed a number of factors that they perceived as causing their households to use less of certain subsistence resources and described a similar variety of reasons as to why they may not have

gotten enough of certain resources. There is no apparent similarity among all Napakiak households that suggests a specific event or phenomenon that affected households' harvest and use patterns in 2011; however, wild food resource availability, functional equipment for transportation and harvest, and the availability of time to harvest wild foods were reported as the most common reasons overall. This suggests that both socioeconomic factors (e.g., disposable income to pay for equipment and repairs, employment schedules, limited personal time due to family constraints, etc.) and environmental factors (e.g., abundance of salmon, abundance of berries, etc.) affect a household's and a community's ability to obtain the subsistence resources they need to be satisfied and to prosper.

Jobs, Income, and Expenses

Respondents were asked about both earned income (jobs held and wages earned by all households members 16 years old and older) and unearned income (Alaska Permanent Fund dividend, Social Security, public assistance, etc.). In 2011, Napakiak households earned or received an estimated total of $2,540,218, of which $1,493,108 was from wage employment and $1,047,109 was from other income sources. The average earned income per household in 2011 was $16,777, while the average per household income from other sources was $11,765. The total average household income for Napakiak was $28,542. Table 4-7 shows the percentages of estimated earned and other income in 2011 by source.

Local government jobs (including school and tribal government positions) were the single largest source of earned income, contributing an estimated $1,011,026. The category of service jobs represented the second largest source of earned income, contributing $210,012 in wages to Napakiak households. Service jobs may have included employment related to health care, mechanical or boat repair, and child day care. Retail trade was the third largest income source for residents, contributing $114,813. The largest source of other income was entitlements which accounted for $395,518 in income in 2011. This category includes payments from sources of aid to low income households, such as cash assistance through the Temporary Aid to Needy Families Program, food stamp assistance through the Supplemental Nutrition Assistance Program, and heating and utility purchase vouchers through the Low Income Home Energy Assistance Program. The Alaska Permanent Fund dividend was the second largest source of other income at $337,955. Figure 4-17 shows the top 10 income sources for Napakiak ranked by estimated contribution.

In addition to income, Napakiak respondents were also asked about household expenses for 2011. Household expenditures included housing, fuel, groceries, utilities, and costs for supplies used to support subsistence activities, such as ammunition, gas, and equipment parts (Table 4-8). The total annual household expense for the community in 2011 was an estimated $1,479,018. The average total expense per household was an estimated $16,618 for the year. The greatest expense to Napakiak households was store-bought groceries, costing the average household approximately $7,526 in 2011. Housing represented the second greatest

Table 4-7. – Estimated earned and other income, Napakiak, 2011.

Income source	Number of people	Number of households	Total for community	Mean per household[a]	Percentage of total[b]
Earned income					
Local government	58.8	53.4	$1,011,026	$11,360	39.8%
Services	27.0	23.1	$210,012	$2,360	8.3%
Retail trade	14.3	16.0	$114,813	$1,290	4.5%
Transportation, communication, and utilities	6.4	5.3	$81,489	$916	3.2%
State government	6.4	7.1	$27,699	$311	1.1%
Agriculture, forestry, and fishing	6.4	7.1	$22,577	$254	0.9%
Federal government	1.6	1.8	$21,813	$245	0.9%
Other employment	1.6	1.8	$3,679	$41	0.1%
Earned income subtotal	**121.8**	**71.2**	**$1,493,108**	**$16,776**	**58.8%**
Other income					
Alaska Permanent Fund dividend		76.3	$337,955	$3,797	13.3%
Food stamps		36.6	$319,708	$3,592	12.6%
Social Security		19.1	$111,609	$1,254	4.4%
Unemployment		20.7	$46,657	$524	1.8%
Pension/retirement		9.5	$39,001	$438	1.5%
Supplemental Security income		6.4	$34,729	$390	1.4%
Native corporation dividend		63.6	$26,215	$295	1.0%
Energy assistance		36.6	$23,986	$270	0.9%
Adult public assistance		7.9	$22,887	$257	0.9%
Disability		4.8	$19,347	$217	0.8%
TANF (temporary cash assistance for needy families)		3.2	$18,194	$204	0.7%
Citgo fuel voucher		35.0	$18,132	$204	0.7%
Child support		6.4	$14,074	$158	0.6%
Longevity bonus		9.5	$12,739	$143	0.5%
Meeting honoraria		6.4	$1,876	$21	0.1%
Workers' compensation/insurance		0.0	$0	$0	0.0%
Veterans assistance		0.0	$0	$0	0.0%
Other		0.0	$0	$0	0.0%
Foster care		0.0	$0	$0	0.0%
Other income subtotal		**77.9**	**$1,047,109**	**$11,765**	**41.2%**
Community income total			**$2,540,218**	**$28,542**	**100.0%**

Source ADF&G Division of Subsistence household surveys, 2012.

a. The mean is calculated using the total number of households in the community, not the number of households for this income category.

b. Income by category as a percentage of the total community income from all sources (wage-based income and non-wage-based income.)

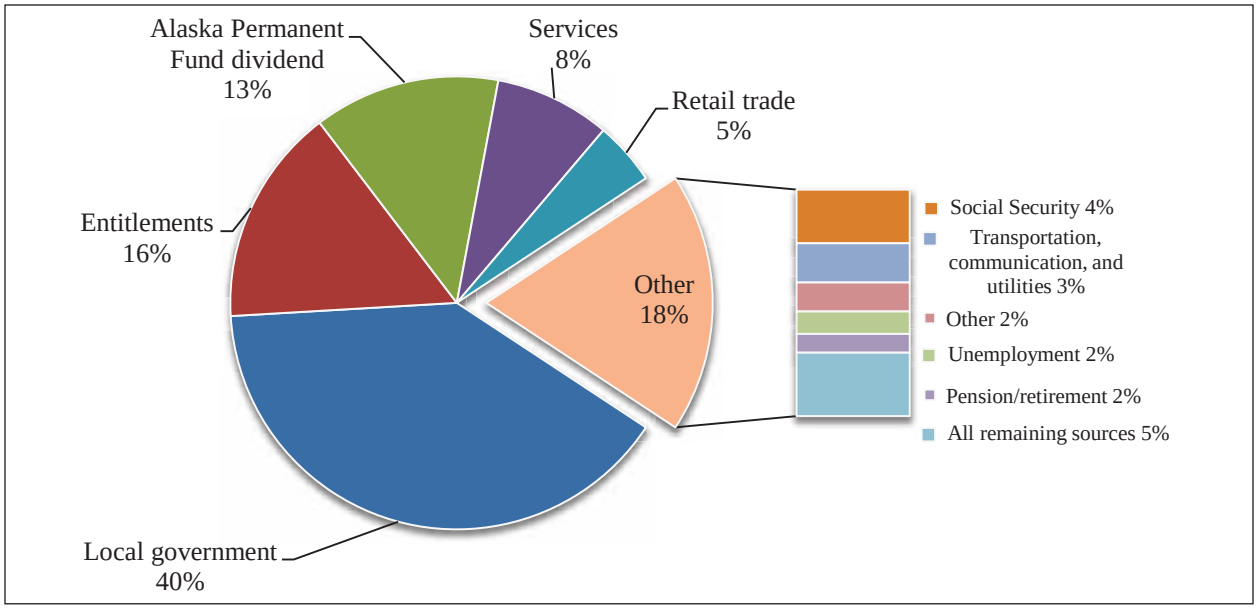


Figure 4-17.–Top 10 income sources ranked by estimated amount, Napakiak, 2011.

Table 4-8. – Estimated annual expenses, Napakiak, 2011.

Household expenses	Number of households	Total for community	Mean per household	Percentage of category	Percentage of total
Total expenses	**89.0**	**$1,479,018**	**$16,618**	**100.0%**	**100.0%**
Housing	89.0	$645,023	$7,247	100.0%	43.6%
Rent/mortgage	54.0	$148,800	$1,672	23.1%	10.1%
Stove oil	79.5	$181,934	$2,044	28.2%	12.3%
Firewood	25.4	$18,696	$210	2.9%	1.3%
Electricity	77.9	$100,301	$1,127	15.5%	6.8%
Propane	38.1	$16,086	$181	2.5%	1.1%
Water/sewer/garbage	74.7	$50,580	$568	7.8%	3.4%
Telephone	85.8	$77,181	$867	12.0%	5.2%
Television	57.2	$51,446	$578	8.0%	3.5%
Groceries	89.0	$670,539	$7,534	100.0%	45.3%
Store-bought groceries	87.4	$669,846	$7,526	99.9%	45.3%
Subsistence–customary trade	22.3	$692	$8	0.1%	0.0%
Subsistence	89.0	$163,456	$1,837	100.0%	11.1%
Gasoline	74.7	$96,146	$1,080	58.8%	6.5%
Ammunition	66.8	$13,855	$156	8.5%	0.9%
Equipment parts	55.6	$41,547	$467	25.4%	2.8%
Other supplies	38.1	$11,908	$134	7.3%	0.8%

Source ADF&G Division of Subsistence household surveys, 2012.

expense at an average of $7,247 per household. Housing expenses included average annual expenditures per household of $2,044 for heating oil, $1,672 for rent or mortgage, $1,127 for electricity, and $867 for telephone service. Other items that composed total annual average housing expenses were television ($578 per year), water, sewer, and garbage ($568 per year), firewood ($210 per year), and propane ($180 per year). In addition to store-bought groceries, an estimated 22 households (25%) spent a total of $692 on customary trade of subsistence foods, with an average expense of $8 per household.

Many household expenses were directly related to searching for and harvesting wild foods. Subsistence-related costs, including gasoline, ammunition, equipment parts, and other supplies (e.g. rain gear, coolers, camping equipment) totaled an estimated $163,456 for the community, with an average cost of $1,837 per household. The highest subsistence expenditure was for gasoline, with a total community expense of $96,146, which was used primarily for boats, ATVs, and snowmachines. Napakiak households spent on average $1,080 annually for purchases of gasoline. Households also spent an average of $467 per year on parts for equipment used for subsistence activities and $156 per year on ammunition. The percentage of Napakiak households that used boats with motors for subsistence activities in 2011 was 72%. The total percentage of households that used snow machines for subsistence was 61%. Most households in Napakiak owned one or both of these pieces of equipment; however, some households reported that due to the high cost of parts, they did not have a working boat or snow machine in 2011, which prevented them from pursuing certain subsistence activities. Households reported that new boat motors cost an average of $4,110 per household and lasted an average of 5 years. Boats cost an average of $5,929 per household and lasted an average of 15 years. Snowmachines lasted about 5 years before having to be replaced at an average per household cost of $2,841. Other indispensable pieces of subsistence equipment were fishing nets. Napakiak respondents stated that new nets lasted approximately 4 years, with an average replacement cost of $501 (Table 4-9).

Recording information regarding household income and expenses is potentially helpful to understanding all aspects of the mixed cash and subsistence economies that exist in rural Alaskan communities such as Napakiak. To harvest wild foods successfully in rural Alaska, households must be able to purchase the equipment and fuel necessary for transportation to the places where they can harvest fish, game, and vegetation. Fuel is also essential for the operation of fishing gear, particularly in regions like the lower Kuskokwim River. In

Table 4-9. – Estimated equipment costs and household use, Napakiak, 2011.

	Equipment used for subsistence					
	Boats	Boat motors	Nets	Snowmachines	4-wheelers (ATVs)	Trucks/cars
All households						
Using						
Estimated number	65.8	65.8	60.0	52.2	36.8	3.9
Percentage	73.9%	73.9%	67.4%	58.7%	41.3%	4.3%
Owning						
Estimated number	52.2	54.2	48.4	46.4	36.8	3.9
Percentage	58.7%	60.9%	54.3%	52.2%	41.3%	4.3%
Mean owned	0.7	0.8	1.4	0.6	0.5	0.0
Total estimated owned in the community	63.8	67.7	123.8	54.2	40.6	3.9
Mean original cost per household	$5,929	$4,110	$607	$2,841	$2,493	$409
Total estimated community cost	$527,643	$365,757	$53,993	$252,841	$221,911	$36,374
Estimated annual community cost	$28,329	$46,512	$11,879	$31,393	$25,661	$5,400
Only households owning						
Mean owned	1.2	1.3	2.6	1.2	1.1	1.0
Maximum owned	3	4	6	2	2	1
Mean original purchase cost	$10,101	$6,752	$1,116	$5,445	$6,037	$9,400
Minimum original purchase cost	$1,533	$500	$30	$800	$3,000	$9,000
Maximum original purchase cost	$18,000	$11,000	$1,500	$10,000	$10,000	$9,800
Median original purchase cost	$8,000	$7,000	$383	$4,775	$6,500	$9,400
Mean replacement time (years)	14.5	5.3	4.2	5.4	7.3	10.0
Minimum replacement time (years)	0	0	0	0	0	10
Maximum replacement time (years)	25	10	25	15	15	10
Median replacement time (years)	20.0	5.0	3.0	5.0	8.0	10.0

Source ADF&G Division of Subsistence household surveys, 2012.

addition, fishers and hunters must have access to fishing nets, firearms, ammunition, and other equipment to maximize their harvest efficiency. Because supporting an active subsistence economy requires cash flow in a community, data that describe income and expenses can potentially explain a community's capacity to harvest and distribute subsistence resources.

Food Security

Researchers asked Napakiak respondents whether 10 statements regarding food security conditions were ever true for their household during 2011. For each of the conditions that were true for their households, respondents were also asked to state during which months these conditions existed. This portion of the survey was intended to assess each household's food security--that is, "access by all people at all times to enough food for an active, healthy life" (Nord et al. 2009:2). The food security inquiry was modeled on questions developed by the USDA and modified by ADF&G to account for differences in access to subsistence and store-bought foods. The 10 food security conditions discussed in the survey and Napakiak households' responses are presented in Figure 4-18, with the first condition listed in the figure indicating lowest food insecurity (i.e., "Worried about having enough food") and the last condition indicating the highest food insecurity (i.e., "Did not eat for a whole day"). Most notable among these responses was that 38% of Napakiak households reported that they lacked the resources necessary to get both the subsistence and store-bought food they needed, and 32% of households worried about having enough food. In addition, 27% of households reported that when considering both subsistence and store-bought sources together, their food did not last and they could not get more. A number of households also indicated high food insecurity conditions when they affirmed that their households experienced cutting the size of their meals (12% of households), eating less than they should (18%), going hungry (18%), losing weight (18%), and not eating for a whole day (12%) all due to a lack of food.

Based on their responses to this portion of the survey, households were generally categorized as being food secure or food insecure following a USDA protocol (Bickel et al. 2000). Food secure households were divided between 2 subcategories: high food security and marginal food security. Food insecure households were also divided between 2 subcategories: low food security or very low food security. During 2011, 79% of Napakiak households reported high or marginal food security. Of the remaining households, 13% reported low food security while 9% reported very low food security. In comparison in 2011, 85% of U.S. households and 86% of Alaska households reported high and marginal food security conditions (Figure 4-19). Based upon these survey responses, it is apparent that in 2011 Napakiak households on average experienced lower food security than average households throughout the U.S., including Alaska; however, because these percentages are relatively close in value, further analysis would be necessary to determine whether there existed a statistically significant difference between reported food insecurity conditions in Napakiak and average households elsewhere in the state and nation.

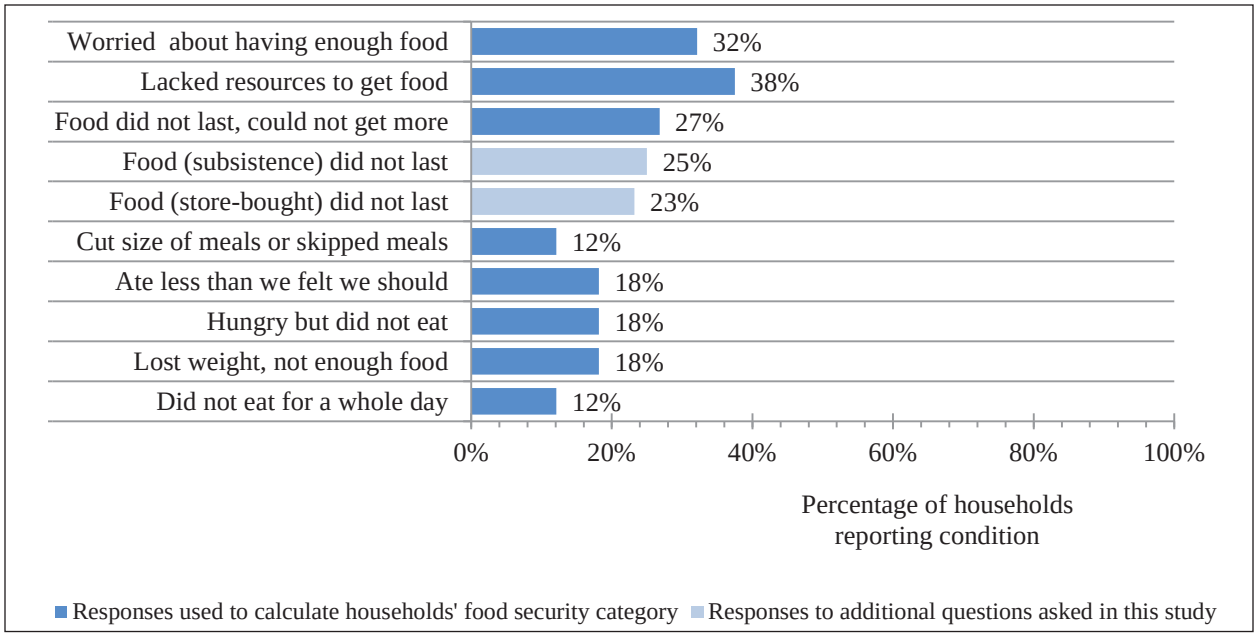


Figure 4-18.–Food insecure conditions results, Napakiak, 2011.

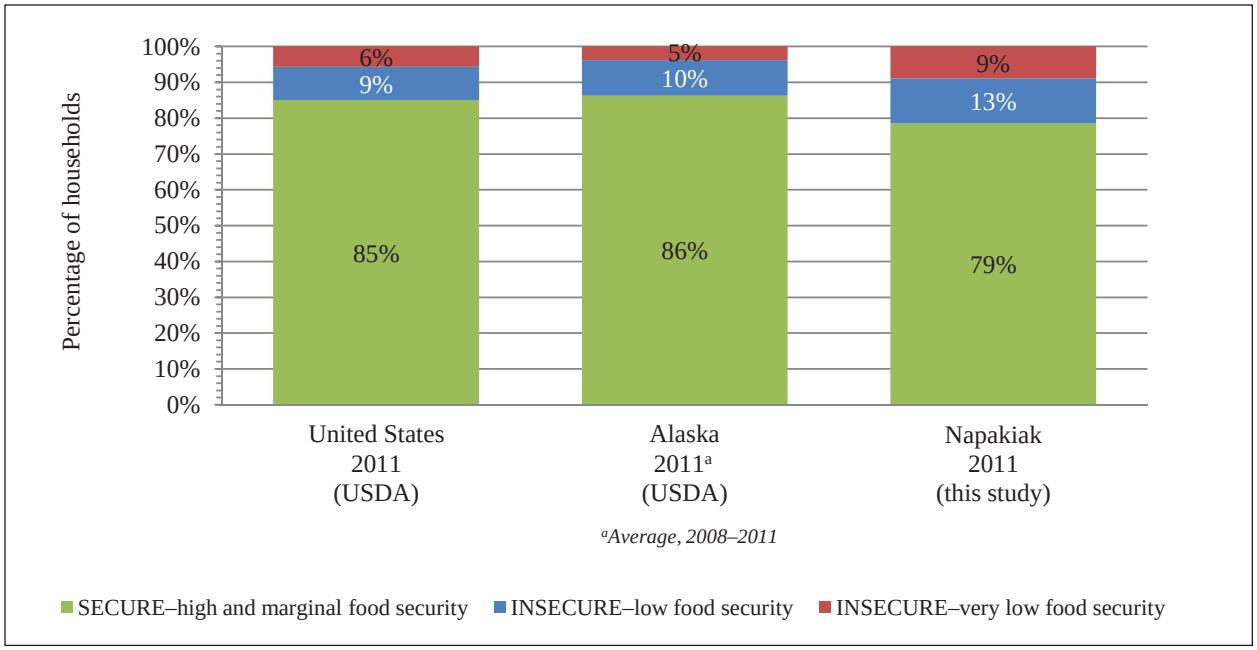


Figure 4-19.–Food security categories, Napakiak, 2011.

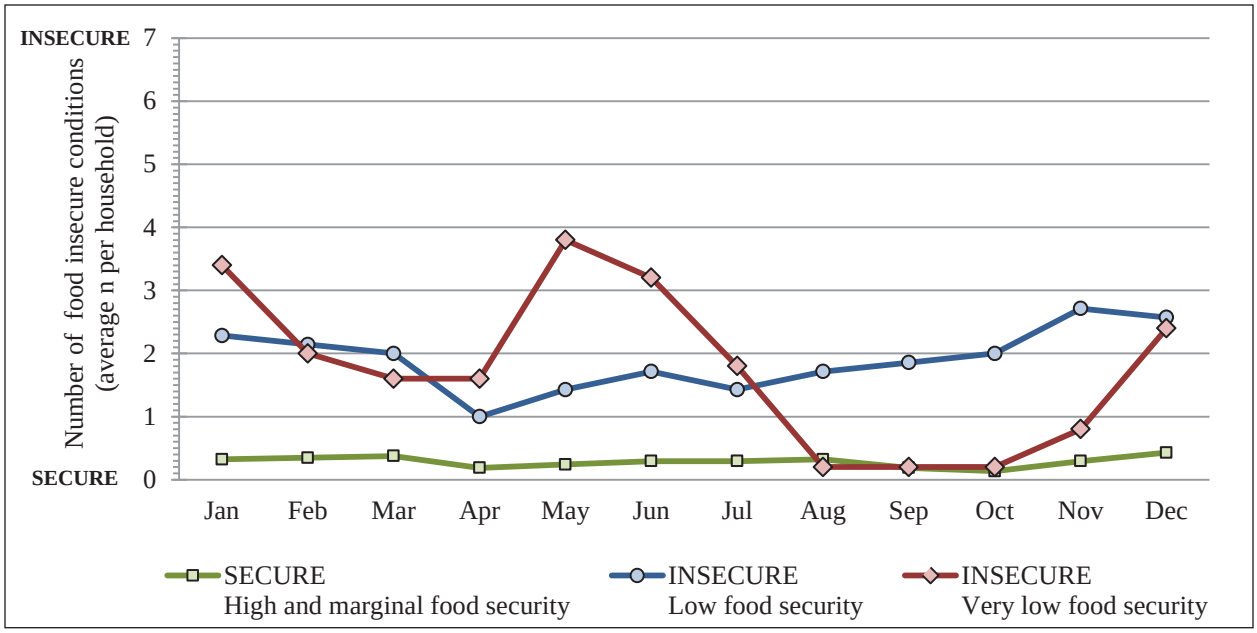


Figure 4-20.–Food insecure conditions by month and by household category, Napakiak, 2011.

Figure 4-20 shows the average number of food insecure conditions reported by month for each category. Households experiencing high food security reported essentially no instances of food insecure conditions throughout the year. Households that reported low food security conditions experienced their highest food insecurity in the winter, spring, and fall months of January through March and October through December, 2011. This pattern suggests that Napakiak households with low food security experienced some increase in food security between April and August, possibly due to the availability of northern pike, migratory birds, and salmon.

When compared to households with high, marginal, and low food security, Napakiak households reporting very low food security conditions experienced the greatest amount of variability in these conditions throughout the year (Figure 4-20). These households reported the fewest instances of food insecure conditions between August and September. Households reported the most instances of food insecure conditions in January, May, and June. December was also one of the months with high food insecurity. Higher food insecurity in colder months could be related to depletion of summer food stores, lack of transportation such as a snowmachine, and increased household spending on utilities such as heating fuel, electricity, and gasoline used to harvest firewood. Increased food insecurity in May and June may result from a households lack of the boats, motors, or drift gillnets needed to harvest sufficient amounts of salmon (particularly Chinook salmon) when migrating adults are present in the Kuskokwim River and available to the community. Households that report a variety of food insecure conditions may be more easily influenced by changes in the accessibility of food, resulting in a higher degree of seasonal variability seen in this category.

Wild Food Networks

In most Kuskokwim communities, households obtain wild food harvested by others through exchange networks that include sharing, barter, and customary trade. Other research conducted by the Division of Subsistence demonstrated that sharing of subsistence harvests is vitally important for maintaining kinship ties, cultural traditions, and the physical well-being of all community residents (Stickney 1981). While the diagram does not differentiate the various forms of exchange, it does illustrate the complex nature of the Napakiak wild food network, the strong connections among households both within the community and in other communities, and the cooperative nature of subsistence harvests. The importance of sharing was also expressed in the ethnographic portion of the study when a key respondent stated, "Everything we catch, we share. Everything. Like sea mammals, moose, fishes; everything we catch we share. See in the village, we got a different…size of families, family groups. You know, even there, the relatives, we gotta share with everybody." (05082012WNA1)

Figure 4-21 depicts a network of wild food exchanges between Napakiak households and with households in other communities. The nodes are shaped according to the demographic structure of the household (couple, single male, single female) and colored according to the age of the head or heads of household. A developing household head is less than 40 years old, a mature household head is 40 to 59 years old, and an elder household head is 60 years old or older. Gray boxes are unsurveyed households. Blue circles connote a household in another community. The size of each node is scaled to represent the household's total subsistence harvest; the larger the node, the greater that household's total harvest. Arrowed lines show the direction of the exchange and are weighted to show multiple exchanges. However, arrowed lines only indicate resources flowing into an individual household; the network diagram cannot imply patterns of reciprocity. Likewise, the diagram does not illustrate other relationships which occur in subsistence sharing networks such as providing financial support for the harvesting effort or receiving food from an intermediary instead of directly from those harvesting or processing the resources. Households near the center of the network diagram are more connected than others. Households (represented by nodes) migrate to the center of the diagram as they receive more resources from other households; those households closer to the periphery of the diagram receive fewer resources.

Napakiak residents reported exchanging food between individuals and families in Napakiak and with residents in at least 20 other Alaskan communities. Households reported receiving food from other lower Kuskokwim River communities including Akiak, Atmautluak, Bethel, Eek, Napaskiak, Nunapitchuk, and Tuntutuliak, as well as the Kuskokwim Bay communities of Chefornak, Kongiganak, Kipnuk, Kwigillingok, and Quinhagak. Napakiak households were also connected with a number of other communities that were within the region but outside the lower Kuskokwim River. These included the Yukon–Kuskokwim Delta communities of Chevak, Newtok, Pilot Station, Scammon Bay, and Toksook Bay. Chuathbaluk was the sole central Kuskokwim River community within the Napakiak subsistence resource sharing network.

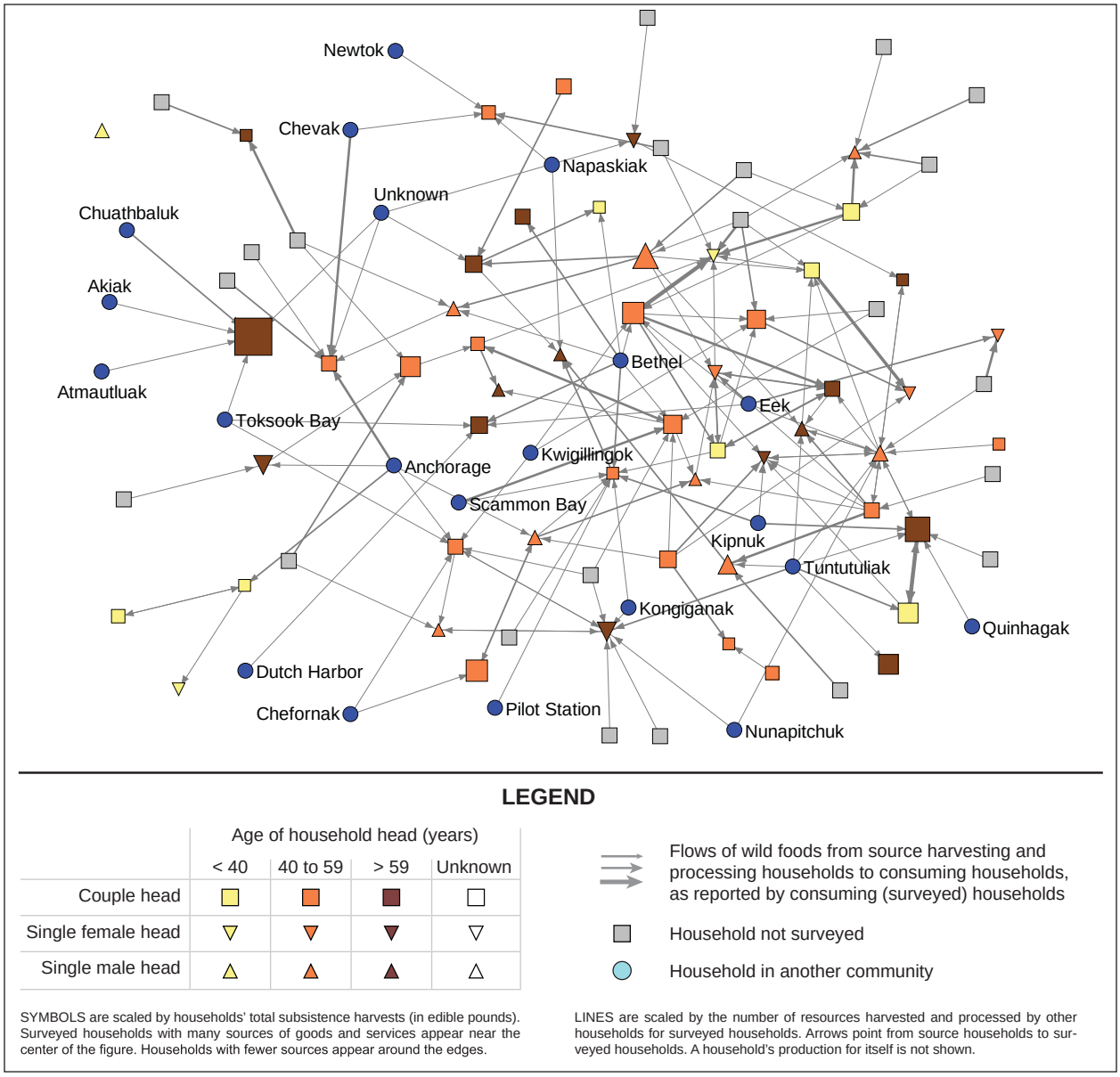


Figure 4-21.–Wild food harvesting and processing network, Napakiak, 2011.

Although these villages are widespread throughout the region, residents of each of these communities are predominantly Central Yup'ik and likely share the cultural and social traditions that define the distribution of wild foods between families and friends. It is also likely that some Napakiak households have familial connections with these communities.

In northwestern Alaska, Magdanz et al. (2002:64) found that active elder households, mature couples, and single active males tend to be the highest producers of subsistence foods. That pattern appears to be consistent with Napakiak's wild food network. For example, twice the number of mature households gave food to others than did younger households. There are some variations to this general pattern, however, as indicated by the large brown square to the left of the diagram. This represents the heaviest harvesting house-

hold, an elder couple. While this is consistent with Magdanz's et al. (2002) research in terms of demographics, no other household in Napakiak reported receiving food from them. Instead, this household appeared to maintain connections with households in 5 other communities. It is important to note that the large number of unsurveyed households depicted by grey squares in the figure could explain this representation of the heaviest harvesting household in Napakiak. It is possible that much of the household's wild food exchanges were not captured through the surveys.

There are also a number of households throughout the network that receive resources from many other households. They are depicted as having several arrows pointing to them from other households in the figure. These households represent all age groups and include couples, single females, and single males. Some are moderate to high harvesting households; however, many appear to be low harvesters. Such depictions of survey data likely indicate the strong connections within families. Possible scenarios could include several households sharing with low harvesters such as elderly parents or grandparents, single mothers, or young couples. An essential aspect of the mixed cash and subsistence economy that exists in Napakiak, as well as the predominant cultural traditions of the Yup'ik people residing there, is that high harvesting households assist relatives and friends in obtaining the resources they need. This is done not only to provide for others the nutrition they need but also to share the important cultural value that wild food represents to the community. One key respondent demonstrated the importance of distributing food, even when it results in households receiving relatively small shares of the catch. He stated that "[When we go moose hunting], even if there's 8 or 9 of us, we catch one we'll split it all (05082012WNA1)." This further demonstrates the importance that the sharing of food plays in characterizing Napakiak's subsistence practices and patterns.

When analyzed in comparison with characteristics of household networks within the community, subsistence harvest and use estimates can provide additional information that further demonstrates the importance of sharing in Napakiak. Most households that reported harvesting subsistence resources also reported giving resources to other households. Conversely, many households that did not report harvesting resources did report using and receiving wild foods. Analysis of the patterns of harvest of all subsistence resources among Napakiak households indicated that 27% of households took 70% of the total annual harvest in 2011. This pattern is similar to that recorded by Wolfe et al. (2010) in other communities of rural Alaska. Wolfe et al. (2010) reported that on average, 30% of households were responsible for 70% of the harvest of all subsistence resources within communities studied throughout the state. Descriptions of this network of shared subsistence resources indicate that the harvest of wild foods by a portion of Napakiak households is essential in supporting many other households in the community. These data suggest that a few high-harvesting households obtained large amounts of resources and distributed them around the community in 2011. These high-harvesting households likely have a fundamental role in maintaining the nutritional, social, and cultural sustainability of the entire community.

Comparisons with Prior Results

This section discusses the results from this study in comparison to previously collected data. Historical quantitative information on subsistence harvests in Napakiak is limited; this was the first comprehensive subsistence harvest survey conducted by ADF&G in Napakiak. Migratory bird surveys have been conducted in the lower Kuskokwim River area over the past several years, but the results are published only at the regional level. Klein (1966) included Napakiak in his study "Waterfowl in the economy of the Eskimos on the Yukon–Kuskokwim Delta, Alaska." In addition to the above studies, ADF&G has conducted subsistence salmon surveys in Napakiak each year from 1990 to 2011.

The Kuskokwim River corridor is an important flyway for migrating birds, and the Yukon–Kuskokwim Delta is an essential nesting and rearing area for many birds, including geese and ducks. Klein (1966) provides a point of comparison in harvests between the years 1964 and 2011. Kline visited Napakiak during his study, which he conducted during April through June 1964 and in February 1965. Klein (1966) recorded a total goose harvest of 1,505 geese for Napakiak in 1964, with 1,075 harvested in spring (25 geese per household) and 430 harvested in fall (10 geese per household). At the time of Klein's study Napakiak residents considered "Canada goose" to be the most important category of geese for the community both in spring and fall.[9] In 2011 the total goose harvest was 941 individual birds (1,710 lb). The principal goose species harvested by weight was greater white-fronted goose (715 lb). Cackling goose and lesser Canada goose also represented the larger harvests of geese with 474 lb and 371 lb total harvested by the community, respectively.

The harvests of certain duck species has decreased when compared with Klein's (1966) study. The spring duck harvest in 1964 was 645 birds, with 15 individuals per household. These were primarily composed of mallard, northern pintail, and common eider. The fall duck harvest of these 3 species was 129 ducks, with 3 per household. The total harvest of these 3 duck species for the year was 774 ducks. The harvest of ducks in 2011 was 2,210 individuals. The most commonly harvested duck species by weight in 2011 were black scoter (466 lb) and scaup (392 lb). Northern pintail and mallard were the next most commonly harvested species by weight in 2011, with a total of 177 lb and 172 lb harvested, respectively.

In 1964 Napakiak residents harvested 86 tundra swans (Klein 1966), essentially identical to the 2011 harvest of 81 tundra swans, a total of 811 lb for the community. Compared to 1964 (Klein 1966), harvests of sandhill cranes and bird eggs were higher in 2011. Napakiak households harvested an estimated total of 8 sandhill cranes and 216 bird eggs in 1964. In 2011, respondents reported harvesting 94 sandhill cranes for a total of 938 lb, and 2,155 eggs or 624 lb for the community. While comparisons of all bird species between 1964 and 2011 may be interesting to consider, it is also very important to understand the difference in human population for the community between the two years. Klein (1966) reported a total population of 254

9. Klein (1966) reported Napakiak harvest data for the category of Canada goose, which included two species, cackling goose and lesser Canada goose. The purpose of combining harvests of these species was that they are very similar in appearance and difficult to distinguish. As such, when conducting bird harvest surveys Klein could not record harvests of each species individually with a high level of certainty.

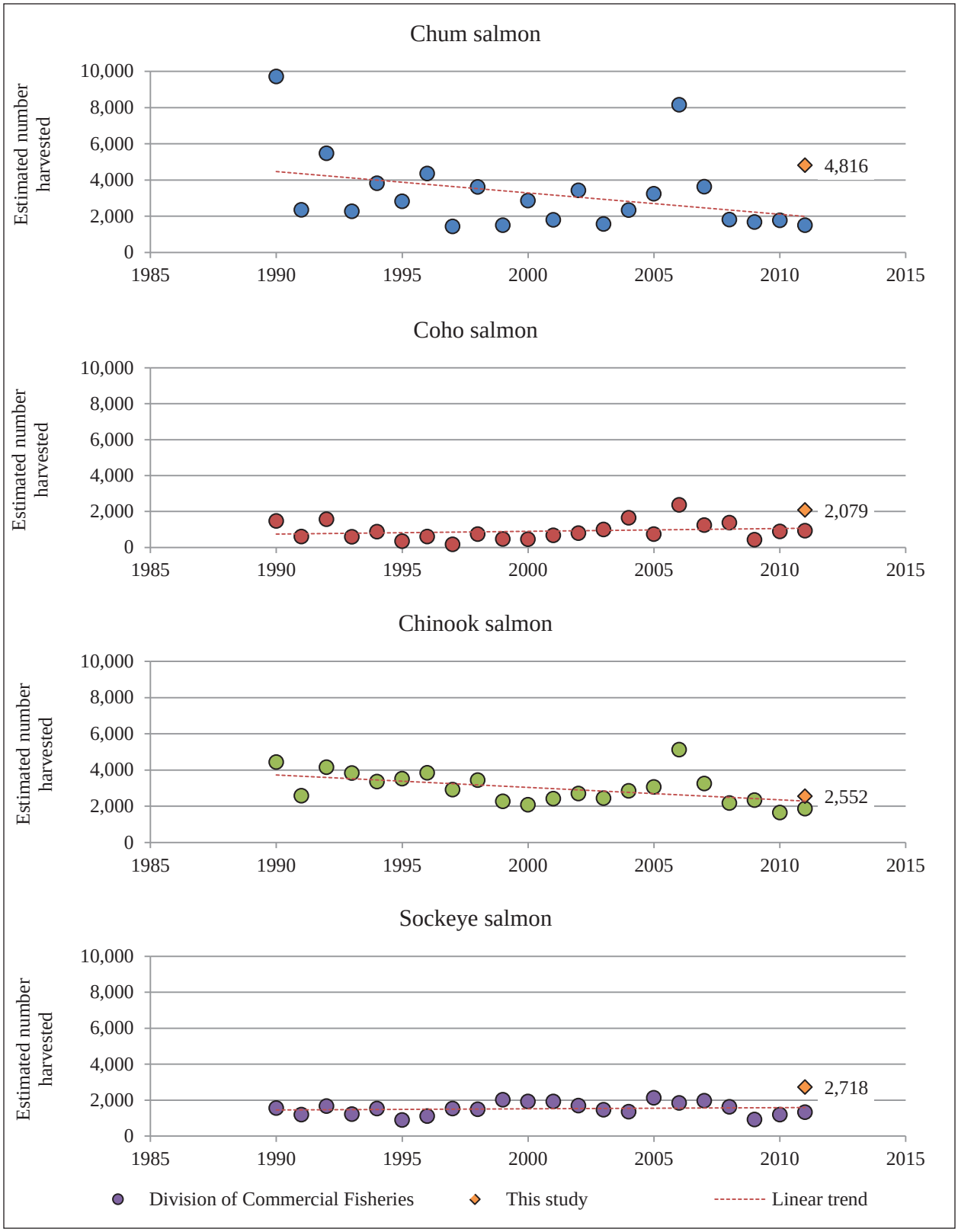


Figure 4-22.–Estimated total number of chum, coho, Chinook, and sockeye salmon harvested by residents, Napakiak, 1990–2011.

people in 1963. The estimated population for the community for this study was 316 people, an increase of 24%. Considering the increased population, as well as other social and economic changes that have occurred for all communities in rural Alaska since the 1960s, explaining differences in bird harvests between Klein (1966) and 2011 household surveys is beyond the scope of this research.

ADF&G Division of Subsistence conducted postseason subsistence salmon surveys in Napakiak between 1990 and 2007. Since 2008, ADF&G Division of Commercial Fisheries has administered that survey. Salmon harvest numbers vary from year to year for a variety of reasons including environmental conditions, salmon population fluctuations, natural cycles in returns of spawning salmon, and regulatory changes. Figure 4-22 shows estimated Napakiak salmon harvest numbers between 1990 and 2011. These include harvest estimates for 2011 from this survey as well as the postseason harvest survey conducted by Division of Commercial Fisheries. The trend in Chinook salmon harvests shows a gradual decrease since 1990, with some of the lowest harvests occurring from 2008 through 2011. The total harvest of Chinook salmon of 2,552 fish for this study was the highest since 2008. The Division of Commercial Fisheries reported an estimated harvest of 1,963 Chinook salmon in 2011.[10] This trend in Chinook salmon harvests that are slightly lower than historical harvests is consistent with observations of Napakiak residents regarding the declining abundance of the species and is similar to that of the adjacent community of Napaskiak (see "Comprehensive Survey Results Napaskiak, 2011"). Other research by ADF&G has described that total returns of Kuskokwim River Chinook salmon have declined each year since 2005 with the some of the lowest returns on record occurring in 2010 and 2011 (Elison et al. 2012; Brazil et al. 2013).

Chum salmon may have decreased very slightly in 22 years of surveys; however, harvests vary widely with a range from 1,430 fish in 1997 to 9,714 fish in 1990. Chum salmon harvests remained relatively low overall from 2008 through 2010. Another very high harvest occurred in 2006 with 8,143 fish. The chum harvest estimate for this study was 4,816 fish, the highest harvest of all salmon species in 2011. The Division of Commercial Fisheries estimated a total harvest of 1,546 chum salmon for Napakiak in 2011.

Historical harvests of sockeye salmon show a relatively stable trend, with annual variations between approximately 1,000 and 2,000 fish since 1990. The highest harvest of sockeye salmon occurred in 2011 with 2,718 fish. The Division of Commercial Fisheries estimated a total harvest of 1,351 sockeye salmon by Napakiak fishers in 2011. Harvests of coho salmon have also shown a great deal of variability since 1990 with relatively lower harvests occurring in 2009 through 2011. In surveys conducted for this research, Napakiak households harvested an estimated 2,079 coho salmon. The Division of Commercial Fisheries estimated a total harvest of 927 coho salmon in 2011 for the community. The relatively high harvests in chum, sockeye, and coho salmon in 2011 in conjunction with relatively low Chinook salmon harvests from 2008 to 2011 could serve as an example of one subsistence resource being replaced or supplemented by another when the

10. The differences in harvest amounts of subsistence-caught salmon between data from this study and data from the Division of Commercial Fisheries 2011 survey presented in this section are likely the result of differences in survey methodology, as well as variations in sample sizes and sample composition.

preferred resource—Chinook salmon, in this case—is not as available. Kuskokwim River chum, sockeye, and coho salmon are considered by managers and fishers to have maintained their abundance throughout the previous decade or more (Brazil et al.2013; Estensen et al. 2009). At least since 2002, the numbers of returning adult chum, sockeye, and coho salmon have achieved the escapement goals set by ADF&G (Brazil et al. 2013). Thus, while there have been serious concerns expressed by lower Kuskokwim River fishers in recent years regarding the status of Chinook salmon stocks, chum, sockeye, and coho salmon often return to the Kuskokwim River in high numbers, and Napakiak harvests tend to reflect this phenomenon.

Conclusion

Napakiak is a community that relies on abundant wild resources present in the lower Kuskokwim River and surrounding tundra. Of the wild food resources available in the region, fish compose the majority of all Napakiak harvests, particularly Chinook, chum, and sockeye salmon as well as northern pike and several species of whitefishes. Other important subsistence resources include moose and caribou, ducks, geese, and other birds as well as berries such as salmonberries and blueberries. Napakiak residents harvest these resources throughout the lower Kuskokwim River corridor and into the territory of the lower Yukon River.

An essential aspect of the subsistence way of life practiced by residents of Napakiak includes sharing wild food resources with family and friends, particularly those who may be lacking resources or the ability to get them. As such there exists a network of households in the community with links to several communities within the Yukon–Kuskokwim Delta region as well as other villages and large cities around Alaska. As a result of this network of shared resources, many households were able to obtain the food they needed in 2011; however, there were also a number of households that reported not getting enough wild food resources, some to the point of experiencing various conditions of food insecurity.

With a high reliance on several species of fish as sources of wild food, residents of Napakiak, like in other communities in the Kuskokwim River region, are very responsive to changes in the availability of fish resources. This is particularly true for salmon, especially Chinook salmon. In 2011, as in other recent years when subsistence Chinook salmon harvests have been in decline, Napakiak households have demonstrated resilience by harvesting large numbers of other species, such as chum, sockeye, and coho salmon. Northern pike is also a very important resource to the residents of Napakiak, representing 16% of all wild food harvests by weight in 2011 and equivalent to both Chinook and chum salmon harvests by weight. Large annual harvests of northern pike are partly due to Napakiak's proximity and historical connection to the mouth of the Johnson River. This is especially true in late winter and spring when non-spawning juvenile pike aggregate in large numbers before migrating into the surrounding streams, sloughs, and lakes to feed in summer months.

This research represents the first comprehensive subsistence harvest survey that ADF&G has conducted in Napakiak. While this report advances researchers' knowledge of the various social, economic, and cultural

aspects that encompass subsistence ways of life in Napakiak, additional survey and ethnographic research will be necessary to develop a more complete understanding of life in the community. The important contribution that the community has made should be evident in this report and will serve both the residents of Napakiak and future researchers in advancing studies of the interactions of human and natural resource systems as they exist in the community and the region.

Chapter 5: Comprehensive Survey Results Napaskiak, 2011

Lisa J. Slayton

In April of 2012, ADF&G researchers surveyed 56 of 96 households (58%) in Napaskiak. Expanding for the unsurveyed households, the residents of Napaskiak's estimated total harvest of edible pounds (lb) of wild foods between January and December 2011 was 196,763 lb (± 21%). The average harvest per household was 2,050 lb; the average harvest per person was 410 lb. During the study year, Napaskiak's residents in total harvested 89 different species of subsistence fish, wildlife, and vegetation and used 103. These included the harvest and use of 8 subsistence resources that were not listed on the survey.

Five species—Chinook salmon, humpback whitefish, moose, summer chum salmon, and northern pike—accounted for 60% of the total harvest in 2011 (Figure 5-1) In edible pounds, Chinook salmon contributed more than any other single species to the total community harvest. In 2011, an estimated 4,227 Chinook salmon were taken for an estimated total harvest of 39,948 edible pounds or 20% of the total community harvest of wild foods.

This chapter summarizes findings from the household surveys, including demographic characteristics, responses to harvest assessment questions, harvest estimates, employment, income, and food security. Har-

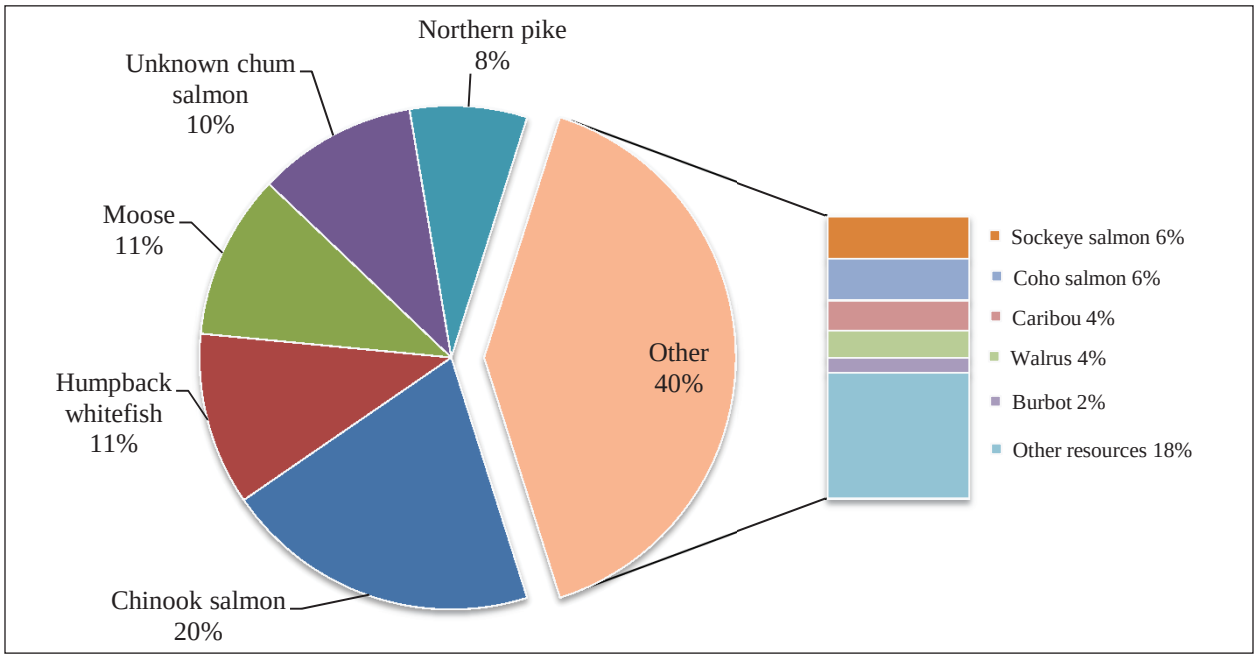


Figure 5-1.–Population history, Napaskiak, 2011.

Photo by Alida Trainor

Figure 5-2.–Napaskiak and the Kuskokwim River coated in snow and ice, Napaskiak, 2011.

vest numbers are expanded estimates. Additional tables appear in Appendix D. Results from this survey are available online in the Division of Subsistence Community Subsistence Information System (CSIS).

In addition to the 2011 comprehensive survey, ethnographic interviews were conducted with 2 individuals, including 1 female elder who is still involved in subsistence activities and 1 male subsistence hunter and fisherman. These ethnographic interviews provide context for the quantitative data presented in this chapter. Findings from these interviews, historical background information, and comparisons to earlier studies are presented throughout the chapter.

About Napaskiak

Napaskiak (Napaskiaq) is a Yup'ik Eskimo community located on the south bank of the Kuskokwim River, directly opposite the smaller community of Oscarville. It lies approximately 6 miles southeast of Bethel and 401 miles west of Anchorage. The community is located within the Yukon–Delta National Wildlife Refuge (YDNWR). Winter temperatures average -2 to 19˚F, and summer temperatures average from 42 to 62˚F with an average annual participation of 16 inches per year. Average annual snowfall is approximately 50 inches. The weather is influenced by both the inland continental climate and by maritime storms from the Bering Sea. The Kuskokwim River at Napaskiak is ice-free from mid-May through October.[1]

Napaskiak, shown in Figure 5-2**,** is located in an area that is mostly composed of wet and heath tundra, dwarf birch and alder thickets, freshwater marshes, and willow thickets (Oswalt 1963:4). Year-round fauna

1. Alaska Department of Commerce, Community, and Economic Development (ADCCED) Division of Community and Regional Affairs, Juneau: "Alaska Community Database Online: Community Information." Accessed August 2013. http://commerce.alaska.gov/cra/DCRAExternal/community.

include moose, red fox, muskrat, river otter, mink, hare, ermine, ptarmigan, spruce grouse, raven, Canada jay, and several small mammals (e.g., shrews, voles, and lemmings). The occasional wolf, wolverine, lynx, and brown or black bear are also found near the community. Caribou migrate within hunting distance each year. In addition to 5 species of salmon and 5 species of whitefish, smelt, burbot (locally known as lush), blackfish, and northern pike can be found at various times of the year (Oswalt 1963).

Archaeological investigations in the vicinity of Napaskiak have produced evidence that can be attributed to an Eskimo culture dating between 3,000 and 4,000 year ago (Ackerman 1980). This evidence, in the form of lithic artifacts (i.e., stone tools and flakes) recovered from prehistoric game lookout stations, intercept points (i.e., kill sites), and processing camps located along river corridors and inland lakes, speaks to a past subsistence pattern tied to the landscape and the migration patterns of caribou, the principal big game animal of the time. Many of these archaeological sites dating to this period were discovered in the Eek and Kwethluk river drainages and the foothills and drainages of the Kilbuck Mountains (Ackerman 1980:10–11). These areas continue to be utilized for subsistence pursuits by the residents of Napaskiak today.

At the time of European contact in the mid-19th century, subsistence activities were pursued by individual families moving throughout the landscape for the majority of the year as they followed seasonally available wild resources. Salmon was the major subsistence focus, followed by fur bearing mammals and large land mammals such as caribou (Oswalt 1963). For this section on early history, a description of the historic seasonal round begins in the spring, the time of the year when stores of frozen and dried foods had become depleted, and people depended on small mammals such as hares, and birds such as ptarmigans for food. Ptarmigans were particularly important, as large flocks could be found around the village by April (Oswalt 1963:84–85). In late April, before break-up, whole families moved to tundra camps to set fish traps under the ice for blackfish and whitefishes, and to hunt for muskrats, beavers, river otters, hares, and ptarmigans. Ducks and geese were hunted at this time as well (Oswalt 1963:87). In May, families would move to their summer fish camps. As soon as the river was ice-free, and the high water subsided, families used small mesh set gillnets for pike and whitefish (Oswalt 1963:89). Following an annual run of smelt, the first salmon to come up the Kuskokwim River were Chinook salmon, followed by sockeye salmon, chum salmon, and finally coho salmon (Oswalt 1963:91). The entire summer was devoted primarily to harvesting and processing salmon. After the fishing season ended in early September, families moved to their tundra camps to harvest whitefishes and blackfish migrating from tundra lakes, trap furbearers, and hunt ducks and geese. By October, families returned to their winter villages. At this time, groups of men would make hunting trips up the Kuskokwim River as far as Aniak for moose, caribou, and sometimes bears. In the winter months, families trapped for furbearers and fished through the ice for whitefishes and blackfish. Trapping continued through December and then resumed in late February to April. Fishing occurred with fish traps in nearby streams throughout the winter and early spring (Oswalt 1963:12, 80–84).

According to local tradition, the people of Napaskiak once lived at a winter village called “Oovingiyuk” located approximately 1 mile up the slough at the up-river end of the present community (Oswalt 1963). Around 1800, they moved to the present site of Napaskiak when the slough changed and Oovingiyuk began

eroding away (Oswalt 1980; C. M. Brown 1983). Before the move, the people of Oovingiyuk utilized the present site of Napaskiak as a spring camp for harvesting smelt (Oswalt 1963). The new village of Napaskiak was infused with people from a downriver village called Eekchuk, whose numbers had declined due to feuds with coastal Eskimos (Oswalt 1980). Archaeological test excavations at Eekchuk indicate that this village may have been abandoned before A.D. 1800, which may approximate the date that Napaskiak was established (Oswalt 1980). Napaskiak first appears in the public record in 1867 when it was listed on a U.S. Coast Survey Map (Oswalt 1963).

After Russian and Euro-American contact in the mid to late 1800s, the Kuskokwim region experienced a slow but steady increase of traders, prospectors, and missionaries, bringing with them changes that greatly affected the lives of the Alaska Natives living along the banks of the Kuskokwim River. Trade items first introduced by the Russians included steel traps, knives, and guns. These new items made trapping and hunting much more efficient. Traders encouraged the Native people to use them to hunt and trap as many fur bearing animals as possible for trade rather than for personal use or clothing needs (C. M. Brown 1983). The fur trade in the Kuskokwim region greatly increased during the American period beginning in 1867. In 1884 the Alaska Commercial Company recorded that approximately 4,000 pelts consisting of muskrat, mink, beaver, marten, and fox were obtained from the Bethel station alone (C. M. Brown 1983). Mink pelts from the Yukon–Kuskokwim Delta region were among the largest and best quality in North America at that time and were in great demand (Klein 1966:324). Trapping mink and muskrats was a major occupation of residents of Napaskiak at this time (Oswalt 1963:82–84).

The years 1900 to 1913 brought dramatic changes to the Kuskokwim region affecting all of the established villages including nearby Bethel and Oscarville. The influx of traders, prospectors, and missionaries brought influenza, measles, and other diseases previously unknown to the Kuskokwim Natives. In 1900, a disastrous influenza and measles epidemic took the lives of over half of the Native adults and most all of the children in the region, causing a major shift in populations up and down the Kuskokwim River as some villages were abandoned and new villages were established (Oswalt 1963). The “Great Sickness” and subsequent epidemics of various diseases caused periods of starvation in many villages due to the death or illness of household subsistence providers and processors (Lenz 1985).

The 1960s brought the advent of snowmachines, which quickly took the place of dog teams as the major form of transportation used for subsistence activities, such as hunting and trapping. Historically, the use of salmon as dog food was a significant portion of the overall subsistence salmon harvest (C. Brown et al. 2005). The diminished need for dog teams meant that the vast amount of mostly chum salmon previously needed to feed the dogs could now be sold or traded, and the time spent fishing to produce food specifically for the dogs could now be used for other subsistence pursuits or wage employment.

For this chapter, a year-long study of the community of Napaskiak conducted in 1955–1956 by Wendell H. Oswalt serves as a major source of information about historic Napaskiak. At the time of Oswalt’s study, the only permanent store available to Napaskiak residents was Oscar Samuelson’s store, the “Oscarville Trading Post” located directly across the Kuskokwim River in Oscarville (Oswalt 1963). Oswalt (1963) states that

historically, and during the year of his ethnographic study of Napaskiak (1955–1956), the store owner or trader was one of the most important "outsiders" in the lives of the Napaskiak residents and Alaska villages in general. It was through the trader that most imported food and manufactured goods were funneled into communities, and furs were traded or sold outside the community. Oswalt (1963) reports that Oscar Samuelson's store was patronized by most residents of Oscarville and Napaskiak. Subsistence resources such as dried fish and furs were traded for such commodities as imported food, clothing, hardware, ammunition, outboard motors, and other manufactured goods. Store-bought foods considered necessities included flour, milk, sugar, coffee, tea, and salt. Most families relied upon their fish and fur harvests as their primary source of income and were tied through these resources to a credit system with the store. Credit would be extended to trappers for supplies to outfit them for fall mink trapping and for spring muskrat trapping (Oswalt 1963). Cash or cash substitutes such as trade tokens or "bingles" were also accepted forms of exchange. Subsistence activities were, and continue to be, the bedrock of the economy in Napaskiak.

Today, the economy of Napaskiak is a mixed subsistence-cash economy. Trapping no longer plays the key role that it did in earlier years, but it still continues today along with land mammal hunting, subsistence fishing, and some commercial fishing. Subsistence activities continue to provide most food sources. The health clinic, tribal and city offices, and the Lower Kuskokwim District K–12 public school provide permanent sources of employment.[2] Some residents travel to jobs in nearby Bethel via snowmachine or truck in winter (on the Kuskokwim River via an ice road), and by boat on the river or all-terrain vehicle (ATV) on a back trail in summer. A small general store serving both Napaskiak and Oscarville is located in Napaskiak.

Napaskiak is supplied with electrical power via a transmission line from Bethel. Treated well water is hauled from the washeteria. The washeteria and the school have complete plumbing systems while most individual homes have running water to the kitchen only. Napaskiak is not connected to other Alaskan communities by a road system. Residents of both Oscarville and Napaskiak rely on the Napaskiak airstrip for mail, passenger, and cargo services. Barge services deliver goods once a year via the Kuskokwim River.[3]

Seasonal Round

The contemporary seasonal round for Napaskiak differs from the early historical seasonal round in a number of ways. Napaskiak residents no longer travel about the landscape in large family groups to reside in seasonal hunting or fishing camps for extended lengths of time as they follow the resources. While seasonal camps are still used, improved methods of transportation (i.e. snowmachines, ATVs, and boats) make travel to and from camps less labor intensive and less time consuming. Hunting is usually conducted on an individual or hunting partner basis and can take place on a 1 day trip from the community or on a multiple

2. Alaska Department of Commerce, Community, and Economic Development (ADCCED) Division of Community and Regional Affairs, Juneau: "Alaska Community Database Online: Community Information." Accessed August 2013. http://commerce.alaska.gov/cra/DCRAExternal/community.
3. Alaska Department of Commerce, Community, and Economic Development (ADCCED) Division of Community and Regional Affairs, Juneau: "Alaska Community Database Online: Community Information." Accessed August 2013. http://commerce.alaska.gov/cra/DCRAExternal/community.

day trip to a hunting camp. Summer fish camps are maintained by family and extended family groups who now have the option of remaining at camp for a few days at a time or traveling back and forth to Napaskiak on the same day. Additionally, fur trapping is no longer the major subsistence pursuit that it once was. Formerly, fur bearing animals were second in importance only to fish (C. M. Brown 1983:142). The decline in the fur market effectively ended intensive spring muskrat and fall mink trapping activities. In 2011 only 2% of Napaskiak households reported harvesting and using muskrats, and no households reported harvesting or using mink, marten, fox, lynx, or wolf.

Today Napaskiak residents eagerly await the arrival of spring, which brings with it the first swans and geese in April, and later ducks during their spring migration along well established flyways. Soon after the arrival of spring ducks, a run of smelts (most likely rainbow smelt) occurs in May. June marks the beginning of an intensive summer-long pursuit of a primary subsistence resource—salmon. Following the smelt run in May, Chinook salmon begin passing through the Napaskiak area in early June. The Chinook salmon are followed by successive runs of chum salmon, coho salmon, and sockeye salmon. Near the end of the summer fishing season, berry picking becomes important. Fall brings with it another period of duck and goose hunting, berry picking, and fishing for whitefish and blackfish. This is also the time of year when large mammal hunting, primarily for moose and caribou, becomes a focus of subsistence activity and remains so until around February. Ice fishing for whitefish and jigging for northern pike begins in early spring and lasts for as long as the ice remains solid. Napaskiak residents hunt for small mammals, ptarmigans, and grouses opportunistically throughout the year according to availability. This is often conducted in conjunction with other subsistence activities.

Each season brings with it a different subsistence resource focus. And for the residents of Napaskiak, each season brings with it a timeless sense of continuation and renewal. One respondent said:

> There's elders out here you know that…they crave for anything fresh all the time. You know when it comes to spring, they know the birds are coming, and they know that someone will bring them fresh ducks, fresh geese. Or, when it comes to fall time, moose you know, they will be expecting fresh moose. The crave [craving] for Native food will always be there. Even for us, me and my children you know. When it comes to June our crave for fresh salmon is like right in front of us and we go out there and get it. And, it's a change of food that we are ready for…the taste of Native food. (04212012NAP1)

Demographics

The 56 surveyed households in Napaskiak included 280 residents. Household sizes ranged from 1 to 11 persons, with an average of 5 persons per household. The average age was 27; the oldest person included in the survey effort was 84. On average, household heads had lived in Napaskiak for approximately 38 years. The longest length of residency was 84 years (Appendix Table D1-2). The percentage of household heads

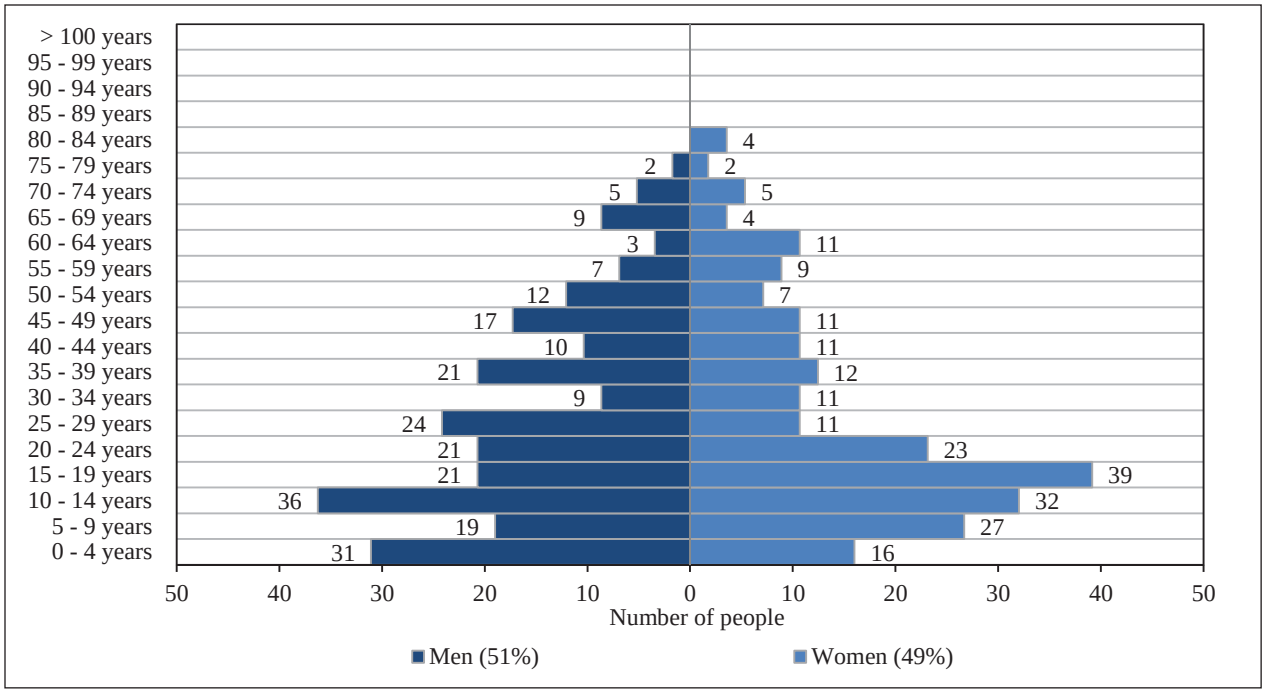


Figure 5-3.–Population profile, Napaskiak, 2011.

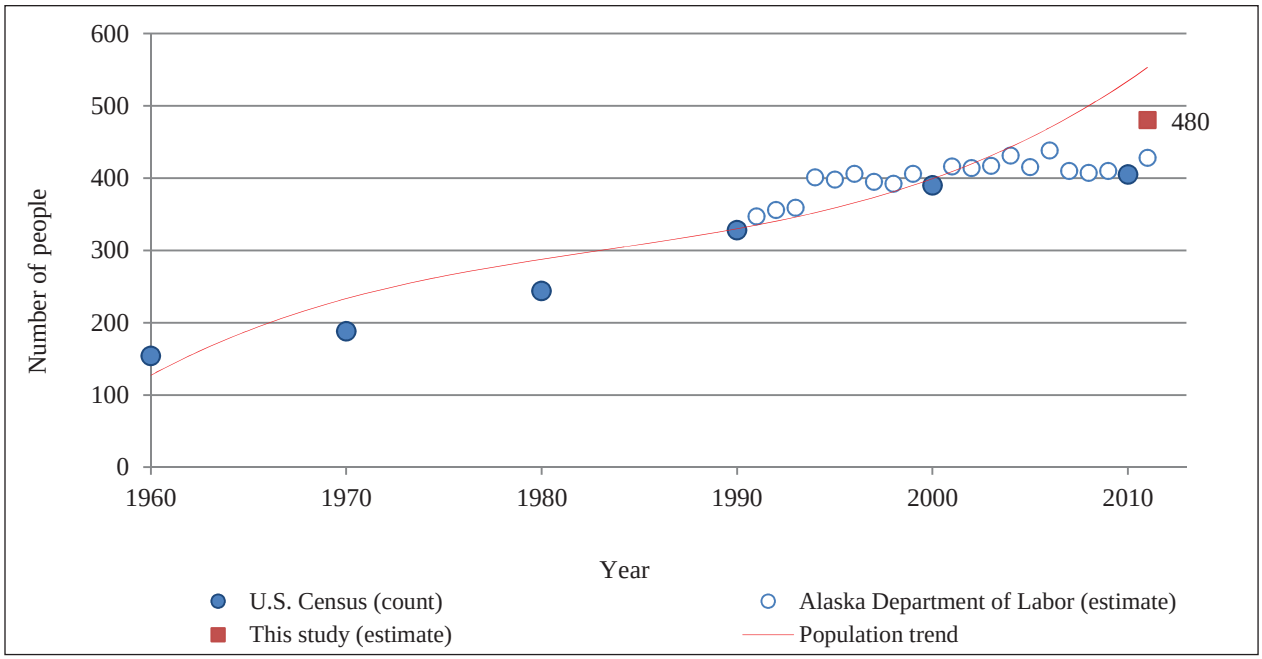


Figure 5-4.–Population history, Napaskiak, 2011.

born in Alaska was 93% (Appendix Table D1-1). Expanding for the 40 unsurveyed households in this study, the estimated population for 2011 was 480 residents (51% male, 49% female) as shown in Figure 5-3. Just over 96% of the total population was Alaska Native.

Napaskiak has historically been occupied primarily by Yup'ik Eskimos. The 1880 U.S. Census reported a community population of 196. By 1890 the population had dropped to 97, and was as low as 67 in 1939.[4] For population comparisons, the U.S. Census Bureau reported a total population of 390 people residing in Napaskiak in 2000. According to the 2010 Census the population had increased to 421 with 97% American Indian or Alaska Native; 3% white; and 0.5% multi-racial. The slightly higher population estimate from this survey compared to the 2010 U.S. Census Bureau estimate could be a result of higher average household size in our 58% random sample. Population trends from 1960 to 2011 are shown in Figure 5-4. The overall population trend for Napaskiak at this time is that of limited but steady growth.

Wild Food Uses and Harvests

The primary purpose of the household survey was to collect information about the harvest and use of edible wild foods. Respondents were asked whether their household used or attempted to harvest each resource during the study year. If they attempted to harvest a resource, they were asked if and how much they harvested and for additional details of the harvest such as gear type, sex of the animal, or month of harvest.

Tables and figures in this section summarize responses to the harvest and use questions. The term harvest includes resources actually harvested by any member of the surveyed household. The term use includes all resources harvested and used or given away, or resources received from others. Of the surveyed households, 100% of Napaskiak households used some kind of wild food, and 93% reported harvesting some type of wild foods (Figure 5-5; Appendix Table D4-1). In most Kuskokwim communities, households use wild foods harvested by others through sharing networks, so the percentages of households harvesting usually are lower than the percentages of households using wild foods. This was the case for Napaskiak in 2011. Distribution within wild food networks will be discussed later in the "Wild Food Networks" section.

Napaskiak residents harvested and or used subsistence resources from 6 major resource categories discussed within this chapter (Figure 5-6). Individual households used an average of 22 different subsistence resources. Salmon contributed the most by edible pounds (83,784 lb or 175 lb per capita). Fish (both salmon and nonsalmon species) was the most widely used resource (used by 100% of households), followed by land mammals (98% of households). Vegetation such as berries, plants, greens, mushrooms, and wood were used by 93% of households. Birds and eggs were used by a combined total of 91% of households overall. Marine mammals were used by 64% of households with 57% reporting that they had received marine mammals through sharing networks associated with coastal areas. No use of marine invertebrates such as clams or crabs was reported by any household.

4. Alaska Department of Commerce, Community, and Economic Development (ADCCED) Division of Community and Regional Affairs, Juneau: "Alaska Community Database Online: Community Information." Accessed August 2013. http://commerce.alaska.gov/cra/DCRAExternal/community.

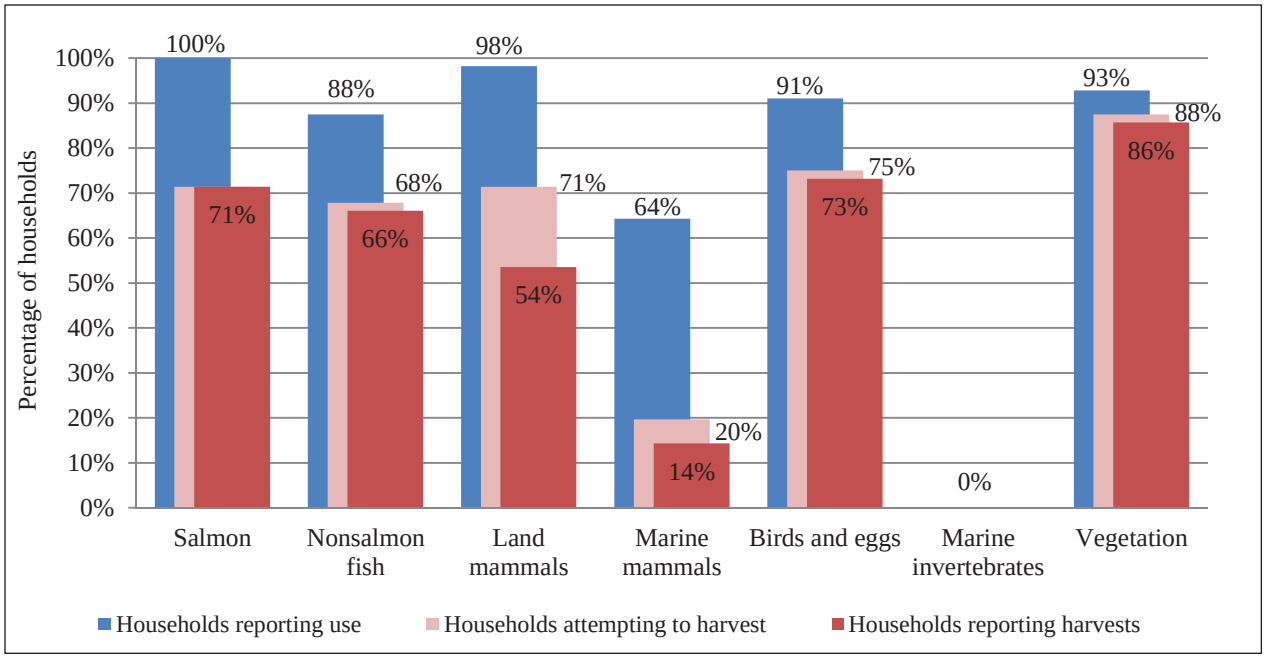


Figure 5-5.–Percentages of households using, attempting to harvest, or harvesting subsistence resources by category, Napaskiak, 2011.

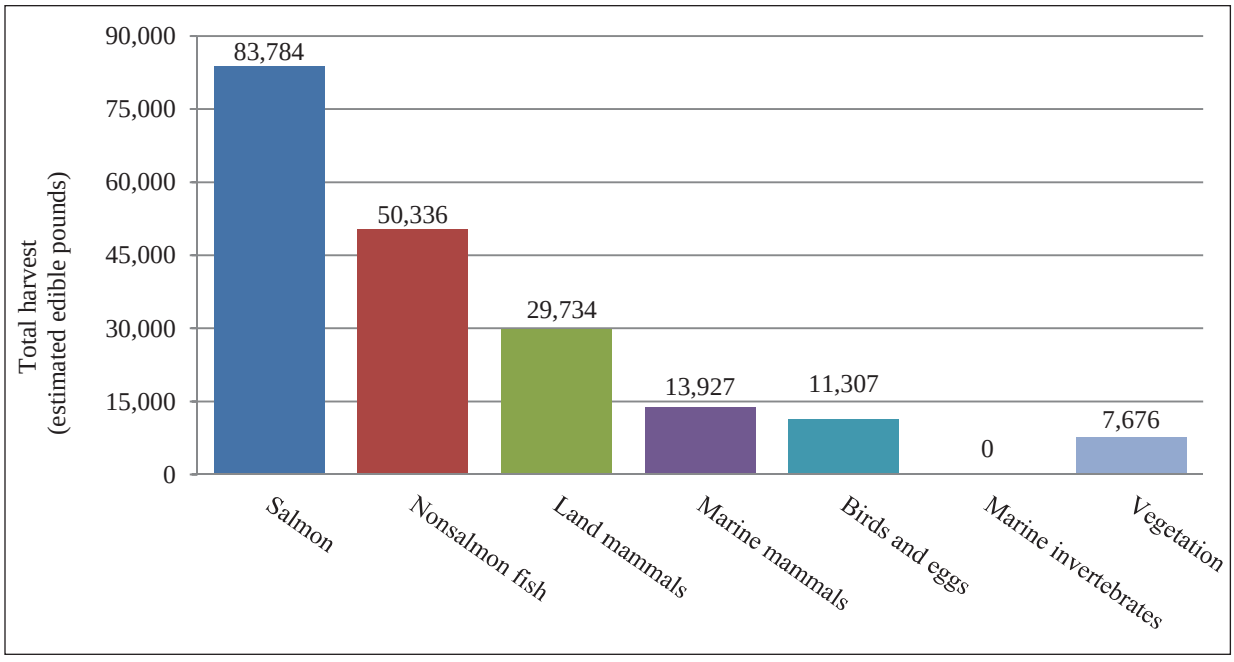


Figure 5-6.–Total estimated edible pounds harvested by the community by resource category, Napaskiak, 2011.

Table 5-1. – Estimated use and harvest of fish, Napaskiak, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Fish										
Salmon										
Chum salmon	71.4%	58.9%	58.9%	30.4%	32.1%	20,146.0 lb	209.9 lb	42.0 lb	3,957.0 ind	± 23%
Coho salmon	66.1%	46.4%	46.4%	37.5%	21.4%	11,671.3 lb	121.6 lb	24.3 lb	2,206.3 ind	± 33%
Chinook salmon	91.1%	69.6%	69.6%	44.6%	39.3%	39,948.0 lb	416.1 lb	83.2 lb	4,227.3 ind	± 19%
Pink salmon	1.8%	1.8%	1.8%	0.0%	1.8%	48.2 lb	0.5 lb	0.1 lb	17.1 ind	± 129%
Sockeye salmon	76.8%	64.3%	64.3%	30.4%	32.1%	11,970.3 lb	124.7 lb	24.9 lb	2,375.1 ind	± 22%
Unknown salmon	1.8%	0.0%	0.0%	1.8%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**100.0%**	**71.4%**	**71.4%**	**53.6%**	**46.4%**	**83,783.8 lb**	**872.7 lb**	**174.5 lb**	**12,782.8 ind**	**± 17%**
Char										
Dolly Varden	5.4%	5.4%	5.4%	0.0%	0.0%	30.9 lb	0.3 lb	0.1 lb	20.6 ind	± 78%
Lake trout	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**5.4%**	**5.4%**	**5.4%**	**0.0%**	**0.0%**	**30.9 lb**	**0.3 lb**	**0.1 lb**	**20.6 ind**	**± 78%**
Trout										
Rainbow trout	5.4%	3.6%	3.6%	1.8%	1.8%	40.8 lb	0.4 lb	0.1 lb	29.1 ind	± 115%
Subtotal	**5.4%**	**3.6%**	**3.6%**	**1.8%**	**1.8%**	**40.8 lb**	**0.4 lb**	**0.1 lb**	**29.1 ind**	**± 115%**
Whitefishes										
Sheefish	10.7%	10.7%	10.7%	3.6%	8.9%	1,760.6 lb	18.3 lb	3.7 lb	270.9 ind	± 76%
Broad whitefish	33.9%	17.9%	17.9%	23.2%	14.3%	2,106.9 lb	21.9 lb	4.4 lb	1,504.9 ind	± 76%
Bering cisco	7.1%	5.4%	5.4%	1.8%	1.8%	96.9 lb	1.0 lb	0.2 lb	69.2 ind	± 90%
Least cisco	16.1%	12.5%	12.5%	3.6%	7.1%	1,199.4 lb	12.5 lb	2.5 lb	1,199.4 ind	± 78%
Humpback whitefish	32.1%	19.6%	19.6%	14.3%	12.5%	21,807.6 lb	227.2 lb	45.4 lb	7,269.2 ind	± 107%
Round whitefish	12.5%	5.4%	5.4%	10.7%	3.6%	593.5 lb	6.2 lb	1.2 lb	593.5 ind	± 114%
Unknown whitefishes	12.5%	3.6%	3.6%	10.7%	0.0%	66.7 lb	0.7 lb	0.1 lb	27.4 ind	± 121%
Subtotal	**60.7%**	**37.5%**	**37.5%**	**41.1%**	**25.0%**	**27,631.4 lb**	**287.8 lb**	**57.6 lb**	**10,934.4 ind**	**± 86%**
Anadromous/marine fish										
Pacific herring	12.5%	0.0%	0.0%	12.5%	1.8%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Unknown smelt	46.4%	28.6%	28.6%	19.6%	10.7%	2,963.6 lb	30.9 lb	6.2 lb	493.9 gal	± 62%
Pacific tomcod	3.6%	0.0%	0.0%	3.6%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Saffron cod	5.4%	0.0%	0.0%	5.4%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Pacific halibut	19.6%	0.0%	0.0%	19.6%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 lb	± 0%
Arctic lamprey	1.8%	0.0%	0.0%	1.8%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Stickleback (needlefish)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Subtotal	**55.4%**	**28.6%**	**28.6%**	**39.3%**	**12.5%**	**2,963.6 lb**	**30.9 lb**	**6.2 lb**		**± 61%**
Other freshwater fish										
Alaska blackfish	26.8%	14.5%	16.1%	16.4%	7.3%	686.0 lb	7.1 lb	1.4 lb	686.0 lb	± 80%
Burbot	58.9%	50.0%	48.2%	18.2%	24.1%	4,147.1 lb	43.2 lb	8.6 lb	921.6 ind	± 29%
Arctic grayling	1.8%	1.8%	1.8%	0.0%	0.0%	5.1 lb	0.1 lb	0.0 lb	3.4 ind	± 129%
Northern pike	60.7%	55.4%	51.8%	12.5%	19.6%	14,831.2 lb	154.5 lb	30.9 lb	3,295.8 ind	± 28%
Longnose sucker	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown nonsalmon fish	1.8%	0.0%	0.0%	1.8%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**78.6%**	**67.9%**	**64.3%**	**33.9%**	**30.4%**	**19,669.4 lb**	**204.9 lb**	**41.0 lb**		**± 25%**
All fish	**100.0%**	**80.4%**	**80.4%**	**76.8%**	**55.4%**	**134,119.8 lb**	**1,397.1 lb**	**279.4 lb**		**± 25%**
All resources	**100.0%**	**94.6%**	**92.9%**	**98.2%**	**80.4%**	**196,762.9 lb**	**2,049.6 lb**	**409.9 lb**		**± 21%**

Source ADF&G Division of Subsistence household surveys, 2012.

Note "All resources" include all species of fish, wildlife, and plants reported on the survey

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

Photo by Alida Trainor

Figure 5-7.–Northern pike soaking in a pan. These were caught by jigging through a hole cut in the ice, Napaskiak, 2011.

Fish and land mammals were the most used and harvested subsistence foods for the residents of Napaskiak in 2011. Within the fish category, all households (100%) reported using salmon species, while 71% reported harvesting them (Table 5-1). Of the salmon species (and fish species overall), residents sought the Chinook (king) salmon, which was harvested by 70% and used by 91% of households above other fish species. A respondent said:

> King [is] number one! That's the biggest, good eating. You get a lot out of a king. You'll get slabs. We make strips out of them. The king salmon is the one you want to get. The other ones is the reds (sockeye), they are good eating. I put in silvers (coho), they come in at the end of July or August. They come in August. And, that is one fish that I put away. My aunt, she likes to put away king salmon, and make salted fish on silvers. I'll put away 40 silvers…just fillet them and put away. (04212012NAP1)

The second most harvested fish species overall, harvested by 64% of households and used by 77%, was sockeye salmon. Napaskiak households (59%) harvested chum salmon, and 71% used it. Of the nonsalmon fish species, northern pike was the most harvested and used, 52% of Napaskiak households harvested this resource, while 61% used it (Figure 5-7). The second most harvested and used of the nonsalmon fish was burbot, used by 59% of households and harvested by 48%. Smelts were used by 46% of households and harvested by 29%. Whitefish species (all combined species available in the area) were used by 61% of

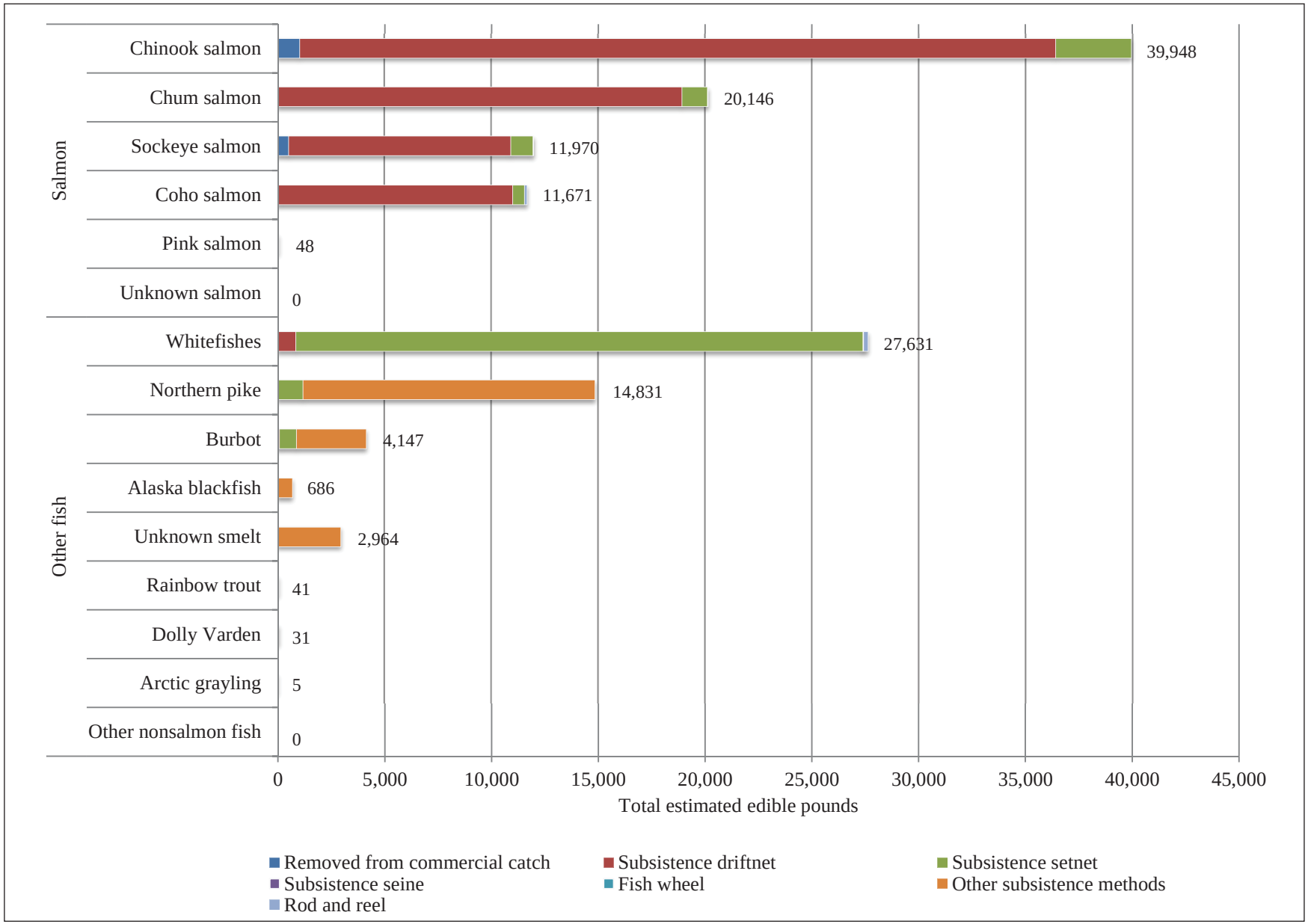


Figure 5-8.–Fish harvest by gear type, Napaskiak, 2011.

households and harvested by 38%. Napaskiak households harvested and used humpback whitefish. This was the most harvested (20% of households) and used (32% of households) of the various whitefish species.

Although the amount of fish needed for dog food has diminished over the years, Napaskiak households continued to use several species of salmon and nonsalmon for dog food in 2011. The main fish species used for dog food was humpback whitefish (16,714 lb), followed by coho salmon (4,172 lb) and chum salmon (3,781 lb). Other fish species used for dog food were: broad whitefish, least cisco, burbot, smelt, round whitefish, Bering cisco, and Alaska blackfish (in that order) (Appendix Table D4-2).

Traditional Native subsistence technology was based on the use of natural materials such as wood, bone, skin, and stone. While natural materials for gear are still used to some extent as a way to remain connected to traditional teachings and to the natural world, nylon, metal, and plastic have supplanted these natural materials in the construction of subsistence tools and gear. Gear types used for harvesting fish species in 2011 included subsistence setnets, subsistence driftnets, rod and reel, and other subsistence methods such as "jigging" (i.e., fishing with stick and line through a hole in the ice), and the use of dip nets and fish traps (Figure 5-8). By far the most important gear type used for catching Chinook salmon (35,347 lb or 88%) was the driftnet, followed by the setnet (3,564 lb or 9%). This was the case for the other salmon species as well. However, a small amount of summer chum, sockeye, and coho salmon were taken with rod and reel. The majority of whitefish species were taken with setnets (97%). A small amount of whitefish species (850 lb) were taken in driftnets as incidental to Chinook fishing. Humpback whitefish (82 lb) and least cisco (35 lb) were also taken with rod and reel. Napaskiak residents reported jigging to harvest 13,636 lb (93%) northern pike. Just over 1,195 lb of northern pike were also harvested in setnets; most of these were incidental to other fish species. A respondent described his pike fishing:

> Pike yeah, every now and then…it's more fun to jig. When they get in the net they are like crocodiles you know. They will swirl around in there and next thing you know, they are making a mess in there. You have to pull the net in. (04212012NAP1)

Another nonsalmon fish species harvested mainly by jigging was burbot (3,277 lb or 79%). Burbot was also harvested by setnet (797 lb) and driftnet (77 lb). Alaska blackfish (686 lb or 100%) were harvested using funnel shaped wire fish traps. According to respondents, attempts to harvest blackfish have decreased through the years. Smelts (2,964 lb or 100%), most likely rainbow smelt, were harvested with dip nets in the spring after break-up.

Napaskiak households reported using 4 large land mammal species—moose (89% of households), caribou (86%), black bear (7%), and brown bear (2%) (Table 5-2). Forty-one percent of households reported harvesting caribou (average 43 lb per capita), while 29% reported harvesting moose (average 43 lb per capita) (Table 5-2**).** Hunters spent a total of 607 days in pursuit of moose; successful Napaskiak hunters spent an average of 6 days per moose in 2011. Of the 113 hunters who hunted moose, 29 (33%) were successful (Appendix Table D1-3). There was no reported harvest of black bear or brown bear, suggesting that those households reporting use of bears received their bear meat from trading or sharing networks outside of the community

Table 5-2. – Estimated use and harvest of land and marine mammals, Napaskiak, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Land mammals										
Large land mammals										
Bison	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Black bear	7.3%	0.0%	0.0%	7.3%	1.8%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Brown bear	1.8%	0.0%	0.0%	1.8%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Caribou	85.7%	50.0%	41.1%	51.8%	40.0%	8,510.7 lb	88.7 lb	17.7 lb	60.4 ind	± 24%
Moose	89.3%	64.3%	28.6%	67.9%	29.1%	20,837.1 lb	217.1 lb	43.4 lb	29.1 ind	± 29%
Muskox	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Dall sheep	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**96.4%**	**67.9%**	**48.2%**	**75.0%**	**46.4%**	**29,347.8 lb**	**305.7 lb**	**61.1 lb**	**89.5 ind**	**± 23%**
Small land mammals										
Beaver	14.3%	12.5%	8.9%	5.4%	1.8%	282.9 lb	2.9 lb	0.6 lb	25.7 ind	± 89%
Coyote	0.0%	0.0%	0.0%	0.0%	0.0%	*Not usually eaten*			0.0 ind	± 0%
Red fox	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Snowshoe hare	5.4%	7.1%	5.4%	0.0%	5.4%	41.1 lb	0.4 lb	0.1 lb	41.1 ind	± 129%
Jackrabbit	8.9%	7.1%	5.4%	3.6%	5.4%	37.7 lb	0.4 lb	0.1 lb	20.6 ind	± 91%
River (land) otter	1.8%	3.6%	1.8%	0.0%	0.0%	10.3 lb	0.1 lb	0.0 lb	3.4 ind	± 129%
Lynx	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Marmot	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Marten	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Mink	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Muskrat	1.8%	1.8%	1.8%	0.0%	1.8%	*Not reported as eaten*			10.3 ind	± 129%
Porcupine	1.8%	1.8%	1.8%	0.0%	0.0%	13.7 lb	0.1 lb	0.0 lb	3.4 ind	± 129%
Arctic ground (parka) squirrel	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Red (tree) squirrel	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Weasel	0.0%	0.0%	0.0%	0.0%	0.0%	*Not usually eaten*			0.0 ind	± 0%
Wolf	0.0%	0.0%	0.0%	0.0%	0.0%	*Not usually eaten*			0.0 ind	± 0%
Wolverine	0.0%	0.0%	0.0%	0.0%	0.0%	*Not usually eaten*			0.0 ind	± 0%
Subtotal	**26.8%**	**25.0%**	**19.6%**	**7.1%**	**14.3%**	**385.7 lb**	**4.0 lb**	**0.8 lb**	**104.6 ind**	**± 75%**
Marine mammals										
Bearded seal	17.9%	8.9%	7.1%	12.5%	5.4%	3,600.0 lb	37.5 lb	7.5 lb	8.6 ind	± 67%
Ringed seal	14.3%	10.7%	8.9%	8.9%	8.9%	1,728.0 lb	18.0 lb	3.6 lb	27.4 ind	± 68%
Spotted seal	19.6%	7.1%	3.6%	17.9%	3.6%	1,056.0 lb	11.0 lb	2.2 lb	18.9 ind	± 108%
Unknown seal	48.2%	8.9%	0.0%	42.9%	7.1%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Walrus	25.0%	7.1%	7.1%	19.6%	7.1%	7,542.9 lb	78.6 lb	15.7 lb	6.9 ind	± 63%
Beluga whale	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Bowhead whale	1.8%	0.0%	0.0%	1.8%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**64.3%**	**19.6%**	**14.3%**	**57.1%**	**17.9%**	**13,926.9 lb**	**145.1 lb**	**29.0 lb**	**61.7 ind**	**± 47%**
All land mammals	**98.2%**	**71.4%**	**53.6%**	**75.0%**	**48.2%**	**29,733.5 lb**	**309.7 lb**	**61.9 lb**		**± 23%**
All marine mammals	**64.3%**	**19.6%**	**14.3%**	**57.1%**	**17.9%**	**13,926.9 lb**	**145.1 lb**	**29.0 lb**		**± 47%**
All resources	**100.0%**	**94.6%**	**92.9%**	**98.2%**	**80.4%**	**196,762.9 lb**	**2,049.6 lb**	**409.9 lb**		**± 21%**

Source ADF&G Division of Subsistence household surveys, 2012.

Note "All resources" include all species of fish, wildlife, and plants reported on the survey

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

or from households within the community that were not surveyed. Large mammals are usually shared among friends and family members both within and outside of the community. A respondent describes how his son's first moose was distributed in the community:

> We have a tradition…when my son first killed a moose, the whole moose went to this community… that's a tradition. The first catch, you keep a little bit, most of it goes to this whole village. It's our tradition of sharing your first catch. So, we cut it all up, put it in Ziplocs, and he enjoyed the daylights out of himself!...going from house to house. He caught his moose when he was 8 years old. We went house to house, him with his 1 gallon Ziplocs. I was on a 4-wheeler and he would run in there and pass out his meat, and that's our tradition you know. They had a feast for him, his first catch. Nothing goes to waste. The next thing you know, he enjoyed the trip. He will want to go again. (04212012NAP1)

The same respondent described various caribou uses:

> Caribou, yeah, we'll take the hide too. Nothing goes to waste for a caribou. The people downriver [want] the beard. It's used for a dance mask. Those ladies down there, the first thing they will ask from me if I caught a caribou is, "Did you take the beard?" I'm like, "For what, I'm not going to eat the beard!" I kid a lot.
>
> They say, "Next time you get it. We use it for dance fans, it's washable. We'll just soak it in water and before you know it, it's clean."
>
> They make a big deal of the beard you know. But caribou is good too. You eat the liver right there on the spot, just cool it off in the snow and slice it off. You just eat a couple of bits and you are warmed up. (04212012NAP1)

Clearly, large land mammals were a major source of both nutrition and cultural continuation for the residents of Napaskiak in 2011.

Small land mammals were used to lesser extent than large land mammals were. Small land mammals were used by just 27% of households and harvested by just 20% for an average of 0.8 lb per capita. The highest percentage of use of small land mammals was beaver, used by 14% of households and harvested by 9% (average 0.6 per capita). The low harvest and usage of small land mammals may be explained by the current lack of a market for fur bearing animals. As noted earlier, the percentage of harvest and use for small mammals such as muskrats, mink, or marten in Napaskiak would likely have been much higher in the past due to the existence of the high demand fur trading industry that existed in the area prior to the 1960s (Oswalt 1963). For harvest timing of all mammals and birds please see Appendix tables D4-3 through D4-6.

Residents of Napaskiak have many ties to downriver coastal areas as evidenced by the high percentage of marine mammal use compared with the lower percentage of harvest. In 2011 64% of Napaskiak households

Table 5-3. – Estimated use and harvest of marine invertebrates, Napaskiak, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Marine invertebrates										
Unknown clams	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
King crab	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown Tanner crab	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown crab	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown mussels	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Shrimp	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Unknown marine invertebrates	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Subtotal	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0 lb**	**0.0 lb**	**0.0 lb**		**± 0%**
All marine invertebrates	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0 lb**	**0.0 lb**	**0.0 lb**		**± 0%**
All resources	**100.0%**	**94.6%**	**92.9%**	**98.2%**	**80.4%**	**196,762.9 lb**	**2,049.6 lb**	**409.9 lb**		**± 21%**

Source ADF&G Division of Subsistence household surveys, 2012
Note "All resources" include all species of fish, wildlife, and plants reported on the survey
a. Summary rows that include incompatible units of measure have been left blank

used marine mammals while just 14% (average 29 lb per capita) reported harvesting any. A few Napaskiak residents will travel to coastal areas to hunt or exchange other resources for seals and other marine products from time to time. A respondent stated:

> Yeah, I mean, people will go down coast, go after seal. When they come back they will give the seal hide to an elder who knows how to, what to do with it. Yeah, they will dry it; they will tan it and make soles out of it…Eskimo boots.

> There are a handful of people who go. But many times people from down coast will barter, exchange you know. A whole seal for a gallon bucket of salted fish or dry fish. (04212012NAP1)

Occasionally marine mammals will swim up the Kuskokwim River to the Napaskiak area. A respondent said:

> Summertime we will run into seals out there yeah. They come up right out here. They come after the fish. If we see them out here we will go after them. Two years ago there was a walrus right out here. I mean how did it get here? I don't know. It probable came up the wrong river, or, you know, it was right out front of Napaskiak…they caught it. The whole village feasted on the walrus. (04212012NAP1)

In 2011 Napaskiak households harvested and used several types of marine mammals. Of the seals, households reported harvesting (7%), and using (18%) bearded seal. Ringed seal was harvested by 9%, and used by 14%. Spotted seal was harvested by 4% and used by 20%. Households harvested (7%) and used (25%) walrus. Unknown seal, which often refers to seal oil, was used by 48% of households. In addition, bowhead

Table 5-4. – Estimated use and harvest of vegetation, Napaskiak, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Berries										
Blueberry	50.0%	44.6%	44.6%	7.1%	12.7%	583.4 lb	6.1 lb	1.2 lb	145.9 gal	± 30%
Lowbush cranberry	21.4%	17.9%	17.9%	5.4%	1.8%	122.7 lb	1.3 lb	0.3 lb	30.7 gal	± 54%
Highbush cranberry	1.8%	1.8%	1.8%	0.0%	0.0%	27.4 lb	0.3 lb	0.1 lb	6.9 gal	± 129%
Crowberry	75.0%	66.1%	66.1%	20.0%	22.2%	2,765.3 lb	28.8 lb	5.8 lb	691.3 gal	± 23%
Gooseberry	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Currants	1.8%	1.8%	1.8%	0.0%	0.0%	6.9 lb	0.1 lb	0.0 lb	1.7 gal	± 129%
Nagoonberry	3.6%	3.6%	3.6%	0.0%	0.0%	2.1 lb	0.0 lb	0.0 lb	0.5 gal	± 106%
Raspberry	10.7%	7.1%	7.1%	3.6%	1.8%	12.0 lb	0.1 lb	0.0 lb	3.0 gal	± 79%
Salmonberry	80.4%	69.6%	69.6%	18.5%	22.6%	3,601.8 lb	37.5 lb	7.5 lb	900.4 gal	± 18%
Subtotal	**91.1%**	**83.9%**	**82.1%**	**28.6%**	**30.4%**	**7,121.6 lb**	**74.2 lb**	**14.8 lb**	**1,780.4 gal**	**± 19%**
Plants/greens/mushrooms										
Wild rhubarb	28.6%	28.6%	28.6%	3.6%	8.9%	439.9 lb	4.6 lb	0.9 lb	110.0 gal	± 58%
Eskimo potato	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Fiddlehead ferns	8.9%	7.1%	7.1%	1.8%	3.6%	23.6 lb	0.2 lb	0.0 lb	23.6 gal	± 81%
Nettle	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Hudson Bay (Labrador) tea	19.6%	19.6%	19.6%	5.4%	10.7%	30.1 lb	0.3 lb	0.1 lb	30.1 gal	± 42%
Mint	1.8%	1.8%	1.8%	0.0%	0.0%	1.7 lb	0.0 lb	0.0 lb	1.7 gal	± 129%
Sourdock	12.5%	10.7%	10.7%	1.8%	1.8%	18.0 lb	0.2 lb	0.0 lb	18.0 gal	± 56%
Spruce tips	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Willow leaves	1.8%	1.8%	1.8%	1.8%	0.0%	0.4 lb	0.0 lb	0.0 lb	0.4 gal	± 129%
Wild celery	5.4%	5.4%	5.4%	5.4%	3.6%	3.5 lb	0.0 lb	0.0 lb	3.5 gal	± 90%
Wild rose hips	1.8%	1.8%	1.8%	0.0%	0.0%	6.9 lb	0.1 lb	0.0 lb	1.7 gal	± 129%
Yarrow	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Unknown mushrooms	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Fireweed	3.6%	3.6%	3.6%	0.0%	0.0%	7.1 lb	0.1 lb	0.0 lb	1.8 gal	± 125%
Stinkweed	16.1%	16.1%	16.1%	0.0%	3.6%	15.5 lb	0.2 lb	0.0 lb	15.5 gal	± 63%
Punk	25.0%	17.9%	10.7%	7.1%	3.6%	0.0 lb	0.0 lb	0.0 lb	84.9 gal	± 82%
Puffballs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Unknown greens	3.6%	3.6%	3.6%	0.0%	1.8%	5.2 lb	0.1 lb	0.0 lb	5.2 gal	± 128%
Mousefoods	1.8%	1.8%	1.8%	0.0%	0.0%	2.5 lb	0.0 lb	0.0 lb	2.5 gal	± 129%
Subtotal	**51.8%**	**46.4%**	**42.9%**	**12.5%**	**16.1%**	**554.3 lb**	**5.8 lb**	**1.2 lb**	**298.9 gal**	**± 48%**
Wood										
Wood	44.6%	42.9%	42.9%	3.6%	5.4%	0 lb	0.0 lb	0.0 lb	102 cord	± 30%
Subtotal	**44.6%**	**42.9%**	**42.9%**	**3.6%**	**5.4%**	**0 lb**	**0.0 lb**	**0.0 lb**	**102 cord**	± 30%
All vegetation	**92.9%**	**87.5%**	**85.7%**	**35.7%**	**35.7%**	**7,676.0 lb**	**80.0 lb**	**16.0 lb**		**± 19%**
All resources	**100.0%**	**94.6%**	**92.9%**	**98.2%**	**80.4%**	**196,762.9 lb**	**2,049.6 lb**	**409.9 lb**		**± 21%**

Source ADF&G Division of Subsistence household surveys, 2012.
Note "All resources" include all species of fish, wildlife, and plants reported on the survey.
a. Summary rows that include incompatible units of measure have been left blank.

whale was used by 2% of households but there was no reported harvest. Households also harvested (7%) and used (25%) walrus. There was no harvest of marine invertebrates for Napaskiak in 2011 (Table 5-3).

Napaskiak households harvested and used a variety of vegetation in 2011 (Table 5-4). Over half (52%) reported using some type of plants, greens, and mushrooms (excluding wood), while 43% reported harvesting. Within the vegetation category, 91% of Napaskiak households used berries while 82% harvested them (average 15 lb per capita). The most harvested (70% of households) and used (80% of households) berry was

Photo by Lisa Slayton

Figure 5-9.–The sign of a successful hunt, several ptarmigans dry on a rack outside a home, Napaskiak, 2011.

the salmonberry (average 8 lb per capita), prized along with blueberries for making akutaq. A respondent describes how they harvest and consume berries as a family:

> Berries! You know, right after fishing season berries come. Um salmonberries come out first, end of July, that's when the berries come…cloudberries. We have got to go quite a ways for them, a good hour or hour-and-a-half. Some people camp out. They take the whole family with them. It's always good to camp out. Me and my kids we will go on a day trip, which is good. We'll get a good 10 gallons or so. My daughter, at the end of August, she will go out after blueberries. She is a great blueberry pie maker, man! And, there is nothing like blueberry ice cream too! (04212012NAP1)

After berries, wild rhubarb (used by 29% of households), punk (25%), and Hudson Bay tea (20%) were the top 3 vegetation resources used. The top 3 harvested after berries were wild rhubarb (harvested by 29% of households for an average of 1 lb per capita), Hudson Bay tea (20%, less than 1 lb per capita), and stinkweed (16%, less than 1 lb per capita). A more in-depth discussion of plants and plant use follows in the comparison section where information from Wendell Oswalt's ethnobotany study (1957) of Napaskiak is presented and compared with the 2011 findings of this comprehensive survey. Nearly half of Napaskiak households (45%) used, and 43% harvested, wood for heating fuel and/or smokehouse fires. Households reported using mostly spruce for heating their homes and cottonwood for smoking fish.

Napaskiak households reported harvesting and using several different species of birds in 2011 (Table 5-5). Households harvested 15 different species of migratory ducks, 6 different species of geese, tundra swans, sandhill cranes, spruce grouse, ruffed grouse, and ptarmigans. Of the migratory ducks, the most harvested species (52%, for an average of 2 lb per capita) and the most used (57%) was black scoter, followed by scaup

Table 5-5. – Estimated use and harvest of birds, Napaskiak, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Migratory birds										
Ducks										
Bufflehead	10.7%	10.7%	10.7%	0.0%	8.9%	23.7 lb	0.2 lb	0.0 lb	59.3 ind	± 80%
Canvasback	5.4%	5.4%	5.4%	0.0%	1.8%	52.8 lb	0.6 lb	0.1 lb	48.0 ind	± 96%
Common eider	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
King eider	5.4%	0.0%	0.0%	5.4%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown eider	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Goldeneye	21.4%	21.4%	21.4%	0.0%	14.3%	155.0 lb	1.6 lb	0.3 lb	193.7 ind	± 41%
Harlequin	8.9%	7.1%	7.1%	1.8%	7.1%	26.6 lb	0.3 lb	0.1 lb	53.1 ind	± 87%
Mallard	42.9%	39.3%	39.3%	3.6%	17.9%	309.7 lb	3.2 lb	0.6 lb	309.7 ind	± 33%
Common merganser	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Red-breasted merganser	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown merganser	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Long-tailed duck	23.2%	21.4%	21.4%	1.8%	12.5%	135.1 lb	1.4 lb	0.3 lb	168.9 ind	± 44%
Northern pintail	23.2%	21.4%	21.4%	1.8%	7.1%	157.8 lb	1.6 lb	0.3 lb	197.2 ind	± 46%
Scaup	50.0%	48.2%	48.2%	5.4%	23.2%	980.8 lb	10.2 lb	2.0 lb	1,089.8 ind	± 28%
Black scoter	57.1%	51.8%	51.8%	8.9%	28.6%	751.0 lb	7.8 lb	1.6 lb	834.5 ind	± 24%
Surf scoter	12.5%	10.7%	10.7%	1.8%	8.9%	146.6 lb	1.5 lb	0.3 lb	162.9 ind	± 56%
White-winged scoter	25.0%	21.4%	21.4%	7.1%	12.5%	592.5 lb	6.2 lb	1.2 lb	658.3 ind	± 45%
Northern shoveler	8.9%	8.9%	8.9%	0.0%	3.6%	102.9 lb	1.1 lb	0.2 lb	171.4 ind	± 77%
Green-winged teal	7.1%	5.4%	5.4%	1.8%	5.4%	16.5 lb	0.2 lb	0.0 lb	54.9 ind	± 90%
Wigeon	17.9%	16.1%	16.1%	1.8%	7.1%	92.4 lb	1.0 lb	0.2 lb	132.0 ind	± 52%
Unknown ducks	10.7%	5.4%	5.4%	5.4%	1.8%	49.2 lb	0.5 lb	0.1 lb	56.6 ind	± 88%
Subtotal	**75.0%**	**64.3%**	**64.3%**	**19.6%**	**33.9%**	**3,592.5 lb**	**37.4 lb**	**7.5 lb**	**4,190.3 ind**	**± 25%**
Geese										
Brant	3.6%	3.6%	3.6%	0.0%	1.8%	30.9 lb	0.3 lb	0.1 lb	25.7 ind	± 96%
Cackling goose	53.6%	46.4%	46.4%	12.5%	26.8%	1,070.9 lb	11.2 lb	2.2 lb	892.4 ind	± 27%
Canada goose	25.0%	23.2%	23.2%	7.1%	16.1%	679.5 lb	7.1 lb	1.4 lb	323.6 ind	± 49%
Unknown Canada goose	12.5%	7.1%	7.1%	5.4%	3.6%	65.8 lb	0.7 lb	0.1 lb	54.9 ind	± 72%
Emperor goose	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Snow goose	3.6%	3.6%	3.6%	0.0%	1.8%	19.7 lb	0.2 lb	0.0 lb	8.6 ind	± 106%
White-fronted goose	62.5%	57.1%	57.1%	12.5%	33.9%	2,370.5 lb	24.7 lb	4.9 lb	987.7 ind	± 24%
Unknown geese	8.9%	3.6%	3.6%	5.4%	0.0%	79.7 lb	0.8 lb	0.2 lb	42.9 ind	± 106%
Subtotal	**85.7%**	**69.6%**	**69.6%**	**25.0%**	**37.5%**	**4,317.0 lb**	**45.0 lb**	**9.0 lb**	**2,335.7 ind**	**± 22%**
Other migratory birds										
Tundra (whistling) swan	25.0%	28.6%	25.0%	0.0%	3.6%	582.9 lb	6.1 lb	1.2 lb	58.3 ind	± 36%
Sandhill crane	39.3%	35.7%	33.9%	5.4%	7.1%	906.7 lb	9.4 lb	1.9 lb	90.7 ind	± 29%
Whimbrel	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**42.9%**	**46.4%**	**41.1%**	**5.4%**	**7.1%**	**1,489.5 lb**	**15.5 lb**	**3.1 lb**	**149.0 ind**	**± 27%**
Other birds										
Spruce grouse	1.8%	1.8%	1.8%	0.0%	0.0%	1.7 lb	0.0 lb	0.0 lb	1.7 ind	± 129%
Sharp-tailed grouse	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Ruffed grouse	1.8%	1.8%	1.8%	0.0%	0.0%	1.7 lb	0.0 lb	0.0 lb	1.7 ind	± 129%
Ptarmigan	62.5%	50.0%	50.0%	14.3%	28.6%	1,551.2 lb	16.2 lb	3.2 lb	1,551.2 ind	± 21%
Subtotal	**62.5%**	**50.0%**	**50.0%**	**14.3%**	**28.6%**	**1,554.6 lb**	**16.2 lb**	**3.2 lb**	**1,554.6 ind**	**± 21%**
All migratory birds	**87.5%**	**73.2%**	**73.2%**	**33.9%**	**42.9%**	**9,399.0 lb**	**97.9 lb**	**19.6 lb**		**± 21%**
All other birds	**62.5%**	**50.0%**	**50.0%**	**14.3%**	**28.6%**	**1,554.6 lb**	**16.2 lb**	**3.2 lb**		**± 21%**
All resources	**100.0%**	**94.6%**	**92.9%**	**98.2%**	**80.4%**	**196,762.9 lb**	**2,049.6 lb**	**409.9 lb**		**± 21%**

Source ADF&G Division of Subsistence household surveys, 2012

Note "All resources" include all species of fish, wildlife, and plants reported on the survey

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

Table 5-6. – Estimated use and harvest of bird eggs, Napaskiak, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Bird eggs										
Duck eggs	32.7%	29.1%	25.0%	5.5%	18.2%	57.1 lb	0.6 lb	0.1 lb	380.6 ind	± 37%
White-fronted goose eggs	1.8%	1.8%	1.8%	0.0%	0.0%	0.9 lb	0.0 lb	0.0 lb	3.4 ind	± 129%
Unknown goose eggs	23.2%	21.4%	14.3%	7.1%	10.7%	71.0 lb	0.7 lb	0.1 lb	236.6 ind	± 57%
Swan eggs	21.4%	17.9%	17.9%	3.6%	8.9%	85.3 lb	0.9 lb	0.2 lb	135.4 ind	± 50%
Sandhill crane eggs	1.8%	1.8%	1.8%	0.0%	0.0%	2.2 lb	0.0 lb	0.0 lb	3.4 ind	± 129%
Whimbrel eggs	1.8%	1.8%	1.8%	0.0%	0.0%	2.1 lb	0.0 lb	0.0 lb	6.9 ind	± 129%
Unknown shorebird eggs	12.5%	10.7%	8.9%	3.6%	5.4%	7.7 lb	0.1 lb	0.0 lb	154.3 ind	± 58%
Unknown gull eggs	21.4%	21.4%	17.9%	5.4%	12.5%	111.1 lb	1.2 lb	0.2 lb	370.3 ind	± 55%
Unknown eggs	5.4%	5.4%	5.4%	1.8%	0.0%	15.8 lb	0.2 lb	0.0 lb	72.0 ind	± 97%
Subtotal	**41.1%**	**37.5%**	**32.1%**	**8.9%**	**19.6%**	**353.1 lb**	**3.7 lb**	**0.7 lb**	**1,362.9 ind**	**± 38%**
All birds and eggs	**91.1%**	**75.0%**	**73.2%**	**41.1%**	**51.8%**	**11,306.7 lb**	**117.8 lb**	**23.6 lb**	**9,592.4 ind**	**± 20%**
All resources	**100.0%**	**94.6%**	**92.9%**	**98.2%**	**80.4%**	**196,762.9 lb**	**2,049.6 lb**	**409.9 lb**		**± 21%**

Source ADF&G Division of Subsistence household surveys, 2012.
Note "All resources" include all species of fish, wildlife, and plants reported on the survey.
a. Summary rows that include incompatible units of measure have been left blank.

which was harvested by 48% (average per capita of 2.0 lb) of households and used by 50% . Households harvested (39%, 1 lb per capita) and used (43%) mallard, making mallard the third most harvested and used of the migratory ducks. Of the 6 species of geese, white-fronted geese were the most harvested (57%, 5 lb per capita) and used (63%), followed by cacklers, harvested by 46% (2 lb per capita) and used by 54%, and lesser Canada geese, harvested by 23%, 1 lb per capita) of households and used by 25%. In 2011 Napaskiak households harvested (34%, 2 lb per capita) and used (39%) more sandhill cranes than tundra swans, which were harvested by 25% (1 lb per capita) of households and used by 25%. Of all other birds available, ptarmigans were the most harvested (50%, 3 lb per capita) and used (63%) (Figure 5-9). Households used (2%, less than 1 lb per capita) and harvested (2%) spruce grouse and ruffed grouse.

Households in Napaskiak also harvested and used several different types of bird eggs in 2011 (Table 5-6). Households harvested (25%, less than 1 lb per capita) and used (33%) eggs. Duck eggs were the most harvested (25%, less than 1 lb per capita) and used (33%), followed by swan eggs which were harvested by 18% (less than 1 lb per capita) and used by 21%, and unknown gull eggs harvested by 18% (less than 1 lb per capita) of households and used by 21%. Napaskiak households also harvested and used geese eggs, sandhill crane eggs, whimbrel eggs, and unknown shorebird eggs. The total pounds of eggs harvested by the community was 353 lb, with a mean per capita of 0.7 lb.

Harvest Areas

As part of the survey, Napaskiak households were asked to mark on a map the areas where they harvested or searched for subsistence resources. From these data, maps were produced for each community depicting the harvest and search areas for the following species or categories of species: berries and greens; ptarmigans, grouse, ducks and geese; moose; burbot, northern pike, sheefish, other whitefish; salmon; and small

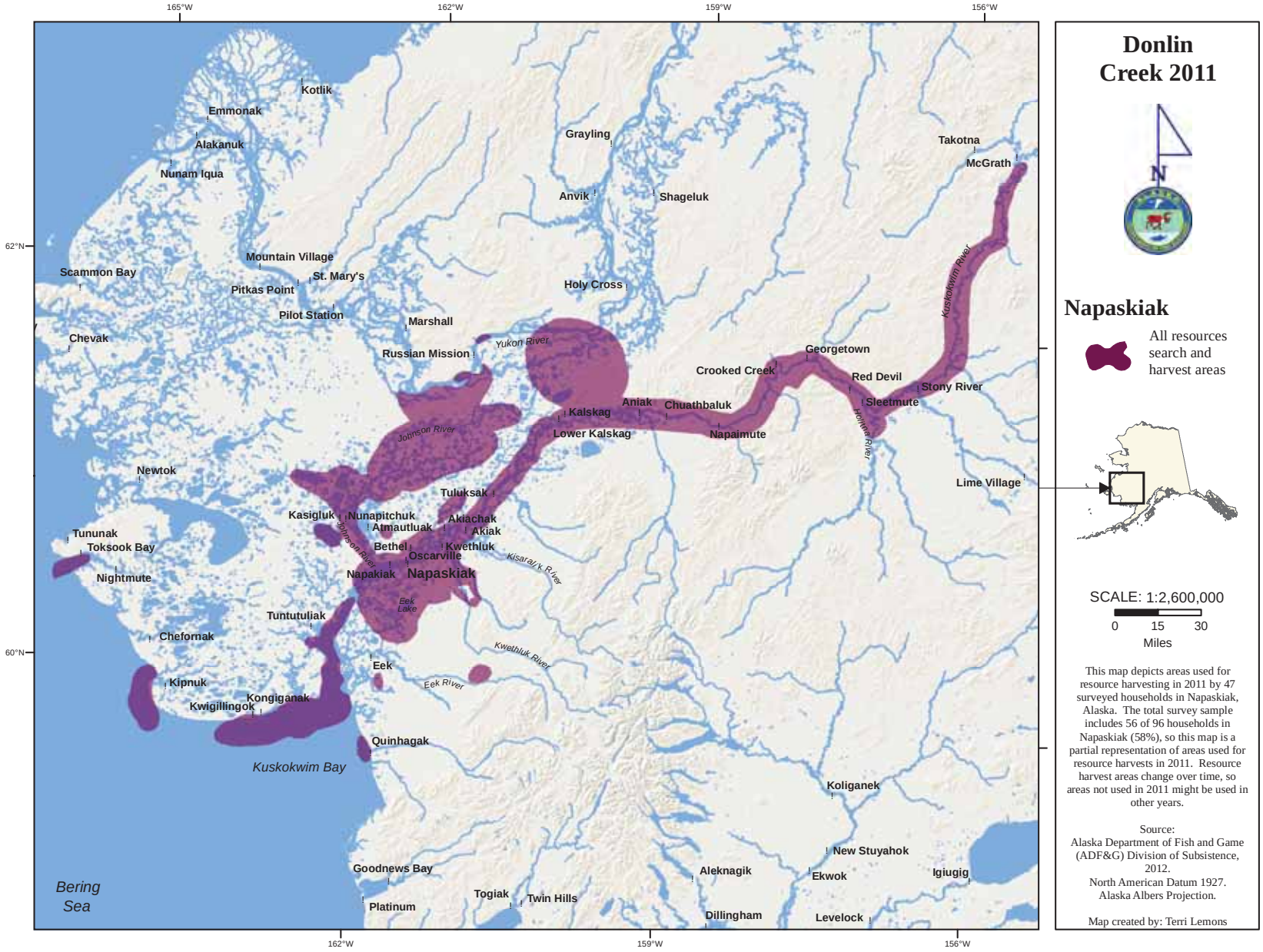


Figure 5-10.–All resources search and harvest areas, Napaskiak, 2011.

Photo by Lisa Slayton

Figure 5-11.–Fish camps are a vital part of the lives of Napaskiak residents, Napaskiak, 2011.

land mammals in 2011. Figure 5-10 summarizes all the mapped data collected from Napaskiak for 2011. Households reported using a total of 7,075 square miles for subsistence activities in 2011. Circumstances such as regulatory changes, environmental changes, animal population trends, technological advances, and economic considerations have continuously affected Napaskiak residents' geographic patterns and areas of use over time. As a result, the overall geographic extent of the area considered to be traditionally important for subsistence to the community has not changed according to respondents and is represented by a much broader area than was actually documented in 2011.

In 2011, Napaskiak households searched for and harvested salmon primarily in the mainstem of the Kuskokwim River. The stretch of the mainstem (approximately 10 miles) that Napaskiak households used most intensely began from the upriver community of Bethel and continued to the downriver end of Fish Camp Island, which lies between Napaskiak and Napakiak. Other stretches of the mainstem used for salmon fishing were the "big bend," the first large river bend upriver of Bethel, and a stretch of river beginning at the downriver end of Fish Camp Island and continuing to just past the mouth of the Johnson River. Other search and harvest locations for salmon fishing included a stretch of the mainstem of the Kuskokwim just above the community of Akiachak and at the mouth of the Kasigluk River. Figure 5-12 shows the harvest and search locations for salmon species targeted by Napaskiak respondents in 2011. Most households have family fish camps located near the community or within a short boat ride (Figure 5-11). Fish camp is an integral part of subsistence fishing and serves not only as a base for processing fish, but also as a social center for family and friends, and as a conduit for the passing on of traditional knowledge. A respondent noted:

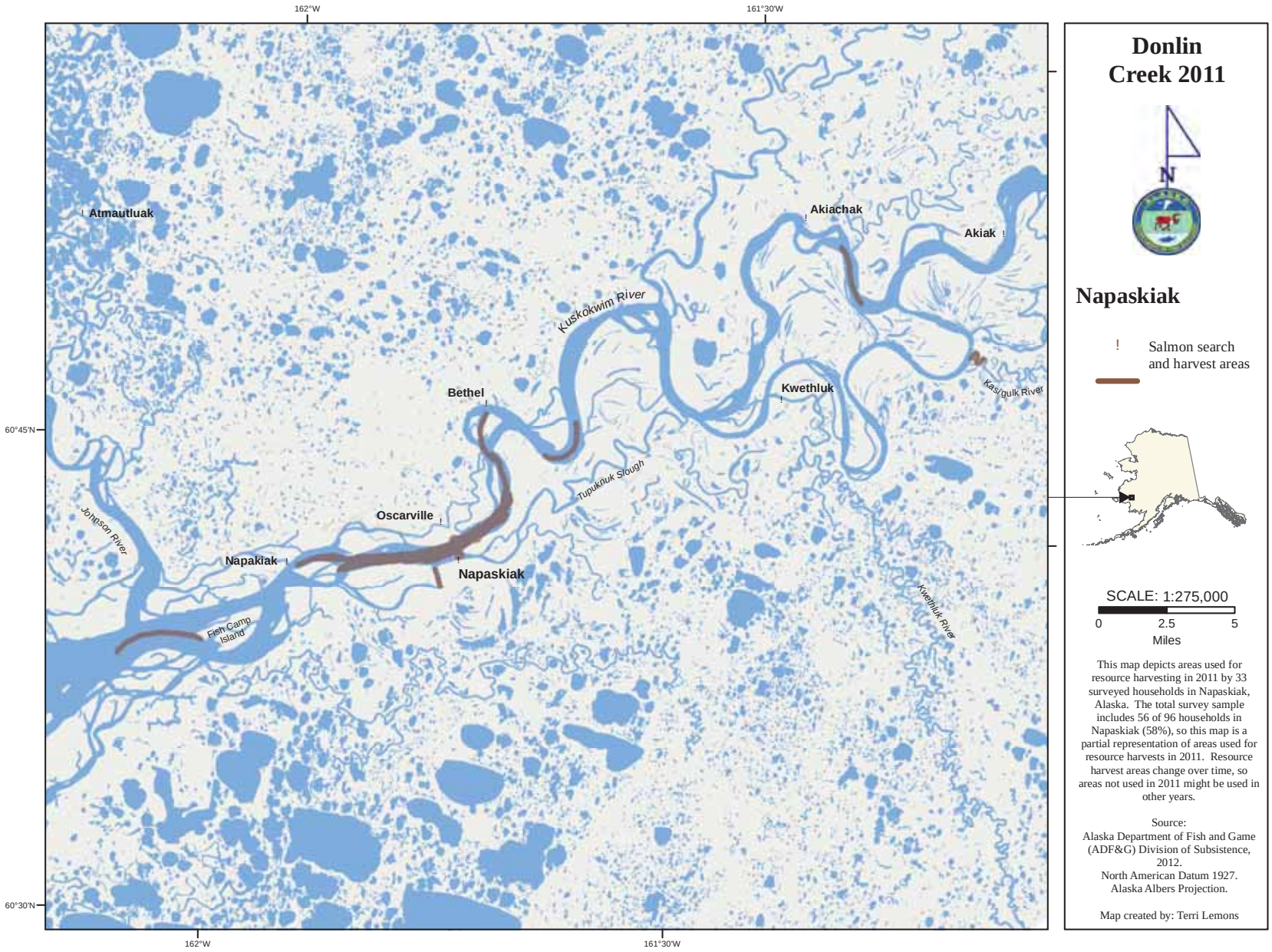


Figure 5-12.–Salmon search and harvest areas, Napaskiak, 2011.

> [My brother] he's got a fish camp right next to us. And, and when we cut [fish], um when we start harvesting fish…I mean there is like 5 families right across from us, and we are all fishing. They'll stop by and start cutting, help cut, you know. All the 5 camps that are in one area. Those 5 camps that are cutting fish, we are all family you know, we take care of each other. Um, if 1 family is behind in cutting, somebody…my aunt will go over there and help. If my aunt is a little slow, 2 of the family members will stop by and start helping. You know, speed things up. And the guys, we hang the fish. We cook what they want. It's like a job. They [women] take breaks…the guys make coffee, guys cook, uh you name it, we do it. Everybody has a job, even the little kiddies. They will cook hearts over the fire, you know, something to snack on (04212012NAP1).

Napaskiak households also fished for and harvested nonsalmon fish species along the main stem of the Kuskokwim River in much of the same locations as salmon. Figure 5-13 shows the harvest and search locations for nonsalmon species targeted by Napaskiak households in 2011. In addition, northern pike were searched for and harvested on the mainstem of the Kuskokwim on both sides of Fish Camp Island, up the Johnson River, in the upriver portion of Lomavik Slough, and in some of the smaller waterways to the southwest of Napaskiak. The primary search and harvest locations for whitefish species were in Eek Lake and the surrounding smaller lakes and other numerous water bodies to the south of Napaskiak. Whitefish were also harvested along the mainstem of the Kuskokwim River, in Tupuknuk and Kuskokuak sloughs, and in the Kwethluk River. In addition to the mainstem of the Kuskokwim River, sheefish were targeted and harvested in the Kayigyalik Lake area to the north of the community of Nunapitchuk. Napaskiak households searched for and harvested burbot in a number of different areas along the mainstem of the Kuskokwim River from the Kwethluk area upriver of Napaskiak to the mouth of the Johnson River (and up the Johnson River) downriver of Napaskiak. Several areas near Bethel, around Fish Camp Island, a stretch of the mainstem of the Kuskokwim River near Kwethluk, and the area of the Kuskokwim River just alongside the community of Napaskiak were the most heavily used.

Napaskiak households searched for and harvested large mammals such as caribou and moose over a large area. The extensive search and harvest area for moose stretched along the Kuskokwim River corridor from the area around the confluence of the Johnson and Kwethluk rivers upriver to the community of McGrath, a river distance of over 400 miles. In addition, 2 other large search and harvest areas for moose stretched from the Kuskokwim River overland to the Yukon River. The first area extended up the Johnson River, through the lakes area of Takslesluk Lake, Kayigyalik Lake, and Nunavakanukakslak Lake, along the Johnson and Pikmiktalik rivers, and then continued overland to the Yukon River. The second largest search and harvest area for moose extended from the Kuskokwim River overland through the Portage Lakes area of Arhymot (Big Lake), Kukaklik, and Kulik lakes to the northwest of Kalskag, through the Talbiksok River area, and then on to the Yukon River. Additional search and harvest locations used by Napaskiak households for moose were the Holitna and Kwethluk rivers. Figure 5-14 shows the harvest and search locations for moose targeted by Napaskiak households in 2011.

Napaskiak hunters searched for and harvested walrus in the mainstem Kuskokwim River downstream to

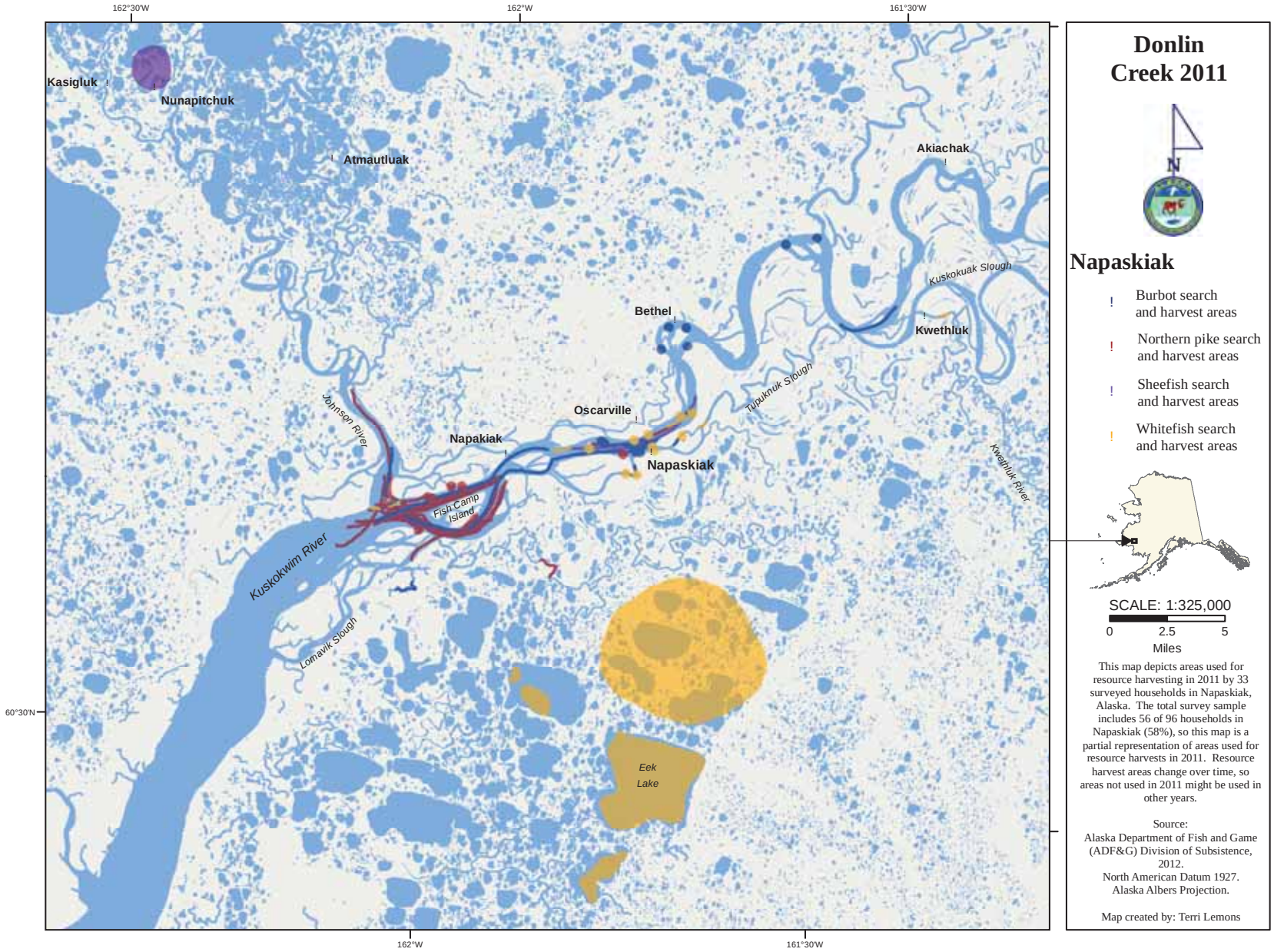


Figure 5-13.–Burbot, northern pike, sheefish, and whitefishes search and harvest areas, Napaskiak, 2011.

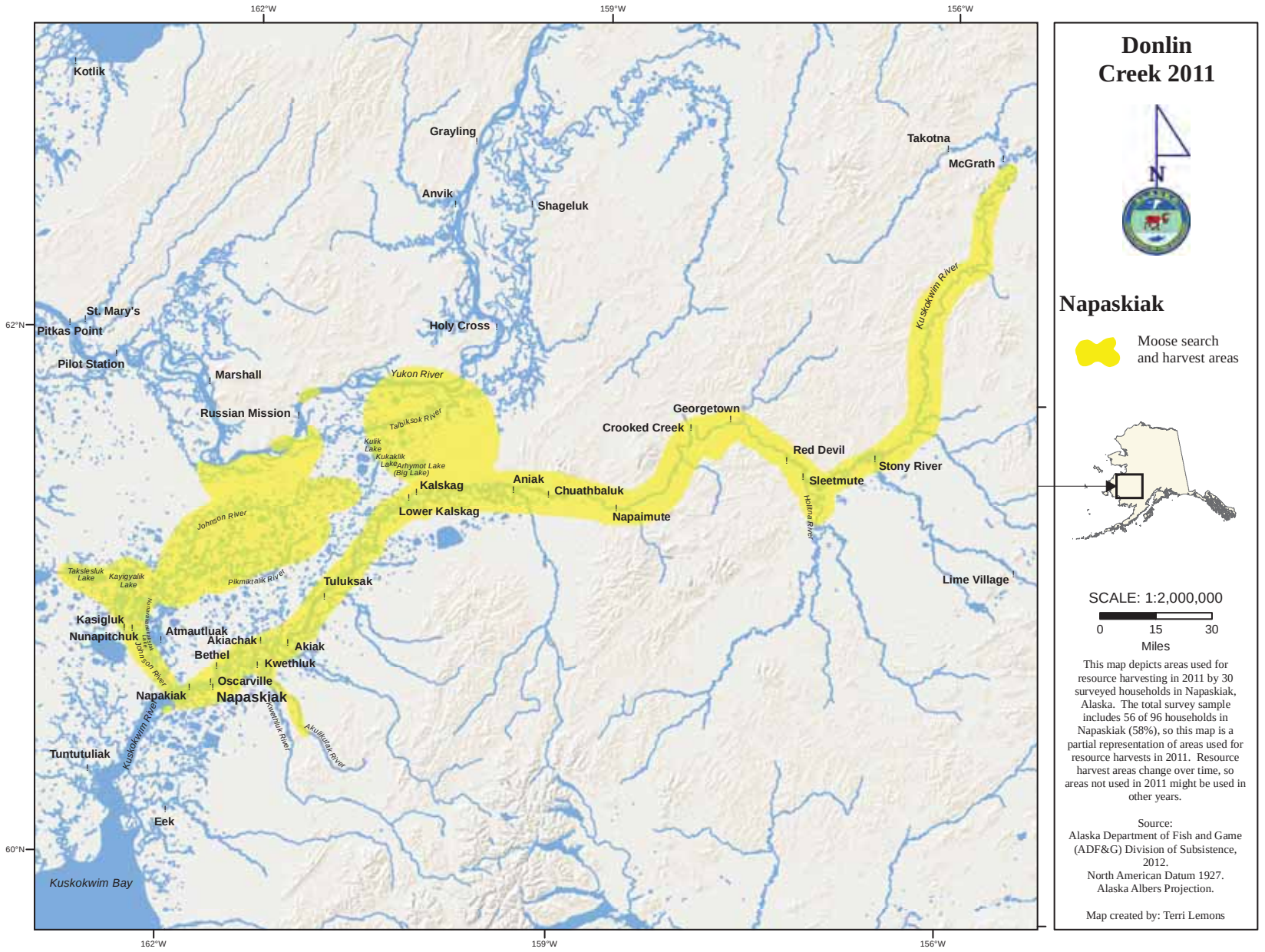


Figure 5-14.–Moose search and harvest areas, Napaskiak, 2011.

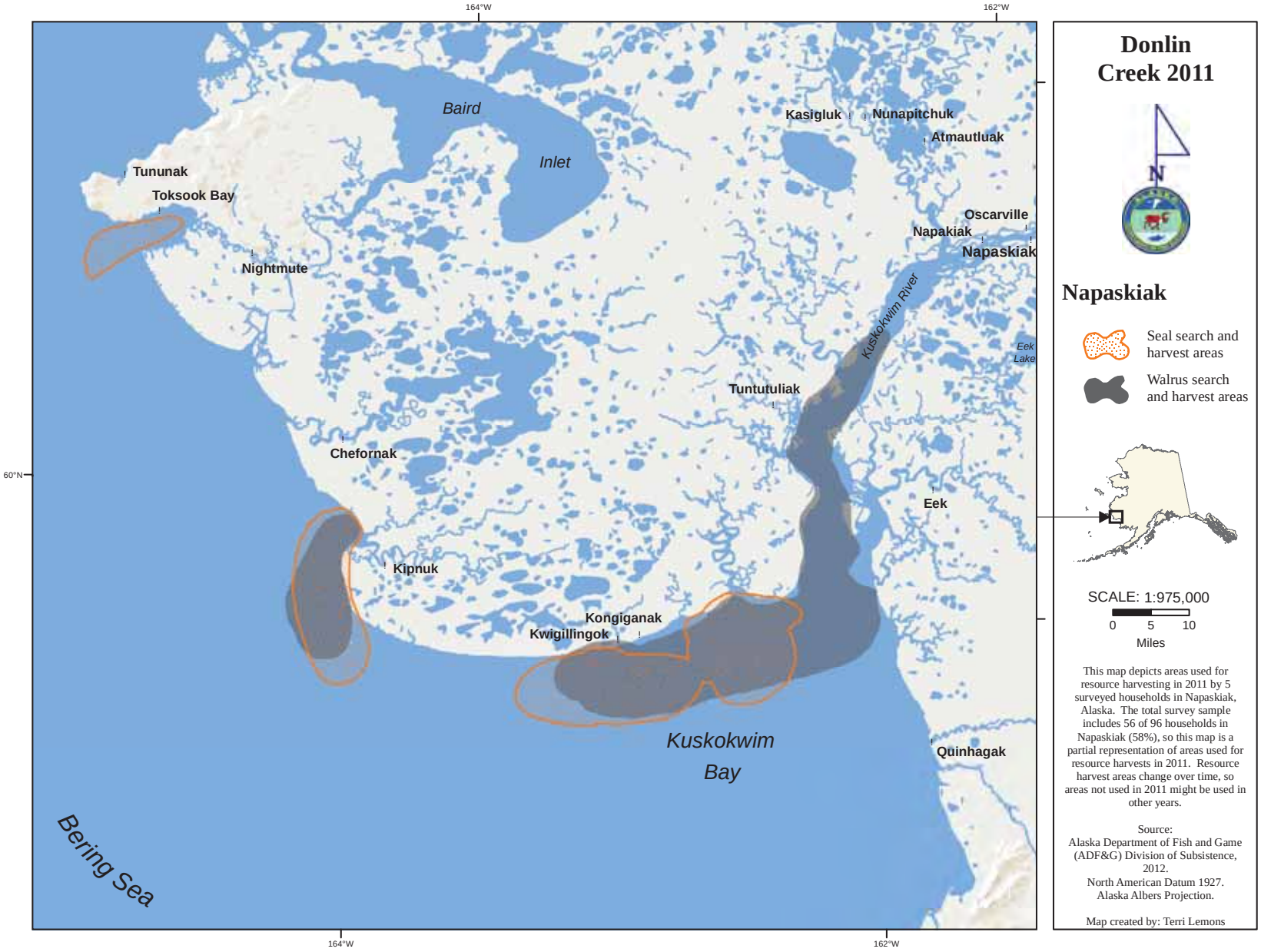


Figure 5-15.–Seal and walrus search and harvest areas, Napaskiak, 2011.

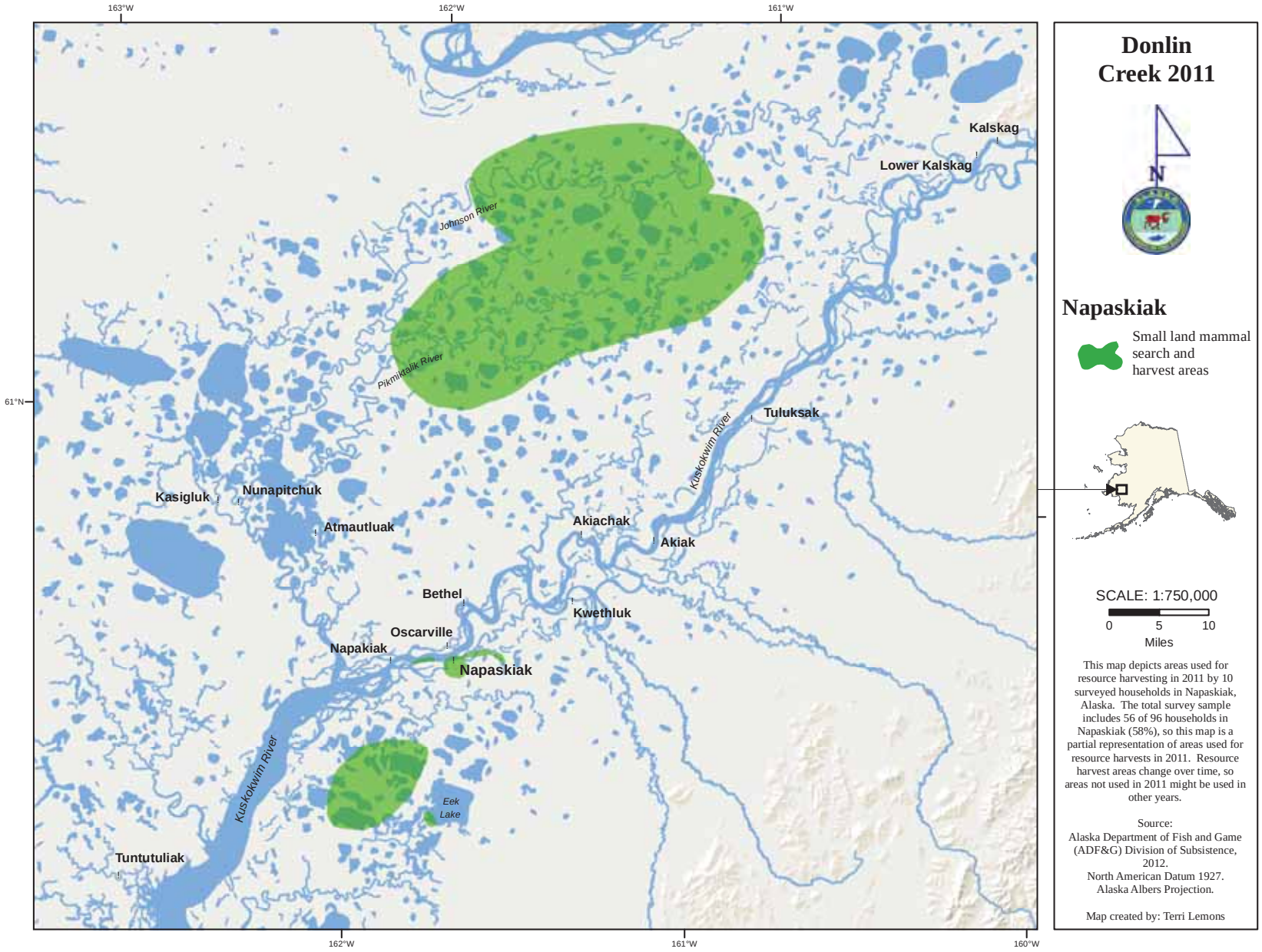


Figure 5-16.–Small land mammal search and harvest areas, Napaskiak, 2011.

and in Kuskokwim Bay, including the coastal waters in the area of Kongiganak and Kwigillingok as well as in the vicinity of Kipnuk. Hunters harvested seals in areas of Kuskokwim Bay and west of Kipnuk in areas overlapping search areas for walrus as well as south and west of the coast of Nelson (Figure 5-15).

The search and harvest areas for small mammals in 2011 consisted of the area immediately around Napaskiak and the small lakes and streams to the west of Eek Lake between Eek Lake and the Kuskokwim River. Additional areas included the southern portion of Eek Lake, itself, and a large low-lying area of lakes and other water bodies to the northeast of Napaskiak between the Kuskokwim and the Yukon rivers. This area encompasses the upper Johnson and Pikmiktalik rivers, which run roughly parallel to each other along their lengths. These low-lying water infused areas were perfect habitat for the search and harvest of muskrat, river otter, and beaver. Snowshoe hare and Alaska hare were primarily harvested in the vicinity of Napaskiak. Figure 5-16 shows the harvest and search locations for small mammals targeted by Napaskiak households in 2011.

Napaskiak households searched for berries and greens in a variety of areas. Some respondents noted that they had to go farther in 2011 than they usually do to find the types and quantities of berries that they wanted. The harvesting of berries is usually a family affair since everyone from the very young to the older members of a family can participate. Berry picking is also considered a time when family and friends who live in different locations can come together for a joint subsistence and social activity. This may be reflected in some of the search and harvest locations used by Napaskiak households in 2011. In 2011 households searched for and harvested berries and greens in the area surrounding the community of Lower Kalskag, an area between the communities of Akiachak and Akiak, the area surrounding Bethel, and areas near the communities of Kasigluk and Nunapitchuk. Households also searched for berries and greens and harvested them opportunistically while pursuing other subsistence activities. Some households reported searching for and harvesting berries and greens up the Gweek River while harvesting wood, and in the Pikmiktalik River area while fishing or hunting. Additional locations for berries and greens were scattered throughout the Eek Lake area and the surrounding wetlands to the south and southwest of Napaskiak. Figure 5-17 shows the harvest and search locations for berries and greens targeted by Napaskiak households in 2011.

While ducks and geese were targeted during their annual migrations in the spring and fall, ptarmigans and grouse were taken year-round, often opportunistically while pursuing other subsistence activities, and often near the community. Ptarmigans were also targeted species and were searched for and harvested in the wetlands to the south and southeast of Napaskiak surrounding Eek Lake. Ducks and geese commanded a much larger search and harvest area in 2011. Napaskiak households utilized Takslesluk and Nunavakpak lakes, Eek Lake and the surrounding lakes and water bodies between Eek Lake and the Kuskokwim River, and the lakes and water bodies directly south of the community of Napaskiak. One respondent said:

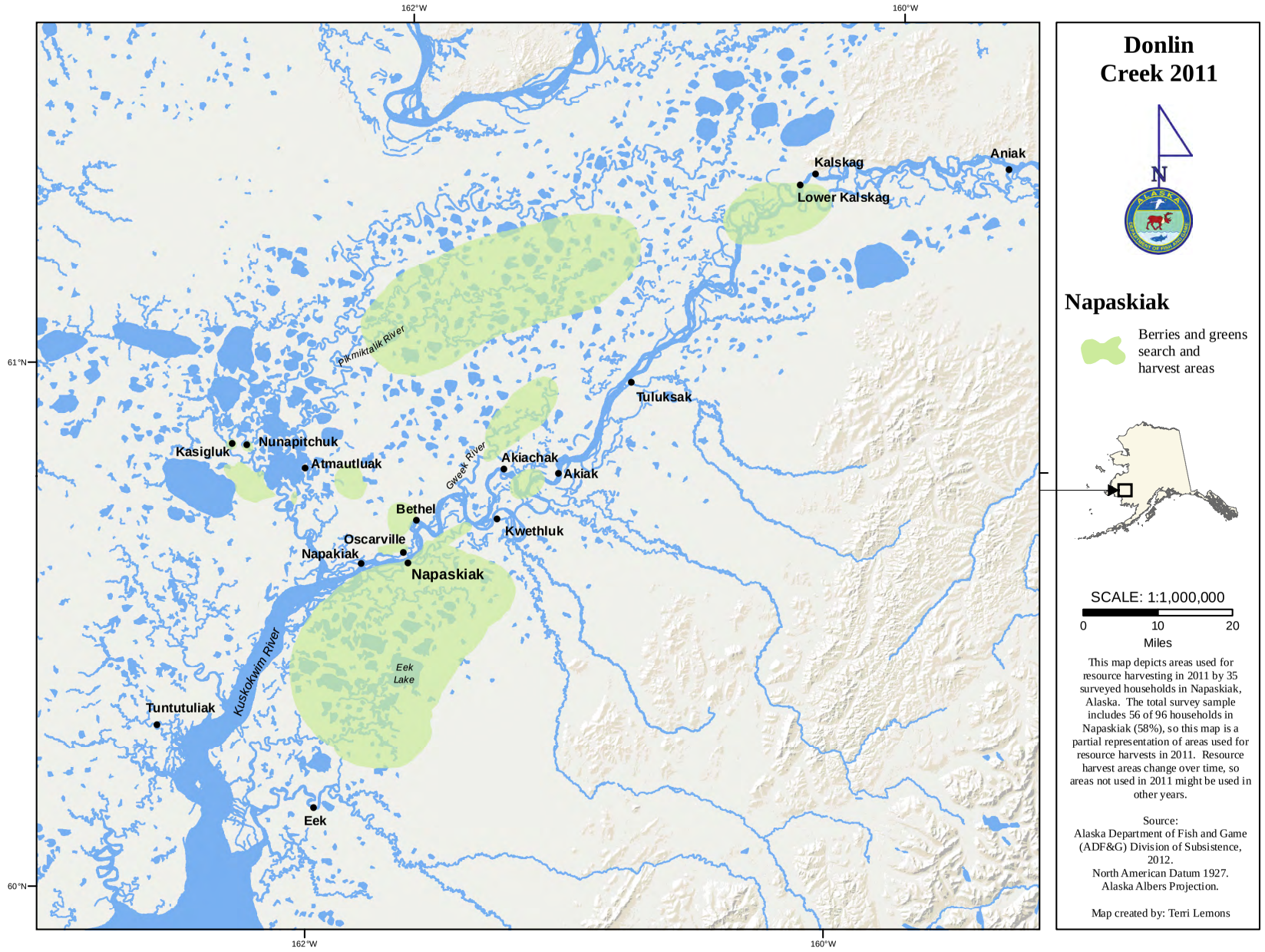


Figure 5-17.–Berries and greens search and harvest areas, Napaskiak, 2011.

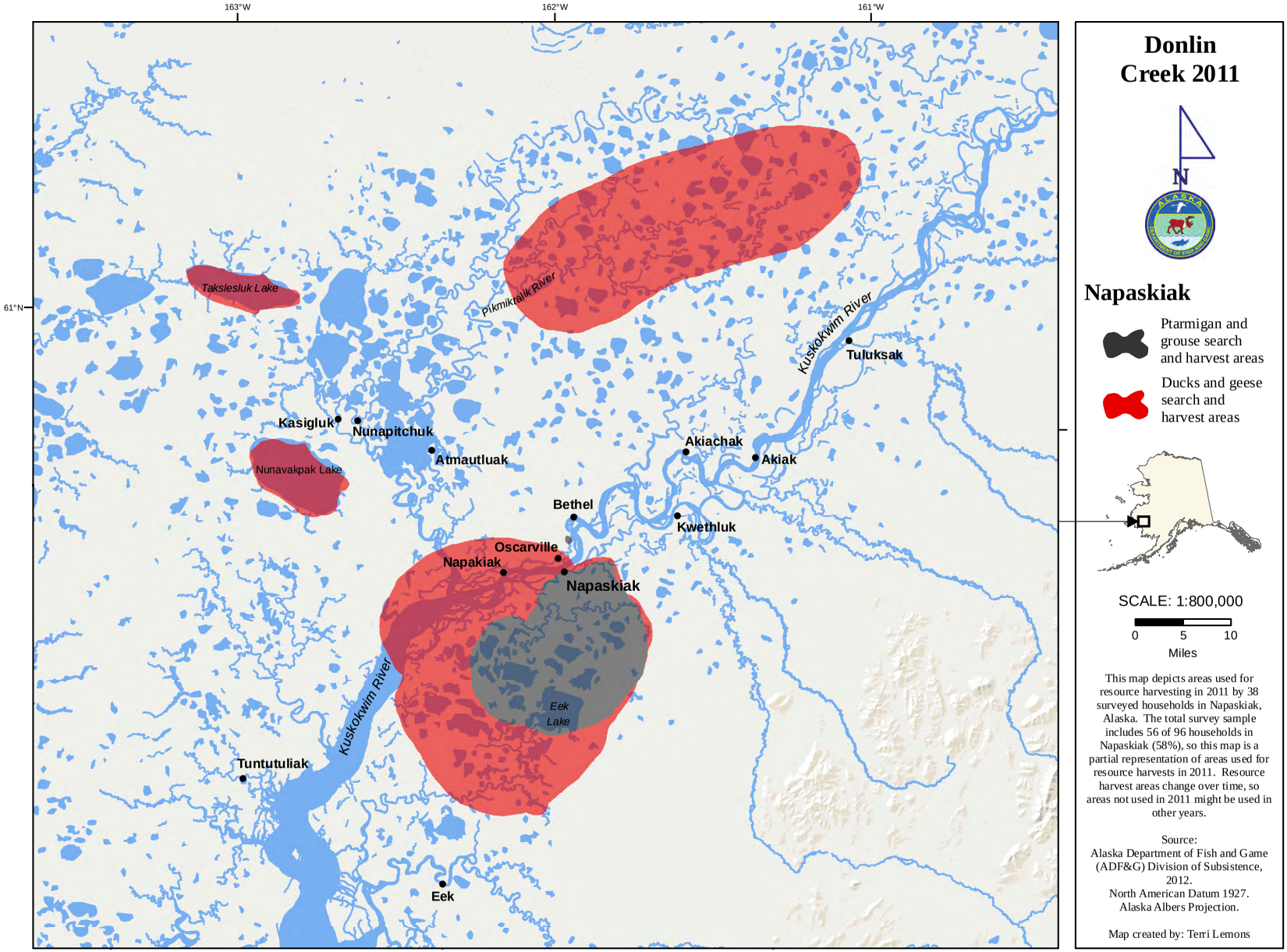


Figure 5-18.–Ptarmigan, grouse, ducks, and geese search and harvest areas, Napaskiak, 2011.

> The geese and swans come first before anything else. When the ice clears up back where we go hunting is where we go for the other, the small ducks. Once everybody starts going, everybody is out there hunting. Our hunting grounds are one lake after another. Um, sloughs that go into other lakes and you know, that's where we go hunting. (04212012NAP1)

In addition, 2 major flyways were utilized extensively, 1 along the mainstem of the Kuskokwim River, itself, and 1 along the Pikmiktalik River in the wetlands between the Kuskokwim River and the Yukon River, to the north and northeast of Napaskiak. Figure 5-18 shows the search and harvest locations for ptarmigans and grouses, and ducks and geese by Napaskiak households in 2011.

Harvest Assessments

Researchers asked respondents to assess their own harvests in 2 ways: whether they got more, less, or about the same amount of 7 resource categories in 2011 as in past years and whether they got "enough" of each of the 7 resource categories. Households also were asked to provide reasons if their use was different or if they were unable to get enough of a resource. If they did not get enough of a resource, they were asked to evaluate the severity of the impact to their household as a result of not getting enough. They were further asked whether they did anything differently (such as supplement with store-bought food or switch to a different subsistence resource) because they did not get enough. This section discusses responses to those questions.

Together, Figure 5-19 and Figure 5-20 provide a broad overview of households' harvests. Since not everyone uses all resource categories, some households did not respond to the assessment questions. Additionally, some households that do typically use a resource category simply did not answer questions. While the percentages displayed in these figures were calculated including all surveyed households (including those that did not respond to the question), the bars specifically highlight responses provided by households reporting that they typically use the resource category. Generally, the results are presented in this section as they appear in the figures, but it is important to remember that they are not limited to only households that ordinarily use the resource. Additional details are provided in cases where further analysis lends clarity to the discussion of use patterns. Subsistence harvest success also can be assessed by comparing current harvest estimates with past harvest estimates, which will be discussed later in the comparisons section.

In nearly all subsistence resource categories, Napaskiak respondents reported that they harvested or used the same or more wild foods in comparison with recent years and that their households got enough of each resource in 2011. However, despite the general impression that most Napaskiak households may have met their subsistence needs for the year, it is important to consider that many respondents described experiencing some lack of resources. Households that reported not getting enough of a resource gave various reasons as to why they did not get enough (Appendix D4-14). The number of households reporting that they did not get enough of certain resources, and the things that they did differently as a result is listed in Appendix tables D4-12 and D4-13.

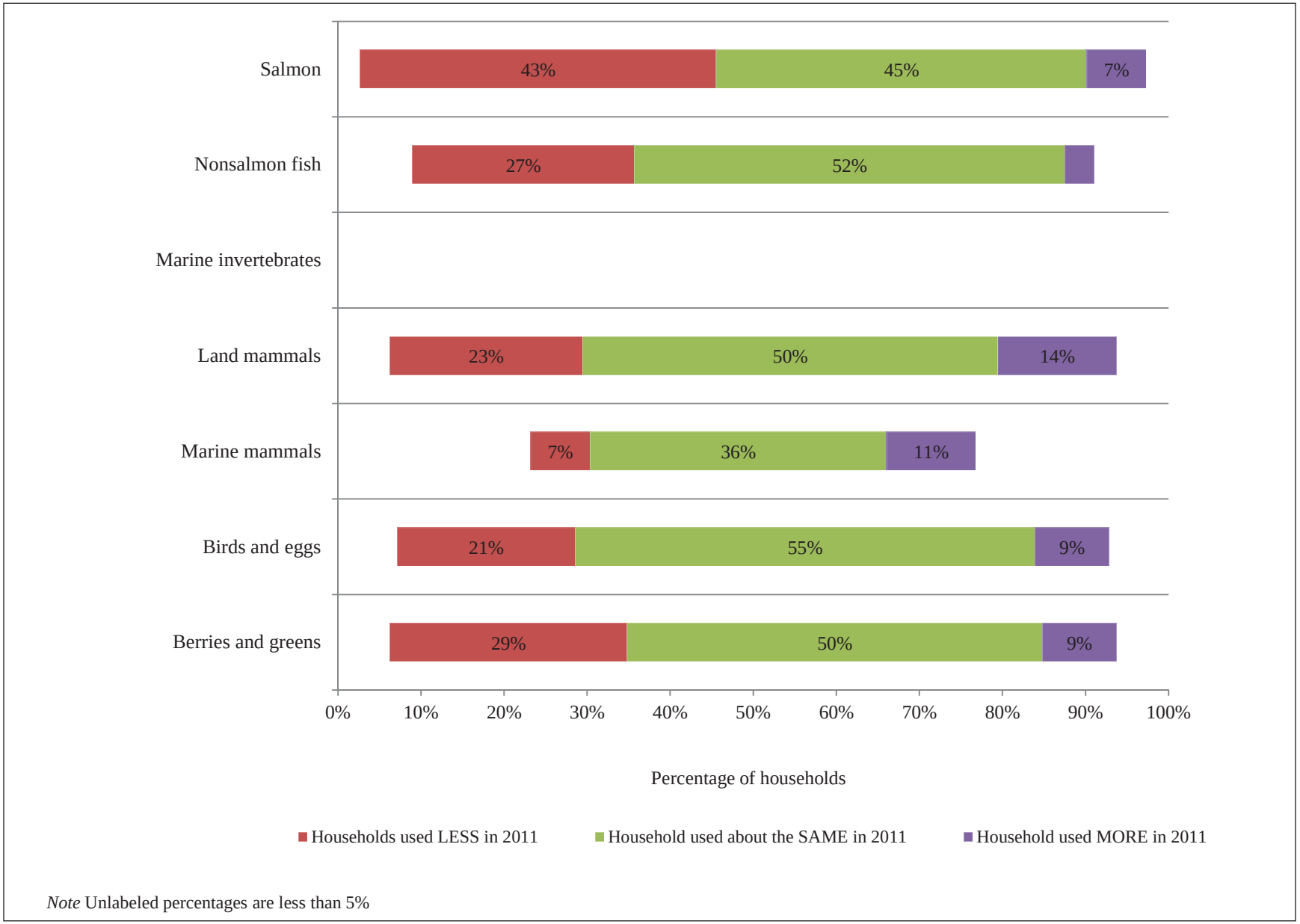
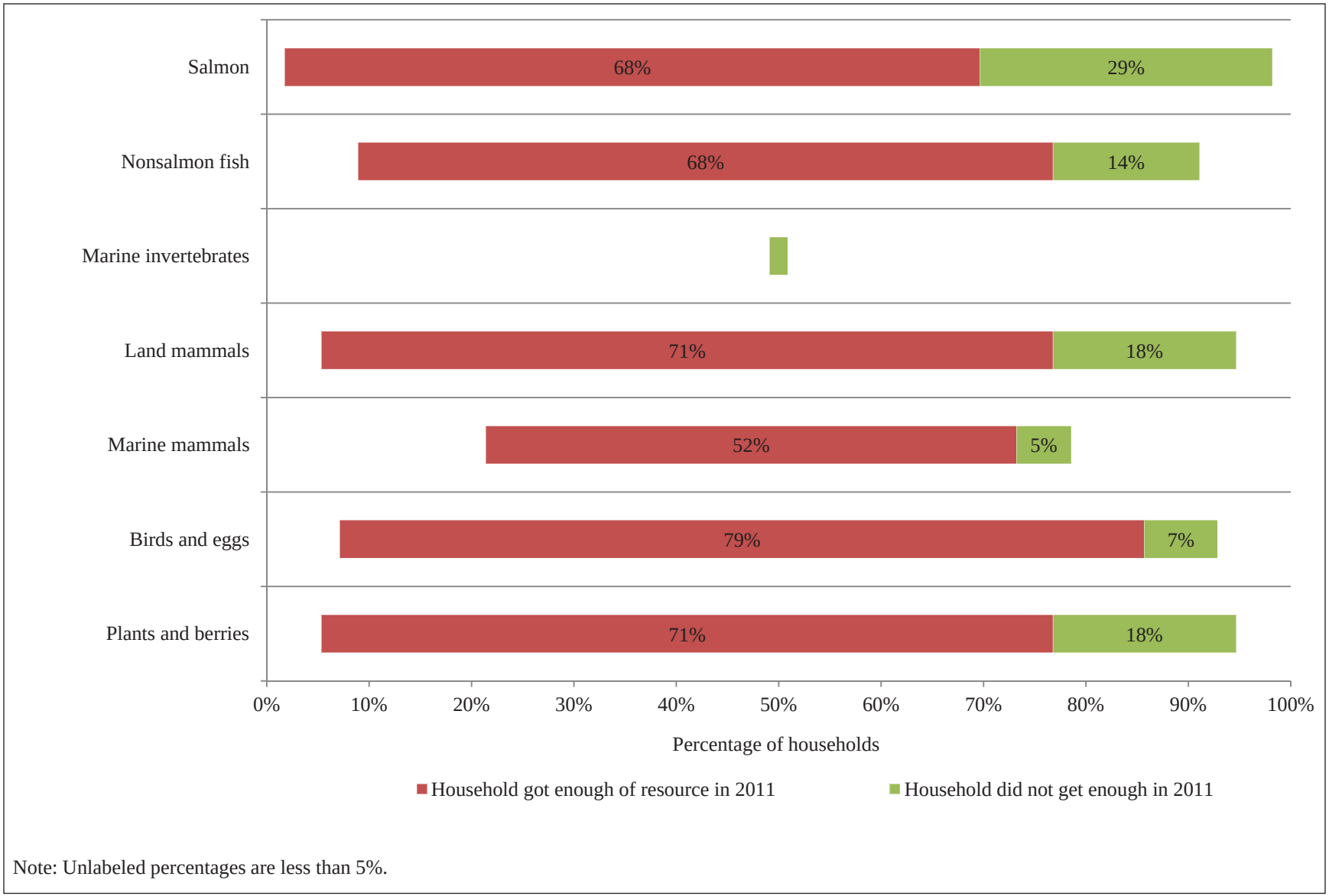


Figure 5-19.–Number of households using a resource and reporting LESS, SAME, or MORE use as compared to previous years, Napaskiak, 2011.



Note: Unlabeled percentages are less than 5%.

Figure 5-20.–Number of households reporting getting enough resources, Napaskiak, 2011.

Salmon fishing is the lifeblood of Napaskiak residents with 100% of households reporting use of salmon in 2011. A majority of respondents (68%) reported getting enough, while 29% reported not getting enough salmon in 2011. Of the respondents who described not getting enough salmon, the majority of them explained that fishing regulations were the cause of their inability to obtain enough salmon. This was particularly true with Chinook salmon, with 15 households stating that they did not get enough of this resource. Still, less than half of respondents reported using less salmon when compared to recent years. Respondents provided a variety of reasons as to why their use was different in 2011. For households that used less salmon, the major reasons were restrictive salmon fishing regulations, lack of resource availability, and personal and family reasons. When asked to evaluate to what extent the lack of salmon affected their households, the majority of respondents (63%) reported that the impact was minor; however, 19% described experiencing a major impact, and 13% said that the impact was severe. Perhaps an indirect measure of these impacts can come from evaluating how respondents behaved differently when their households did not get enough salmon. These Napaskiak respondents discussed purchasing more commercial foods and replacing salmon with other wild foods.

Because of their year-round availability, nonsalmon fish species are also an important contributor to the diets of Napaskiak residents. A large majority of respondents (68%) reported getting enough nonsalmon fish species in 2011, while 14% reported not getting enough. A similar majority of respondents said they used more or the same amount of nonsalmon in 2011 as in recent years; however, nearly half (43% of respondents) described using less. Among households that responded to this question, 75% said that the impact of not getting enough nonsalmon was minor, while 13% said that it was major. Reasons given for not getting enough nonsalmon fish species in 2011 included a lack of effort trying to harvest the resource and the fact that respondents did not receive the resource from other households.

Land mammals represent an important contribution to the diets of Napaskiak residents, with moose and caribou composing 15% of the total wild foods harvested in 2011. A large majority of respondents (71%) reported that they got enough land mammals, while 18% said they did not get enough. Forty–nine of 56 households said that they used land mammals in 2011, with half describing that they used about the same amount of land mammals in 2011 and 14% using more. Twenty-three percent of respondents reported using less. Of the households that did not get enough land mammals, very few reported any impacts that would suggest hardship as a result of their lack of land mammals; however, 6 respondents reported that there was a minor impact to their household when they did not get enough.

The harvest assessment portion of the survey results indicates that many Napaskiak households were satisfied with their harvest of birds and eggs in 2011. Seventy-nine percent of respondents said they got enough, with only 7% reporting that they did not get enough. Furthermore, 64% reported that they either used the same or more birds and eggs in 2011 as compared to recent years. Of those who described using less, a large majority (75%) said that doing so had a minor impact on their households. This is perhaps another indication that overall Napaskiak respondents experienced satisfaction with their bird and egg harvests in 2011.

Similarly, responses to questions about households' assessments of their harvest and use of berries and

greens as well as marine mammals showed a general sense of satisfaction with the amounts they used in 2011. These data indicate that while there were some households that experienced challenges that arose when they did not receive the resources they felt they needed, most respondents expressed a favorable assessment of their wild food use. This is despite low harvests of Chinook salmon in comparison to historical harvests of this species, a principal subsistence resource for Napaskiak. Furthermore, Napaskiak residents described adapting to a lack of resources such as Chinook salmon by harvesting other species as replacements. Because of the small sample sizes, these harvest assessments are limited in their ability to demonstrate broad patterns of subsistence use trends in Napaskiak; however, these data provide insights into residents' perceptions of their own satisfaction and success in harvesting wild foods. The data can also assist researchers in designing future studies that investigate in greater detail these important aspects of subsistence resource harvest and use.

For a summary of households responding to less use in recent years by category, and for a complete list of the reasons by category that use of resources was less than in recent years see Appendix tables D4-7 and D4-8. For a summary of households responding to more use in recent years by category, and for a complete list of the reasons by category that use of resources was more than in recent years see Appendix tables D4-9 and D4-10.

Jobs, Income, and Expenses

Respondents were asked about both earned income (jobs held and wages earned by all households members 16-years-old and older) and unearned income (Alaska Permanent Fund Dividend, Social Security, public assistance, etc.). In 2011, Napaskiak households earned or received an estimated total of $5,785,673, of which $4,541,279 (78%) was from wage employment, and $1,244,395 (22%) was from other sources. The average earned income per household in 2011 was $47,305, while the average per household income from other sources was $12,962. The total average household income for Napaskiak was $60,267. Table 5-7 shows the percentages of estimated earned and other income in 2011 by source. The 2006–2010 American Community Survey (ACS) estimated the per capita income (in 2010 inflation-adjusted dollars) to be approximately $15,263. In 2011, according to survey results, the per capita income was $12,054.

Figure 5-21 shows the top 10 income sources for Napaskiak in 2011 ranked by estimated contribution. Local government jobs (including school and tribal government positions) were the single largest source of earned income, contributing an estimated $3,233,430. The second largest source of earned income was services, which contributed $683,280 in wages to Napaskiak. Construction was the third largest income source for residents, contributing $222,917. The percentage of employed adults working year-round was 39%, while the average months employed was 9. Napaskiak respondents held 180 full-time jobs and 29 part-time jobs in 2011. The remaining jobs were either shift work or on-call (occasional) work (Appendix Table D4-15). Oswalt (1978) states that in 1956 only 1 man, the general assistant for the Bureau of Indian Affairs school, held a permanent job. His salary was approximately $3,000 per year. Also that year, approximately 20 men worked occasionally unloading supply vessels docked near Bethel, making about $100 each for the year.

Table 5-7. – Estimated earned and other income, Napaskiak, 2011.

Income source	Number of people	Number of households	Total for community	Mean per household[a]	Percentage of total[b]
Earned income					
Local government	111.4	73.4	$3,233,430	$33,682	55.9%
Services	32.6	30.1	$683,280	$7,117	11.8%
Construction	12.0	11.3	$222,917	$2,322	3.9%
Federal government	10.3	7.5	$111,604	$1,163	1.9%
Transportation, communication, and utilities	3.4	3.8	$108,216	$1,127	1.9%
Agriculture, forestry, and fishing	10.3	9.4	$74,702	$778	1.3%
Retail trade	3.4	3.8	$63,520	$662	1.1%
Other employment	5.1	5.6	$43,610	$454	0.8%
Earned income subtotal	**194.9**	**86.6**	**$4,541,279**	**$47,305**	**78.5%**
Other income					
Alaska Permanent Fund dividend		89.1	$556,685	$5,799	9.6%
Food stamps		30.9	$233,647	$2,434	4.0%
Social Security		17.1	$131,342	$1,368	2.3%
Pension/retirement		12.0	$102,385	$1,067	1.8%
Unemployment		20.6	$44,488	$463	0.8%
Supplemental Security income		8.6	$39,826	$415	0.7%
Native corporation dividend		63.4	$39,017	$406	0.7%
Energy assistance		36.0	$33,233	$346	0.6%
Adult public assistance		5.1	$19,378	$202	0.3%
Meeting honoraria		5.1	$17,100	$178	0.3%
Disability		1.7	$11,047	$115	0.2%
Longevity bonus		3.4	$10,286	$107	0.2%
Citgo fuel voucher		15.4	$4,390	$46	0.1%
Child support		3.4	$1,570	$16	0.0%
TANF (temporary cash assistance for needy families)		0.0	$0	$0	0.0%
Worker's compensation/insurance		0.0	$0	$0	0.0%
Veterans assistance		0.0	$0	$0	0.0%
Other		0.0	$0	$0	0.0%
Foster care		0.0	$0	$0	0.0%
Other income subtotal		**89.1**	**$1,244,395**	**$12,962**	**21.5%**
Community income total			**$5,785,673**	**$60,267**	**100.0%**

Source ADF&G Division of Subsistence household surveys, 2012.

a. The mean is calculated using the total number of households in the community, not the number of households for this income category.

b. Income by category as a percentage of the total community income from all sources (wage-based income and non-wage-based income.)

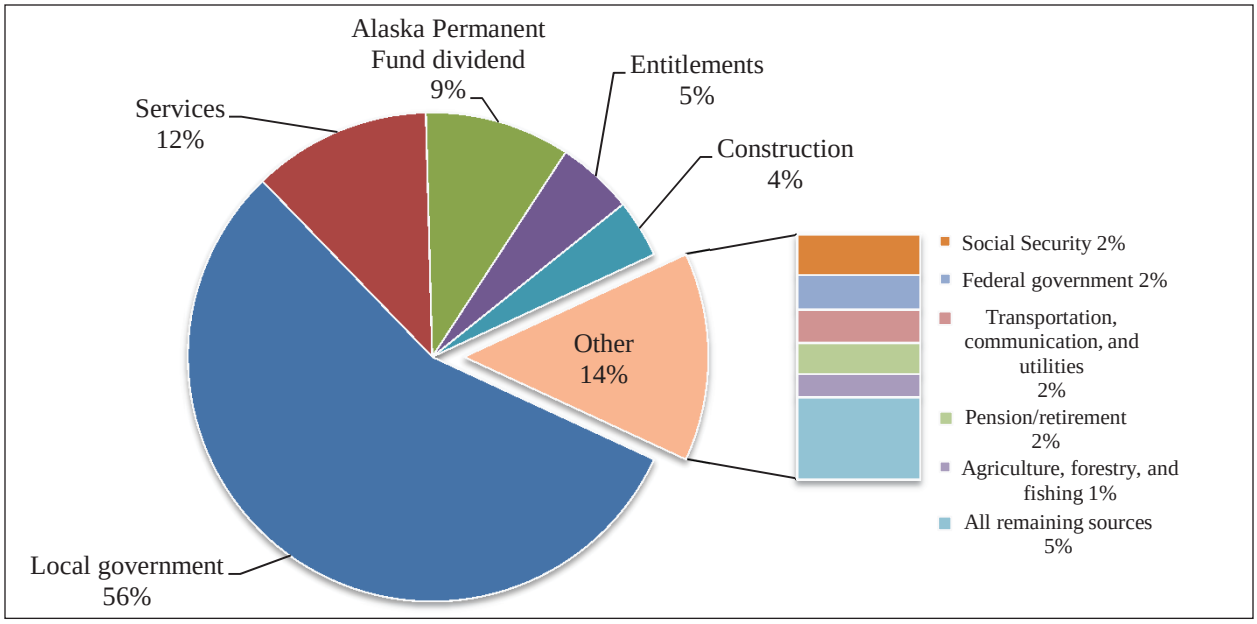


Figure 5-21.–Top 10 income sources ranked by estimated amount, Napaskiak, 2011.

Table 5-8. – Estimated annual expenses, Napaskiak, 2011.

Household expenses	Number of households	Total for community	Mean per household	Percentage of category	Percentage of total
Total expenses	**96.0**	**$1,975,080**	**$20,574**	**100.0%**	**100.0%**
Housing	96.0	$815,235	$8,492	100.0%	41.3%
Rent/mortgage	44.6	$135,293	$1,409	16.6%	6.9%
Stove oil	84.0	$245,996	$2,562	30.2%	12.5%
Firewood	27.4	$18,144	$189	2.2%	0.9%
Electricity	82.3	$159,698	$1,664	19.6%	8.1%
Propane	42.9	$26,070	$272	3.2%	1.3%
Water/sewer/garbage	77.1	$63,091	$657	7.7%	3.2%
Telephone	92.6	$111,816	$1,165	13.7%	5.7%
Television	56.6	$55,127	$574	6.8%	2.8%
Groceries	96.0	$931,004	$9,698	100.0%	47.1%
Store-bought groceries	96.0	$926,302	$9,649	99.5%	46.9%
Subsistence–customary trade	20.6	$4,702	$49	0.5%	0.2%
Subsistence	96.0	$228,841	$2,384	100.0%	11.6%
Gasoline	84.0	$124,584	$1,298	54.4%	6.3%
Ammunition	78.9	$37,403	$390	16.3%	1.9%
Equipment parts	54.9	$33,935	$353	14.8%	1.7%
Other supplies	53.1	$32,919	$343	14.4%	1.7%

Source ADF&G Division of Subsistence household surveys, 2012.

Table 5-9. – Estimated equipment costs and household use, Napaskiak, 2011.

	Equipment used for subsistence					
	Boats	Boat motors	Nets	Snowmachines	4-wheelers (ATVs)	Trucks/cars
All households						
Using						
Estimated number	73.0	73.0	73.0	78.7	23.0	19.2
Percentage	76.0%	76.0%	76.0%	82.0%	24.0%	20.0%
Owning						
Estimated number	57.6	57.6	59.5	74.9	23.0	15.4
Percentage	60.0%	60.0%	62.0%	78.0%	24.0%	16.0%
Mean owned	0.9	0.9	1.6	1.2	0.3	0.2
Total estimated owned in the community	90.2	90.2	155.5	111.4	26.9	15.4
Mean original cost per household	$7,459	$6,498	$837	$7,436	$1,464	$5,480
Total estimated community cost	$716,040	$623,766	$80,382	$713,891	$140,544	$526,080
Estimated annual community cost	$53,215	$64,504	$14,301	$114,875	$28,324	$59,952
Only households owning						
Mean owned	1.6	1.6	2.6	1.5	1.2	1.0
Maximum owned	3	3	7	3	2	1
Mean original purchase cost	$12,431	$10,829	$1,351	$9,534	$6,100	$34,250
Minimum original purchase cost	$2,193	$500	$60	$100	$3,500	$19,000
Maximum original purchase cost	$22,333	$25,000	$1,500	$13,000	$9,000	$54,000
Median original purchase cost	$6,000	$7,325	$500	$6,667	$5,000	$32,500
Mean replacement time (years)	10.0	6.4	3.8	3.9	3.8	5.6
Minimum replacement time (years)	0	0	0	0	1	3
Maximum replacement time (years)	30	25	10	10	10	10
Median replacement time (years)	10.0	5.0	4.0	3.0	3.0	5.0

Source ADF&G Division of Subsistence household surveys, 2012.

Photo by Lisa Slayton

Figure 5-22.–Repairs to subsistence equipment continue year-round. Here, a snowmachine is repaired indoors during spring, Napaskiak, 2011.

About the same number of men were flown to Bristol Bay salmon canneries where they earned $300 to $600 for the season. Oswalt notes that a few others held seasonal (summer) jobs that year (Oswalt 1978:131). The largest source of "other income" for Napaskiak households in 2011 was the Alaska Permanent Fund dividend, which accounted for $556,685 in income in 2011. The "other income" category also included several state and federal assistance programs, retirement funds, and Native corporation dividends. According to Oswalt (1978) the total community income from these types of sources (excluding the Alaska Permanent Fund and Native corporation dividends, which did not exist at the time) in 1956 was $1,800. For comparative purposes see Appendix Table D1-4 for employment characteristics for all communities.

In addition to income, Napaskiak respondents were also asked about household expenses for 2011 (Table 5-8). Household expenditures included housing, fuel, groceries, utilities, and subsistence-related costs for such items as ammunition, gas, equipment parts, and other supplies. The total of all annual household expenses for the community in 2011 was an estimated $1,975,080. The average total expenses per household was an estimated $20,574 for the year. Store-bought groceries cost the average household approximately $9,698 for a community total of $926,302. Subsistence-related costs, which included gasoline, ammunition, equipment parts, and other supplies (i.e. rain gear, coolers, camping equipment) totaled an estimated $228,841 for the community, with an average cost of $2,384 per household (Table 5-9). Nets for fishing cost an average $837 per household annually. Respondents stated that nets needed to be replaced on average every 4 years.

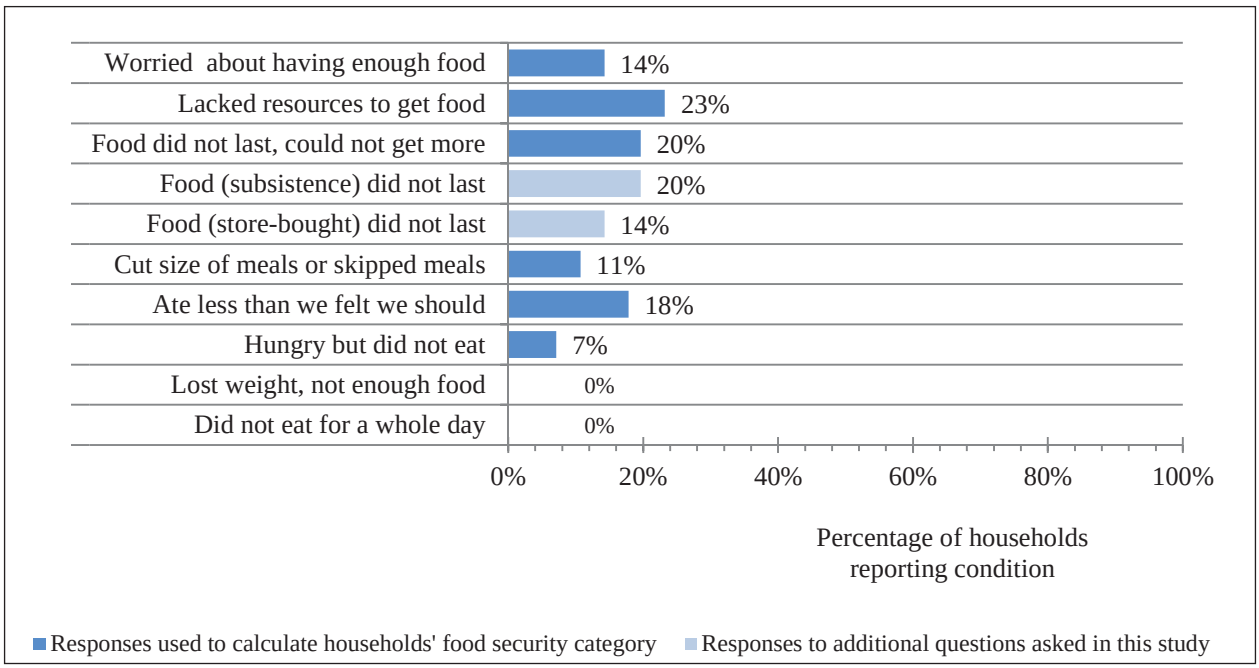


Figure 5-23.–Food insecure conditions results, Napaskiak, 2011.

The largest subsistence expenditure in 2011 for most households was for gasoline, primarily for use in boats and snowmachines. The high cost of gasoline was cited as a factor in households not getting enough of certain subsistence resources such as salmon, ducks, and salmonberries in 2011. The percentage of households that used boats for subsistence activities in 2011 was 79%. The total percentage of households that used snowmachines for subsistence was 84%. Most households in Napaskiak owned one or both of these. However, some households reported that due to the high cost of parts, they did not have a working boat or snowmachine in 2011, which prevented them from pursuing certain subsistence activities (Figure 5-22). The estimated total number of working boats owned by Napaskiak households in 2011 was 90, while the number of working snowmachines was 111. Households reported that new boat motors lasted an average of 4 years; the boats themselves lasted about 5 or 6 years, and snowmachines lasted about 3 years before having to be replaced at great expense to households. Far from being a means of providing food for the family with limited costs, subsistence pursuits overall in Napaskiak (as elsewhere in rural Alaska) were costly.

Food Security

Respondents were asked a short series of questions intended to assess their household's food security status; that is, "access by all people at all times to enough food for an active, healthy life" (Nord et al. 2009:2). The food security questions were modeled on questions developed by the USDA and modified by ADF&G to account for differences in access to subsistence and store bought foods. Core questions and community responses are summarized in Figure 5-23.

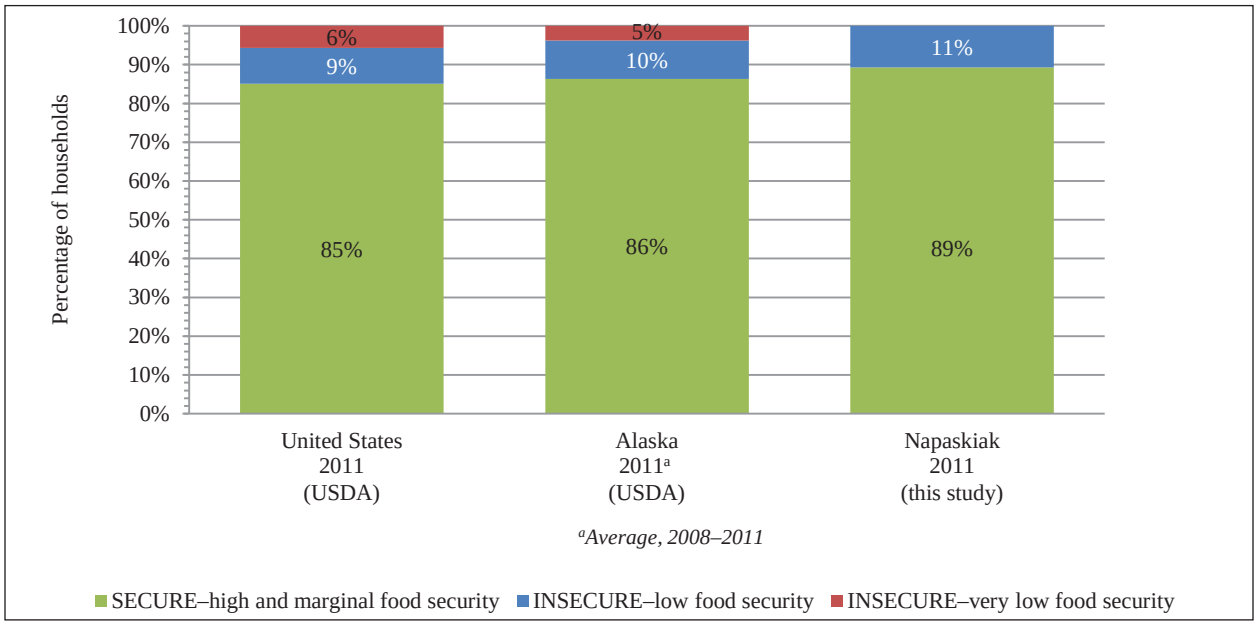
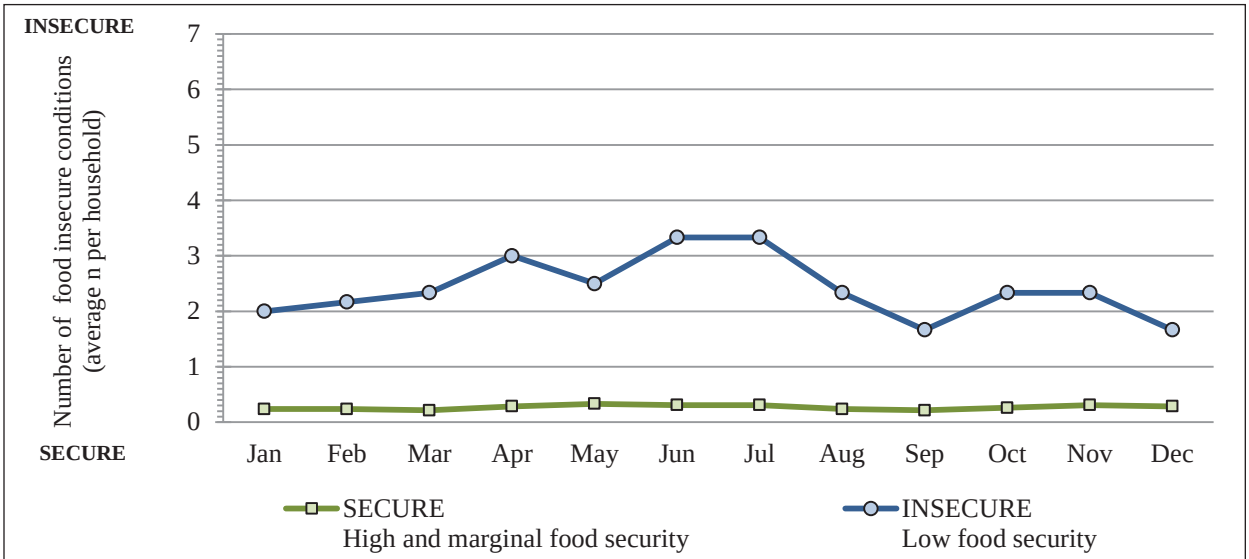


Figure 5-24.–Food security categories, Napaskiak, 2011.

Photo by Jeff Park

Figure 5-25.–Due to the high cost of shipping, store shelves and coolers are often bare, Napaskiak, 2011.

Based on their responses to these questions, households were categorized as being food insecure or food secure following a USDA protocol (Bickel et al. 2000). Food security ranged on a continuum from very low food security and low food security, to marginal or high food security. No household in Napaskiak fell into the category of very low food security, but 11% of households experienced low food security. The majority of households (89%) had high or marginal food security in 2011 (Figure 5-24). Of those households reporting food insecure conditions, 20% indicated that their subsistence food did not last through the year, 23% reported that they lacked the resources (i.e. gear, cash, and gas) to get subsistence foods, and 14% said that their store-bought food did not last. Due to high shipping costs to rural areas, store foods are limited in variety



Note No Napaskiak households were categorized as being "INSECURE Very low food security." The category was removed from the figure to avoid confusion.

Figure 5-26.–Food insecure conditions by month and by household category, Napaskiak, 2011.

or are often not available at all. According to several respondents many shelves and coolers in the Napaskiak store were often empty in 2011 (Figure 5-25).

When households reported a food insecure condition (such as “ate less than we felt we should”), they were asked when the condition occurred. Food insecure conditions in Napaskiak in 2011 were found to be linked to changes in the time of year (Figure 5-26). Those experiencing low food security reported 1 or more food insecure conditions throughout the entire year. The most insecure conditions (3 to 4 food insecure conditions) occurred in June and July during the peak salmon fishing season. This was perhaps due to concerns over how successful fishing efforts would be by the end of summer. Having enough fish to last the winter is often an ever present concern in subsistence-focused communities.

Wild Food Networks

Sharing and exchange are a significant means of redistributing subsistence foods throughout the community of Napaskiak and also throughout a broader network of other communities via family and friends. Figure 5-27 depicts the flow of wild foods between households within Napaskiak, and between Napaskiak and other communities. It is interesting to note that many communities are physically located on or near the coast, creating pathways by which various subsistence foods from different regions and resource bases are exchanged. For example, seal oil from the coast that is not available in the middle Kuskokwim River area may be exchanged for moose meat from the Interior, which is not readily available in coastal areas. Most of these pathways or connections are based on friend and family relationships.

Communities (represented by blue dots on the network diagram) with which Napaskiak shared or exchanged

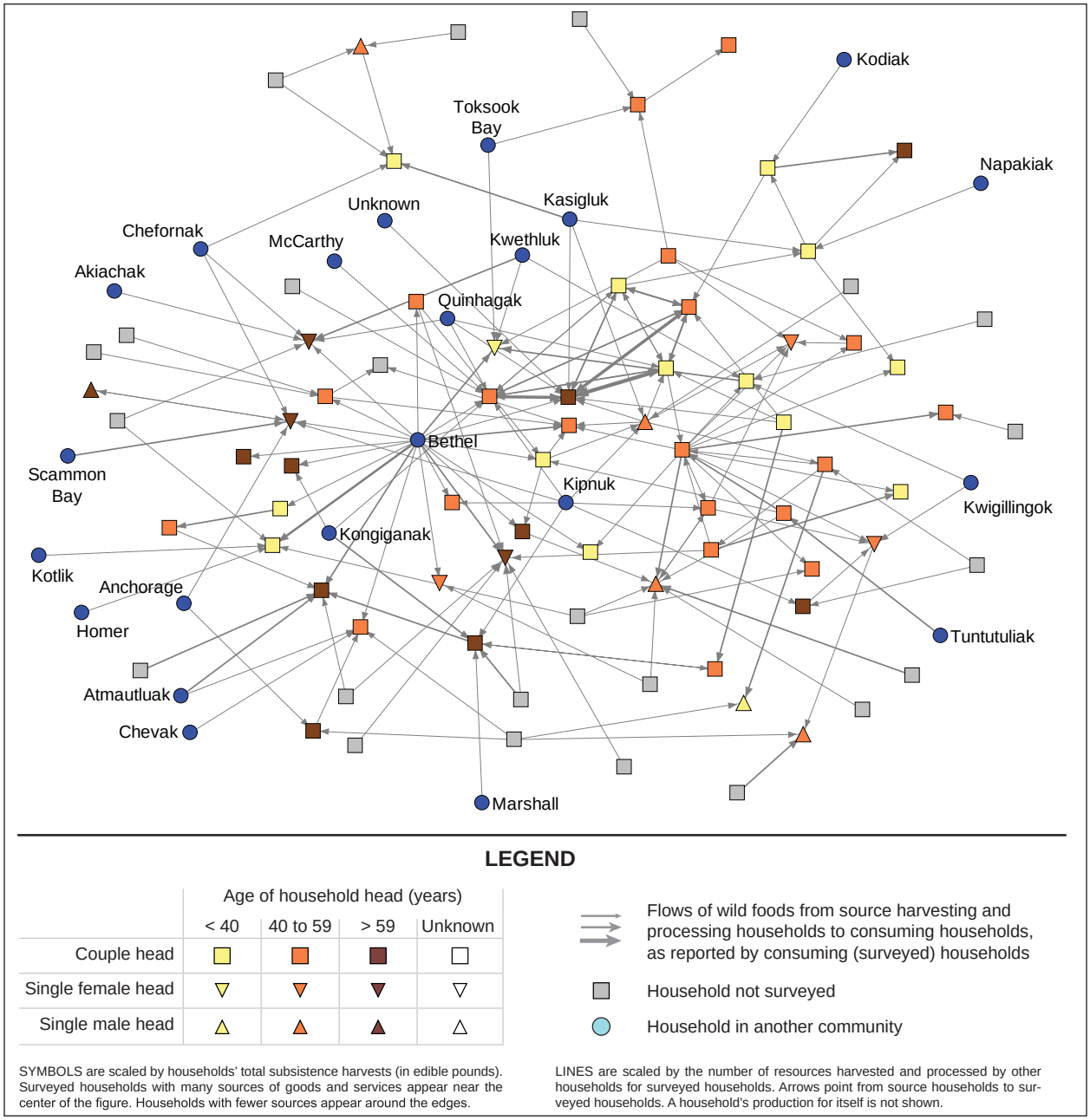


Figure 5-27.–Wild food harvesting and processing network, Napaskiak, 2011.

subsistence foods in 2011 included the coastal or near-coastal communities of Tuntutuliak, Kwigillingok, Toksook Bay, Quinhagak, Kipnuk, Kongiganak, Chefornak, Scammon Bay, Kotlik, Homer, Chevak, and Kodiak; the inland or tundra communities of McCarthy, Kasigluk, Atmautluak, Akiachak, Kwethluk, Napakiak, and Marshall; the urban community of Anchorage; and the regional hub of the Napaskiak area, Bethel. The location of communities such as Bethel, Quinhagak, and Kipnuk near the center of the network diagram suggests that these communities share and exchange with Napaskiak residents more than other communities.

The intricate network that is created by these connections reveals much about the harvesting, processing, consuming, and sharing activities by the residents of Napaskiak. The square and triangle symbols on

the network diagram represent the demographics of various households. The symbols are scaled to show households' total wild food harvests in edible pounds; the larger symbols indicate high producing households. The highest producing households are usually active elder households, mature couples, and single, active males (Magdanz et al. 2002). The lines connecting households indicate the flow of wild foods from source harvesting or processing households to consuming households and are scaled as well. Thicker lines connecting households indicate a larger or more varied flow of wild foods. Inactive elder households and households headed by single women tend to be more connected within networks as several households share their harvests with them. Households with more connections to other households through food exchanges migrate to the center of the diagram. Households near the edge of the diagram have fewer connections suggesting that they have produced or received fewer sources of wild foods than other households within the community, or that they produced a lot themselves and therefore less likely to receive. Following the pattern of the 30/70 rule (Wolfe et al. 2010) 32% of Napaskiak households took 70% of the harvest in 2011. Those that produced the most were primarily those households that were headed by 2 mature adults.

Comparisons with Prior Results

This baseline survey was the first comprehensive subsistence harvest survey conducted by ADF&G in Napaskiak; however, some ethnographic information and subsistence harvest data have been collected in Napaskiak throughout the years**.** During 1955 and 1956, Oswalt (1957) conducted an in-depth ethnographic study and ethnobotanical overview for Napaskiak. Migratory bird harvests have been documented annually by the Alaska Migratory Bird Co-Management Council (AMBCC) since 2004, and results are available from the years 2004–2009 (Naves 2011). These harvests, however, are reported on a sub-regional level, and community specific figures are not available. Klein (1966) included Napaskiak in his study "Waterfowl in the Economy of the Eskimos on the Yukon–Kuskokwim Delta, Alaska." A harvest study conducted by the Association of Village Council Presidents (Hensel 1993) reported a brown bear harvest of 0 for the year 1992. The brown bear harvest for 2011 was also 0. In addition to the above studies, ADF&G has conducted subsistence salmon surveys in Napaskiak in most years from 1989 to 2011.

Oswalt's (1957) study provides an excellent opportunity to compare plant use information for Napaskiak over time. Oswalt (1957) noted that the residents of Napaskiak had long used plants as food, medicine, ceremonial ingredients, and raw material for manufacture. He found that plants used as food were generally prepared in 5 different ways: eaten raw, dried, boiled, eaten with seal oil, and brewed for tea. Willow and fireweed leaves, berries, and rose hips were eaten raw. Two lichens, shield lichen and curled shield lichen, were used as flavorings. Eight different plant stems or leaves were boiled and then added to soups or stews of meat or fish. Dried fireweed leaves were used to make tea. Sour dock was eaten with seal oil. Oswalt (1957) states that at the time of his study the salmonberry was the most important plant used for food. These berries were eaten raw or used to make *akutaq* (i.e., Eskimo ice-cream). Akutaq was made using salmonberries, seal oil, commercial lard, sugar, boiled fish, and greens such as sour dock, horsetail, mare's tail, or woodfern according to the season. Other plants used as food included: alpine bearberry, crowberries, false-chamomile,

marsh marigold, marsh cress, wild rose, nagoonberries, blueberries, dandelion, cranberries, wild celery, cotton grass, and Labrador tea (Oswalt 1957). Oswalt (1957:35) estimated that 5% to 10% of the diet in Napaskiak consisted of plants; however, it is not clear what metric he used to arrive at this percentage. In 2011 edible plants made up less than 1% of the diet by weight.

According to Oswalt (1957), other plants, including trees, had a variety of uses as fuel and raw material for manufacturing. The most common trees used for firewood was spruce and alder. The most common tree used for smoking fish was cottonwood. Artifacts made from wood included handles for such items as chisels, saws, wood planes, and crooked knives. Spruce was the preferred wood for making wooden items, although cottonwood was used as well. Woven materials such as mats, sacks, and socks were made from sedges, while grasses were used for boot insoles. Other plants used for fuel or manufacturing were: birch, tall cotton grass, sphagnum moss, and nettle.

In addition to being used as food, fuel, and for manufacture, plants had a variety of other uses for the residents of Napaskiak. Several types of plants were used for their medicinal properties. Plants that were used as medicines were either used raw as a poultice or were cooked in water and consumed as a drink. Types of plants used as medicine included: Arctic kidney lichen, willow, tall cotton grass, wormwood (also known as stinkweed), white spruce, Labrador tea, false chamomile, and sour dock (Oswalt 1957). Oswalt (1957) discusses only 2 plants that had ceremonial uses: wild celery used in purifying rituals, and Labrador tea used to cleanse children of sickness and to ward off ghosts. Additional uses for plants included using wormwood and false chamomile in sweat baths as aromatic cleansing agents (Oswalt 1957; Lantis 1959).

Salmonberries were the most used edible plant in both Oswalt's study and by Napaskiak households in 2011. Plants used in 2011 but not mentioned in Oswalt's study were punk fungus (used as a tobacco additive), wild rhubarb, fiddlehead ferns (possibly woodfern), and mint. Plants that were used during Oswalt's study year that were not used in 2011 were false chamomile, marsh marigold, marsh cress, horsetail, mare's tail, dandelion, cotton grass, lichens, woodfern, nettles, and bearberry. It must be noted that none of the above plants were listed as examples on the survey questionnaire in 2011, and this may or may not have played a role in how respondents answered the question "Do you or members of your household use or try to pick greens for subsistence?" However, both cotton grass and horsetail may be considered mouse foods, and while these were not listed independently on the survey, the overall category of mouse foods (See "Comprehensive Survey Results Napakiak, 2011" for description of "mouse foods") was listed, garnering 2% harvest and 2% usage by Napaskiak households in 2011.

Klein (1966) presents a point of comparison in bird species harvests between the years 1964 and 2011. Taking community population differences of the 2 different years into account, an overall shift in focus of certain bird species has occurred since Klein's (1966) study and 2011. The Kuskokwim River corridor is an important flyway for migrating birds, and the Yukon–Kuskokwim delta is an essential nesting and rearing area for many birds, including geese and ducks. In 1964, the total goose harvest for Napaskiak was 1,225 with the main focus on Canada geese. In 2011 the total goose harvest was 2,338 individuals, with the majority being white-fronted geese rather than Canada geese. In 1964, for both the spring and the fall, northern pintail

was the most harvested duck species. The most commonly harvested duck species in 2011 were scaup and black scoter. Northern pintails were sixth in harvest rate of ducks in 2011. Napaskiak has also seen a change in the harvest of sandhill cranes and swans between the years 1964 and 2011. The total harvest of sandhill cranes in 1964 was 6. In 2011 the total harvest of sandhill cranes was 91. Sandhill cranes were targeted and harvested to a much greater (approximately 7 times more) degree in 2011 compared to 1964. This increase in the harvest and use of sandhill crane was also observed in the nearby community of Napakiak for the year 2011. The total number of swans harvested in 1964 was 70, compared to 58 in 2011. This equates to a per capita harvest of swans in 1964 approximately 3 times that of 2011.

Klein (1966) describes a common communal waterfowl hunting practice at the time of his 1964 study. This traditional method for taking waterfowl was through the use of bird drives. The drives took place during early summer in the lake system to the south of Napaskiak where molting adult birds and flightless juvenile birds gathered in abundance. Using boats and kayaks, people would drive large flocks of flightless birds into fish nets or toward a line of people with clubs on shore. Traditionally, some Kuskokwim River villages conducted at least 1 drive per year per village. In the Kuskokwim River region, residents practiced bird drives near villages along the coast to as far inland as the middle Kuskokwim River area. During the bird drive of 1961 Napaskiak residents harvested 1,400 birds. The last recorded bird drive for Napaskiak occurred in 1963. Although Klein (1966) states that the 1963 Napaskiak bird drive (and a few coastal bird drives) were the last bird drives in the Kuskokwim and Yukon–Kuskokwim Delta areas, Morrow (1992) offers an interesting and detailed description of a communal duck drive conducted by Yup'ik Eskimos on Big Lake west of Bethel that she observed in the 1980s. Federal regulations prohibit the use of "any type of vehicle, aircraft, or boat to concentrate, drive, rally, or stir up any migratory birds; however, boats may be used to position a hunter" (50 CFR §92.20). It is unclear whether migratory bird drives continue into the present day.

In an overall assessment of Napaskiak's food ways over time, Oswalt (1978) states that in 1956 the food habits of the community at that time reflected a greater continuity with the past than did material culture. Salmon continued to be the most important staple in nearly all households. According to Oswalt, "The aboriginal processing techniques persisted; that is, fish were dried and smoked or might be buried whole." He also noted, "The principal means of cooking salmon was still by boiling, and dried salmon continued to be stripped from the skin in pieces, and dipped into seal oil before eating" (Oswalt 1978:132). This importance of salmon to the people of Napaskiak, and the traditional processing techniques for salmon, continue to this day.

In addition to Oswalt's (1957) ethnobotany study and Klein's (1966) bird harvest study, ADF&G Subsistence Division conducted postseason subsistence salmon surveys in Napaskiak between 1990 and 2008. Since 2008, ADF&G Division of Commercial Fisheries has administered that survey. Salmon harvest numbers vary from year to year for a variety of reasons including environmental conditions, salmon population fluctuations, natural cycles in returns of spawning salmon, and regulatory changes. Figure 5-28 shows estimated Napaskiak salmon harvest numbers between 1990 and 2011. This figure shows 2 data points for 2011; 1 represents the harvest estimated by the annual postseason survey conducted by the Division of Com-

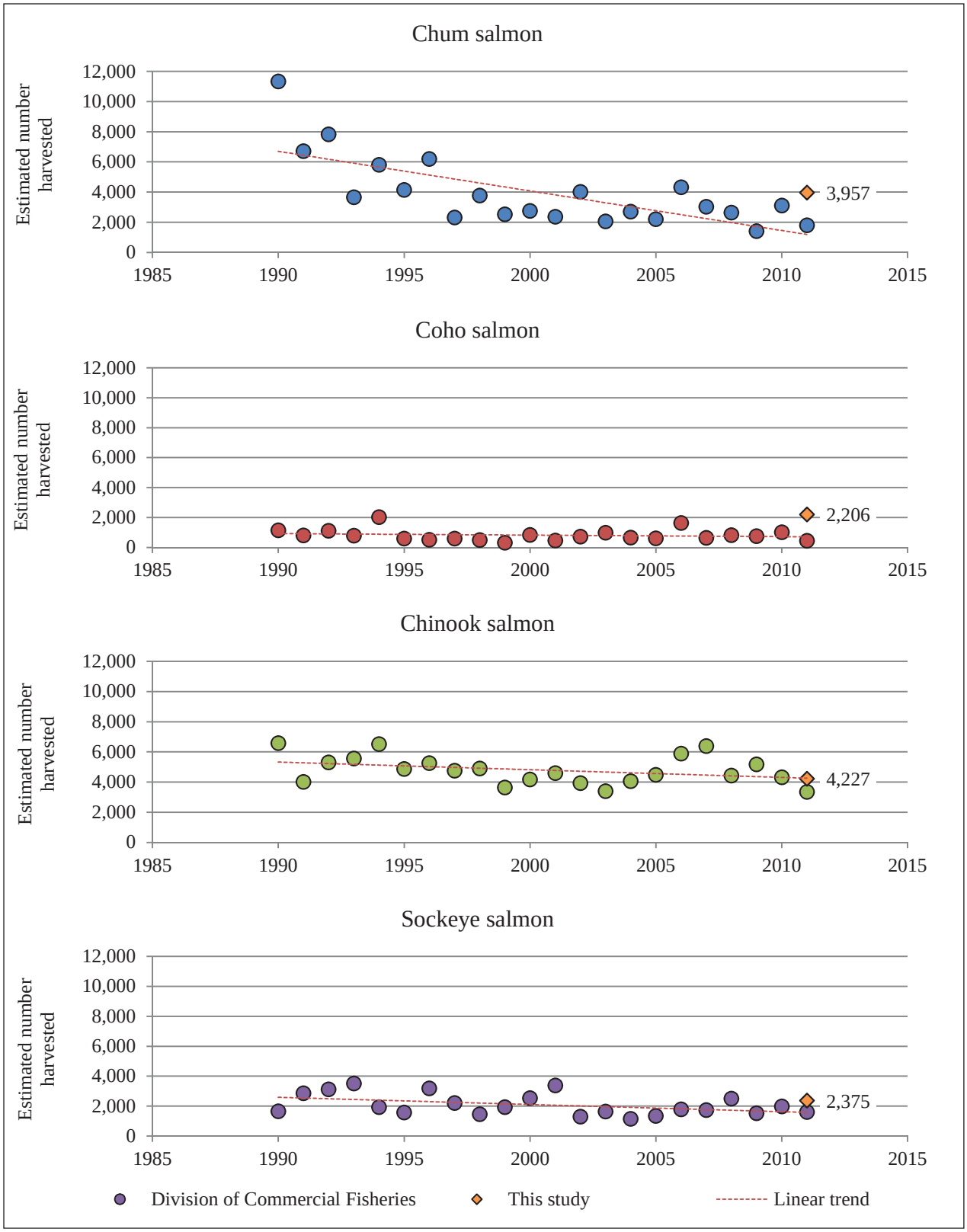


Figure 5-28.–Estimated total number of chum, coho, Chinook, and sockeye salmon harvested by residents, Napaskiak, 1990–2011.

mercial Fisheries and the other represents the data gathered in this survey. The data trend line for Chinook salmon shows a trend of slightly decreasing harvests. This trend is consistent with observations of long-term Napaskiak residents as to the declining abundance of Chinook salmon. This study's estimate of the 2011 Chinook salmon harvest for Napaskiak was 4,227 fish (± 19% confidence limit). The ADF&G Division of Commercial Fisheries conducted an annual post season subsistence harvest survey for 2011 which estimated that Napaskiak fishers harvested 3,360 Chinook salmon[5]. This report's estimate is the lowest harvest since 2005 (4,485). While there has been some fluctuation over the years, the Chinook salmon harvest has not regained the 1990 harvest level of 6,586 fish. The trend line for chum salmon data also shows a trend of decreasing harvests. The highest harvest during the years 1990 to 2011 was in 1990 with a total of 11,334 chum salmon. The next highest harvest of chum was 7,817 in 1992. Chum salmon harvests have not risen above 6,000 since 1996. A typical harvest of chum salmon in recent years has been between 2,000 and 4,000 fish. This study's estimate of the 2011 chum salmon harvest for Napaskiak was 3,957 fish. The ADF&G Division of Commercial Fisheries conducted an annual post season subsistence harvest survey for 2011, which estimated that Napaskiak fishers harvested 1,783 chum salmon. The trend line for sockeye salmon shows a steady trend with slight fluctuation in more recent years. The trend line for coho salmon shows a trend of slightly decreasing harvests. However, the 2010 and 2011 harvests were higher than average. The 2011 harvest of coho salmon was the highest of the 1990 to 2011 recording period. One reason for this recent increase may reflect a more concerted effort to harvest coho salmon as replacement food in light of declining Chinook harvests. This study's estimate of the 2011 coho salmon harvest for Napaskiak was 2,206 fish. The ADF&G Division of Commercial Fisheries conducted an annual post season subsistence harvest survey for 2011 which estimated that Napaskiak fishers harvested 471 coho salmon.

Regulatory Concerns

Napaskiak residents continue to struggle with maintaining their cultural practices and providing for their families while trying to follow federal and state regulations concerning hunting and fishing. Several respondents voiced concerns about how these two perspectives currently co-exist. Concerning salmon fishing closures one respondent said:

> You know, Fish and Game…some years it's just… the year they introduced, "we are closing the river for 3 days and then open for 3 days…" that's no good. I usually go out on 1 tide and you know, 1 tide is good for me. But, when they start doing these closures… I went out on 1 tide and catch the other one 12 hours later…it overworks my aunt [who has to cut and put up the fish], it overworks me. We never overharvest; we never do. There is always… they [fish] always pass by… they [officials] say it's [fish count] low some years yeah, it is low, but we are not the only people catching them [fish] you know. It's the commercial out there [ocean] that is catching them. We

5. The differences in harvest amounts of subsistence-caught salmon between data from this study and data from the Division of Commercial Fisheries 2011 survey presented in this section are likely the result of differences in survey methodology, as well as variations in sample sizes and sample composition.

> don’t overharvest; we catch what we need. But the closures, they really hurt us you know. I mean people complain; yeah, everybody complains about the closures, and there are people being fined if they leave their net out there. They don’t have the money to pay for their fines you know. They [officials] will fine you a good $300. I mean, do you see elders out here with $300 in their pockets? Not really. Many people out here are living on a day to day basis…from one paycheck to the next paycheck. For those families that are struggling, it’s hard on them (04212012NAP1).

Conclusion

Findings from the household survey show that Napaskiak residents harvested and used a wide variety of wild resources in 2011. Households harvested and used both inland and marine subsistence resources either through direct harvest, or through sharing networks within the community, and with other communities near the coast and elsewhere. Napaskiak residents invested a great deal of time, effort, and money in harvesting fish (salmon and nonsalmon), large and small land mammals, marine mammals, birds and eggs, and vegetation. Fish (both salmon and nonsalmon combined) was the most harvested and used of the above resource categories. Chinook salmon was the most harvested and used of any single species. Comparison with prior studies of the area shows a continued reliance on salmon species, particularly Chinook salmon, over time. Some households viewed shifts in resource focus and harvest effort for certain species of birds and vegetation types over the years as adaptations to environmental change (i.e., climate change and natural cyclical changes) and changes in cultural uses of these species. Napaskiak residents continue to adapt to changes to their environment as they try to reconcile the need to comply with federal and state hunting and fishing regulations with the need to provide subsistence foods and cultural continuity for their families.

Chapter 6: Comprehensive Survey Results Nikolai, 2011

Andrew R. Brenner

In January 2012, researchers surveyed 26 of 39 households (67%) in Nikolai. The surveyed households reported harvesting 38,945 edible pounds of wild food between January and December 2011. Expanding for 13 unsurveyed households, Nikolai's estimated total harvest of wild foods in 2011 was 58,416 lb (±27%). The average harvest per household was 1,498 lb; the average harvest per person was 499 lb.

Moose, 7 species of fish, black bear, and beaver made up the top 10 resources and represented 89% of all harvested wild foods by edible weight (Figure 6-1). The estimated harvest of 42 moose represented the largest percentage (47%) of Nikolai's annual wild food harvest, contributing more than any other individual resource or resource category by edible weight (27,300 lb). Fish of all species formed a large percentage (41%) of the total wild food harvest. Seven fish species formed the majority of the fish harvest by edible weight, with estimated harvests of 1,143 individual Chinook salmon, 579 northern pike, 416 coho salmon, 381 sheefish, 339 chum salmon, 842 humpback whitefish, and 512 Bering cisco. Harvests of an estimated 21 individual black bears and 71 beavers also contributed a substantial amount of food to the overall harvest.

This chapter summarizes findings from the household surveys, including demographic characteristics, responses to harvest assessment questions, harvest estimates, reported employment and income, wild food networks, and responses to food security questions.

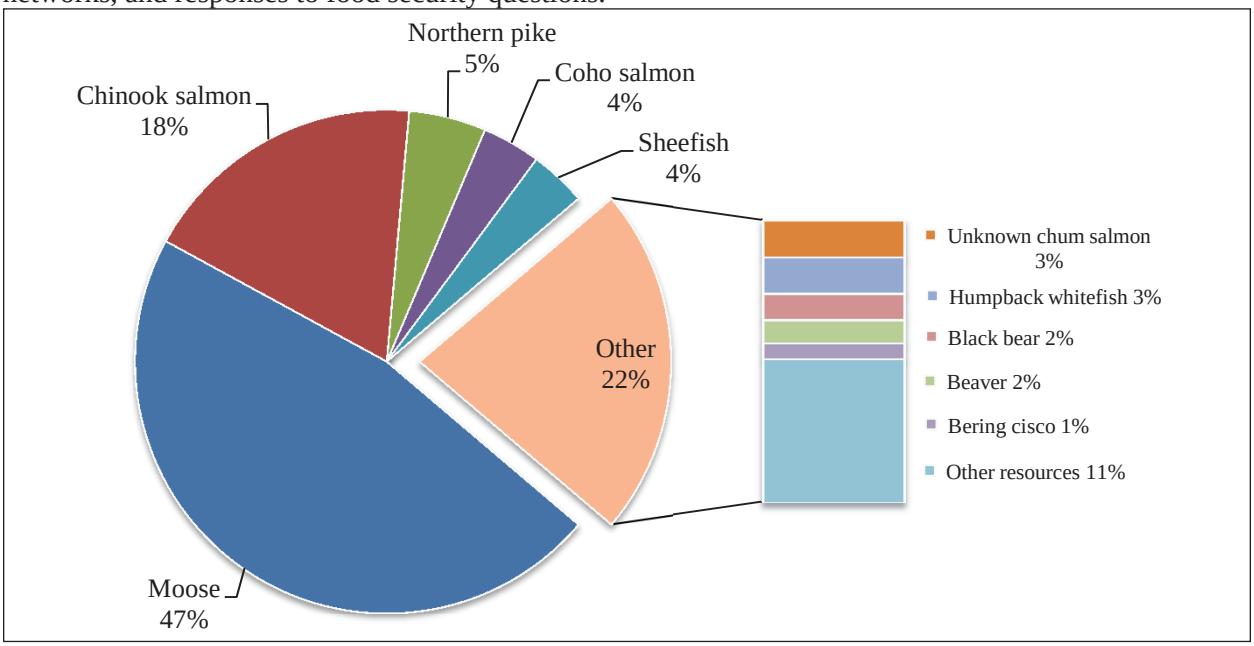


Figure 6-1.–Top 10 species harvests ranked by estimated edible weight, Nikolai, 2011.

In addition to surveys, ADF&G staff conducted 7 ethnographic interviews with respondents who were knowledgeable about subsistence harvest and use patterns in Nikolai. Seven men and 2 women, ranging in age from 49 to 93 years, were asked about their past and current subsistence practices, including species targeted, gear type, timing of harvest, intergenerational transmission of knowledge, distribution and sharing, processing and preservation, and use areas. They were also asked about changes over their lifetimes to their own household's and community's subsistence practices, fish and game populations, and the environment.

About Nikolai

Nikolai, also known as Edzeno' Nikolai, is located in Interior Alaska on the South Fork of the Kuskokwim River, about 46 air miles east of McGrath. The community is named after one of its founding residents, Chief Nikolai, who lived in the late 19th and early 20th centuries (Collins 2004:116); edzeno' is an Upper Kuskokwim Athabaskan word meaning "place by the river" (Holen et al. 2006:66). Nikolai is a relatively small community with a population of around 100,[1] and nearby McGrath (population 346) functions as the nearest regional hub. Incorporated as a second class city in 1970, community services are provided by a school, health clinic, and volunteer emergency services. Homes receive water from individual wells and are either connected to a community sewage system or use septic tanks. Electricity is provided by a local utility, Nikolai Light and Power Utility. Fuel and heavy equipment may be shipped into the community via barge, and groceries and other supplies arrive year-round by air. Nikolai is not a road system community and can be reached only by air, river, or winter trails that enable snowmachine travel to the nearby community of McGrath (Figure 6-2).

Nikolai lies within the upper Kuskokwim River region, a broad glacial basin bordered by the Kuskokwim Mountains and the Alaska Range (Stokes 1985). A continental climate ranging from 60 to 90 degrees F, a network of numerous rivers and lakes with interspersed black spruce forest, marshy tundra, and riparian white spruce and balsam poplar forest are typical of the region (Holen et al. 2006). Nikolai has relocated at least twice since the 1880s, primarily due to extensive erosion of riverbanks which is common in this region. The community has been in its current location since 1918.

The majority (>90%) of Nikolai residents are Alaska Native, primarily of Upper Kuskokwim Athabascan (Dichinanek' Hwt'ana) descent. A number of residents are members of or have genealogical and social ties to other cultural groups within and outside of Alaska, especially neighboring Athabascan, Middle Kuskokwim Yup'ik, and Euro–American peoples (Holen et al. 2006).

The upper Kuskokwim River region has passed through several historical periods which have contributed to the nature of current subsistence hunting and fishing in Nikolai. The pre-contact period, prior to the 1830s, can be described from limited archeological data as well as locally maintained oral histories. Although relatively little is known about the ancient prehistory of the area in the immediate vicinity of Nikolai, nearby

1. Alaska Department of Commerce, Community, and Economic Development (ADCCED) Division of Community and Regional Affairs, Juneau: "Alaska Community Database Online: Community Information." Accessed August 2013. http://commerce.alaska.gov/cra/DCRAExternal/community.

Photo by Chad Cook

Figure 6-2.–Alaska Range as seen from Nikolai in January.

archeological evidence indicates that the area has been occupied by humans of various cultural groups for over 10,000 years (Saleeby 2010:125; Bever 2001:156). While indigenous Upper Kuskokwim residents' first direct contact with Europeans occurred around the 1830s as Russian fur traders traveled into the upper Kuskokwim River region, residents of this region had probably been indirect participants in Russian trade markets for some time before this (Stokes 1985:22). A trading post was established at Vinasale (twenty miles downriver of McGrath) by 1850 (Oswalt 1980), and trade between Russians and local residents took place primarily at this trading center, with few Russians traveling upstream of McGrath's current location.

Following the American purchase of Alaska in 1867, Euro–American contact with the people of the upper Kuskokwim River gradually increased. The Spurr expedition first documented the seasonal community of Nikolai in 1898, located then at the confluence of the Little Tonzona and South Fork Kuskokwim Rivers (Brown 1983:159–160). At the time, many Upper Kuskokwim residents had a relatively nomadic hunting, fishing, and trapping way of life (Collins 2004:101), and Nikolai was still primarily a seasonal community. After significant gold discoveries in the Innoko River drainage in 1906, mining opportunities in the Upper Kuskokwim led to a large influx of American prospectors who required relatively large quantities of food for themselves and their dog teams. Local residents supplied this increased demand with game meat and fish, an effort furthered by the adoption of highly efficient fish wheels in upriver communities by 1918 (Schneider 1985:12). Mining intensity in the region decreased with the onset of World War II and the need for heavy equipment elsewhere in Alaska in support of the war effort (Stokes 1985; Collins 2004). A permanent school was established in Nikolai in 1948, a post office in 1949, and an airstrip in 1963.[2]

2. Alaska Department of Commerce, Community, and Economic Development (ADCCED) Division of Community and Regional Affairs, Juneau: "Alaska Community Database Online: Community Information." Accessed August 2013. http://commerce.alaska.gov/cra/DCRAExternal/community.

Seasonal Round

Residents of Nikolai follow patterns of hunting, fishing, and gathering wild foods that reflect the seasonal availability of subsistence resources in the upper Kuskokwim River region. Such seasonal patterns developed long before the earliest memories of current Nikolai residents, and many have persisted into the present. These patterns have regularly been adapted to economic, environmental, regulatory, sociocultural, and technological changes. To contextualize the subsistence harvest and use patterns of Nikolai residents in 2011, the following section provides an overview of the historical seasonal pattern of hunting and fishing practiced by Nikolai residents, as well as a brief discussion of changes to this pattern that have occurred in recent decades.

Information about the seasonal patterns of subsistence hunting, fishing, and gathering prior to 1960 in the upper Kuskokwim River region draws from historical and archeological sources, previous research in the area, and oral history provided by Nikolai residents in 2012. The Upper Kuskokwim Athabascan people historically occupied and still use much of an area encompassing approximately 22,000 square miles (Hosley 1966:6), with a territory ranging roughly from the mouth of Stony River on the Kuskokwim River northeast to Lake Minchumina and extending north and south into the surrounding mountains. Much of this large area was and still is used for hunting and fishing, as resources in the region are often widely dispersed relative to other areas of the state (Collins 2004:11).

The general pattern of subsistence in the area at the time of the first Russian exploration in the area in the mid-1800s likely involved a small nomadic population (less than 300 people in total) that traveled in small groups throughout the year, with travel heavily influenced by seasonal concentrations of caribou, sheep, salmon, and whitefish, and the majority of time spent in upland areas rather than river lowlands (Hosley 1966). Nikolai residents in 2011 were knowledgeable about this semi-nomadic subsistence pattern:

> They'd travel all the time. They couldn't stay in one spot because they were highly mobile. They wouldn't use one drainage to get all the sheep or caribou; they knew better than that. So they'd get as much as they can and then they'd make a *dwhk'a*[3], which is a cache. (012713NIK3)

In the early time period, small groups or bands of area residents occupied separate territories along major tributaries of the Kuskokwim River, most of which extend into the Alaska Range (Collins 2004:13). Each tributary provided a diverse environment extending from the river lowlands to the highlands of the Alaska Range, and groups traveled seasonally throughout individual territories based on availability of wild food resources at different times of year. During spring and early summer, most people would travel to specific locations at lower elevations to harvest fish including king salmon and whitefish. Other animals such as moose, muskrat, black bear, beaver, and waterfowl would also be harvested during this time as well:

3. Upper Kuskokwim Athabascan spelling from Collins and Petruska (1979).

> And then they'd go to fish camp and then the diet changed basically; they'd fish through the summer, but they'd get tired of eating fish, and again they'd send one of the young men out and they'd get a moose and pass the meat out around to all the camps there and eat it up again. (040312MCG2)

While fish have probably always been an important part of the diet for area residents, it is likely that an increased use of sled dogs corresponding with the development of the fur trade in the mid-19th to mid-20th centuries resulted in an increased emphasis on summer salmon fishing for dog food, a trend noted for other areas of Interior Alaska during this time period (Andersen 1992). Once fish were dried for winter use, small groups typically traveled into the mountains of the Alaska Range for the remainder of the summer to hunt for moose, bear, caribou, and sheep. Fish available during later summer (such as coho salmon), small land animals (including porcupine, ground squirrels, and beaver) and plants including berries and edible roots (*tsosr*, or "wild carrots" [4]) were also important food resources that were harvested in the Alaska Range during summer and early fall. After harvesting and drying meat, people built skin-on-frame boats with the hides of caribou or moose that had been harvested, and traveled downriver with the meat to one of several winter camps. Nineteenth century residents of the upper Kuskokwim River region relied primarily on caribou, bear, and sheep that were hunted over a large area in and around the Alaska Range, as moose were generally absent in the area until the early 20th century. "That time I was born around Nixon Fork (1920s), there was no moose in this area at that time. No moose. Only, I remember only caribou. And black bear" (012812NIK2). By the beginning of the 20th century moose began to increase in abundance in the region (Collins 2004:132–133). Nikolai residents in 2012 discussed this major change in the subsistence resource base that occurred nearly a century ago:

> There used to be more caribou around here than moose. In fact, they said the first time my grandpa [hunted a moose], they tracked a moose for about a week up there in the mountains. They got it, the first time they saw a moose. Then they, my grandpa said, they skinned it out and then, he was a little kid at the time, he said "I guess we'll try the moose meat even if we die from it." He told his dad. And then his dad laughed, and he said, "It's food," so they tried it, and he said, "I'll die with you even so." (N012712NIK3)

While at first residents were unfamiliar with moose, it gradually became a staple food resource in the area, both in the river lowlands and in the foothills of the Alaska Range. With the increase in moose in the area, moose hunting became the major fall subsistence activity, and families would often disperse throughout the region for fall moose hunting. Moose hunting would also continue to a lesser extent throughout the remainder of the year.

After freezeup in the fall, some area residents traveled back into the mountains to hunt caribou, moose, and sheep, and returned to the winter village with meat. As winter progressed, some families traveled to trapline cabins throughout the region to harvest marten, lynx, wolf, and wolverine, particularly as the fur trade developed, and outside trade goods became increasingly available throughout the first half of the 20th

4. Scientific name: *Hedysarum alpinum.*

century. Beginning in February, families typically focused their efforts on harvesting beaver, which provided both a valuable mid-winter food resource and a profitable trade good. In early spring, some families moved to spring camps to harvest muskrats. In later spring they harvested nonsalmon fish species and often hunted a few moose. In April, migratory waterfowl migrate through the area around Nikolai, and area residents have long hunted these birds for a brief period in the spring before nesting begins. Several Nikolai residents in 2012 described that in the past migratory birds were harvested in larger quantities than in recent decades and with different gear such as traps and .22 rifles that waterfowl hunters do not use currently.

Recent Changes in the Seasonal Round

Several socio-economic and environmental changes in the second half of the 20th century, including the introduction of a school in Nikolai, increasingly available employment opportunities, the adoption of new technology related to subsistence, and increasing external regulation of hunting and fishing, influenced changes in the typical seasonal round of Nikolai residents. In general, changes in the seasonal round in the second half of the 20th century included a transition from a semi-nomadic seasonal pattern of hunting and fishing to a pattern of basing subsistence activities out of Nikolai, a decrease in the harvest of salmon used for dog food and correspondingly less time spent at summer fish camps, and a transition to fall moose and bear hunting forming the primary big game harvest activity rather than a mixture of moose, caribou, bear, and sheep hunted throughout the year.

The establishment of a school in Nikolai in the mid-20th century led to the dissolution of several smaller winter communities in the area and consolidation of area residents in Nikolai. This in turn led to increasing permanent residency in Nikolai and reduced seasonal movement of families during the winter months for subsistence resources. One former Nikolai resident summarized the effect the establishment of a school had on area residents' seasonal subsistence activities:

> And at times people were scattered too, they weren't all in Nikolai until school started there which was in the late 50s, before school started. And then they had to move in with their families. Before that some of them lived at Big River and other places. So that was another major change, when the school opened and the school became a part of their life. Then they had to keep their families in Nikolai. Before that they were dispersed throughout the area, and they'd come together at Christmas is all, for the holidays and visiting and so on, church activities. (040312MCG2)

Nikolai residents constructed the first school in Nikolai in 1948 (Collins 2004:102), and families with school age children who had formerly lived during the winter in several different locations (Big River, Slow Fork Kuskokwim River, Tonzona River, Telida, and Vinasale) moved to Nikolai and maintained winter residence there. This altered trapping activities throughout the winter, as families with children no longer lived along traplines. Men continued trapping, either alone or in small groups, and often based their activities out of Nikolai. The spring time seasonal pattern also changed, as families with children no longer traveled to

beaver trapping camps with their children who were attending school (Collins 2004:110). After the school was established, families generally dispersed to seasonal fishing camps at the end of the school year, as large quantities of salmon were needed to feed not only the families themselves but also dogs that provided the major form of winter transportation for much of the 20th century. While the seasonal movement of families to fishing camps continues to some extent in the present, the introduction and rapid adoption of snowmachines beginning in the 1960s led to decreasing use of dog teams for transportation and related declines in seasonal use of fish camps. As a result, the decreasing reliance on dog teams as the primary means of winter transportation led to a decrease in the need for large quantities of chum salmon that were used for dog food. Correspondingly, families that formerly stayed at salmon fishing camps throughout the summer gradually shifted to staying shorter periods at fish camp to secure salmon (primarily Chinook salmon) for human use.

> By ’68 every family at least had access to a snowmachine; they didn’t always have them, but most of the time they at least had one of their own. It became much easier to haul wood with those. And then they started using them on the trapline. There were a number of reasons for that change. One of the transition, changes, was that they wanted to work in the summer, like go firefighting and so on, but if the men went out on the fire, then the women had to both check the fish wheel, cut the fish, put up the fish, take care of all of those activities because the men were gone. It was quite a chore, uh, for them to do all of that activity. Whereas if they had a snow machine, they’d only need to put up some for eating,[and] fish for eating in the summer, instead of putting them up for dog team as well. (040312MCG2)

While in recent years some families still spend several weeks at salmon fishing camps from late June until mid-July to harvest Chinook salmon and some chum salmon, other families fish from a home base in the community and do not travel to salmon fishing camps or go to fish camps only for brief periods.

Fall season subsistence activities in Nikolai in recent years have primarily centered on moose and to a lesser extent black bear hunting. While in past decades residents often harvested other large land mammals during fall months including caribou and Dall sheep, in recent years moose and black bear are virtually the only large land mammals regularly harvested. Residents described that this reduction in the diversity of large land mammals harvested likely reflects a combination of changes in resource abundance, hunting regulations, and socioeconomic conditions including difficult access to distant locations such as the Alaska Range due to high fuel costs.

Demographics

The 26 surveyed households included 78 people. The estimated total population from this study in 2011 is 117 people, including 71 males (60%) and 47 females (40%) (Figure 6-3). Household sizes ranged from 1 to 9 people, with an average of 3 people per household (Appendix Table D1-2). The average age was 36.7 years, and the oldest surveyed person was 83 at the time of data collection. Approximately 107 residents

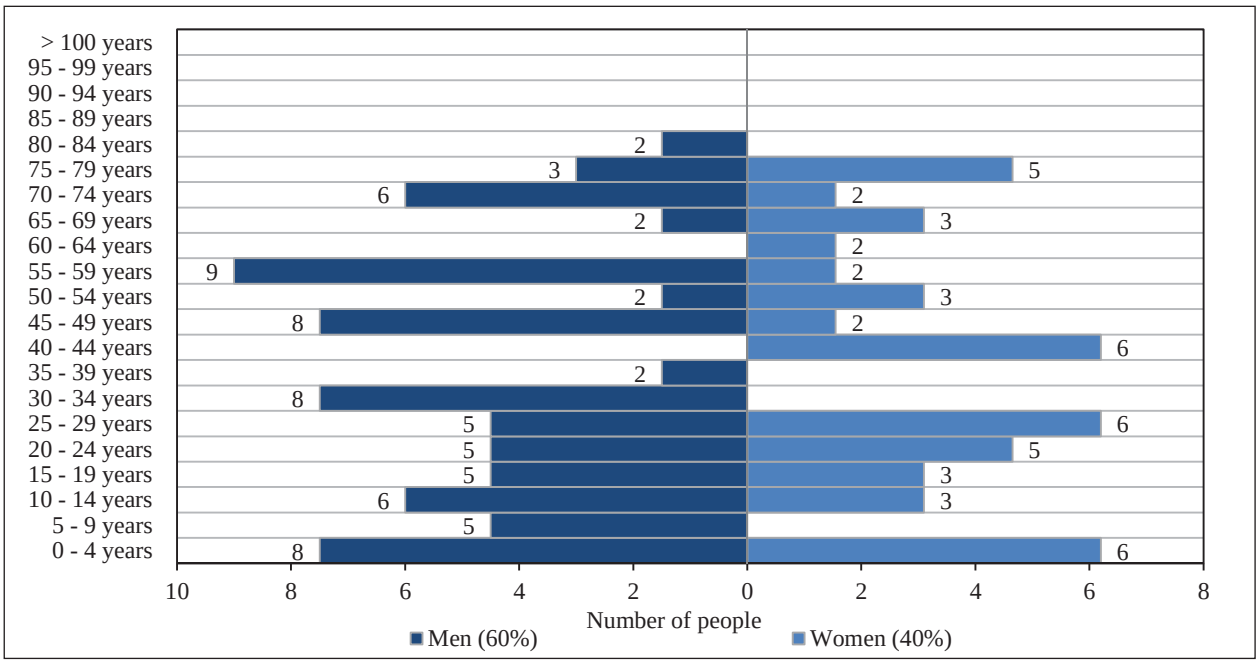


Figure 6-3.–Population profile, Nikolai, 2011.

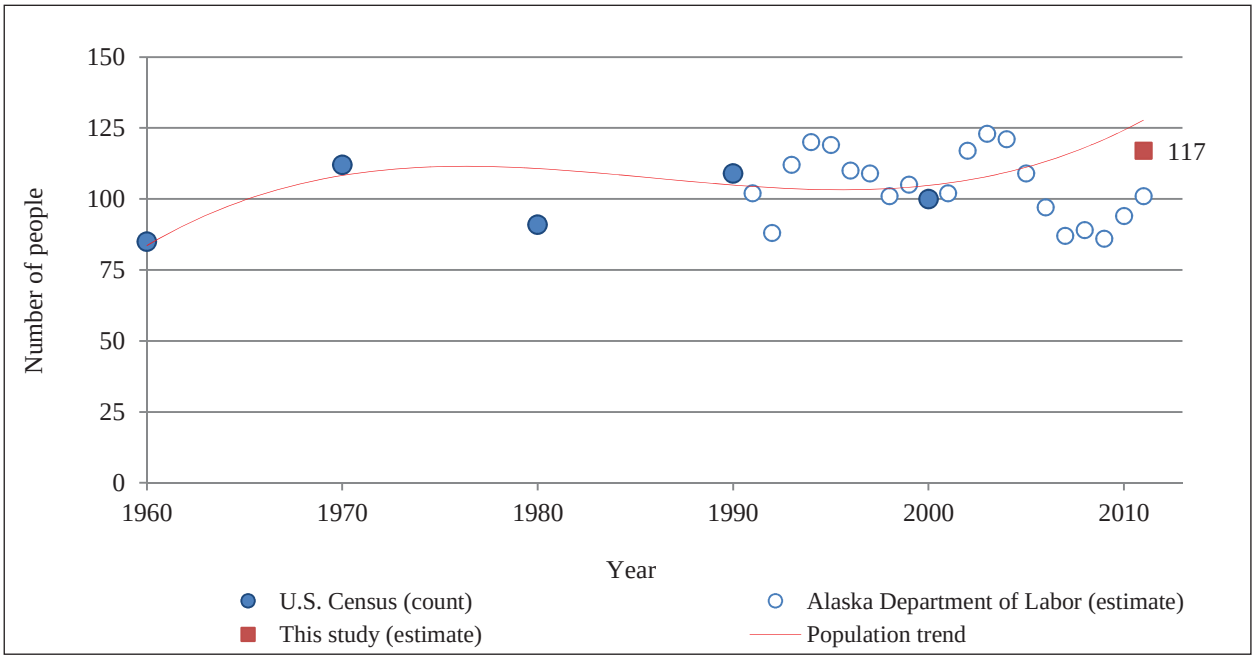


Figure 6-4.–Population history, Nikolai, 2011.

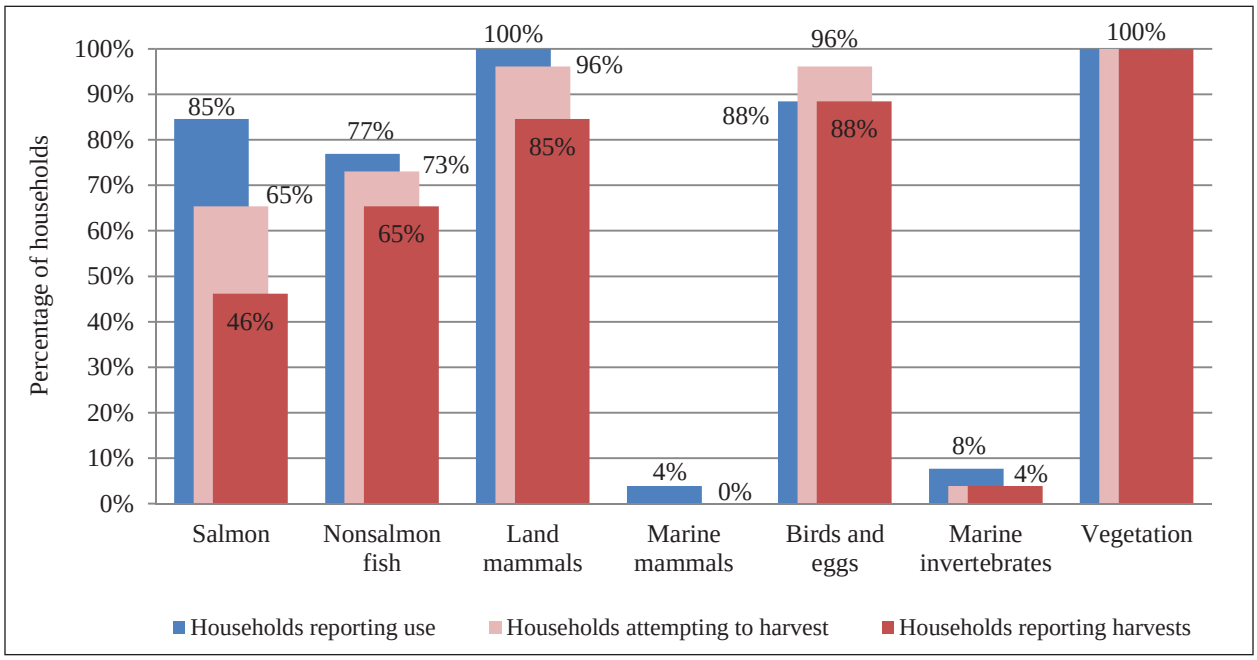


Figure 6-5.–Percentages of households using, attempting to harvest, or harvesting subsistence resources by category, Nikolai, 2011.

(91%) were Alaska Native, and 96% of households had at least 1 head of household who was Alaska Native. On average, residents had lived in Nikolai for 31 years. The survey asked for the name of each household member's birth community (defined as an individual's parents' residence at time of birth). The majority (83%) of household heads reported Nikolai as their birth community, and all remaining household heads (17%) were born in other areas of the United States outside of Alaska (Appendix Table D1-1). Nikolai's population has remained fairly stable over the past 50 years, ranging between 88 and 122 individuals (Figure 6-4).

Wild Food Uses and Harvests

The primary purpose of the household survey was to collect information about the harvest and uses of edible wild foods. Respondents were asked whether their household used or tried to harvest each resource during the study year. If they attempted to harvest a resource, they were asked how much they harvested and for other details of the harvest, such as gear type, sex of the animal, or month of harvest.

Tables and figures in this section summarize responses to the harvest questions expanded for unsurveyed households. Every household in Nikolai (100%) reported using and harvesting subsistence resources in 2011. The most widely used resources in this community were land mammals and vegetation (100% of households reported use), followed by birds and eggs (88%), salmon (85%), and nonsalmon fish (77%). Few households reported the use of marine invertebrates (8%) or marine mammals (4%). (Figure 6-5)

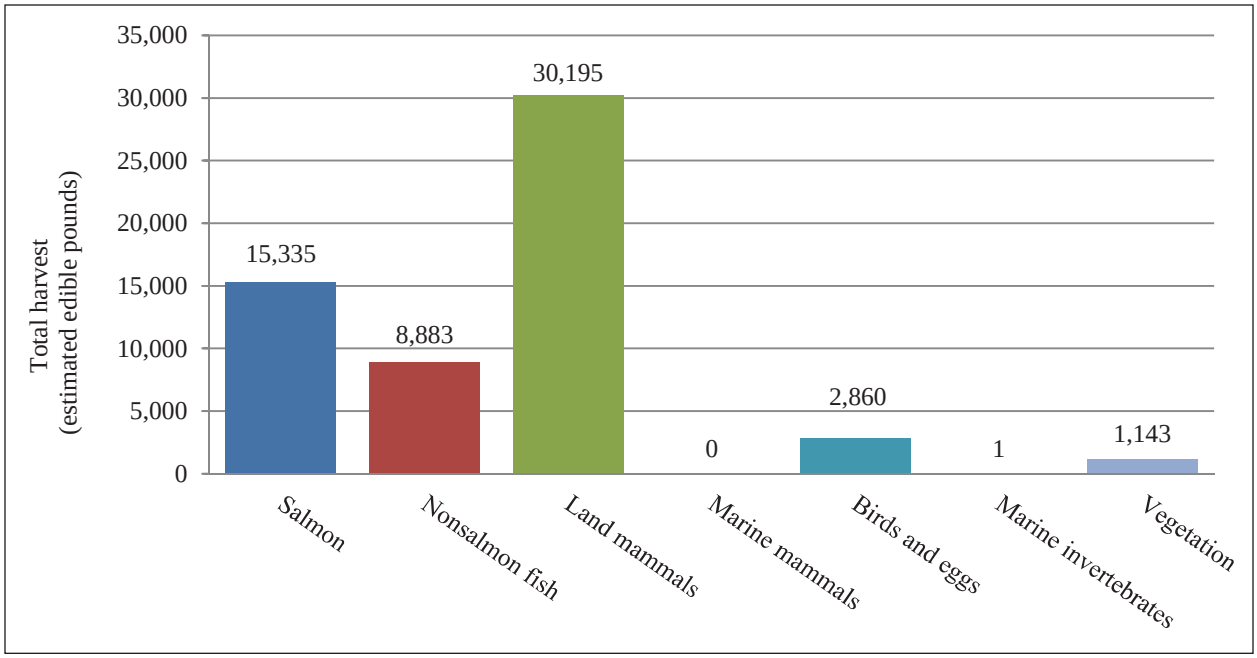


Figure 6-6.–Total estimated edible pounds harvested by the community by resource category, Nikolai, 2011.

Nikolai households used an average of 19 and attempted to harvest 21 different wild food resources during the study year. The fewest number of wild food resources that any household attempted to harvest was 4, while the maximum number of resources that any one household reported attempting to harvest was 53. On average, households actually harvested 15 subsistence resources with harvests by various households ranging from 2 to 48 resources (Appendix Table D5-1).

Land mammals formed the majority of Nikolai's subsistence harvest in 2011 (Figure 6-6), constituting an estimated 52% of all wild foods harvested by edible weight. All households (100%) reported using, and most (85%) reported harvesting land mammal species during 2011 (Table 6-1). Large land mammals, especially moose, represented the bulk of land mammal harvests. An estimated 42 individual moose represented 27,300 edible pounds that composed 90% of the land mammal harvest by edible weight. Other large land mammals harvested in 2011 include 21 individual black bears, 3 brown bears, and 2 caribou. Fifteen percent of households reported using Dall sheep in 2011, all of which was received from other households. Although 12% of households attempted to harvest Dall sheep in 2011, none were able to actually harvest Dall sheep.

Appendix Table D5-3 provides information on the harvest of large land mammals by month and sex. The large majority of large land mammals were harvested during fall season hunting in August and September. In addition to the estimated harvest of 39 bull moose in August and September, Nikolai residents harvested an estimated 3 cow moose in November and January. In addition to the 15 black bears harvested in August and September, Nikolai residents harvested an estimated 6 black bears in other months of the year (May, July, and October). Nikolai's estimated harvest of 3 wolves occurred in December and January.

Over half of Nikolai households (62%) used and harvested small land mammals in 2011. Small land

Table 6-1. – Estimated use and harvest of land and marine mammals, Nikolai, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Land Mammals										
Large land mammals										
Bison	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Black bear	50.0%	46.2%	26.9%	38.5%	19.2%	1,218.0 lb	31.2 lb	10.4 lb	21.0 ind	± 49%
Brown bear	11.5%	11.5%	7.7%	11.5%	3.8%	174.0 lb	4.5 lb	1.5 lb	3.0 ind	± 82%
Caribou	15.4%	19.2%	3.8%	15.4%	7.7%	225.0 lb	5.8 lb	1.9 lb	1.5 ind	± 119%
Moose	100.0%	92.3%	57.7%	65.4%	57.7%	27,300.0 lb	700.0 lb	233.3 lb	42.0 ind	± 27%
Muskox	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Dall sheep	15.4%	11.5%	0.0%	15.4%	3.8%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**100.0%**	**92.3%**	**65.4%**	**80.8%**	**61.5%**	**28,917.0 lb**	**741.5 lb**	**247.2 lb**	**67.5 ind**	**± 27%**
Small land mammals										
Beaver	53.8%	50.0%	42.3%	34.6%	23.1%	1,080.0 lb	27.7 lb	9.2 lb	70.5 ind	± 47%
Coyote	3.8%	11.5%	3.8%	0.0%	0.0%	*Not usually eaten*			1.5 ind	± 119%
Red fox	0.0%	11.5%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Snowshoe hare	19.2%	23.1%	19.2%	0.0%	0.0%	47.3 lb	1.2 lb	0.4 lb	36.0 ind	± 66%
Jackrabbit	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
River (land) otter	3.8%	7.7%	3.8%	0.0%	0.0%	*Not usually eaten*			1.5 ind	± 119%
Lynx	11.5%	11.5%	11.5%	0.0%	0.0%	*Not usually eaten*			16.5 ind	± 75%
Marmot	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Marten	19.2%	23.1%	19.2%	0.0%	3.8%	*Not usually eaten*			198.0 ind	± 64%
Mink	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Muskrat	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Porcupine	42.3%	46.2%	38.5%	7.7%	15.4%	128.3 lb	3.3 lb	1.1 lb	49.5 ind	± 53%
Arctic ground (parka) squirrel	11.5%	11.5%	7.7%	3.8%	11.5%	18.8 lb	0.5 lb	0.2 lb	37.5 ind	± 97%
Red (tree) squirrel	3.8%	3.8%	3.8%	0.0%	0.0%	3.4 lb	0.1 lb	0.0 lb	4.5 ind	± 119%
Weasel	7.7%	11.5%	7.7%	0.0%	0.0%	*Not usually eaten*			3.0 ind	± 82%
Wolf	7.7%	15.4%	7.7%	0.0%	0.0%	*Not usually eaten*			3.0 ind	± 82%
Wolverine	3.8%	11.5%	3.8%	0.0%	3.8%	*Not usually eaten*			1.5 ind	± 119%
Subtotal	**61.5%**	**61.5%**	**61.5%**	**34.6%**	**26.9%**	**1,277.6 lb**	**32.8 lb**	**10.9 lb**	**423.0 ind**	**± 47%**
Marine mammals										
Bearded seal	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Ringed seal	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Spotted seal	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown seal	3.8%	0.0%	0.0%	3.8%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Walrus	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Beluga whale	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Bowhead whale	3.8%	0.0%	0.0%	3.8%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**3.8%**	**0.0%**	**0.0%**	**3.8%**	**0.0%**	**0.0 lb**	**0.0 lb**	**0.0 lb**	**0.0 ind**	**± 0%**
All land mammals	**100.0%**	**96.2%**	**84.6%**	**80.8%**	**65.4%**	**30,194.6 lb**	**774.2 lb**	**258.1 lb**		**± 26%**
All marine mammals	**3.8%**	**0.0%**	**0.0%**	**3.8%**	**0.0%**	**0.0 lb**	**0.0 lb**	**0.0 lb**		**± 0%**
All resources	**100.0%**	**100.0%**	**100.0%**	**92.3%**	**84.6%**	**58,416.4 lb**	**1,497.9 lb**	**499.3 lb**		**± 27%**

Source ADF&G Division of Subsistence household surveys, 2012.

Note "All resources" include all species of fish, wildlife, and plants reported on the survey.

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

mammals including 71 beavers, 50 porcupines, 38 ground squirrels, and 36 snowshoe hares contributed substantial amounts of food to the community, with a combined estimate of 11 edible pounds per person. Other small land mammals that are harvested primarily for their fur and are not usually eaten included 198 marten, 17 lynx, 3 wolves, and 2 wolverines; this furbearer harvest likely represented an important source of cash income in 2011. Most small land mammals were harvested in winter months from November to March, corresponding to established trapping seasons and higher fur quality during these months (Appendix Table D5-4). Beaver and porcupine, both used extensively for food in Nikolai, were harvested throughout the year, often opportunistically while harvesting other subsistence resources. w

Fishes of all species formed a large portion (41%) of Nikolai residents' subsistence harvest by edible weight in 2011. The majority (85%) of households reported using, and most (65%) reported harvesting fish species during 2011 (Table 6-2).

Salmon composed 63% of the fish harvest with 15,335 total edible pounds. Residents reported harvesting all 5 species of Pacific salmon present in Alaska waters, although Chinook salmon (1,143 individual salmon, 70% of total salmon harvest by edible weight), coho salmon (416 individuals, 14% of salmon harvest by edible weight), and chum salmon (339 individual salmon, 11% of salmon harvest by edible weight) dominated the harvest. Sockeye salmon are only rarely observed in the Kuskokwim River as far upstream as Nikolai, and most sockeye salmon were harvested outside of the region. Pink salmon have not previously been described as occurring in the area. Although the only reported harvest of pink salmon was from the area around Nikolai, it is possible that the reported harvest of 5 pink salmon reflects a species misidentification.

Sheefish, whitefish, and northern pike formed the largest portion of Nikolai's nonsalmon fish harvest. Whitefish of all species contributed 5,479 edible pounds, or 23% of the total fish harvest by edible weight. Nikolai residents harvested 6 species of whitefishes, including (ranked in descending order by contribution to total edible weight) 381 sheefish, 842 humpback whitefish, 512 Bering cisco, 240 round whitefish, 225 broad whitefish, and 272 least cisco. Other nonsalmon fish species included 579 northern pike, 245 longnose suckers (used primary for dog food), 126 Arctic grayling, 75 unspecified trout (likely rainbow trout harvested outside of the region), 63 Dolly Varden, and 5 burbot.

Respondents were asked what gear type they used to harvest subsistence fish in 2011. Respondents primarily used set gillnets and rod and reel (Figure 6-7). Set gillnets were used to harvest the majority of fish, including most of the salmon, whitefish, and northern pike harvest. Rod and reel was used primarily as a supplement to set gillnets, but for some households, it was the only gear type used. A substantial portion of the Chinook salmon harvest was taken with rod and reel, in addition to other salmon and whitefish species, northern pike, Arctic grayling, rainbow trout, and Dolly Varden. A small portion of the northern pike harvest was harvested using jigging gear during winter months.

In addition to describing the total number of fish harvested for subsistence in 2011, respondents described the number of fish harvested that were used exclusively to feed dogs (Appendix Table D5-2). Most fish harvested by Nikolai residents in 2011 were used primarily for human consumption, but some residents

Table 6-2. – Estimated use and harvest of fish, Nikolai, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Fish										
Salmon										
Chum salmon	46.2%	19.2%	11.5%	42.3%	7.7%	1,725.9 lb	44.3 lb	14.8 lb	339.0 ind	± 103%
Coho salmon	50.0%	34.6%	23.1%	34.6%	15.4%	2,198.0 lb	56.4 lb	18.8 lb	415.5 ind	± 84%
Chinook salmon	73.1%	65.4%	42.3%	57.7%	34.6%	10,801.4 lb	277.0 lb	92.3 lb	1,143.0 ind	± 40%
Pink salmon	7.7%	3.8%	3.8%	3.8%	0.0%	12.6 lb	0.3 lb	0.1 lb	4.5 ind	± 119%
Sockeye salmon	19.2%	15.4%	15.4%	11.5%	7.7%	597.2 lb	15.3 lb	5.1 lb	118.5 ind	± 70%
Unknown salmon	3.8%	0.0%	0.0%	3.8%	3.8%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**84.6%**	**65.4%**	**46.2%**	**73.1%**	**50.0%**	**15,335.1 lb**	**393.2 lb**	**131.1 lb**	**2,020.5 ind**	**± 39%**
Char										
Dolly Varden	19.2%	19.2%	19.2%	0.0%	0.0%	88.2 lb	2.3 lb	0.8 lb	63.0 ind	± 86%
Lake trout	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**19.2%**	**19.2%**	**19.2%**	**0.0%**	**0.0%**	**88.2 lb**	**2.3 lb**	**0.8 lb**	**63.0 ind**	**± 86%**
Trout										
Rainbow trout	3.8%	3.8%	3.8%	0.0%	3.8%	150.0 lb	3.8 lb	1.3 lb	75.0 ind	± 119%
Subtotal	**3.8%**	**3.8%**	**3.8%**	**0.0%**	**3.8%**	**150.0 lb**	**3.8 lb**	**1.3 lb**	**75.0 ind**	**± 119%**
Whitefishes										
Sheefish	50.0%	42.3%	34.6%	23.1%	19.2%	2,133.6 lb	54.7 lb	18.2 lb	381.0 ind	± 71%
Broad whitefish	26.9%	34.6%	23.1%	11.5%	11.5%	315.0 lb	8.1 lb	2.7 lb	225.0 ind	± 52%
Bering cisco	38.5%	26.9%	19.2%	26.9%	19.2%	716.1 lb	18.4 lb	6.1 lb	511.5 ind	± 63%
Least cisco	15.4%	15.4%	11.5%	7.7%	11.5%	271.5 lb	7.0 lb	2.3 lb	271.5 ind	± 99%
Humpback whitefish	38.5%	34.6%	26.9%	15.4%	11.5%	1,683.0 lb	43.2 lb	14.4 lb	841.5 ind	± 76%
Round whitefish	7.7%	15.4%	7.7%	3.8%	3.8%	360.0 lb	9.2 lb	3.1 lb	240.0 ind	± 111%
Unknown whitefishes	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**57.7%**	**46.2%**	**42.3%**	**42.3%**	**30.8%**	**5,479.2 lb**	**140.5 lb**	**46.8 lb**	**2,470.5 ind**	**± 57%**
Anadromous/marine fish										
Pacific herring	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Unknown smelt	7.7%	0.0%	0.0%	7.7%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Pacific tomcod	3.8%	0.0%	0.0%	3.8%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Saffron cod	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Pacific halibut	3.8%	0.0%	0.0%	3.8%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 lb	± 0%
Arctic lamprey	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Stickleback (needlefish)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Subtotal	**11.5%**	**0.0%**	**0.0%**	**11.5%**	**0.0%**	**0.0 lb**	**0.0 lb**	**0.0 lb**		**± 0%**
Other freshwater fish										
Alaska blackfish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 lb	± 0%
Burbot	11.5%	11.5%	7.7%	7.7%	0.0%	10.8 lb	0.3 lb	0.1 lb	4.5 ind	± 87%
Arctic grayling	38.5%	30.8%	26.9%	23.1%	7.7%	88.2 lb	2.3 lb	0.8 lb	126.0 ind	± 56%
Northern pike	69.2%	65.4%	57.7%	26.9%	34.6%	2,895.0 lb	74.2 lb	24.7 lb	579.0 ind	± 49%
Longnose sucker	15.4%	15.4%	15.4%	7.7%	0.0%	171.2 lb	4.4 lb	1.5 lb	244.5 ind	± 76%
Subtotal	**73.1%**	**73.1%**	**61.5%**	**42.3%**	**34.6%**	**3,165.2 lb**	**81.2 lb**	**27.1 lb**		**± 47%**
All fish	**84.6%**	**84.6%**	**65.4%**	**76.9%**	**57.7%**	**24,217.7 lb**	**621.0 lb**	**207.0 lb**		**± 39%**
All resources	**100.0%**	**100.0%**	**100.0%**	**92.3%**	**84.6%**	**58,416.4 lb**	**1,497.9 lb**	**499.3 lb**		**± 27%**

Source ADF&G Division of Subsistence household surveys, 2012.

Note "All resources" include all species of fish, wildlife, and plants reported on the survey.

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

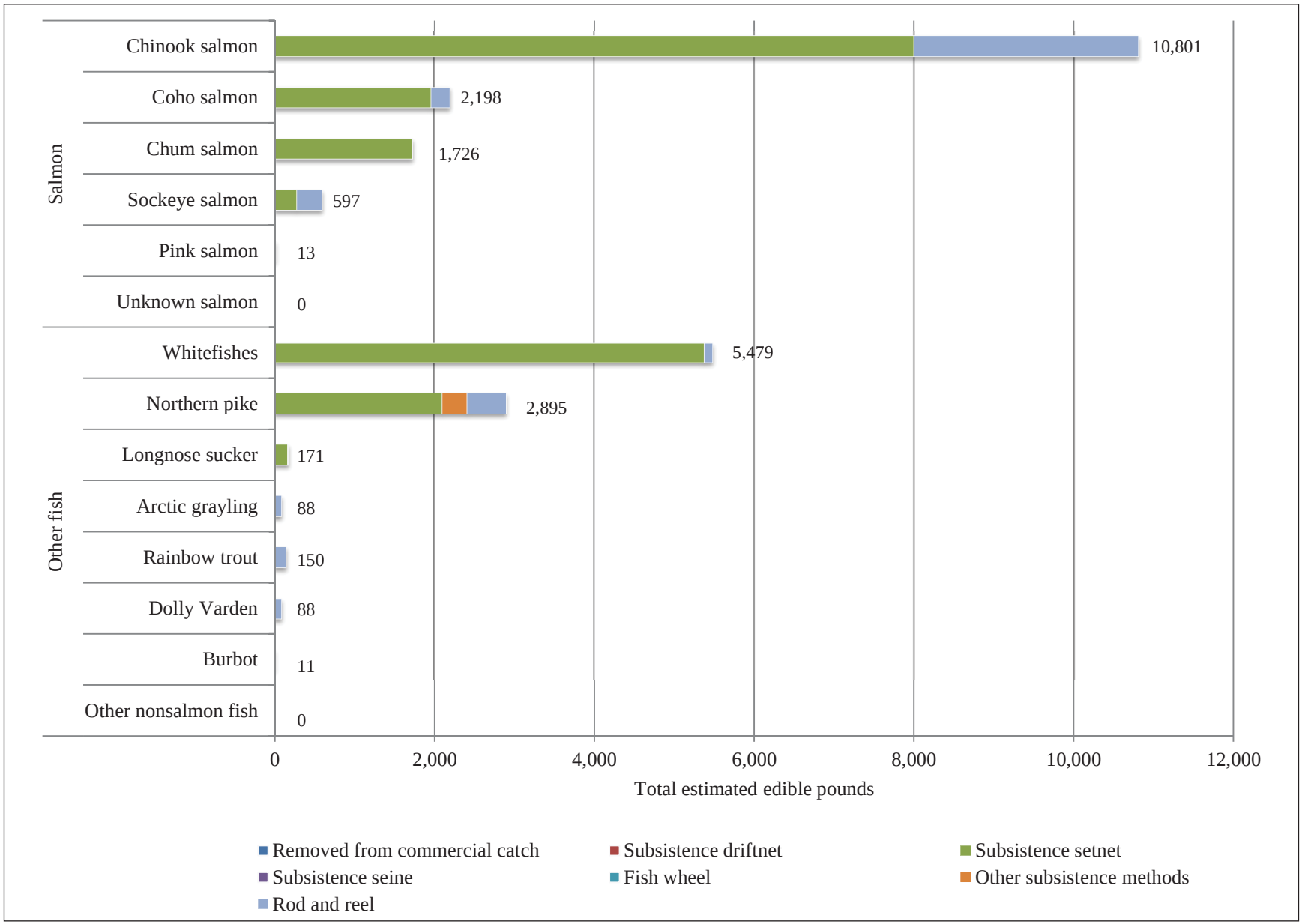


Figure 6-7.–Fish harvest by gear type, Nikolai, 2011.

described using a portion of their fish harvest exclusively for dog food. Some residents specifically harvest fish for dogs, and some opportunistically use fish as dog food that are for some reason unfit for human consumption (e.g. partial spoilage, questionable food value). While remnants such as viscera, heads, and bones that remain after processing fish for human consumption are commonly fed to dogs, such fish were used primarily for human consumption and thus were not included in estimates of the number of fish used exclusively for dog food. In total, Nikolai residents used an estimated 989 fish (roughly equivalent to 3,239 edible pounds) for dog food (Appendix Table D5-2). Nearly half of this dog food weight was made up of chum salmon. Other salmon species, northern pike, whitefishes, and longnose sucker also made up substantial portions of the dog food harvest.

Wild birds contributed only 5% (2,860 edible lb) to the 2011 wild food harvest by edible weight, though they were harvested and used by 88% of households (Table 6-3). Migratory birds, primarily ducks and geese, formed the majority (77% by edible weight) of the wild bird harvest. Duck and goose species harvested included 195 individual northern pintail, 173 wigeon, 171 lesser Canada geese, 117 white fronted geese, 104 mallards, and smaller numbers of bufflehead, canvasback, goldeneye, harlequin ducks, scaup, black scoter, surf scoter, northern shoveler, green-winged teal, and cackling geese. Residents also harvested an estimated 5 tundra swans and 2 sandhill cranes. Most households (81%) harvested non-migratory bird species including grouses and ptarmigans. Spruce grouse formed the majority of this harvest with an estimated 423 individual birds, and residents also harvested an estimated 144 ruffed grouse, 78 ptarmigan, and 9 sharp-tailed grouse. No residents reported harvesting bird eggs for subsistence(Table 6-4). Nearly all (97%) migratory birds were harvested in spring months, whereas most (79%) non-migratory birds were harvested during fall (Appendix Table D5-5).

All surveyed Nikolai households reported harvesting and using wild plants for subsistence during the study year (Table 6-5). Residents harvested an estimated 172 cords of firewood; most households (88%) used firewood in the study year. Berries were the most widely used and harvested edible wild plant resource. The average Nikolai household harvested 27 lb of wild berries in 2011, and berries represented 91% of the plant harvest by edible weight. The most harvested and used berries included lowbush cranberries (119 total gallons harvested, used by 73% of households), blueberries (68 gallons, used by 73% of households), and smaller quantities of salmonberries, highbush cranberries, wild raspberries, currants, and crowberries. Other edible or medicinal wild plants harvested in 2011 included punk (birch polypore fungus), rose hips, stinkweed (common wormwood), Hudson Bay tea, unknown mushrooms, wild rhubarb, mint, nettle, spruce tips, and puffball mushrooms.

Table 6-3. – Estimated use and harvest of birds, Nikolai, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Migratory birds										
Ducks										
Bufflehead	11.5%	23.1%	7.7%	7.7%	4.0%	135.0 lb	3.5 lb	1.2 lb	90.0 ind	± 87%
Canvasback	11.5%	19.2%	7.7%	3.8%	3.8%	18.2 lb	0.5 lb	0.2 lb	16.5 ind	± 108%
Common eider	0.0%	7.7%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown eider	0.0%	7.7%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Goldeneye	15.4%	23.1%	11.5%	3.8%	7.7%	18.0 lb	0.5 lb	0.2 lb	22.5 ind	± 83%
Harlequin	3.8%	15.4%	3.8%	0.0%	0.0%	4.5 lb	0.1 lb	0.0 lb	3.0 ind	± 119%
Mallard	38.5%	46.2%	30.8%	11.5%	15.4%	201.8 lb	5.2 lb	1.7 lb	103.5 ind	± 45%
Common merganser	0.0%	3.8%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Red-breasted merganser	0.0%	3.8%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown merganser	0.0%	3.8%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Long-tailed duck	0.0%	15.4%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Northern pintail	38.5%	50.0%	34.6%	12.0%	20.0%	292.5 lb	7.5 lb	2.5 lb	195.0 ind	± 49%
Scaup	7.7%	23.1%	7.7%	3.8%	8.0%	8.4 lb	0.2 lb	0.1 lb	9.4 ind	± 117%
Black scoter	3.8%	19.2%	3.8%	0.0%	3.8%	8.1 lb	0.2 lb	0.1 lb	9.0 ind	± 119%
Surf scoter	3.8%	15.4%	3.8%	0.0%	0.0%	4.1 lb	0.1 lb	0.0 lb	4.5 ind	± 119%
White-winged scoter	0.0%	11.5%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Northern shoveler	3.8%	19.2%	3.8%	0.0%	3.8%	9.8 lb	0.3 lb	0.1 lb	9.0 ind	± 119%
Green-winged teal	26.9%	36.0%	23.1%	4.0%	16.0%	30.4 lb	0.8 lb	0.3 lb	58.5 ind	± 56%
Wigeon	42.3%	46.2%	34.6%	16.0%	20.0%	226.0 lb	5.8 lb	1.9 lb	172.5 ind	± 50%
Unknown ducks	0.0%	3.8%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**53.8%**	**57.7%**	**42.3%**	**23.1%**	**23.1%**	**956.8 lb**	**24.5 lb**	**8.2 lb**	**693.4 ind**	**± 46%**
Geese										
Brant	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Cackling goose	7.7%	7.7%	7.7%	0.0%	0.0%	7.2 lb	0.2 lb	0.1 lb	6.0 ind	± 82%
Lesser Canada goose	46.2%	50.0%	38.5%	15.4%	23.1%	680.6 lb	17.5 lb	5.8 lb	171.0 ind	± 41%
Unknown Canada goose	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Emperor goose	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Snow goose	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
White-fronted goose	53.8%	46.2%	38.5%	19.2%	23.1%	496.1 lb	12.7 lb	4.2 lb	117.0 ind	± 40%
Unknown geese	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**65.4%**	**53.8%**	**46.2%**	**26.9%**	**26.9%**	**1,183.9 lb**	**30.4 lb**	**10.1 lb**	**294.0 ind**	**± 38%**
Other migratory birds										
Tundra (whistling) swan	11.5%	7.7%	3.8%	7.7%	3.8%	50.4 lb	1.3 lb	0.4 lb	4.5 ind	± 119%
Sandhill crane	3.8%	23.1%	3.8%	0.0%	3.8%	15.0 lb	0.4 lb	0.1 lb	1.5 ind	± 119%
Whimbrel	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**11.5%**	**23.1%**	**3.8%**	**7.7%**	**3.8%**	**65.4 lb**	**1.7 lb**	**0.6 lb**	**6.0 ind**	**± 119%**
Other birds										
Spruce grouse	80.8%	88.5%	80.8%	19.2%	30.8%	423.0 lb	10.8 lb	3.6 lb	423.0 ind	± 20%
Sharp-tailed grouse	15.4%	34.6%	11.5%	3.8%	3.8%	9.0 lb	0.2 lb	0.1 lb	9.0 ind	± 72%
Ruffed grouse	57.7%	69.2%	50.0%	19.2%	11.5%	144.0 lb	3.7 lb	1.2 lb	144.0 ind	± 34%
Ptarmigan	26.9%	30.8%	26.9%	3.8%	3.8%	78.0 lb	2.0 lb	0.7 lb	78.0 ind	± 44%
Subtotal	**80.8%**	**88.5%**	**80.8%**	**23.1%**	**34.6%**	**654.0 lb**	**16.8 lb**	**5.6 lb**	**654.0 ind**	**± 22%**
All migratory birds	**69.2%**	**65.4%**	**53.8%**	**38.5%**	**26.9%**	**2,206.1 lb**	**56.6 lb**	**18.9 lb**		**± 41%**
All other birds	**80.8%**	**88.5%**	**80.8%**	**23.1%**	**34.6%**	**654.0 lb**	**16.8 lb**	**5.6 lb**		**± 22%**
All resources	**100.0%**	**100.0%**	**100.0%**	**92.3%**	**84.6%**	**58,416.4 lb**	**1,497.9 lb**	**499.3 lb**		**± 27%**

Source ADF&G Division of Subsistence household surveys, 2012.

Note "All resources" include all species of fish, wildlife, and plants reported on the survey

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

Table 6-4. – Estimated use and harvest of bird eggs, Nikolai, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Bird eggs										
Duck eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown goose eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Swan eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown shorebird eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown gull eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0 lb**	**0.0 lb**	**0.0 lb**	**0.0 ind**	**± 0%**
All birds and eggs	**88.5%**	**96.2%**	**88.5%**	**42.3%**	**42.3%**	**2,860.1 lb**	**73.3 lb**	**24.4 lb**		**± 34%**
All resources	**100.0%**	**100.0%**	**100.0%**	**92.3%**	**84.6%**	**58,416.4 lb**	**1,497.9 lb**	**499.3 lb**		**± 27%**

Source ADF&G Division of Subsistence household surveys, 2012.
Note "All resources" include all species of fish, wildlife, and plants reported on the survey.
a. Summary rows that include incompatible units of measure have been left blank.

The survey asked each household about their harvest and use of marine mammals and marine invertebrates in 2011. Given the location of Nikolai within interior Alaska and the difficulty of marine access, harvest and use of these resources was negligible. Eight percent of households reported using subsistence harvested marine invertebrates, and only 4% of households reported harvesting marine invertebrates for food (Table 6-6). No households reported harvesting marine mammals, but 4% of households reported using marine mammals, seal oil and bowhead whale, that they had received from other households or communities (Table 6-1).

Sharing, roughly measured by instances of households giving away and receiving subsistence resources, was highest for land mammals and fish, with an estimated 81% of households reporting receiving land mammals and 77% of households receiving fish. Moose was the most received land mammal resource, received by 65% of households, and Chinook salmon was the most received fish species, received by 58% of households. The most commonly given away resource was moose, with 58% of households reporting giving moose to other households. For all resources, 85% of households gave subsistence resources to at least 1 other household, and 92% of households received subsistence resources. These high levels of sharing indicate that subsistence resources are widely distributed throughout the community and are likely important even to those households that do not harvest substantial amounts of subsistence resources in a particular year (see “Wild Food Networks”).

Table 6-5. – Estimated use and harvest of vegetation, Nikolai, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Berries										
Blueberry	73.1%	65.4%	57.7%	46.2%	34.6%	272.0 lb	7.0 lb	2.3 lb	68.0 gal	± 30%
Lowbush cranberry	73.1%	73.1%	69.2%	36.0%	32.0%	477.0 lb	12.2 lb	4.1 lb	119.3 gal	± 39%
Highbush cranberry	30.8%	26.9%	26.9%	12.0%	8.0%	81.0 lb	2.1 lb	0.7 lb	20.3 gal	± 48%
Crowberry	3.8%	7.7%	3.8%	3.8%	0.0%	6.0 lb	0.2 lb	0.1 lb	1.5 gal	± 119%
Gooseberry	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Currants	7.7%	3.8%	3.8%	7.7%	7.7%	6.0 lb	0.2 lb	0.1 lb	1.5 gal	± 119%
Raspberry	23.1%	19.2%	15.4%	7.7%	0.0%	49.5 lb	1.3 lb	0.4 lb	12.4 gal	± 88%
Salmonberry	42.3%	46.2%	38.5%	19.2%	11.5%	150.0 lb	3.8 lb	1.3 lb	37.5 gal	± 39%
Subtotal	**80.8%**	**76.9%**	**76.9%**	**57.7%**	**46.2%**	**1,041.5 lb**	**26.7 lb**	**8.9 lb**	**260.4 gal**	**± 26%**
Plants/greens/mushrooms										
Wild rhubarb	15.4%	11.5%	11.5%	11.5%	7.7%	18.0 lb	0.5 lb	0.2 lb	4.5 gal	± 66%
Eskimo potato	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Nettle	3.8%	3.8%	3.8%	0.0%	0.0%	1.5 lb	0.0 lb	0.0 lb	1.5 gal	± 119%
Hudson's Bay (Labrador) tea	23.1%	23.1%	23.1%	0.0%	3.8%	9.2 lb	0.2 lb	0.1 lb	9.2 gal	± 51%
Mint	11.5%	11.5%	11.5%	0.0%	3.8%	4.5 lb	0.1 lb	0.0 lb	4.5 gal	± 66%
Sourdock	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Spruce tips	3.8%	3.8%	3.8%	0.0%	0.0%	1.5 lb	0.0 lb	0.0 lb	1.5 gal	± 119%
Willow leaves	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Wild celery	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Wild rose hips	19.2%	19.2%	19.2%	7.7%	3.8%	45.0 lb	1.2 lb	0.4 lb	11.3 gal	± 58%
Yarrow	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Unknown mushrooms	11.5%	11.5%	11.5%	0.0%	0.0%	4.9 lb	0.1 lb	0.0 lb	4.9 gal	± 81%
Fireweed	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Stinkweed	15.4%	15.4%	15.4%	3.8%	7.7%	10.9 lb	0.3 lb	0.1 lb	10.9 gal	± 74%
Punk	7.7%	7.7%	7.7%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	15.0 gal	± 82%
Puffballs	3.8%	3.8%	3.8%	0.0%	0.0%	6.0 lb	0.2 lb	0.1 lb	1.5 gal	± 119%
Unknown vegetation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Subtotal	**42.3%**	**38.5%**	**38.5%**	**15.4%**	**11.5%**	**101.4 lb**	**2.6 lb**	**0.9 lb**	**64.7 gal**	**± 43%**
Wood										
Wood	88.5%	76.9%	76.9%	42.3%	34.6%	0.0 lb	0.0 lb	0.0 lb	171.6 cord	± 23%
Subtotal	**88.5%**	**76.9%**	**76.9%**	**42.3%**	**34.6%**	**0.0 lb**	**0.0 lb**	**0.0 lb**	**171.6 cord**	**± 23%**
All vegetation	**100.0%**	**100.0%**	**100.0%**	**73.1%**	**57.7%**	**1,142.9 lb**	**29.3 lb**	**9.8 lb**		**± 26%**
All resources	**100.0%**	**100.0%**	**100.0%**	**92.3%**	**84.6%**	**58,416.4 lb**	**1,497.9 lb**	**499.3 lb**		**± 27%**

Source ADF&G Division of Subsistence household surveys, 2012

Note "All resources" include all species of fish, wildlife, and plants reported on the survey

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

Table 6-6. – Estimated use and harvest of marine invertebrates, Nikolai, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Marine invertebrates										
Unknown clams	3.8%	0.0%	0.0%	3.8%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
King crab	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown Tanner crab	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown crab	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown mussels	3.8%	3.8%	3.8%	0.0%	0.0%	1.1 lb	0.0 lb	0.0 lb	0.8 gal	± 119%
Shrimp	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Unknown marine invertebrates	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Subtotal	**7.7%**	**3.8%**	**3.8%**	**3.8%**	**0.0%**	**1.1 lb**	**0.0 lb**	**0.0 lb**		**± 119%**
All marine invertebrates	**7.7%**	**3.8%**	**3.8%**	**3.8%**	**0.0%**	**1.1 lb**	**0.0 lb**	**0.0 lb**		**± 119%**
All resources	**100.0%**	**100.0%**	**100.0%**	**92.3%**	**84.6%**	**58,416.4 lb**	**1,497.9 lb**	**499.3 lb**		**± 27%**

Source ADF&G Division of Subsistence household surveys, 2012.
Note "All resources" include all species of fish, wildlife, and plants reported on the survey.
a. Summary rows that include incompatible units of measure have been left blank.

Harvest Areas

As part of the survey, households were asked to mark on a map the areas where they harvested or searched for subsistence resources. Figure 6-8 summarizes all the mapped data collected from 25 of 26 surveyed households in Nikolai.

For 2011, respondents reported using a total of 757 square miles for subsistence. The upper Kuskokwim River and its tributaries were prominent as both search and harvest locations for subsistence resources and as transportation corridors used to reach important harvest areas.

Salmon fishing in 2011 occurred primarily on the South Fork Kuskokwim River downstream from Nikolai, tributaries of Big River (especially Salmon River and Blackwater creek), and some salmon fishing also took place on the North Fork Kuskokwim River extending to near Telida (Figure 6-9).

Whitefish, sheefish, and northern pike search and harvest areas were generally similar to salmon fishing areas in the Kuskokwim River and its tributaries, corresponding to the harvests of both salmon and non-salmon fish species in the same regularly used fishing locations. Northern pike search and harvest areas also included several lakes north of Nikolai (Figure 6-10).

Nikolai residents made extensive use of the numerous river corridors in the Upper Kuskokwim River region while hunting for large and small game (Figure 6-11; Figure 6-12). Hunters often opportunistically harvested available game species when targeting a primary game species such as moose or caribou. Because of this, many of the search and harvest areas for moose, caribou, black bear, brown bear, and small land mammals showed a degree of overlap.

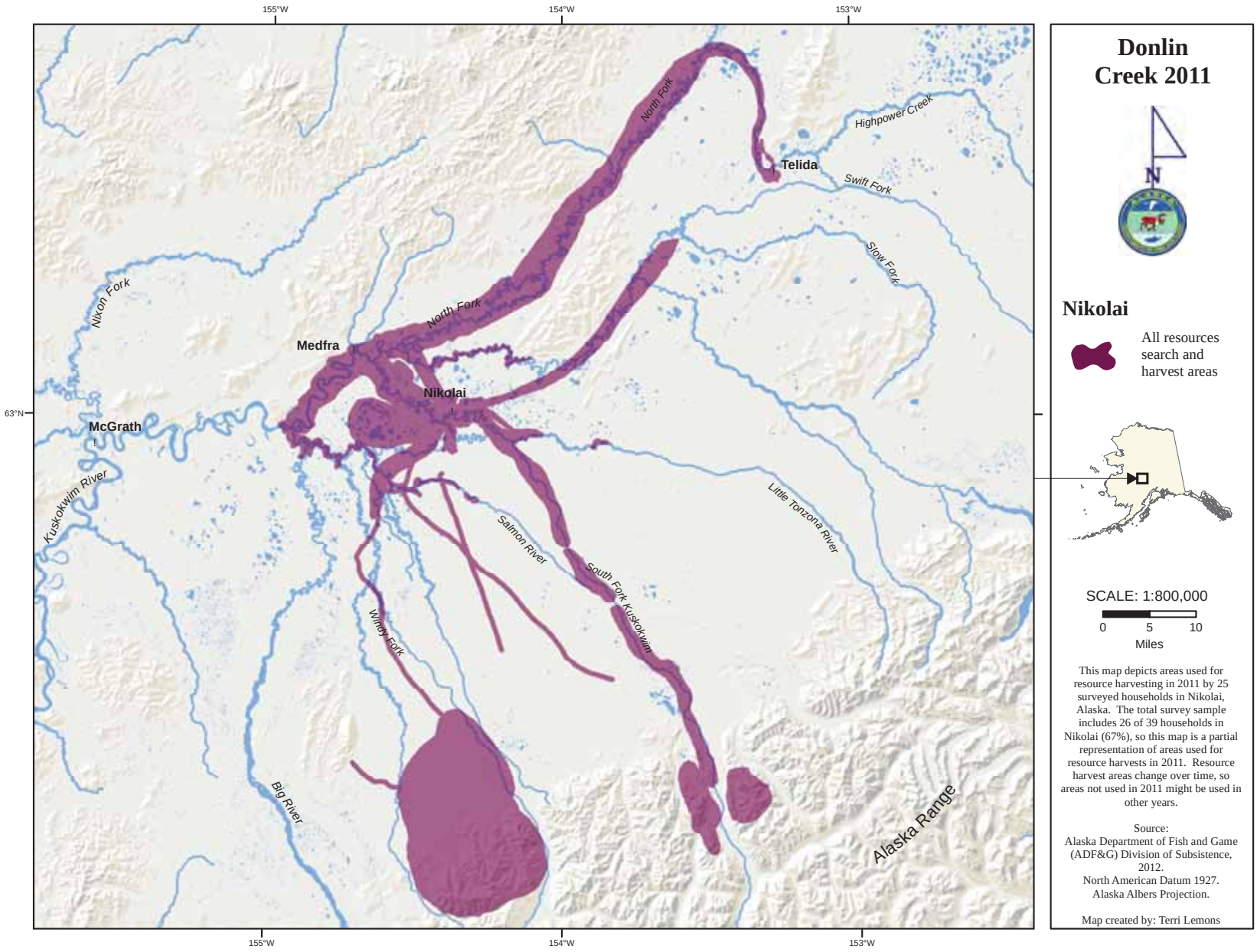


Figure 6-8.–All resources search and harvest areas, Nikolai, 2011.

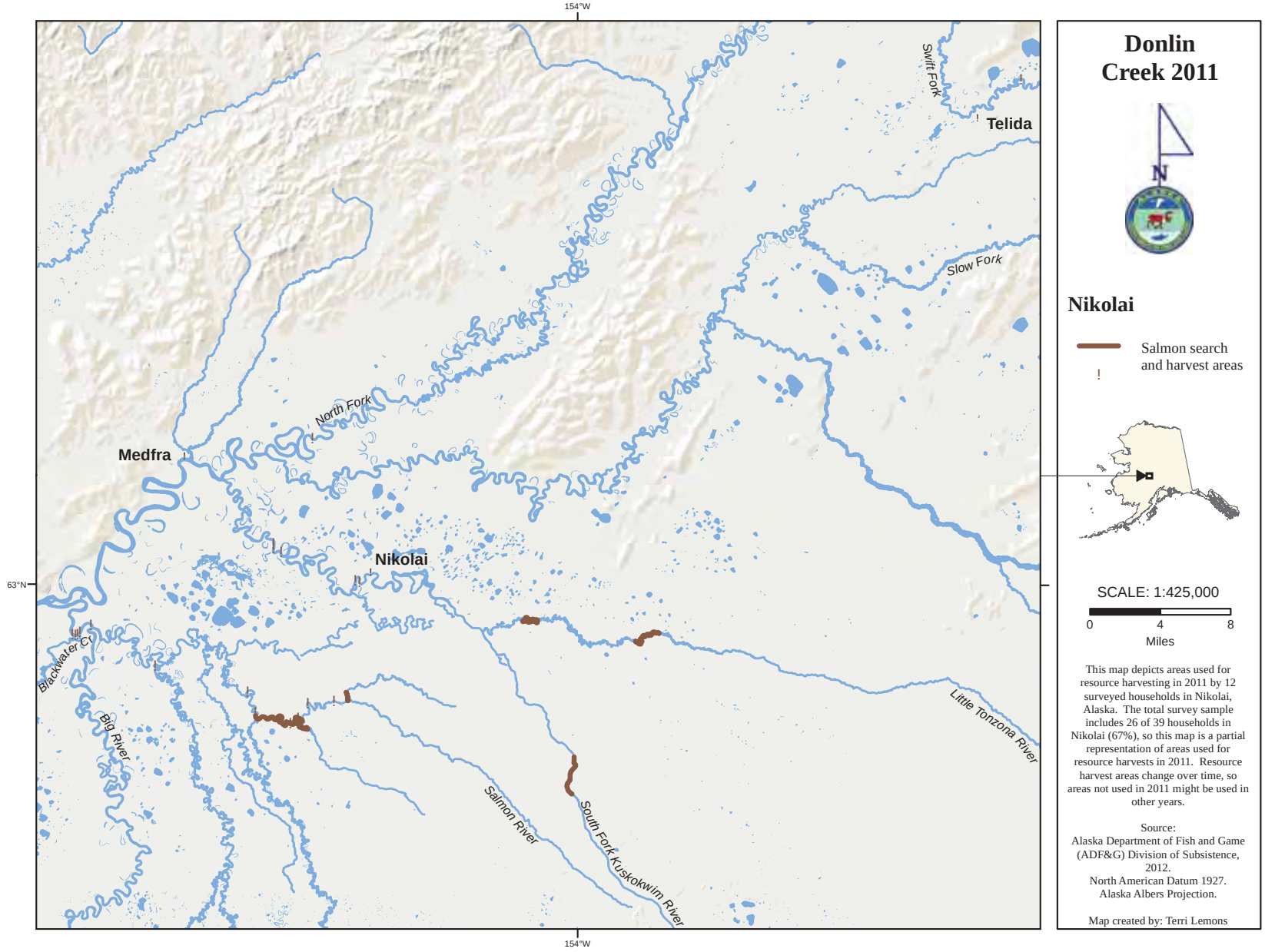


Figure 6-9.–Salmon search and harvest areas, Nikolai, 2011.

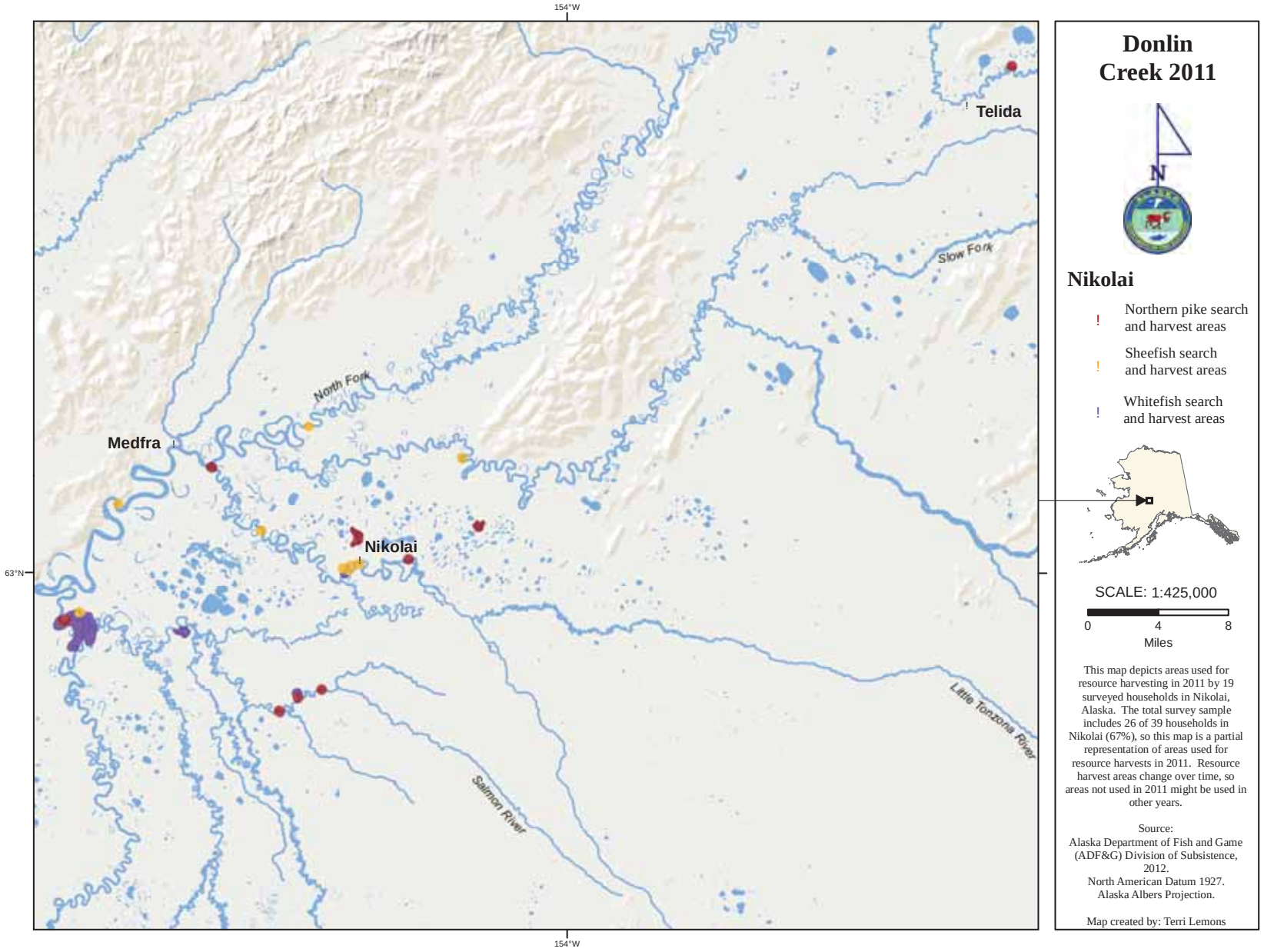


Figure 6-10.–Northern pike, sheefish, and whitefishes search and harvest areas, Nikolai, 2011.

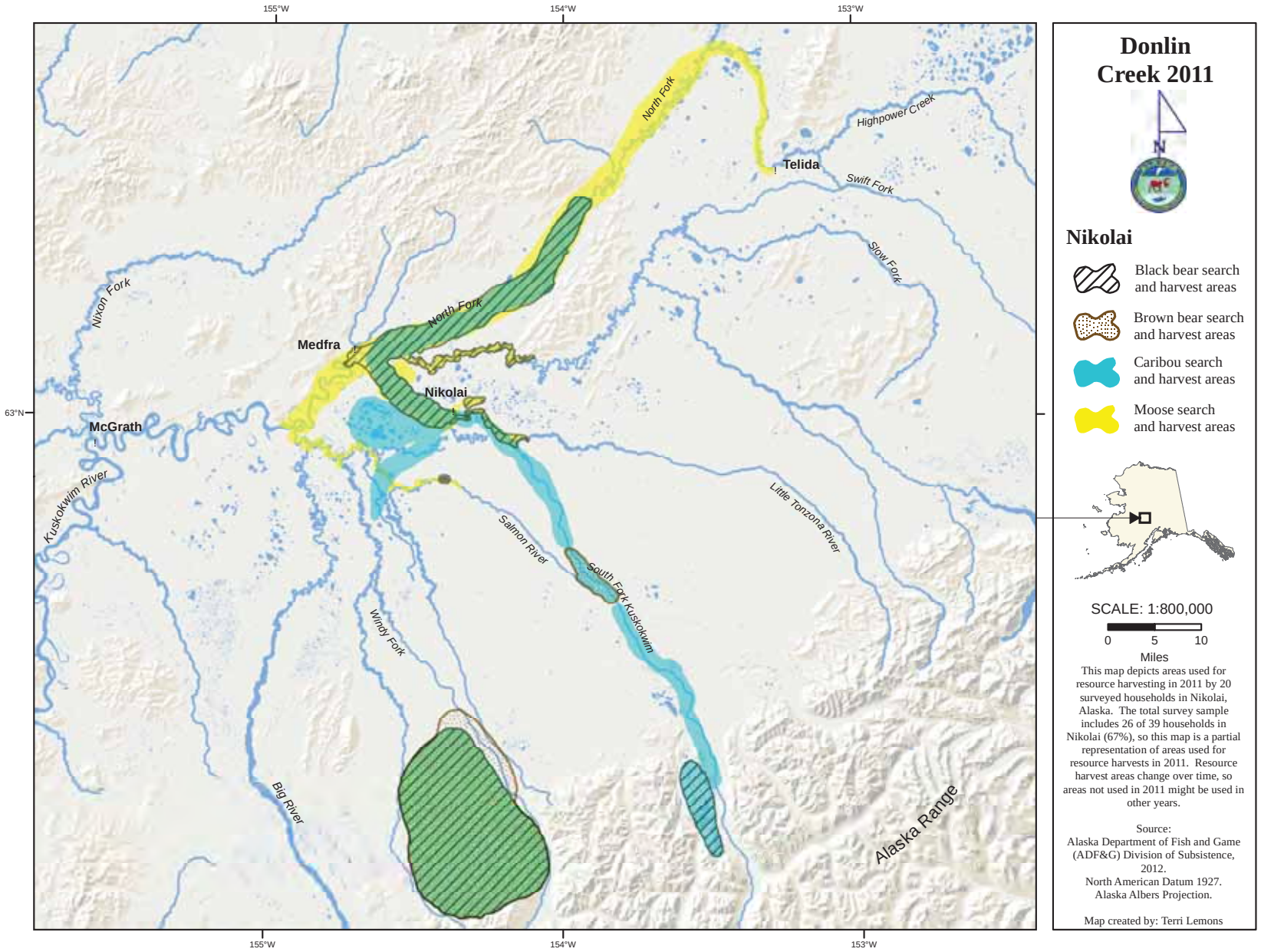


Figure 6-11.–Black bear, brown bear, caribou, and moose search and harvest areas, Nikolai, 2011.

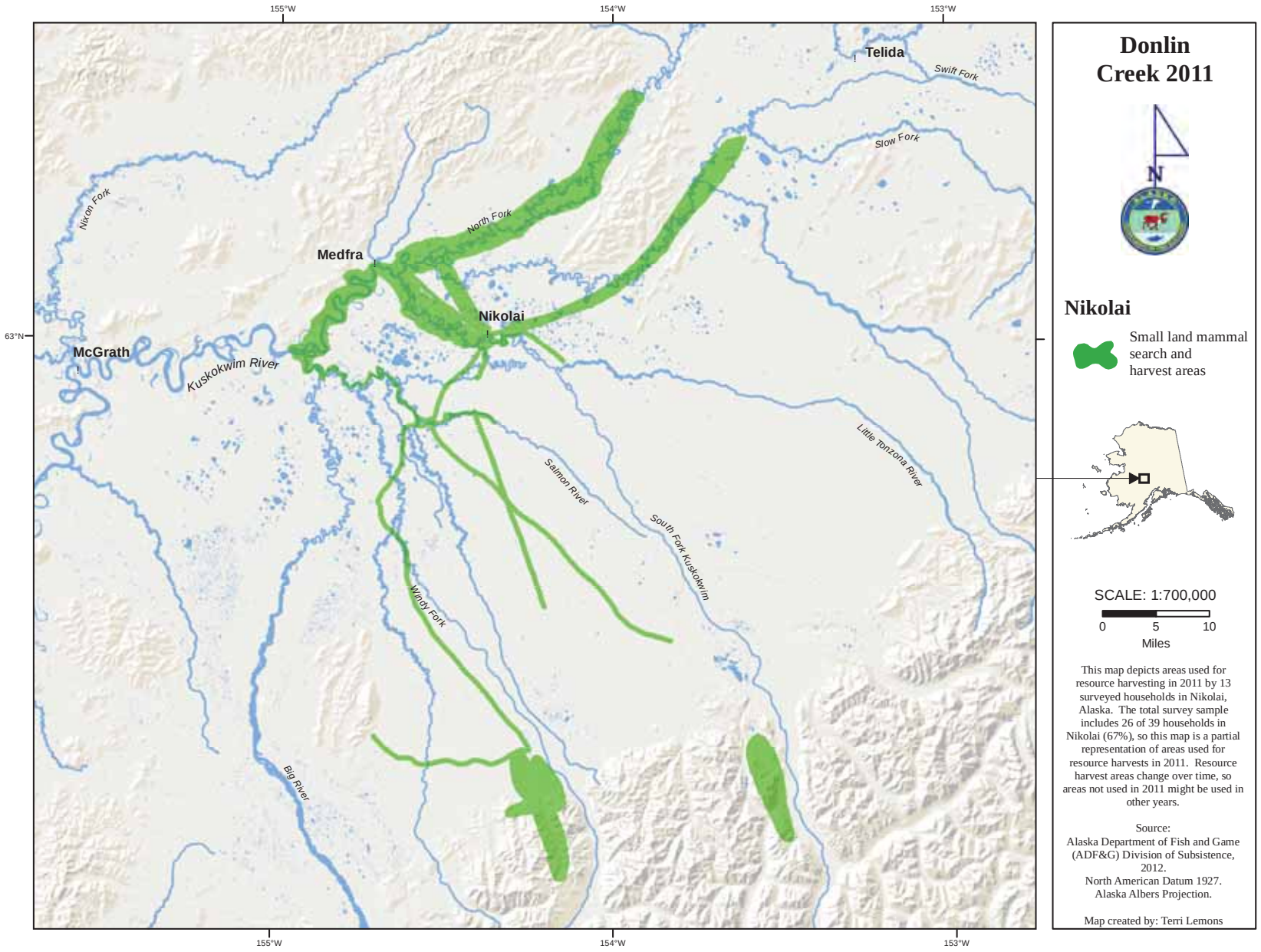


Figure 6-12.–Small land mammal search and harvest areas, Nikolai, 2011.

Moose search and harvest areas generally included the area around Nikolai, the South Fork Kuskokwim River downstream from Nikolai, the Salmon River, and the North Fork Kuskokwim River extending upriver to the area around Telida.

Black bear search and harvest areas generally coincided with moose search and harvest areas, and many residents described hunting black bears opportunistically while moose hunting. There were also search and harvest areas for bear in the headwaters of Windy Fork and the South Fork Kuskokwim River.

Although caribou have been scarce near Nikolai in recent years, and only 1 caribou was reportedly harvested in 2011, several respondents described that they always make a conscious effort to search for caribou while moose hunting, so much of the area used for moose hunting also reflects caribou search areas. Respondents also actively searched overland for caribou west of Nikolai, a formerly productive caribou hunting location during winter. Some respondents described traveling upstream on the South Fork Kuskokwim River and other Kuskokwim River tributaries to look for small bands of caribou located closer to the Alaska Range.

Small land mammal search and harvest areas often correspond to search and harvest areas for big game. For example, respondents described that it is common to harvest porcupines or beavers along river corridors if they are seen while moose hunting. In addition to utilizing a large area for small land mammal search and harvests incidental to hunting for big game, respondents described actively operating traplines for furbearers in 2011, represented by several linear search and harvest areas in Figure 6-12. Respondents described that multiple traplines not depicted as part of the 2011 mapping are still used in alternating years, or would be used in the future if trapping were more profitable corresponding to higher fur prices than those in 2011, lower gas prices than those in 2011, or both.

Search and harvest areas for ducks, geese, and ptarmigans largely corresponded to the Kuskokwim River, its tributaries, and the land surrounding them: the South Fork Kuskokwim River downstream from Nikolai, the North Fork Kuskokwim River, and the Salmon River were particularly important. Some hunting for ptarmigans also occurred closer to the Alaska Range. Many residents regularly harvest grouses in the immediate vicinity of Nikolai (Figure 6-13).

Search and harvest areas for berries and greens were located along the mainstem Kuskokwim River and South Fork Kuskokwim River downstream from Nikolai, as well as closer to the Alaska Range and in the immediate vicinity of Telida (Figure 6-14). Many residents harvest berries close to Nikolai, although the variability of berry patches' productivity from year to year often requires some families to travel considerable distances for berry picking.

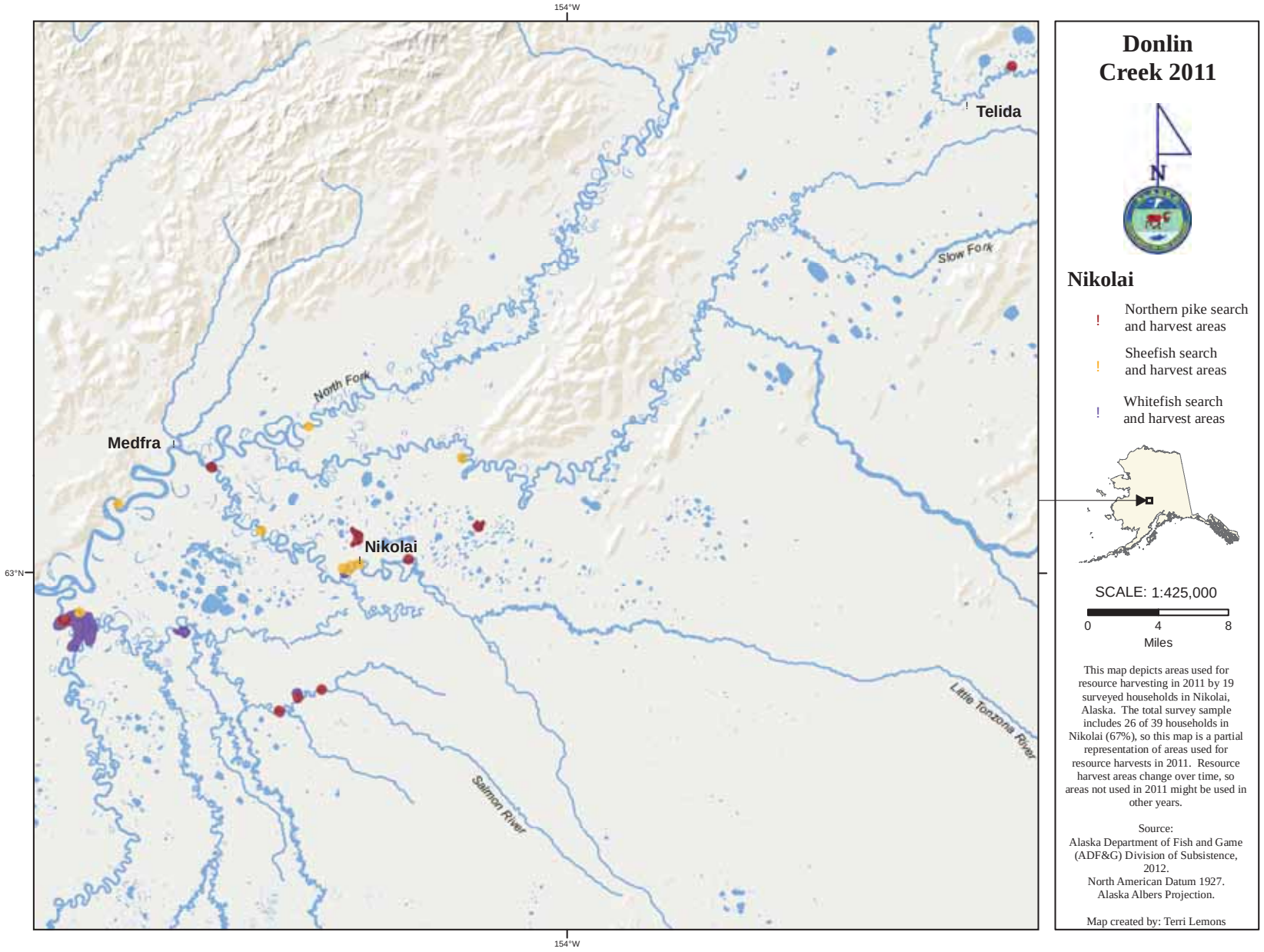
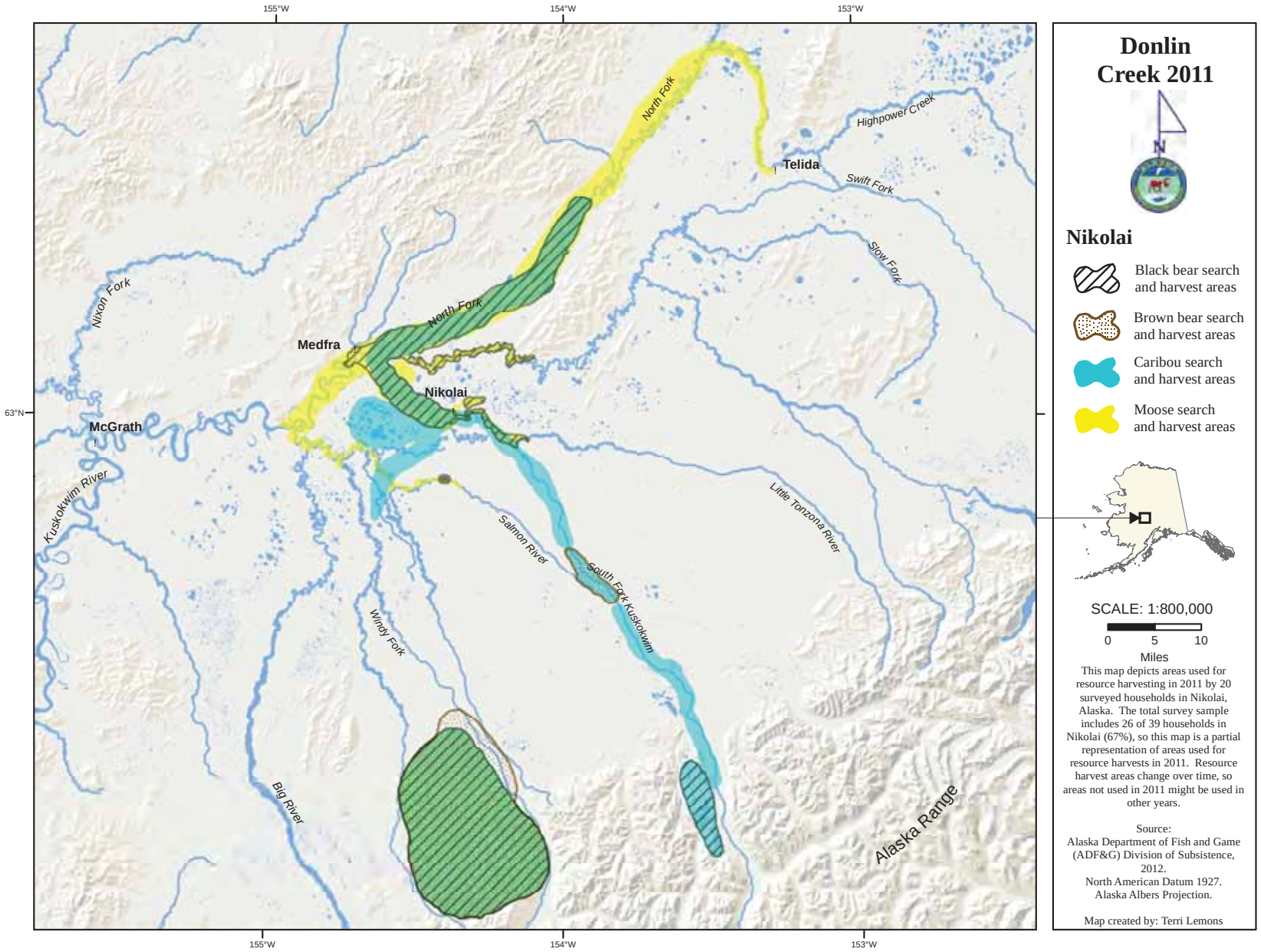


Figure 6-10.–Northern pike, sheefish, and whitefishes search and harvest areas, Nikolai, 2011.



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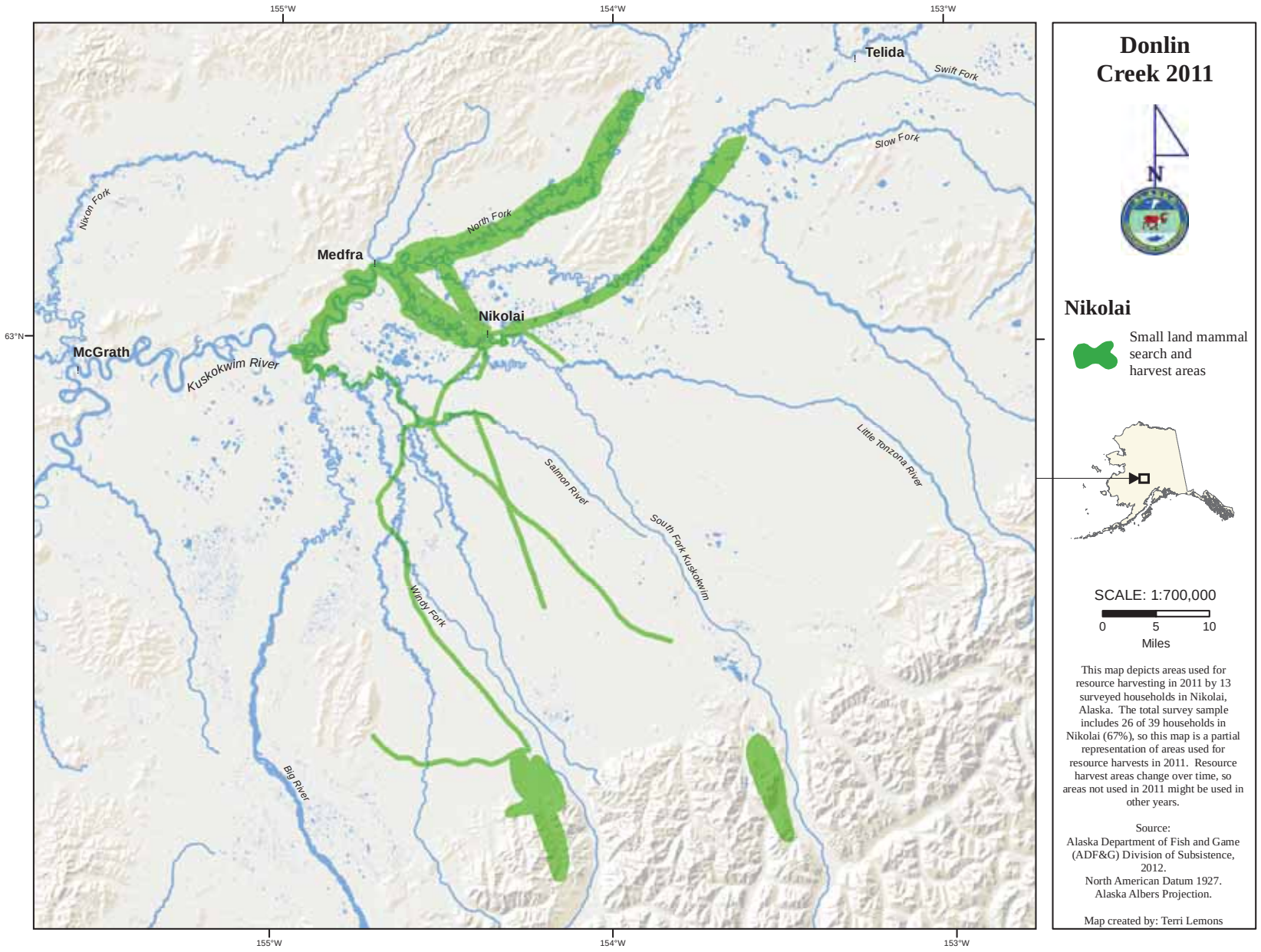

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Search and harvest areas for berries and greens were located along the mainstem Kuskokwim River and South Fork Kuskokwim River downstream from Nikolai, as well as closer to the Alaska Range and in the immediate vicinity of Telida (Figure 6-14). Many residents harvest berries close to Nikolai, although the variability of berry patches' productivity from year to year often requires some families to travel considerable distances for berry picking.

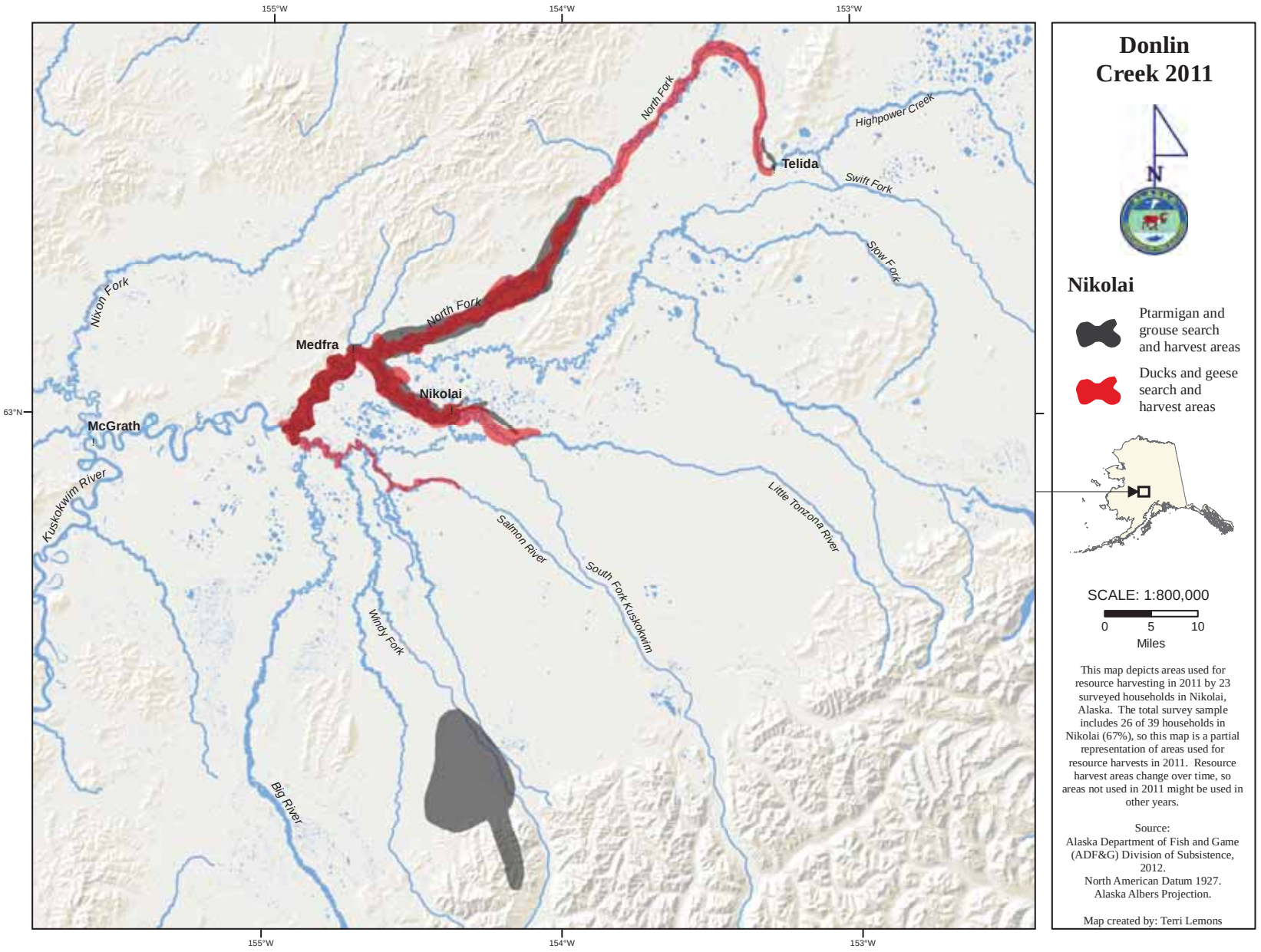


Figure 6-13.–Ptarmigan, grouse, ducks, and geese search and harvest areas, Nikolai, 2011.

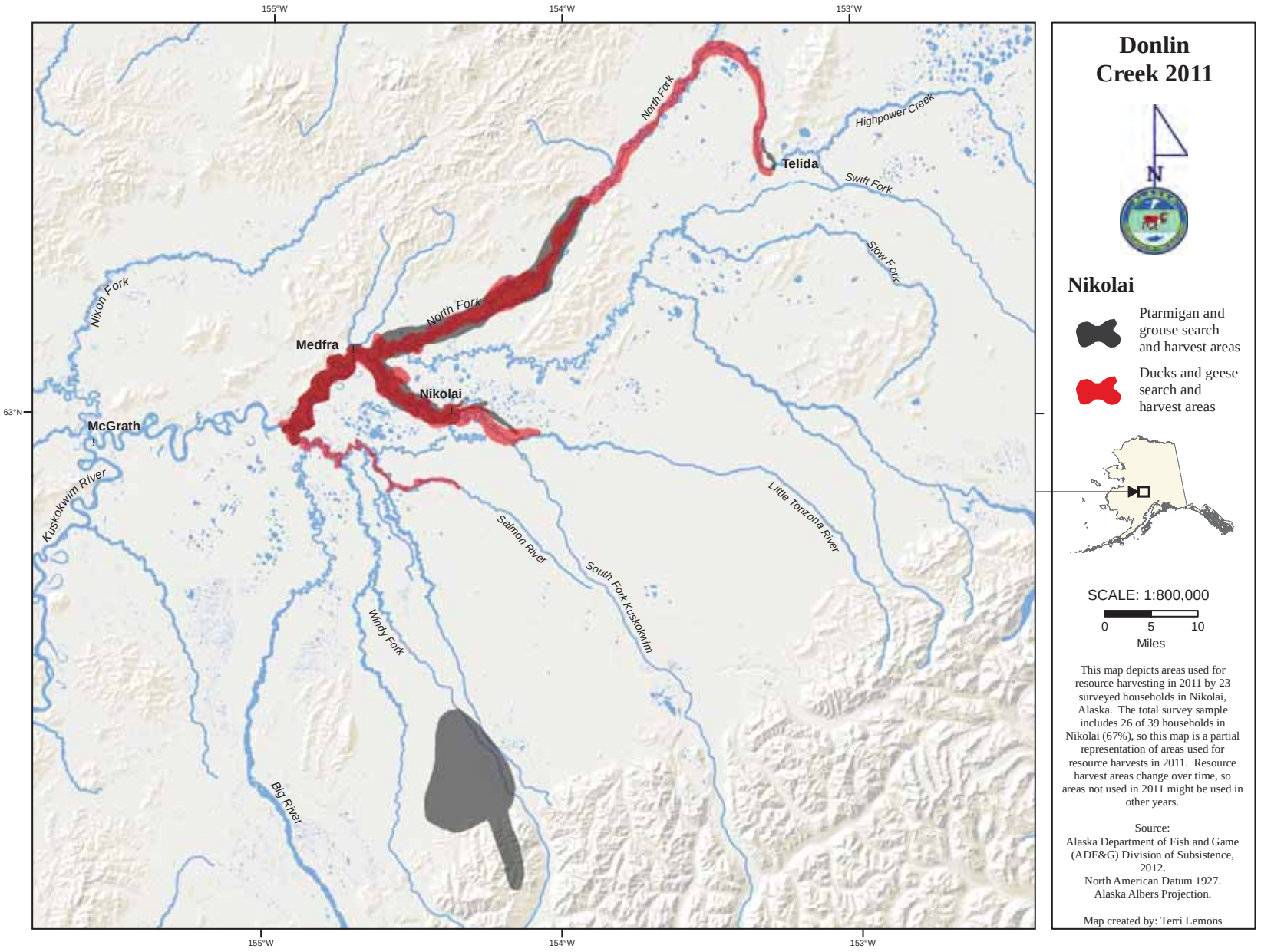


Figure 6-13.–Ptarmigan, grouse, ducks, and geese search and harvest areas, Nikolai, 2011.

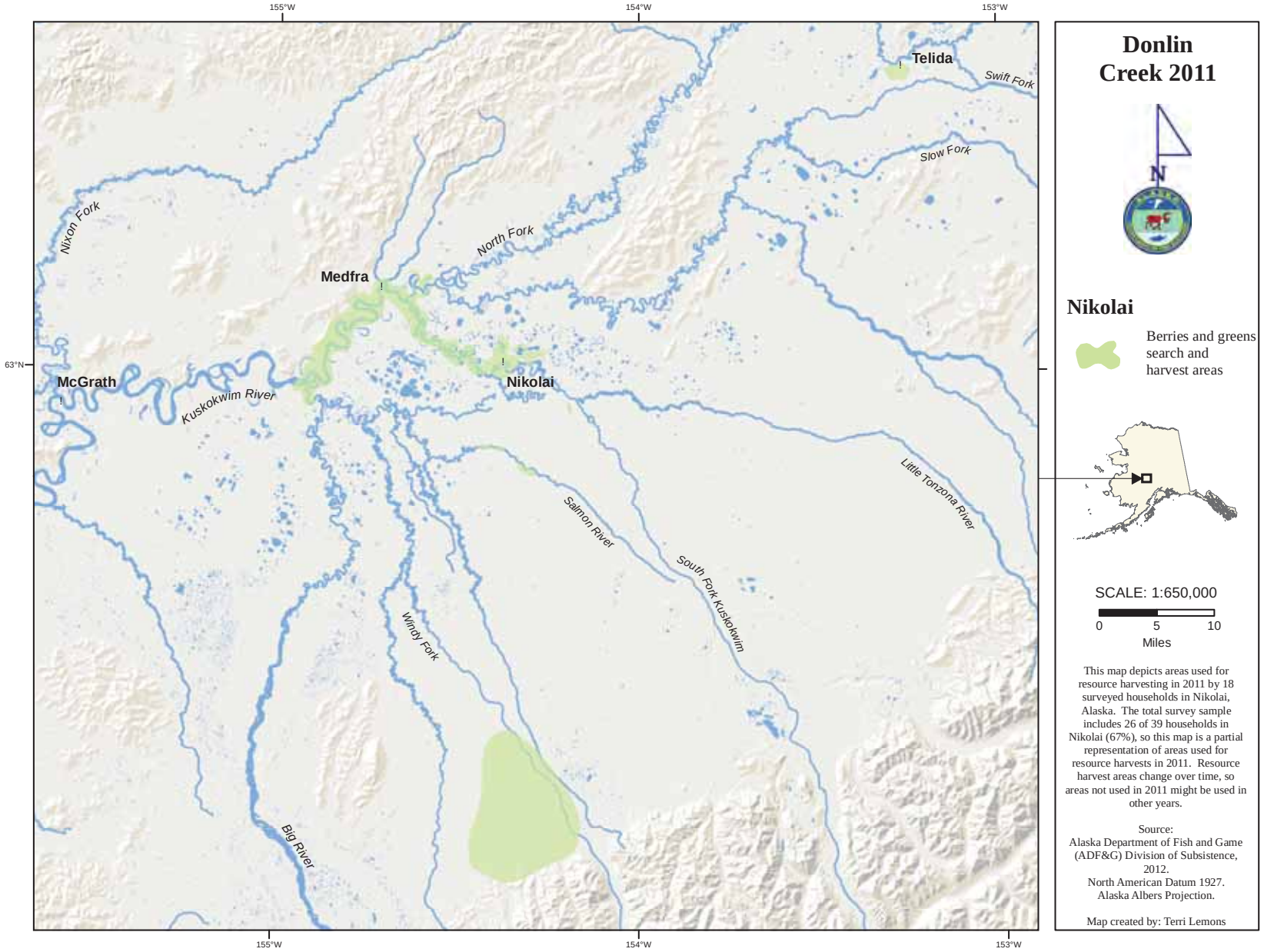


Figure 6-14.–Berries and greens search and harvest areas, Nikolai, 2011.

Harvest Assessments

Researchers asked respondents to assess their own harvests in two ways: whether they got more, less, or about the same amount of 7 resource categories in 2011 as in past years (Figure 6-15), and whether they got "enough" of each of the 7 resource categories (Figure 6-16). Households also were asked to provide reasons if their use was different or if they were unable to get enough of a resource (Appendix tables D5-6 through D5-9). If they did not get enough of a resource, they were asked to evaluate the severity of the impact to their household as a result of not getting enough (Appendix Table D5-10). They were further asked whether they did anything differently (such as supplement with store food or switch to a different subsistence resource) because they did not get enough (Appendix tables D5-11 and D5-12). This section discusses responses to those questions.

Together, Figure 6-15 and Figure 6-16 provide a broad overview of households' harvests. Since not everyone uses all resource categories, some households did not respond to the assessment questions. Additionally, some households that do typically use a resource category simply did not answer questions. While the percentages displayed in these figures were calculated including all surveyed households (including those that did not respond to the question), the bars specifically highlight responses provided by households reporting that they typically use the resource category. Generally, the results are presented in this section as they appear in the figures, but it is important to remember that they are not limited to only households that ordinarily use the resource. Additional details are provided in cases where further analysis lends clarity to the discussion of use patterns.

Taken together, Figure 6-15 and Figure 6-16 can illustrate use patterns contextualizing the 2011 harvest of wild resources by Nikolai households. For individual resource categories, the majority of responding households consistently reported not getting enough (Figure 6-16). Despite this, there was more variability in the percentages of responding households reporting that they used less of a resource in 2011 than in recent years; in some cases a greater percentage of respondents reported using the same amount or more of a resource of which a majority of respondents reported not getting enough (Figure 6-15). The disparity between the two figures in certain resource categories may be indicative of harvests in recent years that have consistently not met the needs of some responding households.

Large land mammals as a resource category composed one-half of Nikolai's total estimated harvest in 2011, and a majority of households (54%) reported not getting enough of these resources during the study year. Despite this, 58% of responding households reported using the same amount or more land mammals in 2011 in comparison with recent years; as mentioned above, it may be that harvests in recent years may be stable but not meeting the needs of Nikolai households. The impacts to households that did not get enough large land mammals were pronounced; 43% of households who responded to the question described the impact as major and 7% stated that it was severe. For households that reported not getting enough large land mammals and provided a response to what kind they needed, 64% reported needing more moose. Reasons given for not getting enough large land mammals were that the resource was not available, low hunting ef-

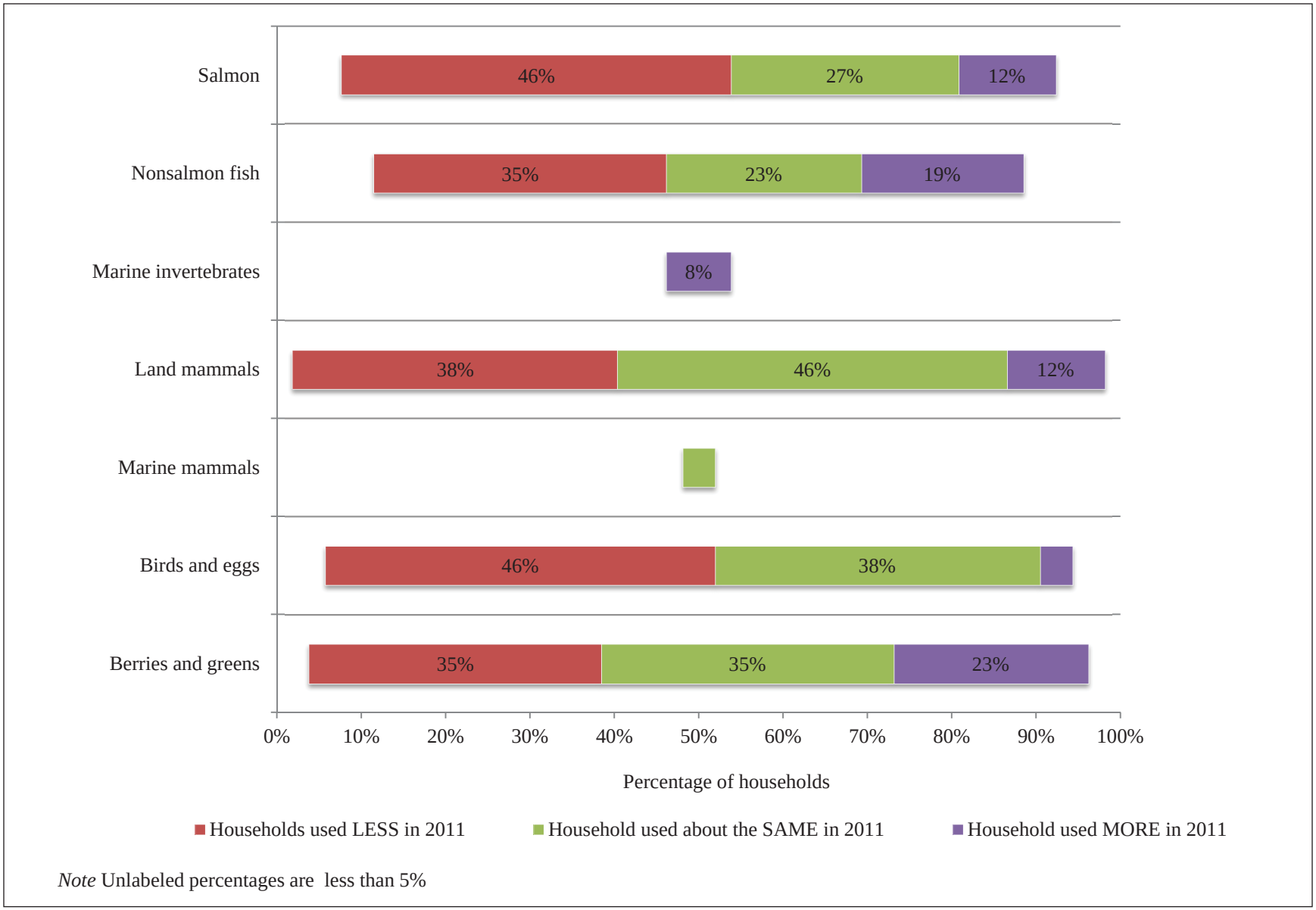
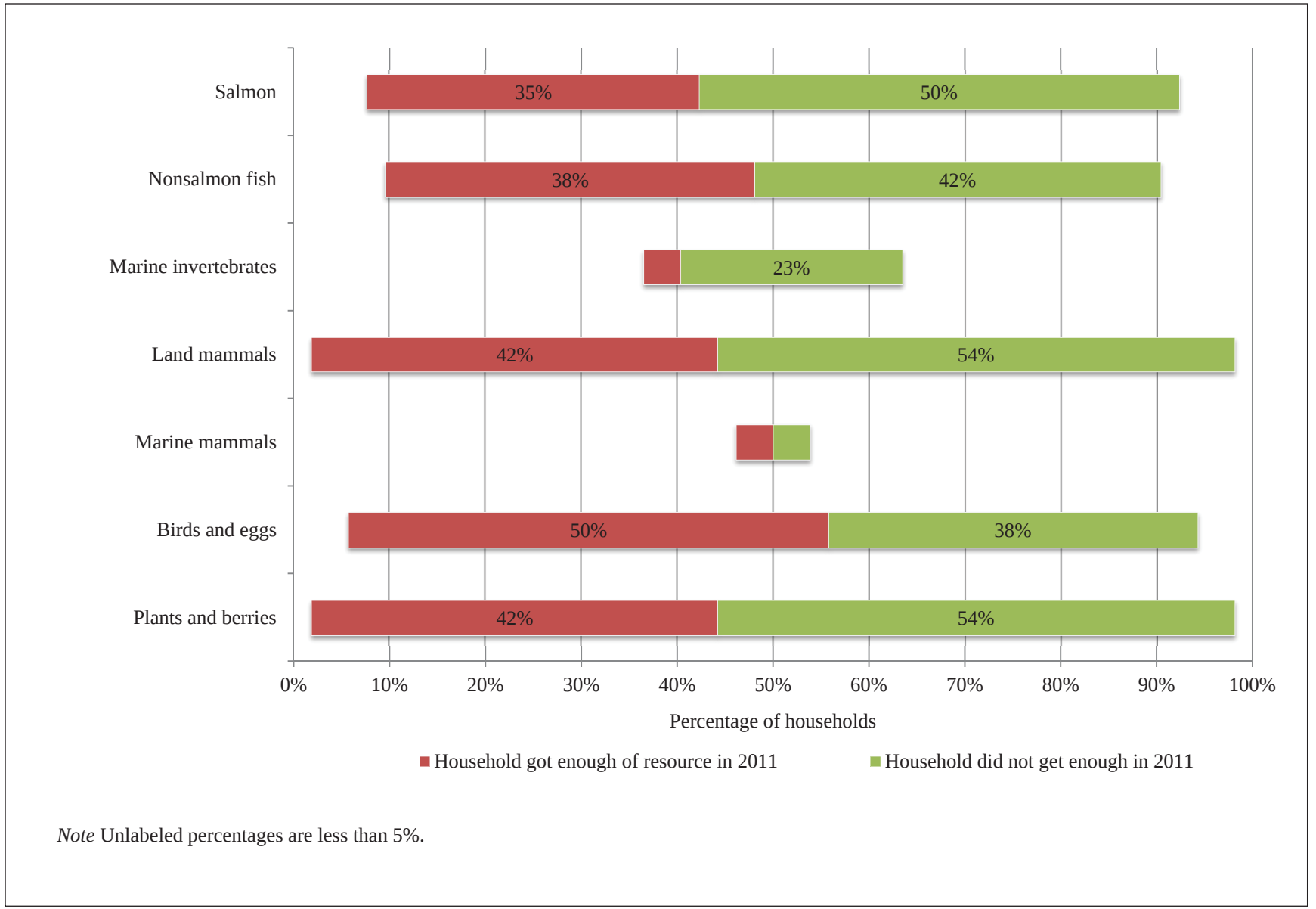


Figure 6-15.–Number of households using a resource and reporting LESS, SAME, or MORE use as compared to previous years, Nikolai, 2011.



Note Unlabeled percentages are less than 5%.

Figure 6-16.–Number of households reporting getting enough resources, Nikolai, 2011.

fort, and the high price of gasoline. Of Nikolai respondents who did not get enough land mammals and did things differently (Appendix Table D5-11 and Table D5-12), a majority reported using more store-bought groceries (82%) and 18% replaced these resources with other subsistence foods.

Salmon composed 26% of the total estimated harvest for Nikolai households in 2011, and 50% of households reported that they did not get enough of this resource; correspondingly, 46% of respondents reported using less salmon during the study year than in recent years. The consequences of not getting enough salmon were apparent; 46% of respondents who answered the question described the impact as minor, and 39% reported that it was major. Of households that reported what kind of salmon they needed more of, 62% said they needed more Chinook salmon, and 31% wanted more coho salmon. When asked why they did not get enough salmon, the most common reasons included work conflicts, less time, and regulations. As is the case for most resource categories, a majority of respondents who said they did things differently as a result of not getting enough salmon reported purchasing more store-bought foods (75%) and 25% reported that they made do without.

Along with large land mammals, berries and greens was a resource category that the largest percentage of households (54%) did not get enough of during the study year. In comparison, 58% of respondents said that they used the same amount or more of these resources in 2011 as compared to recent years. As in the case of large land mammals, it is possible that this disparity is due to harvests that consistently have not met the needs of Nikolai households. Another possibility is that a small percentage of households expended more effort during the study year; berries and greens was the resource category with the highest percentage of responding households reporting using more in 2011 (23%). A majority of households who did not get enough described the impact as minor (57%), while 36% said it was major. For those households that stated what kind of vegetation they needed, 86% said they needed more blueberries, and 79% wanted more salmonberries. A majority of respondents who did things differently as a result of not getting enough vegetation supplemented with store-bought foods (70%), while 20% asked others for help, and 10% increased their harvest effort.

Jobs, Income, and Expenses

Respondents were asked about both earned income (jobs held and wages earned by all household members 16 years and older) and other income from sources such as the Alaska Permanent Fund Dividend, Social Security, and public assistance. The survey also asked about months worked and the work schedule. As Table 6-7 shows, for 2011, Nikolai households cumulatively earned or received an estimated $1,116,876, of which $505,787 was from wage employment and $611,089 was from other sources. The average per household income for 2011 was $28,638.

Figure 6-17 shows the percentage of community income by source, both earned or other income. Local government, services related employment, social security, and the Alaska Permanent Fund Dividend together represented over half of Nikolai's total income in 2011.

Table 6-7. – Estimated earned and other income, Nikolai, 2011.

Income source	Number people	Number of households	Total for community	Mean per household[a]	Percentage of total[b]
Earned income					
Services	9.0	8.5	$154,320	$3,957	13.8%
Local government	18.0	15.3	$154,106	$3,951	13.8%
State government	10.5	11.9	$74,453	$1,909	6.7%
Retail trade	1.5	1.7	$32,681	$838	2.9%
Federal government	4.5	5.1	$28,488	$730	2.6%
Mining	1.5	1.7	$26,911	$690	2.4%
Transportation, communication, and utilities	3.0	3.4	$22,152	$568	2.0%
Agriculture, forestry, and fishing	3.0	3.4	$10,977	$281	1.0%
Other employment	1.5	1.7	$1,700	$44	0.2%
Earned income subtotal	**51.3**	**30.5**	**$505,787**	**$12,969**	**45.3%**
Other income					
Social Security		13.5	$141,062	$3,617	12.6%
Alaska Permanent Fund dividend		34.5	$134,505	$3,449	12.0%
Pension/retirement		6.0	$71,031	$1,821	6.4%
Unemployment		9.0	$64,021	$1,642	5.7%
Native corporation dividend		34.5	$59,925	$1,537	5.4%
Disability		6.0	$29,518	$757	2.6%
Energy assistance		19.5	$26,644	$683	2.4%
Food stamps		13.5	$24,923	$639	2.2%
Adult public assistance		6.0	$12,500	$321	1.1%
Longevity bonus		6.0	$11,683	$300	1.0%
Citgo fuel voucher		9.0	$10,631	$273	1.0%
Winnings		1.5	$7,500	$192	0.7%
Meeting honoraria		4.5	$4,829	$124	0.4%
Other		4.5	$4,412	$113	0.4%
Rental income		1.5	$4,050	$104	0.4%
Supplemental Security income		3.0	$3,855	$99	0.3%
TANF (temporary cash assistance for needy families)		0.0	$0	$0	0.0%
Workers' compensation/insurance		0.0	$0	$0	0.0%
Veterans assistance		0.0	$0	$0	0.0%
Child support		0.0	$0	$0	0.0%
Foster care		0.0	$0	$0	0.0%
Other income subtotal		**36.0**	**$611,089**	**$15,669**	**54.7%**
Community income total			**$1,116,876**	**$28,638**	**100.0%**

Source ADF&G Division of Subsistence household surveys, 2012.

a. The mean is calculated using the total number of households in the community, not the number of households for this income category.

b. Income by category as a percentage of the total community income from all sources (wage-based income and non-wage-based income.)

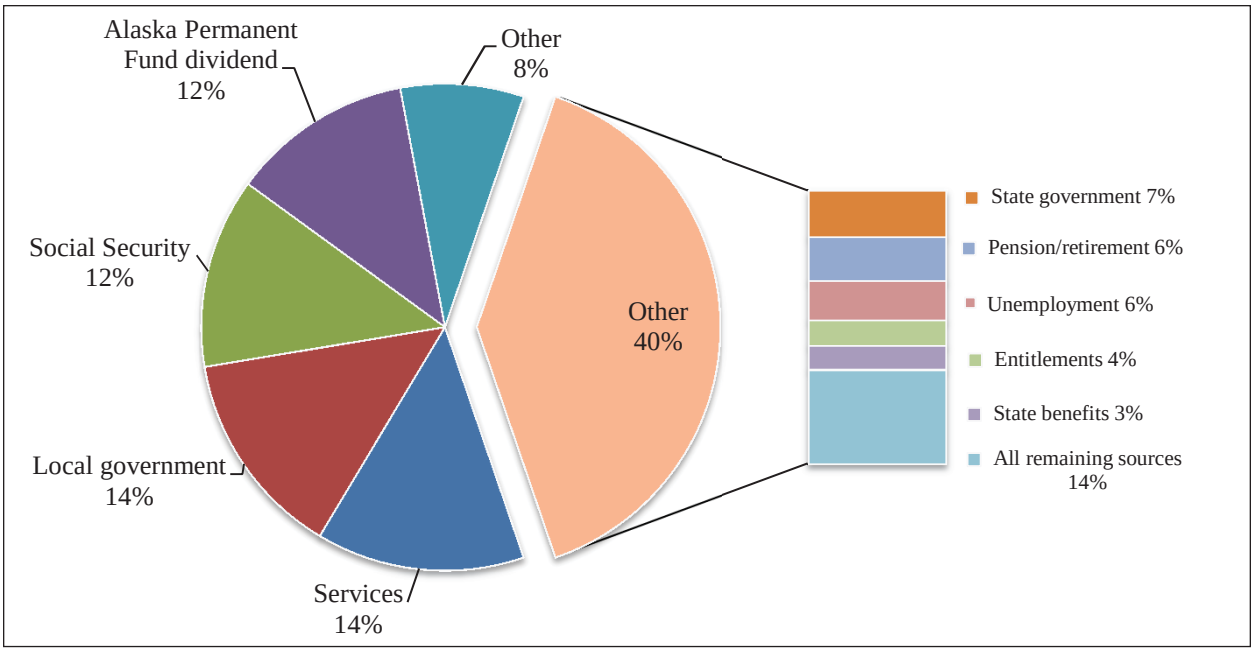


Figure 6-17.–Top 10 income sources ranked by estimated amount, Nikolai, 2011.

An estimated 51 out of 88 adults (58%) held at least 1 job in 2011 (Appendix Table D1-4). On average, those adults with jobs worked approximately 7 months of the year; the average number of weeks employed was 28. Thirty-five percent of employed adults worked year-round. The number of jobs held per employed household ranged from 1 to 8 with an average of 2.2. On average employed adults held 1.3 jobs. Of the jobs reported by Nikolai respondents, 26% were full time positions, 28% were part-time, 23% were on call or occasionally employed, and 7% were part time shift work; respondents did not report schedules for 15% of jobs (Appendix Table D5-13).

The main contributors to other, non-job related income were Social Security (13% of total community income) and the Alaska Permanent Fund dividend[5] (12% of total community income). Pension and retirement and unemployment (each 6% of total community income), and Native corporation dividends (5% of total community income) represented additional important sources of other income.

Nikolai respondents were also asked about annual household expenses for 2011. Household expenditures included housing, fuel, groceries, utilities, and subsistence related costs for items such as ammunition, gas, equipment parts, and other supplies. The sum of annual household expenses for the entire community in 2011 was an estimated $578,886, and the average household spent an estimated $14,843 on expenses related to housing, groceries, and subsistence in 2011 (Table 6-8).

Nikolai households on average spent more on groceries than on any other single annual expense measured by the survey: groceries represented an estimated 42% of all annual expenses. Store-bought groceries cost the average household approximately $6,212, with a community total of $242,268. In addition to store-

5. The Alaska Permanent Fund dividend paid $1,174 to eligible Alaska residents in 2011.

Table 6-8. – Estimated annual expenses, Nikolai, 2011.

Household expenses	Number of households	Total for community	Mean per household	Percentage of category	Percentage of total
Total expenses	**39.0**	**$578,886**	**$14,843**	**100.0%**	**100.0%**
Housing	39.0	$206,307	$5,290	100.0%	35.6%
Rent/mortgage	15.0	$52,959	$1,358	25.7%	9.1%
Stove oil	12.0	$23,288	$597	11.3%	4.0%
Firewood	16.5	$15,241	$391	7.4%	2.6%
Electricity	37.5	$74,419	$1,908	36.1%	12.9%
Propane	15.0	$12,243	$314	5.9%	2.1%
Water/sewer/garbage	6.0	$1,931	$50	0.9%	0.3%
Telephone	28.5	$10,822	$277	5.2%	1.9%
Television	19.5	$15,405	$395	7.5%	2.7%
Groceries	39.0	$244,413	$6,267	100.0%	42.2%
Store-bought groceries	37.5	$242,268	$6,212	99.1%	41.9%
Subsistence–customary trade	12.0	$2,145	$55	0.9%	0.4%
Subsistence	39.0	$128,165	$3,286	100.0%	22.1%
Gasoline	37.5	$89,746	$2,301	70.0%	15.5%
Ammunition	28.5	$5,114	$131	4.0%	0.9%
Equipment parts	22.5	$21,793	$559	17.0%	3.8%
Other supplies	13.5	$11,513	$295	9.0%	2.0%

Source ADF&G Division of Subsistence household surveys, 2012.

bought groceries, 12 households reported purchasing subsistence harvested wild foods through customary trade. In comparison to store-bought food purchases, the estimated total community expenditure of $2,145 for subsistence foods purchased with cash was negligible (< 1% of the total cash used to purchase food).

Annual housing expenses, including rent/mortgage, utilities, and television, accounted for 36% of Nikolai residents' total cash expenditures on basic expenses, with a cumulative value of $206,307 in 2011. Cash spent on electricity, rent, and stove oil formed the majority (73%) of housing expenses, with the remainder distributed between purchased firewood, television, propane, telephone, and water/sewer/garbage expenses. Most households in Nikolai use locally harvested firewood as a primary or secondary heat source. One indication of the reliance on firewood in Nikolai lies in the fact that stove oil expenses formed a lower percentage of all expenses in Nikolai (4%) than in any other community in this study.[6] Expenses for gasoline used for the harvest and transport of firewood are included below with other subsistence expenses (Figure 6-18).

Annual cash expenditures directly related to the subsistence harvest of wild foods and firewood formed 22% of Nikolai residents' total basic expenses and totaled an estimated $128,165. Gasoline purchased for subsistence purposes represented the second highest single expense with an estimated total community cost of $89,746 and gasoline purchases accounted for most (70%) of cash expenses directly related to subsistence. Other subsistence related annual cash expenses included expenses for equipment parts, ammunition, and other supplies such as rain gear, coolers, or camping equipment.

6. Other communities' stove oil expenses totaled between 7 and 13% of all expenses

Photo by David Runfola

Figure 6-18.–Nikolai steam bath house, "ninle," with locally harvested firewood. Spruce trees in background are on the far bank of the South Fork Kuskokwim River.

In addition to information on annual expenses, Nikolai residents answered questions related to the cost of equipment used for subsistence, including boats, boat motors, nets, snowmachines, ATVs, and trucks/cars (Table 6-9). Other than trucks and cars, which are very uncommon in Nikolai, many households own at least 1 of these vehicles or equipment items for subsistence.[7] Households that do not own their own vehicle or equipment are often able to use another household's property. For example, the percentage of households that owned the estimated total of 15 boats in Nikolai was less than half at 39%, but most households (84%) were able to use these boats for subsistence in 2011.

The total original cost of all of the snowmachines used for subsistence in Nikolai in 2011 was higher than any other vehicle or piece of equipment used for subsistence at $156,546, and the original purchase cost of the average snowmachine was $8,028. Other vehicles or pieces of equipment used for subsistence, ranked according to their total estimated community costs included boat motors ($145,938, mean original purchase cost of $9,622), ATVs ($107,494, mean original purchase cost $8,269), boats ($78,156, mean original purchase cost $5,153), trucks/cars ($49,920, mean original purchase cost $30,720), and fishing nets ($9,532, mean original purchase cost $550). While the total estimated community cost for all vehicles and equipment used for subsistence in 2011 was $547,585 (roughly equivalent to half of total 2011 community income), this cost is not recurrent annually as vehicles and equipment used for subsistence typically do not

7. Some households own vehicles or equipment items that were never used for subsistence during the study year (e.g., an ATV used exclusively for transportation or that was not in working order during the study year). Quantitative information on these vehicles and equipment items was not collected as part of this survey.

Table 6-9. – Estimated equipment costs and household use, Nikolai, 2011.

Table 6-9.–Assessment of equipment costs for Nikolai, 2011.

	Equipment used for subsistence					
	Boats	Boat motors	Nets	Snowmachines	4-wheelers (ATVs)	Trucks/cars
All households						
Using						
Estimated number	32.8	28.1	20.3	26.5	25.0	3.1
Percentage	84.0%	72.0%	52.0%	68.0%	64.0%	8.0%
Owning						
Estimated number	15.2	15.2	17.3	19.5	13.0	1.6
Percentage	38.9%	38.9%	44.4%	50.0%	33.3%	4.2%
Mean owned	0.4	0.4	0.7	0.6	0.3	0.0
Total estimated owned in the community	15.2	17.3	26.0	21.7	13.0	1.6
Mean original cost per household	$2,004	$3,742	$244	$4,014	$2,756	$1,280
Total estimated community cost	$78,156	$145,938	$9,532	$156,546	$107,494	$49,920
Estimated annual community cost	$3,531	$9,549	$962	$13,494	$8,380	$2,506
Only households owning						
Mean owned	1.0	1.1	1.5	1.1	1.0	1.0
Maximum owned	1	2	3	2	1	1
Mean original purchase cost	$5,153	$9,622	$550	$8,028	$8,269	$30,720
Minimum original purchase cost	$500	$250	$50	$1,000	$5,000	$20,000
Maximum original purchase cost	$10,000	$12,000	$600	$14,650	$7,250	$20,000
Median original purchase cost	$3,000	$7,000	$250	$5,500	$6,000	$20,000
Mean replacement time (years)	18.3	8.8	7.2	7.5	8.0	13.5
Minimum replacement time (years)	15	3	2	2	3	14
Maximum replacement time (years)	20	20	30	15	15	14
Median replacement time (years)	20.0	7.0	3.5	7.3	6.0	13.5

Source ADF&G Division of Subsistence household surveys, 2012.

need to be replaced for several years. For example, respondents described that the average replacement time, or length of use, for boat motors, nets, snowmachines, and ATVs ranged from 7–9 years, and boats average replacement time was 18 years. As such, the estimated total annual community cost of vehicles and equipment used for subsistence ($38,442) is substantial, but smaller than gasoline and store-bought groceries.

Food Security

Respondents were asked a short series of questions intended to assess their household's food security; that is, "access by all people at all times to enough food for an active, healthy life" (Nord et al. 2009:2). The food security questions were modeled on questions developed by the U.S. Department of Agriculture (USDA) and modified by ADF&G to account for differences in access to subsistence and store-bought foods. Core questions and Nikolai responses are summarized in Figure 6-19.

Based on their responses to these questions, households were categorized as having high, marginal, low, or very low food security following a USDA protocol (Bickel et al. 2000). In Nikolai in 2011, 65% of surveyed households were categorized as having high or marginal food security, 23% as having low food security, and 12% as having very low food security (Figure 6-20). This suggests that Nikolai households experienced much lower levels of food security than Alaska statewide or United States national averages in 2011.

Respondents whose answers to survey questions indicated food insecure conditions for their household were asked to describe in which months these conditions occurred in 2011. Figure 6-21 shows food insecure conditions throughout the year. Households with high and marginal food security experienced little seasonal variation in food insecurity throughout the year and had consistently low levels of food insecurity. In contrast, survey responses indicate that households categorized as having low or very low food security experienced relatively high levels of seasonal variation in food security levels. Low food security households, for example, generally described that in winter months, food insecurity conditions increased. These households were less food secure in winter months (beginning in October and ending in April) than they were in other months of the year. While it is not clear why this pattern emerged, explanatory factors may include a decrease in subsistence resource availability in winter months, decreases in cash employment opportunities in winter months, increased costs and efforts related to heating homes in winter months, increased frequency of flight delays and related delays of store-bought food shipments, or unique circumstances that affected individual households in 2011. A pattern of seasonal variation in food security conditions also emerged for those households categorized as having very low food security in 2011, although this pattern differed from that for low food security households. While food insecurity conditions for these households occurred throughout the year, the highest levels were in July and August. While it is not clear why this pattern emerged, explanations may include a decreased ability to store food in summer months for households without access to freezers, or unique circumstances affecting individual households in 2011.

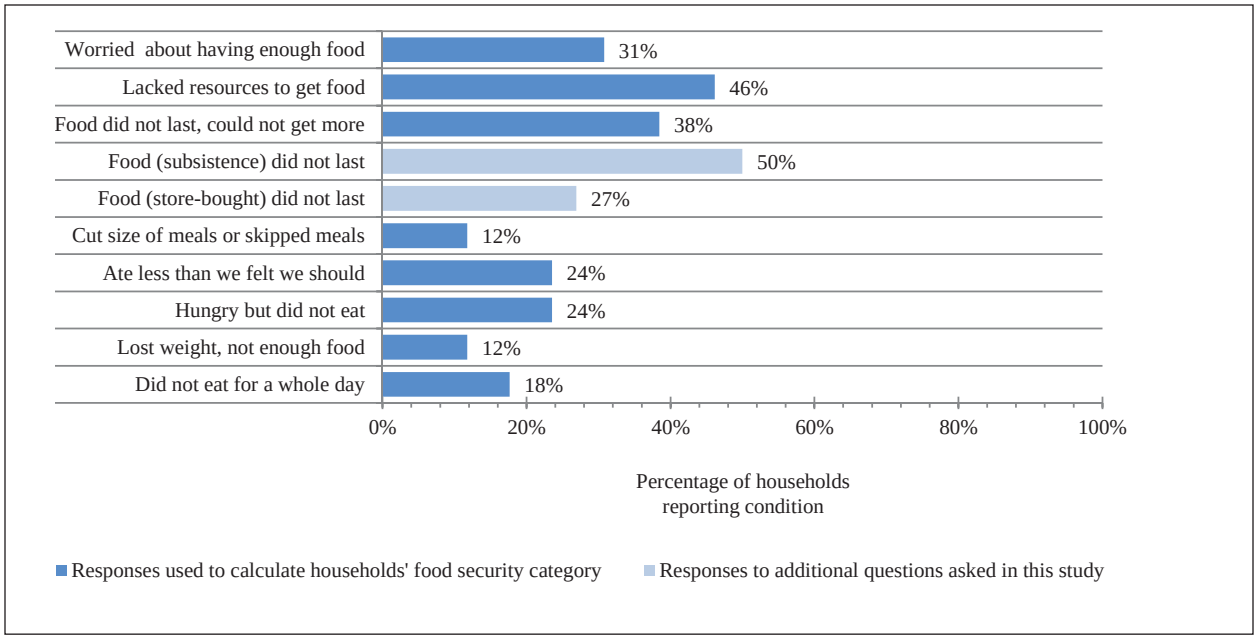


Figure 6-19.–Food insecure conditions results, Nikolai, 2011.

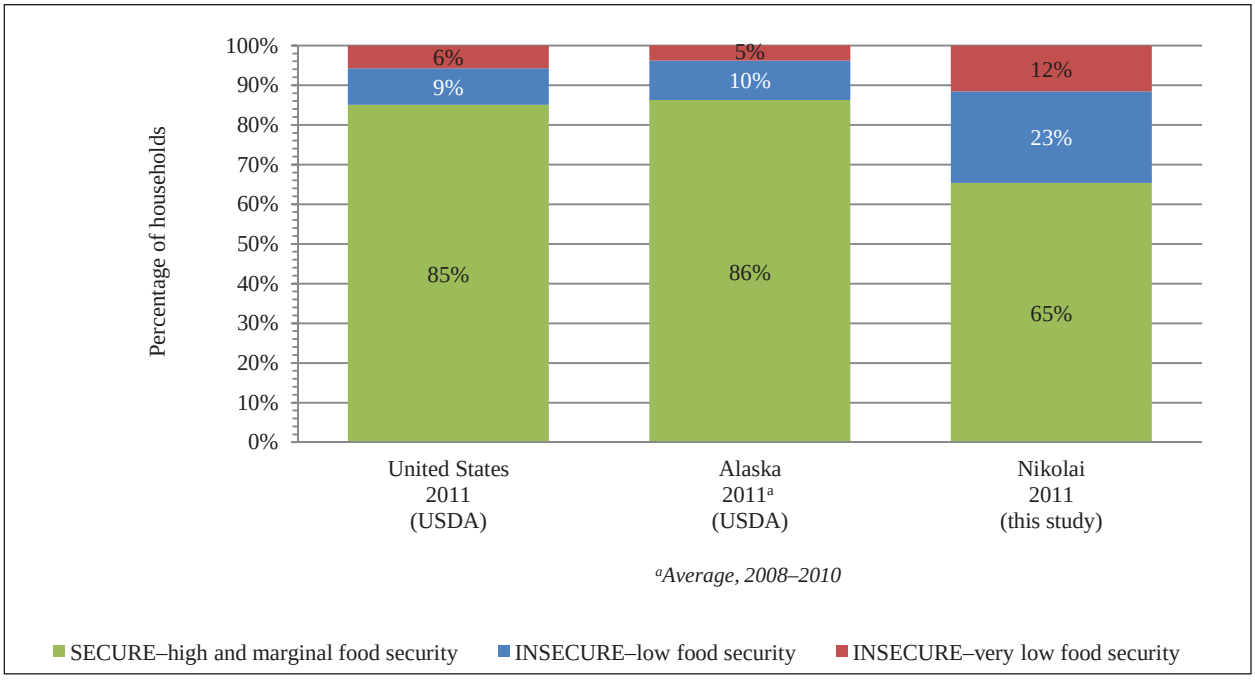


Figure 6-20.–Food security categories, Nikolai, 2011.

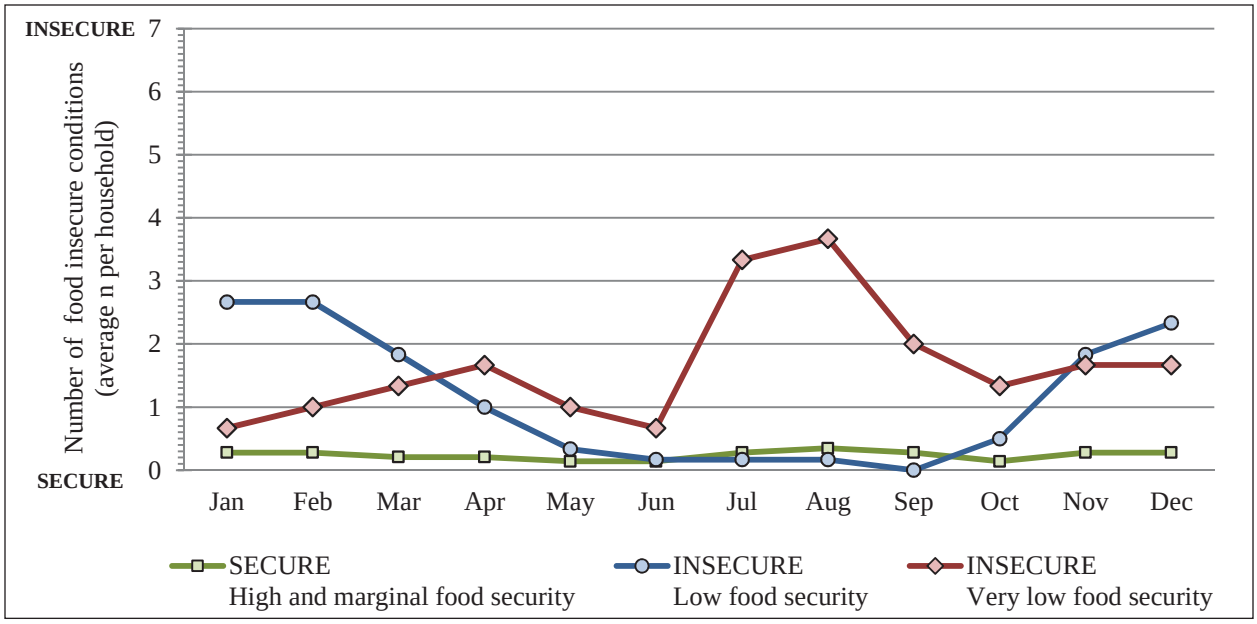


Figure 6-21.–Food insecure conditions by month and by household category, Nikolai, 2011.

Wild Food Networks

For each resource category on the survey form, respondents were asked to identify households that harvested and processed the resources that the respondent household used. Figure 6-22 depicts the flow of wild foods between households within Nikolai or received from other communities in Alaska.

Each line in the figure represents at least 1 instance of a reported food sharing event in a surveyed household; extensive sharing of wild foods between households is readily apparent in the figure. Every household in Nikolai described being connected through wild food sharing to at least two and typically several other households. Several unsurveyed households, represented as grey squares, that surveyed households reported as sources of wild food indicate that the subsistence food network is probably more extensive and complex than what is depicted in the figure. There is considerable diversity in the composition of individual households within the subsistence food sharing network. Differences in age class or marriage/partner status of household heads do not appear to have a substantial effect on levels of sharing between households. High harvesting households, depicted by their representative shape's increased size relative to other households, include all 3 age groups, indicating that subsistence harvesting and sharing patterns are likely transferring between generations.

Respondents reported 5 other Alaska communities as sources of wild foods. The central location of the nearby community of McGrath in the network graph suggests a well-developed subregional wild food network. Other communities are all located near the periphery of the network and reflect fewer connections with Nikolai households. The relatively few numbers of and limited connections to other communities when compared to other communities in this study (see for example McGrath Figure 3-20) is perhaps reflective of the historical and current difficulty in access to Nikolai from other communities.

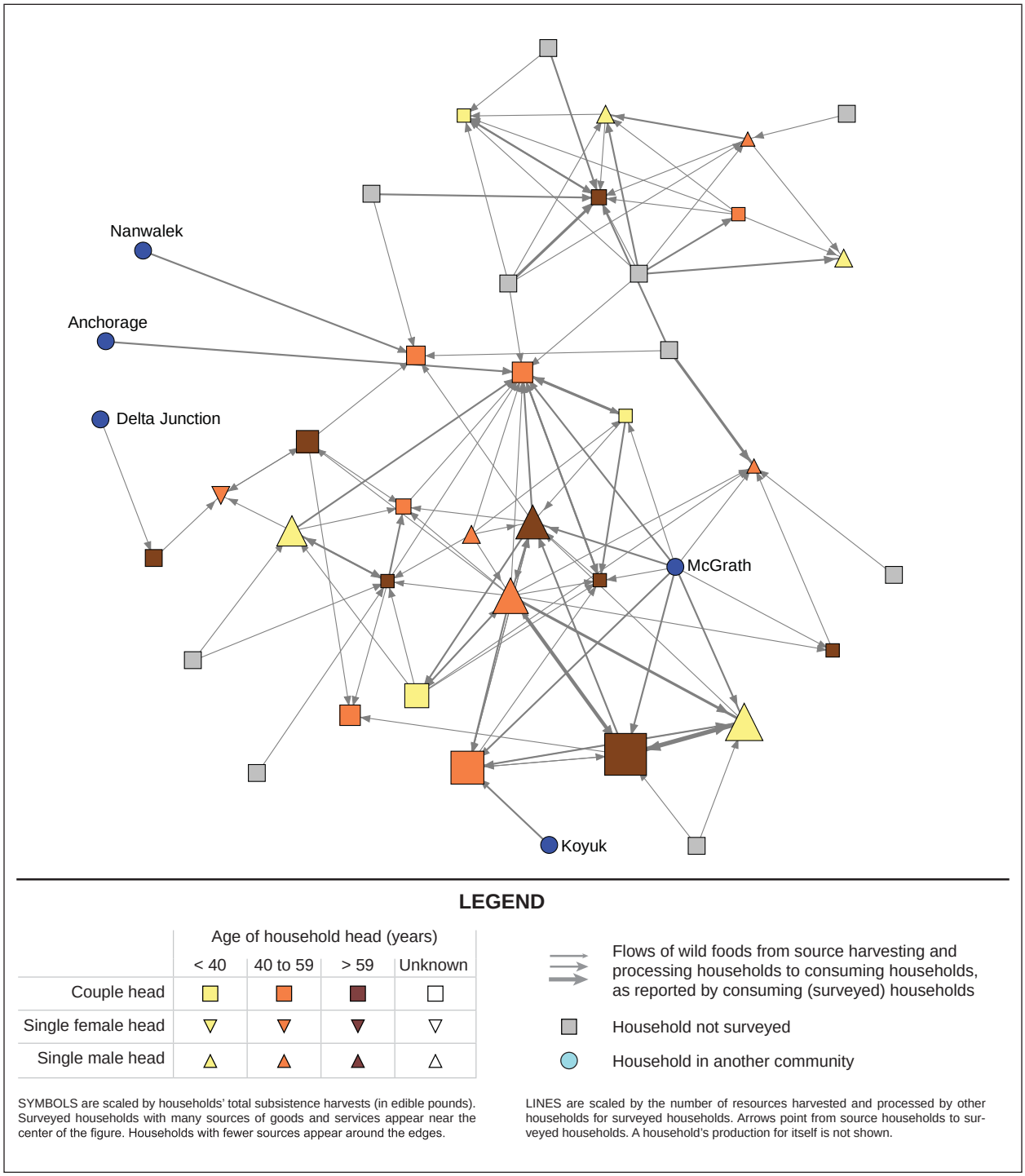
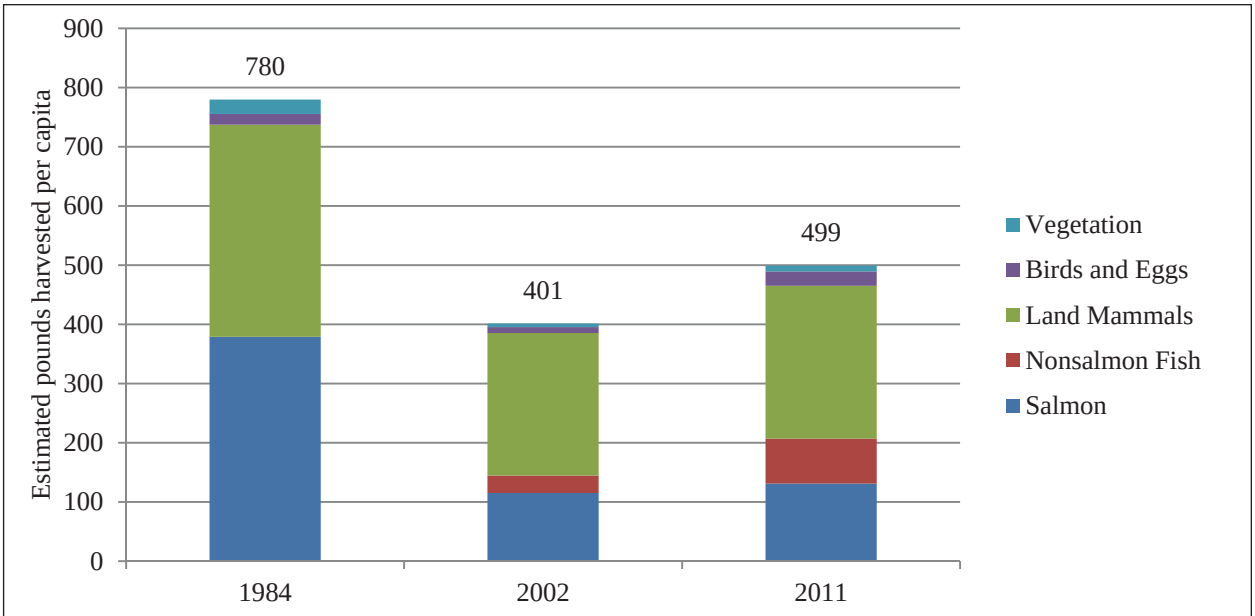


Figure 6-22.–Wild food harvesting and processing network, Nikolai, 2011.



Note Nonsalmon fish harvests were not provided in a comparable manner for the 1984 study.

Figure 6-23.–Estimated pounds harvested per capita by resource category, Nikolai, 2011.

Comparisons with Prior Results

Comparison of Nikolai residents' 2011 estimated subsistence harvest to previous harvest information allows greater understanding of changes in the composition, quantity, and patterns of annual subsistence harvests over time. This section discusses the results of the 2011 study in comparison to previously collected data. Qualitative data on historical subsistence harvest and use patterns in Nikolai comes primarily from ethnographic information collected for this project and other ADF&G Subsistence Division research in Nikolai, as well as information collected by Collins (2004) as part of an oral history of the region. Quantitative harvests estimates have been developed by several ADF&G researchers over the past 30 years. This study is the second comprehensive subsistence harvest survey conducted by ADF&G in Nikolai, with a previous comprehensive survey completed for the study year 2001–2002 (Holen 2006). In addition to comprehensive surveys, ADF&G Division of Subsistence researcher Jeff Stokes conducted harvest surveys for moose and salmon (1981–1984), and developed harvest estimates for other resources in 1984 based on information gathered while living in Nikolai over several years (Stokes 1985)[8]. Salmon harvest surveys were conducted by ADF&G annually for most years from 1990–present (Carroll and Hamazaki 2012). The results from this current study are compared and contextualized below with information from these previously mentioned studies on an individual resource category basis. In general, no obvious changes in harvest patterns at the resource category level are apparent between the 3 study years, with the exception of salmon (specifically chum salmon), which were likely harvested in much higher numbers in 1984 than in 2002 and 2011 (Figure 6-23).

8. Comparisons between the non-systematic harvest estimates developed by Stokes (1985) and the systematic harvest estimates developed through household surveys in 2002–2003 (Holen 2006) and 2012 (this study) must be viewed with some caution. Specific comparisons which are likely problematic are discussed below.

Photo by James M. Van Lanen

Figure 6-24.–Nikolai fish camp, Salmon River.

Salmon has long formed an important component of the annual subsistence harvest in the upper Kuskokwim River region; evidence from oral history suggests that salmon were actively harvested at the time of first Russian contact in the area (ca. the mid-1800s), and likely since much earlier times. Information on historical subsistence salmon harvests in Nikolai indicates that while the importance of subsistence harvested salmon in the Nikolai area has persisted into the present, salmon harvest patterns have changed considerably over time. Major changes in harvest patterns include changes in gear types used to harvest salmon, a decrease in the amount of time spent salmon fishing on an annual basis for most households, a decrease in the amount of chum salmon harvested, and possible decreases in the harvest of other salmon species (Figure 6-24).

Since the early contact period, Nikolai residents have used several different gear types to harvest salmon, including spears, wooden fish weirs and traps, fish wheels, gillnets, and rod and reel. In recent years the most common salmon fishing gear types in Nikolai have been set gillnets and rod and reel; in 2011, these were the only reported gear types used for harvesting salmon. Gear types used to harvest salmon have changed along with changes in the availability of outside manufactured goods, fishing regulations, and needs for salmon used as dog food.

Historical information suggests that prior to Russian contact in the Upper Kuskokwim River region, area residents harvested pre-spawning Chinook salmon at a few key clearwater locations with wooden fish fences

and traps, as well as harvesting spawning or spawned-out salmon by hand or fish spear in upriver tributaries (Stokes 1985:212; Collins 2004:19). These methods are currently not widely used by Nikolai residents. One resident described that coho salmon are occasionally, opportunistically harvested with makeshift spears in upriver spawning tributaries while hunting upriver from Nikolai, but this was not reported for the 2011 study year. At statehood, the State of Alaska adopted AS 16.10.070 to ban the use of fish traps for commercial salmon fishing as a conservation measure (Colt 1999:2). The statute, however, "does not prevent the operation of small hand-driven fish traps of the type ordinarily used on rivers of the state that are otherwise legally operated in or above the mouth of a stream or river." Correspondingly, a fyke net, defined as a "fixed, funneling (fyke) device used to entrap fish" is a type of legal gear for subsistence fishing in Alaska, "unless otherwise provided" in regulations by the Alaska Board of Fisheries (5 AAC 39.105(d)). Nevertheless, the board adopted regulations which exclude fish traps and fences as legal gear for subsistence salmon fishing in the Kuskokwim Area (5 AAC 01.270(a)). Consequently, fish traps and fences have not been used in Nikolai since the mid-1960s when the regulation was first enforced in the area (Stokes 1985:224; Ikuta et al. 2013:107–109).

Fish wheels were widely used by Nikolai residents to harvest salmon for much of the 20th century. In the early 20th century, increases in mining activity in the region led to a demand for chum salmon to be used as food for dog teams, and many families in the area began using fish wheels to meet this demand in the early 20th century (Schneider 1985:12). Until the late 1960s, most Nikolai households spent a large portion of each summer at Medfra (a now unoccupied community downriver from Nikolai) harvesting chum salmon for use as dog food, both for personal dog teams and for sale or trade to others. Since the replacement of dog teams with snowmachines beginning in the 1960s, the use of fish wheels to harvest chum salmon has largely ceased.

Following the prohibition on fish fences in the 1960's, Nikolai residents continued fishing at traditionally-used, clearwater fish fence sites to harvest Chinook salmon but transitioned from using fish fences to primarily using rod and reel at these locations. Rod and reel harvests of Chinook salmon formed over 20% of the Chinook salmon harvest in 2011.

Set gillnets are currently the subsistence gear used to harvest the majority of salmon in Nikolai. In 2011, most residents used manufactured gillnets or net materials purchased commercially. Although Upper Kuskokwim River residents used gillnets made of caribou sinew or willow bark for harvesting non-salmon fish species in the precontact era, these nets were generally not durable enough for directed salmon fishing (Stokes 1985:216).

Related to the changes in gear type used to harvest chum salmon above, in recent years there have been considerable decreases in both the amounts of chum salmon Nikolai residents harvest to feed dogs and the amount of time most families spend fishing for salmon each summer. Until the introduction of snowmachines in the area, most families would spend nearly the entire summer fishing for salmon, focusing early efforts on Chinook salmon and some early run chum salmon, *nolaya*, for human food, and from later July through the remainder of the summer fishing for late season chum salmon, *srughot'aye*, used primarily for dog food.

Ethnographic information suggests that in recent years only a few families travel to a salmon fishing camp for more than a week or two each summer. While a few (12%) households continue fishing for chum salmon for dog food in Nikolai (91% of chum salmon were used as dog food in 2011), according to respondents harvest levels are far lower than in past decades. In addition to the effects of a reduced need for chum salmon, decreased time spent salmon fishing is also likely related to the replacement of fish wheels and traditional fish fences with set gillnets and rod and reel. While fish fences and to a lesser extent fish wheels required a large investment of time and energy from multiple people, set gillnets and rod and reel fishing are portable and relatively easily used by 1 individual. As such, week-long, weekend, or day trips for salmon fishing are much more practical and common than in the past.

Quantitative estimates for Nikolai subsistence salmon harvests were collected by ADF&G Subsistence Division staff from 1981–1984 (Stokes 1985) and for most years from 1990-2011 by ADF&G Division of Subsistence (1990–2007) and Division of Commercial Fisheries (2007–present). Comparison of Nikolai residents' 2011 subsistence salmon harvest estimates to historical harvest estimates reveals possible trends in harvest quantities over time, including a large decrease in chum salmon harvests and variable but possibly decreasing annual harvests of Chinook and coho salmon (Figure 6-25).

As indicated by key respondents in Nikolai and described above, annual quantitative harvest estimates indicate a dramatic reduction in the average annual harvest of chum salmon in the past half century. For example, harvest estimates for chum salmon from 1981–1984 averaged 3,940 individual chum salmon annually, an order of magnitude greater than the estimated 2011 harvest of 339 chum salmon. While specific harvest estimates are not available for years prior to the 1980s, annual chum salmon harvests were likely much higher than the 1981–1984 average for years prior to the introduction of snowmachines. Harvest estimates developed from post-season salmon surveys likely indicate an additional smaller decline between 1990 and 2011, with an average annual harvest of 400 chum salmon between 1990 and 1999 and an average annual harvest of 225 chum salmon between 2000 and 2011.

No clear patterns emerge from historical Chinook salmon harvest estimates, although there is some indication that harvests in recent decades are much lower than in the period of fish fence utilization prior to the 1960s. Harvest numbers for salmon prior to the 1960s are vague; some evidence from area residents suggests that up to 2,000 Chinook salmon were harvested annually at fish fence locations on the Salmon River until the mid-20th century, and another 200–300 annually at fish fence sites on the Little Tonzona River (Stokes 1985:9, 28). Although Nikolai residents have become skilled at using rod and reel at these clearwater locations to harvest Chinook salmon in the decades since fish fences' prohibition and are able to harvest substantial quantities of salmon, harvest levels of Chinook salmon at former fish fence sites have probably declined somewhat. Several respondents described additional declines in Chinook salmon harvests over recent decades. Post season salmon surveys from 1990–2011 provide the most comparable data between years as the survey design and methodology have changed little over this time (Figure 6-26): although there has been a decline from the 1990–1999 average of 488 Chinook salmon to the 2000–2011 average of 388 Chinook salmon, there have also been relatively high levels of interannual variability in salmon harvests

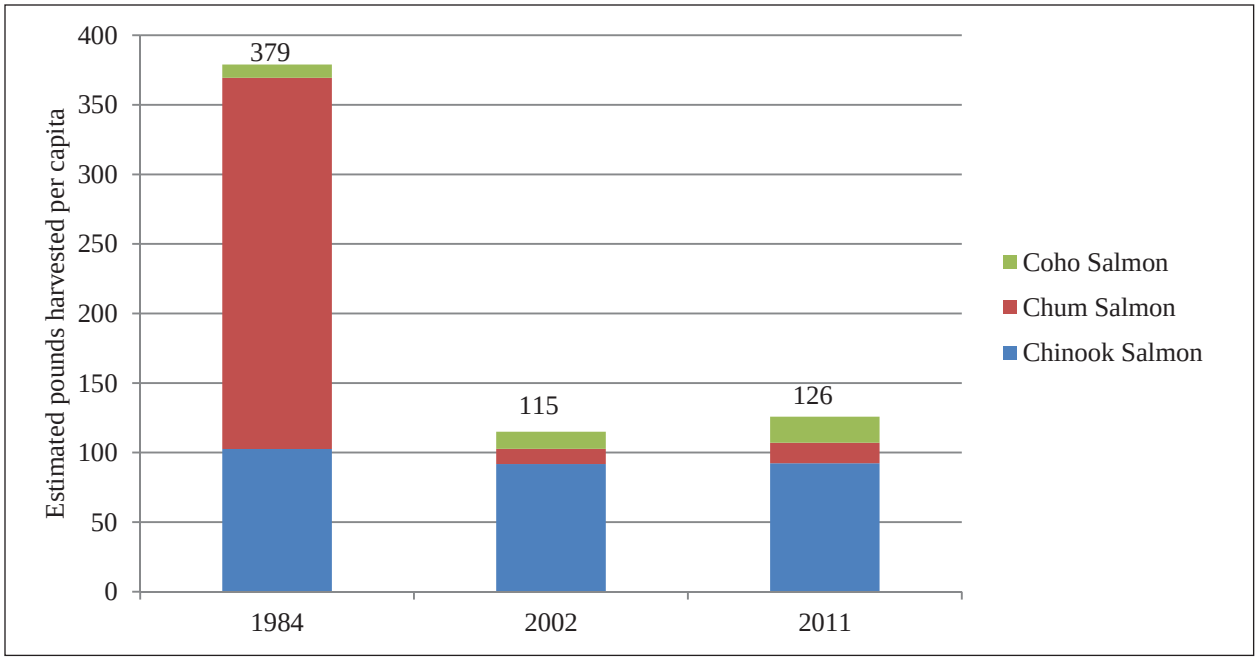


Figure 6-25.–Estimated pounds of salmon harvested per capita, Nikolai, 1984, 2002, and 2011.

(ranging from 144 Chinook salmon in the year 2000 to 938 Chinook salmon in 1995) (Carroll and Hamazaki 2012:69; Hamazaki personal communication 2013). Comprehensive subsistence surveys for 2002 and 2011 (this study) differ from the post season salmon surveys in design and methodology, and estimated harvests of 751 Chinook salmon in 2002 and 1,143 in 2011 are higher than those developed from post season salmon surveys. Because of the large interannual variability between the post season surveys themselves, and between post season surveys and comprehensive subsistence surveys, identifying clear trends in Nikolai's annual Chinook salmon harvests for recent decades is not possible at this time. A similar situation exists for annual coho salmon harvests, with even greater levels of interannual variability and differences between data for different surveys.

Previously collected harvest information for nonsalmon fish species by Nikolai residents that is comparable to data collected for this study exists only for 2002. Estimated harvests of nonsalmon fish species in 2011 were higher than those in 2002, both in terms of per capita and total harvests.

The total estimated edible weight contribution of 8,883 lbs in 2011 is over 3 times the harvest of 2,830 lbs in 2002, and the comparison of per capita harvests, which control for population and household size variability, are similarly higher in 2011 when compared to 2002 (Figure 6-27) . Harvests of all nonsalmon fish species other than burbot and grayling were higher in 2011 than in 2002, with higher harvests of sheefish, other whitefishes, and northern pike accounting for most of the difference in harvests. It is not clear if this apparent increase in harvests represents a normal level of interannual variation or a trend toward increasing harvests.

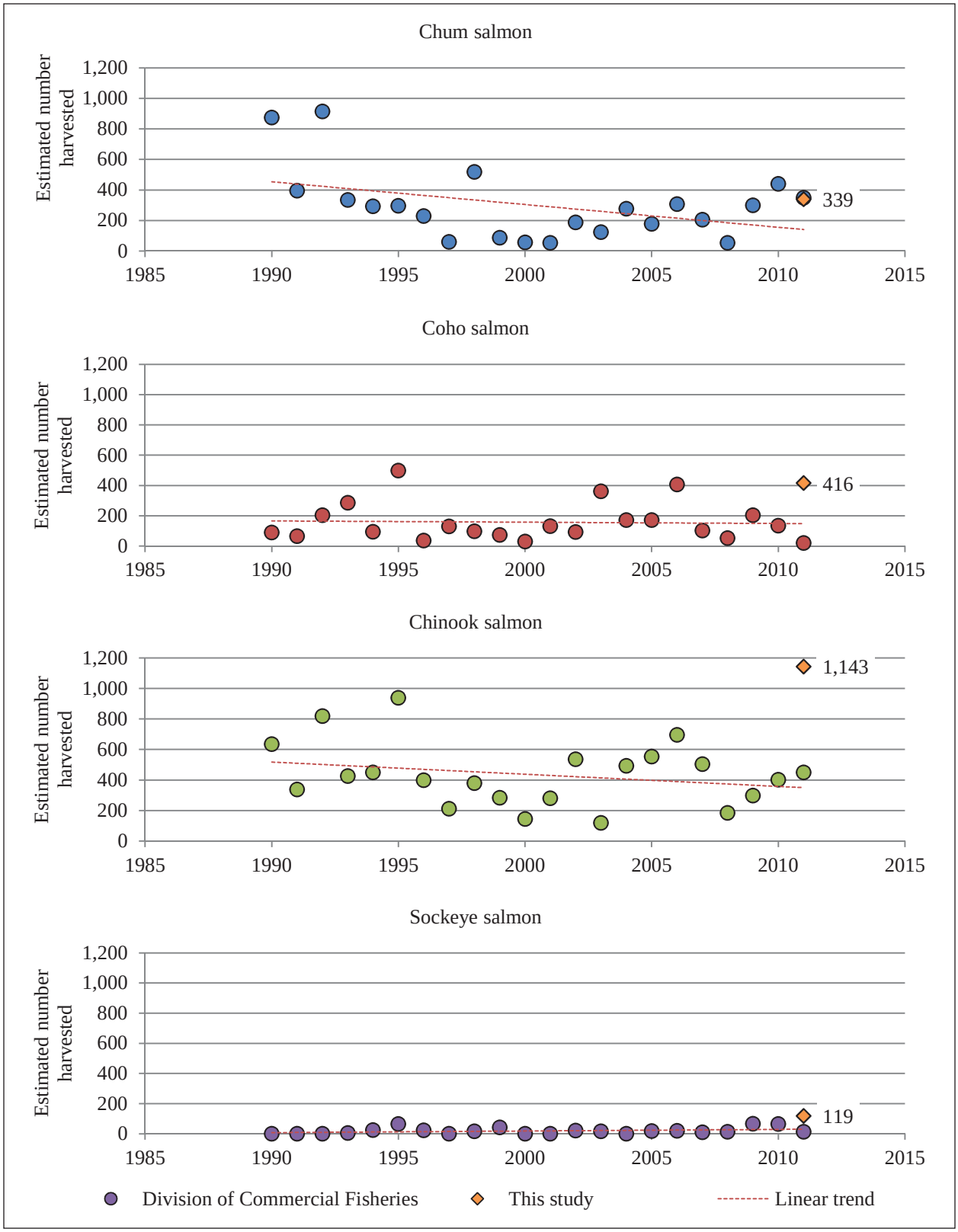


Figure 6-26.–Estimated total number of chum, coho, Chinook, and sockeye salmon harvested by residents, Nikolai, 1990–2011.

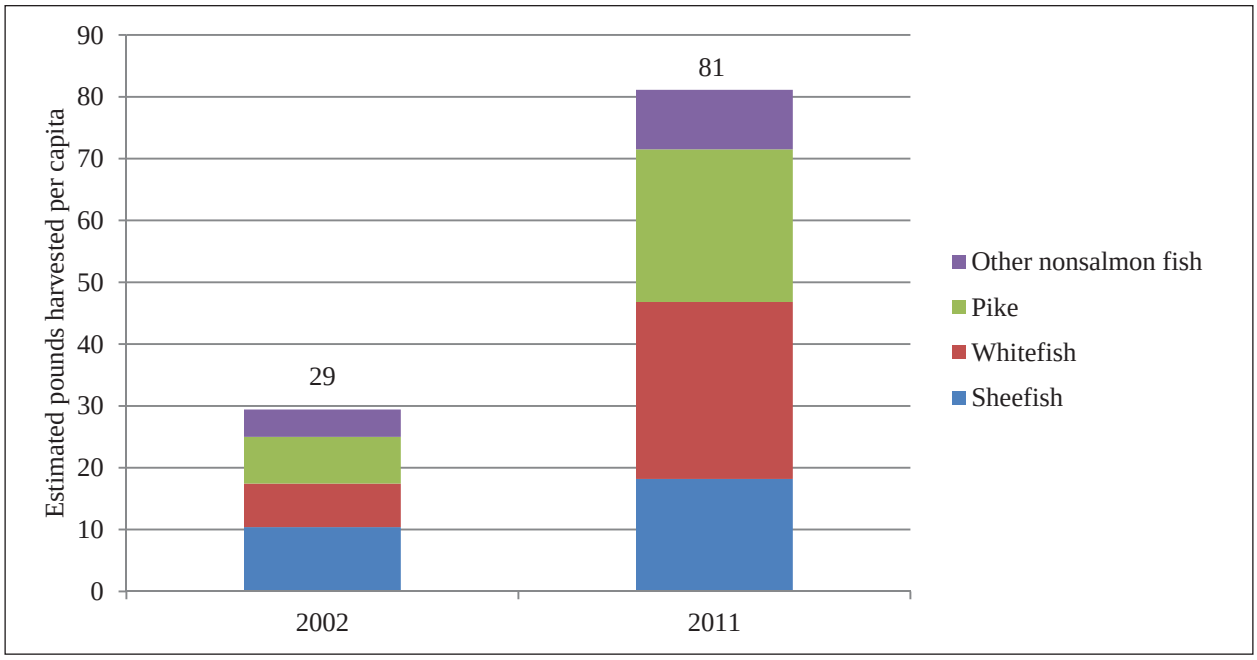


Figure 6-27.–Estimated pounds of nonsalmon fish harvested per capita, Nikolai, 2011.

Although harvests of nonsalmon fish species were estimated by ADF&G researcher Jeff Stokes and are included in the ADF&G Division of Subsistence CSIS, these numbers were not based on systematic household surveys and are not used for comparison here. Similarly, post season salmon surveys conducted annually from 1990–present currently include nonsalmon fish harvest questions, but differences in survey timing and design preclude comparison with data collected as part of this study.

Moose contributed more by edible weight to Nikolai's annual subsistence harvest in 2011 than any other subsistence resource. Some elder Nikolai residents recalled that moose were not present in the area in the early 20th century, "That time I was born around Nixon Fork, there was no moose in this area at that time. No moose. I remember only caribou and black bear." Since the mid-20th century moose has formed one of the most important foods in the area. While relatively little is known about historical moose harvest numbers prior to the 1980s, in 1970 the Alaska Board of Game acknowledged that two moose per household was a general minimum annual need for Nikolai households (Stokes 1985:113), and harvest numbers prior to the 1980s likely reflected this need. More recently, historical Nikolai moose harvest data were collected for the years 1981–1984 and also for the year 2002. The average annual harvest from 1981–1984 was 51 moose annually (around 1.5 moose per household), while estimated harvests in 2002 and 2011 were 38 and 42 moose, respectively (around 1 moose per household for both years). Per capita moose harvest estimates for 2002 and 2011 were also less than in 1984 (Figure 6-28). Data from harvest ticket returns, which provide an indication of minimum but not total annual harvests, indicates that Nikolai residents harvested an average of at least 28 moose annually between 2001 and 2011, ranging from 21 to 36 individual moose annually

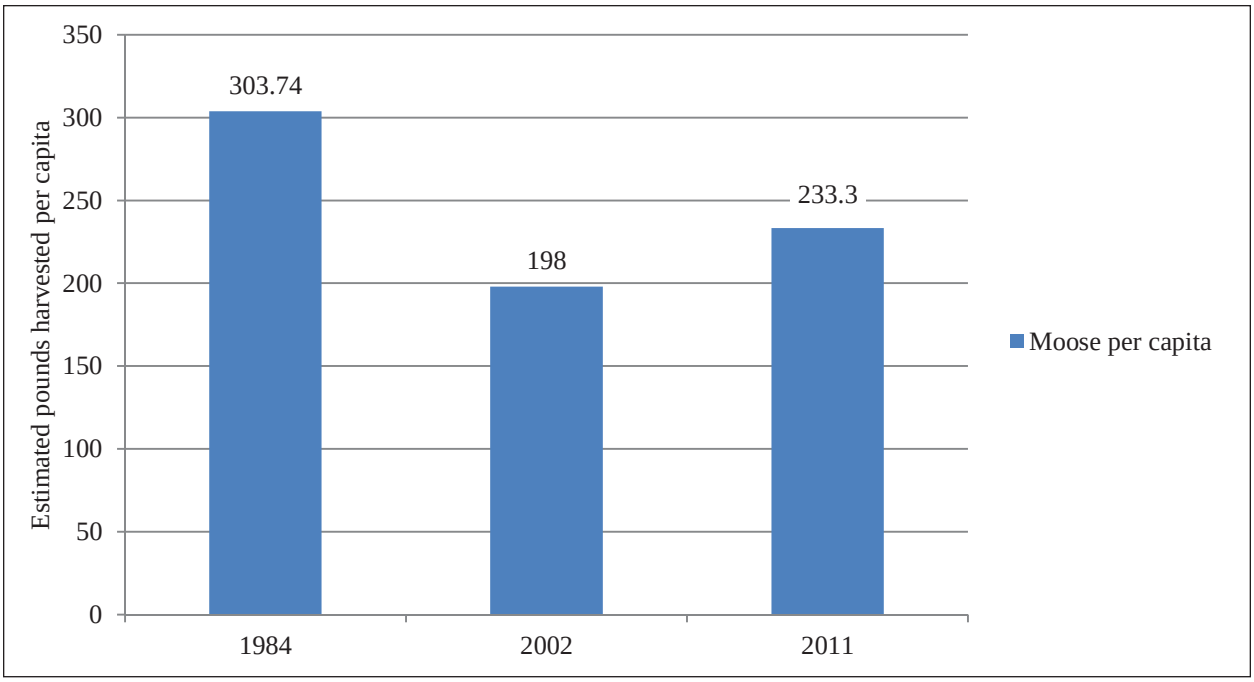


Figure 6-28.–Estimated, pounds of moose per capita, Nikolai, 1984, 2002, and 2011.

and showing no indication of declining harvests (Winfonet[9]). Moose harvests therefore may have declined somewhat from historical levels but have likely remained fairly stable over the past decade.

Moose harvest areas in 2011 were fairly similar and largely fall within areas depicted for 1967–1983 in Stokes (Stokes 1985:92). One exception is the increased use of an area around Telida by Nikolai residents that was depicted for Telida but not Nikolai residents in the previously mentioned report. This change likely reflects the current residency of several households with ties to Telida that moved to Nikolai following then closure of the Telida school in 1996 (Collins 2004:4, 82).

Nikolai residents indicated that caribou harvests have been low in the past decade when compared with much of the 20th century, and harvest records confirm this. Nikolai residents harvested an estimated 20 caribou in 1984 and 17 in 2002, but the 2011 estimated harvest was only 2 caribou. Although caribou have historically been a major part of the subsistence harvest in Nikolai, recent declines in caribou herd abundance in the area have led to decreasing caribou harvests. Several respondents attributed such declines in caribou populations near Nikolai to an influx of the Mulchatna herd in the late 1990s. According to these respondents, many caribou from the Mulchatna herd migrated through the area near Nikolai, largely absorbing several smaller local groups of caribou along the way and effectively removing local caribou from the area.

9. The Alaska Department of Fish and Game maintains a record of hunters' and trappers' reported wildlife harvests and related information in a database known as the Wildlife Information Network (WinfoNet). Data in WinfoNet are accessed through an ADF&G intranet website. Some harvests of large land mammals and furbearers are required by regulation to be reported to the Division of Wildlife Conservation in the form of a general hunt harvest ticket or a harvest report from a registration, drawing, Tier I, or Tier II hunt permit, or by having furs of certain species sealed by ADF&G or a certified fur sealer (5 AAC 92.010; 5 AAC 92.170).

> This year, the last few years, last 10 years there was hardly any caribou around here. We're missing caribou. Back in 1998 when Mulchatna Herd was starving…it came up to our hunting areas up here…and then it got the local caribou. And the local caribou migrated away with them. So our caribou population just took a nose dive. (012712NIK3)

Some respondents indicated that some caribou from smaller local herds remain in the foothills of the Alaska Range, likely representing caribou that are part of the Tonzona, Big River–Farewell, and Rainy Pass herds (Seavoy 2011:116). Some residents expressed that hunting regulations for these herds do not provide a reasonable opportunity for harvest, as there is currently only a fall season hunt during open water periods. Although a few Nikolai residents are able to travel to these locations with shallow draft boats and motors, the majority of Nikolai residents do not have regular access to locations upriver from Nikolai in the fall when rivers are very shallow in braided upriver areas.

The 2011 harvest of black bears may indicate an increase in black bear harvests over the past several decades. Nikolai residents regularly utilize black bear as a wild food resource, and Nikolai residents' estimated harvest of 21 black bears in 2011 provided around 2% of the total subsistence harvest by edible weight. In 1984 and 2002, Nikolai residents harvested an estimated 6 and 18 black bears, respectively. Stokes described that black bear harvests in the early 1980s did not contribute substantially to the diet of Nikolai residents, largely due to cultural taboos and restrictions on consumption, such as a prohibition on consumption by all residents other than men and older women. In 2012 some key respondents indicated that these restrictions are not as rigidly followed as in the past for at least some Nikolai households, which may have influenced the higher harvest in the past decade relative to the early 1980s. Most search and harvest areas for black bears depicted for 1967–1983 (Stokes 1985:153) were used by Nikolai residents in 2011, and black bears were regularly harvested opportunistically while pursuing other resources such as moose.

Harvests of Dall sheep in 2002 and 2011 indicate a reduction in harvest over the past half century. Information from historical sources indicates that Dall sheep have long been harvested by area residents. No Nikolai residents harvested Dall sheep in 2002 or 2011. The seasonal round of area residents prior to more permanent residence in Nikolai (following the construction of a school) often included harvesting Dall sheep in the Alaska Range during the fall, as well as in the late winter and early spring. In the mid-20th century, many Nikolai residents continued traveling to the Alaska Range from Nikolai to harvest Dall sheep in the winter, traveling with dog teams and later on snowmachines along frozen river corridors that lead into the mountains.

> The year 1960, I moved to Nikolai Village. With family, schoolkids. And you had to go to mountain, Alaska Range, to get sheep. Those days, us Native people, we use all the game available to us. Moose, sheep, caribou, bear. (012812NIK2)

Some residents incorporated sheep hunting into their trapping activities and moose hunting near the Alaska Range.

> They'd go on for about a week from the village out trapping and we'd go out to the hills and stay at the hills 2 or 3 days and they'd hunt out there, to allow their traps time to work and they'd check them on the way back to the village again. And at the Alaska Range they'd hunt moose basically, but uh, take a few sheep too. Especially as we approached Christmas time, they'd bring those back to the village, and they'd be shared in potlatch then. (040312MCG2)

Nikolai residents described that in the mid-20th century there were dramatic changes in hunting regulations as understood by local residents, as well as an increase in enforcement of regulation violations.

> Nowadays Fish and Game make law that had to be a ram. During that time [1960] I didn't worry about those. I shoot any sheep if I wanted sheep. I get sheep…So, us Natives want to go to mountain every fall to get sheep. I always wanted em. And nowadays, due to the game law, we don't get no chance to go up there. (012812NIK2)

Historical hunting regulations from 1961 specify a Dall sheep season in GMU 19 from August 20th to September 20th, with an annual limit of 1 ram per person annually with three-quarter curl horn[10] or larger. It is unclear when the prohibition on sheep hunting outside of this season (in accordance with local customs) was first enforced, and while it is likely that some covert hunting of Dall sheep outside of the specified seasons occurred from the 1960s through the early 1980s, sheep harvests likely declined to virtually none.

> Whatever is around that place we should be able to eat. Instead of that the government keeps watch over (protects) it from us. Because of that we do not get to eat many things such as caribou and sheep. We used to eat as much of those as we ate moose. The way it is now sheep are protected. It has been over 30 years since I ate sheep because it is closed (during the winter when it is accessible to the villagers). The government, the game department keeps them from us. (Deaphon 2004:21–22)

Although Dall sheep regulations in the area have remained similar over at least the past 50 years, multiple respondents described a continuing dissatisfaction with the prohibition on hunting outside of the current fall season. In recent years some residents have attempted to adapt to seasonal restrictions on Dall sheep hunting by traveling to the Alaska Range in the established fall season along local rivers with shallow-draft boats and motors. In 2011, a few Nikolai residents reported attempting to harvest Dall sheep in the established fall season, but none were successful.

10. Defined in the 1961 regulations handbook as "Three-quarter curl horn means the horn of a mature mountain sheep, the tip of which has grown through three-quarters of the circle described by the outer surface of the horn as viewed from the side." ADF&G. 1961. 1961–1962 Alaska Hunting Regulations, pages 11–12, 33. Alaska Department of Fish and Game, Juneau.

> Sheep hunting, the season starts in August tenth, and it quits around September twenty. And that's… there's no access for the local people. Except for one person, he has a…he has like a Go-Devil-type of boat, and then even him he has a tough time going up to the mountains. So…only time you can go up in the mountains is the beginning of August when there's high water. If the water's too shallow you can't make it up there. 'Cause it braids out, you see. The river gets wide, and the channel shifts. So some years you can't even go up there. (012712NIK3)

In 2010, a Nikolai resident submitted a proposal to the Alaska Board of Game requesting a limited registration hunt for Dall sheep in winter months. Although the BOG recognized that Nikolai residents had a customary and traditional use of Dall sheep, they ruled that the current fall season likely provided adequate access to the resource. The Edzeno' Nikolai Tribal Council recently submitted an additional proposal similar to the previously mentioned one to the BOG in 2014, with the reasoning that the current fall season does not provide adequate access for subsistence. In February 2014, the BOG adopted this proposal for portions of GMU 19 with conditions that included: a bag limit of 1 sheep with three-quarter curl or less, excluding lambs and ewes accompanied by a lamb, and excluding rams with broomed horns; season dates of October 1 to April 30; a prohibition of the use of aircraft for access to hunt sheep except in and out of McGrath, Nikolai, and Telida airports; hunters being required to call the McGrath area biologist within 3 days of the beginning and end of each hunt and report any sheep harvested after each hunt; and the hunt being closed by emergency order when the total harvest reaches or approaches 10 sheep. Additionally, the BOG amended the proposal to remove a proxy allowance and the Board also required sealing of harvested animals within 30 days of harvest. Finally, the Board specified that during the first year of this hunt, the total harvest of 10 sheep would be reduced to 5 sheep as a precautionary measure due to concerns about potential difficulty in monitoring the hunt. During deliberation, BOG members focused on the commuity's claim that the current hunt did not provide for recognized customary and traditional use patterns, the importance of carrying on hunting traditions, as well as the likelihood that harvests would be biologically sustainable.Nikolai's furbearer harvest in 2011 likely indicates a decline in trapping activities for most residents over the past half century. In the mid-20th century, most families were actively involved in trapping furbearers, and furbearers represented a large portion of the cash economy in Nikolai.

> All of the men were involved in trapping at that time. That was the basis of the economy. The only wage employment available was in the summertime from firefighting and limited labor in the area, and so on. (040312MCG2)

Prior to the construction of a school in Nikolai, many families spent the majority of each winter trapping furbearers throughout the area, living in wall tents or at small cabins along family traplines. Once a school was established, most families with children moved to Nikolai permanently, and attempted to maintain traplines while based out of Nikolai. The introduction of snowmachines eased this transition as families who continued trapping but lived permanently in Nikolai were able to run traplines in much less time than with dog teams (Stokes 1985:176). While this likely made trapping easier in some respects initially, several other

changes, including declining fur prices in the 1970s (Stokes 1985), increasing gasoline costs, and changing employment patterns, have limited trapping activities in recent years. Only a few households in Nikolai reported actively trapping in 2011, and trapping related income currently represents only a very minor portion of community income when compared to income from employment opportunities that emerged in the second half of the 20th century. Previous Nikolai harvest estimates are only available for 2002; furbearer harvests for all species other than river otter (1 in 2002 and 2 in 2011) showed a decline between 2002 and 2011. For example, harvests of marten, often viewed as the most important furbearer in the region, decreased from a harvest of 416 in 2002 to an estimated harvest of 198 in 2011. While comparisons between these two years reflect comments made by individuals in Nikolai, these data alone are not entirely representative of trapping patterns in the area. Nikolai residents described that increases in fur prices often lead to increased trapping activity, and several residents who did not trap in 2011 described that they still maintain unofficial ownership of specific traplines that may be used should good economic opportunities arise.

Nikolai residents harvested similar quantities of birds in 2011 relative to previous studies. The 2011 estimated harvest of 693 ducks (8 lb per capita) is less than the harvest of 725 in 1980 but substantially greater than the estimated harvest of 149 in 2002 (1 lb per capita). Nikolai's estimated 2011 harvest of 294 geese (10 lb per capita) was similar to the 1980 and 2002 harvests of 145 and 241 geese (5 lb per capita), respectively. Grouse and ptarmigan harvests appear to show an increase between studies, with 145 grouses and ptarmigans harvested in 1984, 414 in 2002 (3 lb per capita), and 654 in 2011 (6 lb per capita). Nikolai was also surveyed as part of the Alaska Migratory Bird Co-management Council's migratory bird subsistence survey in 2004, 2005, and 2006 (Naves 2010a). Harvest estimates from this survey are not reported on a village basis but rather as total harvests for various regions and subregions throughout Alaska. Nikolai is included in the Mid-Yukon–Upper Kuskokwim subregion, together with 8 other villages.[11] Although Nikolai harvest data from this study cannot be directly compared with harvest estimates from such an aggregate of communities, a similar pattern of migratory bird hunting that emphasizes ducks, geese, grouse, and ptarmigan exists in both data sets (Naves 2010a:63).

Historical estimates for Nikolai residents' harvests of berries are available for 1984 and 2002, and estimates for quantities of edible greens and firewood harvested are available for 2002. Nikolai's total estimated harvest of 260 gallons of berries in 2011 is less than the 435 gallons harvested in 1984 and more than the estimated 2002 harvest of 128 gallons. This fluctuation between years is likely typical and Nikolai residents described that 2011 was a poor berry year for blueberries, typically the most harvested berry species in Nikolai. Edible greens are not harvested in substantial amounts for most households, and the increase in harvests of greens from 14 gallons in 2002 to 65 gallons in 2011 likely reflects the efforts of only a few families. In contrast, nearly all Nikolai families make extensive use of firewood as a heat source, and this is reflected in harvest estimates for both 2002, with a total estimated community harvest of 128 cords of firewood, and 2011 (172 cords of firewood).

11. Anvik, Grayling, Holy Cross, Lake Minchumina, McGrath, Shageluk, Takotna, and Tanana

Conclusion

Throughout this research, Nikolai residents emphasized the past and present importance of subsistence resources to their community's economy and culture. Subsistence food resources and firewood are widely shared and are viewed by most residents as essential to survival due to the high local costs of food and heating oil.

Moose, salmon, and nonsalmon fish species made up the bulk of Nikolai's subsistence harvest in 2011. Other resources, including black bear, beaver, porcupine, birds, and berries are also important and widely used. Subsistence search and harvest areas are extensive; most upper Kuskokwim River tributaries near Nikolai are used in summer and winter months both for harvesting subsistence resources and as transportation corridors leading to subsistence harvest locations.

Respondents described long-term as well as more recent changes to subsistence patterns in Nikolai over the past century. Long-term changes include dramatic reductions in the quantities of salmon harvested for dog food following the adoption of snowmachines and airplanes for transportation, increasing reliance on moose corresponding to their increased abundance in the area beginning in the early 20th century, a reduction in the contribution of fur sales to the local cash economy, and regulatory restrictions that affected patterns of harvesting Chinook salmon, caribou, and Dall sheep. More recent changes include observed declines in the size and abundance of Chinook salmon, declines in populations of locally available caribou herds, and increases in gasoline prices that have limited subsistence related travel for some residents. While residents expressed concern about some of these changes, the high and relatively stable harvest and use levels of subsistence resources in Nikolai in 2011 compared to previous years indicates that many residents are exhibiting substantial resilience and making efforts to adapt their subsistence harvest and use patterns to change.

Chapter 7: Comprehensive Survey Results Takotna, 2012

Seth Wilson

In April 2012, researchers surveyed 14 of 22 households (64%) in Takotna. The surveyed households reported harvesting 5,223 edible pounds of wild food between January and December 2011. Expanding for 8 unsurveyed households, Takotna's estimated total harvest of wild foods in 2010 was 8,382 lb (±33%). The average harvest per household was 381 lb; the average harvest per person was 162 lb.

In 2011, moose accounted for 77% of all resources harvested by edible weight (Figure 7-1). The remaining subsistence harvest was broadly distributed. The second most harvested species by weight—spruce grouse—accounted for 5% of the total subsistence harvest, followed by black bear (4%). The remaining 7 most harvested resources were distributed between land mammals, fish, birds, and vegetation. Though the subsistence harvest of Takotna is heavily concentrated on 1 resource, the community has access to and harvests a variety of resources. During the study year, Takotna residents harvested 33 different species of fish, wildlife, and vegetation.

This chapter summarizes findings from the household surveys, including demographic characteristics, responses to harvest assessment questions, harvest estimates, employment, income, and food security. Harvest numbers are expanded estimates. Results from this survey are available online in the Division of Subsistence CSIS.

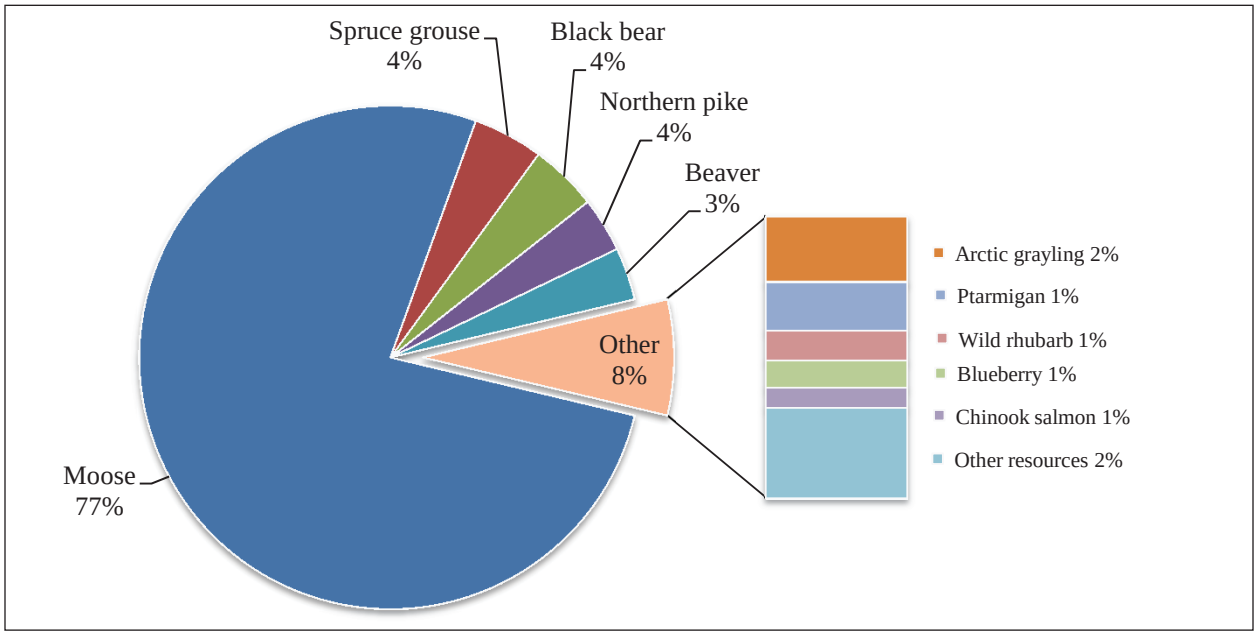


Figure 7-1.–Top 10 species harvests ranked by estimated edible weight, Takotna, 2011.

Photo by Joshua Peirce

Figure 7-2.–A winter aerial view of the Takotna town site.

This chapter also describes results from households' land use mapping. During household surveys, surveyors created 12 maps depicting the search areas and fishing locations of all resources pursued by individual households. These maps were combined to create the community use maps in figures 7-10 through 7-16. Researchers asked many residents to participate in interviews in order to provide ethnographic context for the harvest survey, but none consented. After the data were analyzed, the information was reviewed with community members in Takotna on December 20, 2012.

About Takotna

Takotna is located 15 miles west of McGrath and 235 miles northwest of Anchorage. It is adjacent to the Takotna River, from which it derives its name, an anglicized form of the Upper Kuskokwim Athabascan word *Tocho'no*, meaning "open water" (Stokes 1985:351). A.G. Maddren of the United States Geological Survey recorded the spelling as Takotna in 1908 (Orth 1971:943). The Takotna town site was selected for miners to transition from traveling via sternwheelers on the Kuskokwim River to walking over land to the Iditarod–Ophir mining district (Oswalt 1980) (Figure 7-2).

The Takotna River has its origins in the Kuskokwim Mountains, located to the northwest of the community, and traverses a patchy alpine tundra environment. Flowing to the southeast, the clearwater river passes into a mixed spruce-birch environment before it empties into the flat alluvial basin of Kuskokwim River, directly across from the community of McGrath (Andrews 1977:152). The community of Takotna is sandwiched between the Takotna River and the topographic relief of the Kuskokwim Mountains. The region has a cold,

continental climate. Summer temperatures average 42 to 80 °F, and winter temperatures range on average from -42 to 0 °F. The river is generally ice-free from June through October.[1]

The Upper Kuskokwim Athabascans have traditionally occupied the upper Kuskokwim River basin, including the Takotna and Nixon Fork drainages. Very few archeological investigations have been conducted in this area, so length of occupation and settlement patterns have been inferred from linguistic and ethno-historical research. Referring to themselves as Dena'ina[2], or simply "the people," Upper Kuskokwim Athabascans were linguistically distinct from neighboring Athabascan ethnic groups (Stokes 1985:19). Hosley described them as bands, or extended family groups, that share cultural and linguistic similarities (Hosley 1981:618). Through ethnographic interviews with Nikolai residents, Hosley identified 6 discreet bands, 1 of which, the Takotna River group, occupied the Takotna and Nixon Fork rivers (Hosley 1966:185). Band resource and land use areas likely fluctuated and experienced a large degree of fluidity (Stokes 1985:22). In the mid-1970s, ethno-historical investigations concerning sacred sites were conducted for the purpose of tribal lands selection following the passage of the Alaska Native Claims Settlement Act (see ANCSA 14(h)1 files held at UAF Alaska and Polar Regions Collections and Archives). Preliminary site selections identified a very large village with subterranean house pits and a cemetery at the mouth of Fourth of July Creek, just upriver from present day Takotna. Another sizeable community, called *Tach'a*, located at the confluence of the Nixon Fork and Takotna River, existed up until the early historic period (Andrews 1977:384).

The Takotna and Nixon Fork rivers contained important salmon harvest sites for early occupants. Early occupants used salmon fences as the principal method of harvesting salmon. However, this harvest method is feasible only in favorable riverbed morphology. Families from the Takotna River Band, as well as from Vinasale and Big River, camped by and maintained a single salmon fence site during the summer months (Stokes 1985:382). Oral interviews with Nikolai elders identified 3 salmon fence sites (though there were likely more) on the Takotna River: 1 just upriver of the present day community, a second near Big Creek, and a third within or near Fourth of July Creek (Stokes 1985:381).

Euro–American travelers began interacting with Upper Kuskokwim Athabascans later than they did with other Native groups in other parts of Alaska. In 1839, employees of the Russian–American Company, led by Petr Kolmakov, ascended the Kuskokwim River to the Takotna River to establish trade contacts with its residents (Brown 1983:59). The exploration party ascended the Takotna River, and portaged to the Innoko River, mapping the country. In 1844, Russian officer Lavrenti Zagoskin retraced the journey made by Kolmakov, this time documenting ethnographic, ecological, and geographical notes for the purposes of Russian expansion into the Upper Kuskokwim fur economy (Zagoskin 1967:271). On May 31, 1844, he encountered Upper Kuskokwim Athabascans on the Takotna River who were returning from a trading trip to the Kolmakov redoubt. Russian influence brought a cash market to the upper Kuskokwim River, which held highly prized furs. Hosley notes (1981:620) that as Kolchan (Upper Kuskokwim Athabaskans) involvement

1. Alaska Department of Commerce, Community, and Economic Development (ADCCED) Division of Community and Regional Affairs, Juneau: "Alaska Community Database Online: Community Information." Accessed August 2013. http://commerce.alaska.gov/cra/DCRAExternal/community.
2. Upper Kuskokwim Athabascans are distinct from Dena'ina Athabascans who have historically inhabited the Cook Inlet, Lake Clark, and Stony River regions.

Photo by Maureen Horne-Brine

Figure 7-3.–A view of Takotna Mountain, looking south from the community.

in the fur trade increased, they adopted a sedentary lifestyle. Permanent villages were established and maintained. Furthermore, as land gained economic value, families developed exclusive rights to trapping areas (Figure 7-3).

The Takotna River has received a great amount of attention from prospectors. Prospectors made the first commercially viable discovery of gold in the area, in Ganes Creek, about 10 miles west of the current community, in 1906. Stampedes to the Innoko River occurred in 1907 and 1908 where prospectors made subsequent discoveries of gold deposits. In 1908, three merchants hired a sternwheeler in Bethel to transport merchandise upriver to sell to the stampeders. The sternwheeler ascended the Takotna River until impeded by its shallow depth, and there the town of Takona formed (Oswalt 1980:80).

The community grew quickly. By 1919, it had approximately 50 dwellings, 2 stores, and several roadhouses (Oswalt 1980:80). The mining industry, as in other parts of the state, brought with it ancillary business to support the miners, providing wage employment to Upper Kuskokwim Athabascans (Hosley 1981:621) (Figure 7-4). Sled dogs used for winter access to the mines and kenneled in Takotna during the summer, put strain on the river's salmon (Hansen and Shelden 2011:3). Due to the increased mining activity and the remoteness of the Iditarod mining district, the Alaska Road Commission (ARC) made a reconnaissance of the area in 1921 to facilitate access from the Kuskokwim River (Stirling 1986:6). Starting as early as 1921 and ending at World War II, the ARC made developments to numerous roads, many originating in Takotna, that included bridges, telegraph lines, and shelters (Stirling 1986).

Source Reed Family Papers, UAF-1968-21-223, Alaska and Polar Regions Collections, Elmer E. Rasmuson Library, University of Alaska Fairbanks

Figure 7-4.–Travelers on the Iditarod Trail pose in front of the Northern Commercial Company store in Takotna, 1920.

In 1924, the U.S. Post Office Department hired Ben Eielson to conduct 8 trips from Fairbanks to McGrath to test the feasibility of using aircraft as mail transport (Stirling 1986:38) and pioneered a new route to the Upper Kuskokwim Region. Air travel emerged shortly thereafter and largely replaced the use of the winter trail system and sled dogs (Stirling 1986; Brown 1983; Hosley 1981). By 1926, competing companies were offering freight and passenger service from Fairbanks. The ARC quickly switched from improving mining roads to constructing airfields. The first Takotna landing strip, constructed in 1927, was 1,000 feet long and situated precariously on the hilltop just north of the community (Oswalt 1980:80). Airstrips developed in Flat, Ophir (on top of a mine tailings dump), Iditarod, and McGrath (Stirling 1986:40). McGrath became a statewide transportation hub, and many planes used the Takotna River as a winter landing strip (Oswalt 1980:41). The state of Alaska constructed a new 3,300 foot runway in 2011 (Anchorage Daily News 2009).

A number of formal entities provide community services. A federally recognized tribe is located in the community—Takotna Village. The ANCSA for-profit corporation merged with surrounding communities in 1974 to form MTNT (McGrath, Takotna, Nikolai, Telida), Limited. The Takotna Community Association administers community services. There is 1 school. The closest grocery store is the Alaska Company store in McGrath.[3] Takotna is the middle checkpoint of the Iditarod sled dog race.

3. Alaska Department of Commerce, Community, and Economic Development (ADCCED) Division of Community and Regional Affairs, Juneau: "Alaska Community Database Online: Community Information." Accessed August 2013. http://commerce.alaska.gov/cra/DCRAExternal/community.

Seasonal Round

As with any rural Alaska community, Takotna has a mixed cash and subsistence economy strongly influenced by seasonality. Though local wage earning opportunities are not as numerous as in the past, increased mobility often draws individuals outside the community for employment. Residents balance their year between subsistence activities and wage employment. Employment opportunities vary year to year, as do the availability and abundance of wild resources. Furthermore, the seasonal changes in employment occur alongside the biological cycle of each resource.

Spring brings a flurry of activity to Takotna. The State of Alaska provides jobs clearing snow from roads that access the placer mines in the Innoko mining district. Miners begin sending supplies and fuel to Takotna, which local residents then transport to the placer mines. Hunting opportunities increase marginally in the spring due to a limited number of returning migratory waterfowl and the emergence of bears from their dens. As the Takotna River opens, residents fish for northern pike and Arctic grayling near the community and from along the road to Sterling Landing.

Summer is a busy time for residents that work in construction, mining, or agriculture industries. Some residents leave Takotna for the entire summer or work alternating shifts in the nearby Nixon Fork mine. Hosley reports that jobs with the fire service, road and airport maintenance, and work in the mines are often the most common seasonal occupations (Hosley 1981:621).

Historically, as noted above, the Takotna River hosted many salmon harvesting sites. In recent decades, fishers have opted to forgo fishing camps on the Takotna River in favor of the Kuskokwim River where salmon are more abundant and better quality. In recent years, fishers have targeted salmon with rod and reel gear in the Takotna River or, less frequently, with setnet gear in the Kuskokwim River near McGrath or Sterling Landing. In addition, some Takotna residents have harvested salmon in personal use fisheries located in other regions of Alaska[4].

Most residents regard fall as the apex of their subsistence calendar. After summer salmon fishing, Takotna residents turn to big game hunting and berry picking. The same roads that link Takotna to placer mines facilitate moose and bear hunting, grouse hunting, and berry picking. In GMU 21A, which encompasses the road system adjacent to Takotna, moose hunting commences September 5 and continues until September 25. Regulations allow residents to harvest 1 antlered bull. Hunters target moose and often harvest black bear, brown bear, and numerous grouse when these birds congregate along the roads beginning in late summer to collect gravel for their crops. Berries become ripe during this time of year, and residents go to well-known sites to pick blueberries, cranberries, and crowberries.

Wage earning opportunities diminish during the winter season, but some individuals turn to trapping to gain income. Taking advantage of miles of unmaintained road in the winter, trappers access the upper reaches of

4. In Alaska, “Personal use” is a legally defined regulatory category of fishery. It is defined as “the taking, fishing for, or possession of finfish, shellfish, or other fishery resources, by Alaska residents for personal use and not for sale or barter, with gill or dip net, seine, fish wheel, long line, or other means defined by the Board of Fisheries.”

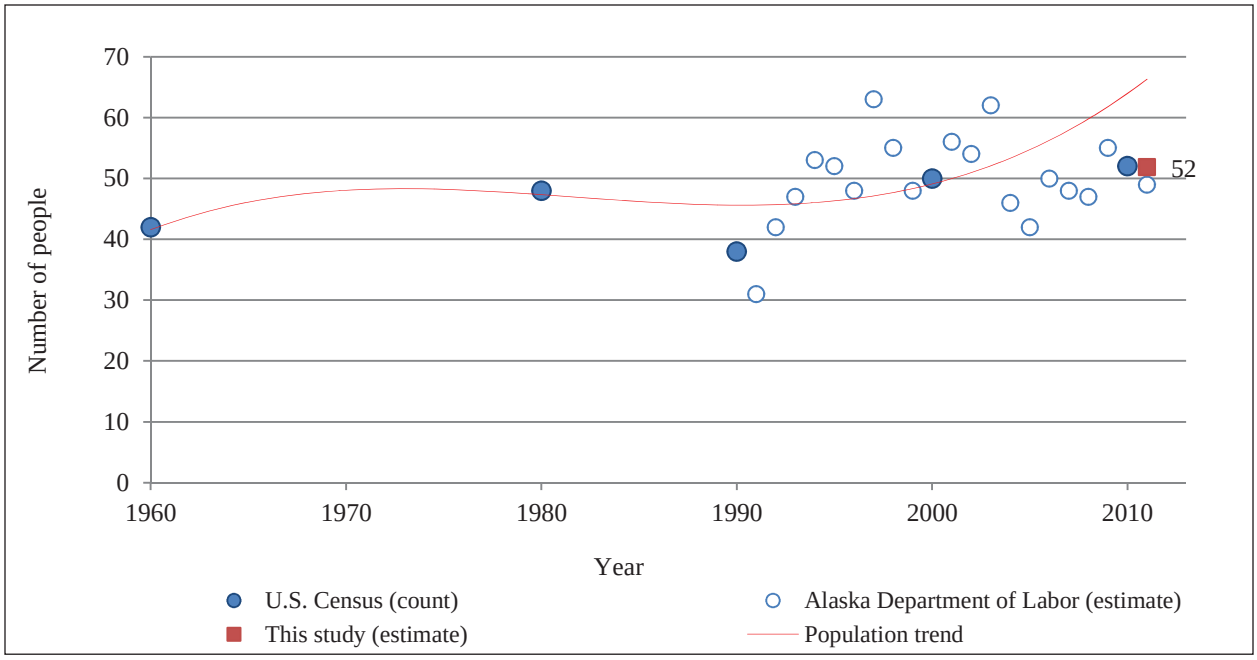


Figure 7-5.–Population history, Takotna, 2011.

the Innoko River to trap for marten, lynx, and wolverine among other furbearers. Residents also described traveling to cabins near Takotna to trap.

Winter has traditionally been a time for ceremonial gatherings, and this has not changed in contemporary rural Alaska. Takotna comes alive at the end of winter in April with the arrival of the long awaited Iditarod dog sled race. According to one 2012 Iditarod Blogger:

> Every man, woman and child residing in Takotna has a job during Iditarod. The school shuts down as the race comes through and the kids all have duties. Relatives and friends of Takotna residents from all over the United States migrate to the checkpoint during March to help with the race. The women cook, the men park dog teams and heat water while the kids clean up. It's a great deal of work to organize and coordinate a checkpoint let alone feed hungry mushers, spectators and race volunteers (Hanke 2012).

Demographics

Takotna has a small, ethnically diverse population. The 14 surveyed households included 33 people. Expanded to account for the additional 8 unsurveyed households, this study estimates a population of 52 individuals (Figure 7-5). For comparison, the Alaska Department of Labor estimated 49 individuals resided in Takotna during the year 2011 (DOL 2012). The mean household size was recorded as 2.4 occupants per dwelling with a maximum number of 5 individuals living in 1 house (Appendix Table D1-2). The mean age in Takotna was 39 years old; the eldest resident was 85 years of age, and the average length of residency was 22 years. Most

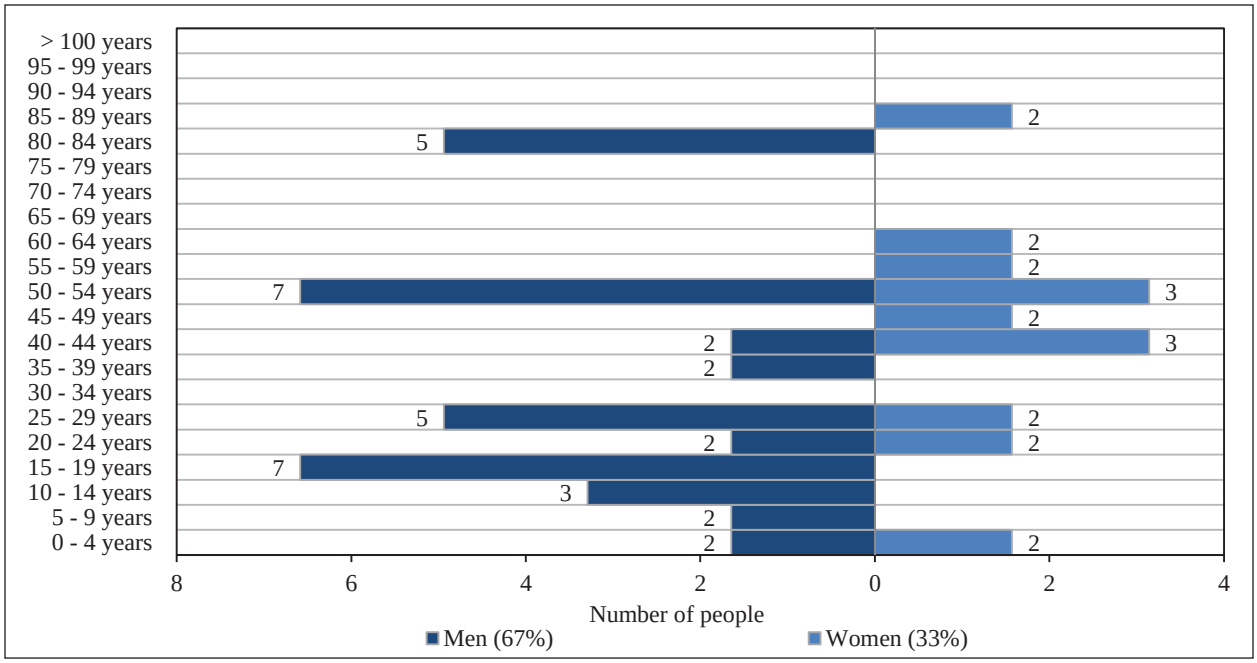


Figure 7-6.–Population profile, Takotna, 2011.

heads of households are from places outside of Alaska (48%); 35% grew up in Takotna, and 9% were from Anchorage (Appendix Table D1-1). This study estimates that 52% of Takotna's population is Alaska Native. In 1984, Stokes recorded the population as 29% Alaska Native (Stokes 1985:49). Because ethnographic data were not collected by this study, reasons for this change are unclear.

Figure 7-6 is a population profile expanded from the respondent households and does not show any discernible pattern. Men compose 67% of the population creating an unequal gender distribution. This gender gap has apparently widened since 1984 when 55% of the population was male and 45% female (Stokes 1985:48). Fifty percent of the entire population is below the age of 40.

Wild Food Uses and Harvests

The primary purpose of the household survey was to collect information about the harvest and use of edible wild foods. Respondents were asked whether their household used or tried to harvest each resource during the study year. If they tried to harvest a resource, they were asked how much they caught and for other details of the harvest such as gear type, sex of the animal, or month of harvest.

Tables and figures in this section summarize responses to the harvest questions. The role of subsistence resources in Takotna is reflected in the harvest and use levels of subsistence resources; every household in Takotna used and 93% of households harvested at least 1 wild food resource in 2011 (Appendix Table D6-1). Takotna households collectively harvested 36 different species. Owing to the specialization of subsistence

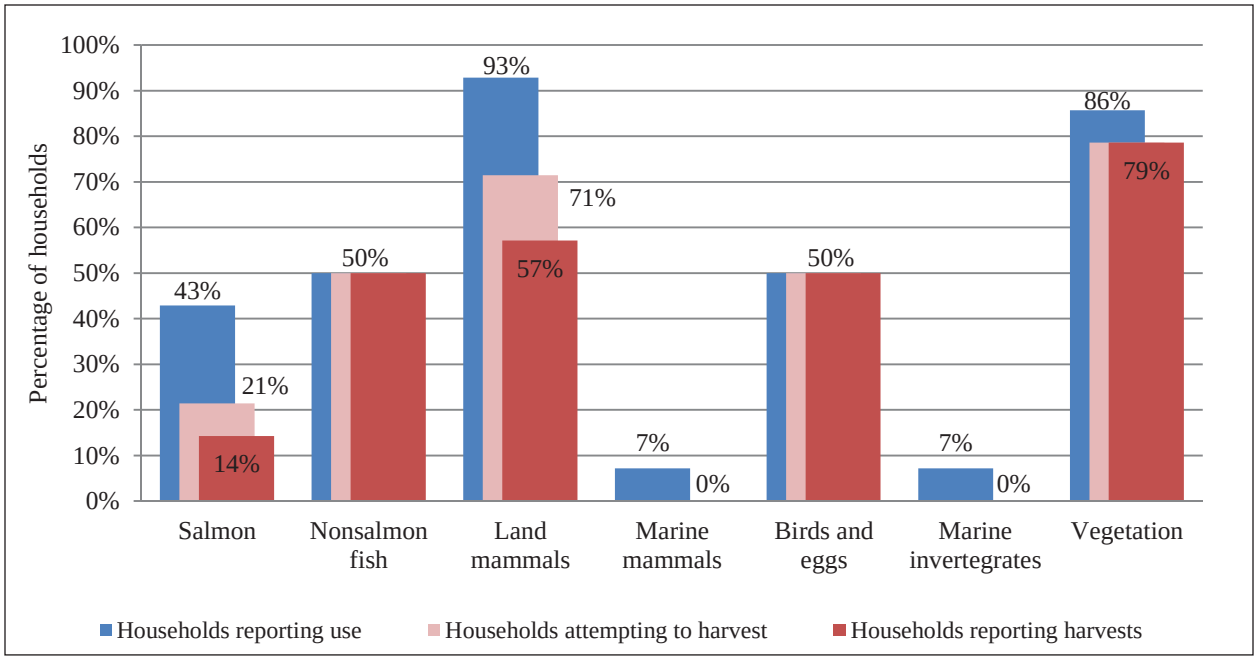


Figure 7-7.–Percentages of households using, attempting to harvest, or harvesting subsistence resources by category, Takotna, 2011.

hunting and fishing, a relatively small proportion of the households (36%) harvested most (70%) of the subsistence harvest.

Figure 7-7 portrays household use, harvest, and attempted harvest for all wild resource categories. The most widely used resources were land mammals (by 93% of households) and vegetation (86%). Nonsalmon fish species and birds had the third highest use levels of all resource categories with 50% of households using at least 1 type of resource in each category. Harvest rates were low for salmon fish species (43%) compared to other communities.

Reflecting these high use and harvest levels, moose formed the bulk (77%) of Takotna's wild food harvest by edible weight in 2011. Participation, conservatively defined as those households that attempted to harvest a resource, is often low for specialized harvesting activities such as large game hunting. However, this is not the case in Takotna and suggests that many residents are able to pursue big game. Although nearly all households used vegetation during the study year, it contributed a relatively smaller percentage (3%) to the total 2011 wild food harvest by edible weight. This illustrates the point that there is a difference between the percentage of households participating in harvesting activity or using a resource and how much that resource contributes to the overall diet in Takotna. Due to this difference, Figure 7-7 should be considered alongside Figure 7-8 in order to keep frequency of resource use versus its contribution in edible weight in perspective.

Takotna fishers harvested 71 edible pounds of salmon in the summer of 2011, less than 1% of the 2011 harvest of all wild resources (Table 7-1). The harvest represents about 1.4 lb of meat per person. The harvest was composed of 5 coho salmon and 5 Chinook salmon, all caught by rod and reel gear in the Takotna River. This represents a very small amount of salmon compared to other communities and is likely less than other

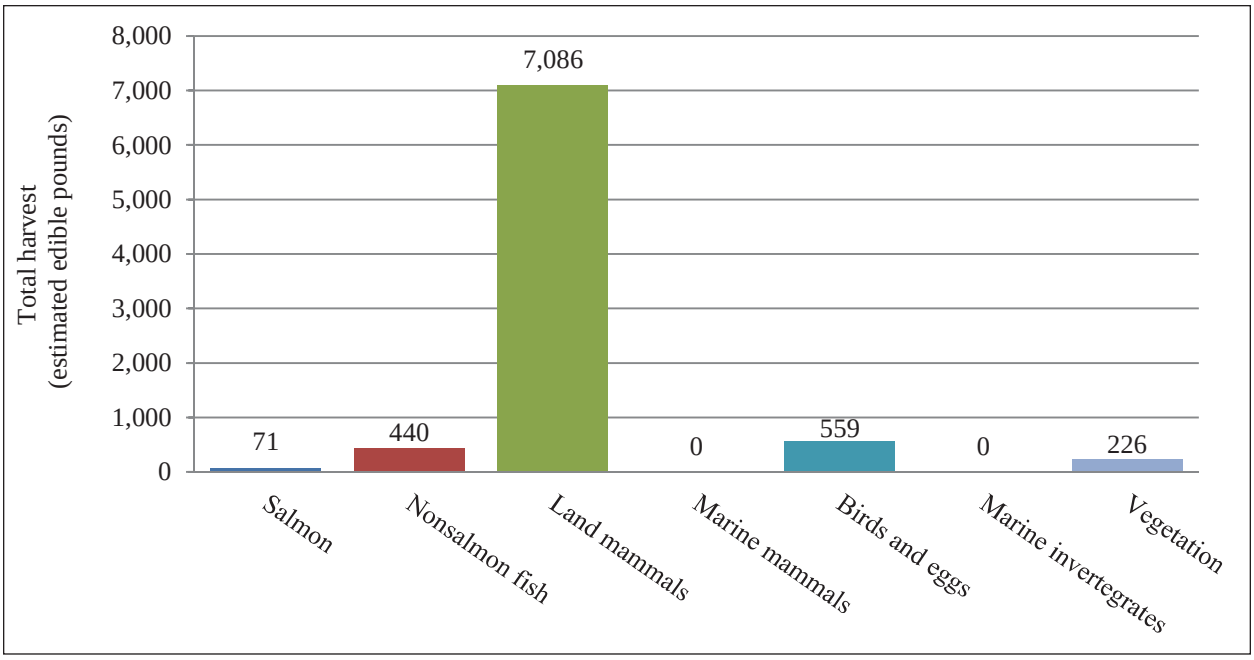


Figure 7-8.–Total estimated edible pounds harvested by the community by resource category, Takotna, 2011.

years when families establish fish camps on the Kuskokwim River. A number of households reported that they chose to forgo fishing and instead took jobs during the airport construction. Furthermore, only half the households that reported attempting to harvest Chinook salmon were actually successful in doing so.

The only 2 nonsalmon fish species harvested in Takotna were Arctic grayling and northern pike (Table 7-1), providing about 8.5 lb of edible meat per person. In 2011, Takotna residents harvested an estimated 207 Arctic grayling (145 lb) and 59 northern pike (295 lb). Despite such a minimal harvest, almost half (43%) of the community attempted to harvest northern pike and Arctic grayling, and all that attempted harvest were successful. The primary means of harvesting these nonsalmon fish species was by rod and reel (Figure 7-9). Fishers also harvested small amounts by jigging with a hook and line through the ice during late winter. A few households shared both species. Seven percent of the households received sheefish. Some Takotna residents also reported receiving marine fish such as halibut and eulachon (hooligan) from outside the community.

Although Takotna was a popular place to kennel dogs for the gold mining industry, there was no dog team in Takotna during 2011. No respondents reported targeting fish for dog food (Appendix Table D6-2). Those respondents that have dogs report feeding them scraps in years that they get salmon or using commercial dog food.

Takotna residents harvested no shellfish in 2011 (Table 7-2). A small percentage of households reported receiving scallops and oysters from Southeast Alaska and commented that it was an abnormal occurrence.

Mammal harvests (Table 7-3) made up approximately 85% of Takotna subsistence harvest by edible weight. This category includes large land mammals (96% of mammal harvest by weight), small land mammals (4%), and marine mammals (0%). Takotna hunters harvested 13 individual moose, providing 6,439 edible

Table 7-1. – Estimated use and harvest of fish, Takotna, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Fish										
Salmon										
Chum salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Coho salmon	21.4%	14.3%	14.3%	7.1%	7.1%	26.9 lb	1.2 lb	0.5 lb	5.1 ind	± 121%
Chinook salmon	35.7%	14.3%	7.1%	35.7%	0.0%	44.6 lb	2.0 lb	0.9 lb	4.7 ind	± 130%
Pink salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Sockeye salmon	14.3%	0.0%	0.0%	14.3%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**42.9%**	**21.4%**	**14.3%**	**35.7%**	**7.1%**	**71.4 lb**	**3.2 lb**	**1.4 lb**	**9.8 ind**	**± 127%**
Char										
Dolly Varden	7.1%	0.0%	0.0%	7.1%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Lake trout	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**7.1%**	**0.0%**	**0.0%**	**7.1%**	**0.0%**	**0.0 lb**	**0.0 lb**	**0.0 lb**	**0.0 ind**	**± 0%**
Trout										
Rainbow trout	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0 lb**	**0.0 lb**	**0.0 lb**	**0.0 ind**	**± 0%**
Whitefishes										
Sheefish	7.1%	0.0%	0.0%	7.1%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Broad whitefish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Bering cisco	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Least cisco	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Humpback whitefish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Round whitefish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown whitefishes	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**7.1%**	**0.0%**	**0.0%**	**7.1%**	**0.0%**	**0.0 lb**	**0.0 lb**	**0.0 lb**	**0.0 ind**	**± 0%**
Anadromous/marine fish										
Pacific herring	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Eulachon (hooligan, candlefish)	7.1%	0.0%	0.0%	7.1%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Unknown smelt	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Pacific tomcod	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Saffron cod	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Pacific halibut	14.3%	0.0%	0.0%	14.3%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 lb	± 0%
Arctic lamprey	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Stickleback (needlefish)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Subtotal	**14.3%**	**0.0%**	**0.0%**	**14.3%**	**0.0%**	**0.0 lb**	**0.0 lb**	**0.0 lb**		**± 0%**
Other freshwater fish										
Alaska blackfish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 lb	± 0%
Burbot	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Arctic grayling	42.9%	42.9%	42.9%	0.0%	23.1%	145.2 lb	6.6 lb	2.8 lb	207.4 ind	± 61%
Northern pike	42.9%	42.9%	42.9%	14.3%	14.3%	294.9 lb	13.4 lb	5.7 lb	59.0 ind	± 55%
Longnose sucker	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**50.0%**	**50.0%**	**50.0%**	**14.3%**	**28.6%**	**440.1 lb**	**20.0 lb**	**8.5 lb**		**± 52%**
All fish	**57.1%**	**50.0%**	**50.0%**	**50.0%**	**35.7%**	**511.6 lb**	**23.3 lb**	**9.9 lb**		**± 54%**
All resources	**100.0%**	**92.9%**	**92.9%**	**92.9%**	**78.6%**	**8,382.1 lb**	**381.0 lb**	**161.6 lb**		**± 33%**

Source ADF&G Division of Subsistence household surveys, 2012.

Note "All resources" include all species of fish, wildlife, and plants reported on the survey.

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

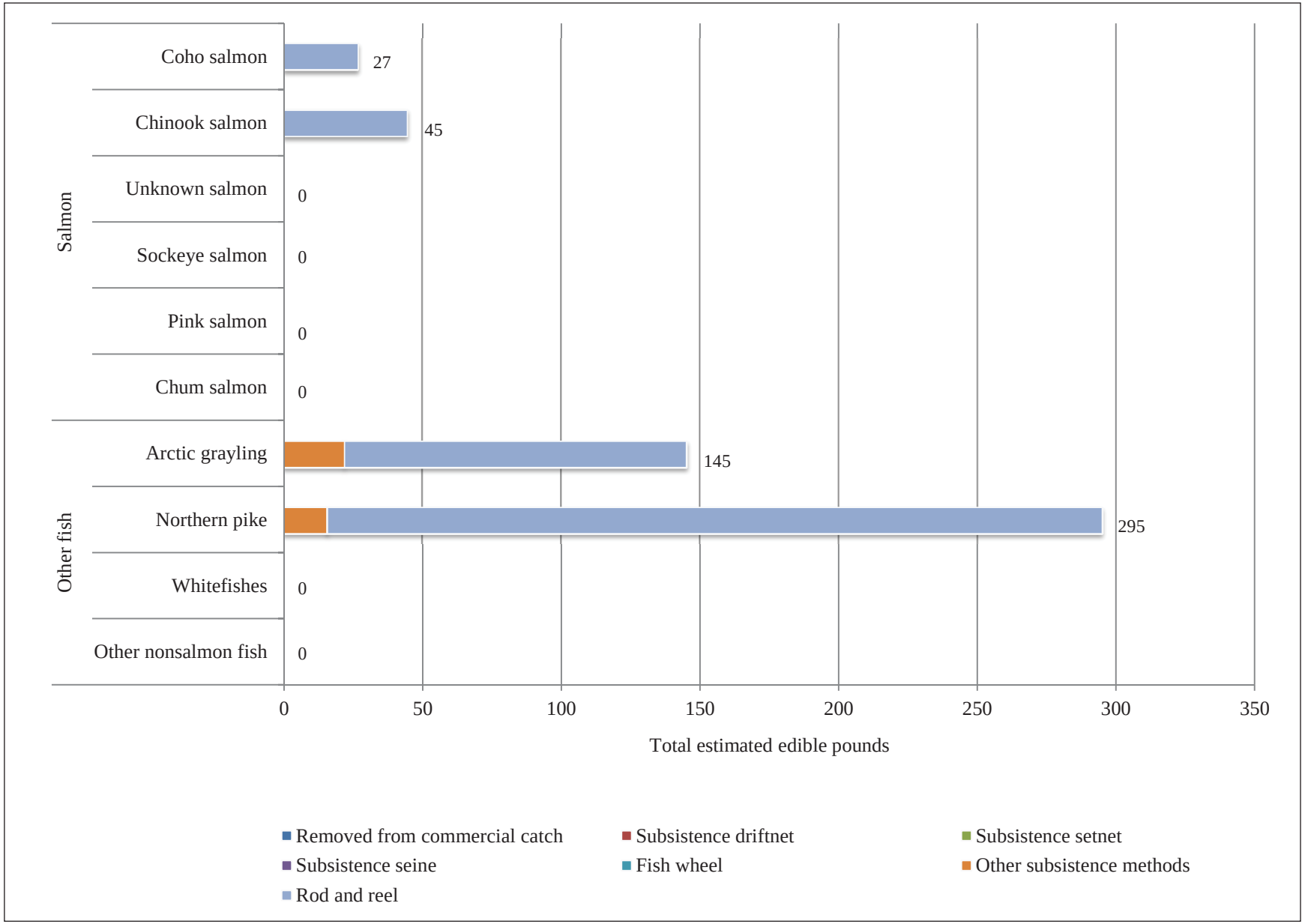


Figure 7-9.–Fish harvest by gear type, Takotna, 2011.

Table 7-2. – Estimated use and harvest of marine invertebrates, Takotna, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Marine Invertebrates										
Unknown clams	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
King crab	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown Tanner crab	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown crab	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown mussels	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Oyster	7.1%	0.0%	0.0%	7.1%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Scallop	7.1%	0.0%	0.0%	7.1%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Shrimp	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Unknown marine invertebrates	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Subtotal	**7.1%**	**0.0%**	**0.0%**	**7.1%**	**0.0%**	**0.0 lb**	**0.0 lb**	**0.0 lb**		**± 0%**
All marine invertebrates	**7.1%**	**0.0%**	**0.0%**	**7.1%**	**0.0%**	**0.0 lb**	**0.0 lb**	**0.0 lb**		**± 0%**
All resources	**100.0%**	**92.9%**	**92.9%**	**92.9%**	**78.6%**	**8,382.1 lb**	**381.0 lb**	**161.6 lb**		**± 33%**

Source ADF&G Division of Subsistence household surveys, 2012
Note "All resources" include all species of fish, wildlife, and plants reported on the survey
a. Summary rows that include incompatible units of measure have been left blank

pounds of meat, about 124 pounds per capita, the largest harvest of any mammal species. Approximately 93% of the households used moose meat, and moose hunting was a widespread endeavor (71% of community households attempted to harvest moose). Likely because of the abundance of moose and easy access to habitat, approximately 80% of the households who hunted for moose successfully harvested at least 1. Takotna residents spent 127 hunter days in pursuit of moose, an average of 7 hunting days per moose harvested (Appendix Table D1-3). All reported moose were bulls harvested in September (Appendix Table D6-3). Black bear were the only other large land mammal harvested by Takotna Residents. Takotna hunters harvested 6 black bears in unknown months of the year during 2011. Black bear contributed 365 pounds to the total subsistence harvest. Black bear was minimally used by Takotna households (21%), and about half of the households that targeted black bear were successful. Seven percent of households reported attempting to harvest brown bear but were unsuccessful. Takotna residents did not report using any other large land mammals.

Small land mammals were harvested more frequently for fur rather than for food. Approximately 21% of the households engaged in hunting or trapping small land mammals. The harvest was not widely distributed; only marten and wolverine were given away. Takotna trappers harvested an estimated 597 marten. Marten, a mainstay to the trapping community, were harvested by approximately 21% households and are not generally eaten. The economic contribution of this high quantity of marten is likely significant. Sold at auction, large marten averaged $79.72 in March 2011.[5] Marten harvests occurred consistently from November to February. The second largest small land mammal harvest by Takotna residents was approximately 20 beavers; residents harvested them from January to March. Approximately half were used for food, but most were used for their

5. Fur Harvester Auction Inc. 2011. FHA March 13, 2011 Auction Results. Fur Harvester Auction Inc.: Ontario. Accessed March 27, 2014. http://furharvesters.com/results/2011/mar11us.pdf

Table 7-3. – Estimated use and harvest of land and marine mammals, Takotna, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Land mammals										
Large land mammals										
Bison	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Black bear	21.4%	14.3%	7.1%	14.3%	0.0%	364.6 lb	16.6 lb	7.0 lb	6.3 ind	± 130%
Brown bear	0.0%	7.1%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Caribou	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Moose	92.9%	71.4%	57.1%	64.3%	42.9%	6,439.0 lb	292.7 lb	124.2 lb	12.9 ind	± 38%
Muskox	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Dall sheep	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**92.9%**	**71.4%**	**57.1%**	**71.4%**	**42.9%**	**6,803.6 lb**	**309.3 lb**	**131.2 lb**	**19.2 ind**	**± 35%**
Small land mammals										
Beaver	14.3%	14.3%	14.3%	0.0%	0.0%	282.9 lb	12.9 lb	5.5 lb	20.4 ind	± 103%
Coyote	0.0%	0.0%	0.0%	0.0%	0.0%	*Not usually eaten*			0.0 ind	± 0%
Red fox	14.3%	14.3%	14.3%	0.0%	0.0%	*Not usually eaten*			10.2 ind	± 126%
Snowshoe hare	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Jackrabbit	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
River (land) otter	7.1%	7.1%	7.1%	0.0%	0.0%	*Not usually eaten*			3.1 ind	± 130%
Lynx	7.1%	7.1%	7.1%	0.0%	0.0%	*Not usually eaten*			3.1 ind	± 130%
Marmot	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Marten	21.4%	21.4%	21.4%	0.0%	7.1%	*Not usually eaten*			597.1 ind	± 97%
Mink	14.3%	14.3%	14.3%	0.0%	0.0%	*Not usually eaten*			5.1 ind	± 126%
Muskrat	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Porcupine	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Arctic ground (parka) squirrel	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Red (tree) squirrel	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Weasel	14.3%	14.3%	14.3%	0.0%	0.0%	*Not usually eaten*			1.7 ind	± 126%
Wolf	7.1%	14.3%	7.1%	0.0%	0.0%	*Not usually eaten*			6.3 ind	± 130%
Wolverine	7.1%	14.3%	7.1%	0.0%	7.1%	*Not usually eaten*			3.1 ind	± 130%
Subtotal	**21.4%**	**21.4%**	**21.4%**	**0.0%**	**14.3%**	**282.9 lb**	**12.9 lb**	**5.5 lb**	**650.2 ind**	**± 103%**
Marine mammals										
Bearded seal	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Ringed seal	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Spotted seal	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown seal	7.1%	0.0%	0.0%	7.1%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Walrus	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Beluga whale	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Bowhead whale	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**7.1%**	**0.0%**	**0.0%**	**7.1%**	**0.0%**	**0.0 lb**	**0.0 lb**	**0.0 lb**	**0.0 ind**	**± 0%**
All land mammals	**92.9%**	**71.4%**	**57.1%**	**71.4%**	**50.0%**	**7,086.5 lb**	**322.1 lb**	**136.7 lb**		**± 35%**
All marine mammals	**7.1%**	**0.0%**	**0.0%**	**7.1%**	**0.0%**	**0.0 lb**	**0.0 lb**	**0.0 lb**		**± 0%**
All resources	**100.0%**	**92.9%**	**92.9%**	**92.9%**	**78.6%**	**8,382.1 lb**	**381.0 lb**	**161.6 lb**		**± 33%**

Source ADF&G Division of Subsistence household surveys, 2012.

Note "All resources" include all species of fish, wildlife, and plants reported on the survey.

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

Table 7-4. – Estimated use and harvest of birds, Takotna, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Migratory birds										
Ducks										
Bufflehead	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Canvasback	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Common eider	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown eider	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Goldeneye	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Harlequin	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Mallard	21.4%	14.3%	14.3%	7.1%	0.0%	15.3 lb	0.7 lb	0.3 lb	7.9 ind	± 91%
Common merganser	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Red-breasted merganser	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown merganser	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Long-tailed duck	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Northern pintail	7.1%	7.1%	7.1%	0.0%	0.0%	4.7 lb	0.2 lb	0.1 lb	3.1 ind	± 130%
Scaup	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Black scoter	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Surf scoter	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
White-winged scoter	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Northern shoveler	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Green-winged teal	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Wigeon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown ducks	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**21.4%**	**14.3%**	**14.3%**	**7.1%**	**0.0%**	**20.0 lb**	**0.9 lb**	**0.4 lb**	**11.0 ind**	**± 89%**
Geese										
Brant	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Cackling goose	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Lesser Canada goose	7.1%	7.1%	7.1%	0.0%	0.0%	6.3 lb	0.3 lb	0.1 lb	1.6 ind	± 130%
Unknown Canada goose	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Emperor goose	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Snow goose	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
White-fronted goose	7.1%	7.1%	7.1%	0.0%	0.0%	20.0 lb	0.9 lb	0.4 lb	4.7 ind	± 130%
Unknown geese	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**7.1%**	**7.1%**	**7.1%**	**0.0%**	**0.0%**	**26.2 lb**	**1.2 lb**	**0.5 lb**	**6.3 ind**	**± 130%**
Other migratory birds										
Tundra (whistling) swan	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0 lb	0.0 lb	0.0 ind	± 0%
Sandhill crane	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0 lb	0.0 lb	0.0 ind	± 0%
Whimbrel	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0 lb**	**0.0 lb**	**0.0 lb**	**0.0 ind**	**± 0%**
Other birds										
Spruce grouse	50.0%	50.0%	50.0%	7.1%	14.3%	378.7 lb	17 lb	7.3 lb	378.7 ind	± 68%
Sharp-tailed grouse	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0 lb	0.0 lb	0.0 ind	± 0%
Ruffed grouse	28.6%	28.6%	28.6%	0.0%	0.0%	26.7 lb	1 lb	0.5 lb	26.7 ind	± 62%
Ptarmigan	21.4%	21.4%	21.4%	0.0%	0.0%	106.9 lb	4.9 lb	2.1 lb	106.9 ind	± 96%
Subtotal	**50.0%**	**50.0%**	**50.0%**	**7.1%**	**14.3%**	**512.3 lb**	**23.3 lb**	**9.9 lb**	**512.3 ind**	**± 70%**
All migratory birds	**21.4%**	**14.3%**	**14.3%**	**7.1%**	**0.0%**	**46.3 lb**	**2.1 lb**	**0.9 lb**		**± 106%**
All other birds	**50.0%**	**50.0%**	**50.0%**	**7.1%**	**14.3%**	**512.3 lb**	**23.3 lb**	**9.9 lb**		**± 70%**
All resources	**100.0%**	**92.9%**	**92.9%**	**92.9%**	**78.6%**	**8,382.1 lb**	**381.0 lb**	**161.6 lb**		**± 33%**

Source ADF&G Division of Subsistence household surveys, 2012.

Note "All resources" include all species of fish, wildlife, and plants reported on the survey.

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

Table 7-5. – Estimated use and harvest of bird eggs, Takotna, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Bird eggs										
Duck eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0 lb	0.0 lb	0.0 ind	± 0%
Unknown goose eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0 lb	0.0 lb	0.0 ind	± 0%
Swan eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0 lb	0.0 lb	0.0 ind	± 0%
Unknown shorebird eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0 lb	0.0 lb	0.0 ind	± 0%
Unknown gull eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0 lb	0.0 lb	0.0 ind	± 0%
Unknown eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0 lb**	**0.0 lb**	**0.0 lb**	**0.0 ind**	**± 0%**
All birds and eggs	**50.0%**	**50.0%**	**50.0%**	**14.3%**	**14.3%**	**558.6 lb**	**25.4 lb**	**10.8 lb**		**± 67%**
All resources	**100.0%**	**92.9%**	**92.9%**	**92.9%**	**78.6%**	**8,382.1 lb**	**381.0 lb**	**161.6 lb**		**± 33%**

Source ADF&G Division of Subsistence household surveys, 2012.
Note "All resources" include all species of fish, wildlife, and plants reported on the survey.
a. Summary rows that include incompatible units of measure have been left blank.

pelt. Another common use for beaver in Takotna is as trapping bait. Other notable harvests were 10 red fox and 6 wolves, as well as limited amounts of river otter, lynx, and wolverine, and all were taken in winter months (Appendix Table D6-4). No snowshoe hare were harvested because, as one resident stated, they were significantly less abundant than in 2010.

Likely due to its distance from the maritime environment and prohibitions imposed by the marine mammal protection act, residents of Takotna did not harvest marine mammals in 2011 (Appendix Table D6-5). Seven percent of the households received unknown seal, likely processed seal oil, a widely distributed resource.

About half of Takotna households used birds and eggs that contributed 559 lb to Takotna's total harvest, about 11 lb per person in 2011 (Table 7-4 and Table 7-5). Migratory birds contributed 46 lb of edible food amounting to less than 1% of the total harvest. The most frequently harvested migratory bird was mallards (8 individuals, 15 lb). Takotna respondents also reported harvesting 5 greater white-fronted geese (20 lb), 3 northern pintail (5 lb), and 2 lesser Canada geese (6 lb). All migratory bird harvests occurred in the spring months. Other (nonmigratory) birds, such as grouses and ptarmigans, made up the bulk of Takotna's bird harvest (512 lb, 6% of total subsistence harvest). Takotna residents harvested 379 spruce grouse (379 lb), which gather along the roads connected to the community. Residents harvested ruffed grouse in lesser quantities (27 lb). One resident commented that ruffed grouse are colonizing the area, but he does not harvest them in order to aid their population growth. All grouses were taken in the fall. Lastly, Takotna residents harvested 107 ptarmigan (sub-species not identified, 107 lb.) in the winter months (Appendix Table D6-6). No Takotna residents used or harvested wild bird eggs in 2011.

Table 7-6 shows Taktona's harvest of vegetation. Vegetation was the smallest harvested category by weight (3% of all resources) but represents a broad assortment of plants, berries, fungi, and wood commonly available in Interior Alaska. Berries were the largest category in terms of quantity and weight (35 gal, 140 lb) and were used by 64% of households. The harvest of berries provided 2.7 pounds per capita of food. Takotna residents picked a variety of berries that included 15 gallons of blueberries (60 lb), 7 gallons of lowbush

Table 7-6. – Estimated use and harvest of vegetation, Takotna, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Berries										
Blueberry	50.0%	42.9%	42.9%	28.6%	14.3%	59.7 lb	2.7 lb	1.2 lb	14.9 gal	± 71%
Lowbush cranberry	21.4%	21.4%	21.4%	0.0%	0.0%	28.3 lb	1.3 lb	0.5 lb	7.1 gal	± 78%
Highbush cranberry	7.1%	7.1%	7.1%	0.0%	0.0%	1.6 lb	0.1 lb	0.0 lb	0.4 gal	± 130%
Crowberry	14.3%	14.3%	14.3%	0.0%	0.0%	15.7 lb	0.7 lb	0.3 lb	3.9 gal	± 105%
Gooseberry	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Currants	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Raspberry	14.3%	14.3%	14.3%	0.0%	14.3%	9.4 lb	0.4 lb	0.2 lb	2.4 gal	± 94%
Salmonberry	28.6%	28.6%	28.6%	14.3%	7.1%	25.1 lb	1.1 lb	0.5 lb	6.3 gal	± 71%
Subtotal	**64.3%**	**57.1%**	**57.1%**	**28.6%**	**28.6%**	**139.9 lb**	**6.4 lb**	**2.7 lb**	**35.0 gal**	**± 68%**
Plants/greens/mushrooms										
Wild rhubarb	28.6%	28.6%	28.6%	0.0%	0.0%	66.4 lb	3.0 lb	1.3 lb	16.6 gal	± 123%
Eskimo potato	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Fiddlehead ferns	7.1%	7.1%	7.1%	0.0%	0.0%	0.4 lb	0.0 lb	0.0 lb	0.4 gal	± 130%
Nettle	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Hudson's Bay (Labrador) tea	7.1%	7.1%	7.1%	0.0%	0.0%	1.6 lb	0.1 lb	0.0 lb	1.6 gal	± 130%
Mint	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Sourdock	7.1%	7.1%	7.1%	0.0%	0.0%	1.6 lb	0.1 lb	0.0 lb	1.6 gal	± 130%
Spruce tips	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Willow leaves	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Wild celery	7.1%	7.1%	7.1%	0.0%	0.0%	7.9 lb	0.4 lb	0.2 lb	7.9 gal	± 130%
Wild rose hips	7.1%	7.1%	7.1%	0.0%	0.0%	1.6 lb	0.1 lb	0.0 lb	0.4 gal	± 130%
Yarrow	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Unknown mushrooms	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Fireweed	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Stinkweed	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Punk	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Puffballs	7.1%	7.1%	7.1%	0.0%	0.0%	6.3 lb	0.3 lb	0.1 lb	1.6 gal	± 130%
Unknown vegetation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Subtotal	**42.9%**	**42.9%**	**42.9%**	**0.0%**	**0.0%**	**85.6 lb**	**3.9 lb**	**1.7 lb**	**30.0 gal**	**± 116%**
Wood										
Wood	64.3%	57.1%	57.1%	14.3%	21.4%	0.0 lb	0.0 lb	0.0 lb	63 cord	± 42%
Subtotal	**64.3%**	**57.1%**	**57.1%**	**14.3%**	**21.4%**	**0.0 lb**	**0.0 lb**	**0.0 lb**	**63 cord**	± 42%
All vegetation	**85.7%**	**78.6%**	**78.6%**	**35.7%**	**35.7%**	**225.5 lb**	**10.3 lb**	**4.3 lb**		**± 70%**
All resources	**100.0%**	**92.9%**	**92.9%**	**92.9%**	**78.6%**	**8,382.1 lb**	**381.0 lb**	**161.6 lb**		**± 33%**

Source ADF&G Division of Subsistence household surveys, 2012.
Note "All resources" include all species of fish, wildlife, and plants reported on the survey.
a. Summary rows that include incompatible units of measure have been left blank.

cranberries (28 lb), and 6 gallons of salmon berries (25 lb). Limited quantities of crowberries, raspberries, and highbush cranberries were harvested.

Takotna households gathered 7 different greens from the land, which contributed 86 lb of edible food. Wild rhubarb was the largest harvest (17 gal, 66 lb.). Survey respondents often commented that they harvest it in passing and rarely bring any home to process, which is likely why wild rhubarb was not given away or received by any households. The next largest harvest was of wild celery, about 8 gallons. A limited number of households harvested Hudson Bay tea, sour dock, puffballs, fiddlehead ferns, and wild rosehips. Lastly, 64% of Takotna households used wood (species unknown), presumably to heat their homes. Along with

blueberries, wood was one of the most exchanged resources; residents reported both sharing and buying wood through customary trade, though none commented about barter.

Harvest Areas

Surveyed households assisted researchers in preparing maps for locations where individual households hunted, fished, and gathered subsistence resources in 2011. The resulting maps depict search and harvest areas for 6 different resource categories (salmon, northern pike and Arctic grayling, nonsalmon fish, large land mammals, small land mammals, birds and eggs, and berries and greens). Only surveyed households' search areas and harvest locations were combined to create a series of maps depicting Takotna's subsistence use areas in 2011, therefore these figures are only a partial representation of Takotna's total use areas. Furthermore, these areas change yearly with fluctuations in animal populations such that no single year of mapped data can represent the entirety of the area used by Takotna residents over time. Figure 7-10 summarizes the spatial data for 2011 harvests collected from Takotna households.

For 2011, Takotna residents reported using a total of 107 square miles for subsistence, representing diverse riparian, alpine, and boreal ecosystems. Takotna residents accessed these areas by small skiffs, ATVs, snowmachines, and highway vehicles using adjacent rivers, gravel roads, and trails.

Salmon fishing (Figure 7-11) was concentrated along the Takotna River, adjacent to the community and upstream about 12 miles, to the confluence of the Takotna River and Big Creek. Takotna residents also fished for salmon up to a mile downstream of Takotna, accessing the river from the community's road system. Though all salmon fishing was conducted with rod and reel gear at specific points, the harvest maps depict general search and harvest areas rather than specific locations where harvests took place.

The search and harvest areas for northern pike and Arctic grayling were similar to those described above for salmon (Figure 7-12). Residents searched for and harvested nonsalmon fish species along the Takotna River between the community of Takotna and Big Creek. As with salmon, the figure depicts a single continuous line. This line reflects rod and reel fishing locations from single locations along the riverbank, or while drifting with the current in a small skiff. Single dots, such as those located east of Takotna, represent singular fishing locations.

Hunters ranged farther for large land mammals than any other resource (Figure 7-13). Moose were sought mainly along the Takotna River and the road system. On the Takotna River, hunters ranged from its confluence with the Nixon Fork River upstream to the Little Waldren Fork. From the Takotna River, hunters accessed tributaries such as the Big Waldren Fork, Banner Creek, and Fourth of July Creek. Residents also hunted moose by trucks and ATVs along the road system that extends to Sterling Landing and along roads adjacent to the Innoko River. Black bears were hunted along the same road system, likely concurrent with moose hunting.

As discussed above, Takotna residents put considerable effort into winter trapping, and the community's collective use of land for harvesting small land mammals reflects this use (Figure 7-14). Trapping occurred

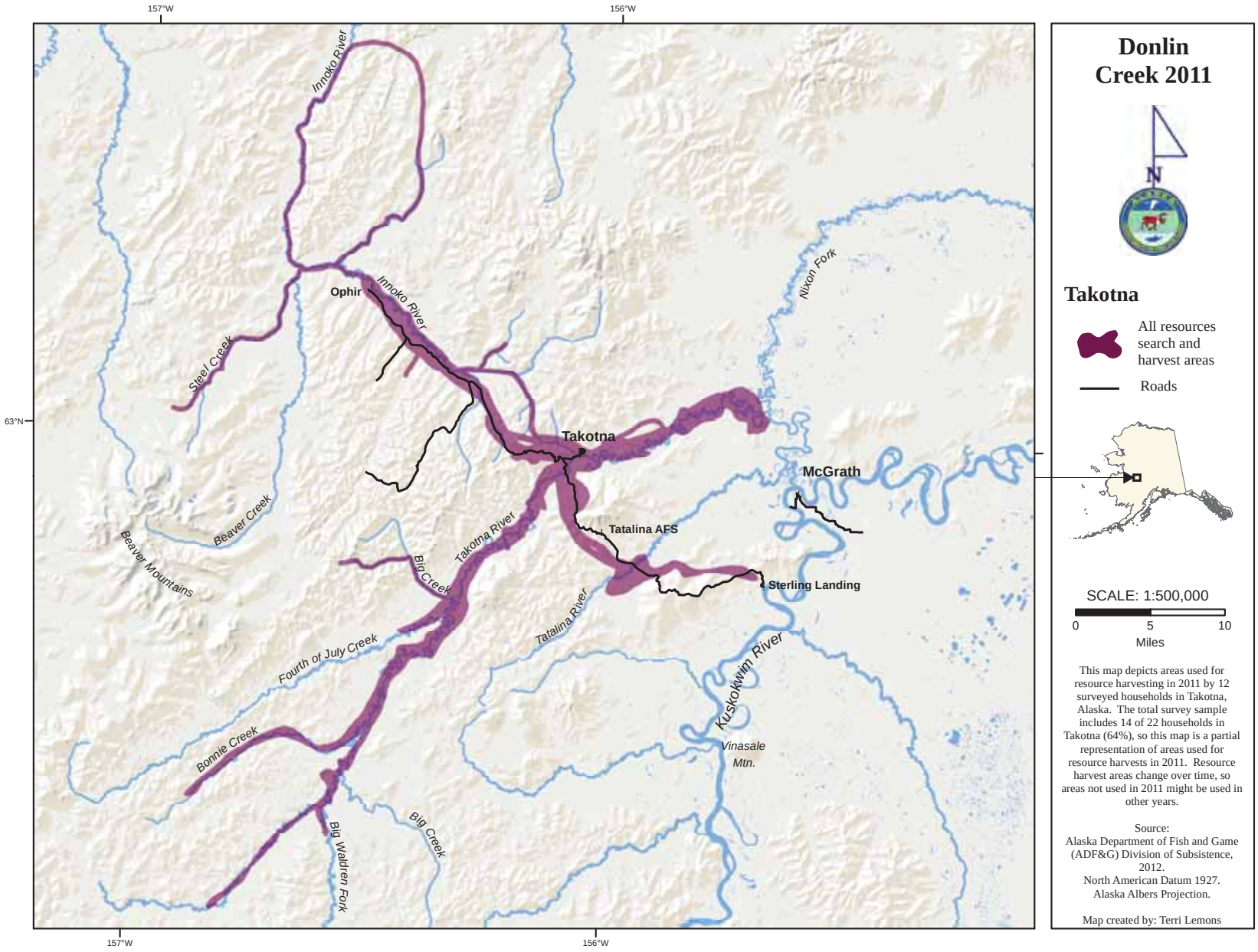


Figure 7-10.–All resources search and harvest areas, Takotna, 2011.

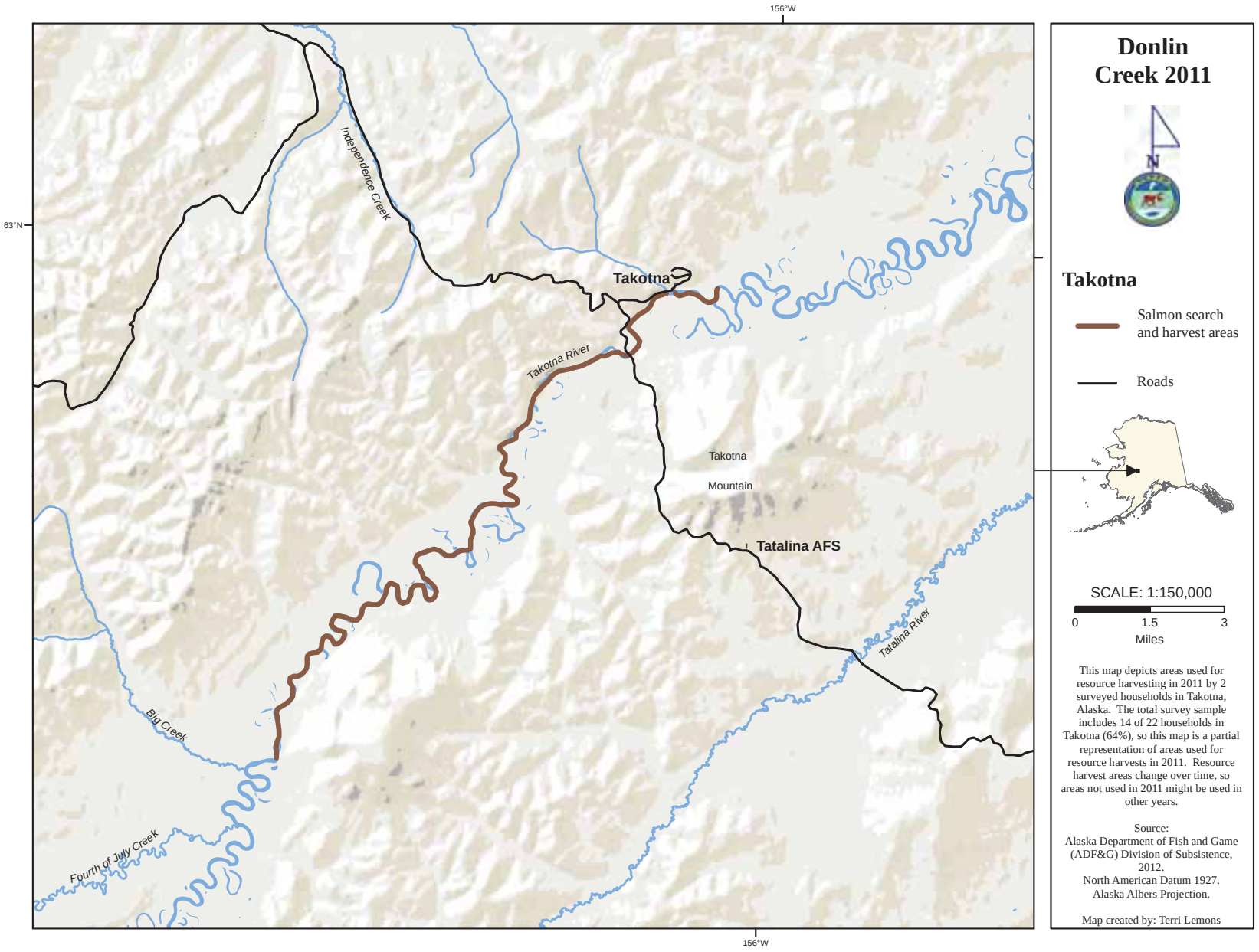


Figure 7-11.–Salmon search and harvest areas, Takotna, 2011.

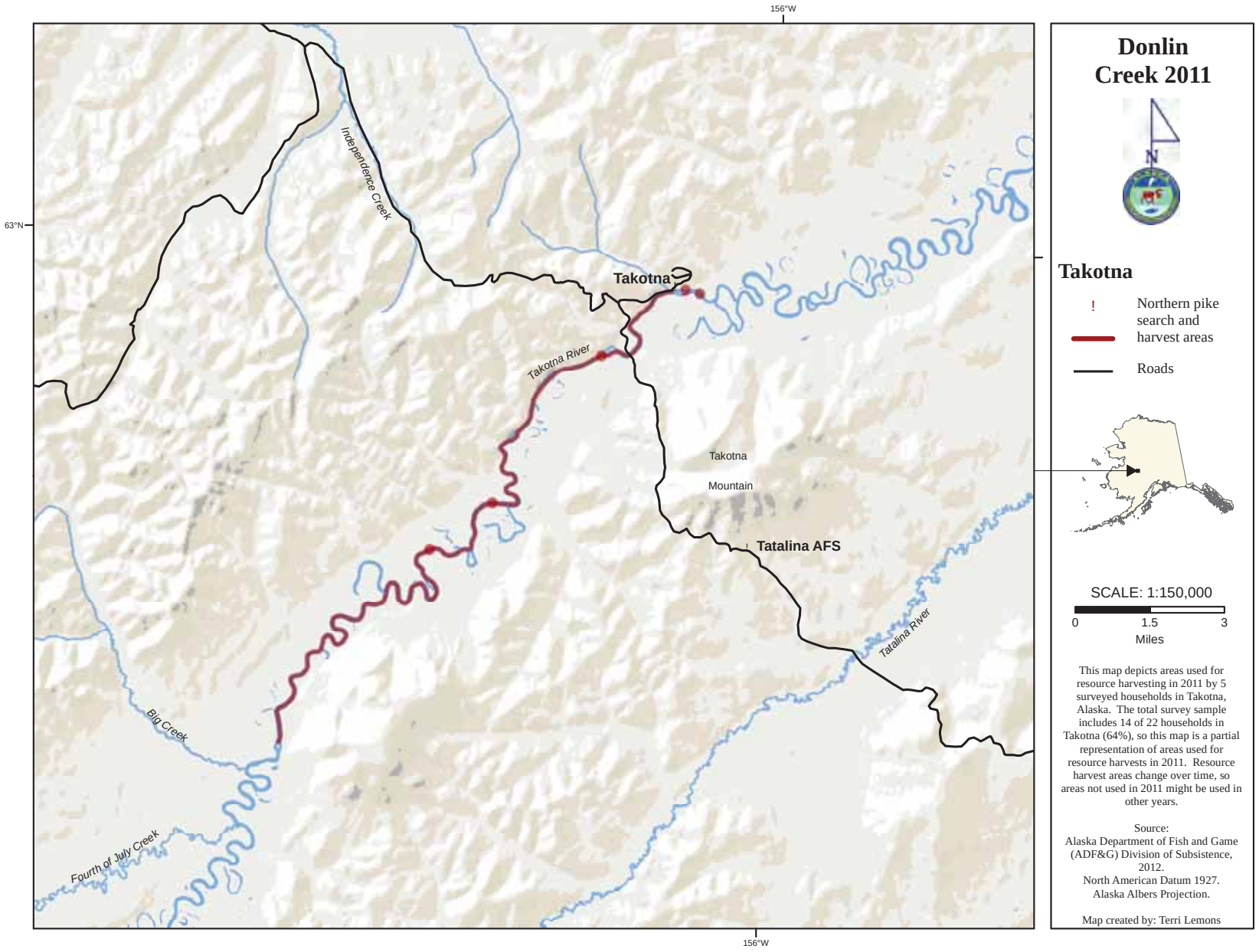


Figure 7-12.–Northern pike search and harvest areas, Takotna, 2011.

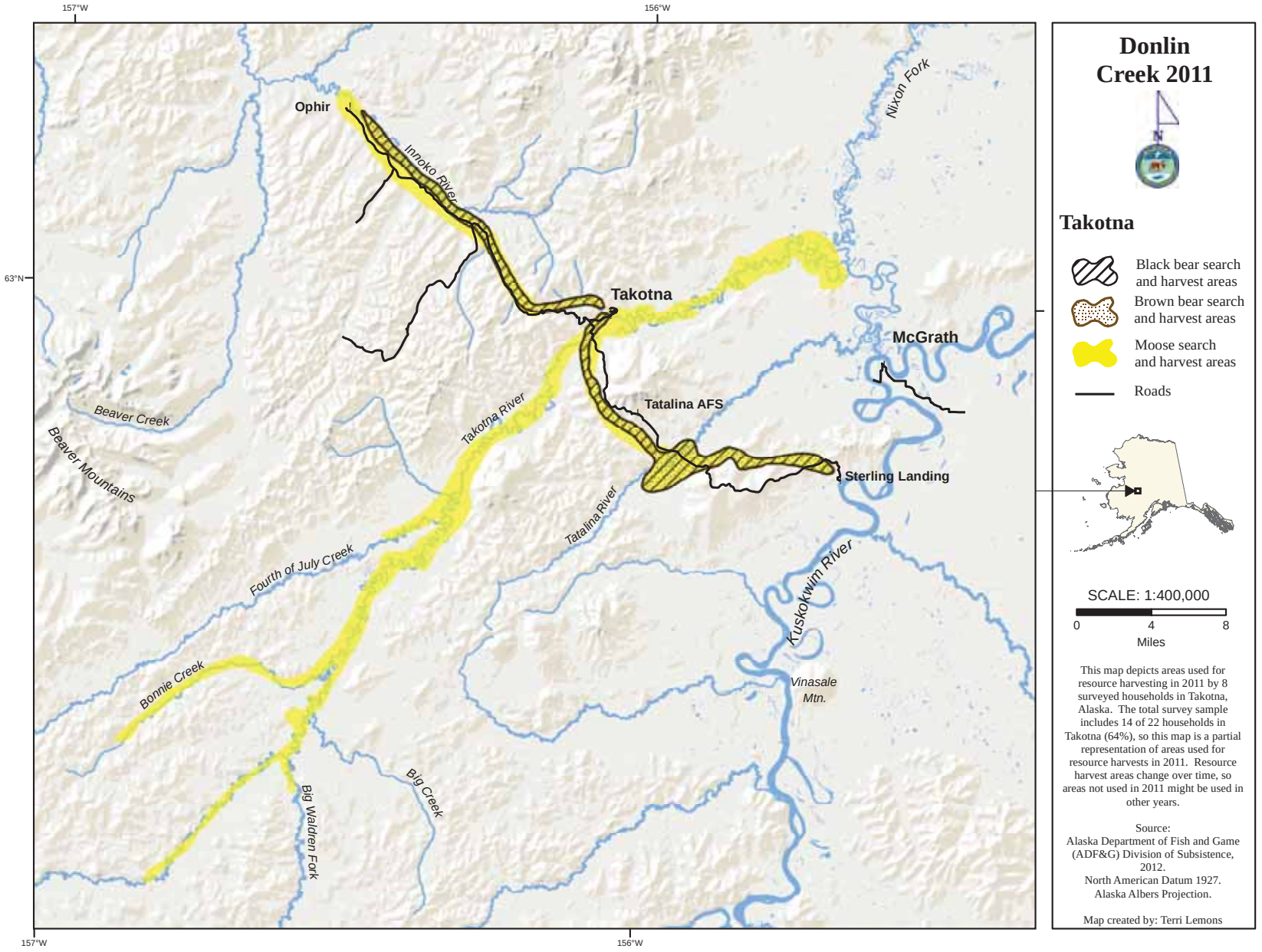


Figure 7-13.–Black bear, brown bear, and moose search and harvest areas, Takotna, 2011.

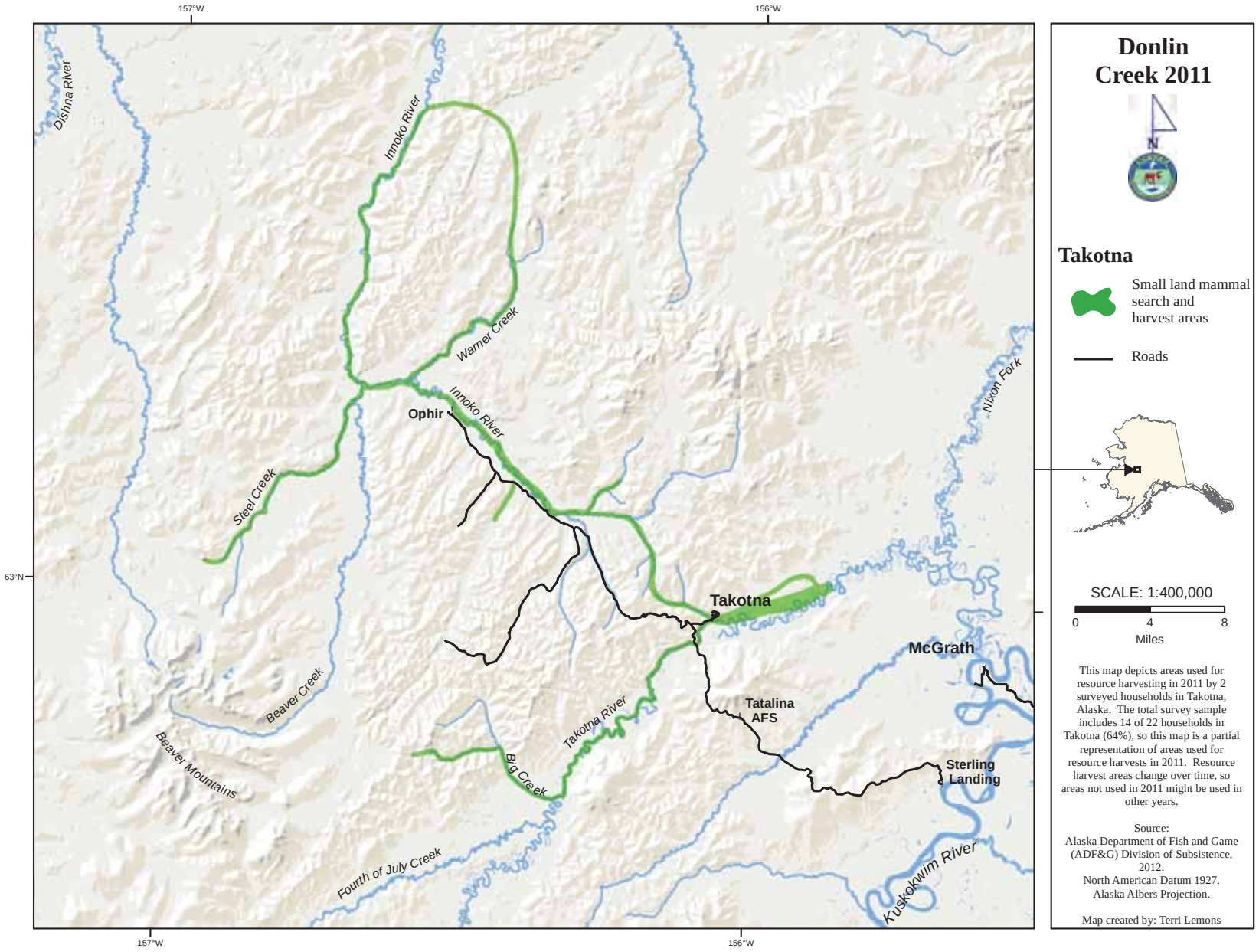


Figure 7-14.–Small land mammal search and harvest areas, Takotna, 2011.

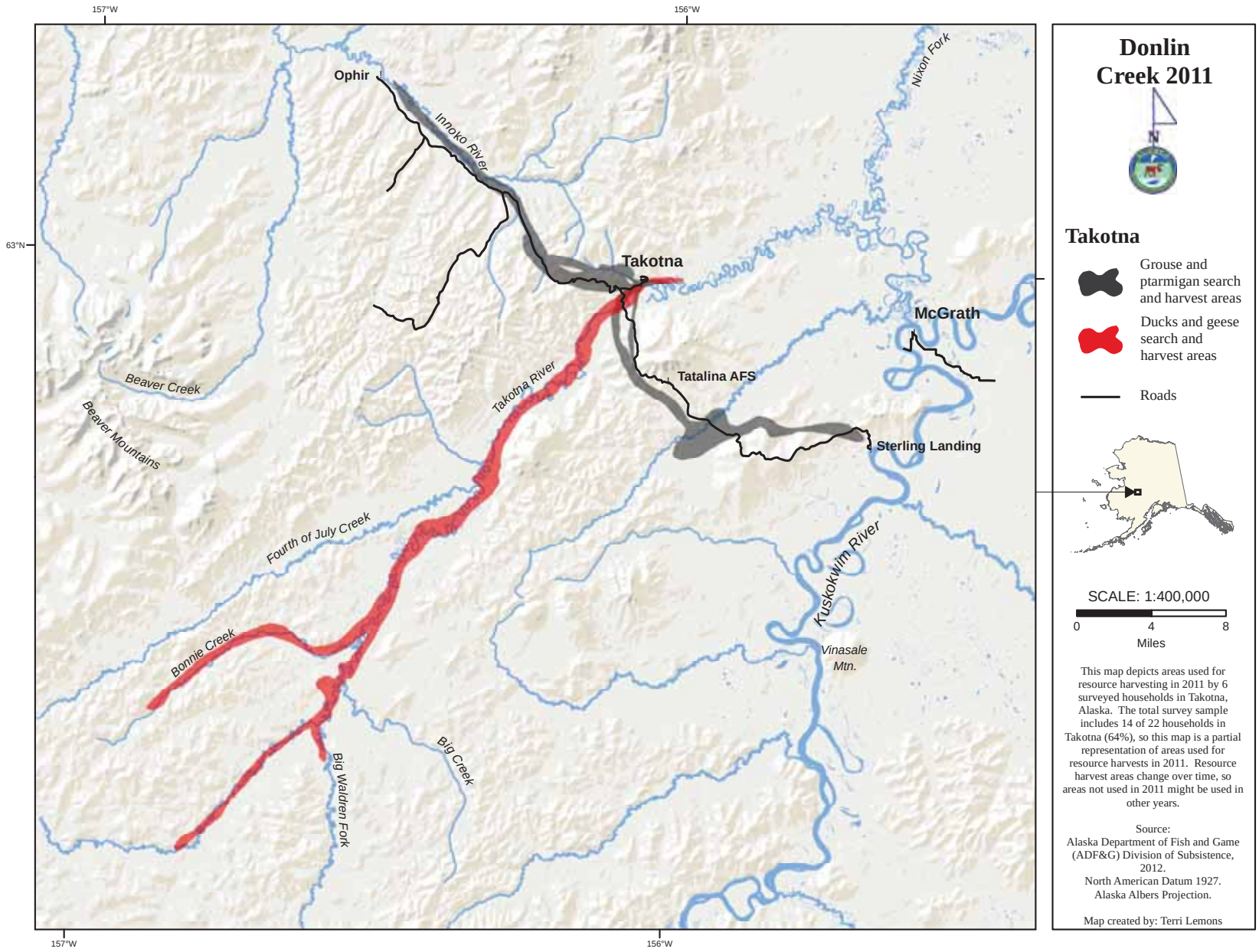


Figure 7-15.–Grouse, ptarmigan ducks, and geese search and harvest areas, Takotna, 2011.

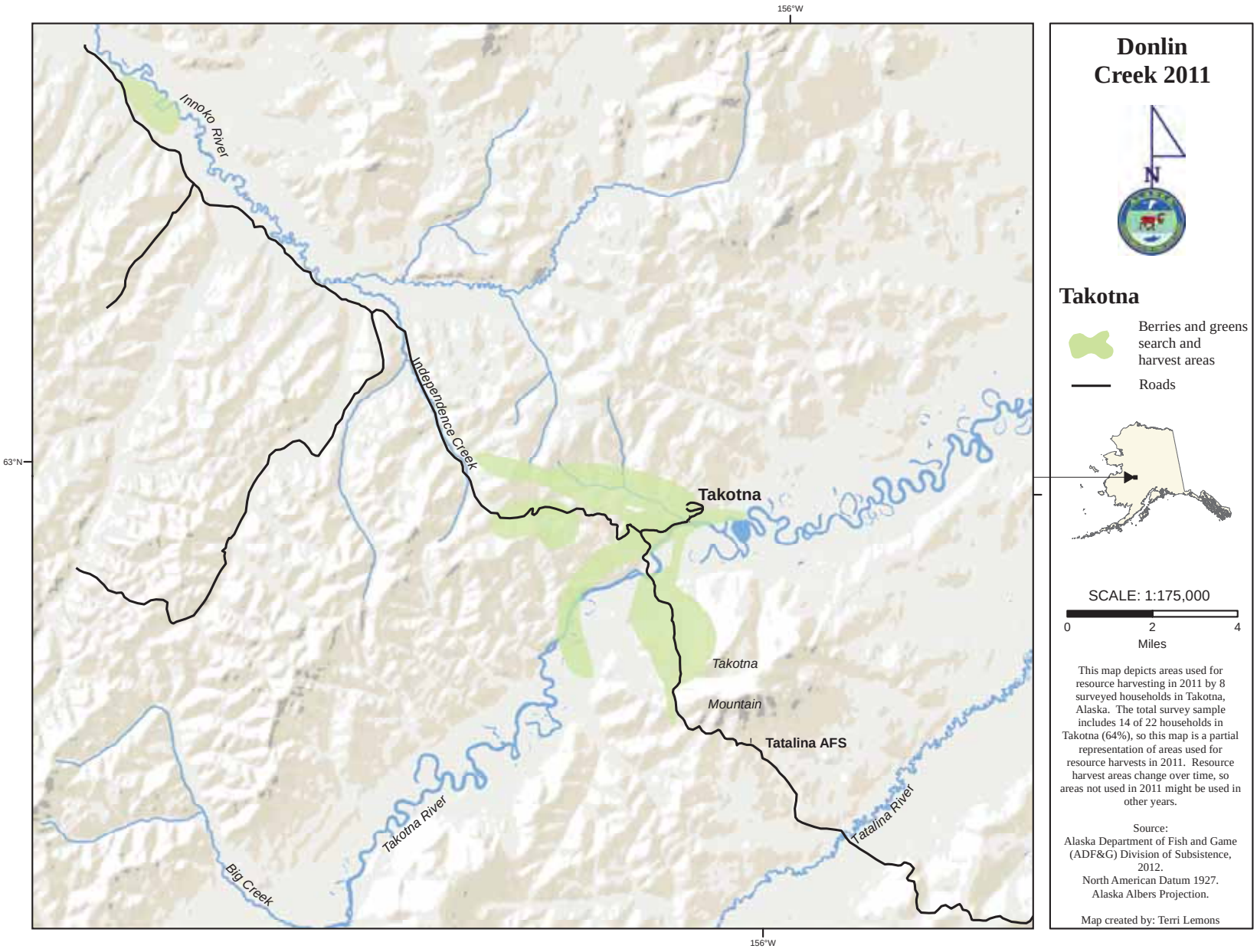


Figure 7-16.–Berries and greens search and harvest areas, Takotna, 2011.

along the Takotna River to Big Creek. Trappers used the road system, unmaintained during the winter months, and frozen river drainages to trap. This brought Takotna community members north into the Innoko River drainage and south toward the Beaver Mountains and the Takotna River.

Hunters' also searched for birds along river corridors and roads (Figure 7-15). Ducks and geese were harvested in the spring along the Takotna River up to the Little Waldren Fork, and including Banner Creek. Grouses and ptarmigans were sought mostly in the fall and winter along the open roads in the Innoko mining district and the road to Sterling Landing. Harvesting spruce grouse is a common activity among all residents, and considerable effort was expended near the community and within walking distance on its connected roads.

Berry picking is another common activity that residents engaged in near Takotna (Figure 7-16). Berries and greens were harvested mostly within a 4-mile distance from the community. Residents picked vegetation on the north side of Takotna Mountain, adjacent to the roads leaving the community, and in the hills to the west of Takotna. Additionally, at least 1 respondent reported harvesting greens along the Innoko River, likely while engaged in other subsistence activities.

Harvest Assessments

Researchers asked respondents to assess their own harvests in 2 ways: whether they got more, less, or about the same amount of 7 resource categories in 2011 as in past years, and whether they got "enough" of each of the 7 resource categories. Households also were asked to provide reasons if their use was different or if they were unable to get enough of a resource. If they did not get enough of a resource, they were asked to evaluate the severity of the impact to their household as a result of not getting enough. They were further asked whether they did anything differently (such as supplement with store-bought food or switch to a different subsistence resource) because they did not get enough. This section discusses responses to those questions.

Together, Figure 7-17 and Figure 7-18 provide a broad overview of households' harvests. Since not everyone uses all resource categories, some households did not respond to the assessment questions. Additionally, some households that do typically use a resource category simply did not answer questions. While the percentages displayed in these figures were calculated including all surveyed households (including those that did not respond to the question), the bars specifically highlight responses provided by households reporting that they typically use the resource category. Generally, the results are presented in this section as they appear in the figures, but it is important to remember that they are not limited to only households that ordinarily use the resource. Additional details are provided in cases where further analysis lends clarity to the discussion of use patterns.

Takotna residents gave a mixed assessment of their 2011 subsistence harvest. Most (71%) households said they used less subsistence resources in 2011 than in recent years. Only 21% said they used the same, and none reported using more. Despite diminished use, more than half (57%) reported getting enough. A community's use and need of resources is a dynamic association affected by its ability cope with scarcity, availability, and substitution of other resources, and changes in demographic structure.

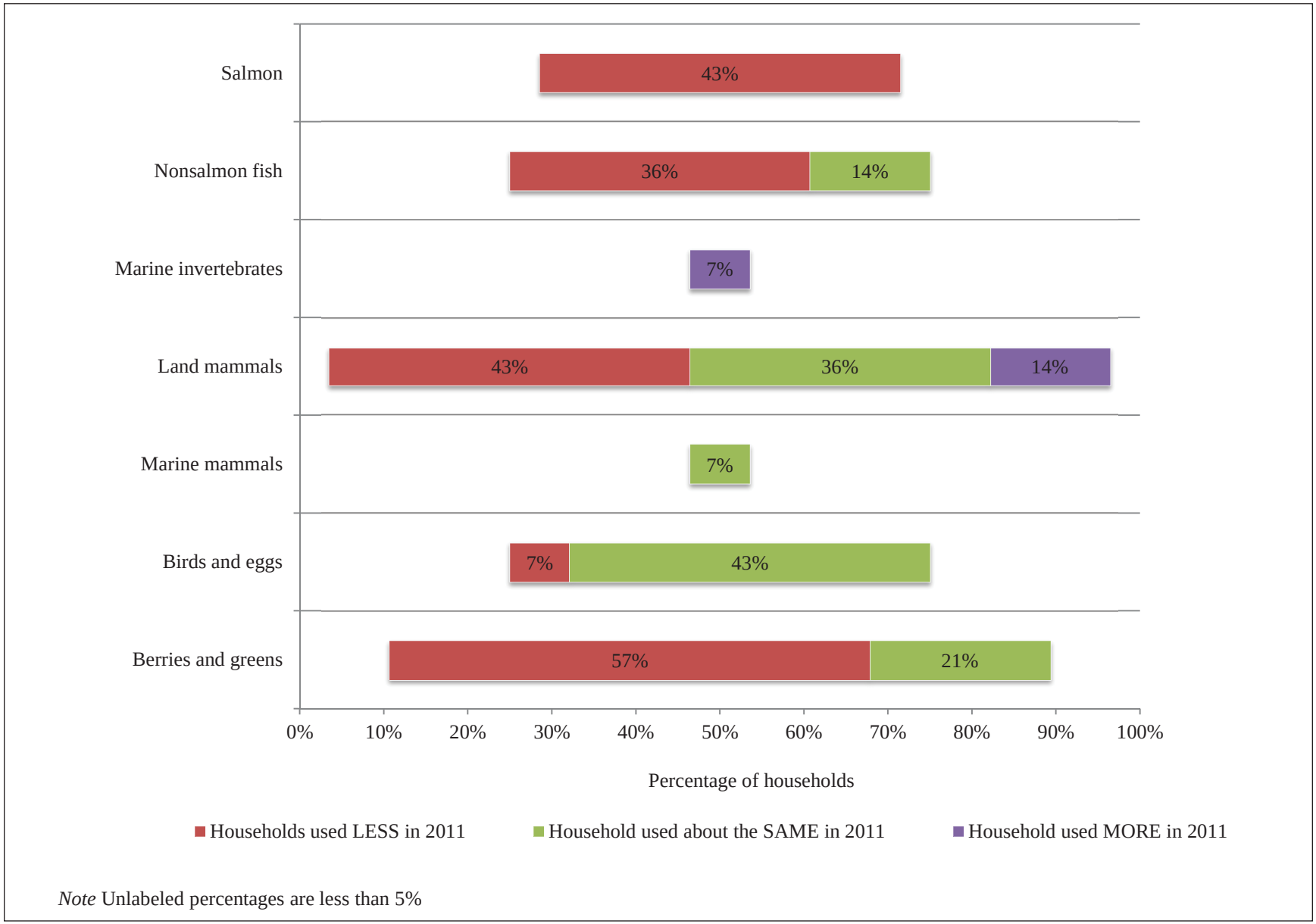
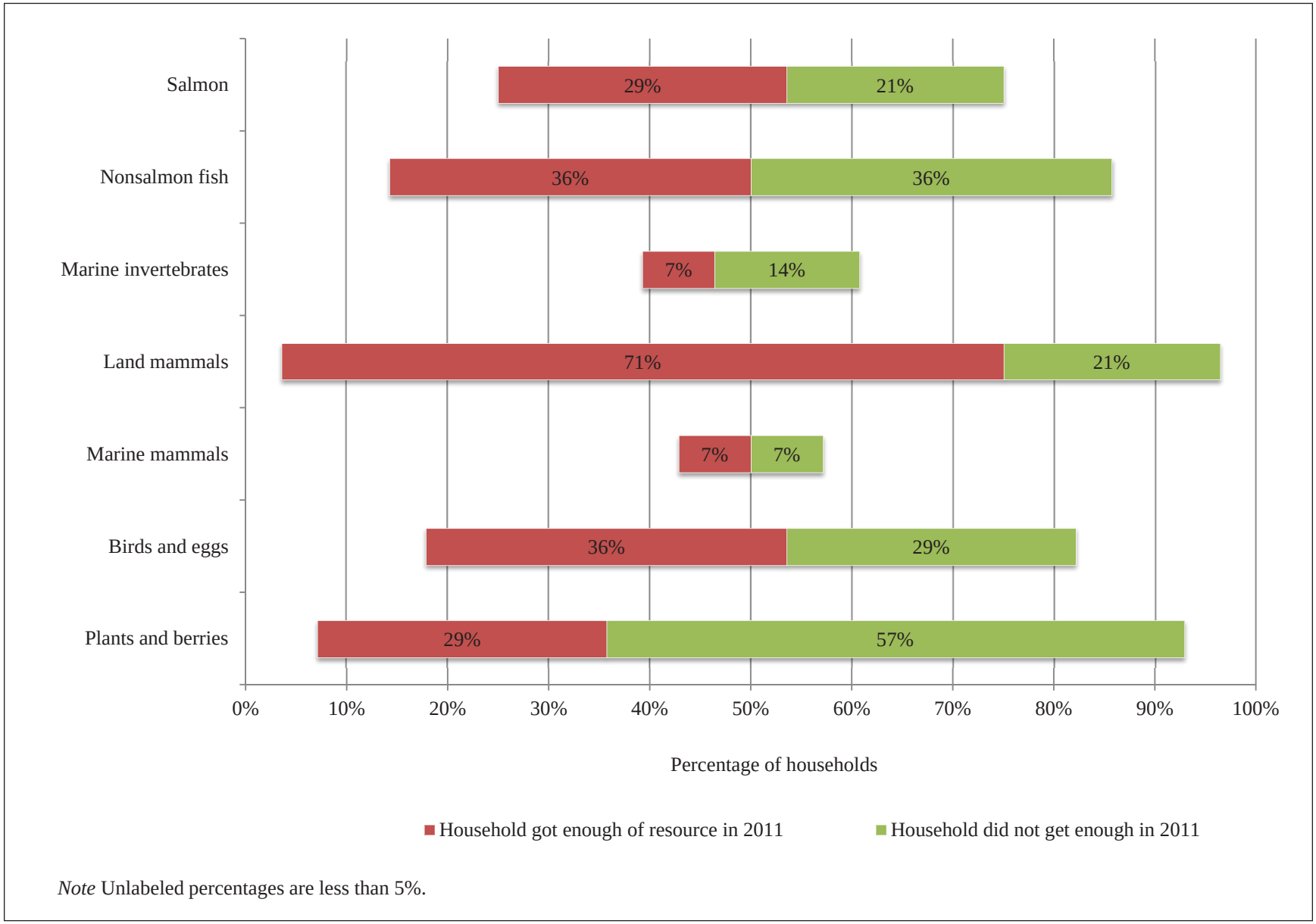


Figure 7-17.–Number of households using a resource and reporting LESS, SAME, or MORE use as compared to previous years, Takotna, 2011.



Note Unlabeled percentages are less than 5%.

Figure 7-18.–Number of households reporting getting enough resources, Takotna, 2011.

As discussed earlier, salmon is less available in Takotna than in other Kuskokwim River communities. Only 43% of households provided responses to the question of whether they used less, the same, or more salmon than in previous years; all of them said they used less salmon in 2011, though the majority of them reported that they got enough. Reasons for this may include changes in households' need for salmon, if for example, they have adjusted to using lesser quantities or that they view the resource as not particularly desirable. Respondents offered a number of reasons for why they harvested less salmon, and chief among them was a lack of resource availability (Appendix tables D6-7 through D6-10). Others mentioned that they were working and therefore lacked time. Often households will travel to the Kuskokwim River to harvest salmon. The major airstrip construction project, with the jobs it brought, inhibited residents' ability to do so. Half of the households that used salmon noted that the lack of salmon forced them to rely more on commercial foods (Appendix tables D6-11 and D6-12).

Respondents portrayal of nonsalmon fish species harvests was similar to salmon. Half of the respondents that provided responses indicated that they got enough nonsalmon fish, yet most reported that they used less in 2011 than in recent years. Those that used less responded that it was because they did not try to harvest nonsalmon fish and that they were working. No households reported that the lack of nonsalmon fish species changed their behavior.

Land mammals are perhaps the most important resource category to Takotna residents, and 93% of the sampled households provided responses to the assessment questions regarding land mammal use. Seventy-one percent of the households said that they got enough; 21% did not get enough, and the remaining 8% did not provide responses or did not use the resource, even though 43% stated that they harvested less. However, 36% stated that they used about the same as in recent years. As with fish, respondents that used less in 2011 said that they were working and had no time to harvest the resource. One respondent replied that the lack of land mammal use in their household presented a severe hardship (Appendix Table D6-13).

Half of the sampled households provided responses to birds and eggs. Thirty-six percent of the community households said that they got enough, and 43% said they used about the same as in other years.

The use of plants and berries elicited the second greatest number of responses from households. Of those who responded, 57% said they used less than in recent years, and few (29% of reporting households) felt they got enough. As with the other resource categories, respondents cited a lack of time and busy summer work schedule for their declined use of the resource. Evoking a strong preference for vegetation, particularly berries, half of the respondents that commented said that the impact to their household was major. For more information see Appendix Table D6-14.

Jobs, Income, and Expenses

Respondents were asked about both earned income (jobs held and wages earned by all household members 16 years old and older) and unearned income (Alaska Permanent Fund dividend, Social Security, public assistance, etc.). For 2011, Takotna households earned or received an estimated $712,509, of which $573,871

Table 7-7. – Estimated earned and other income, Takotna, 2011.

Income source	Number of people	Number of households	Total for community	Mean per household[a]	Percentage of total[b]
Earned income					
Services	9.4	11.0	$262,896	$11,950	36.9%
Construction	3.1	3.7	$137,234	$6,238	19.3%
Local government	6.3	5.5	$115,723	$5,260	16.2%
Other employment	3.1	3.7	$23,145	$1,052	3.2%
Agriculture, forestry, and fishing	3.1	3.7	$12,934	$588	1.8%
Retail trade	1.6	1.8	$11,591	$527	1.6%
Transportation, communication, and utilities	1.6	1.8	$6,263	$285	0.9%
State government	1.6	1.8	$4,084	$186	0.6%
Earned income subtotal	**26.5**	**16.5**	**$573,871**	**$26,085**	**80.5%**
Alaska Permanent Fund dividend		18.9	$54,337	$2,470	7.6%
Social Security		3.1	$18,871	$858	2.6%
Unemployment		7.9	$16,673	$758	2.3%
Veterans assistance		1.6	$14,520	$660	2.0%
Food stamps		3.1	$13,389	$609	1.9%
Meeting honoraria		1.6	$11,000	$500	1.5%
Native corporation dividend		14.1	$7,326	$333	1.0%
Energy assistance		3.1	$2,522	$115	0.4%
TANF (temporary cash assistance for needy families)		0.0	$0	$0	0.0%
Adult public assistance		0.0	$0	$0	0.0%
Supplemental Security income		0.0	$0	$0	0.0%
Longevity bonus		0.0	$0	$0	0.0%
Pension/retirement		0.0	$0	$0	0.0%
Workers' compensation/insurance		0.0	$0	$0	0.0%
Disability		0.0	$0	$0	0.0%
Child support		0.0	$0	$0	0.0%
Other		0.0	$0	$0	0.0%
Foster care		0.0	$0	$0	0.0%
Citgo fuel voucher		0.0	$0	$0	0.0%
Other income subtotal		**20.4**	**$138,638**	**$6,302**	**19.5%**
Community income total			**$712,509**	**$32,387**	**100.0%**

Source ADF&G Division of Subsistence household surveys, 2012.

a. The mean is calculated using the total number of households in the community, not the number of households for this income category.

b. Income by category as a percentage of the total community income from all sources (wage-based income and non-wage-based income.)

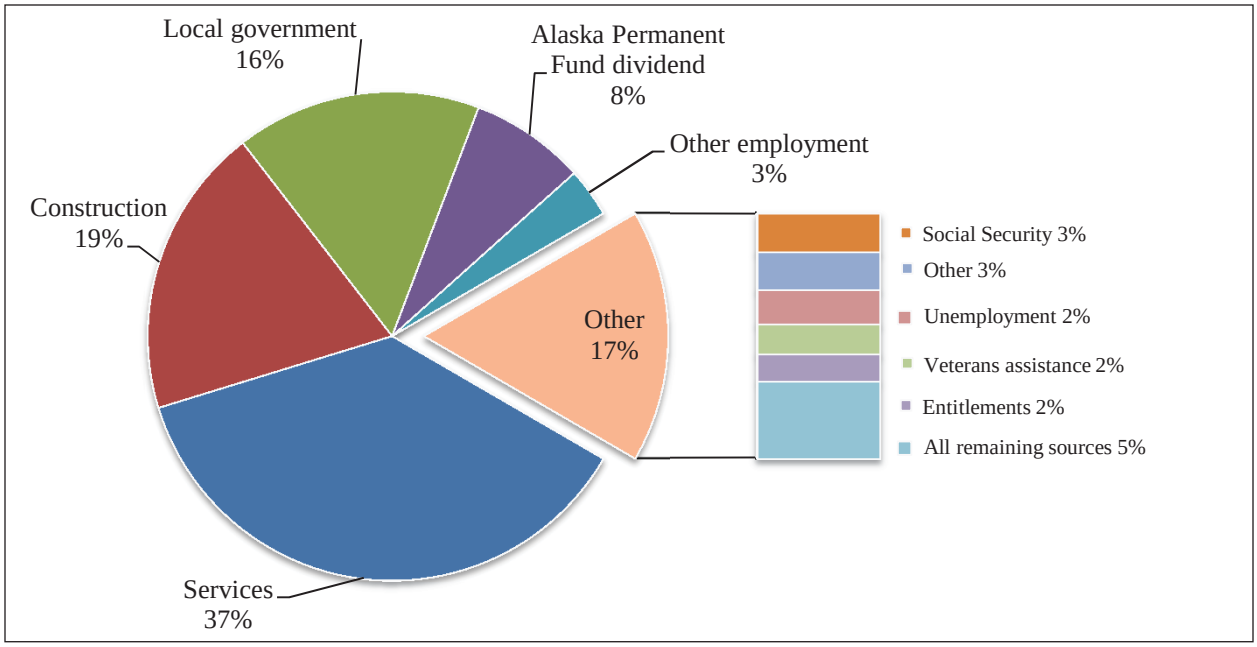


Figure 7-19.–Top 10 income sources ranked by estimated amount, Takotna, 2011.

(81%) was from wage employment and $138,638 (19%) was from other sources (Table 7-7). This amounts to a per capita income of $13,702. For comparison, the 2005–2009 American Community Survey reported a per capita income of $8,765 (AKDOL 2013). The estimated mean per household income estimated by this survey was $32,387.

The top source of income was employment related to services ($262,892 or 37%), which is a broad category that includes professional services, hotels and lodging, recreation services (tourism), and miscellaneous repair services, from which 50% of the households received income (Figure 7-19). The second largest source of income was from construction that employed 18% of the households and brought $137,234 to the community. Typically, the largest source of income in rural communities is from local government, which only brought $115,723 to Takotna. However, in 2011 an FAA funded airport was constructed which either directly or indirectly employed numerous residents. Agriculture, forestry, and fishing brought $12,934 to Takotna, most of which was from trapping.

Among other sources of income, the Alaska Permanent Fund dividend brought $54,337 to the community, the largest source of income in this category. Social security provided $18,871 and unemployment provided $16,673.

This survey counted 44 adults, of which 27 (61%) held employment for at least part of 2011 (Appendix Table D1-4). The total number of jobs held by residents during the study year was 37, which includes employment in the community, in neighboring McGrath, and jobs held in other parts of Alaska. The mean number of jobs held by employed households was 2.3. Only 33% of the employment was year-round—most likely provided by the school district, local government, and health clinic. Most of the employment held by residents was on a seasonal basis providing on average 7.7 months of wage income (Appendix Table D6-15).

Table 7-8. – Estimated annual expenses, Takotna, 2011.

Household expenses	Number of households	Total for community	Mean per household	Percentage of category	Percentage of total
Total expenses	**22.0**	**$307,374**	**$13,972**	**100.0%**	**100.0%**
Housing	22.0	$135,801	$6,173	100.0%	44.2%
Rent/mortgage	11.0	$27,138	$1,234	20.0%	8.8%
Stove oil	17.3	$43,794	$1,991	32.2%	14.2%
Firewood	6.3	$1,269	$58	0.9%	0.4%
Electricity	20.4	$28,888	$1,313	21.3%	9.4%
Propane	15.7	$12,041	$547	8.9%	3.9%
Water/sewer/garbage	7.9	$3,266	$148	2.4%	1.1%
Telephone	12.6	$10,165	$462	7.5%	3.3%
Television	9.4	$9,240	$420	6.8%	3.0%
Groceries	22.0	$138,234	$6,283	100.0%	45.0%
Store-bought groceries	22.0	$132,280	$6,013	95.7%	43.0%
Subsistence–customary trade	6.3	$5,954	$271	4.3%	1.9%
Subsistence	22	$33,339	$1,515	100.0%	10.8%
Gasoline	15.7	$21,780	$990	65.3%	7.1%
Ammunition	9.4	$1,448	$66	4.3%	0.5%
Equipment parts	4.7	$6,417	$292	19.2%	2.1%
Other supplies	12.6	$3,694	$168	11.1%	1.2%

Source ADF&G Division of Subsistence household surveys, 2012.

Though he did not collect income and economic data, Stokes (1985) noted that residents were employed by local government entities, at a local sawmill, and outside the community by the Tatalina Air Force station and in McGrath. In 2011, no residents reported employment from the Tatalina Air Force station, which is still operational.

Takotna's long distance from Alaska's urban centers and the high price of transportation greatly increase the cost of living (Table 7-8). In 2011, research staff collected household, food, and subsistence expenditures as a complement to household income. The mean per household annual expenditure was reported as $13,972, 43% of the mean per household income. The highest expenditure incurred by households was store-bought groceries, which households reported to be 43% of all expenditures. The annual cost of groceries, $6,283 per household, only reflects the price households pay for food. Takotna no longer has a grocery store, and residents have the option of chartering a flight to McGrath to purchase groceries at the A.C. Company Store, or ordering groceries from Anchorage and paying freight charges. The next highest expenditures incurred by households included energy and heating. Stove oil accounted for 14% of a household's annual budget and electricity, generated locally but with imported diesel, accounted for 9% of the households' income.

Subsistence costs reported by Takotna households were minimal (11%), compared to other household expenditures (Table 7-9). The purchase of gasoline was the single largest expense related to subsistence, and encompassed 7% of the total expenditure reported by households. The broad categories of equipment parts and other supplies were the second and third largest subsistence expenses. However, not typically an annual cost, motorized equipment is essential to subsistence users. About 33% of the households in Takotna owned

Table 7-9. – Estimated equipment costs and household use, Takotna, 2011.

	Equipment used for subsistence					
	Boats	Boat motors	Nets	Snowmachines	4-wheelers (ATVs)	Trucks/cars
All households						
Using						
Estimated number	12.8	11.0	0.0	7.3	11.0	5.5
Percentage	58.3%	50.0%	0.0%	33.3%	50.0%	25.0%
Owning						
Estimated number	7.3	7.3	0.0	5.5	11.0	1.8
Percentage	33.3%	33.3%	0.0%	25.0%	50.0%	8.3%
Mean owned	0.3	0.3	0.0	0.7	0.7	0.2
Total estimated owned in the community	7.3	7.3	0.0	14.7	14.7	3.7
Mean original cost per household	$375	$1,800	$0	$3,667	$1,708	$167
Total estimated community cost	$8,250	$39,600	$0	$80,667	$37,583	$3,676
Estimated annual community cost	$363	$2,532	$0	$12,302	$3,805	$269
Only households owning						
Mean owned	1.0	1.0	0.0	2.7	1.3	2.0
Maximum owned	1	1	0	4	3	2
Mean original purchase cost	$1,125	$5,400	$0	$14,667	$3,417	$2,005
Minimum original purchase cost	$300	$900	$0	$3,667	$300	$1,003
Maximum original purchase cost	$3,000	$12,000	$0	$12,000	$4,000	$1,003
Median original purchase cost	$600	$4,350	$0	$5,250	$2,350	$1,003
Mean replacement time (years)	16.0	11.0	0.0	5.8	8.8	10.0
Minimum replacement time (years)	7	7	0	3	3	10
Maximum replacement time (years)	30	15	0	10	20	10
Median replacement time (years)	13.5	11.0	0.0	4.5	6.0	10.0

Source ADF&G Division of Subsistence household surveys, 2012.

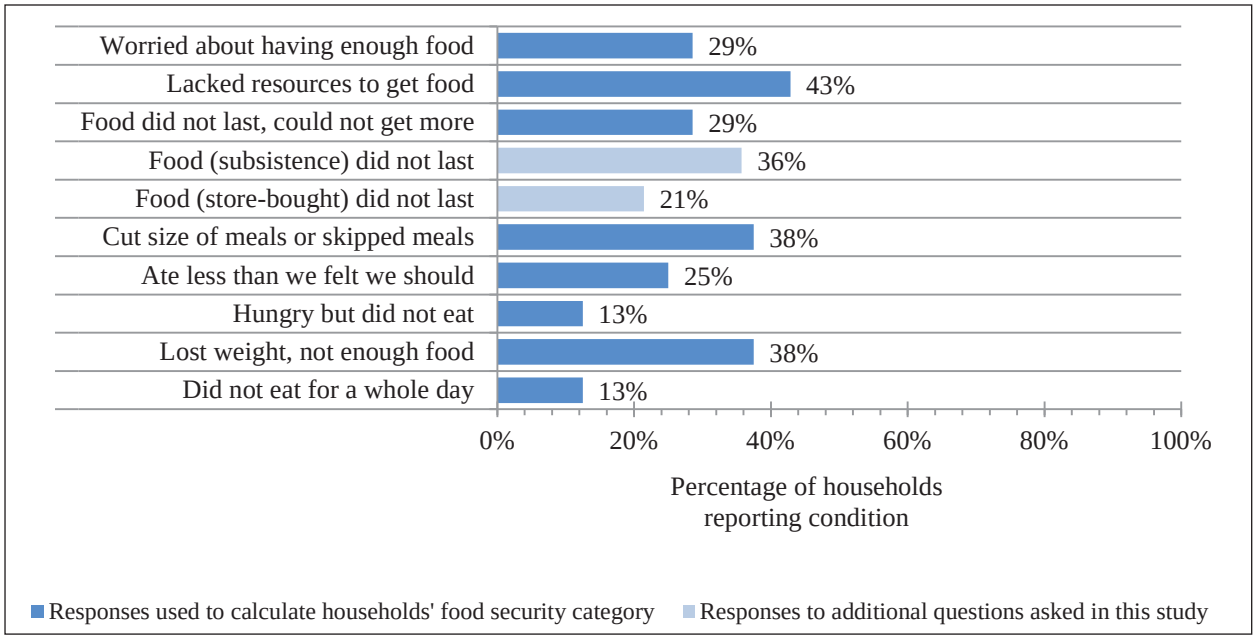


Figure 7-20.–Food insecure conditions results, Takotna, 2011.

boats and motors, and 50% owned ATVs that they used for subsistence harvesting. Respondents reported that ATVs lasted an average of 9 years, and boats lasted about 16 years.

Food Security

Respondents were asked a short series of questions to assess their household's food security, defined as "access by all people at all times to enough food for an active, healthy life" (Nord et al. 2009:2). Modeled on a method developed by the USDA, survey questions were modified by ADF&G to account for differences in access to subsistence and store-bought foods. Core questions and community responses are summarized in Figure 7-20. Results in this section are expanded from the frequency of reporting households.

Households were scored based on their responses to the questions shown in Figure 7-20. Households were then designated as having high, marginal, low, or very low food security. In Takotna in 2011, 71% of the surveyed households were food secure, having either high or marginal food security (Figure 7-21). Food secure households reported no more than 2 instances of food insecurity. Food insecurity among these households often manifested itself as anxiety over food for at least part of the year or as a reported food shortage that did not disrupt their eating pattern. Fourteen percent of Takotna households reported low food security. Heads of households had trouble providing enough food for their family at some point during the year. The remaining 14% of households reported conditions of very low food security. These households reported a disruption in their eating pattern for at least 7 months of the calendar year. Takotna was among the least food secure communities in this study.

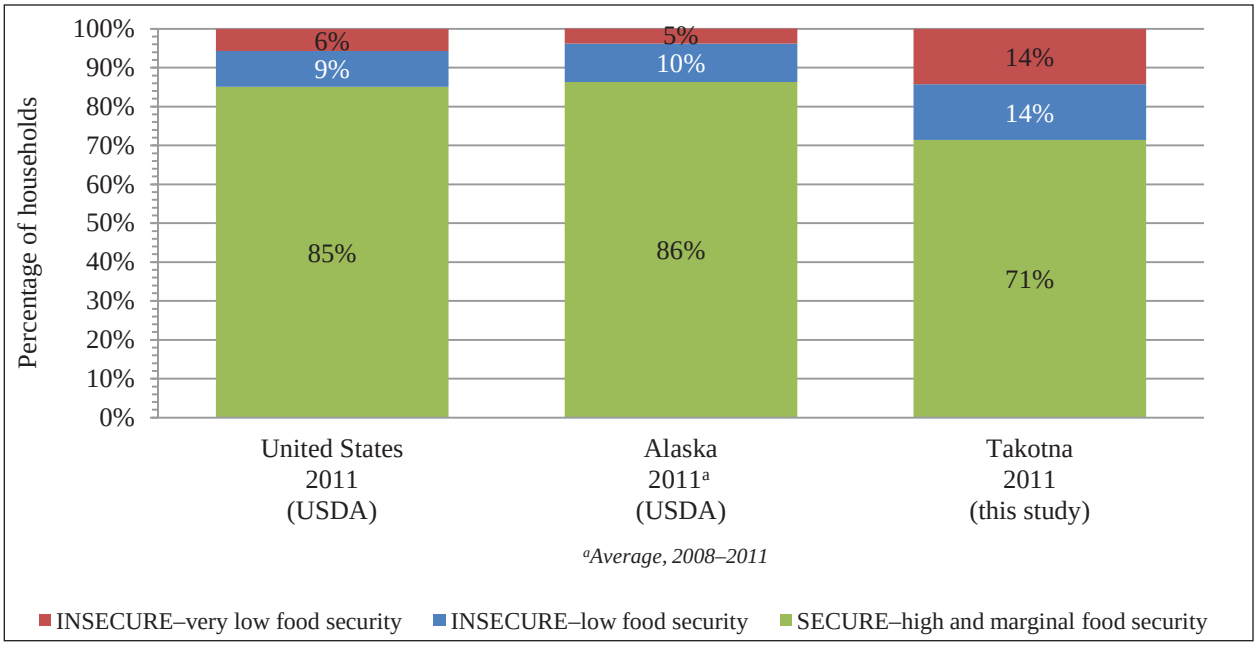


Figure 7-21.–Food security categories, Takotna, 2011.

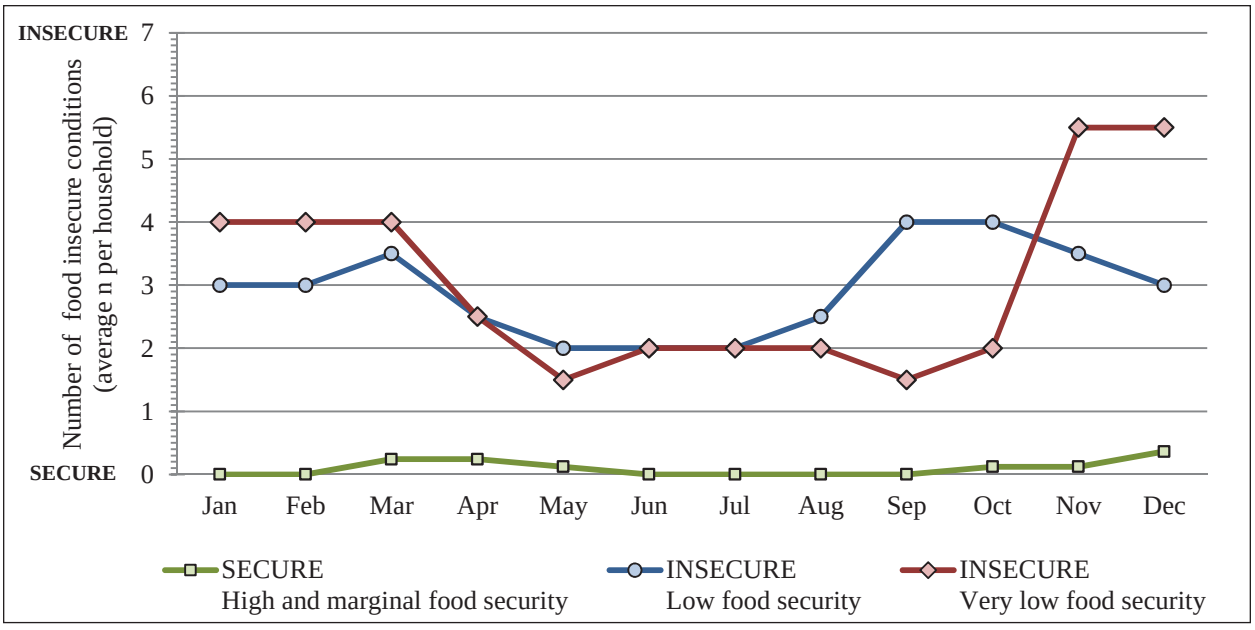


Figure 7-22.–Food insecure conditions by month and by household category, Takotna, 2011.

Figure 7-22 portrays the responses to food security questions, or reports of instances of food insecure conditions, throughout the year. The food secure households collectively indicated that they remained secure through the whole year, with some indication of insecurity during the spring and early winter months. Households labeled as food insecure, those with low or very low food security, experienced the most seasonal variability as a group. Marginally insecure households experienced food insecurity most strongly from September until March. The most insecure households indicated the most instances of insecurity in November and December but consistently reported an average of 3 insecure conditions per month.

A number of variables likely influenced Takotna residents' access to food throughout the year. First, respondents were asked to consider both access to subsistence and store bought food when assessing their household's food security. Obtaining commercial foods was difficult for some residents, they explained, because Takotna no longer has a store, and therefore they must charter a plane to nearby McGrath or order food to be shipped from an urban center. As discussed above, 43% of the community's expenditures went toward food in 2011, an estimated $6,013 per household. This does not include the cost of accessing food, via charter or shipping, which, residents felt, would have almost doubled the figure. The cost of food becomes a challenge during months of severe cold, when households must choose between buying energy to heat their house and food. In November and December, for example, the Interior of the state experienced a prolonged cold snap that, residents say, reached 60 degrees below zero. (Personal communication to Seth Wilson, Subsistence Specialist, Takotna community meeting December, 2012).

Wild Food Networks

Subsistence hunting, fishing, and gathering are highly cooperative endeavors that few individuals undertake alone. Food and materials gained through a person's efforts may also be distributed along kinship lines or through other social relationships. This survey collected information on distribution networks for individual resource categories, and some important resources such as moose, from the point of view of the household unit. Respondents were asked "Last year, who killed the ___ your household used?" and "Last year, who processed the ___ your household used?" For each resource used, every household was asked if they gave that resource to another household, and if they received that resource from another household.

Figure 7-23 portrays a network of Takotna households linked to each other, as well as to other Alaska communities, by harvesting and processing activities. Since questions were uni-directional (i.e. only documenting the flow of resources into the respondent households) this study cannot measure reciprocity. Households were also asked to identify if other households provided cash, materials, or other equipment to aid the respondent household in harvesting subsistence resources. Residents exchanged moose most often. An estimated 64% of Takotna households received it and 43% gave it away, which includes exchanges within the community and to other communities in Alaska. This may be a reflection of the abundance and availability of the resource. As discussed above, over half of the community's households harvested a moose. This indicates that even households that successfully harvested a moose during the year, also likely received at least a

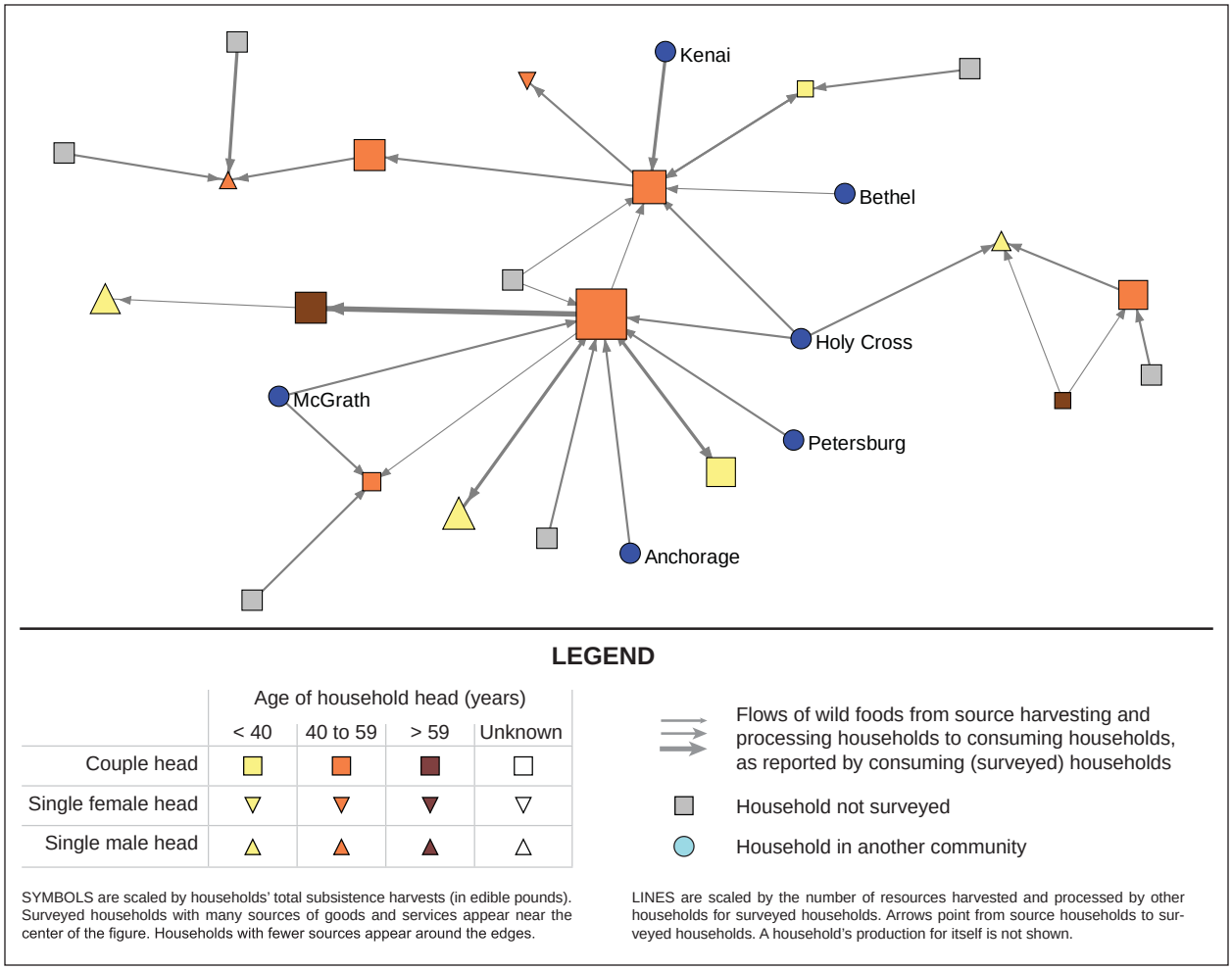


Figure 7-23.–Wild food harvesting and processing network, Takotna, 2011.

portion. The second most exchanged resource was Arctic grayling, another abundantly harvested resource.

In 2011, 37% of the households harvested 70% of the resources, suggesting that subsistence harvests were centralized among a few high-harvesting households. Households participate in subsistence harvesting activities to different degrees, generally corresponding to factors such as household maturity level, income, and size (Magdanz et al. 2002:112). As an example, the top producing household was a mature couple with a very long tenure in the community. It occupies a central position in Figure 7-23 and was identified 17 times as a source of subsistence foods or processing help to other households. In addition, they received help from 7 households in 13 instances. Households with whom they share the strongest relationships are connected by bolded uni-directional arrows, indicating a great amount of support. Households that are likely to produce less (i.e. young single male households, single female households, single elder households) commonly receive the most support. No households contacted during the study were completely isolated from other households. Community members in Takotna share ties with many other communities from across the state, especially Holy Cross and McGrath.

Comparisons with Prior Results

This section compares the major findings of the 2011 study with previously published data. Between 1981 and 1985, ADF&G Subsistence Resource Specialist Jeff Stokes (1985) conducted research regarding the use of fish and wildlife resources by 4 communities in the upper Kuskokwim River Drainage, including Takotna. Though highly descriptive, Stokes (1985) collected little quantitative information on subsistence harvests, though it does contain extensive land use maps. ADF&G has collected subsistence salmon harvest data for most communities in the Kuskokwim River since 1960. Finally, ADF&G estimated migratory bird harvests as part of the Alaska Migratory Birds Co-Management program from 2004 to 2008. This section discusses the current results compared to these earlier studies.

Historical salmon harvests in Takotna are presented in Figure 7-24. Estimates were created from reports gathered through postseason subsistence salmon surveys. However, for many years Takotna was either not surveyed, or the sample was too small to allow statistical expansion. In such instances, estimates are inferred from historical data and data from nearby communities and by applying a Bayesian estimation method (Hamazaki 2011). Salmon harvests have been minimal, with residents focusing mostly on coho and Chinook salmon. The Takotna River hosts large numbers of coho and chum salmon and a smaller quantity of Chinook salmon. With the exception of 1990, Chinook and chum salmon harvests have ranged from 0 to 20 salmon per year. Sockeye salmon harvests have varied between 0 and 3 salmon per year. Coho salmon, the most abundant salmon species in the Takotna River, has increased since 2000, ranged from 0 to 51 salmon per year. Residents note that chum salmon are undesirable by the time they reach Takotna and that they can easily target Chinook and coho salmon by rod and reel from the banks of the river.

Moose far exceeded any other harvest during the study period. Information gathered from moose harvest ticket returns shows that moose harvest levels are stable. Figure 7-25 shows moose harvests by Takotna residents beginning in 1990. The red dots reflect reported values collected by hunters who returned a harvest report. The blue diamond reflects the harvest estimate collected from this study, calculated by the method described above. There has been a federal or state wildlife agency management office in McGrath since before statehood, and hunters in the upper Kuskokwim River have a high rate of reporting (R. Seavoy, Area Biologist, ADF&G, McGrath, personal communication). Over the past 21 years, Takotna hunters harvested an average of 8 moose each year, ranging from 1 to 14 moose per year. Both survey and harvest ticket information show that 2011 was a high harvesting year.

Bird harvests in Takotna were estimated by the Division of Subsistence in 2005 and 2010 as part of the Alaska Migratory Bird Co-Management Council. Both migratory and nonmigratory bird harvests were surveyed. However, data from that study are reported on a regional basis, which makes comparisons between the datasets difficult. For example, the Middle Yukon–Upper Kuskokwim subregion, which includes Takotna and 7 other communities, harvested approximately 786 birds in 2010. The portion harvested by Takotna residents is unknown. The following year, according to this study, Takotna alone harvested 17 migratory birds.

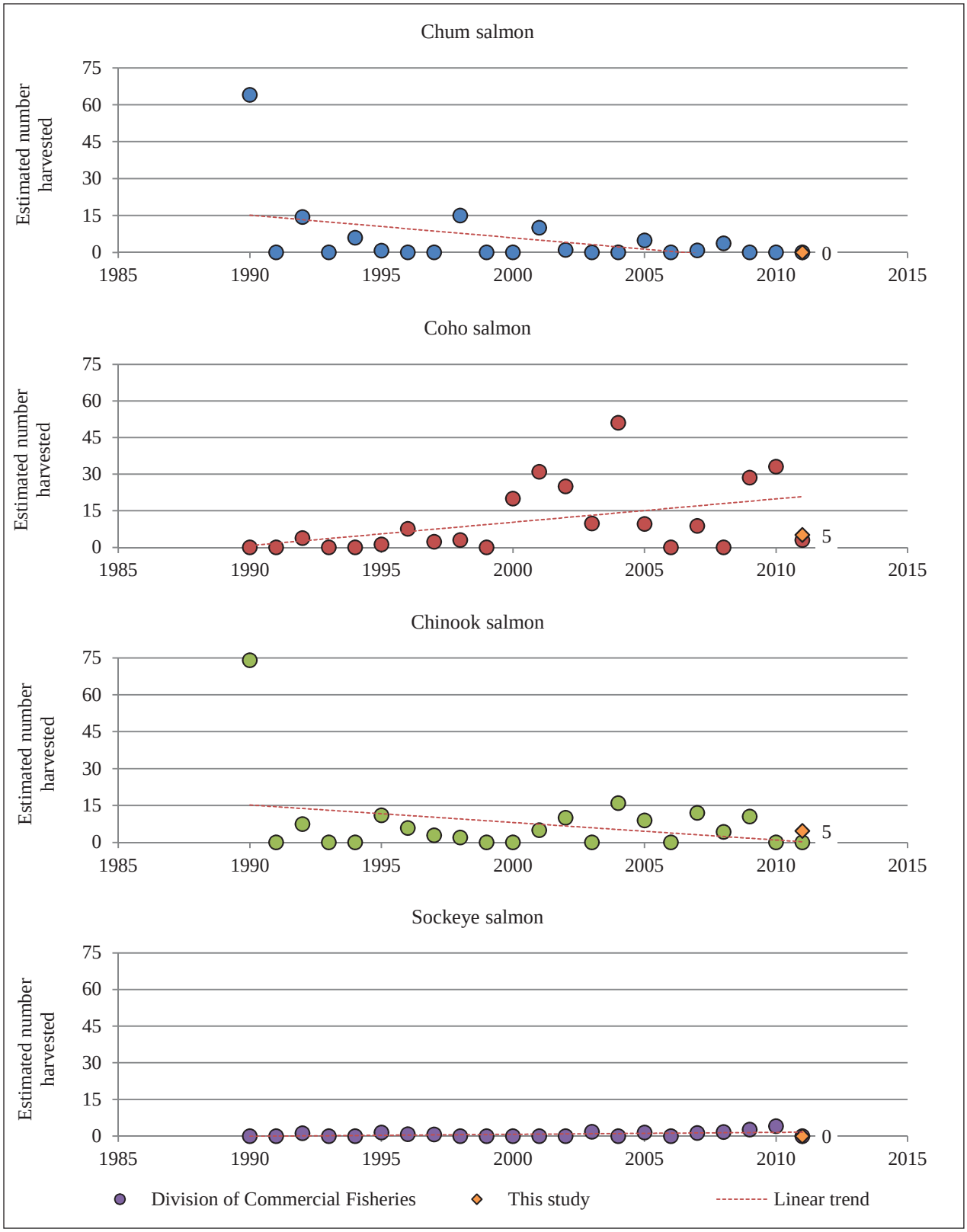


Figure 7-24.–Estimated total number of chum, coho, Chinook, and sockeye salmon harvested by residents, Takotna, 1990–2011.

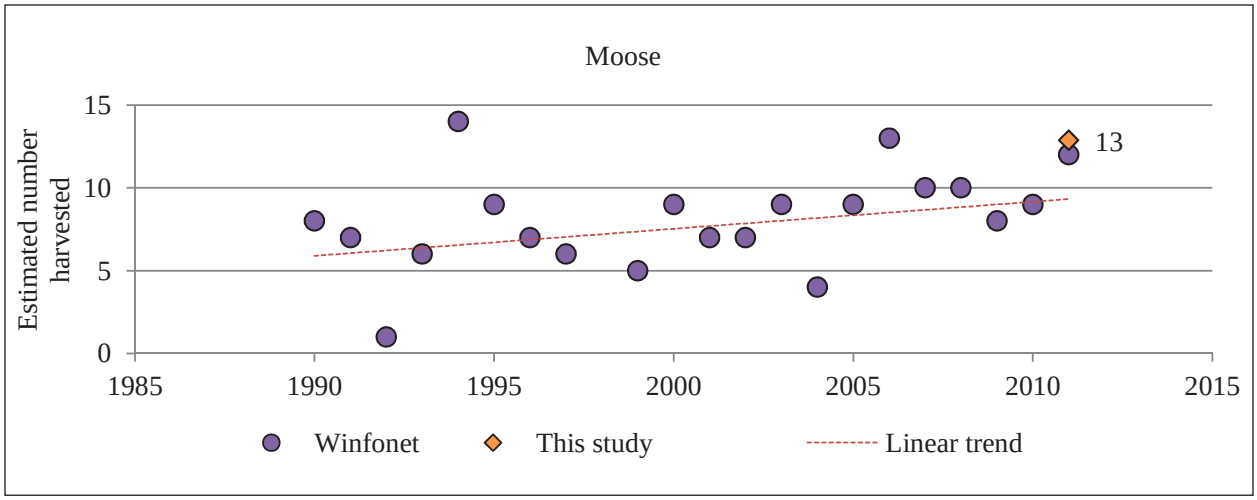


Figure 7-25.–Estimated total number of moose harvested by residents, Nikolai, 1990–2011.

Stokes (1985) documented the land Takotna residents used for hunting and gathering for ADF&G. However, those maps reflect land use over the course of 17 years, from 1967 to 1983 and will likely show a greater extent of use when compared to a map depicting only a single year. The maps collected for this survey reflect just a single year. Land use is not fixed, and hunters change land use patterns in accordance with fluctuations in wildlife abundance. Thus, readers should use caution not to assume that land use has declined as compared to previous years.

Historical salmon fishing sites by Takotna residents have not been mapped by Stokes (1985). He stated that because of the small number of salmon present in the Takotna River, Takotna residents utilized more productive sites along the Kuskokwim River. Though residents commented to research staff that some still do travel to the Kuskokwim River to target salmon, some households reported targeting them in the Takotna River in 2011.

Residents looked for Arctic grayling and northern pike along the Takotna River. Stokes (1985) documented residents targeting them near the confluence of the Takotna and Kuskokwim River. During 2011, they were harvested from the Takotna River, next to the community.

Then and now, Takotna residents covered the most terrain in search of large land mammals. Previous mapped work depicts moose hunting in a greater amount of areas than in this study. Takotna residents sought moose in the Beaver Mountains, the Kuskokwim River, the Nixon Fork River, and spur roads that access placer claims along the Ophir Road. Caribou hunting occurred in previous years around the Beaver Mountains and in the Nixon Fork drainage but did not occur in 2011. Takotna hunters stated that they rarely hunt caribou in the Beaver Mountains anymore because of the distance required to access the herd.

Stokes (1985) combined the search areas of McGrath and Takotna residents for both waterfowl and vegetation resources. Waterfowl hunting areas are similar, encompassing the Takotna River upstream of the community. In 1985, additional areas were documented including the downstream portion of the Takotna River, part of the Nixon Fork, and the Kuskokwim River. In both studies, woodcutting and berry picking were conducted immediately around the community.

Conclusion

Takotna has changed dramatically since its establishment as a gold mining town proximate to the lucrative Iditarod–Ophir mining districts. Currently, the community experiences a mixed cash–subsistence economy, with wage labor available on a seasonal basis. Households are challenged by the high cost of food and energy. Residents are reliant on subsistence resources to mitigate these costs and fulfill social and nutritional needs. Residents use the adjacent road system created by the military and mining industry and the Takotna and Kuskokwim rivers to harvest large amounts of moose, grouse, and bear. Though most residents described the study year of 2011 as atypical due to a large construction project, they still emphasized their connection to the resources around Takotna.

Chapter 8: Comprehensive Survey Results Anvik, 2011

Alida Trainor

In March 2012, two researchers surveyed 24 of 32 eligible households (75%) in Anvik. Expanding for 8 unsurveyed households, Anvik's estimated total harvest of wild foods between January and December 2011 was 34,001 edible pounds (±22%). The average harvest per household was 1,075 lb; the average harvest per capita was 391 lb.

Four varieties of salmon, Chinook, summer chum, coho and fall chum, accounted for 59% of the total harvest of wild foods in 2011 (Figure 8-1). In edible pounds, Chinook salmon contributed more than any other single species to the total community harvest. In 2011, an estimated 1,326 Chinook salmon were taken for an estimated harvest of 12,334 lb or 36% of Anvik's total harvest of wild foods.

This chapter summarizes findings from ethnographic interviews alongside results of the household surveys, including demographic characteristics, responses to harvest assessment questions, harvest estimates, reported employment and income, and responses to food security questions. Harvest numbers are expanded estimates. Results from this survey are available online in the CSIS.

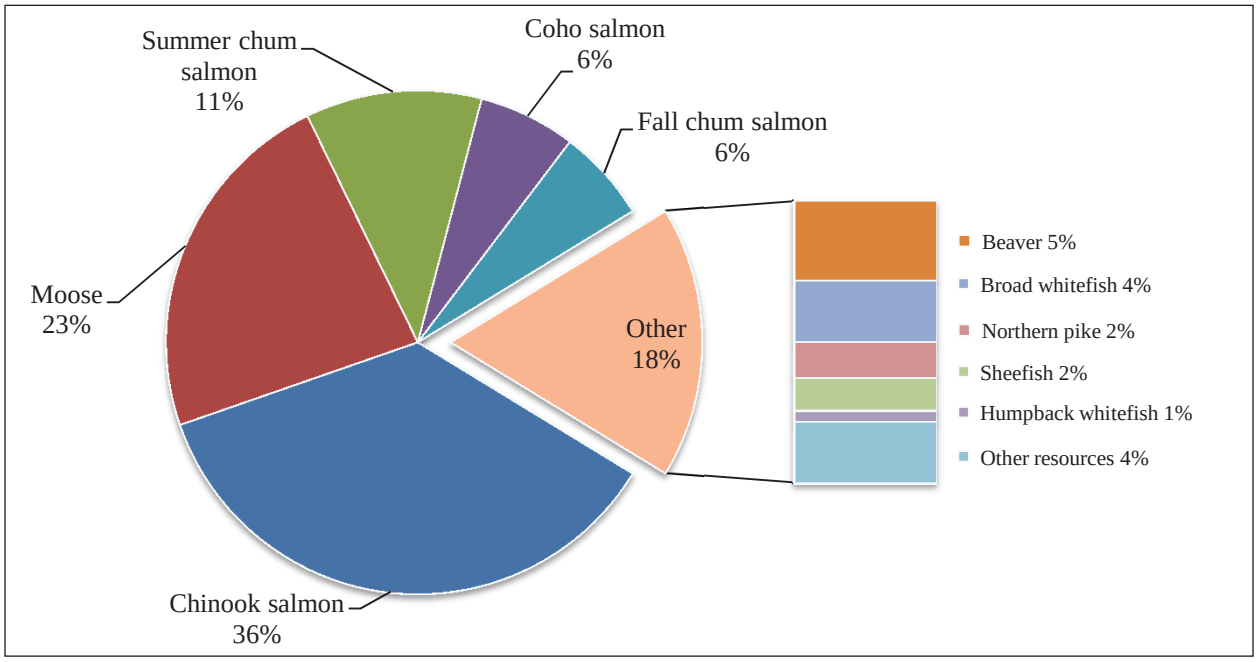


Figure 8-1.–Top 10 species harvests ranked by estimated edible weight, Anvik, 2011.

In addition to the comprehensive survey, 3 interviews were conducted with 4 individuals (2 men and 2 women). With the exception of 1 elder, all were still actively engaged in hunting, fishing, gathering, and/or preparing subsistence foods. All have spent the majority of their lives in Anvik with some travel away from the community at various times in their lives. By gaining a better understanding of the seasonal round, local history, and knowledge of subsistence activities in the area, the interviews contextualize the quantitative harvest and use data collected in the surveys.

About Anvik

Anvik is located at confluence of the Anvik and Yukon rivers, roughly 35 miles north of Holy Cross. Average temperatures in Anvik range from -60 to 87 degrees Fahrenheit. Rain and snow fall average 21 inches and 110 inches respectively.[1] Throughout its history Anvik has been known by a variety of names including: American Station, Anvic, Anvick, Anvig, Anvig Station, and Anwig.[2] While a traditionally Deg Xinag speaking community, the name "Anvik" is likely of Yup'ik origin. Van Stone notes that "Anvik" is an expression meaning "exit" or "going out" in Central Yup'ik (VanStone 1979a:31). *Deloy Ges*, the Deg Xinag term for the Anvik River denotes a place of "overflow" (Osgood 1958:30). Anvik is home to Deg Hit'an Athabascans who rely heavily on the Anvik and Yukon rivers in addition to Shageluk Slough for hunting, fishing, travelling, and trading purposes. The Anvik River serves as a navigable route between the coast of Norton Sound and the Yukon River (VanStone 1979a:31). During Russian explorations into the interior of Alaska, travelers using this route often stopped in Anvik (Osgood 1940:37).

Historic contact between the Deg Hit'an and Euro-Americans began as a result of Russian expansion, eastward into Alaska's Interior. Osgood (1940) estimates that Euro-Americans first made contact with Deg Hit'an in 1830 when Ensign Vasileev led an expedition to explore the land between the Nushagak River and tributaries of the Kuskokwim River. While Vasileev did not pass by Anvik in 1830, he may have encountered Deg Xinag near the upper Kuskokwim River tributaries of the Holitna or Hoholitna rivers (Osgood 1940:22).

Early contact with the Russians presented trading opportunities but likely caused the spread of smallpox to the Deg Hit'an. Notes taken by Russian traders left detailed population figures beginning as early as 1834 (VanStone 1979a:4). These numbers show Anvik's population decreasing by half from 240 to 120 individuals during the smallpox epidemic in the 1840s.

Shortly after Vasileev made his way through the Yukon–Kuskokwim area, Andrei Glazunov, a Russian explorer with Alaska Native heritage, made a similar voyage to assess trade opportunities on the Yukon River. In 1833 he set out overland from St. Michael in a northeasterly direction in search of viable trading post locations. It took Glazunov and his crew 5 days to reach the headwaters of the Anvik River. In January

1. Alaska Department of Commerce, Community, and Economic Development (ADCCED) Division of Community and Regional Affairs, Juneau: "Alaska Community Database Online: Community Information." Accessed August 2013. http://commerce.alaska.gov/cra/DCRAExternal/community.
2. Alaska Department of Commerce, Community, and Economic Development (ADCCED) Division of Community and Regional Affairs, Juneau: "Alaska Community Database Online: Community Information." Accessed August 2013. http://commerce.alaska.gov/cra/DCRAExternal/community.

Photo by Alida Trainor

Figure 8-2.–Today, few buildings remain in downtown Anvik. A roadhouse once used to house travelers in the early 1900s (pictured right) is now used as a checkpoint during the Iditarod Trail Sled Dog race.

1834, Glazunov recorded contact with the Deg Hit'an for the first time. He only stopped in Anvik briefly, noting that the community sat at the confluence of the Anvik and Yukon rivers (Osgood 1940:37). Roughly 2 weeks later Glazunov arrived in Holy Cross, a settlement much larger than Anvik. With 700 residents, this was the largest community he observed. Holy Cross, only 35 miles downriver from Anvik, served as a trading site for other Deg Hit'an who came to trade their furs with Yup'ik Eskimos from the lower Yukon River (Osgood 1940:37).

Russian trading posts, however, were farther away and required substantial travel. Five trading posts in the Yukon–Kuskokwim region presented opportunities for the Deg Hit'an to participate in direct trade with the Russians. The closest of the 5, Iqugmiut (Russian Mission) was located roughly 80 miles away. Nelson reported that the people of Anvik had a wide array of goods they would trade for seal oil, seal skin, and other coastal products obtained by the Yup'ik Eskimos (Nelson 1978:68). Anvik people and their neighbors in Shageluk were well known for their wooden tubs and dishes. Large clay pots about 2 feet tall and 18 inches wide, fortified with feathers or hair and fired at a high heat for 12 hours were used for cooking or for transporting trade goods to the coast. Beaver and marten skins served as standards of trade. Traders bought all other items as "fractions of a skin or multiples of a skin in value" (Nelson 1978:47). Other articles of trade included wooden fish traps and dried or smoked salmon. Trade usually occurred in the fall after the culmination of fishing season (Nelson 1978:46).

The United States purchase of Alaska in the summer of 1867 opened a new period of economic exploration and contact with the Deg Hit'an, particularly along the Yukon River. Shortly after the purchase of Alaska, the *Yukon*, an American river steamboat, began ascending the river of the same name during the summer of 1869. This was the beginning of the steamboat era and rapidly increased commerce between Natives and Euro-American traders (Osgood 1940:43). During its first trip up the river, the boat, owned by the Alaska Commercial Company, stopped at Anvik to drop off supplies necessary for establishing a trading post (Osgood 1940:43).

After the establishment of the trading post, the American presence in Anvik continued to grow. In 1887, the Domestic and Foreign Missionary Society of the American Episcopal Church sent Reverend Octavius Parker and Reverend John Chapman to establish a mission church to "rescue and defend" the Native people (MacAlpine 1987:3). The first post office opened in Anvik during the summer of 1898 with Reverend Chapman acting as the postmaster.

Parker and Chapman soon opened a church that also served as a school. Before long, children from neighboring communities moved to Anvik to attend the school. Dormitories were built to accommodate them and the school operated at capacity until 1930 when Chapman retired. In addition to the school, Reverend Parker built a hospital, administered smallpox vaccines, and conducted other routine medical procedures (MacAlpine 1987:4). In 1922, Chapman helped install a farm lighting plant in order to produce electricity and ultimately installed a telegraph system connecting Anvik to the rest of Alaska and other cities around the Pacific Rim. Chapman's plans for rapid development prompted him to send out a plea throughout Alaska calling for "anyone who could drive a nail and saw a board straight" to help with mission construction (MacAlpine 1987:8).

Parker and Chapman first settled on the right bank of the Yukon River about 2½ miles above the mouth of the Anvik River where most local people lived at the time. Once Mission construction began, local people started moving further upstream, closer to Parker and Chapman's church settlement (MacAlpine 1987:3).

The flurry of activity that accompanied the Anvik mission for nearly 40 years began to wane when Chapman retired in 1930 after 43 years of service. His son, Reverend Henry Chapman took over mission operations for an additional 18 years (MacAlpine 1987:8). Formal education in Anvik was taken over by the Territory of Alaska in 1946.

Today Anvik is home to 85 residents living in 46 households (U.S. Census Bureau 2011). The population is relatively young with an average age of 29, 92% of whom are Alaska Native. Due to residents either passing away or relocating, Anvik has lost approximately 19% of its population—about 20 residents—over the last 10 years. The Anvik Blackwell School, built in 1980, operates with fewer than 20 students. Many parents choose to send their children to various boarding schools across Alaska, hoping to expose them to more students their age (050312ANV3). There is no road access to Anvik, but 2 air carriers do offer daily flights in and out of the community. In addition to the school, other community buildings include 2 stores, a tribal office, a tribal hall that hosts a variety of events, a bingo hall, and a clinic (Figure 8-2).

Seasonal Round

Wild food harvest patterns vary in response to a variety of factors, including fluctuations in animal populations, employment opportunities, and changes in local climate among others. This holds true in Anvik where declines in Chinook salmon abundance have affected harvest patterns, where seasonal work such as firefighting takes priority over subsistence activities, and where respondents credit climate change with the decreased availability of migratory birds (050312ANV3). In general, however, subsistence harvest activities in Anvik reoccur in an annual seasonal round.

When the ice breaks free in the Yukon River, Anvik residents know that spring has come. By April the sounds of geese and ducks return, and bird hunting commences. Residents hunt for migratory fowl, including mallards, northern pintails, and Canada geese, to name a few, on foot or from boats. Primarily men and boys participate in bird hunting while women pluck and clean the fowl. Stores of salmon and moose are often depleted by early spring, making migratory birds a welcome change in diet. Nonsalmon fish are caught to supplement diets while residents await the return of salmon.

Summer is a busy time of year for the people of Anvik. Salmon has long been central to the diet of Deg Hit'an. Nelson (1978) noted that from "the last of June until after the middle of August, the various species of salmon continue to run and everyone is busy; the men attend to the fish traps and the women cut up and hang the fish [salmon] to dry on long frameworks of poles" (Nelson 1978:36). When Nelson passed through Anvik in the 1880s, dip nets and fish traps were the primary gear types used to catch salmon. To use a dip net, fishermen would paddle out into the river in a canoe and float with the current while holding the net under water. When a fish was caught, it was brought into the boat and killed. Nelson warned that "a failure of the salmon run means famine for the [Yukon People]" (Nelson 1978:36).

Today, the significance of salmon fishing remains unchanged. One elder respondent remembers that, as a child, her family would fish from May through June for the best Chinook salmon and would spend July and August targeting chum salmon for dog food (030212ANV1). Dip nets are no longer used in Anvik, but drifting with gillnets still utilizes older techniques of floating with the river current. Respondents described fishing primarily in family units. Some would cut and dry their fish on the river bank, not far from town while others would process all their salmon outside their houses. Unlike other study communities where fish camps are more common, only one respondent mentioned fishing at a camp several miles away from Anvik (050312ANV3). While community wide famine is no longer a concern, poor salmon runs do impact Anvik families and present challenges when planning for the winter (see "Harvest and Use" and "Food Security" below).

In addition to salmon fishing, all respondents described their summer pursuit of berries and greens. An elder respondent remembered that June was the month she would gather birch bark for her grandmother. Birch bark and the roots of spruce trees are materials needed for basket making, a craft once common in Anvik. Osgood described a variety of birch bark baskets used to hold fish nets, berries, and water (Osgood 1940:135–142). For many, blueberry picking in July and August is a yearly activity that not only fills a specific dietary need

Photo by Alida Trainor

Figure 8-3.–Richardson's is the main grocery store in Anvik. Fuel, canned goods, and a limited selection of produce is available. Residents often supplement their subsistence diets with food purchased here.

but also brings family and friends together. In late August, when fishing has slowed and berries are no longer in good shape for harvesting, Anvik residents welcome the return of migratory birds.

Fall is a short season characterized by moose hunting, bird hunting, and nonsalmon fishing. It is only a matter of weeks, or even days, between the conclusion of salmon fishing and the opening of moose hunting season in September. Anvik is located in Game Management Unit 21E, and subsistence hunting is open September 5th through September 25th.

After moose hunting, Anvik residents have the opportunity to take advantage of abundant whitefish species and sporadic Arctic lamprey runs in October and November. Unlike other nonsalmon species that are available year round, Arctic lamprey, or "eels" as they are known in Anvik, migrate very slowly up the Yukon River in the fall. Nelson recorded a detailed account of lamprey fishing (Nelson 1978:37). To maximize harvest, Anvik fishers would chip holes in the ice, one after another, headed in an upstream direction. Sticks with nails or dip nets are used to scoop large quantities of the Arctic lamprey out. Fishermen follow the school upriver, running upriver from one hole to the next, ready to pull out more. This process is repeated "until the fishermen are exhausted or another village is reached. In the latter case the people of the lower village must stop and the people of the upper village take up the pursuit" (Nelson 1978:37). Brown et al. (2005:92)

reported that lamprey fishing generally occurs in groups, likely because of the concentrated nature of the run and the diligence required in watching for them.

Nonsalmon fishing continues into the winter months. Anvik residents set gillnets under the ice in both the Yukon and Anvik rivers to catch whitefishes, burbot[3] (known locally as lush), and "old dog salmon" (050312ANV3). The salmon harvests of the summer months and moose harvests in the fall are the food stocks that Anvik residents rely on most throughout the winter. Survey respondents reported that shortages of salmon or moose prompt Anvik families to either rely on a replacement subsistence food, or resolve to buy packaged store food (Figure 8-3). Subsistence food stores usually begin to run low in the spring, and families seek out fresh sources of wild foods, such as nonsalmon fish species, to bridge the gap until salmon fishing commences once again.

Demographics

Sixty-six residents lived in the 24 surveyed households in Anvik. Household sizes ranged from 1 to 10 occupants with an average of 3 residents per household. During the survey period the median age was 33; the oldest resident was 84, and the youngest was 1-year-old. The average length of residency was 27 years. Of survey respondents, 67% of household heads reported Anvik as their birthplace. Fairbanks, the largest city in Interior Alaska, was listed as the birthplace for 8% of household heads and was the second most commonly reported birthplace.

Expanding for unsurveyed households, the estimated population of 88 includes 47 males (53%) and 41 females (47%); 84 were Alaska Native (96%). In comparison, the 2010 U.S. Census reported a total population of 85 residents for the same year. In 2011, the Alaska Department of Labor estimated a total population of 79 (Figure 8-4).

Unlike the other study communities of Grayling, Napaskiak, Nikolai, and Russian Mission, which all have very clear pyramidal populations that demonstrate steady population growth, the implications of Anvik's demographics distributions is less clear. Despite ethnographic and personal communication reports that many young people leave the community for high school education elsewhere and are not returning to the community, 18% of the population (16 individuals) fell between the ages of 10 and 19 (Figure 8-5). There are fewer female teenagers than males, but in general, the larger distribution of residents in younger age ranges indicates a growing population. On the other end of the population profile, there are 6 people older than 65. A number of female elders in Anvik passed away in the last 10 years, accounting for an empty cohort of women older than 70. Three men, between the ages of 70 and 84, are the oldest residents of Anvik. Additional demographic information is provided in Appendix Table D1-1 and Appendix Table D1-2.

3. Burbot, a fish species in the Gadidae or cod family, are the only freshwater cod in North America. Common names include eel pout, lingcod, lush, loche and mud shark. In Anvik, burbot are often referred to as lush. In prior Donlin Creek reports, loche, an alternate spelling of lush has been used. This spelling can cause confusion because of the pronunciation. In this report, when quoting or referring to ethnographic citations, lush is used as the colloquial reference to burbot. No other alternative will be used.

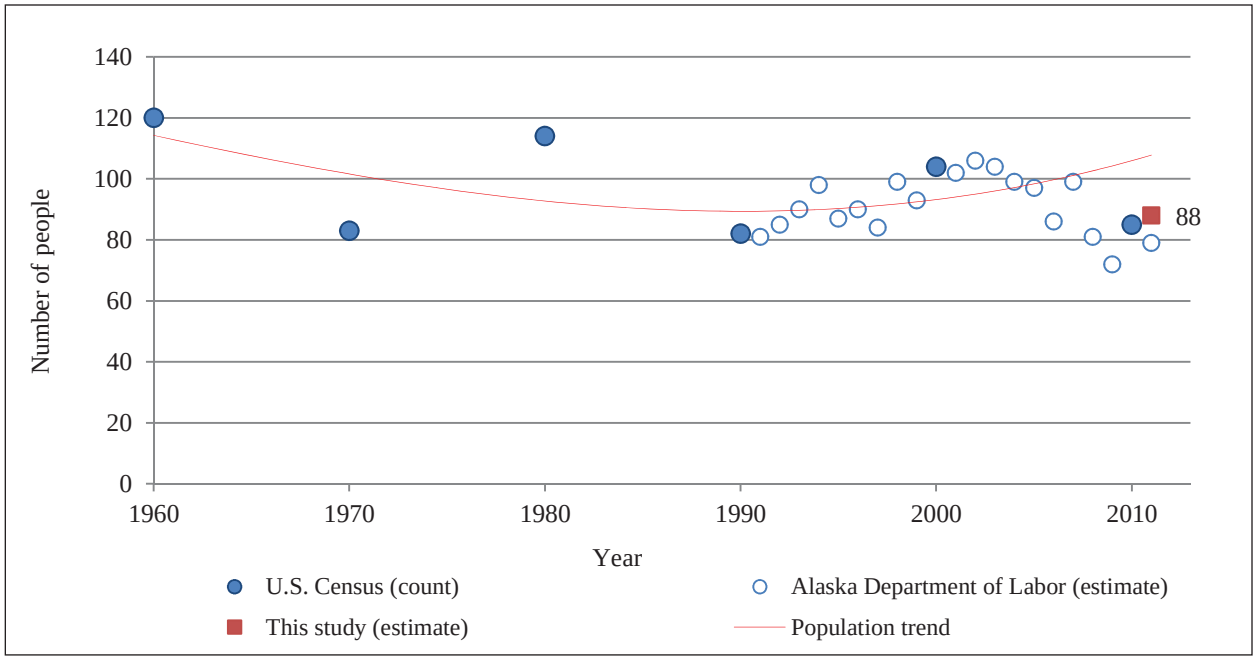


Figure 8-4.–Population history, Anvik, 2011.

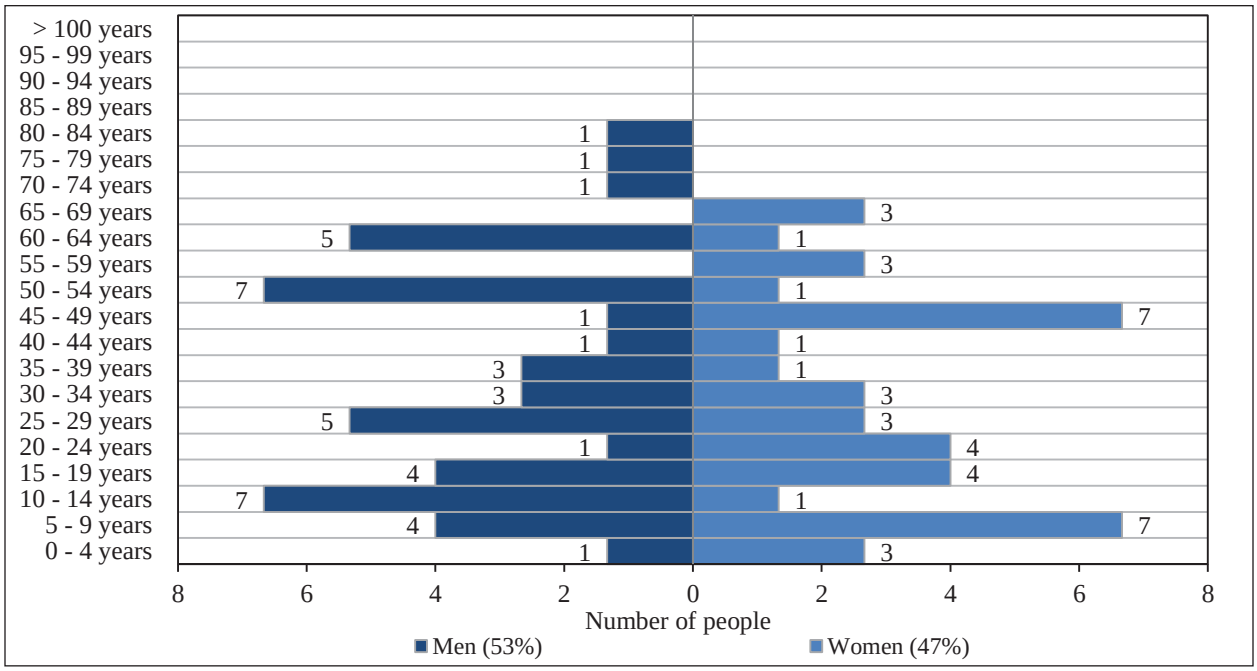


Figure 8-5.–Population profile, Anvik, 2011.

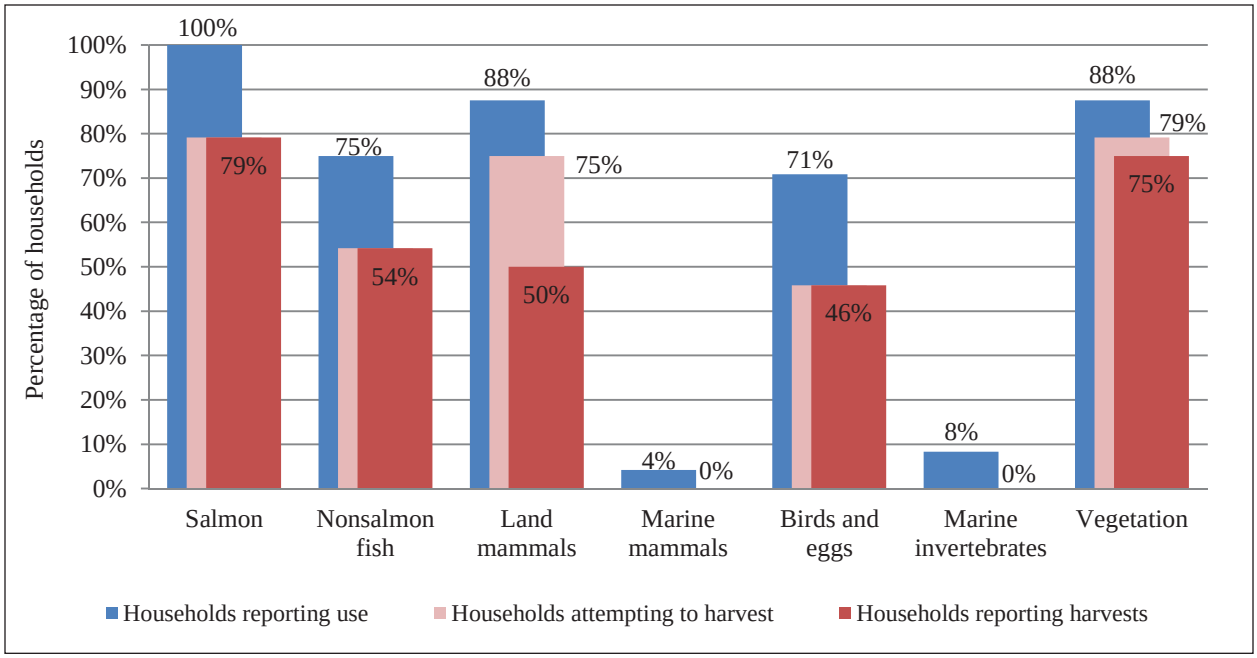


Figure 8-6.–Percentages of households using, attempting to harvest, or harvesting subsistence resources by category, Anvik, 2011.

Wild Food Uses and Harvests

The primary purpose of the household survey was to collect information about the harvest and uses of edible wild foods. Respondents were asked whether their household used or attempted to harvest each resource during the study year. If they attempted to harvest a resource, additional details including quantity of harvest, gear type, sex of an animal, or month of harvest were gathered.

Tables and figures in this section summarize responses to the harvest questions expanded to all residents. In 2012, Anvik households used an average of 11 wild resources (Appendix Table D7-1). The maximum number of resources harvested by a single household was 27. Figure 8-6 and Appendix Table D7-1 show that 100% of households used some kind of wild food, and 88% of households reported that they harvested wild foods. The difference between the percentage of households harvesting and the percentage using is attributed to the common practice of sharing or exchanging food. Eighty-three percent of households reported receiving a wild resource while 54% gave portions of their harvests to others (Figure 8-4; Appendix Table D7-1). Salmon were the most widely used resource (by 100% of households), followed by large land mammals (88% of households).

Figure 8-7 summarizes harvest by resource category in edible weight. The largest part of Anvik's subsistence harvest consisted of fish with an estimated 23,458 lb contributed by this resource category to the total community harvest. Salmon species composed 87% of the edible weight of fish harvests. Land mammals were the second largest contributor to residents' diets at 9,620 edible pounds. Likely due to location of Anvik

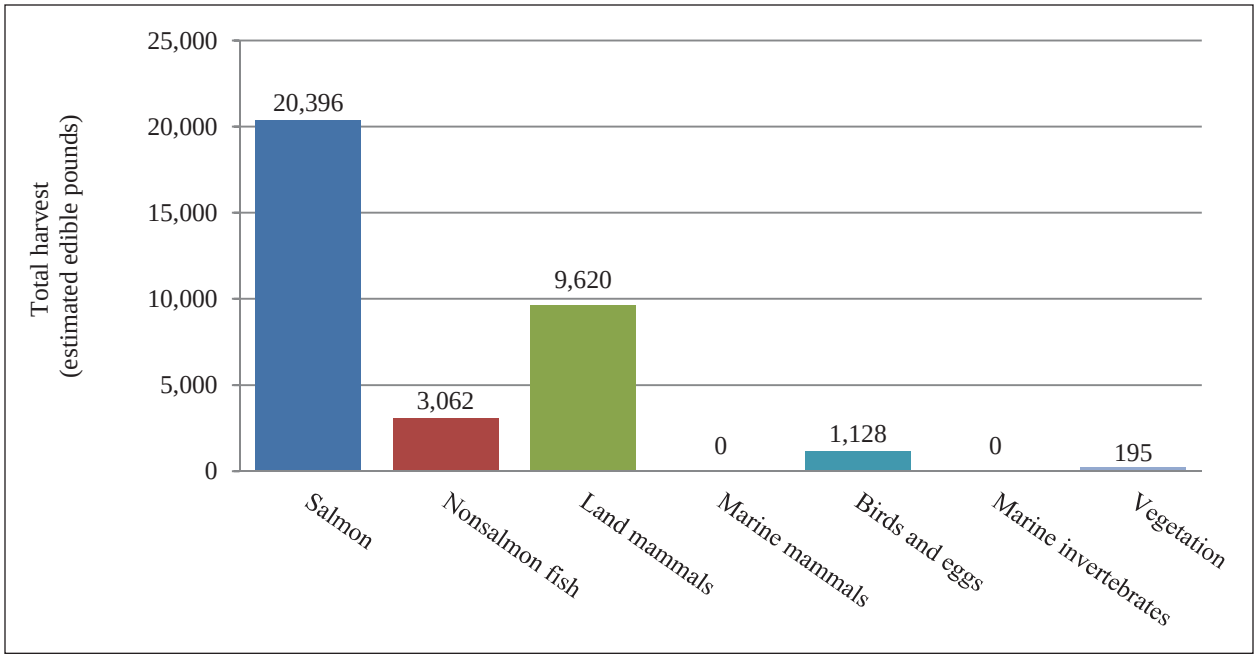


Figure 8-7.–Total estimated edible pounds harvested by the community by resource category, Anvik, 2011.

far from the coast in Interior Alaska, no household harvested any marine invertebrates or marine mammals. However, some respondents reported utilizing unknown seal species, possibly seal oil gifted from friends or relatives in other Alaska communities. Eight percent of households also reported receiving unknown species of clams (Table 8-1). Birds and eggs and vegetation harvests were low in comparison to fish and land animals with only 1,128 lb and 195 lb respectively.

Of the top 10 resources, comprising the majority of the wild foods harvest by edible weight, salmon species (Chinook, summer chum, coho and fall chum) contributed a combined 59% (20,397 lb). Moose, the only large land animal in the top 10 resources, contributed 23% (7,920 lb), while other nonsalmon species (broad whitefish, northern pike, sheefish, and humpback whitefish) combined contributed 9% (2,987 lb). Beaver added 5% (1,680 lb) to the total subsistence harvest (Figure 8-1).

Anvik residents reported a heavy reliance on subsistence caught fish in 2011 (Table 8-2). Of all the resources harvested by Anvik residents, salmon harvests provided the majority of edible pounds. Chinook salmon was the most widely used resource by Anvik residents in 2011. This notable salmon species contributed 12,334 edible pounds to Anvik's total harvest, more than any other species. Seventy-nine percent of respondents reported attempting to harvest Chinook salmon, and all who attempted were successful. Chinook salmon were distributed throughout the community through sharing at relatively high levels; 33% of households reported giving some Chinook salmon away while 33% reported receiving the resource, enabling 100% of households to make use of this species.

Anvik residents preserve their Chinook salmon in a variety of ways. Cutting and drying Chinook salmon strips are favored methods:

Table 8-1. – Estimated use and harvest of marine invertebrates, Anvik, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Marine invertebrates										
Unknown clams	8.3%	0.0%	0.0%	8.3%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
King crab	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown Tanner crab	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown crab	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown mussels	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Shrimp	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Unknown marine invertebrates	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Subtotal	**8.3%**	**0.0%**	**0.0%**	**8.3%**	**0.0%**	**0.0 lb**	**0.0 lb**	**0.0 lb**		**± 0%**
All marine invertebrates	**8.3%**	**0.0%**	**0.0%**	**8.3%**	**0.0%**	**0.0 lb**	**0.0 lb**	**0.0 lb**		**± 0%**
All resources	**100.0%**	**91.7%**	**87.5%**	**83.3%**	**54.2%**	**34,400.9 lb**	**1,075.0 lb**	**390.9 lb**		**± 22%**

Source ADF&G Division of Subsistence household surveys, 2012.
Note "All resources" include all species of fish, wildlife, and plants reported on the survey.
a. Summary rows that include incompatible units of measure have been left blank.

> Pretty much we strip them out and make strips out of them. We put 15 or 20 of them away depending on the salmon, in the freezer. We eat fish 4 or 5 times a week. We enjoy it. It's all we eat. We take our strips out on the trap line. It's easy, fast and quick...When we catch kings we get 80 or 90 and that's mainly for stripping. (050312ANV2) t

All ethnographic respondents were old enough to remember a time without electricity. Prior to the 1970s, the lack of freezers limited the availability of fresh fish in Anvik. In addition to strips, residents jarred Chinook salmon in pressure cookers and also made large quantities of salted fish (050312ANV3). One respondent remembers his father filling a large wooden keg with layers of Chinook salmon and rock salt. Today, in addition to drying, canning, and salting fish, many residents freeze whole, uncooked, unprocessed salmon through the winter (050312ANV3).

In Anvik, setnets and drift gillnets are the 2 primary gear types used to harvest salmon species. Setnet sites in Anvik are hard to come by. A variety of features, including river current, depth, and shoreline are necessary to create a viable fishing location. Respondents noted that only a few "hot spots" exist in the area for salmon setnets. The bluffs downstream from Anvik create 2 productive eddies. One respondent explained that, with the exception of the setnet sites at the bluffs there are few other setnet opportunities. Despite reports of limited spots, however, setnets caught 4,724 edible pounds of Chinook salmon (38% of the harvest) and 2,207 edible pounds (57% of the harvest) of summer chum salmon. As a result of limited setnet sites, "people mainly drift" (050313ANV2). Drift gillnets accounted for more than half (61%) of Chinook edible weight harvested. Similarly, the majority of fall chum (97%) and coho salmon (89%) edible weight were caught while "drifting." Driftnets caught 43% (1,672 edible pounds) of summer chum salmon (Figure 8-8).

Unlike setnets that are stationary, driftnets are used over longer distances, creating the opportunity for multiple fishers to take advantage of the same areas. One respondent explained the conditions that create

Table 8-2. – Estimated use and harvest of fish, Anvik, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Fish										
Salmon										
Summer chum salmon	33.3%	29.2%	29.2%	4.2%	8.3%	3,880.0 lb	121.2 lb	44.1 lb	773.3 ind	± 57%
Fall chum salmon	50.0%	33.3%	33.3%	16.7%	12.5%	2,040.3 lb	63.8 lb	23.2 lb	406.7 ind	± 41%
Unknown chum salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Coho salmon	37.5%	29.2%	29.2%	8.3%	12.5%	2,142.0 lb	66.9 lb	24.3 lb	420.0 ind	± 42%
Chinook salmon	100.0%	79.2%	79.2%	33.3%	33.3%	12,334.2 lb	385.4 lb	140.2 lb	1,325.9 ind	± 19%
Pink salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Sockeye salmon	4.2%	0.0%	0.0%	4.2%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**100.0%**	**79.2%**	**79.2%**	**37.5%**	**33.3%**	**20,396.5 lb**	**637.4 lb**	**231.8 lb**	**2,925.9 ind**	**± 23%**
Char										
Dolly Varden	4.2%	4.2%	4.2%	0.0%	0.0%	1.2 lb	0.0 lb	0.0 lb	1.3 ind	± 103%
Lake trout	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0 lb**	**0.0 lb**	**0.0 lb**	**0.0 ind**	**± 0%**
Trout										
Rainbow trout	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0 lb**	**0.0 lb**	**0.0 lb**	**0.0 ind**	**± 0%**
Whitefishes										
Sheefish	41.7%	29.2%	29.2%	16.7%	4.2%	704.0 lb	22.0 lb	8.0 lb	117.3 ind	± 36%
Broad whitefish	33.3%	20.8%	20.8%	12.5%	8.3%	1,306.7 lb	40.8 lb	14.8 lb	326.7 ind	± 84%
Bering cisco	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Least cisco	4.2%	4.2%	4.2%	0.0%	0.0%	6.7 lb	0.2 lb	0.1 lb	6.7 ind	± 103%
Humpback whitefish	29.2%	20.8%	20.8%	8.3%	8.3%	224.3 lb	7.0 lb	2.5 lb	74.8 ind	± 50%
Round whitefish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown whitefishes	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**62.5%**	**37.5%**	**37.5%**	**33.3%**	**12.5%**	**2,241.7 lb**	**70.1 lb**	**25.5 lb**	**525.4 ind**	**± 57%**
Anadromous/marine fish										
Pacific herring	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Unknown smelt	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Pacific tomcod	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Saffron cod	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Pacific halibut	4.2%	0.0%	0.0%	4.2%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 lb	± 0%
Arctic lamprey	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Stickleback (needlefish)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Subtotal	**4.2%**	**0.0%**	**0.0%**	**4.2%**	**0.0%**	**0.0 lb**	**0.0 lb**	**0.0 lb**		**± 0%**
Other freshwater fish										
Alaska blackfish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 lb	± 0%
Burbot	8.3%	4.2%	4.2%	4.2%	0.0%	5.3 lb	0.2 lb	0.1 lb	2.7 ind	± 103%
Arctic grayling	16.7%	16.7%	16.7%	0.0%	8.3%	61.3 lb	1.9 lb	0.7 lb	61.3 ind	± 62%
Northern pike	45.8%	45.8%	45.8%	4.2%	16.7%	752.0 lb	23.5 lb	8.5 lb	250.7 ind	± 41%
Longnose sucker	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**45.8%**	**45.8%**	**45.8%**	**4.2%**	**16.7%**	**818.7 lb**	**25.6 lb**	**9.3 lb**		**± 40%**
All fish	**100.0%**	**83.3%**	**83.3%**	**50.0%**	**45.8%**	**23,458.0 lb**	**733.1 lb**	**266.6 lb**		**± 24%**
All resources	**100.0%**	**91.7%**	**87.5%**	**83.3%**	**54.2%**	**34,400.9 lb**	**1,075.0 lb**	**390.9 lb**		**± 22%**

Source ADF&G Division of Subsistence household surveys, 2012.

Note "All resources" include all species of fish, wildlife, and plants reported on the survey.

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

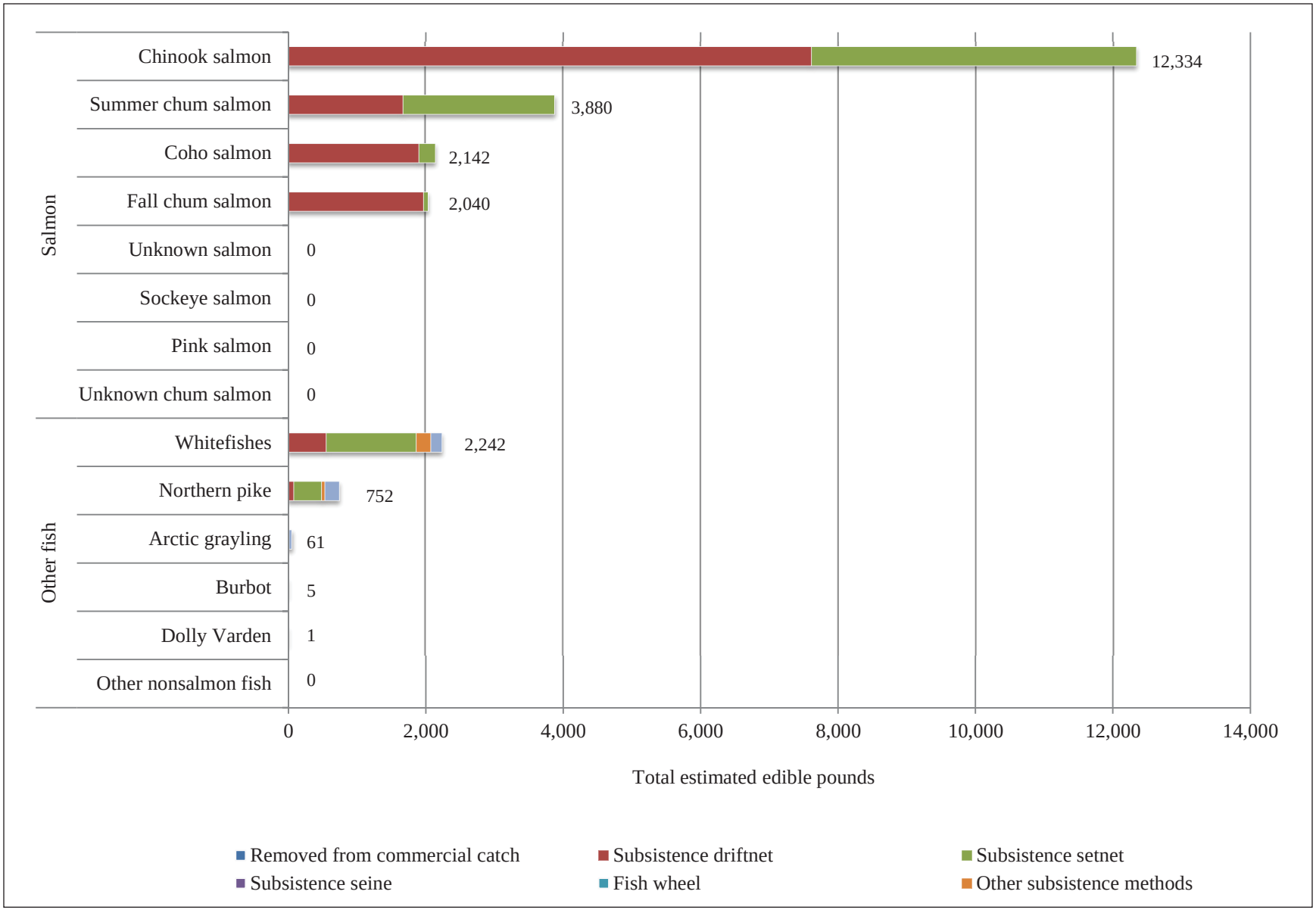


Figure 8-8.–Fish harvest by gear type, Anvik, 2011.

a good drifting area, “the most important thing is a smooth bottom with no snags, not too fast current, and gotta have the right depth, dragging the bottom” (050212ANV2). Understanding the swimming patterns of fish is also necessary:

> …because fish go from point to point. I guess that’s how they swim. If the water is high you gotta go further in, and they’re going the same route every time. You can fish anywhere on the river you want, but when it’s deep water they just seem to go right under the net. You wanna try and get the lazy ones that are up on the side, taking a break in calmer waters. (050212ANV2)

One survey respondent described building a fish wheel every couple of years but did not report using one in 2011. While no surveyed household reported harvesting fish in a wheel, ethnographic interview respondents reported that 2 or 3 fish wheels have been operating for the last several years (050212ANV2, 050213ANV3). Fish wheel use may have been missed in the survey if the sample did not include harvesters using wheels. However, given the high percentages of households reporting net use, fish wheel use is likely low. Respondents described the heavy use of fish wheels during the commercial summer chum roe fishery that took place between 1978 and 1997. At that time, “there were lots because everyone was commercial fishing and everyone was using fish wheels. That bend down there [near the confluence of the Bonasila River] was full of them” (050212ANV1). Commercial fishing in the Yukon River district 4A lasted for nearly 20 years and shaped the fishing histories of all ethnographic respondents.

During ethnographic interviews some respondents reported that Chinook salmon was not the primary salmon species harvested during their youth. Instead, respondents recalled that Anvik residents ate more summer chum salmon than Chinook salmon and harvested more fall chum salmon in those days than they do now. While the respondents did not offer explanations for this change, the prevalence of commercial fishing could account for heavier reliance on chum salmon in the past.

For those active in the harvesting efforts in the late 1970s and 1980s, subsistence fishing occurred alongside commercial fishing. One respondent, who was a young girl at time the roe fishery opened, she remembers learning to cut her family’s “fancy fish and strips” alongside her mother who would be busy with the roe (050312ANV3). For some, the roe fishery was particularly lucrative, “…it was so exciting because when we first found out they were selling roe, we’d get 5 or 10 lb and hurry over to sell it. We’d get cash right there” (050212ANV1). Additionally, families with dog teams were able to maximize salmon harvest for their dogs while also profiting from salmon eggs. Some families harvested additional salmon to sell to dog mushers in the area. As a child, one respondent remembers that, “We’d fill a big smoke house full [of summer chum salmon] and sell a ton and a half to a dog musher up river and send it up by barge. That was a lot of fish, but my mom and dad were young and had 8 kids to support” (050312ANV3).

Despite the high harvest of salmon, respondents reported that overall community salmon harvest effort has declined in recent prior years. Concerns over the health and abundance of salmon species, particularly Chinook salmon, were documented during the ethnographic interviews. Some respondents observed that salmon populations are “pretty weak,” while others fear that the decline in Chinook salmon is “just going to

get worse and worse" (050212ANV2, 050312ANV3). Changes in climate, the Bering Sea pollock fishery, and overharvesting in lower Yukon River communities were all cited as factors that possibly contribute to declining abundance.

While nonsalmon fish species contributed significantly less than salmon in terms of estimated edible weight (3,062 lb versus 20,397 lb respectively), they still are vital components of Anvik's seasonal harvests; 4 species of nonsalmon fish are among the top 10 harvested species. Respondents unanimously agreed that whitefish are the most important nonsalmon species. Whitefish species have high rates of use with over half (63%) of household residents reporting using this resource. Forty-two percent of respondents reported using sheefish, the most commonly used whitefish species (Table 8-2). Sheefish also had the highest rate of attempted harvest (29% of households) among whitefish species. Broad whitefish followed with 33% of Anvik households reporting use and 21% reporting attempted harvest. All households who attempted to catch whitefish were successful.

Nonsalmon gear types varied more than those used for salmon species. Fishers reported 4 different methods including subsistence driftnet, subsistence setnet, winter jigging, and rod and reel. Arctic grayling was the only fish species harvested by a single gear type: rod and reel. Respondents reported jigging for northern pike, a species common in the area, during the spring months of March and April. Jigging, also known as hook and line, occurs when a fishing lure is attached to a string that is tied or wrapped to a short stick. A small hole is cut in the ice and the lure is dropped down into the water. The line is pulled up when the fisher feels a fish tugging on the lure. Anvik residents use pike when making fish ice cream, a delicacy often served at special occasions. An elder respondent noted that in the past her mother would, "…cut pike for eating fish too but now, when people get pike they mostly freeze it because it's good for ice cream" (050212ANV1). One respondent remembers catching live blackfish in the lakes south of Anvik. Afterwards, the family would "…use those blackfish for live bait to catch burbot or anything else that will bite. Pike, that's the thing we look forward to every year" (050312ANV3).

Other nonsalmon species add welcome variety to the diets of Anvik residents. Burbot, caught in a subsistence set net under the ice, was described by respondents as "the poor man's lobster" and considered a "delicacy to the elders around here" (050312ANV3). Burbot is high in iron and "very tasty" when pan fried, deep fried or baked.

While jigging is a particularly popular harvest method, Anvik respondents and survey participants reported setting nets under the ice to harvest, "…everything. Whitefish, sheefish, lush and old dog salmon" (050312ANV3). Residents wait until the rivers freeze and set nets before the ice gets too thick. Similar to summer setnet sites, eddies are ideal locations for winter nets. Once a location is identified, a small mesh net (smaller than 6 inch) is tied to a long pole and several holes are drilled through the ice. Then, the pole and net are passed from one hole to the next until the net is outstretched under water and can be tied off above the ice at each end. Setting a net under the ice is more labor intensive than jigging, but once in place the fisher does not need to constantly tend the fishing site. Appendix Table D7-2 shows the number and weight of fish fed to dogs. Nonsalmon species, including whitefish, contributed 1,670 edible pounds (38% of fish harvested for dogs).

Land mammals contribute substantially to diets of Anvik residents. Overall, 88% of Anvik households reported use of land mammals while 50% reported harvest of a land mammal (Table 8-3). As noted above, the majority of land mammals harvested were moose. Moose, the only large land mammal to fall into the top 10 harvested resources (by edible weight) constituted 82% of the total land mammal harvest, or 7,920 lb of 9,620 lb. Despite the survey findings that more households reported using salmon than moose (100% of households reported using salmon versus 88% of households that reported using moose) and that salmon contributed more edible pounds than moose (20,397 lbs versus 7,920 lbs) to the total community harvest, some respondents felt that moose were more important to Anvik's subsistence profile. They argued that moose, not salmon was the most important resource; "…[moose is a] very important and a big source of food…salmon comes in a close second" (050212ANV3), suggesting that local assessments of resource importance often exceed simple evaluations of amounts harvested or used.

Hunters in Anvik reported a fluctuating but generally healthy moose population in the area. Three respondents reported spending anywhere from 1 day to a week in search of a moose. Appendix Table D1-3 shows the estimated hunting effort by hunters in each of the study communities. On average, out of the 48 households reporting participating in a moose hunt, hunters spent 11 days hunting before harvesting a moose. All of the moose harvested by Anvik hunters were taken in September (Appendix Table D7-3). Ethnographic respondents described the hunting season as an enjoyable time when families and friends come together to help each other meet their harvest needs (050312ANV3). Ethnographic respondents and other community members reported a common, but not egregious, presence of sport hunters, locally described as people from outside the GASH region or state that pay to participate in guided hunts, or hunters from urban areas that have no personal connection to the Anvik area. Sport hunters are particularly prevalent on the Bonasila River where local residents with guiding licenses bring hunters from outside of Alaska or from cities throughout the state. Despite this, respondents did not express much concern over the moose population in the Anvik area, nor did they report any conflict between subsistence and sport hunters.

The ethnographic interviews include information about the importance of using as much of a moose as possible. One respondent reportedly uses, "the heart, the liver, the innards, the tongue and nose" but that people in Anvik rarely keep the kidneys (050312ANV3). "People upriver usually keep [moose] kidneys but we never were raised that way so we don't keep the kidneys." Additionally, the thin layer of skin over the belly is particularly good when filled with stuffing and baked. Moose bellies are often saved for birthdays or other special occasions.

Anvik residents preserve moose meat in a variety of ways. An elder respondent remembers her mother drying the meat and storing it in a high cache. Additionally, to avoid spoilage, "she would hang a leg in the smoke house and make it real dry on the outside. That way the flies won't get it. She'd leave it hanging and when we'd need it we'd bring it in the house and put it away" (050212ANV1). One respondent noted that, even with the invention of freezers, dried moose meat is still favored by her family. Dry meat "don't last too long; it gets eaten up real fast. We never have enough dry meat" (050312ANV3). Other respondents favor canning their meat. Respondents like to can their moose meat because it tenderizes, "like roast beef, real tender"

Table 8-3. – Estimated use and harvest of land and marine mammals, Anvik, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Land mammals										
Large land mammals										
Bison	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Black bear	4.2%	0.0%	0.0%	4.2%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Brown bear	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Caribou	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Moose	87.5%	75.0%	41.7%	50.0%	16.7%	7,920.0 lb	247.5 lb	90.0 lb	14.7 ind	± 27%
Muskox	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Dall sheep	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**87.5%**	**75.0%**	**41.7%**	**54.2%**	**16.7%**	**7,920.0 lb**	**247.5 lb**	**90.0 lb**	**14.7 ind**	**± 27%**
Small land mammals										
Beaver	29.2%	20.8%	20.8%	12.5%	16.7%	1,680.0 lb	52.5 lb	19.1 lb	56.0 ind	± 56%
Coyote	0.0%	0.0%	0.0%	0.0%	0.0%	*Not usually eaten*			0.0 ind	± 0%
Red fox	16.7%	16.7%	16.7%	0.0%	4.2%	*Not usually eaten*			16.0 ind	± 50%
Snowshoe hare	4.2%	4.2%	4.2%	0.0%	0.0%	*Not reported as eaten*			26.7 ind	± 103%
Jackrabbit	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
River (land) otter	4.2%	4.2%	4.2%	0.0%	0.0%	*Not usually eaten*			2.7 ind	± 103%
Lynx	16.7%	16.7%	16.7%	0.0%	0.0%	*Not usually eaten*			6.7 ind	± 52%
Marmot	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Marten	20.8%	20.8%	20.8%	0.0%	0.0%	*Not usually eaten*			308.0 ind	± 51%
Mink	12.5%	12.5%	12.5%	0.0%	0.0%	13.3 lb	0.4 lb	0.2 lb	14.7 ind	± 103%
Muskrat	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Porcupine	4.2%	4.2%	4.2%	0.0%	4.2%	6.7 lb	0.2 lb	0.1 lb	1.3 ind	± 103%
Arctic ground (parka) squirrel	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Red (tree) squirrel	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Weasel	4.2%	4.2%	4.2%	0.0%	0.0%	*Not usually eaten*			2.7 ind	± 103%
Wolf	8.3%	8.3%	8.3%	0.0%	0.0%	*Not usually eaten*			2.7 ind	± 72%
Wolverine	4.2%	12.5%	4.2%	0.0%	0.0%	*Not usually eaten*			1.3 ind	± 103%
Subtotal	**37.5%**	**29.2%**	**29.2%**	**12.5%**	**20.8%**	**1,700.0 lb**	**53.1 lb**	**19.3 lb**	**438.7 ind**	**± 56%**
Marine mammals										
Bearded seal	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Ringed seal	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Spotted seal	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown seal	4.2%	0.0%	0.0%	4.2%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Walrus	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Beluga whale	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Bowhead whale	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**4.2%**	**0.0%**	**0.0%**	**4.2%**	**0.0%**	**0.0 lb**	**0.0 lb**	**0.0 lb**	**0.0 ind**	**± 0%**
All land mammals	**87.5%**	**75.0%**	**50.0%**	**58.3%**	**29.2%**	**9,620.0 lb**	**300.6 lb**	**109.3 lb**		**± 24%**
All marine mammals	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0 lb**	**0.0 lb**	**0.0 lb**		**± 0%**
All resources	**100.0%**	**91.7%**	**87.5%**	**83.3%**	**54.2%**	**34,400.9 lb**	**1,075.0 lb**	**390.9 lb**		**± 22%**

Source ADF&G Division of Subsistence household surveys, 2012.

Note "All resources" include all species of fish, wildlife, and plants reported on the survey.

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

(050312ANV3). An elder respondent, who receives moose from others, is often given moose legs. After skinning the legs and eating the meat she saves the hooves to boil later. After cooking for 3 to 4 hours, the inner marrow comes out and provides an additional meal well after the moose meat is gone (050312ANV3).

Similar to Chinook salmon, sharing of moose was prevalent in Anvik. Half of surveyed households reported receiving moose from others while 17% gave some of their moose away. While 75% of residents attempted to harvest moose, only 42% were successful. The difference between those who attempted to harvest and those that actually did likely contributes to the high rate of sharing in the community. "Wild Food Networks," below, provides a detailed discussion on the extent and prevalence of sharing in Anvik.

In addition to moose, 4% of respondents reported using and receiving, but not harvesting, black bears. Respondents described a variety of beliefs surrounding the hunting and consumption of bears. For example, an elder respondent remembers that children were never allowed to eat bear meat or watch adults hunt bears. When youth were with their families during hunting trips they were instructed to cover themselves with canvas to avoid seeing a bear or the killing of it (050212ANV1). While the respondent could not remember the reason behind the precautions, she associates eating bear with wrongdoing. Two other respondents explained that women should not eat bear until after they conceive all of their children; consequently mainly men eat bear meat. Additionally, respondents believed that wearing a bear hide or fur will make a person mean, and generally, "people still hold to that" (050312ANV3). The cultural beliefs surrounding bears likely contributes to the low harvest and low use rate.

The remaining mammal use came from small land mammals. Twenty-nine percent of households participated in trapping activities. Beaver, an animal commonly trapped and eaten by Anvik residents, contributed 1,680 lb to Anvik's edible weight harvest (Table 8-3; Appendix Table D7-4). Trapping beaver typically occurs in the spring when, "the fur is nice and prime and the weather is warmer. The ice doesn't get as thick" (050212ANV2). Twenty-nine percent of households reported use of beaver, whether for food, fur, or both. Everyone who attempted to harvest beaver successfully did so (21%). Respondents expressed concern over the rising abundance of beaver. In the past, beaver skins drew a higher price than they do today. While beaver meat is regularly eaten and beaver skin is frequently used for sewing, trappers today have less incentive to harvest the animal for commercial purposes (Figure 8-9). As a result, respondents reported, beavers are "…affecting our hunting. I remember trying to go up a couple sloughs but had to turn around because a beaver dam was blocking the way. You can't get over them so we can't go up very many sloughs anymore" (050312ANV3). Additionally, the abundance of beavers and beaver dams raises concerns over nonsalmon fish spawning. Respondents believe that beaver dams in sloughs and lakes inhibit mature whitefish from reaching their spawning areas.

The same percentage of households that trapped beaver also trapped marten (21%). However, unlike beaver, marten were not given or received. Rarely eaten, marten are usually trapped for commercial sale. In total 308 marten were trapped. Aside from beaver and marten, residents reported notable use of both red fox and lynx (17% of households reported using each). Mink, wolf, snowshoe hare, and wolverine are among the other fur bearers harvested in Anvik. Personal trapping tricks, discussed during ethnographic interviews, included

Photo by Alida Trainor

Figure 8-9.–A stretched beaver skin dries in the home of an ethnographic respondent. Declining fur prices have decreased the number of active trappers in Anvik, but some continue to sell their furs to auctioneers or other commercial stores in Fairbanks or Anchorage.

using imitation vanilla, nutmeg, fermented berries, or even wolf fat for scent lures. Additionally, ptarmigan wings and feet were reportedly very effective when trapping marten or mink (050212ANV2, 050312ANV3). Larger, more valuable animals like wolverine and wolf prove more difficult to catch.

> I've tried taking dog food up the trail, fish in an old onion sack. Rancid fish we hung for the dogs to eat during the winter time, threw them in a gunny sack, tie it to the back of a snow machine and drag it down the trail. Then try to set traps along the trail. That's how we catch some wolverine. They'll try to find that fish (050212ANV2).

In general however, the respondent admits that wolverines are "pretty elusive little creatures," and successfully catching one requires "just luck, pretty much."

All ethnographic respondents discussed the recent presence of a fur buyer in Grayling. Having a fur buyer in the area allows local trappers to maximize profit because they no longer have to send their furs to auction. Sending furs out to auction can take 4–6 months, delaying profit for trappers (050212ANV2). Instead, trappers are able to get cash immediately for their furs. All the respondents spoke favorably of this change and discussed the future possibility of increased interest and participation in trapping.

Because of the commercial nature of trapping, sharing of small land animals rarely occurs. Out of the 11 small land mammal species trapped by Anvik residents, only 3—beaver, red fox, and porcupine—were shared with other households.

In terms of harvest, migratory birds contributed 80% (897 lb) of the edible weight to the total pounds of birds harvested. Anvik households used 13 primarily migratory bird species, including 5 of the 20 duck species and 5 of the 8 geese species asked about on the survey. Respect for migratory birds was evident in ethnographic interviews. One respondent explained that "you only take what you can eat. No more than that. Don't go out for target practice. If you are going to shoot them, you better eat them" (050212ANV2). Nearly half of responding households (46%) reported using mallards, the most commonly used bird species (Table 8-4). Thirty-eight percent of households harvested mallards, contributing 260 lb to the total estimated subsistence harvest. All of the households attempting to harvest mallards in 2011 were successful. Northern pintails and green winged teals followed mallards as the second and third most commonly used duck species with 25% and 21% household use respectively. Some respondents reported that in the past, northern pintails were far more abundant than they are now: "There used to be hundreds of pintails years ago but not anymore" (050312ANV3). Respondents credited the decrease in bird abundance with environmental changes that might reduce the vegetation migratory birds eat (050312ANV3). Bird hunters in Anvik pay great attention to natural indicators that alert them to incoming flocks, but changes in weather and climate have affected the predictability and accuracy of natural indicators. One respondent gave an example, "when we go out hunting during spring hunt there used to be a big snow storm before the birds arrive. That way we'd know when they'd be coming in but not anymore" (050312ANV3).

The harvest and use levels of geese are similar to that of ducks. A quarter of Anvik households reported the use of Canada geese and lesser Canada geese, both the most commonly used geese species. Geese and ducks contributed comparable weight to Anvik's total migratory bird harvest: 485 lb (43%) and 413 lb (37%) respectively. Of the 42% of households who attempted to harvest migratory birds, all were successful. Sharing of birds occurred but at lower rates than salmon or large land animals. Twenty-one percent of households gave some migratory birds away while 25% received them. The distribution of migratory birds in the community led to a 63% use rate. With the exception of the reported northern pintail decline, respondents all agreed that the health and abundance of migratory bird species are stable.

Nonmigratory birds in the GASH region provide year-round availability for residents (Appendix Table D7-5). Various species, including spruce grouse, ruffed grouse, and ptarmigan, contributed 20% (231 lb). Thirty-three percent of households harvested and used 173 spruce grouse, the second most used bird (Table 8-4). Ruffed grouse and ptarmigan, used by 29% and 21% of households respectively, were received by 4% and 8% of households. Despite high harvest and use of these birds, no household reported giving species of other birds away. Possible explanations for the lack of giving are that receiving households acquired their birds from outside the community or from unsurveyed households.

No household in Anvik reported the use or harvest of bird eggs (Table 8-5). One respondent described a time when her father relied heavily on eggs:

Table 8-4. – Estimated use and harvest of birds, Anvik, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Migratory birds										
Ducks										
Bufflehead	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Canvasback	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Common eider	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown eider	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Goldeneye	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Harlequin	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Mallard	45.8%	37.5%	37.5%	8.3%	12.5%	260.0 lb	8.1 lb	3.0 lb	133.3 ind	± 35%
Common merganser	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Red-breasted merganser	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown merganser	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Long-tailed duck	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Northern pintail	25.0%	20.8%	20.8%	4.2%	8.3%	86.0 lb	2.7 lb	1.0 lb	57.3 ind	± 43%
Scaup	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Black scoter	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Surf scoter	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
White-winged scoter	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Northern shoveler	4.2%	4.2%	4.2%	0.0%	0.0%	7.3 lb	0.2 lb	0.1 lb	6.7 ind	± 103%
Green-winged teal	20.8%	16.7%	16.7%	4.2%	0.0%	24.3 lb	0.8 lb	0.3 lb	46.7 ind	± 65%
Wigeon	12.5%	8.3%	8.3%	4.2%	4.2%	34.9 lb	1.1 lb	0.4 lb	26.7 ind	± 72%
Unknown ducks	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**54.2%**	**37.5%**	**37.5%**	**16.7%**	**12.5%**	**412.5 lb**	**12.9 lb**	**4.7 lb**	**270.7 ind**	**± 33%**
Geese										
Brant	4.2%	4.2%	4.2%	0.0%	0.0%	48.0 lb	1.5 lb	0.5 lb	8.0 ind	± 103%
Cackling goose	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Lesser Canada goose	25.0%	16.7%	16.7%	8.3%	4.2%	74.3 lb	2.3 lb	0.8 lb	18.7 ind	± 53%
Unknown Canada goose	25.0%	20.8%	20.8%	4.2%	16.7%	172.5 lb	5.4 lb	2.0 lb	88.0 ind	± 49%
Emperor goose	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Snow goose	4.2%	4.2%	4.2%	0.0%	4.2%	37.2 lb	1.2 lb	0.4 lb	9.3 ind	± 103%
White-fronted geese	12.5%	12.5%	12.5%	0.0%	8.3%	152.6 lb	4.8 lb	1.7 lb	36.0 ind	± 78%
Unknown geese	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**50.0%**	**37.5%**	**37.5%**	**12.5%**	**20.8%**	**484.7 lb**	**15.1 lb**	**5.5 lb**	**160.0 ind**	**± 46%**
Other migratory birds										
Tundra (whistling) swan	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Sandhill crane	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Whimbrel	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0 lb**	**0.0 lb**	**0.0 lb**	**0.0 ind**	**± 0%**
Other birds										
Spruce grouse	33.3%	33.3%	33.3%	0.0%	0.0%	121.3 lb	3.8 lb	1.4 lb	173.3 ind	± 32%
Sharp-tailed grouse	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Ruffed grouse	29.2%	25.0%	25.0%	4.2%	0.0%	88.7 lb	2.8 lb	1.0 lb	126.7 ind	± 57%
Ptarmigan	20.8%	12.5%	12.5%	8.3%	0.0%	20.5 lb	0.6 lb	0.2 lb	29.3 ind	± 65%
Subtotal	**45.8%**	**37.5%**	**37.5%**	**8.3%**	**0.0%**	**230.5 lb**	**7.2 lb**	**2.6 lb**	**329.3 ind**	**± 34%**
All migratory birds	**62.5%**	**41.7%**	**41.7%**	**25.0%**	**20.8%**	**897.1 lb**	**28.0 lb**	**10.2 lb**		**± 36%**
All other birds	**45.8%**	**37.5%**	**37.5%**	**8.3%**	**0.0%**	**230.5 lb**	**7.2 lb**	**2.6 lb**		**± 34%**
All resources	**100.0%**	**91.7%**	**87.5%**	**83.3%**	**54.2%**	**34,401 lb**	**1,075 lb**	**390.9 lb**		**± 22%**

Source ADF&G Division of Subsistence household surveys, 2012.

Note "All resources" include all species of fish, wildlife, and plants reported on the survey.

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

Table 8-5. – Estimated use and harvest of bird eggs, Anvik, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Bird eggs										
Duck eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown goose eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Swan eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown shorebird eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown gull eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0 lb**	**0.0 lb**	**0.0 lb**	**0.0 ind**	**± 0%**
All birds and eggs	**70.8%**	**45.8%**	**45.8%**	**33.3%**	**20.8%**	**1,127.7 lb**	**35.2 lb**	**12.8 lb**		**± 34%**
All resources	**100.0%**	**91.7%**	**87.5%**	**83.3%**	**54.2%**	**34,400.9 lb**	**1,075.0 lb**	**390.9 lb**		**± 22%**

Source ADF&G Division of Subsistence household surveys, 2012.
Note "All resources" include all species of fish, wildlife, and plants reported on the survey.
a. Summary rows that include incompatible units of measure have been left blank.

> My memories are of my dad gathering eggs. He would always go up the sloughs and would dig in the trees. That must have been for wood ducks, but I remember gathering eggs and eating eggs… He knew where to find the eggs because he lived here all his life and he just knew the country. He knew where the birds and ducks would lay their eggs just by living here in the area for years and years (050312ANV3).

Lastly, the survey asked about vegetation harvested and/or used by respondents (Table 8-6). The category of vegetation included berries, plants, and wood. Respondents characterized 2011 as a "very bad berry year" (050312ANV3). According to key respondents and comments made during survey administration, the ability of Anvik residents to harvest berries is typically much higher. In 2011, however, half of respondents attempted to harvest berries but only 33% successfully did so. Respondents credit the poor berry year with an unusually dry summer (050312ANV3). In the past few years the typical abundance of berries has been less certain. One respondent explained that, "The season will be too dry or too wet…It varies, one year was real dry, no snow, no rain. Another year it rained, rained, rained too much; that wasn't good" (050312ANV3). Anvik residents use berries to make jams, juices, and fish ice cream. Anvik residents used blueberries (21% of households) and high bush cranberries (17% of households) more than any other of the 7 kinds of berries. When asked what her favorite berry is, one respondent excitedly answered, "Oh blueberries! And raspberries. We do a lot of raspberry picking too. You gotta get out there and fight the bugs" (050312ANV3). The community harvested a total of 165 lb or 41 gallons of berries. The exchange of berries between households in 2011 was low; only 4% of households gave away or received some kind of berry.

While more households attempted to harvest berries than other plants (50% and 42% respectively), successful plant harvest was less common; 42% of households harvested plants while 33% of households harvested berries. Ethnographic interviews captured the harvest and use of a variety of plants including rhubarb for pies, spruce roots and birch bark for baskets, and medicinal plants (050212ANV1, 050212ANV2, 050312ANV3).

Table 8-6. – Estimated use and harvest of vegetation, Anvik, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Berries										
Blueberry	20.8%	33.3%	12.5%	4.2%	4.2%	34.7 lb	1.1 lb	0.4 lb	8.7 gal	± 70%
Lowbush cranberry	4.2%	8.3%	4.2%	0.0%	0.0%	10.7 lb	0.3 lb	0.1 lb	2.7 gal	± 103%
Highbush cranberry	16.7%	20.8%	16.7%	0.0%	0.0%	66.7 lb	2.1 lb	0.8 lb	16.7 gal	± 58%
Crowberry	4.2%	4.2%	4.2%	0.0%	4.2%	42.7 lb	1.3 lb	0.5 lb	10.7 gal	± 103%
Gooseberry	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Currants	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Raspberry	4.2%	8.3%	4.2%	0.0%	0.0%	10.7 lb	0.3 lb	0.1 lb	2.7 gal	± 103%
Salmonberry	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Subtotal	**37.5%**	**50.0%**	**33.3%**	**4.2%**	**4.2%**	**165.3 lb**	**5.2 lb**	**1.9 lb**	**41.3 gal**	**± 50%**
Plants/greens/mushrooms										
Wild rhubarb	4.2%	4.2%	4.2%	0.0%	0.0%	5.3 lb	0.2 lb	0.1 lb	1.3 gal	± 103%
Eskimo potato	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Fiddlehead ferns	4.2%	4.2%	4.2%	0.0%	0.0%	4.0 lb	0.1 lb	0.0 lb	4.0 gal	± 103%
Nettle	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Hudson Bay (Labrador) Tea	16.7%	16.7%	16.7%	0.0%	4.2%	6.7 lb	0.2 lb	0.1 lb	6.7 gal	± 52%
Mint	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Sourdock	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Spruce tips	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Willow leaves	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Wild celery	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Wild rose hips	4.2%	4.2%	4.2%	0.0%	0.0%	5.3 lb	0.2 lb	0.1 lb	1.3 gal	± 103%
Yarrow	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Unknown mushrooms	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Fireweed	4.2%	4.2%	4.2%	0.0%	0.0%	2.6 lb	0.1 lb	0.0 lb	0.6 gal	± 103%
Stinkweed	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Punk	29.2%	29.2%	12.5%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	104.3 gal	± 83%
Puffballs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Unknown vegetation	8.3%	8.3%	8.3%	0.0%	0.0%	6.0 lb	0.2 lb	0.1 lb	6.0 gal	± 92%
Subtotal	**41.7%**	**41.7%**	**29.2%**	**0.0%**	**4.2%**	**29.9 lb**	**0.9 lb**	**0.3 lb**	**124.3 gal**	**± 60%**
Wood										
Wood	83.3%	70.8%	70.8%	16.7%	4.2%	0.0 lb	0.0 lb	0.0 lb	92.7 cord	± 20%
Subtotal	**83.3%**	**70.8%**	**70.8%**	**16.7%**	**4.2%**	**0.0 lb**	**0.0 lb**	**0.0 lb**	**92.7 cord**	± 20%
All vegetation	**87.5%**	**79.2%**	**75.0%**	**20.8%**	**12.5%**	**195.2 lb**	**6.1 lb**	**2.2 lb**		**± 44%**
All resources	**100.0%**	**91.7%**	**87.5%**	**83.3%**	**54.2%**	**34,400.9 lb**	**1,075.0 lb**	**390.9 lb**		**± 22%**

Source ADF&G Division of Subsistence household surveys, 2012.

Note "All resources" include all species of fish, wildlife, and plants reported on the survey.

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

Anvik residents harvested and used punk, an inedible fungus that commonly grows on birch trees, more than any other plant or berry. As one respondent described, punk can be burned as a mosquito and fly repellent (050312ANV3). Additionally, when burned down to an ash and mixed with tobacco, punk can be smoked or chewed to increase the absorption of nicotine. One ethnographic respondent described harvesting punk by the gunny sack in order to distill it into sellable ash.

Processing punk is a labor intensive process. According to one respondent, burning 5 gunny sacks of punk renders roughly only 2 pounds of ash. After gathering several full gunny sacks, the punk is placed into large barrels and harvesters "burn the heck out of it" for hours until only ash, of even consistency, is left (050312ANV3). Once cooled, harvesters package the ash into Ziploc bags. Anvik respondents reported selling punk ash for 10 dollars a pound and noted that marketing punk ash can take considerable effort as well. One respondent explained:

> You sell it to Eskimo villages mainly. Ship it in the mail, call around to those villages. I haven't heard too many people using it in our area. [We sell it] to downriver villages and to the Bethel area where there ain't no trees, no birch trees. Then people [there] probably break it down and make a profit themselves. I went to bingo in Bethel a couple years ago. There was a sandwich bag with just a little bit in it that went for 15 or 20 bucks. (050312ANV3)

While respondents described the occasional burning of punk to repel insects, the bulk of ethnographic discussion on the fungus species attributed the large harvest and use of punk to the sale of punk ash.

Other plants harvested by Anvik residents included Hudson Bay tea (harvested by 17% of households), wild rhubarb, wild rose hips, and fireweed (all harvested and used by 4% of households). Overall 42% of households used a wild plant. Seventy-one percent of households harvested wood, primarily used for heating purposes, with a total of 83% reporting its use. An estimated 93 cords of wood were taken from the surrounding area.

Harvest levels, in terms of edible weight, in all other categories were significantly lower than those in the salmon and land mammals categories. Nonsalmon, birds, and vegetation combined totaled 4,485 lbs while salmon and land mammals totaled 30,016 edible lbs. The high level of effort Anvik residents put forth to harvest land mammals and salmon illustrates a subsistence harvest and use pattern that is highly focused on just a few species. Heavy reliance on a small number of species could potentially create instability if one resource is in short supply. Food security, discussed below, presents the extent and consequences of this pattern in Anvik.

Harvest Areas

As part of the survey, households were asked to mark on a map the areas where they harvested or searched for resources. From these data, maps were produced for each community depicting the harvest areas for 6 resource categories (salmon, large land mammals, birds, small land mammals, nonsalmon species, and berries and greens). Additionally, a comprehensive map was produced depicting harvest and search areas for all resource categories (Figure 8-10).

During 2011, Anvik residents reported using 302 square miles for subsistence. The majority of search areas were located west of Anvik with particular focus on the Anvik and Bonasila rivers. Anvik residents relied heavily on the waterways surrounding their community. The Yukon River was central to the search areas for salmon, large land mammals, and birds. The Yukon River was the only area used during salmon fishing, offering viable drift- and setnet locations (Figure 8-11) . Anvik residents traveled upriver to Grayling and downriver, approximately 12 miles from Holy Cross, to pursue salmon species (Figure 8-12).

Nonsalmon species including burbot, northern pike, sheefish, and whitefish are shown in Figure 8-13. Respondents frequently mapped search areas along the Yukon River, especially close to town. The Anvik River provided some use areas for whitefish, burbot, and sheefish. As described above, the primary gear types for nonsalmon fish species included under the ice setnets, jigging with line and hook, rod and reel, and driftnet. The nonsalmon fish map shows singular spots, likely designating a set net, jigging, or rod and reel location. Longer lines indicate drifting sites.

Anvik residents who hunted moose used the largest land area for any one species (Figure 8-14). Along the Yukon River, residents mapped use areas relatively close to town (roughly 15 miles away). They traveled considerable distances (over 30 miles each) up the Anvik and Bonasila rivers, however, in pursuit of large land animals.

In 2011 bird hunting in Anvik took place along the 3 major rivers noted above, but also included wetland areas that parallel the Yukon River southeast of town. Numerous lakes and sloughs cover this area, and ethnographic respondents described them as resting places for migratory birds including ducks and geese. An ethnographic respondent explained the importance of these areas in spring bird hunting:

> We go where the birds land, where they rest. That is the main places we go to hunt where they go to rest. Spend the night or something. Lakes are good feeding for them; that's where they rest. There will be lots of birds around. During the spring, too, out on the sand bars, out on the willow bars, when it melts there will be small ponds that form from the melting snow, and that's a good place, too, for birds. (050312ANV3)

In addition to migratory species, respondents mapped their grouse and ptarmigan search areas. In comparison to ducks and geese, the search areas for these species covered more land than water (Figure 8-15). Grouse hunting occurred in the same locations as hunting for small land mammals. In some cases the search for furbearers and resident bird populations likely occurs during the same time.

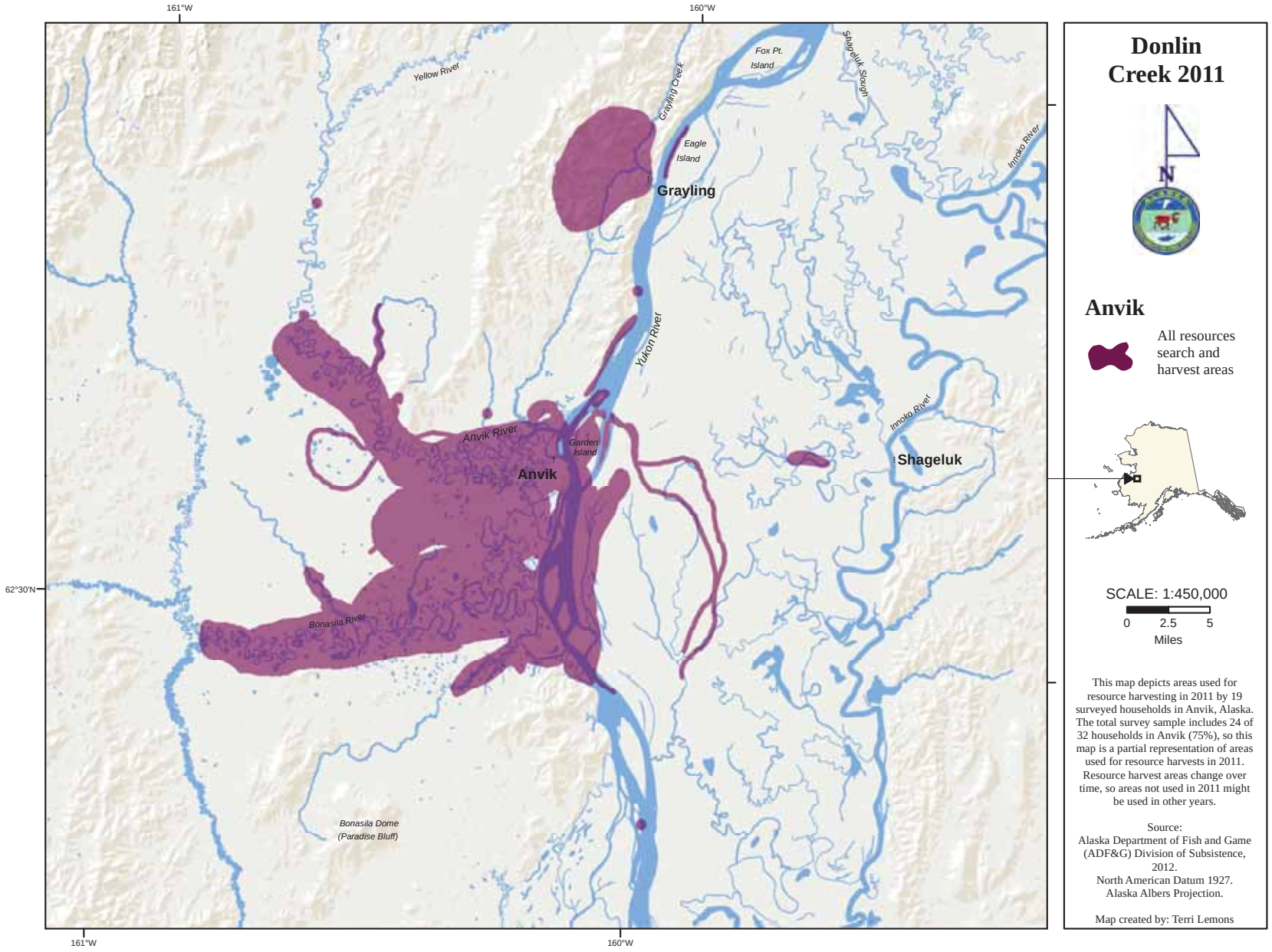


Figure 8-10.–All resources search and harvest areas, Anvik, 2011.

Photo by Alida Trainor

Figure 8-11.–Facing south, this photo shows the bluffs near Anvik that create the limited drifting and setnet sites available to fishers in the Anvik area.

Trapping, a common subsistence activity in Anvik, was documented on the small land animals map (Figure 8-16). While most harvests of small land mammals occurred along traplines, represented as green lines on the map, some harvest areas appear on the map as more general search areas, depending on how a respondent represented his or her trapping or hunting areas. Respondents mapped 2 distinct trapline areas,oneon either side of the Yukon River, and a large, less precise polygon that also indicated small land mammal harvest. One area, roughly following the Anvik River crossed it multiple times. The line heads in a relatively straight route west of town before looping on itself at its westernmost extent. The area across the Yukon River from Anvik begins at the north end of Garden Island and heads inland through a forested area, eventually reversing direction roughly 30 miles from the trailhead.

Households documented harvest of berries and plants west of Grayling on the Yukon River upriver of Anvik, along the Bonasila River, and in the immediate vicinity of Anvik (Figure 8-17).

Harvest Assessments

Researchers asked respondents to assess their own harvests in 2 ways: whether they got more, less, or about the same amount of 7 resource categories in 2011 as in past years, and whether they got “enough” of each of the 7 resource categories. Households also were asked to provide reasons if their use was different or if

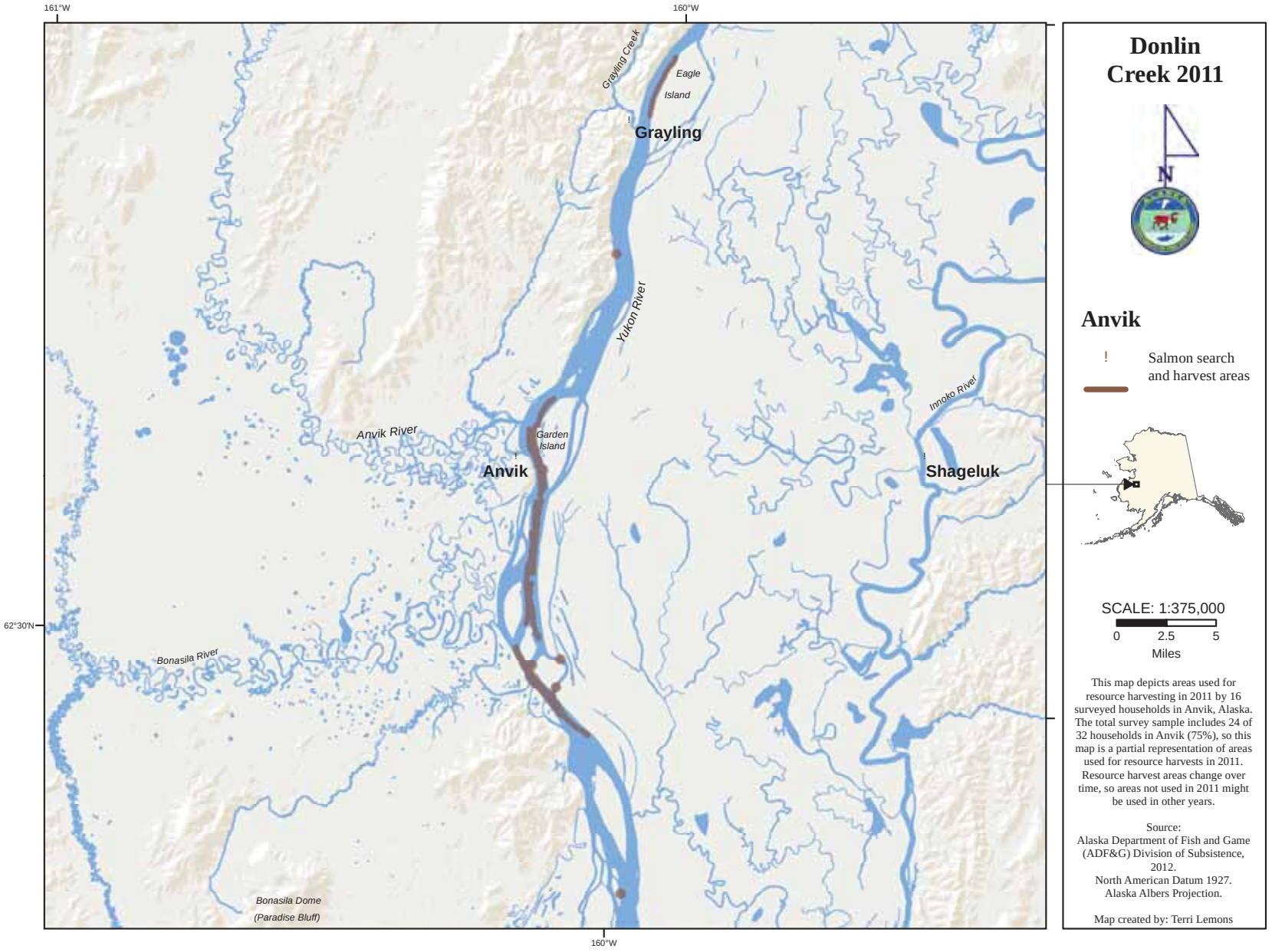


Figure 8-12.–Salmon search and harvest areas, Anvik, 2011.

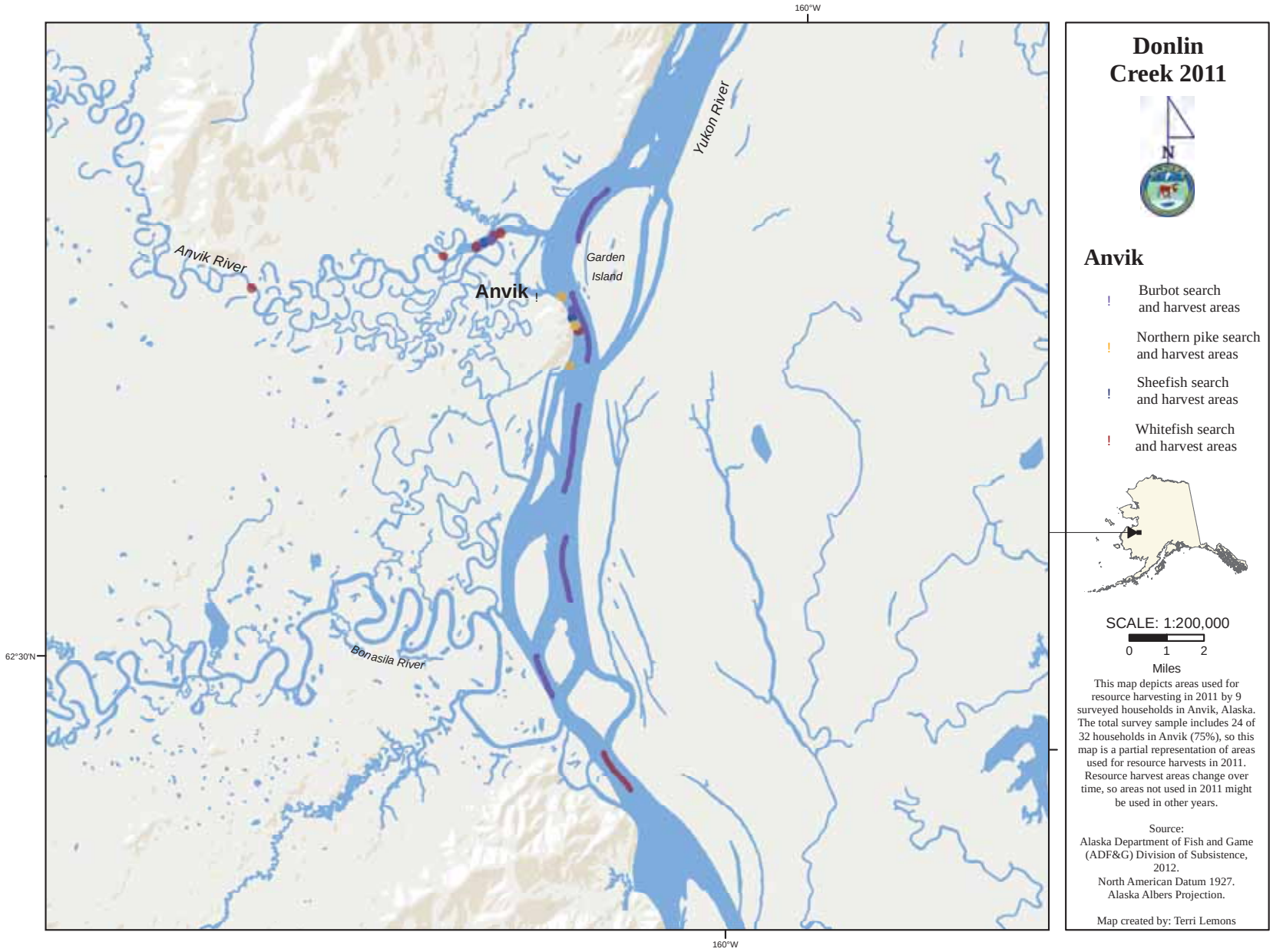


Figure 8-13.–Burbot, northern pike, sheefish, and whitefishes search and harvest areas, Anvik, 2011.

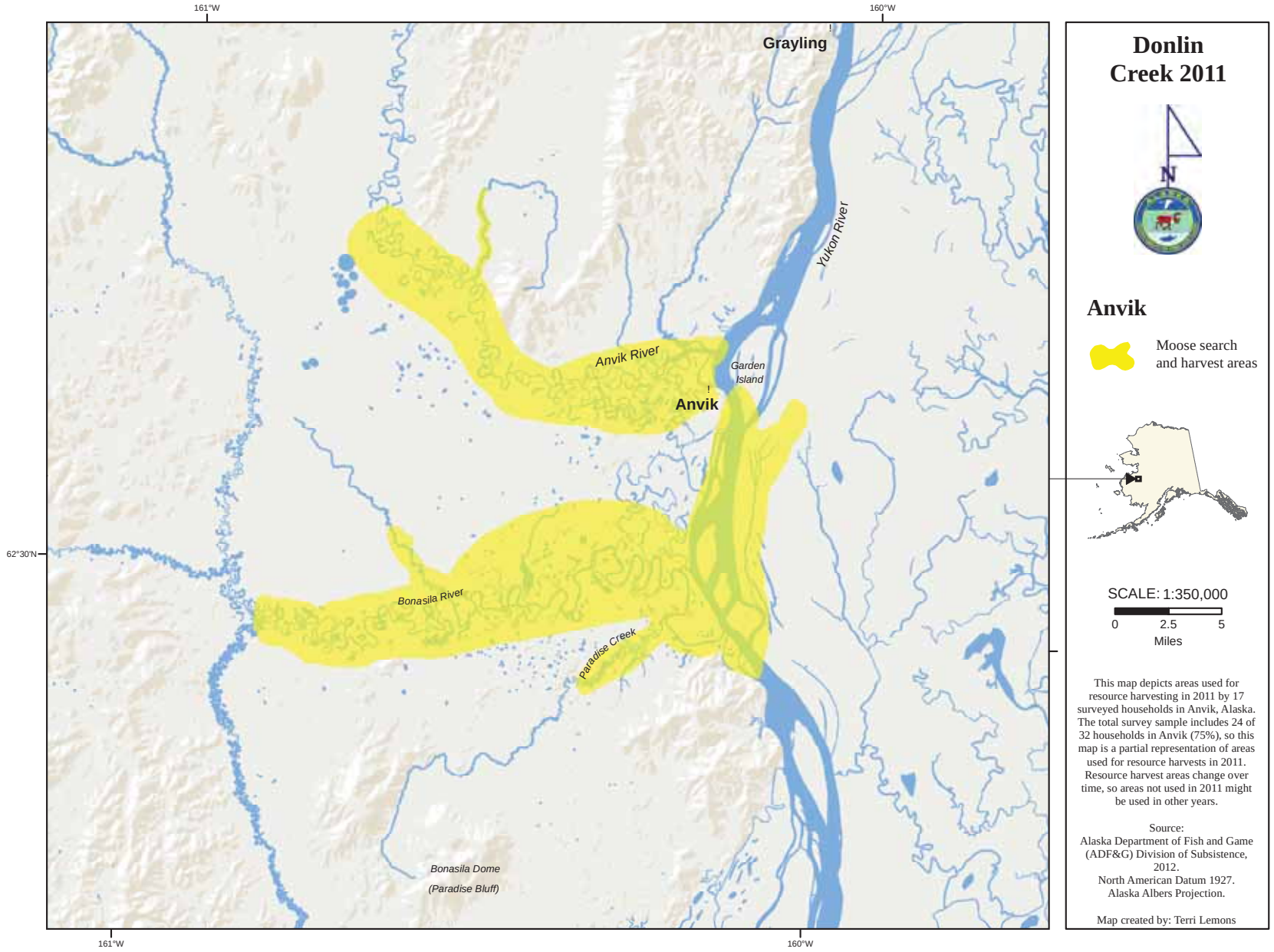


Figure 8-14.–Moose search and harvest areas, Anvik, 2011.

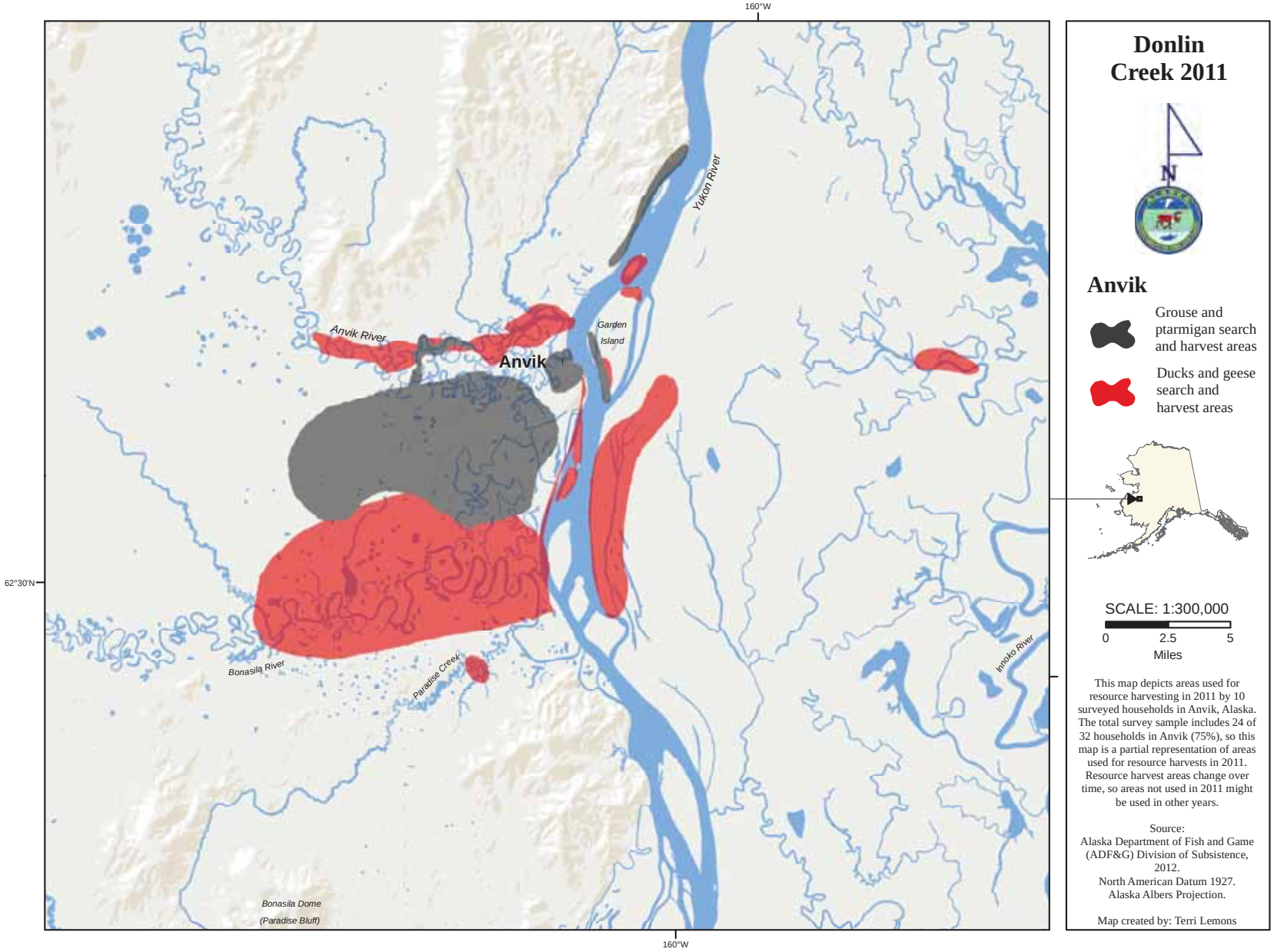


Figure 8-15.–Grouse, ptarmigan, ducks, and geese search and harvest areas, Anvik, 2011.

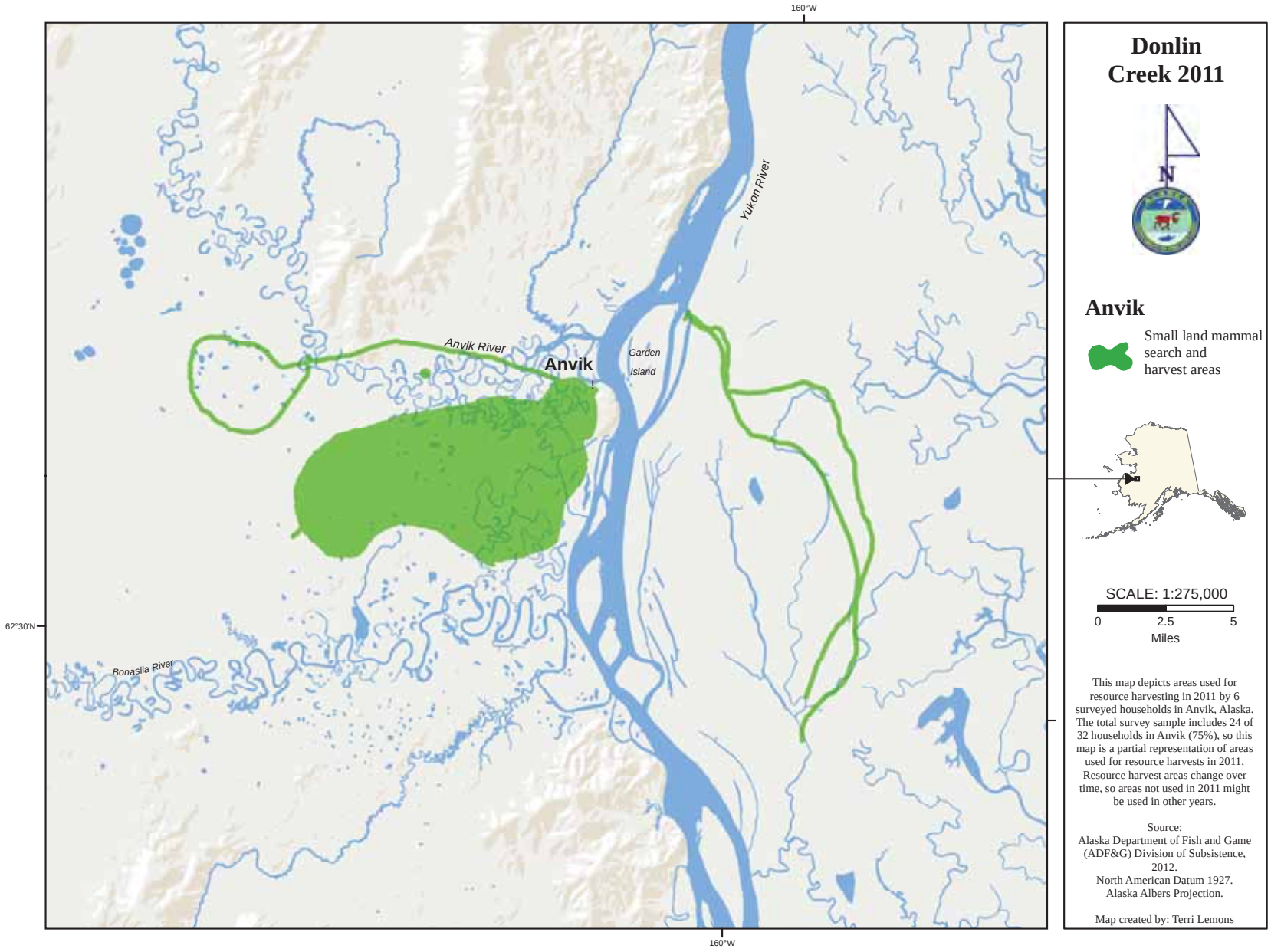


Figure 8-16.–Small land mammal search and harvest areas, Anvik, 2011.

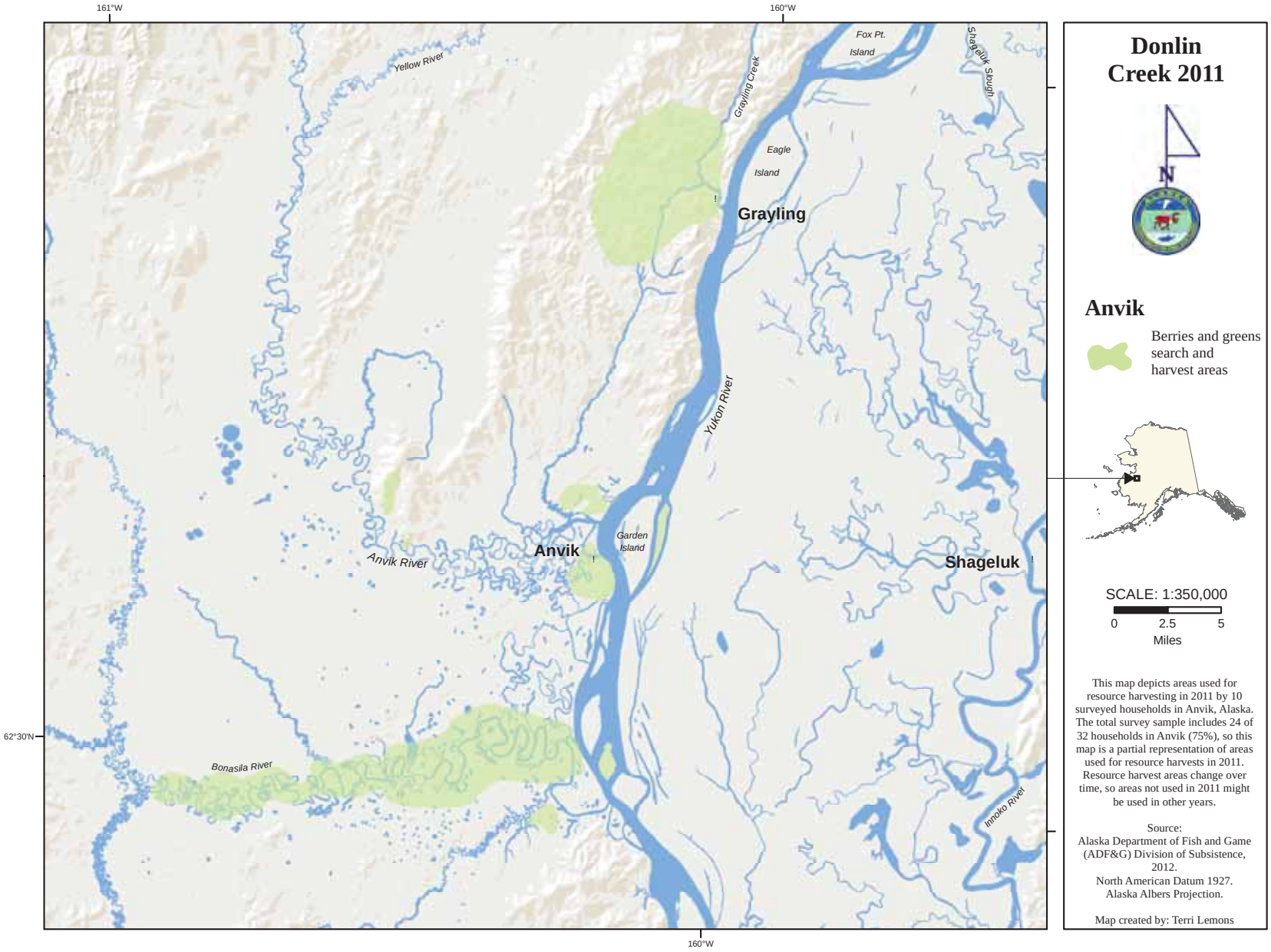


Figure 8-17.–Berries and greens search and harvest areas, Anvik, 2011.

they were unable to get enough of a resource. If they did not get enough of a resource, they were asked to evaluate the severity of the impact to their household as a result of not getting enough. They were further asked whether they did anything differently (such as supplement with store food or switch to a different subsistence resource) because they did not get enough. This section discusses responses to those questions.

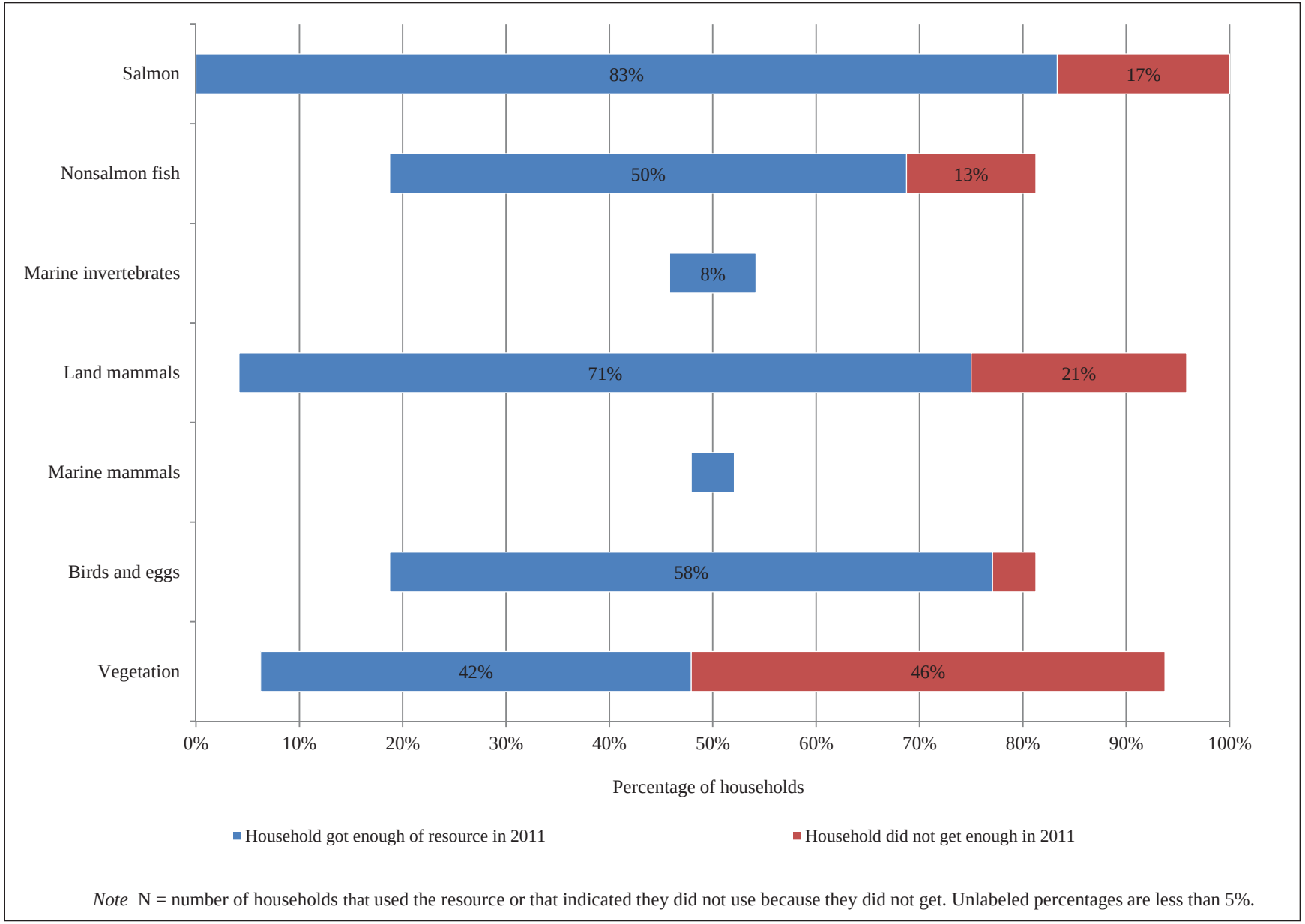
Together, Figure 8-18 and Figure 8-19 provide a broad overview of households' harvests. Since not everyone uses all resource categories, some households did not respond to the assessment questions. Additionally, some households that do typically use a resource category simply did not answer questions. While the percentages displayed in these figures were calculated including all surveyed households (including those that did not respond to the question), the bars specifically highlight responses provided by households reporting that they typically use the resource category. Generally, the results are presented in this section as they appear in the figures, but it is important to remember that they are not limited to only households that ordinarily use the resource. Additional details are provided in cases where further analysis lends clarity to the discussion of use patterns.

Land mammals represented the category with the most consistent use in comparison to recent years; 63% of reporting households used the same amount of land mammals. The high use levels (88% of households) coupled with a low hunting success rate (42% of households) suggests that moose is distributed throughout the community through sharing. Sharing levels may account for the continued stability of land mammal use; 71% of households reported they got enough land mammals while 21% reported they did not get enough.

Out of the 7 categories, household's reported the highest levels of decreased use in the salmon category compared to prior years (33% of households used less). Respondents often cited declining king salmon runs and reduced fishing schedules for their decreased use of salmon. Despite declines, 83% of respondents reported getting enough salmon in 2011 (Figure 8-18).

Ethnographic respondents described berry picking as a reliable activity. In 2011 however, effort did not guarantee harvest. The "bad berry year" discussed above, likely accounts for the high rate of decreased use in the berries and greens category. A higher percentage (46% of households) did not get enough plants and berries than those who did (42%). The percentage of households who used the same amount of berries and greens in 2011 compared to prior years was the same as the percentage of households who used less (33.3%).

Anvik respondents' assessments of their 2011 harvests and uses of resources varied with each category. With the exception of marine invertebrates and marine mammals, the 2 categories with little to no use or harvest, at least 33% of Anvik households reported using about the same amount of each resource category in 2011 compared to prior years (Figure 8-19). Appendix tables D7-6 through D7-13 address households' responses to whether or not they got enough of a particular resource, reasons why they got more or did not get enough of a resource, the impact on the household if they did not get enough, and whether they did anything differently as a result of not getting enough of a resource, such as supplement with store food or substitute another subsistence resource.



Note N = number of households that used the resource or that indicated they did not use because they did not get. Unlabeled percentages are less than 5%.

Figure 8-18.–Number of households reporting getting enough resources, Anvik, 2011.

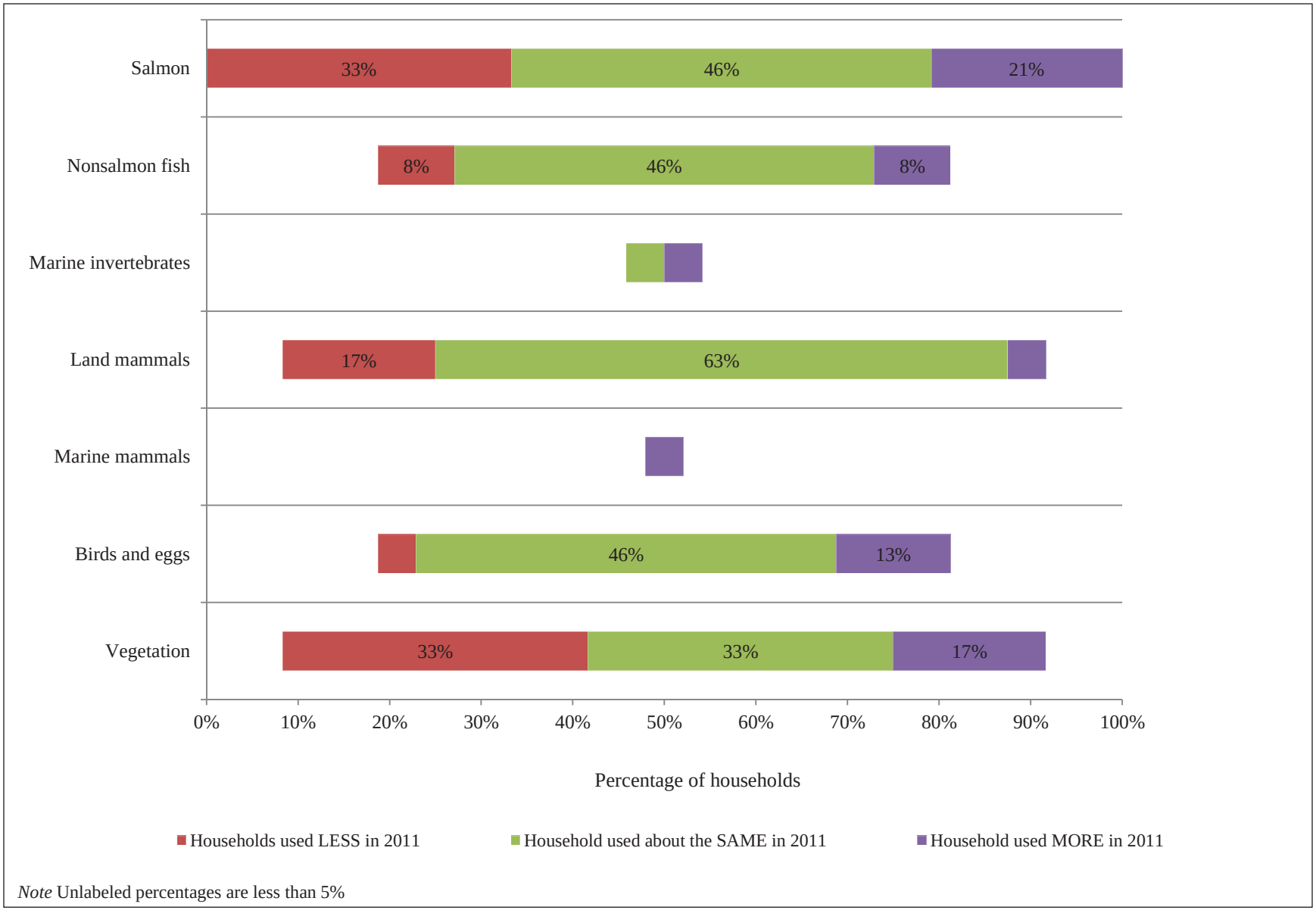


Figure 8-19.–Number of households using a resource and reporting LESS, SAME, or MORE use as compared to previous years, Anvik, 2011.

Jobs, Income, and Expenses

Respondents were asked about both earned income (jobs held and wages earned by all household members 16 years old and older) and other income (Alaska Permanent Fund dividend, Social Security, public assistance etc.). The survey also asked about months worked and individual work schedules. In addition, to understand the costs associated with participation in subsistence activities, respondents were asked about household expenses (such as housing, utilities, food, and subsistence-related expenses) and also the cost and replacement rate of equipment that was used for subsistence activities during the study year (such as motors, boats, ATVs, etc.).

In 2011, Anvik households earned or received an estimated $1 million, of which $792,521 (76%) came from wage employment, and $257,063 (24%) came from other sources (Table 8-7). Average per household income in 2011 was $32,799. Figure 8-20 shows the percentages of the top 10 sources of income. Two categories, service occupations and local government, accounted for a combined total of 37% of the community's total income in 2011. Service occupations including health care, social services, education, and guiding businesses, represented slightly more than 18% of total income. Local government positions, including work for city or tribal organizations and the public school, also represented 18% of total income.

An estimated 45 of 64 adults (71%) held at least 1 job in 2011. Of the jobs reported by Anvik residents, 34% were full-time, 34% were part-time (fewer than 35 hours per week), and 21% were on-call positions, where individuals worked when needed. On average, employed adults worked 9 months of the year with more than half (57%) working year-round. Seventy-nine percent of households had at least 1 employed adult living there. Employed adults often reported holding more than 1 job, ranging from 1 to 5 positions.

The Alaska Permanent Fund dividend, which paid $1,174 to eligible Alaska residents in 2011, was the primary contributor of cash in the "other income" category, making up 10% of Anvik's total income. (Table 8-7). Native corporation dividends contributed $38,132 (4%), and unemployment payments contributed $30,014 (3%) of total income. No Anvik household reported receiving adult public assistance, disability, child support, workers compensation, or supplemental security income. Appendix Table D1-4 and Appendix Table D7-14 provide additional income information for Anvik households.

Income information is best understood in terms of the expense of living in rural Alaska. In 2011 Anvik residents spent an estimated $398,762 on basic living expenses, including housing, utilities, and groceries. Subsistence costs included in these living expenses' total consisted of money spent on gasoline, ammunition, equipment parts, and other miscellaneous supplies needed for hunting and fishing activities (Table 8-8). On average, households spent $2,067 on subsistence expenses, the majority of which was for gasoline purchases (81%). The Anvik village corporation, Deloy Ges Incorporated, owns and operates 1 of 2 stores in the community and is the sole provider of fuel in the community. In 2011 diesel cost $5.25 per gallon while unleaded gasoline cost $5.50 per gallon. In the household expenses category, stove oil accounted for the largest expense (34%), with households spending an average of $1,664 in 2011. Electricity was the second largest expense in this category (29%), with households spending an average of $1,412. The groceries category included store-bought

Table 8-7. – Estimated earned and other income, Anvik, 2011.

Income source	Number of people	Number of households	Total for community	Mean per household[a]	Percentage of total[b]
Earned income					
Services	13.3	12.0	$192,782	$6,024	18.4%
Local government	22.7	14.7	$191,130	$5,973	18.2%
Construction	4.0	4.0	$129,594	$4,050	12.3%
Other employment	6.7	6.7	$96,948	$3,030	9.2%
Mining	1.3	1.3	$94,626	$2,957	9.0%
Federal government	2.7	1.3	$41,143	$1,286	3.9%
Transportation, communication, and utilities	2.7	1.3	$30,754	$961	2.9%
State government	1.3	1.3	$10,488	$328	1.0%
Retail trade	1.3	1.3	$5,057	$158	0.5%
Earned income subtotal	**45.3**	**25.3**	**$792,521**	**$24,766**	**75.5%**
Other income					
Alaska Permanent Fund dividend		28.0	$102,480	$3,203	9.8%
Native corporation dividend		29.3	$38,132	$1,192	3.6%
Unemployment		8.0	$30,014	$938	2.9%
Social Security		2.7	$29,867	$933	2.8%
Food stamps		5.3	$24,720	$773	2.4%
Energy assistance		18.7	$11,275	$352	1.1%
Pension/retirement		1.3	$8,000	$250	0.8%
Veterans assistance		1.3	$4,432	$139	0.4%
Citgo fuel voucher		8.0	$4,143	$129	0.4%
Longevity bonus		1.3	$4,000	$125	0.4%
TANF (temporary cash assistance for needy families)		0.0	$0	$0	0.0%
Adult public assistance		0.0	$0	$0	0.0%
Supplemental Security income		0.0	$0	$0	0.0%
Workers' compensation/insurance		0.0	$0	$0	0.0%
Disability		0.0	$0	$0	0.0%
Child support		0.0	$0	$0	0.0%
Other		0.0	$0	$0	0.0%
Foster care		0.0	$0	$0	0.0%
Meeting honoraria		0.0	$0	$0	0.0%
Other income subtotal		**30.7**	**$257,063**	**$8,033**	**24.5%**
Community income total			**$1,049,584**	**$32,799**	**100.0%**

Source ADF&G Division of Subsistence household surveys, 2012.

a. The mean is calculated using the total number of households in the community, not the number of households for this income category.

b. Income by category as a percentage of the total community income from all sources (wage-based income and non-wage-based income.)

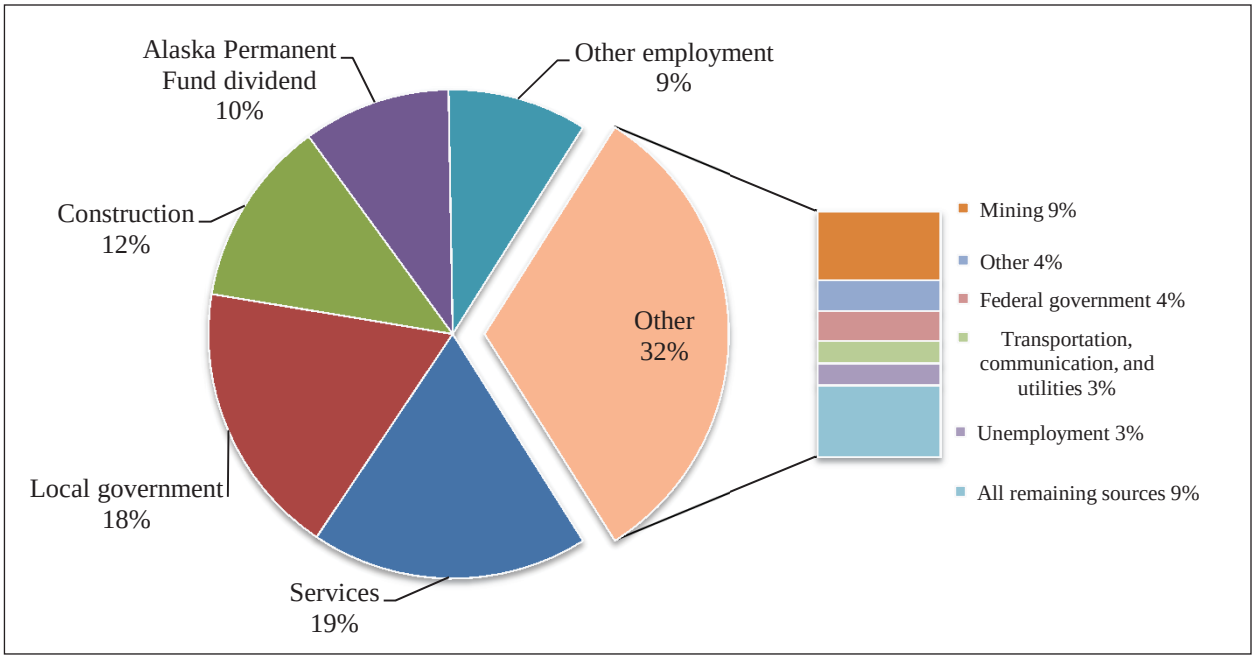


Figure 8-20.–Top 10 income sources ranked by estimated amount, Anvik, 2011.

food and food acquired through customary trade (the exchange of subsistence foods for cash). Store-bought foods made up the bulk of expenses (99% of the groceries category), with households spending an average of $5,508 on them in 2011.

Subsistence equipment expenses constituted a large portion of costs incurred by Anvik households (Table 8-9). The survey asked respondents to report the original amount their household paid for subsistence equipment, even if it did not fall within the study year. Boats, motors, and all-terrain vehicles (ATVs) constituted the most expensive subsistence equipment that Anvik residents bought. Seventy-nine percent of households used a boat for subsistence activities. The mean original purchase cost per household for boats was $3,145. Households spent an average of $2,947 on boat motors while spending an average of $2,716 on ATVs. To gauge the frequency of equipment purchases, the survey asked respondents to estimate how often they replaced their equipment. On average, surveyed households reported replacing their snowmachines every 3 years, their ATVs every 4 years, and their boats every 8 years.

Table 8-8. – Estimated annual expenses, Anvik, 2011.

Household expenses	Number of households	Total for community	Mean per household	Percentage of category	Percentage of total
Total expenses	**32.0**	**$398,762**	**$12,461**	**100.0%**	**100.0%**
Housing	32.0	$156,367	$4,886	100.0%	39.2%
Rent/mortgage	5.3	$9,183	$287	5.9%	2.3%
Stove oil	26.7	$53,236	$1,664	34.0%	13.4%
Firewood	5.3	$3,235	$101	2.1%	0.8%
Electricity	29.3	$45,196	$1,412	28.9%	11.3%
Propane	17.3	$9,023	$282	5.8%	2.3%
Water/sewer/garbage	0.0	$0	$0	0.0%	0.0%
Telephone	30.7	$9,914	$310	6.3%	2.5%
Television	24.0	$26,581	$831	17.0%	6.7%
Groceries	32.0	$176,264	$5,508	100.0%	44.2%
Store-bought groceries	32.0	$175,360	$5,480	99.5%	44.0%
Subsistence–customary trade	5.3	$904	$28	0.5%	0.2%
Subsistence	32.0	$66,131	$2,067	100.0%	16.6%
Gasoline	29.3	$53,806	$1,681	81.4%	13.5%
Ammunition	18.7	$2,862	$89	4.3%	0.7%
Equipment parts	12.0	$8,590	$268	13.0%	2.2%
Other supplies	8.0	$873	$27	1.3%	0.2%

Source ADF&G Division of Subsistence household surveys, 2012.

FOOD SECURITY

Respondents were asked a series of questions intended to assess their household's food security; that is, "access by all people at all times to enough food for an active, healthy life" (Nord et al. 2008:2). The food security questions were modeled on the questions developed by the USDA and modified by ADF&G to account for differences in access to subsistence and store bought foods. Core questions and responses are summarized in Figure 8-21.

Based on their responses to these questions, households were categorized as having high, marginal, low, or very low food security following a USDA protocol (Bickel et al. 2000). In 2011, 88% of Anvik households had high and marginal food security; USDA considers households in both categories to be "food secure." Of the remaining households, 8% had low food security while 4% fell in the very low food security category. The percentage of food secure households in Anvik is higher than both state and national averages. When assessing their household's food security, respondents were asked to respond to 8 statements describing conditions associated with varying levels of food security. Figure 8-22 depicts the percentages of households reporting food insecure conditions. The survey modified the USDA protocol questions to capture the impact of subsistence resources on households' food security. However, the additional questions about subsistence foods were not used to calculate households' food security. Anvik residents are able to buy groceries from 2 small stores in town or can mail order food from Fairbanks or Anchorage. As a result of this availability, no household reported running out of store-bought foods, however, 25% percent of households reported that their subsistence foods did not last.

Table 8-9. – Estimated equipment costs and household use, Anvik, 2011.

	Equipment used for subsistence					
	Boats	Boat motors	Nets	Snowmachines	4-wheelers (ATVs)	Trucks/Cars
All households						
Using						
Estimated number	25.0	26.4	23.7	18.1	16.7	7.0
Percentage	78.3%	82.6%	73.9%	56.5%	52.2%	21.7%
Owning						
Estimated number	22.3	25.0	20.9	16.7	16.7	7.0
Percentage	69.6%	78.3%	65.2%	52.2%	52.2%	21.7%
Mean owned	0.8	0.9	0.8	0.7	0.5	0.2
Total estimated owned in the community	26.4	27.8	25.0	23.7	16.7	7.0
Mean original cost per household	$3,642	$3,500	$650	$2,668	$2,716	$1,200
Total estimated community cost	$116,547	$112,000	$20,800	$85,382	$86,922	$38,393
Estimated annual community cost	$7,752	$10,599	$3,732	$14,476	$9,794	$7,909
Only households owning						
Mean owned	1.2	1.1	1.2	1.4	1.0	1.0
Maximum owned	2	2	2	2	1	1
Mean original purchase cost	$5,236	$4,472	$997	$5,114	$5,206	$5,519
Minimum original purchase cost	$1,700	$500	$500	$750	$75	$3,995
Maximum original purchase cost	$12,000	$8,000	$4,600	$8,000	$8,000	$8,000
Median original purchase cost	$4,125	$5,000	$725	$4,000	$5,500	$5,000
Mean replacement time (years)	12.5	7.5	4.9	4.9	6.8	4.5
Minimum replacement time (years)	0	0	0	2	0	0
Maximum replacement time (years)	30	22	10	13	13	10
Median replacement time (years)	10.0	5.5	5.0	3.0	6.5	4.0

Source ADF&G Division of Subsistence household surveys, 2012.

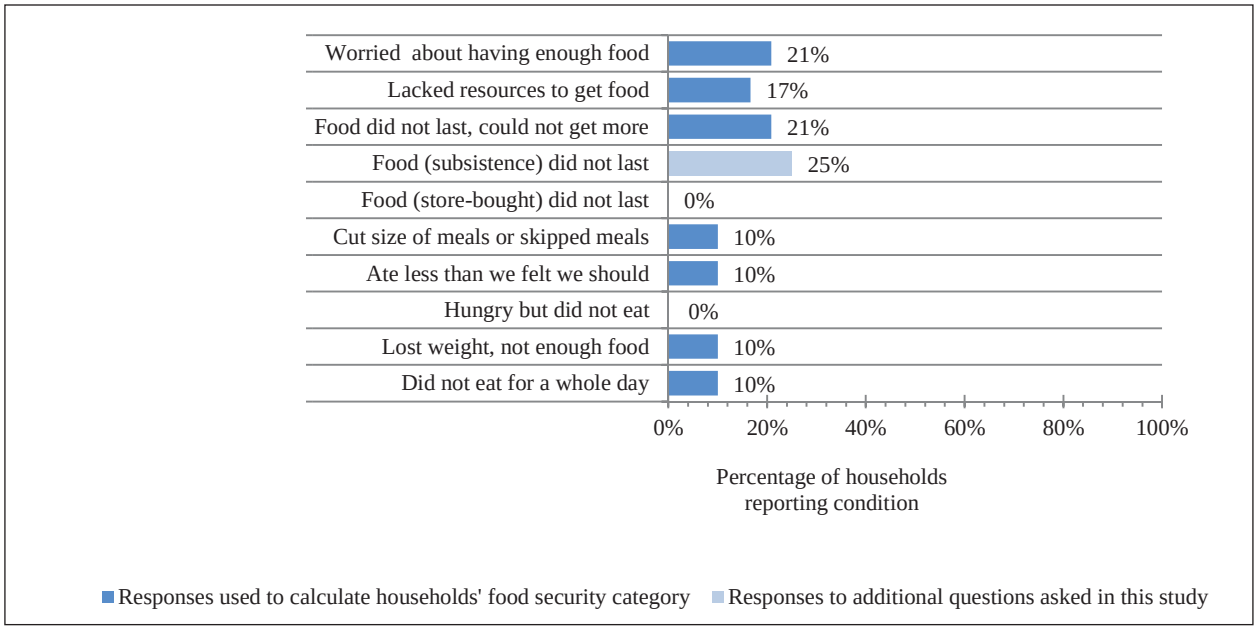


Figure 8-21.–Food insecure conditions results, Anvik, 2011.

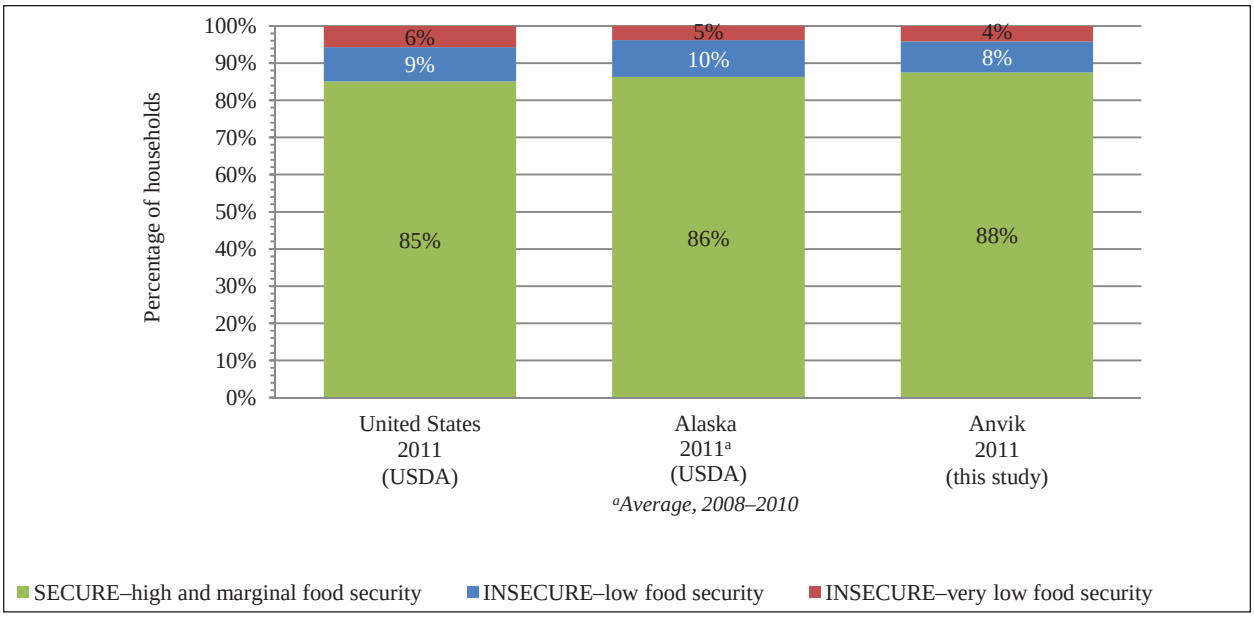


Figure 8-22.–Food security categories, Anvik, 2011.

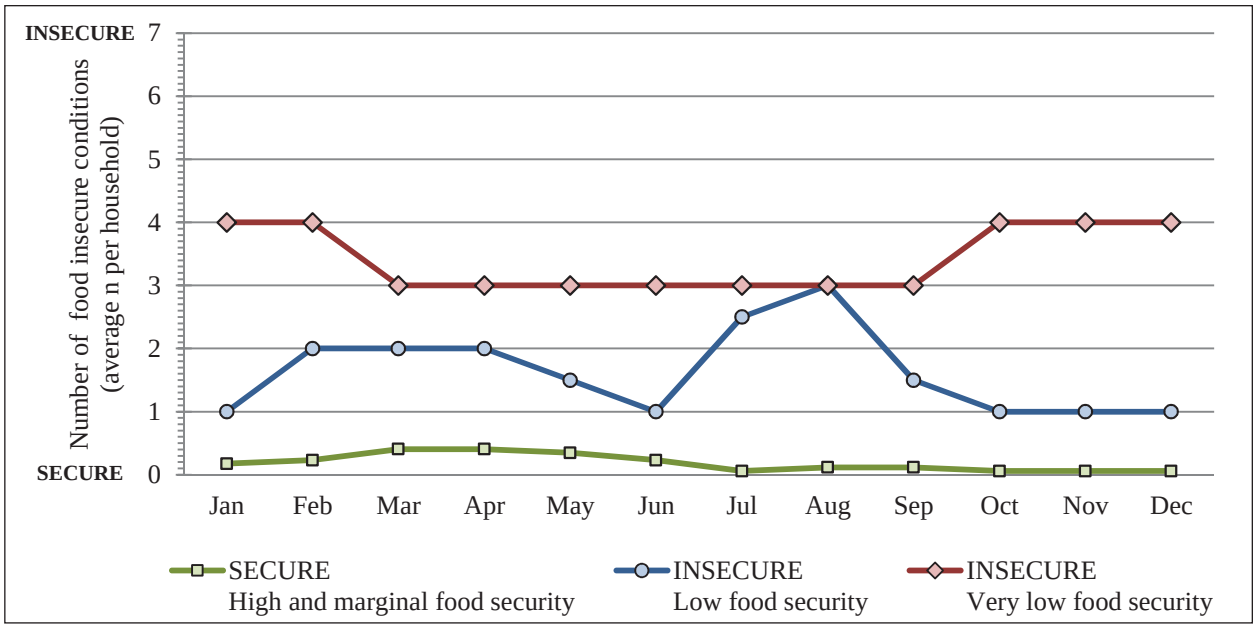


Figure 8-23.–Food insecure conditions by month and by household category, Anvik, 2011.

Figure 8-23 illustrates the effect seasonal changes have on households' anxiety over food. As discussed previously, subsistence harvests occur year-round based on the seasonal availability of resources. The availability of wild resources fluctuates throughout the year and may affect the food security of households participating in subsistence activities from month to month. Households with high and marginal food security (shown in green) remained relatively stable and secure throughout the year. Low food secure households (shown in blue) showed the greatest variation throughout the year. During late winter and spring (February, March, and April), households in this category experienced higher food insecurity. For some households, reserves of food often run low in the spring. The arrival of migratory birds in May and the summer salmon runs in June likely contribute to a decrease of food insecurity. Unlike other communities that showed continued security throughout the summer months, Anvik households categorized with low food security reported more food insecure conditions in July and August. Anxiety over getting enough food to last through the winter may have contributed to the summer increase. Shown in red, households with very low food security have less variance in the rate of their food insecure conditions than those with low food security (shown in blue) though on average reported consistently more instances of food insecurity throughout the year. Between March and September these households report 3 food insecure conditions to be true for each month. For the remainder of the year 4 conditions are true for each month.

Wild Food Networks

In addition to harvesting wild resources, trading, sharing, and bartering are all ways subsistence foods are redistributed throughout a community. Discussed above in the "Wild Food Uses and Harvests" section, more than half (54%) of households gave some wild resources away while 83% of households received some wild foods from others. Figure 8-24 shows the distribution of food between households and depicts a network of wild food exchanges between Anvik households and with households in other communities. The nodes are shaped according to the demographic structure of the household (couple, single male, single female), and colored according to the age of the head or heads of household. A developing household head is less than 40 years old, a mature household head is 40 to 59 years old, and an elder household head is 60 years old or older. Gray boxes are unsurveyed households. Blue circles connote a household in another community. The size of each node is scaled to represent the household's total subsistence harvest; the larger the node, the greater that household's total harvest. Arrowed lines show the direction of the exchange and are weighted to show multiple exchanges. However, arrowed lines only indicate resources flowing into an individual household; the network diagram cannot imply patterns of reciprocity. Likewise, the diagram does not illustrate other relationships which occur in subsistence sharing networks such as providing financial support for the harvesting effort, or receiving food from an intermediary instead of directly from those harvesting or processing the resources. Households near the center of the network diagram are more connected than others. Households (represented by nodes) migrate to the center of the diagram as they receive more resources from other households; those households closer to the periphery of the diagram receive fewer resources. With the exception of 1 single male head under age 40, (represented by the small yellow triangle on the left side) every household had at least 1 food distribution connection with another household, either in the community or somewhere else in Alaska. Six communities, from different regions of the state, appear on Anvik's network diagram. Anvik households reported receiving food from others in these communities. Grayling and Holy Cross appear on the diagram, illustrating the connections between communities in the GASH region. Because the survey asks who gave food to a household rather than who food was given to, the network diagram does not capture the possible outgoing flow of food from Anvik.

Two heavy harvesting households of equal production scale demonstrate two very different distribution profiles. The first, headed by a single male, is represented by an orange triangle in the top left hand corner of the diagram. Despite his high harvest, the network diagram does not show any distribution of his harvest with others. Instead, he received food from someone in Kenai. Typically, the highest producing households have some of the highest distributions of food to other households. In this case however, the household is isolated. There are two possible explanations for this discrepancy. First, the survey asks respondents to identify who they received resources from, not who they gave resources to. Consequently, there is always the possibility that a seemingly isolated household gave food to unsurveyed households and the network figure fails to capture that exchange. Secondly, a high harvesting, seemingly isolated household could give resources to friends or family outside of the community; exchanges that do not appear on the network diagram.

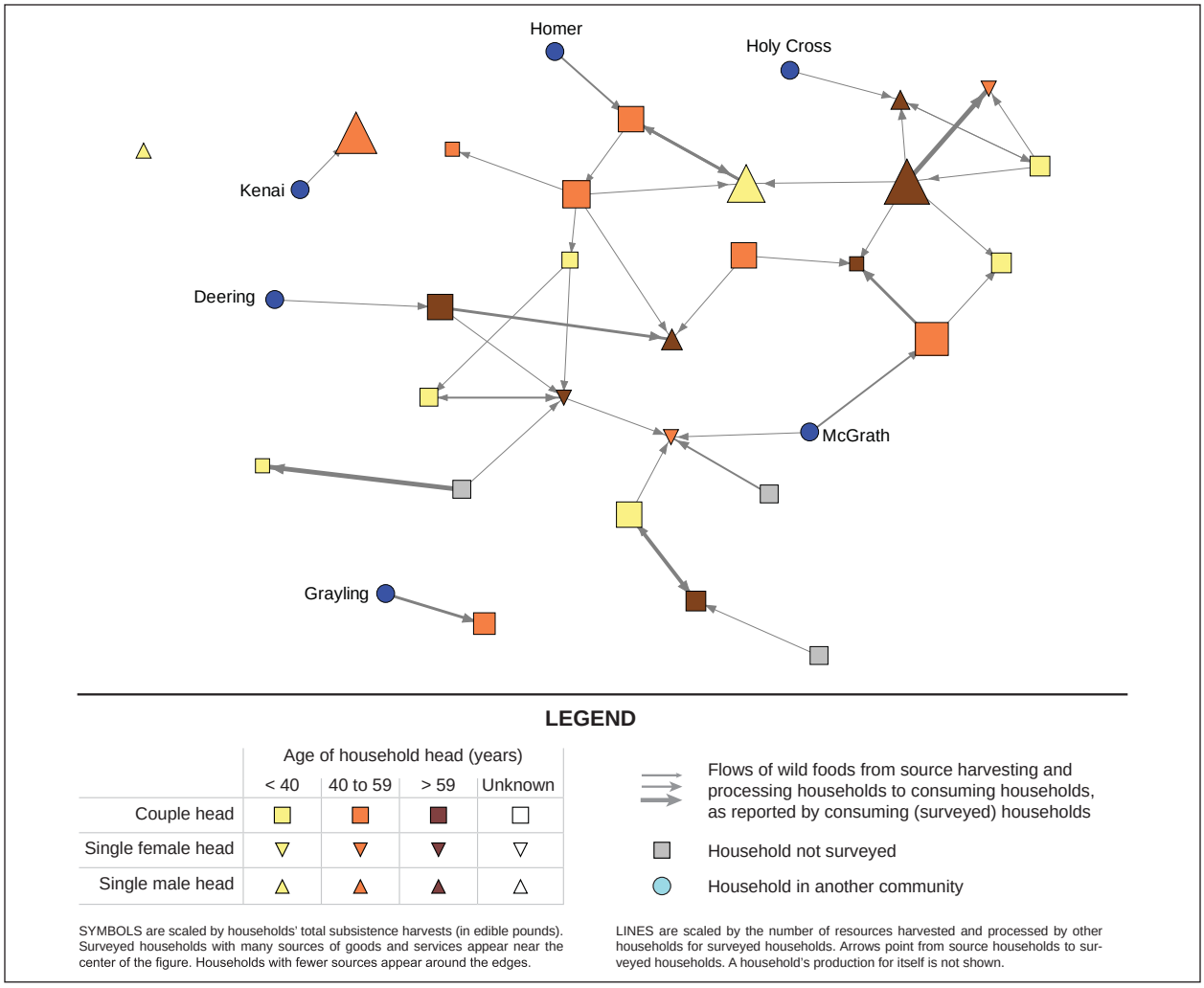


Figure 8-24.–Wild food harvesting and processing network, Anvik, 2011.

In contrast, an equally scaled household headed by a single male over age 59 (represented by a brown triangle located in the top right portion of the diagram) has numerous connections with other households and exchanges food with households more than any other in Anvik. In all, at least 5 households (16% of all households in Anvik) reported they received wild resources from this household. A household headed by a single female between 40 and 59 years old received the greatest number of resources from this high harvesting single male. With the exception of 1 household headed by a couple over the age of 59, all of the others who received food from him were either single females or single males of varying ages.

With the exception of 1 household, every household in Anvik received food from others, regardless of whether they gave food away themselves or not. The interconnectedness of households, both within Anvik and with other communities, demonstrates the communal nature of subsistence harvests. Ethnographic respondents often described their fishing, hunting, and gathering activities by naming the friends and family who helped them. Naturally, a shared effort leads to a shared harvest and the ability to harvest enough for those who cannot fish, hunt, or gather all that they need by themselves.

Comparisons with Prior Results

This section discusses the comparisons between the results of this study and the qualitative and quantitative data of prior studies. Early ethnographic accounts of Anvik were provided by Glazunov (VanStone 1979a), Zagoskin (1967), and Nelson (1978). A range of historical quantitative information for the region exists, documenting harvest and use levels of key species. More recently, Wheeler (1998) conducted a comprehensive subsistence survey that also included ethnographic analysis from respondents in the lower–middle Yukon villages. This study was the third comprehensive subsistence harvest survey conducted in Anvik. The first, conducted in 1990–1991, covered the same resource categories and included the 3 other area communities of Grayling, Shageluk, and Holy Cross (Wheeler et al. 1992). Between 2002–2005 the Division of Subsistence conducted 3 years of big game surveys in the GASH villages. The big game surveys captured use and harvest levels of moose, black bear, brown bear, caribou, and wolf, but did not include any detailed ethnography on the harvest and use of these species. In 2002, the Division of Subsistence conducted a harvest survey in the GASH communities and documented traditional ecological knowledge to capture the harvest and use patterns of nonsalmon species in the area. In 2008 Wolfe and Scott (2010) conducted a comprehensive subsistence survey in 5 Yukon River communities, that included Grayling and Anvik. Finally, postseason salmon surveys have been administered in the Yukon Management Area's District 4 by the Alaska Department of Fish and Game since 1974. Historic subsistence harvests are shown in Figure 8-25 and Figure 8-26 for key salmon species and large land animal species. This section will compare the results of this study with the results of the other comprehensive studies conducted in 1990-1991 and will also include comparisons with the smaller data sets available in the other studies noted above. The studies compared in this section differ in methodology, seasons of data collection, and length of study period. Natural fluctuations in animal populations also can contribute to the fluctuations in harvest and use of wild resources. Overall however, the harvest and use of wild resources has substantially dropped in the last 2 decades.

Wheeler's (1998) *The Role of Cash in Northern Economies: A Case Study of Four Athabascan Villages* contains thorough documentation of the subsistence harvest and use patterns in these 4 communities between September 1990 and August 1991. The 1990–1991 comprehensive survey estimated a much higher total community harvest of wild foods than this study. During the 1990–1991 study year, Anvik households harvested an estimated total of 81,714 edible pounds with a per capita harvest of 844 lb. In 2008, Wolfe and Scott (2010) estimated a per capita harvest of 645 edible pounds (a total community harvest of 54,260 lb)[4]. In 2011 the harvest levels were much lower. Community residents harvested an estimated 34,401 lb, or 391 lb per person, more than a 50% decline since 1990. In addition to decreases in pounds harvested, the composition of harvest has changed as well. Salmon, as a percentage of the total harvest has steadily increased since Wheeler's 1990–1991 study. Estimates in 1990–1991 were based on the post season salmon surveys administered by the ADF&G commercial fisheries division. In 1990–1991 salmon species only made up 20.6% of the harvest. Ten years later, Wolfe and Scott (2010) estimated that 57% of the total community harvest came from salmon species. Finally, by 2011, the top 10 most harvested species were dominated by

4. This estimate does not include salmon harvested specifically for dog food.

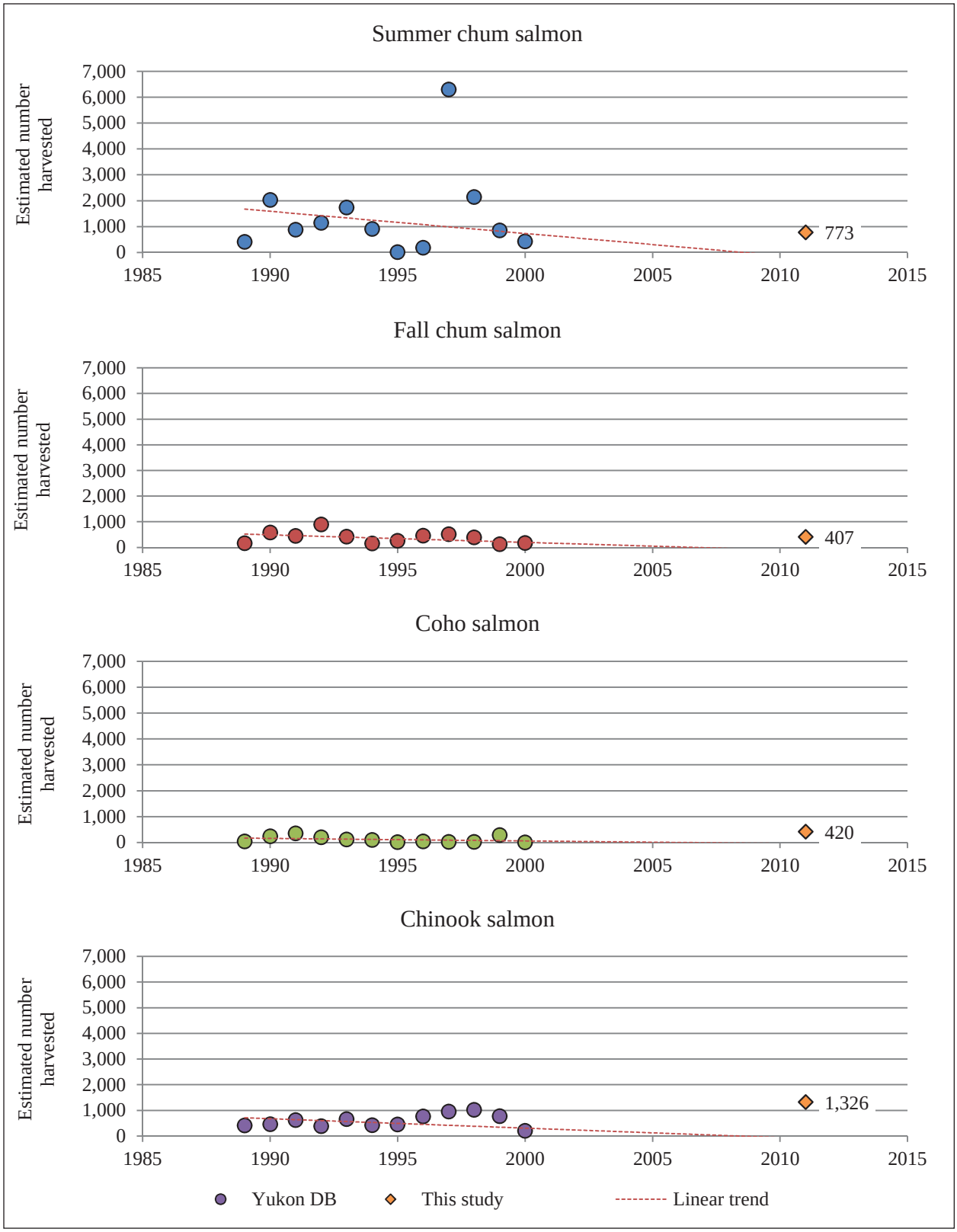


Figure 8-25.–Estimated total number of summer chum, fall chum, coho, and Chinook salmon, harvested by residents, Anvik, 1990–2011.

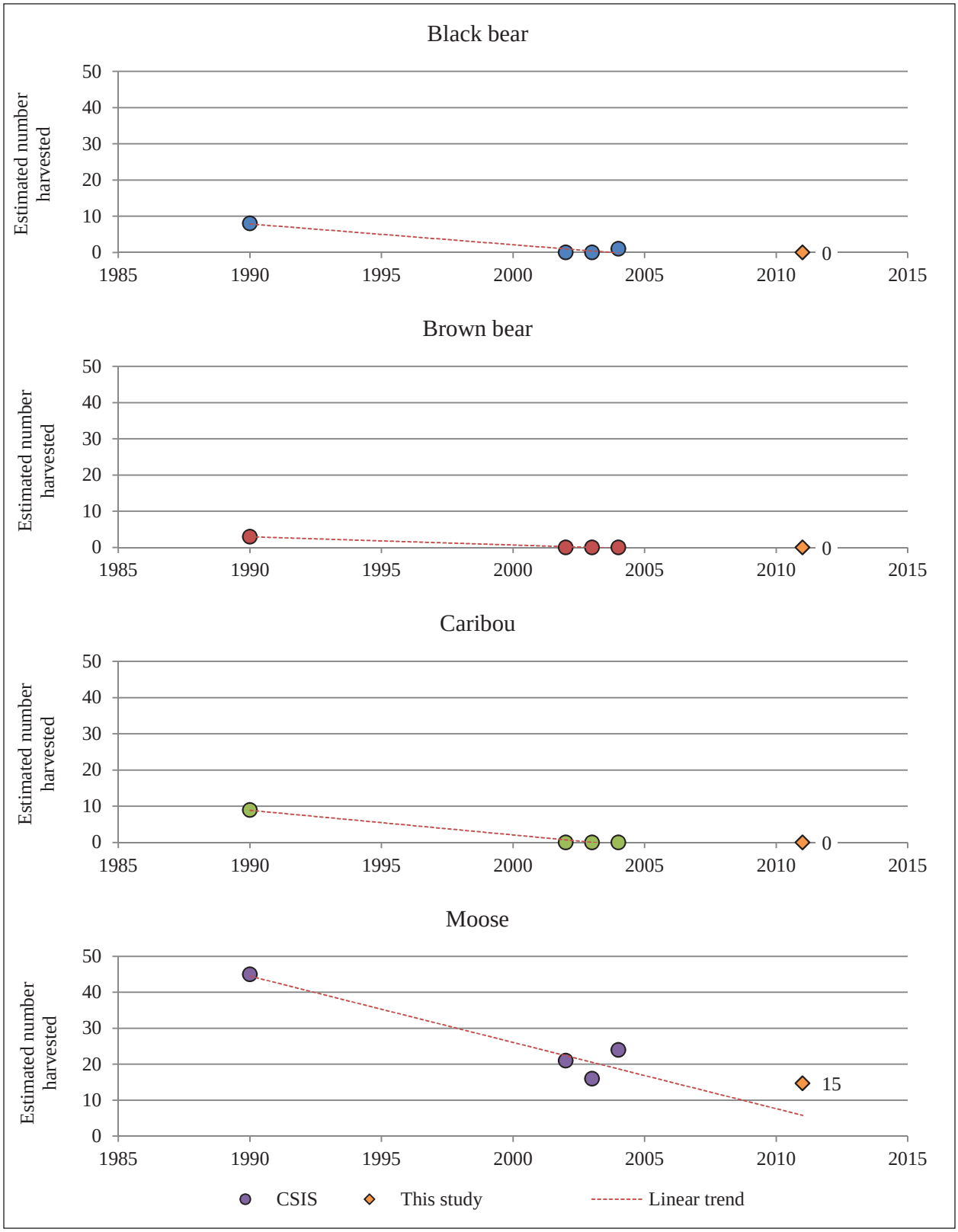


Figure 8-26.–Estimated total number of black bear, brown bear, caribou, and moose harvested by residents, Anvik, 1990–2011.

salmon species including coho, summer chum, Chinook, and fall chum. Combined, these species made up 82% of the total community harvest (20,397 lb). Figure 8-27 shows the top10 resources in the 1990–1991, 2008 and 2011 study[5]. The top 10 resources harvested by Anvik residents in 1990 vary more than the top 10 resources harvested in the other 2 study years. In addition to the increase in salmon, as a percentage of the total community harvest, discussed above, other changes in harvest composition can also be seen. For example, the harvest of moose, a primary resource in Anvik, dropped from 43% of the community total in 1990, to 26% in 2008 and finally to 23% in 2011. Discussed in more detail below, the rise in salmon harvests alongside the decrease in moose harvests document a pattern by Anvik residents of harvesting a less diverse group of resources, possibly making them more vulnerable during times of salmon shortages.

Figure 8-27 shows the harvest history, based on post-season surveys conducted by the ADF&G Commercial Fisheries Division, of Chinook, summer chum, fall chum, and coho salmon from 1990 to 2011. Despite ethnographic testimonies describing weakened Chinook salmon runs, Figure 8-25 shows a general increase in harvest by 2011. The percentage of edible weight also increased. In 1990–1991 Anvik households harvested 8,542 edible pounds of Chinook salmon (approximately 88 lb per capita or 11% of the total community harvest). In 2008 Anvik residents harvested an estimated 26,539 edible pounds of Chinook salmon (approximately 315 lb per capita or 49% of the total community harvest). In 2011, residents harvested 12,334 edible pounds or 140 lb per capita (36% of the total community harvest) of Chinook salmon. Both the 2008 and 2011 studies document significant increases of Chinook salmon harvest since 1990–1991.

An overall increase in salmon fishing participation has accompanied the increases in harvest. Wheeler found that in 1990–1991 roughly 64% of households reported harvesting salmon. In 2008, Wolfe and Scott (2010) estimated that 96% of households harvested salmon, In 2011, 79% of households reported harvesting salmon. While more than half of all households reported fishing for salmon in all 3 studies, 2008 and 2011 show a marked increase over the 1990–1991 study year.

Salmon is the only resource category that shows a substantial increase in harvest and use between 1990–1991 and 2011. Not only did the rates of participation increase but salmon now constitute a much greater percentage of the total harvest than before. Ethnographic interviews collected in this study discuss the local impacts of declining Chinook salmon runs and the increased fishing restrictions that have accompanied them in the past decade. However, key respondents did not discuss a general increase in the reliance on or harvest of salmon seen in the quantitative results in each of the 3 reports. One possible explanation for the rise in the percentage of harvested salmon by edible weight is an overall proportional decline of other resource categories. This section will discuss the declines in a variety of other species.

ADF&G Division of Subsistence documented the harvest and use of nonsalmon fishes by residents in Grayling, Anvik, Shageluk, and Holy Cross in 2002 (Brown et al. 2005). Anvik residents harvested 16,142 lb (174 lb per capita) of nonsalmon species in 2002 and 7,405 lb in 2008 (88 lb per capita). Three years later, in 2011, they harvested 3,061 lb or 35 lb per capita, a significant decrease. Despite the declines in

5. The survey instruments used in the 2 studies differ slightly in methodology. The resulting pie chart from Wheeler's 1990–1991 study combines all whitefish species into one category and does the same for geese. The 2011 study, discussed in this report, separates the species in each of these categories. While the pie charts are not identical, comparisons can still be drawn.

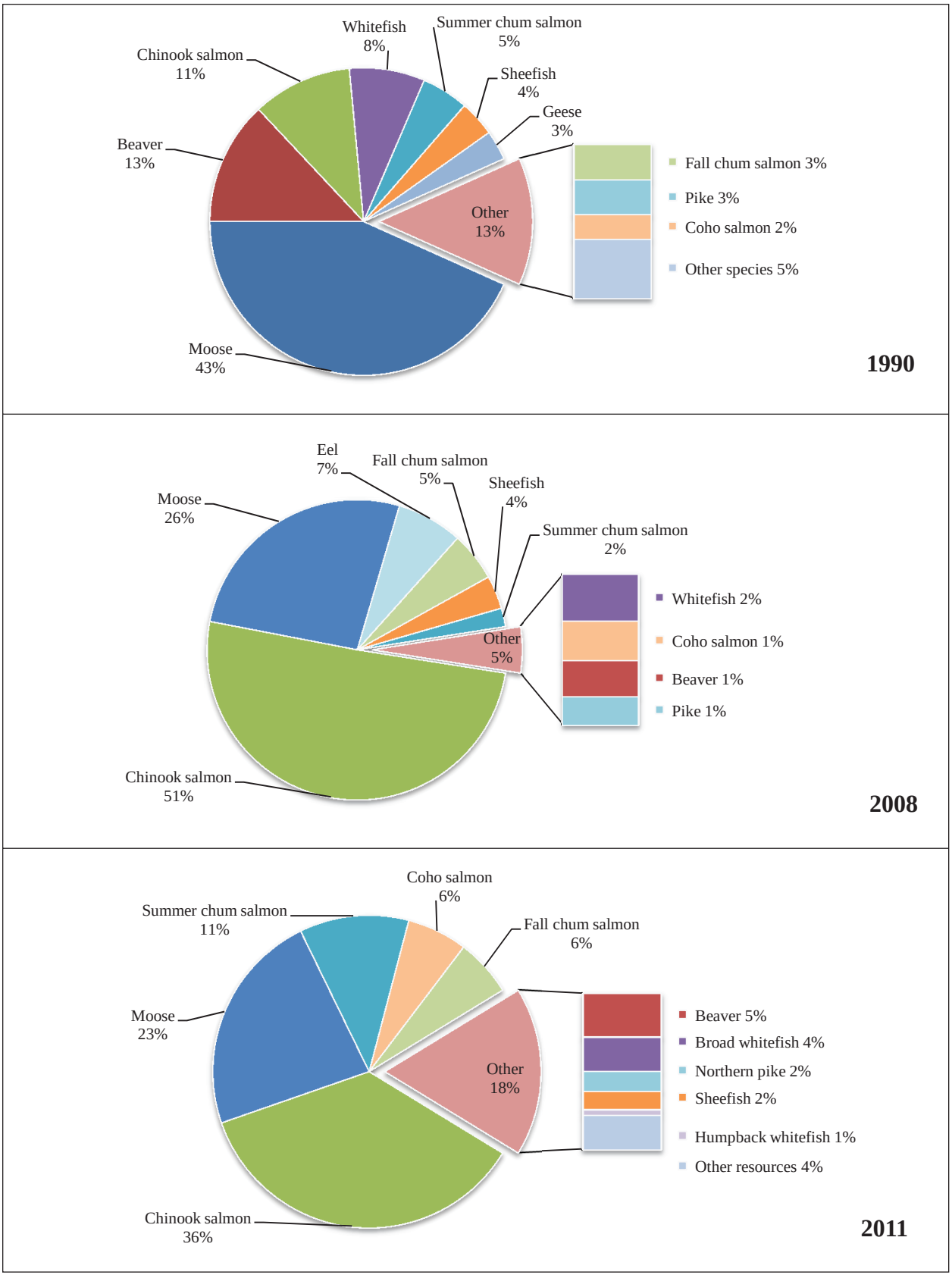


Figure 8-27.–Top 10 species harvests ranked by estimated edible weight, Anvik, 1990, 2008, and 2011.

nonsalmon fishing, all ethnographic respondents spoke of the diverse nonsalmon species accessible in the area. During this study, one respondent cited increased cost associated with fishing as a factor in his decreased Arctic grayling harvests. In the past, he and his family would go "quite a ways" up the Anvik River to target the nonsalmon species. Today however, the price of gas often makes long fishing trips too expensive (050312ANV3). The 2002 survey results show a high use of whitefish species (56%), sheefish (56%), northern pike (53%), Arctic lamprey (44%), and a variety of other nonsalmon species. In 2008, a higher percentage of Anvik residents used non-salmon species. Wolfe and Scott (2010) estimated that 82% of residents used whitefish species and sheefish, while 78% used pike. Wolfe and Scott (2010) did not collect harvest data for lamprey. In 2011, the use of nonsalmon fishes declined. Whitefish use dropped to 63% while pike and lamprey declined to 46% and 0% respectively. The fluctuations in the use of nonsalmon species are not surprising. Resource availability, weather concerns, utilization of dog teams, employment activity, and a variety of other factors affect subsistence harvests from year to year. Lamprey migrations for example, experience natural fluctuations. During the 2002 study, key respondents described the conditions necessary for successful eel harvest. Lampreys usually pass by the GASH villages between October and December, and good weather is necessary to harvest them. In 2011 there was no arctic lamprey harvest; it is unclear whether this was due to a small run, reduced harvest effort or for other reasons. Lampreys are migratory, and they move past the community in large masses creating a very short window for harvest in some years. Typically the run only lasts a couple of days, which creates the possibility of missing the run entirely. Ice conditions vary during that time of year, potentially making it impossible to harvest lamprey (Brown et al. 2005:89). Additionally, there are some years when very few, if any, lamprey come back. Because the runs are so variable, annual comparisons are hard to make. These factors warrant caution when drawing conclusions about the nonexistent harvest in 2011 compared to the high harvest in 2002.

Similar to fish species, the harvest and use levels of large land animals show notable changes since Wheeler's 1990–1991 study (P. Wheeler et al. 1992). In addition to the 1990, 2008, and 2011 studies, 3 years (2002–2004) of big game harvest data is available for comparison. In the early 1990s, the harvest of large land mammal harvest in Anvik was diverse and commonplace. Substantial numbers of black bear, brown bear, caribou, and moose were harvested in 1990–1991.

The large land mammal harvest data collected in this study are comparable to the data collected by the Division of Subsistence between 2000 and 2005 on the harvest of moose, caribou, and bears in the lower–middle Yukon River communities of Grayling, Anvik, Shageluk, and Holy Cross (Brown et al. 2004; Brown and Koster 2005)[6]. Additional comparisons can be made with Wheeler's (1998) 1990–1991, and Wolfe and Scott's (2010) 2008 comprehensive subsistence surveys discussed above. All 5 document the significant harvest and use of moose in Anvik. In 1990–1991, 75% of households harvested moose, the highest percentage of harvest for any large land animal, contributing 35,263 edible pounds to the total community harvest. Per capita, roughly 364 lb of moose were harvested in Anvik in 1990–1991. While reports of moose harvest were common in the other study years (57% of households harvested a moose in 2002–2003, 45% of households harvested a

6. *See also* Brown, Caroline, and David S. Koster. *In prep*. The 2004–2005 Harvest of Moose, Caribou, and Bear in the Lower–middle Yukon River Communities of Grayling, Anvik, Shageluk, and Holy Cross. Fairbanks: Alaska Department of Fish and Game, Division of Subsistence Technical Paper 305.

moose in 2003–2004, 64% in 2004–2005, 89% in 2008 and 42% in 2011), with the exception of 2008, they have declined substantially since Wheeler's comprehensive study. In 2008 comprehensive harvest survey, Wolfe and Scott (2010) focused on the continuity and change in salmon harvests. While harvest data of other wild resources was collected, ethnographic data surrounding resources such as moose, for example, was not, making it impossible to identify factors contributing to the substantially higher moose harvest in 2008. Brown (2005) discusses the concerns of local residents in the 2003–2004 study year. At that time, residents credited a declining moose population in conjunction with the increased competition with other hunters for the decline in moose harvest. However, an increase in attempted harvest and overall use of moose has occurred despite a general decline in successful harvest since Wheeler's study (1992).

The large land mammal studies conducted in the 2000s document the increase of use and harvest. In 2002–2003, 57% of households attempted to harvest moose while 68% reported use. The following year, 58% of households attempted harvest while 81% of households reported use. In 2004–2005, the last year of the big game study, 70% of households attempted moose harvest while 97% reported use. During this same time, area residents expressed their concerns to state and federal managers about moose hunting, harvest, and health of the moose population in the area. Between January and November 2005, residents in the GASH region participated in a Yukon–Innoko Moose Management Working Group (YIWG or Working Group) to discuss biological and harvest concerns regarding moose in Game Management Unit (GMU) 21E and 21A in order to develop recommendations for the Board of Game and the Federal Subsistence Board. The role of the Working Group and the impacts the group had on moose harvest in the GASH area is reported more thoroughly in Discussion chapter of this report.

In 2008, 93% of Anvik households reported using moose while 89% reported harvesting moose, the highest rate in all 5 studies. In 2011, seven years after the last big game study, only 42% of households harvested moose, 75% reported attempting to harvest moose and 88% reported the use of moose .Despite the decline in moose harvests, documented in the 3 big game and 2 of the comprehensive studies in Anvik since 1990, ethnographic interviews conducted in 2011 did not highlight concern for the moose population in the area. One respondent, an active hunter in Anvik, did not believe, or had not noticed, a decline in the moose population:

> Personally me, not really, [moose] are all over. See them on the trail. Just yesterday I saw 4 going up and 6 on the way back. In the summer you can never find them but in the winter they are everywhere. We fly around here and see them all the time all over the place. (050212ANV2)

Others agreed, noting that the presence of sport hunters in the fall did not impede local hunters from harvesting moose. Respondents seemed comfortable with their access to moose whether through direct harvest or through exchanges with others. The sentiment expressed by respondents illustrates the value of using qualitative data to contextualize the quantitative prior to making conclusions about documented changes in animal populations. The increase in use in spite of declining harvests could suggest that moose continues to be an important and sought after resource in Anvik that remains a staple food source through community wide sharing practices.

The harvest and use of caribou was included in Wheeler's 1990–1991 study. However, caribou harvests are difficult to compare over time because each harvest is often dependent on herd migration. In 1990–1991 caribou harvests in Anvik exceeded the harvests in Grayling, Shageluk, and Holy Cross. An estimated 12 caribou were taken in 1990–1991 by 8% of households contributing 1,175 edible pounds to the community total. Anvik residents did not report any caribou harvest during the big game studies (2002–2004), Wolfe and Scott's (2010) 2008 comprehensive subsistence study, or in this report. During all years (2002–2004) of the big game harvest assessment project, households reported low harvest of caribou, black bear, or brown bear. In 2011, the same was true. Explanations for the lack of harvest include limited availability of caribou and cultural beliefs surrounding bears that discouraged the harvest of the large land mammal.

Key respondents described changes in the availability of caribou. A change in resource availability commonly explains fluctuations in the harvest of caribou. In the past, one elder recalled, a caribou herd lingered west of Anvik. She remembered how, during the 1960s, her husband would travel to his spring camp on the Stuyahok River to trap furbearers and hunt caribou (050212ANV1). Today, caribou have migrated farther away, and Anvik residents do not have the opportunity to hunt them anymore, she said. A younger respondent, still an active hunter, agreed with this observation:

> One time everybody was all excited, I think that was about 15 years ago because we heard that caribou came into the country. About 10 miles in the Anvik River hills towards the west. Trappers seen a bunch of caribou, came into town, they went out and got a couple caribou. That was the first time anyone seen any caribou this close. (050212ANV2)

Respondents suggested that the consumption of bear meat in Anvik has become less popular with younger generations. One elder remembered that as a child her parents commonly ate bear meat, but she was never allowed to. When she got older she never got in the habit of eating it (050212ANV1). Other respondents noted that during the 2011 moose hunting season, black and brown bears were commonly sighted, and the bear population seemed especially high, but their preference for moose meat discouraged them from hunting bears (050312ANV3). Citing a lack of interest, these respondents stated that the younger generation does not hunt bears at all.

Unlike bear hunting, the prevalence of trapping and the use of fur bearing animals has continued to be an important economic, social, and cultural practice in Anvik. In 1990, Anvik households harvested 353 beavers, 198 foxes, 145 snowshoe hares, 304 martens, 11 river otters, 15 wolves, and 8 weasels. In 2008, Scott and Wolfe (2010) Anvik residents harvested the same species but in lesser amounts. Residents harvested 41 beavers, 9 foxes, 1 snowshoe hare, 423 marten, 4 river otters and 14 weasels. No wolf harvest was reported. Additional fur bearers harvested in 2008 included mink, muskrat, porcupine, and wolverines. In 2011, with the exception of marten, the harvest of small land animals had declined greatly, but the variety of species remained unchanged. In comparison to the species listed in Wheeler's 1990–1991 study, in 2011 Anvik households harvested far fewer furbearers. Beaver and snowshoe hare for example, experienced substantial declines in harvest, dropping to 56 and 27 respectively. Marten was the only fur bearing species that did not

change significantly—304 in 1990 and 308 in 2011. Participation in trapping changed little in the 18 years between Wheeler's (1998) and Wolfe and Scott's (2010) studies, by 2011 however, trapping in Anvik declined significantly. In 1990–1991, up to 50% of Anvik households reported some participation in trapping. Similarly, Wolfe and Scott (2010) estimated that 52% of Anvik households participated in trapping activities. In 2011, roughly 29% of households attempted to trap fur bearing animals. Interview respondents who regularly participate in trapping activities noted that the populations and prices of fur bearing animals constantly fluctuate, changing the primary species targeted and the quantity harvested (050212ANV2). When asked to describe the reasons for declining participation in trapping, 2 respondents cited a change in demographics (050212ANV2) (050312ANV3). One respondent explained:

> We don't have many teenage boys around here. They all go away to school nowadays. I don't know, better education and the population is so small that parents send their kids to be around others their own age and get a better variety of subjects to learn. Maybe that is why there isn't much trapping much these days. (050312ANV3)

However, with the recent addition of a fur buyer in the area, there is a possibility of an increase in trapping activity in the future. The ability of trappers to sell their furs directly to an individual and receive immediate compensation is more convenient for local trappers and could create a greater financial incentive to trap.

The 1990–1991 comprehensive survey subdivided bird species into 3 categories; ducks, geese and other birds. Similar to the other resource categories discussed above, comparisons with prior study results show dramatic decreases in overall bird harvests and participation in bird hunting. The percentage of households harvesting birds decreased from 83% in 1990–1991, to 63% in 2008 and finally, to 38% in 2011. In 1990–1991, Anvik households harvested a total of 3,966 edible pounds of birds, in 2011, that number dropped to 1,128 lb., representing a 32% drop in per capita harvest from 41 edible pounds per person to 13 edible pounds per person. The 2008 comprehensive study reported similar bird hunting participation as in 1990–1991 (82%) but the lowest level of actual harvest when compared to the other 2 studies. In 2008, only 640 lb of birds were harvested (8 lb per capita). In 1990–1991 the total harvest of ducks, geese, and swans was nearly 12 times the harvest in 2008 (3,253 lb verses 271 lb respectively) and more than 3 times the harvest in 2011 (898 lb). Declines in migratory bird harvests are not isolated. The harvests of other birds have also dropped, falling from 712 lb (7 lb per capita) in 1990–1991 to 369 lb in 2008 (4 lb per capita) and finally, to 231 lb (3 lb per capita) in 2011. The overall drop in bird harvest suggests that residents are not replacing their harvest of 1 bird species for another, but rather have drastically changed their bird harvest and use practices over the last 20 years. One possible explanation for this decline could be the recent attention to the health of migratory birds. One respondent said he was hunting fewer migratory birds now than in the past because of concern about bird health. He stated, "I don't hunt as much as I used to. I think mainly because of bird flu or something. I got real worried about that like everybody else" (050312ANV3). While he had never encountered an infected bird himself, he felt that the risk of encountering one was great enough to stop hunting ducks and geese for the time being.

The 1990–1991 study shows a more diverse harvest profile. Moose and nonsalmon species significantly exceeded the harvest of salmon species. In 1990–1991, land mammal harvest made up nearly half (46%) of the entire community harvest in edible pounds and dropped to 28% in 2011. Similarly, nonsalmon harvests in 1990–1991 were much higher than in 2011. In 1990–1991 Anvik households harvested an average of 402 pounds each, contributing a total of 12,469 lb (15%) to the community total. In 2011, that contribution dropped to 9% (3,061 lb). The distribution of harvest in the early 1990s also had a variety of other species including small land animals, birds, and berries. In the 20 years since Polly Wheeler's comprehensive study in the GASH area, the level of harvest has decreased overall, the diversity of the harvested resources has diminished, and Chinook salmon have come to play a more central role in Anvik's total subsistence harvest (P. Wheeler et al. 1992:149–161). Despite the declines in harvest the percentage of households attempting to harvest land mammals has remained relatively unchanged: 92% of households in 1990–1991 compared to 88% of households in 2011.

Similar to the declines in other resource categories, the harvest of vegetation decreased by 59% between the 1990 and 2011 study years. However, the participation in harvesting activities increased from 67% in 1990 to 79% in 2011. Participation in vegetation harvest was highest in 2008 when 93% of Anvik households attempted harvest. In the 1990–1991 study, no household reported the harvest of plants (other than berries), greens, or mushrooms; however, the total vegetation harvest (made up solely of berries) was still nearly double the total amount of vegetation harvested in 2011.Similarly, compared to the 2008 study, Anvik residents harvested half has much vegetation per capita (2 lb per capita in 2011 verses 4 lb per capita in 2008). . Anvik households harvested an estimated 331 edible pounds of berries in 1990–1991, most of which came from blueberries. In the 1990–1991 study year 50% of households harvested 134 edible pounds of blueberries. Wolfe and Scott (2010) did not report species specific harvest of berries making it impossible to compare the harvest composition of berries in 2008 with the other 2 studies. Overall, in 2008, 78% of households reported harvesting 328 edible pounds of berries, or 4 lb per capita. In 2011, key respondents interviews described a poor blueberry year and expressed disappointment in not getting enough blueberries. To compensate for low blueberry harvests, households harvested a greater number of high bush cranberries (17% of households harvested 67 edible pounds). Unlike berries, other types of vegetation have increased since 1990–1991 when no harvest other than berries was reported. In 2008 Anvik residents harvested 5 lb of plants/greens. In 2011, however, in addition to 5 types of berries, Anvik households reported using a total of 7 vegetation species for a total harvest of 30 lb.

Comparing harvest fluctuations across time requires some understanding of local culture, changes in lifestyles, natural animal population cycles, changes in demographics, and the health of species. In Anvik, a variety of factors, such as changing resource availability, personal preferences, and fewer youth and elders in the community, contribute to a harvest and use profile that differs from the one presented in Wheeler's 1990–1991 comprehensive study. The harvest of large land animals, for example, and especially of moose, often depends on a multitude of factors including distance required to find the animals, access to hunting equipment, the number of animals in the area, and competition with other hunters. Results in the "Wild

Food Networks" section demonstrate that despite fluctuations in harvest, the community of Anvik actively distributes food to those who did not harvest resources themselves. Sharing plays a vital role in mitigating the difference between low harvest numbers and a household's ability to "get enough." Despite the declines in wild resource harvests over the last 20 years, estimates of food security show that the majority of Anvik residents are able to meet their needs. Consequently, the use of subsistence resources remains high, the importance of wild foods significant, and the communal nature of the subsistence way of life is substantial.

Chapter 9: Comprehensive Survey Results Grayling, 2011

Brittany Retherford and Caroline L. Brown

In February 2012, ADF&G researchers surveyed 41 of 55 households (75%) in the village of Grayling. Expanding for 14 unsurveyed households, Grayling's estimated total harvest of wild foods between January and December 2011 was 52,094 lb (±18%).The average harvest per household was 947 lb; the average harvest per person was 246 lb.

Three species—Chinook salmon, moose, and summer chum salmon—contributed 63% to the total community harvest in 2011 (Figure 9-1). In terms of edible pounds, Chinook salmon contributed more than any other single species to the total community harvest. In 2011, an estimated 14,184 lb were harvested, composing 27% of the total community harvest of wild foods. Moose harvests accounted for a comparable percentage, with 12,315 lb (24%).

This chapter summarizes findings from the household surveys, including demographic characteristics, responses to harvest assessment questions, harvest estimates, employment, income, and food security. Figure 9-2 displays the local research assistants who participated in conducting the household surveys. Harvest

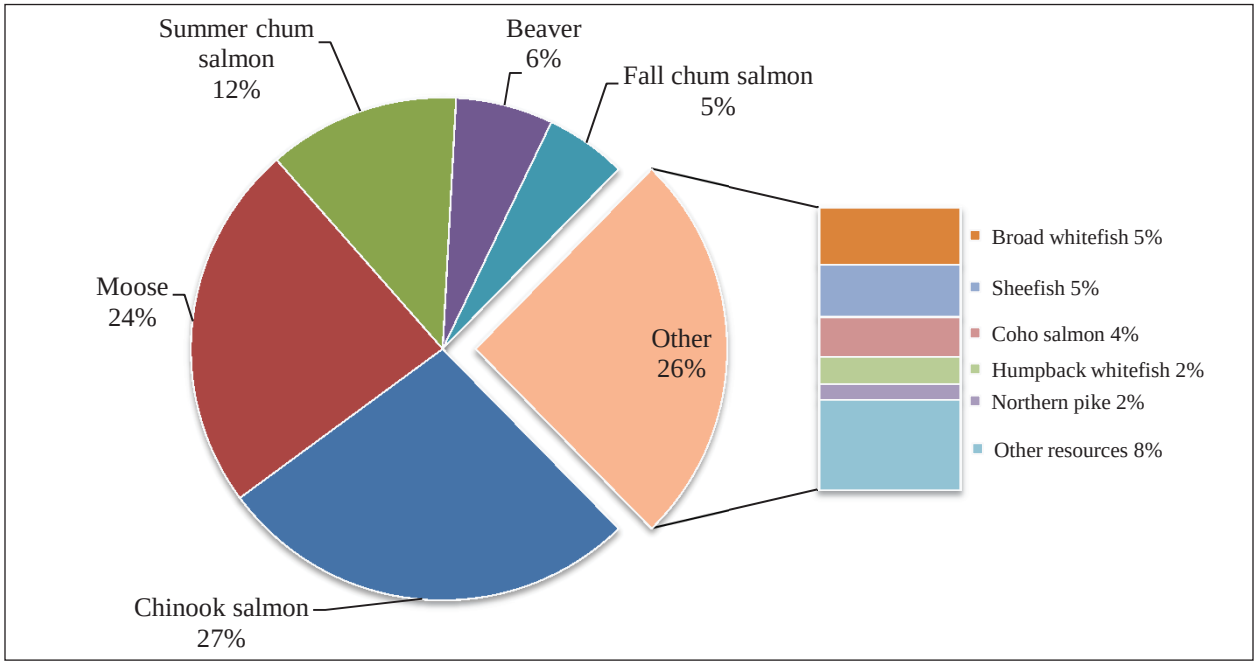


Figure 9-1.–Top 10 species harvests ranked by estimated edible weight, Grayling, 2011.

Photo by Brittany Retherford

Figure 9-2.–Grayling residents Hannah Maillelle and Stephanie Deacon are trained to conduct household subsistence harvest surveys at the library of the David-Louis Memorial School.

numbers are expanded estimates. Additional tables appear in Appendix D. Results from this survey are available online in the Division of Subsistence Community Subsistence Information System (CSIS).

In addition to the 2012 comprehensive survey, 5 ethnographic interviews were conducted with 7 key respondents. These respondents included 3 men and 4 women; all were still actively engaged in subsistence harvesting activities. These interviews provide context for the quantitative harvest and economic data presented in this chapter and help to better illuminate local traditions and customs related to the harvest or use of wild resources as well as local concerns or observations about changes in the surrounding environment and wildlife. Findings from these interviews, historical background information, and comparisons to earlier studies are presented throughout the chapter.

About Grayling

Grayling is an Athabascan community located on the west bank of the Yukon River, east of the Nulato Hills, and approximately 350 river miles from the mouth of the Yukon River (Figure 9-3). Grayling has a continental climate with cold winters and relatively warm summers. Temperature extremes range between 60 to 87 F with 21 inches of total precipitation. The Yukon River at Grayling is ice-free from June through October.[1] Residents of Grayling are more sedentary than they were in the past, but their daily activities continue to be highly dependent on seasonal changes. During winter months, the primary mode of travel

1. Alaska Department of Commerce, Community, and Economic Development (ADCCED) Division of Community and Regional Affairs, Juneau: "Alaska Community Database Online: Community Information." Accessed August 2013. http://commerce.alaska.gov/cra/DCRAExternal/community.

Photo by Jeff Park

Figure 9-3.–An aerial view of Grayling during winter.

is small plane and snowmachine; during summer, residents rely on all-terrain vehicles (ATVs), boats, and airplanes to travel to surrounding communities, hub cities, and to pursue subsistence activities.

Grayling has experienced several shifts in its demographics since it was first visited by Russian explorers in the 1840s. The contemporary site of Grayling may originally have been a Deg Hi'tan settlement, but by 1866, Doy hi'tan Athabascans had moved southward into the area (Kari 1978; Orth 1971; VanStone 1979a). According to historical accounts, Grayling was first reported in 1869 as a site, and by 1900, it was a year-round settlement used as a wood cutting camp used to supply steamers traveling the Yukon River (de Laguna 1936; de Laguna 1947; E. W. Nelson 1978; Osgood 1936; Oswalt 1962; Zagoskin 1967). Wheeler (Wheeler 1998:84) described this trend that was occurring along the Yukon River: "As more boats [steamboats] began using the Yukon, the sale of wood became more structured; and the owners of fleets with many boats began to maintain their own wood yards." Grayling remained a wood cutting camp for several years, helping to fuel the growth of economic activity in Interior Alaska.

In 1918, the population of the settlement was decimated by influenza (021112KGX01). The settlement site was mostly abandoned, although it continued to be utilized as a summer fishing area (Wheeler 1998:84). In 1937, the Alaska Native Village Industries opened a store, signifying that the population had begun to rebound. Residents of Holikachuk and Shageluk—2 villages located on the Innoko River[2]—would often travel to the Yukon River during the summer salmon fishing season to take advantage of rich salmon runs. Holikachuk residents favored the Yukon River near Grayling, likely because of easy access to the Yukon River from the Innoko River via a series of deep sloughs. In 1963, residents of Holikachuk abandoned their

2. The Innoko River is a major tributary of the Yukon River that flows approximately 500 miles northeast to southwest from its headwaters in the Kuskokwim Mountains to its confluence with the Yukon River. This is an important subsistence use area for Grayling residents.

village and the majority relocated to Grayling (Orth 1971; Snow 1981). As a language, Holikachuk "is closer to Lower Koyukon," explained Brown et al. (2005:23). However, Grayling speakers of Holikachuk "are culturally closer to Deg Hit'an people, as shown today by the social interactions and multiple kinship relationships within the GASH[3] villages, than with other peoples" (Brown et al. 2005:23). Many present-day residents of Grayling can directly trace their roots to Holikachuk, and there remains an important cultural connection to the land and waterways around that former village site.

Contemporary Grayling has a mixed economy, and residents engage in both subsistence and cash-earning pursuits. Subsistence remains an integral part of everyday life, and food gathered and hunted as part of subsistence activities remains the dominant source of food. Similar to other rural Alaska villages, wage-earning jobs are limited in Grayling. Local government such as the city of Grayling, the tribal offices, and K–12 school provide permanent sources of employment. Some households are able to find seasonal work. In 2011, 31 residents held commercial fishing permits, but there is no longer any economic viability for commercial fishing, and these permits go largely unused.[4] Grayling is supplied with electrical power by Alaska Village Electric Cooperative (AVEC). Water is derived from an infiltration gallery at nearby Grayling Creek and is treated, stored, and piped throughout the community. Grayling is not connected to other Alaskan communities by a road system. Residents rely on the Grayling airstrip for mail, passenger, and cargo services. Every other year, Grayling serves as a checkpoint on the annual Iditarod Trail Sled Dog Race.[5]

Local wildlife includes large land mammals such as moose, black bear, brown bear, and caribou. This region is well known for its furbearers, both for the quality and quantity of certain species (Wheeler 1998:61). Marten, muskrat, beaver wolverine, river otter, lynx, red fox, among others are all available. Willow ptarmigan, ruffed grouse, and spruce grouse also provide year-round variety to the diet. Seasonal waterfowl include Canada geese, white-fronted geese, black brant, mallard, goldeneye, green-winged teal, and northern pintail. This area features a wide variety of salmon and nonsalmon fish species. Salmon species include chum salmon, king or Chinook salmon, and silver or coho salmon (Wheeler 1998:62). Nonsalmon fish species such as sheefish, northern pike, Arctic grayling, trout, burbot, and various whitefish species are also important for Grayling households (Wheeler 1998:62).

Local plants and vegetation resources used for subsistence include wood (used as heating fuel and for smoking fish), and various berries, and plants. Principal species of trees in the area include black spruce, white spruce, balsam poplar, paper birch, quaking aspen, tamarack, and several species of willows and alders. Edible berries include lowbush cranberry, highbush cranberry, blueberry, and salmonberry. Edible plants include sour dock, wild onion, rosehips, Indian potato, wild celery, and wild rhubarb (Wheeler 1998:62).

3. GASH refers to the villages of Grayling, Anvik, Shageluk, and Holy Cross.
4. Alaska Department of Commerce, Community, and Economic Development (ADCCED) Division of Community and Regional Affairs, Juneau: "Alaska Community Database Online: Community Information." Accessed August 2013. http://commerce.alaska.gov/cra/DCRAExternal/community.
5. Alaska Department of Commerce, Community, and Economic Development (ADCCED) Division of Community and Regional Affairs, Juneau: "Alaska Community Database Online: Community Information." Accessed August 2013. http://commerce.alaska.gov/cra/DCRAExternal/community.

Photo by Brittany Retherford

Figure 9-4.–(From left to right) Edna Deacon, Martha Mailelle, and Mary Deacon pose for a photo in a classroom at the David-Louis Memorial School. The school hosts an informal opportunity for children and community members to learn from knowledgeable elders about traditional crafts such as fur sewing and net-making.

Seasonal Round

Grayling residents (Figure 9-4) historically participated in a seasonal round of subsistence harvesting activities, migrating between spring, summer, fall, and winter camps in pursuit of the wide variety of wild food and resources available throughout the year. Missionary and governmental influences eventually centralized settlement patterns of inhabitants of the region. During the past century, residents have adapted their traditional activities in various ways to accommodate a permanent village site location (Holikachuk) on the Innoko River and then later, on the Yukon River. Opportunities afforded by better technology (boats, snowmachines, gear, etc.), and fluctuation in wage employment trends were responsible for many of these adaptations. Despite these changes, most Grayling residents continue to live a lifestyle dependent on subsistence resources, and elders today are continuing to teach young subsistence hunters and fishers the specialized skills and knowledge needed to successfully harvest these resources during summer, fall, winter, and spring seasons.

For many Grayling residents born before about 1965, childhood memories of participating in subsistence fishing and hunting activities involved a greater amount of travel between seasonal camps than is experienced by residents today. The seasonal round typically begins and ends in the springtime, explained a key respondent who was born in Anvik but who spent most of his childhood and later years in Holikachuk and Grayling:

> Springtime is when I start gathering for subsistence. That goes through all the year, but it starts in the spring, and I could say it ends in the spring, and then it just starts over again in a circle because springtime is when birds first start coming back, but even before that I start ice fishing through the ice. (021312KGX02)

Also in spring, in March and April, one woman explained that people craving fresh meat would hunt beaver. Some households would go to spring camp, which may have been a welcome change of activity and diet, but it could also be an important source of income. One respondent explained hunting for muskrat while at spring camp near Holikachuk:

> They'd go where it's a lot of rat[6] country. And so they'd spring out, they call it "spring out." And they'd, you know, get duck eggs, and paddle around out along the edge of the ice with canoes. And trap rats. I don't know what they [got as payment]. Two or 3 dollars for a rat. Or a dollar. Now they're $20. Fifteen to 20 dollars a rat! (021112KGX01)

Hunting muskrats was also a common activity for younger people, she explained:

> After school we'd all get, borrow our parents' canoes and rowboats and we'd go along the edge of the ice back and behind Holikachuk. And, then hunt rats with .22s… everybody had their little quota. (021112KGX01)

Migratory birds also begin returning to the area in spring, creating opportunities for hunting and, importantly, another source of fresh meat. Duck and geese hunting historically has taken place in both spring and fall, but egg gathering was a springtime pursuit. One respondent noted that it was common to go out to Big Lake near Holikachuk to look for seagull and loon eggs (021112KGX01).

One of the most notable annual movements occurred in late spring/early summer when the entire village of Holikachuk would travel to fish camps on the Yukon River. One respondent, born in Holikachuk in the mid-1940s, described the labor intensive process of moving to summer fish camp each year in preparation for the annual migration of salmon up the Yukon River:

> Every summer we moved… We'd all get ready the end of May. Everybody would. I think it would be after Memorial Day we'd all pack up everything in big tubs… And the dogs. And if you had a gas washing machine… that went along. Or the scrub board and the tubs. And moved off to the fish camp. It was a great time, the kids loved it. It was a big fish camp, like 11 families. I think one time after everybody came back from the cannery we counted there were 69 people. (021112KGX01)

Households moved to fish camp for the duration of the summer. "We'd come here around first of June and never leave until August. Get enough fish for winter time," explained a Grayling resident born in Holikachuk in the early 1950s (021512KGX03).

6. Indicating "muskrat."

Sheefish were the first fish species to arrive in either in late May or early June, followed by king or Chinook salmon. Several respondents said that they were taught to observe changes in the environment as "natural indicators" that foretold the arrival of salmon during summer. Many of these observations were similar to those reported in a 2009 study about natural indicators of the salmon run on the Yukon River (Moncrieff et al. 2009). Grayling was one of the study villages in this report. For this 2011 study, one Grayling man explained:

> I learned from my dad … when we start seeing these birds, king fishers, they come early and they start making their noise. I can't explain. They, they [king fishers] say, 'the fish are coming.' It's usually true even to this day you know. When you know those cotton[wood] trees, they start having those cotton balls start flying, that's the times the dogs [chum salmon] really hit you know. When there is a lot of them [cottonwood seeds] blowing, there is going to be a lot of them, fish are coming… usually pretty well true. There's a lot of…fish are pretty thick you know, usually pretty thick around the 4th of July, back in the day anyway. (021312KGX02)

Another woman also described how the kingfishers helped alert residents to the arrival of salmon by telling a story about how she teaches younger people to listen for those birds to signify the arrival of the salmon run on the Yukon River:

> There is this one bird. I always tell those guys, "Listen for that one bird. It go around on the edge of the bank. You hear this bird?"
>
> "No."
>
> "How come you never hear? You have ears on your head," I say.
>
> And I tell them, "No listen! That's the bird. You know what it's saying? It's 'fish house.' It says, 'Fish house.' 'Fish house,' it says. That's when you know the fish is here already." (021412KGX07)

Another woman described a different way of knowing when the salmon have arrived, mentioned above briefly, "The way I like to tell my kids when the fish are coming is we watch the cotton flying off the trees, and then we know the fish are here." (021412KGX06)

Most fish camps were made up of extended families, with each individual assigned to specific jobs depending upon their gender, age, and aptitude. Fish wheels primarily targeted the steady run of chum salmon, a species that was primarily used to feed the dog teams that Grayling households kept for a variety of utilitarian purposes—hauling wood, checking traplines, and general transportation. Grayling residents developed well-honed skills for preserving the bounty of fish caught each summer. One Grayling woman provided a detailed description of a normal day at fish camp during the late 1950s and early 1960s:

> (After getting up around 9 a.m.), everybody'd either have mush or whatever they ate. Pancakes mostly. And the men would go off to the fish wheel with a couple kids, and everybody would sit around and wait, make smokehouse fire, and then about an hour later you'd see/hear the boat

coming. It was perfectly quiet; all you could hear was the river. And you'd look around; they'd creep around the bend. If you could just see no running board at all, you'd know it was going to be work. A lot, thousands of fish. Thousands, thousands. They'd have a basket, and they'd throw everything on the raft. Everybody just cut their fish and throw them in the water and most of the eggs too. Sometimes they'd save the eggs. But the women would go there and pick all the good fish out. After we'd get done, done cutting fish, it'd be hot and everybody'd be laying in the water, or the kids had to get smudges to keep the bugs down. And we'd be around the beach. We'd break for lunch. We'd have fish hearts because there'd be piles and piles of fish hearts. We just ate fish, fish twice a day, so fish hearts were different than plain old fish. And then, if you didn't get done, you'd finish at about maybe 2 or 3. Clean all the fish and if there was time, they'd take us to the sand bar, and they'd play, we'd play in the shallow mud around there. And the women would dig roots, willow roots, and the kids would pick all the driftwood. So we'd get piles of driftwood and bring them back for the smokehouse. And then supper in the evening, you'd have to go to the fish wheel again and gut fish all evening, and that's it. Seems like a lot of work now, but we didn't think so then. (021112KGX01)

Young girls were expected to learn to process fish. They would "practice" cutting salmon on other species, such as candlefish and whitefish. This practice is still happening today. One respondent recalled that she was about 8 years old when she first started cutting fish:

> Some, some of them are [learning to cut fish]. Some of them aren't yet, but some kids are starting to learn. My granddaughter can cut. Or she doesn't cut yet, she was away last summer, so I had only a man crew. I taught them how to fillet. If you're good at filleting, you can... fillet a 40 lb king salmon in 27 seconds, 37 seconds and with 6 strikes. Flip it over and do the other side and it's done. (021112KGX01).

A male respondent recalled going to fish camp near a place on the Yukon River known as "Rapids," which is a quick-moving section of the Yukon River located between Eagle Island and Fox Point Island. Ten families worked together to harvest the summer catch. This respondent said his grandfather ran 1 of the 4 fish wheels utilized by the families at the camp. It was located a half mile below the fish camp. It was the respondent's job as a young boy to accompany his grandfather to check the wheel:

> Well, my grandpa's fish wheel, there were 4 families and only 1 fish wheel. There was that much fish. He had 2 smokehouses. Big ones. He had his own private smokehouse… and my mom, my 2 aunties would be at the other. Men would always be gone during the summer. Most time was working you know: cannery or railroad, firefighting. So that was the kids' job and the women and the old grandpas. That's what I started off fishing, with my grandpa. (021512KGX03)

King salmon are highly valued as a food resource because of the high quality and rich meat. Today, the subsistence fishing harvest activities during June are focused on methods that most efficiently harvest this

resource. Instead of fish wheels, fishers use drift- and set gillnets, demonstrating how Grayling households adopt new fishing methods to accommodate changes brought on by advances in technology and other life-style changes. Starting mid-July, fall chum salmon arrive in the Yukon River near Grayling. Late summer often brought rain showers, which made drying and smoking fish more difficult. As a result, much of the later runs' harvests were jarred or salted, explained one Grayling man (021312KGX02).

In late August after enough salmon had been harvested and put away for winter, people would return to Holikachuk and concentrate their efforts on preparations for winter. Women and children would go berry picking and harvest domestic crops, such as potatoes, that had been planted earlier in the summer. Men would travel up the Innoko River and get wood. They would raft it downriver, and there would be wood for winter. After temperatures cooled, men would go moose hunting.

Moose was an important source of meat for households. One elder explained certain traditional rules related to processing and harvesting moose. "They didn't let women touch a moose. The men cut it up" (021112KGX01). Moose was used to make soups, pot roasts, and stews. Nowadays, one elder said, people use moose meat to make contemporary dishes such as stir fry. Many people also make dry meat more often now than they did in the past because it is a popular food and tends to get eaten quickly. In the past, meat needed to be able to be conserved for the duration of the winter.

After freeze-up, residents who participated in trapping would set their traplines. One elder woman described "wolverine parties" or the treatment of harvested wolverines, also described by Nelson (1983) for the Koyukon region:

> The men, as soon as the river would freeze up, after they got done with the fish, you know, with the whitefish, the men would, I think, they'd go off in pairs mostly. They'd go off and go up the river to different parts to their trapline. And I don't know if they stayed in tents or if they had a cabin. And they'd stay out for 2 or 3 weeks or more. It was always a big excitement. You'd, you'd be wandering around the village doing whatever you're doing, packing wood, water, whatever. And you'd see, you'd look up the river and you'd see a team coming. They'd come closer, and it'd be somebody, you could tell after a while who it was. And then, especially Jimmy Alexander was always lucky. And then he'd, you'd hear that he'd caught a wolverine. They, I don't remember them catching many wolves, but they caught a lot of wolverine. More. And, if it's a male wolverine, you'd put, I think, a scarf around its neck. And if it was a female, you'd put beads on its neck. And you'd set it up in the corner, and you'd invite everybody in town to come over. And celebrate. So, like I said in those days it was always food based. Everybody was always hungry, so everybody'd bring a little food, and in those days if you had cookies or store bought cookies, it'd really be something, because most people couldn't afford it 'cause they didn't have money. So they'd bring crackers, or mostly they brought fish. And then of course you always knew the people who made really good fish 'cause you always wanted some of theirs. And you'd go, and they'd just pass around, I think the family

> might have soup or something, and you'd go over there and go over there and pass out stuff… I think it was … because of the strong spirit. And … maybe they were feeding the spirit. In those days I didn't ask why. I was never very curious. I mean I was, but not about that. (021112KGX01)

Trapping and hunting fur animals has long been an important tradition in Grayling. Furs and skins harvested from locally available mammal species are sold or are utilized by local craftspeople to sew hats, mittens, mukluks, and other clothing and gear worn for survival in the harsh winter climate. One respondent, an elder man born in Holikachuk, remembered hunting and trapping when he was as young as 6 or 7 years old. He would use a .22 to hunt muskrats, and if it was a "good shot" (somewhere around the head) the fur was worth a dollar (021512KGX03). He explained:

> On a good night, I got about 10 maybe. I was a little guy, my mom used to skin them. I'd get back about 4 or 5 in the morning, go to school at 9. Same thing every day for maybe a week and a half or two (021512KGX03).

He said he would give his mother the money he earned and she would purchase.22 shells and butterscotch candy for him. Another elder man recalled a similar experience, saying that he would typically trap and skin the fur animals himself, but he would bring the hide to his parents to tan because "that's a different skill, it take a lot of time to tan hides, I'm not good at that." (021612KGX04)

In December people would return from trapping. One woman explained that Grayling households then spent the cold month of January hunkering down, though there were also a number of celebrations and dances at this time of year, most of which were held in the *kashim* at the center of town. The kashim is a building that serves the same purpose as a community hall. One dance that she remembered was the "Lucky Dance," which was held every 4 years. (021112KGX01) Sometimes, the men of Grayling or one of the nearby villages would decide to have a "tea party," she said:

> If it was Holikachuk's turn, they'd… send 2 of their 2 messengers. And they'd have 1 or 2 dog teams. And they'd have this little tiny mask. They'd go straight to the, to the kashim. They'd come in the village, of course you couldn't come into the village without being seen. But they tried to sneak in the village and go to the kashim. And they'd wait there for somebody to discover they're there. And they'd have this little tiny mask. They'd go, they're supposed to go to everybody's house and tell them, you're invited to come over. And then everybody'd get all excited. They'd bring little presents, like a little pair of jersey gloves was quite the present. So they'd bring them presents—food and stuff—and treat them the best you could afford to. Cause then they supposedly would go back and say, so and so treated me really good and gave me these nice gloves, or socks, some nice fish, or whatever it was. Then everybody'd pack up and go to Shageluk…. (021112KGX01)

These festivities allowed for the transmission of knowledge through storytelling and dance about important aspects of Athabascan traditions and also solidified bonds between people in these villages. Today, there are fewer annual festivals and celebrations, but people continue to travel between villages throughout the year

to visit family and friends for various occasions—birthday parties, funerals, sporting events, etc. In spring, Grayling residents celebrate spring carnival and occasionally Innoko Days. They also celebrate Traditional Memorial Day, which is at the end of May, but doesn't always coincide with the official Memorial Day.

The present day seasonal round experienced by Grayling households is reminiscent of its historical seasonal round, but advances in technology and job obligations and opportunities have allowed—or required—residents to live year-round in the village and travel to traditional hunting and fishing areas. As in the past, spring activities are focused on replenishing the freezers with fresh meat and setting traplines for furbearers. Summer months are occupied primarily with salmon fishing activities, with drifting with a gillnet or setting a gillnet being the more common gear uses. During late summer and fall, Grayling residents harvest berries and travel to the Innoko River in search of moose before the ice covers the sloughs and rivers. Ice-covered rivers and sloughs in the wintertime allow for easier travel to nearby villages on snowmachines and household activities such as trapping for furbearers and ice fishing for nonsalmon fish such as Arctic grayling, burbot, and lamprey, utilizing the bounty of harvests from the year to sustain them through winter until spring.

Demographics

The 41 surveyed households included 158 people. Expanding for unsurveyed households, Grayling's estimated population was 212 people and included 102 men (48%) and 110 women (52%); based on self-reports, an estimated 205 were Alaska Native (97%). Household size ranged from 1 to 8 people, with an average of 4 people per household. The average age was 28 years old, and the oldest person was 89 years old (Figure 9-5).

The population of Grayling has grown slowly since the city of Grayling was incorporated in 1969.[7] The 1970 the U.S. Census (the first one to include Grayling) recorded a population of 139. The 1990 U.S. Census recorded a population of 208, and the 2010 Census reported a population of 194 (Figure 9-6).

Survey respondents were asked to identify their birthplace, and 45% of household heads reported Grayling as their birthplace (Appendix Table D1-1). It is common in rural villages for expectant mothers to travel to hub communities such as Fairbanks and Anchorage to give birth at modern medical facilities. To capture this trend, the survey form asked respondents to identify where their parents were living when they were born (as opposed to their birth community) as a more accurate record of domicile. Other respondents reported Holikachuk (19%), Anvik (6%), and Shageluk (6%), and other parts of the United States outside Alaska (14%). Many household heads over the age of 50 years old were born in Holikachuk. As noted before, that village was abandoned in 1963, and a majority of its residents relocated to the present day site of the village of Grayling. Additional demographic information can be found in Appendix Table D1-2.

7. Alaska Department of Commerce, Community, and Economic Development (ADCCED) Division of Community and Regional Affairs, Juneau: "Alaska Community Database Online: Community Information." Accessed August 2013. http://commerce.alaska.gov/cra/DCRAExternal/community.

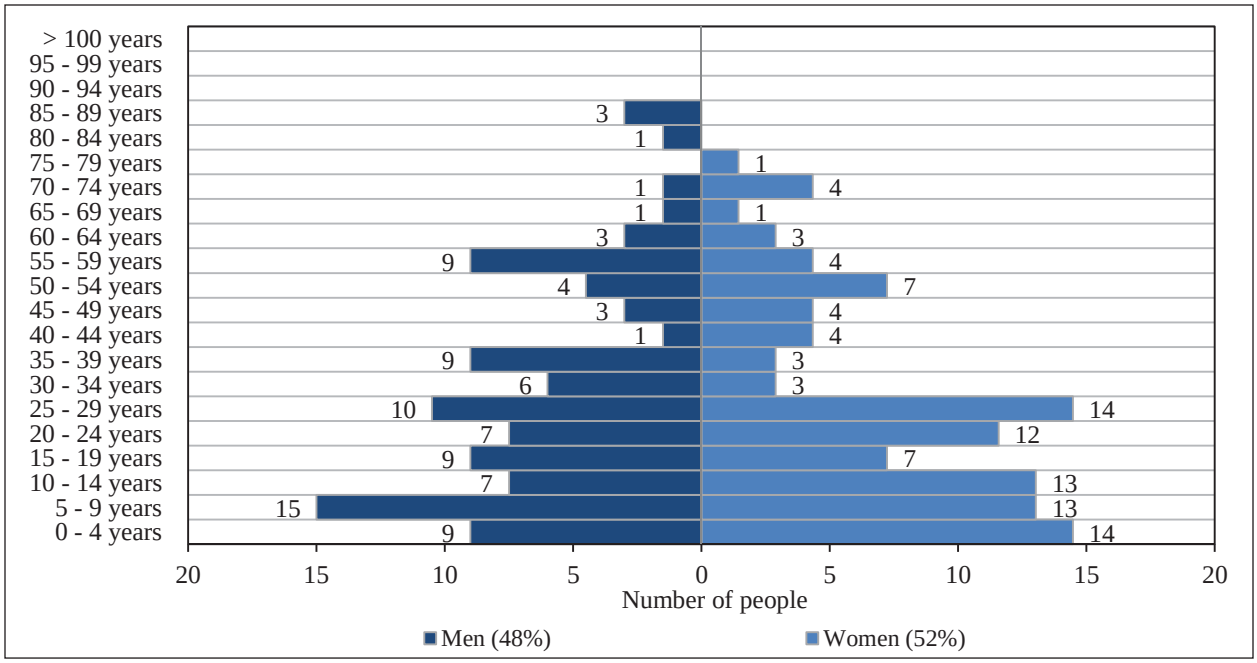


Figure 9-5.–Population profile, Grayling, 2011.

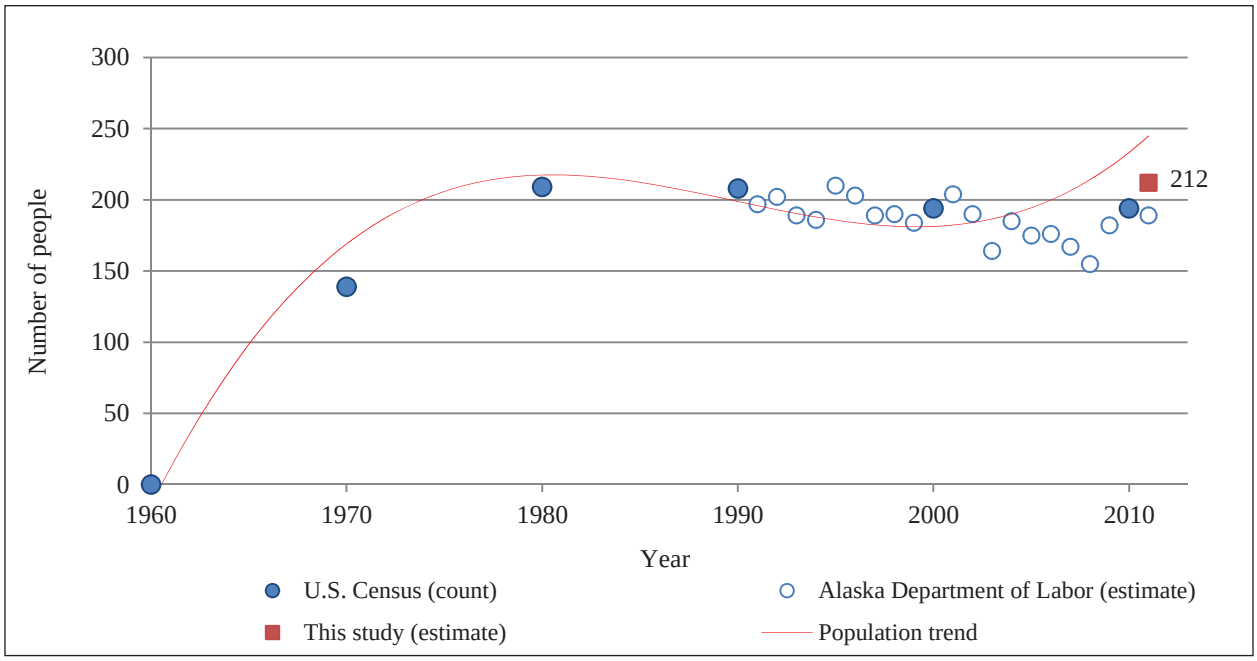


Figure 9-6.–Population history, Grayling, 2011.

Wild Food Uses and Harvests

> But they [my parents] said, the main thing is learning how to gather food, how to put it away, how to take care of it. And teaching your kids how to, you know, go out and get the food. How to take care of it. What to do. Nowadays you go to the store. How many times that beef froze before it gets to the store? Sometimes the meat is brown and I don't think anybody would want to feed their family that meat. But if you get it off the land, you know it's fresh. No preservatives added to it. (021412KGX05)

The primary purpose of the household survey was to collect information about the harvest and uses of wild resources and edible wild foods. Respondents were asked whether their household used or tried to harvest each resource during the study year. If they tried to harvest a resource, they were asked how much they harvested and for other details of the harvest, such as gear type, sex of the animal, or month of harvest. Species are organized into the following resource categories: salmon, nonsalmon fish, land mammals, marine mammals, birds and eggs, marine invertebrates, and vegetation.

Tables and figures in this section summarize responses to the survey harvest questions. Reported results were expanded for unsurveyed households. Grayling households reported harvesting a total 138 wild resources during the study year. While individual household harvest of resources ranged from as few as 3 resources harvested to 42, the typical household harvested about 13 wild resources. One respondent and village leader estimated that roughly 75% of the food used by Grayling residents comes from the land (021512KGX03).

In 2011, the most widely used resource category by Grayling residents was salmon: 100% of households said they used salmon, and salmon made up half (50%) of the community's total harvest of subsistence resources (25,829 lb). Yet, only 68% of households participated in harvesting that resource. By comparison, the most commonly harvested category was vegetation by an estimated 93% of households (Figure 9-7). However, vegetation, which includes berries and edible plants, composed just 2% of the total community harvest by pounds (966 lb) (Figure 9-8). The intrinsic value or importance of a resource does not solely rest in the edible weight of the harvest, but is a result of a more complex set of factors including participation in harvest, role in traditional festivities, and other factors.

The survey also asked households whether they gave away or received each resource. Sharing is a method by which subsistence resources are redistributed within a community, often to elders or those with limited resources, and is roughly measured by instances of households giving away and receiving subsistence foods. "If we don't help each other out, we wouldn't exist," explained one male respondent (021512KGX03). Survey respondents said they most commonly shared land mammals, fish, and vegetation. The most commonly received resource was land mammals (primarily moose), with an estimated 76% of households receiving this resource, followed by fish (66%) (Table 9-1). An estimated 56% of households reported giving away fish in 2011 and 46% of households reported giving away land mammals and vegetation.

In 2011, salmon was, by far, the most commonly harvested resource, making up 77% of the total fish

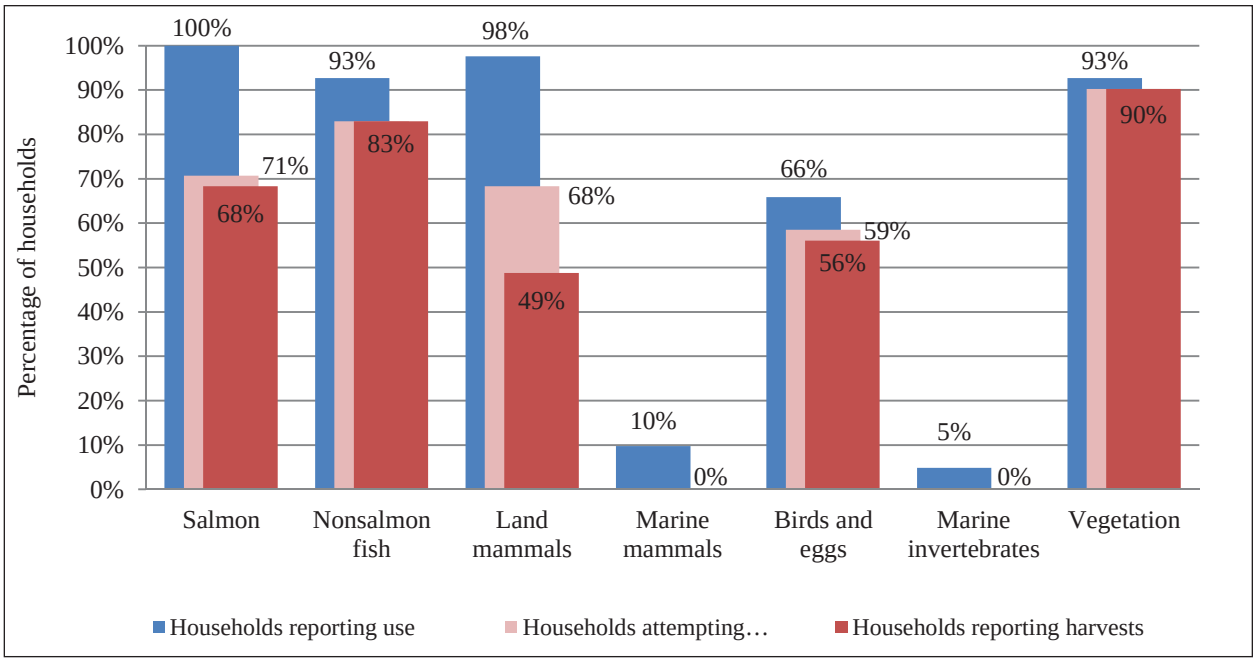


Figure 9-7.–Percentages of households using, attempting to harvest, or harvesting subsistence resources by category, Grayling, 2011.

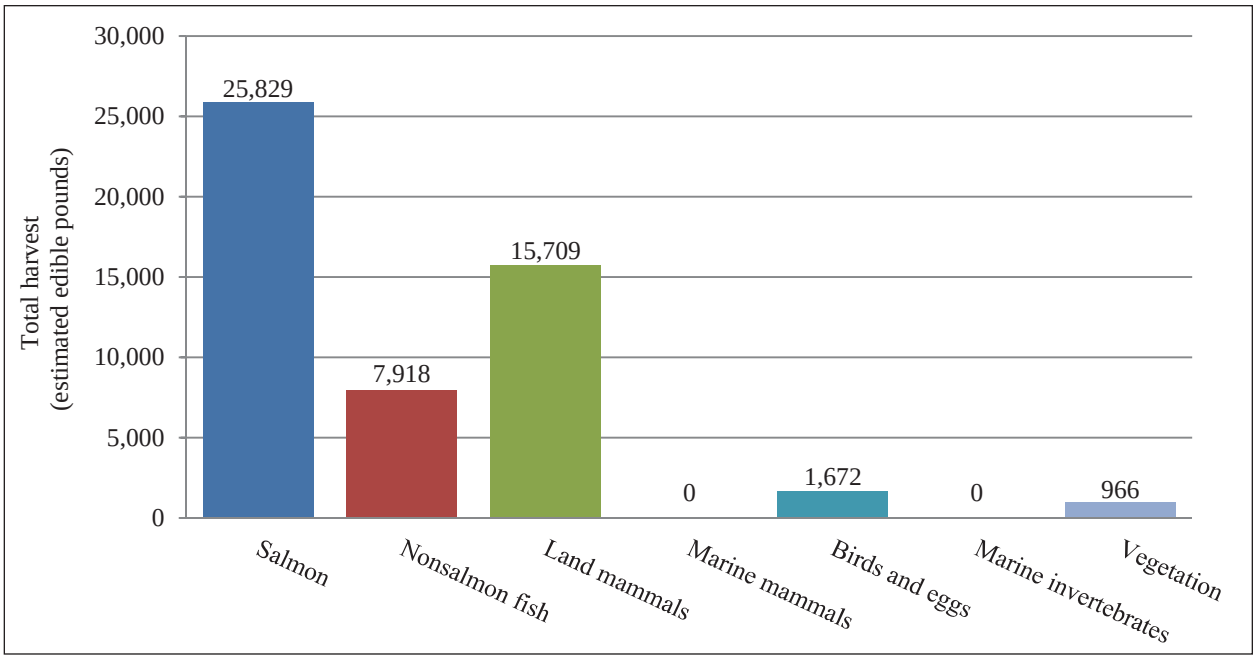


Figure 9-8.–Total estimated edible pounds harvested by the community by resource category, Grayling, 2011.

Table 9-1. – Estimated use and harvest of fish, game, and plant resources, Grayling, 2011.

	Percentage of households					Pounds harvested			Amount harvested[a]		95% conf limit (+/-)
Resource name	Use	Attempting harvest	Harvesting	Receiving	Giving away	Total	Mean per household	Mean per capita	Total estimated amount harvested by community	Mean per household	Harvest
All resources	100.0%	97.6%	97.6%	90.2%	68.3%	52,093.9	947.2	245.8	8,859.3	947.2	17.6%
Salmon	100.0%	70.7%	68.3%	53.7%	41.5%	25,828.6	469.6	121.9	3,830.4	469.6	20.0%
Nonsalmon fish	92.7%	82.9%	82.9%	41.5%	46.3%	7,918.5	144.0	37.4	2,585.0	144.0	20.7%
Land mammals	97.6%	68.3%	48.8%	75.6%	46.3%	15,708.5	285.6	74.1	886.0	285.6	19.9%
Marine mammals	9.8%	0.0%	0.0%	9.8%	4.9%	0.0	0.0	0.0	0.0	0.0	0.0%
Birds and eggs	65.9%	58.5%	56.1%	22.0%	31.7%	1,672.0	30.4	7.9	1,172.4	30.4	28.4%
Marine invertebrates	4.9%	0.0%	0.0%	4.9%	0.0%	0.0	0.0	0.0	0.0	0.0	0.0%
Vegetation	92.7%	90.2%	90.2%	36.6%	46.3%	966.3	17.6	4.6	385.4	17.6	21.0%

Source ADF&G Division of Subsistence household surveys, 2012.
Note "All resources" include all species of fish, wildlife, and plants reported on the survey.
Note "ND" indicates incomplete data or no data available to convert harvest to pounds.
a. Amount of resource harvested is individual units, unless otherwise specified.

harvest and half of the total community harvest by edible weight. Grayling residents harvested a total 3,830 individual salmon in 2011, with an estimated weight of 25,829 lb (or 122 lb per capita) (Table 9-2). Of the salmon category, Chinook salmon comprised the significant majority. Households harvested 14,184 lb of Chinook salmon (67 lb per capita). To a lesser degree, households also harvested summer chum salmon (6,414 total lb or 30 lb per capita), fall chum (2,717 total lb or 13 lb per capita), and coho salmon (1,861 total lb or 9 lb per capita). Salmon is a highly valued resource, and the first salmon caught each year is particularly special, one elder woman explained:

> If I was the first person to catch 2 kings, I'll cut it up, all up for all the elders in the village. Share some with them. Even the head and the tail. We never throw nothing away, we just, even the inside, the guts we cook for our dogs (021412KGX07).

Though the total harvest of nonsalmon fish was less than a quarter of the total fish harvest, nonsalmon fish are an integral component to the diet and way of life of Grayling households. Residents of Grayling harvested twelve species of nonsalmon fish in 2011, including: rainbow trout, sheefish, broad whitefish, least cisco, humpback whitefish, round whitefish, eulachon (hooligan), lamprey, burbot, Arctic grayling, and northern pike.

Nonsalmon fish species are particularly valued in the local subsistence economy in large part because of their year-round availability (Brown et al. 2005:1). These fish have traditionally been important to Grayling households because they can be harvested during months when rivers are frozen over. The network of lakes and sloughs that compose the Innoko River system provide a rich habitat for various whitefish and other nonsalmon fish species.

The most commonly harvested nonsalmon fish in 2011 was sheefish, with 61% of households harvesting this species. During the study year, an estimated 408 individual sheefish were harvested, totaling 2,447 lb (12 lb per capita). Broad whitefish were also commonly harvested, with an estimated 661 individual fish

Table 9-2. – Estimated use and harvest of fish, Grayling, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Fish										
Salmon										
Summer chum salmon	48.8%	34.1%	31.7%	17.1%	22.0%	6,414.1 lb	116.6 lb	30.3 lb	1,278.4 ind	± 39%
Fall chum salmon	39.0%	26.8%	24.4%	19.5%	24.4%	2,717.4 lb	49.4 lb	12.8 lb	541.6 ind	± 37%
Unknown chum salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Coho salmon	24.4%	17.1%	17.1%	7.3%	7.3%	1,860.9 lb	33.8 lb	8.8 lb	364.9 ind	± 39%
Chinook salmon	97.6%	70.7%	65.9%	48.8%	31.7%	14,184.3 lb	257.9 lb	66.9 lb	1,524.8 ind	± 22%
Pink salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Sockeye salmon	7.3%	7.3%	7.3%	0.0%	4.9%	652.0 lb	11.9 lb	3.1 lb	120.7 ind	± 64%
Unknown salmon	2.4%	0.0%	0.0%	2.4%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**100.0%**	**70.7%**	**68.3%**	**53.7%**	**41.5%**	**25,828.6 lb**	**469.6 lb**	**121.9 lb**	**3,830.4 ind**	**± 20%**
Char										
Dolly Varden	2.4%	0.0%	0.0%	2.4%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Lake trout	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**2.4%**	**0.0%**	**0.0%**	**2.4%**	**0.0%**	**0.0 lb**	**0.0 lb**	**0.0 lb**	**0.0 ind**	**± 0%**
Trout										
Rainbow trout	12.2%	7.3%	7.3%	7.3%	0.0%	20.7 lb	0.4 lb	0.1 lb	14.8 ind	± 65%
Subtotal	**12.2%**	**7.3%**	**7.3%**	**7.3%**	**0.0%**	**20.7 lb**	**0.4 lb**	**0.1 lb**	**14.8 ind**	**± 65%**
Whitefishes										
Sheefish	75.6%	61.0%	61.0%	39.0%	24.4%	2,446.8 lb	44.5 lb	11.5 lb	407.8 ind	± 18%
Broad whitefish	39.0%	34.1%	34.1%	14.6%	19.5%	2,645.4 lb	48.1 lb	12.5 lb	661.3 ind	± 45%
Bering cisco	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Least cisco	2.4%	2.4%	2.4%	0.0%	2.4%	13.4 lb	0.2 lb	0.1 lb	13.4 ind	± 102%
Humpback whitefish	31.7%	22.0%	22.0%	12.2%	12.2%	1,259.6 lb	22.9 lb	5.9 lb	419.9 ind	± 42%
Round whitefish	7.3%	4.9%	4.9%	4.9%	2.4%	26.8 lb	0.5 lb	0.1 lb	53.7 ind	± 71%
Unknown whitefishes	2.4%	2.4%	2.4%	2.4%	0.0%	138.4 lb	2.5 lb	0.7 lb	40.2 ind	± 102%
Subtotal	**82.9%**	**68.3%**	**68.3%**	**41.5%**	**34.1%**	**6,530.5 lb**	**118.7 lb**	**30.8 lb**	**1,596.3 ind**	**± 24%**
Anadromous/marine fish										
Pacific herring	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Eulachon (hooligan, candlefish)	2.4%	2.4%	2.4%	0.0%	2.4%	21.8 lb	0.4 lb	0.1 lb	6.7 gal	± 102%
Unknown smelt	2.4%	0.0%	0.0%	2.4%	2.4%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Pacific tomcod	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Saffron cod	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Pacific halibut	4.9%	0.0%	0.0%	4.9%	2.4%	0.0 lb	0.0 lb	0.0 lb	0.0 lb	± 0%
Arctic lamprey	4.9%	4.9%	4.9%	0.0%	0.0%	241.5 lb	4.4 lb	1.1 lb	402.4 ind	± 86%
Stickleback (needlefish)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Subtotal	**12.2%**	**7.3%**	**7.3%**	**4.9%**	**4.9%**	**263.3 lb**	**4.8 lb**	**1.2 lb**		**± 79%**
Other freshwater fish										
Alaska blackfish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 lb	± 0%
Burbot	9.8%	7.3%	7.3%	4.9%	7.3%	64.4 lb	1.2 lb	0.3 lb	32.2 ind	± 61%
Arctic grayling	46.3%	34.1%	34.1%	17.1%	12.2%	279.0 lb	5.1 lb	1.3 lb	279.0 ind	± 35%
Northern pike	29.3%	24.4%	24.4%	7.3%	9.8%	760.6 lb	13.8 lb	3.6 lb	253.5 ind	± 45%
Longnose sucker	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**58.5%**	**48.8%**	**48.8%**	**22.0%**	**22.0%**	**1,104.0 lb**	**20.1 lb**	**5.2 lb**		**± 35%**
All fish	**100.0%**	**85.4%**	**85.4%**	**65.9%**	**56.1%**	**33,747.1 lb**	**613.6 lb**	**159.2 lb**		**± 19%**
All resources	**100.0%**	**97.6%**	**97.6%**	**90.2%**	**68.3%**	**52,093.9 lb**	**947.2 lb**	**245.8 lb**		**± 18%**

Source ADF&G Division of Subsistence household surveys, 2012.

Note "All resources" include all species of fish, wildlife, and plants reported on the survey.

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

caught totaling 2,645 lb (13 lb per capita). The harvest of broad whitefish slightly exceeded the total sheefish harvest, however. Only 39% of households reported using broad whitefish, and only 34% of households reported harvesting broad whitefish, suggesting that the harvest and use of this species is more limited to providing food for dogs or, alternatively, the lower participation and use rates are simply indicators of more specialization. A majority of broad whitefish were utilized for dog food, whereas, sheefish were not used to feed dogs (Appendix Table D8-2). Spring fishing for whitefish on the Innoko River continues to be an important subsistence activity for Grayling households, though this harvest has changed over time as a result of changing needs. For example, one man explained how the fishing for whitefish on the Innoko River was once particularly important because it replenished the supply of food for dogs:

> On the Innoko that was our fish before the—before we get to fish camp. It was our subsistence and our dog feed you know. We had to catch lots for dogs because they had nothing to eat until we could get [to the] Yukon for salmon. (021312KGX02)

Sharing of nonsalmon fish is a common practice in Grayling. Sheefish were the second most widely shared nonsalmon fish species: in 2011, 39% of households reported receiving sheefish and 24% gave it away, second only to sharing levels of Chinook salmon in the fish category. A high percentage of households also reported using Arctic grayling (46%), humpback whitefish (32%), and northern pike (29%). Of these 3 species, a total 1,260 lb (6 lb per capita) of humpback whitefish were harvested in 2011, followed by 761 lb (3.6 lb per capita) of northern pike, and 279 lb (1.3 lb per capita) of Arctic grayling. Rod and reel fishing for Arctic grayling is a popular activity during the months of June, July, August, and September.

Beginning in 2003, Grayling fishers participated for the first time in an experimental commercial harvest of Arctic lamprey, which was managed by ADF&G's Division of Commercial Fisheries. Lamprey, also locally called eel, run for a very short time in the Yukon River and migrate close to shore and near the bottom surface of the ice. The fishery existed in 2011 and fishers used hand-held dip nets to scoop the fish through holes sawed in the ice. Subsistence fishing occurred simultaneously, but in 2011, few lampreys were harvested in either the commercial or subsistence fisheries. A total estimated 242 lb of lamprey was harvested for subsistence use by Grayling fishers in 2011.

Salmon was the primary type of fish used to feed dogs in Grayling (Appendix Table D8-2). Out of the 5,241 lb of fish used for dog food in 2011, 70% (3,649 lb) was salmon (mainly summer chum). Forty-five percent of the summer chum salmon harvest was utilized for dog food. Other fish commonly used for dog food included broad whitefish (1,238 lb), fall chum salmon (358 lb), sockeye salmon (362 lb), and humpback whitefish (248 lbs). Other whitefish species, Arctic grayling, and northern pike were also reportedly given to dogs in 2011, but in smaller amounts.

The survey also asked respondents to identify the gear they used to harvest every fish species (Figure 9-9). Salmon were most commonly harvested either in a set gillnet or a drift gillnet, though a few salmon were harvested using rod and reel. An estimated 12,266 lb of Chinook salmon were harvested using a driftnet, compared with 1,893 lb caught in a setnet. Prior to the 2011 salmon fishing season, the State of Alaska imple-

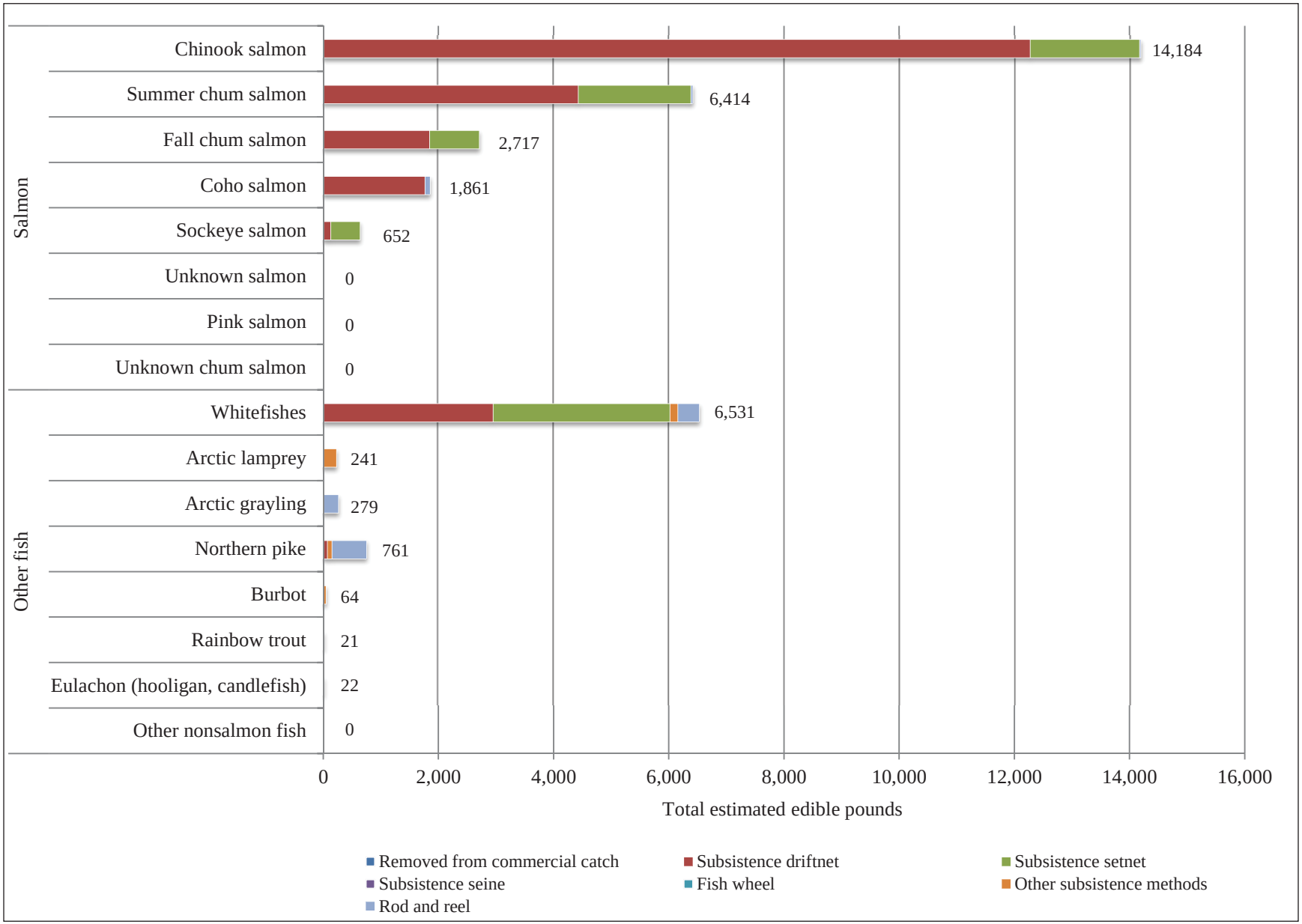


Figure 9-9.–Fish harvest by gear type, Grayling, 2011.

mented a regulatory change requiring subsistence fishers on the Yukon River to use nets with mesh size seven and a half inches or smaller. The smaller mesh size made a difference to at least one fisherman in 2011. He said, "before that, I was using eight and a half. And now you catch anything." (021512KGX03) He also had a setnet, which was shared by 4 families. When he fishes for coho and fall chum salmon, however, he uses a five and seven-eighths inches net. Whitefishes were harvested using either a setnet (3,057 lb) or driftnet (2,958 lb), but some respondents reported using rod and reel (377 lb) or "other gear," which can include dip nets, jigging, etc. In March, sheefish and whitefish are commonly harvested using a net set under the ice.

Grayling residents have developed a specialized set of skills to maximize the harvest of whitefish, utilizing knowledge passed from elders about migratory patterns of various species. One man born in the early 1950s recalled that at one time when he was growing up, dip nets were commonly used to harvest whitefish, sheefish, and northern pike on the Innoko River. Dip nets could yield 5–6 fish per dip, but this respondent said he has employed this method only a few times in more recent memory (021512KGX03). Another male elder described a particular method of harvesting primarily broad whitefish on the Innoko River. This method, which utilizes a net strung under the ice across the width of the river, was employed annually by Grayling residents when they lived in Holikachuk and for many years after the relocation, residents would return to Holikachuk and the Innoko River in spring to harvest whitefish using this method. Residents of Shageluk still use a similar method, but it is less common in Grayling. The respondent described in detail how this method is deployed:

> First of all, you know, you got to make a hole; a series of holes in 3-1/2 maybe 4 feet of ice. Maybe this year might be 5. We have had cold weather you know… 60 below around here, and we had cold weather for about a month at 45–50 below. But, what involves is you got to make a series of holes in the ice about 8 and 10 feet apart. And then you got to get a pole; it takes 2 people, you know, to do that… 3 would be good. And you get a stick, a dry willow and you put, you tie a rope onto there, and then you get 2 forked sticks and push that stick right out after you make all your holes about 60 feet out by 10 feet apart, which is labor intensive. And then, you got to string your line under there against the current. You got to be pretty savvy to do that. Then you stick that stick under the ice like here is a hole, you go under there and then you hold that forked stick like this and you hold the end like that so it will be…so it won't drift down against the current, then push it up and then if you do it on a sunny day you can look down that hole and hopefully you'll see it. And the next hole, the next person will have a forked stick and you push it on until you get to the end and then you hold it. Then I'll go over and feel around for that stick you know. Sometimes you get about halfway and lose the damn stick. So, then you got to start all over again, you know what I mean? A lot of work, and your partner, if you are the one to lose it you know. You got to pull that stick all the way out to the beginning and try again you know. Usually I don't, usually we don't lose it you know. But, we have lost it a couple of times; you know where we have to re-pull it. But then once you get it on the other side, we see the stick and we push that stick past and we get another long stick with a fork on there with a branch like that, you know like a "J"? And we just go down

there and grab it, catch that rope. Catch the rope with the end of the stick and we feed the rest of the rope through. We pull that rope up and tie that off to a stake that we put in the ice and then we go back to where the other end is and we tie the net on that end. We put the net under the ice all the way over to the other end. (021312KGX02)

Large and small land mammals are another important source of sustenance for residents of Grayling. For many households, the opportunity to harvest a moose is a primary focus of subsistence activities every year and has historically been not only an important source of protein but "was a big, big, big celebration item" (021112KGX01). In 2011, 98% of households reported using moose, yet only 39% of households reported harvesting a moose. However, 70% of households said they tried to harvest moose. The discrepancy here depicts a growing trend in GASH area villages, including Grayling, which are reporting increasing difficulty in harvesting moose. Grayling residents harvested an estimated 23 moose, which equaled 12,315 lb of edible food. Many (71%) households received moose from other households or communities, while 35% of households said they gave moose away (Table 9-3).

Historically, moose were harvested throughout the year, but now residents target them during the fall regulatory season after the temperatures cool off enough so that the meat does not spoil as quickly. One respondent said her mother often used to jar moose meat before refrigerators existed in villages as a way to prevent spoilage (021112KGX01). The estimated 23 moose harvested by Grayling households were primarily bull moose that were killed during the month of September (approximately 20 moose). However 1 bull moose was reported harvested in August and 1 female moose was harvested in March. Traditional customs also dictate proper ways to discard moose bones as a way of showing respect to the animals that have been harvested, explained one elder Grayling man:

We don't throw moose bones in the dump. Lot of people do now, but us, we don't. We bury them in the woods. On my porch I've got a bunch of moose bones I hung up so next time I go in the woods I'll bring them and put them under a tree. (021612KGX04)

The survey also asked households to evaluate their moose hunting efforts (Appendix Table D1-3). There were a reported 55 individuals who were identified as having participated in moose hunting in 2011, spending an estimated 312 days searching for moose (an average of 5.7 days per hunter). Twenty-two hunters were successful at harvesting a moose.

Grayling residents also harvested black bear in 2011. An estimated 1 black bear was harvested in September for a total 134 lb. Just 7% of all households said they used black bear in 2011. Historically, black bear meat was a more significant part of the subsistence diet for Grayling households. Black bear hides are also valued as rugs or as bedding. A key respondent said that one way black bear was utilized was by rendering the fat and using it to make donuts (021512KGX03). "They're way better than just regular Crisco or lard," he said. Sometimes, dried fish is dipped in bear fat and eaten, but this is not as common anymore, this respondent said. This man said he did see 2 black bears in 2011 while he was out hunting for moose, but he wanted to wait until after the moose hunt was successful before attempting to harvest the bears. "And after we got our

Table 9-3. – Estimated use and harvest of land and marine mammals, Grayling, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Land mammals										
Large land mammals										
Bison	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Black bear	7.3%	2.4%	2.4%	7.3%	2.4%	134.1 lb	2.4 lb	0.6 lb	1.3 ind	± 102%
Brown bear	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Caribou	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Moose	97.6%	70.0%	39.0%	70.7%	35.0%	12,314.6 lb	223.9 lb	58.1 lb	22.8 ind	± 21%
Muskox	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Dall sheep	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**97.6%**	**68.3%**	**41.5%**	**73.2%**	**34.1%**	**12,448.8 lb**	**226.3 lb**	**58.7 lb**	**24.1 ind**	**± 21%**
Small land mammals										
Beaver	36.6%	22.0%	22.0%	19.5%	14.6%	3,259.8 lb	59.3 lb	15.4 lb	108.7 ind	± 34%
Coyote	0.0%	0.0%	0.0%	0.0%	0.0%	*Not usually eaten*			0.0 ind	± 0%
Red fox	9.8%	9.8%	9.8%	0.0%	2.4%	*Not usually eaten*			12.1 ind	± 62%
Snowshoe hare	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Jackrabbit	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
River (land) otter	2.4%	0.0%	0.0%	2.4%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Lynx	4.9%	4.9%	4.9%	0.0%	0.0%	*Not usually eaten*			2.7 ind	± 71%
Marmot	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Marten	26.8%	26.8%	26.8%	2.4%	17.1%	*Not usually eaten*			684.8 ind	± 40%
Mink	2.4%	2.4%	2.4%	0.0%	0.0%	*Not usually eaten*			2.7 ind	± 102%
Muskrat	2.4%	0.0%	0.0%	2.4%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Porcupine	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Arctic ground (parka) squirrel	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Red (tree) squirrel	2.4%	2.4%	2.4%	0.0%	0.0%	*Not usually eaten*			30.9 ind	± 102%
Weasel	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Wolf	7.3%	7.3%	7.3%	0.0%	2.4%	*Not usually eaten*			6.7 ind	± 60%
Wolverine	12.2%	12.2%	12.2%	0.0%	2.4%	*Not usually eaten*			13.4 ind	± 56%
Subtotal	**46.3%**	**31.7%**	**31.7%**	**19.5%**	**29.3%**	**3,259.8 lb**	**59.3 lb**	**15.4 lb**	**861.8 ind**	**± 34%**
Marine mammals										
Bearded seal	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Ringed seal	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Spotted seal	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown seal	7.3%	0.0%	0.0%	7.3%	4.9%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Walrus	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Beluga whale	7.3%	0.0%	0.0%	7.3%	4.9%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Bowhead whale	2.4%	0.0%	0.0%	2.4%	2.4%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**9.8%**	**0.0%**	**0.0%**	**9.8%**	**4.9%**	**0.0 lb**	**0.0 lb**	**0.0 lb**	**0.0 ind**	**± 0%**
All land mammals	**97.6%**	**68.3%**	**48.8%**	**75.6%**	**46.3%**	**15,708.5 lb**	**285.6 lb**	**74.1 lb**		**± 20%**
All marine mammals	**9.8%**	**0.0%**	**0.0%**	**9.8%**	**4.9%**	**0.0 lb**	**0.0 lb**	**0.0 lb**		**± 0%**
All resources	**100.0%**	**97.6%**	**97.6%**	**90.2%**	**68.3%**	**52,093.9 lb**	**947.2 lb**	**245.8 lb**		**± 18%**

Source ADF&G Division of Subsistence household surveys, 2012.

Note "All resources" include all species of fish, wildlife, and plants reported on the survey.

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

Photo by Brittan Rutherford

Figure 9-10.–A locally-harvested beaver was butchered and the fur stretched at the home of Shirley Clark.

moose, we didn't see any more bears," he explained (021512KGX03). Another respondent said that black bears harvested are always used, "Lot of people eat them, but they don't just hunt them to hunt them. We're kind of superstitious people, you know. We don't kill and waste" (021612KGX04). There are a number of taboos connected with bear hunting, processing, and consuming, especially those activities involving women. Brown bear are harvested occasionally by Grayling households, but primarily "in defense of property. We don't hunt them just to hunt them. Mostly they're around fish camps, during the summer and fall. And they come around the village around here too in, like October." (021512KGX03) In fall 2011, residents reported that a sow and 3 cubs were in the village for about 2 or 3 weeks. Appendix Table D8-3 displays large land mammal harvest timing for Grayling residents.

Several Grayling residents participated in harvesting small land animals, which were used for fur and for food, or for both food and fur. In 2011, households harvested beaver, red fox, lynx, marten, mink, wolf, and wolverine. Beaver was the most widely used small land mammal, with 37% of households reporting using beaver during the study year. Beaver is used both for food and fur, and the estimated 109 beaver harvested yielded a total 3,260 lb of edible food. Beaver were primarily harvested during spring months, with the majority of beaver harvested during the month of March (Figure 9-10). One man who was born in 1948, described the way his family prepares a meal of beaver:

> You got to parboil them first. What we mean by parboiling, we cut them up, and put them in a big pot like that, in a Dutch oven. Cut them up into however size you want to eat and you put 1 spoon of soda and 1 spoon of salt. And you boil it for 20 minutes, and they get all that foam will come off. And we take it off the stove. And we rinse it out, wash it out, and then we wash their pot out and boil it back up for another hour and a half. Salt them, add every kind of spices you use. And put them in a Dutch oven and fry them up and make it all boiling. Slow braise them for an hour and a half. Pretty tasty. (021612KGX04)

Other small land mammal species harvested in 2011 are not typically eaten, including red fox (12 harvested), lynx (3), marten (685), mink (3), tree squirrel (31), wolf (7), and wolverine (13). Survey respondents were asked to identify the month they harvested each small land mammal (Appendix Table D8-4). Animals that are targeted by trappers were harvested primarily between November and February (the open season for trapping is November to March). For example, 111 marten were harvested in November, 208 in December, 204 in January, and 145 in February. One respondent described that the marten population has declined in recent years, making trapping more difficult—especially for those with less knowledge (021312KGX02).

A few households continue to participate in trapping activities and selling harvested furs, but the price of fur has been low in recent years, and it has been difficult to make ends meet, especially when fuel prices are rising. Kwik'pak Fisheries LLC (a subsidiary of Yukon Delta Fisheries Development Association) has implemented a fur-buying program to promote the local fur trade, which has suffered as a result of declining prices. The Kwik'pak program has started to purchase fur at higher prices than the market fetched in recent years and provided a more stable source of revenue (i.e. $60–$100 for marten, $300–$500 for wolf, etc.). One respondent said that this program may be good for trappers, but as a fur sewer, she has yet to see the benefits because consumers have not yet been willing to pay the higher prices for finished items so that she can pay for the higher priced furs, instead substituting now for less expensive furs such as beaver. For example, she said that in 1979, a hand-tanned, hand-sewn marten hat could sell for $450, but that "for the last 10 years, I've been charging $250" (021112KGX01). With the incentive program in place, furs are more expensive to purchase to sew hats, but "now no one wants to pay [higher prices for marten hats, etc.]. So everybody's just gonna have to live with beaver. Which, beaver looks nice" (021112KGX01). This demand for beaver may account for the high harvests of beaver in Grayling in 2011.

Marine mammals are not commonly harvested or used by Grayling households. Though Grayling lies within 50 miles of the coast, the people who inhabit the region are land and riverine-based people. In 2011, 7% of households said they used "unknown seal" (or seal oil), 7% said they used beluga whale, and 2% said they used bowhead whale. All of these marine mammal resources were received from other households.

Marine invertebrates are also rarely harvested and used by Grayling households (Table 9-4). In 2011, 2% of households reported using king crab, unknown crab, and shrimp. Again, like marine mammals, all of these resources were received from other households. One key respondent said that in the past, freshwater clams were available in Horseshoe Lake, but this practice stopped (perhaps because of changing habitat) after Holikachuk Slough broke through the lake. (021512KGX03)

Table 9-4. – Estimated use and harvest of marine invertebrates, Grayling, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Marine invertebrates										
Unknown clams	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
King crab	2.4%	0.0%	0.0%	2.4%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown Tanner crab	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown crab	2.4%	0.0%	0.0%	2.4%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown mussels	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Shrimp	2.4%	0.0%	0.0%	2.4%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Unknown marine invertebrates	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Subtotal	**4.9%**	**0.0%**	**0.0%**	**4.9%**	**0.0%**	**0.0 lb**	**0.0 lb**	**0.0 lb**		**± 0%**
All marine invertebrates	**4.9%**	**0.0%**	**0.0%**	**4.9%**	**0.0%**	**0.0 lb**	**0.0 lb**	**0.0 lb**		**± 0%**
All resources	**100.0%**	**97.6%**	**97.6%**	**90.2%**	**68.3%**	**52,093.9 lb**	**947.2 lb**	**245.8 lb**		**± 18%**

Source ADF&G Division of Subsistence household surveys, 2012.
Note "All resources" include all species of fish, wildlife, and plants reported on the survey.
a. Summary rows that include incompatible units of measure have been left blank.

Birds are another subsistence resource used by Grayling households (Table 9-5). Birds are available year round to Grayling residents, but only certain species are available during certain months, and the survey asked respondents to identify which season they harvested specific species. A total 1,672 lb of birds were harvested by Grayling residents in 2011. No one reported using or harvesting bird eggs. Migratory birds including ducks, geese, tundra swans, sandhill cranes, and whimbrels were used by 34% of Grayling households. The most commonly harvested migratory birds were mallards (17% of households), northern pintails (15%), wigeons (10%), lesser Canada geese (17%), and white-fronted geese (15%). One respondent, an elder male, said that since bird flu became widespread in other parts of the country, the practice of harvesting migratory birds has declined somewhat:

> Not since the bird flu came around, that pretty much cut everything out. But we eat… we don't kill a hell of a lot of birds. I might kill 1 or 2. We don't go out there and kill 40–50 you know. We just got out and kill one, pluck them, cook him up until the next time you want to eat them. Subsistence. That's subsistence. (021612KGX04)

"Other bird" species are more commonly harvested by Grayling residents than migratory birds. The "other birds" resource category includes spruce grouse, sharp-tailed grouse, ruffed grouse, and unknown grouse. Sixty-one percent of households said they used other birds in 2011. Fifty-four percent of households reported that they used spruce grouse, with 49% of households harvesting this resource. Only 15% of households reported giving away spruce grouse and 20% of households said they received spruce grouse, indicating that spruce grouse are not as commonly shared between households as resources such as moose or salmon. Hunting for spruce grouse is a popular activity for children. One elder woman explained: "It's a big thing with the kids. They all go out, all still have guns. They'll go back and walk; they have these four wheelers;

Table 9-5. – Estimated use and harvest of birds, Grayling, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Migratory birds										
Ducks										
Bufflehead	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Canvasback	2.4%	2.4%	2.4%	0.0%	2.4%	10.2 lb	0.2 lb	0.0 lb	5.4 ind	± 102%
Common eider	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown eider	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Goldeneye	2.4%	2.4%	2.4%	0.0%	2.4%	12.4 lb	0.2 lb	0.1 lb	8.0 ind	± 102%
Harlequin	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Mallard	19.5%	19.5%	17.1%	4.9%	14.6%	141.3 lb	2.6 lb	0.7 lb	72.4 ind	± 40%
Common merganser	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Red-breasted merganser	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown merganser	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Long-tailed duck	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Northern pintail	14.6%	17.1%	14.6%	0.0%	12.2%	102.6 lb	1.9 lb	0.5 lb	68.4 ind	± 42%
Scaup	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Black scoter	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Surf scoter	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
White-winged scoter	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Northern shoveler	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Green-winged teal	7.3%	7.3%	4.9%	2.4%	2.4%	13.3 lb	0.2 lb	0.1 lb	25.5 ind	± 83%
Wigeon	9.8%	9.8%	9.8%	2.4%	7.3%	51.0 lb	0.9 lb	0.2 lb	38.9 ind	± 56%
Unknown ducks	4.9%	2.4%	2.4%	2.4%	0.0%	2.0 lb	0.0 lb	0.0 lb	1.3 ind	± 102%
Subtotal	**22.0%**	**19.5%**	**17.1%**	**9.8%**	**14.6%**	**332.7 lb**	**6.0 lb**	**1.6 lb**	**220.0 ind**	**± 41%**
Geese										
Brant	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Cackling goose	2.4%	2.4%	2.4%	0.0%	2.4%	9.7 lb	0.2 lb	0.0 lb	8.0 ind	± 102%
Canada goose	17.1%	19.5%	17.1%	2.4%	17.1%	603.3 lb	11.0 lb	2.8 lb	151.6 ind	± 39%
Unknown Canada goose	4.9%	2.4%	2.4%	2.4%	0.0%	52.6 lb	1.0 lb	0.2 lb	26.8 ind	± 102%
Emperor goose	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Snow goose	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
White-fronted goose	17.1%	14.6%	14.6%	7.3%	12.2%	147.9 lb	2.7 lb	0.7 lb	34.9 ind	± 48%
Unknown geese	4.9%	0.0%	0.0%	4.9%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**31.7%**	**24.4%**	**22.0%**	**14.6%**	**19.5%**	**813.4 lb**	**14.8 lb**	**3.8 lb**	**221.3 ind**	**± 35%**
Other migratory birds										
Tundra (whistling) swan	2.4%	2.4%	2.4%	0.0%	0.0%	15.0 lb	0.3 lb	0.1 lb	1.3 ind	± 102%
Sandhill crane	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Whimbrel	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**2.4%**	**2.4%**	**2.4%**	**0.0%**	**0.0%**	**15.0 lb**	**0.3 lb**	**0.1 lb**	**1.3 ind**	**± 102%**
Other birds										
Spruce grouse	53.7%	48.8%	48.8%	14.6%	19.5%	412.2 lb	7.5 lb	1.9 lb	588.9 ind	± 21%
Sharp-tailed grouse	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Ruffed grouse	26.8%	24.4%	24.4%	12.2%	9.8%	79.8 lb	1.5 lb	0.4 lb	114.0 ind	± 33%
Unknown grouse	2.4%	2.4%	2.4%	0.0%	0.0%	18.8 lb	0.3 lb	0.1 lb	26.8 ind	± 102%
Subtotal	**61.0%**	**56.1%**	**56.1%**	**14.6%**	**24.4%**	**510.8 lb**	**9.3 lb**	**2.4 lb**	**729.8 ind**	**± 18%**
All migratory birds	**34.1%**	**24.4%**	**22.0%**	**17.1%**	**19.5%**	**1,161.2 lb**	**21.1 lb**	**5.5 lb**	**442.7 ind**	**± 35%**
All other birds	**61.0%**	**56.1%**	**56.1%**	**14.6%**	**24.4%**	**510.8 lb**	**9.3 lb**	**2.4 lb**	**729.8 ind**	**± 18%**
All resources	**100.0%**	**97.6%**	**97.6%**	**90.2%**	**68.3%**	**52,093.9 lb**	**947.2 lb**	**245.8 lb**		**± 18%**

Source ADF&G Division of Subsistence household surveys, 2012.

Note "All resources" include all species of fish, wildlife, and plants reported on the survey.

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

Table 9-6. – Estimated use and harvest of bird eggs, Grayling, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Bird eggs										
Duck eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown goose eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Swan eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown shorebird eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown gull eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0 lb**	**0.0 lb**	**0.0 lb**	**0.0 ind**	**± 0%**
All birds and eggs	**65.9%**	**58.5%**	**56.1%**	**22.0%**	**31.7%**	**1,672.0 lb**	**30.4 lb**	**7.9 lb**		**± 28%**
All resources	**100.0%**	**97.6%**	**97.6%**	**90.2%**	**68.3%**	**52,093.9 lb**	**947.2 lb**	**245.8 lb**		**± 18%**

Source ADF&G Division of Subsistence household surveys, 2012.
Note "All resources" include all species of fish, wildlife, and plants reported on the survey.
a. Summary rows that include incompatible units of measure have been left blank.

they'll go up the beach and do grouse" (021112KGX01). A significant portion of the spruce grouse were harvested during the fall. An estimated 538 spruce grouse were harvested in fall months, compared with 11 harvested during winter and 40 harvested during summer (none in spring) (Appendix Table D8-5). Table 9-6 depicts the use and harvest of eggs in Grayling. No households reported using or harvesting any eggs during the study year.

Many households also participate in harvesting the wide variety of wild plants that are plentiful in the Alaska Interior. In 2011, 93% of households used at least 1 kind of vegetation, which included berries, greens and mushrooms, and firewood. Grayling residents who harvest vegetation focus their energies around berry picking, which is a popular social activity and, during good berry years, can provide households with a plentiful supply of fresh fruit that is used in many dishes or simply eaten fresh. Seven different species of berries were harvested in 2011, including blueberries, low bush cranberries (red berries), high bush cranberries, crowberries, currants, raspberries, and salmonberries. The total community estimated berry harvest was 877 lb or 219 gallons. Blueberries dominated the berry harvest in 2011; residents harvested an estimated 431 lb or 108 gallons, or about half of the total berry harvest. One elder Grayling woman described how berries were preserved in the past, prior to the introduction of refrigeration to the village. She said that much of the berry harvest was processed, made into jams, and jarred, but there were other alternatives:

> In those days, we didn't freeze stuff. I guess a long time ago they put them in birch bark baskets, but then they had those wooden barrels. Everybody had 2 wooden barrels at least. One for blueberries, and they'd layer it and put sugar. And with the blackberries, they'd mix the blackberries and the cranberries together, which they call winter berries because they would last all winter. They'd stay fresh all winter, whereas, the blueberries would liquefy. (021112KGX01)

This respondent had a basket that had belonged to her grandmother. The basket could hold about a gallon of blueberries and was undyed, smooth, and made of willow root. She described how this basket was used by the elders who came before her as a tool for late-season post-freeze berry picking:

> Some women in the fall would go out after it froze to Holikachuk since there was so much berries. They'd take these baskets, and they'd go out and all the leaves would be off the blueberry bushes. All you see would be blue. And they'd be frozen. Semi-fermented, semi-dried. And they'd fill baskets up and put that in ice cream. It's very tasty. (021112KGX01)

Gathering other vegetation is also an important harvest activity for Grayling residents (Table 9-7). Survey respondents gathered 46 lb of wild rhubarb, 27 lb of wild rose hips, 8 lb of Hudson Bay tea and 3 lb of sourdock. In 2011, 27% of households said they used some kind of plant other than berries. Besides berries, however, firewood was the most widely used plant resource. The survey asks respondents whether they gathered or used wood as part of subsistence activities because it is an important wild resource that many respondents rely on to heat homes or to process fish during summer months. In 2011, 71% of households said they used wood, with 59% of households harvesting firewood. Grayling households harvested an estimated 118 cords of firewood in 2011. Some households purchased firewood or received firewood as part of the state home fueling program.

Table 9-7. – Estimated use and harvest of vegetation, Grayling, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Berries										
Blueberry	70.7%	63.4%	63.4%	14.6%	19.5%	430.6 lb	7.8 lb	2.0 lb	107.7 gal	± 18%
Lowbush cranberry	22.0%	19.5%	19.5%	2.4%	7.3%	123.4 lb	2.2 lb	0.6 lb	30.9 gal	± 36%
Highbush cranberry	24.4%	24.4%	24.4%	2.4%	2.4%	102.0 lb	1.9 lb	0.5 lb	25.5 gal	± 38%
Crowberry	29.3%	24.4%	24.4%	4.9%	0.0%	115.4 lb	2.1 lb	0.5 lb	28.8 gal	± 34%
Gooseberry	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Currants	2.4%	2.4%	2.4%	0.0%	0.0%	5.4 lb	0.1 lb	0.0 lb	1.3 gal	± 102%
Raspberry	19.5%	19.5%	19.5%	2.4%	2.4%	59.7 lb	1.1 lb	0.3 lb	14.9 gal	± 45%
Salmonberry	22.0%	12.2%	12.2%	9.8%	4.9%	40.9 lb	0.7 lb	0.2 lb	10.2 gal	± 54%
Subtotal	**70.7%**	**68.3%**	**68.3%**	**22.0%**	**24.4%**	**877.3 lb**	**16.0 lb**	**4.1 lb**	**219.3 gal**	**± 20%**
Plants/greens/mushrooms										
Wild rhubarb	7.3%	7.3%	7.3%	0.0%	2.4%	45.6 lb	0.8 lb	0.2 lb	11.4 gal	± 66%
Eskimo potato	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Fiddlehead ferns	2.4%	2.4%	2.4%	0.0%	2.4%	0.3 lb	0.0 lb	0.0 lb	0.3 gal	± 102%
Nettle	2.4%	2.4%	2.4%	0.0%	0.0%	4.0 lb	0.1 lb	0.0 lb	4.0 gal	± 102%
Hudson's Bay (Labrador) tea	9.8%	9.8%	9.8%	0.0%	2.4%	7.7 lb	0.1 lb	0.0 lb	7.7 gal	± 73%
Mint	2.4%	2.4%	2.4%	0.0%	2.4%	1.3 lb	0.0 lb	0.0 lb	1.3 gal	± 102%
Sourdock	2.4%	2.4%	2.4%	0.0%	0.0%	2.7 lb	0.0 lb	0.0 lb	2.7 gal	± 102%
Spruce tips	2.4%	2.4%	2.4%	0.0%	0.0%	0.3 lb	0.0 lb	0.0 lb	0.3 gal	± 102%
Willow leaves	2.4%	2.4%	2.4%	0.0%	0.0%	0.1 lb	0.0 lb	0.0 lb	0.1 gal	± 102%
Wild celery	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Wild rose hips	9.8%	9.8%	9.8%	0.0%	0.0%	26.8 lb	0.5 lb	0.1 lb	6.7 gal	± 65%
Yarrow	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Unknown mushrooms	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Fireweed	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Stinkweed	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Punk	19.5%	19.5%	9.8%	0.0%	4.9%	0.0 lb	0.0 lb	0.0 lb	13.8 gal	± 59%
Puffballs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Unknown vegetation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Subtotal	**26.8%**	**26.8%**	**26.8%**	**0.0%**	**7.3%**	**89.0 lb**	**1.6 lb**	**0.4 lb**	**48.4 gal**	**± 56%**
Wood										
Wood	70.7%	58.5%	58.5%	19.5%	22.0%	0.0 lb	0.0 lb	0.0 lb	117.7 cord	± 21%
Subtotal	**70.7%**	**58.5%**	**58.5%**	**19.5%**	**22.0%**	**0.0 lb**	**0.0 lb**	**0.0 lb**	**117.7 cord**	± 21%
All vegetation	**92.7%**	**90.2%**	**90.2%**	**36.6%**	**46.3%**	**966.3 lb**	**17.6 lb**	**4.6 lb**		**± 21%**
All resources	**100.0%**	**97.6%**	**97.6%**	**90.2%**	**68.3%**	**52,093.9 lb**	**947.2 lb**	**245.8 lb**		**± 18%**

Source ADF&G Division of Subsistence household surveys, 2012.

Note "All resources" include all species of fish, wildlife, and plants reported on the survey.

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

Harvest Areas

As part of the survey, Grayling households were asked to mark on a map the areas where they harvested or searched for subsistence resources. For each resource and category, all households' search areas and harvest locations were combined to create a series of maps depicting Grayling residents' subsistence use areas in 2011. Figure 9-11 summarizes all the mapped data collected from Grayling for 2011.

Grayling residents reported using a total of 1,164 square miles in the Yukon River drainage for subsistence in 2011. Grayling subsistence users still maintain ties to the traditional subsistence harvest areas around Holikachuk, traveling to the area around the old Holikachuk village site for various harvesting activities

throughout the year. Much of the subsistence harvest activities pursued by Grayling residents occur along river corridors. Figure 9-11 depicts all search and harvest areas for all resources in 2011.

Grayling households fished for all salmon species available in the Yukon River (Figure 9-12). The main search and harvest areas were primarily located upriver from the village of Grayling, with drifting occurring on a 6-mile stretch of river beginning at the middle of the western side of Eagle Island, along the northwestern bank of Fox Point Island, and extending as far as roughly 2 miles north of the mouth of Shageluk Slough. Some households also use setnets to harvest salmon, with sites located 1 and 4 miles downriver of Grayling on the western bank of the Yukon River, on the southern end of Fox Point Island, among other locations. A section of the Yukon River referred to as "Rapids" is just upriver of a historic prime salmon harvest area. Rapids is located between Eagle Island and Fox Point Island and historically there were several fish camps near this location (there is another area referred to as "Rapids" on the Yukon River upriver from the community of Tanana). At one time, there were 4 fish wheels set on the bluffs right below Rapids, explained one respondent (021112KGX01). Today, the morphology of the Yukon River at Rapids is changing, which has affected fishing. One respondent explained that today, "It's swifter, and it's shallower. Swifter, and you're drifting along, you're going along and your boat goes down and you think it's a fish but sometimes it's a snag." (021112KGX01)

Based on their experience with the historical village of Holikachuk, Grayling residents maintain a special relationship with the Innoko River, a deep and wide tributary of the Yukon River. The Innoko River "acts more like a large lake than a river system" because the water is so slow moving that at times it is difficult to determine which direction the river flows (Brown et al. 2005: 31). This stretch of the Innoko River by Holikachuk is often referred to locally as "pike country" and is home to some of the largest documented northern pike in Alaska (Brown et al. 2005:45). One respondent who was born in Holikachuk recalled being fearful of the river because of the giant pike it was rumored to contain: "I used to think those pike would be too big, they'd eat me alive. That's where I was born. And, now that I'm older I know better." (021512KGX03) In addition to pike, Grayling residents travel regularly to the Innoko River to harvest other nonsalmon fish such as sheefish, whitefish, and blackfish that inhabit the lake systems of the upper Innoko River. Burbot, northern pike, Arctic grayling, and whitefish were also harvested in the Yukon River along the same stretch where fishermen searched for and harvested salmon. Grayling were also harvested at the mouth of Simon Creek and Thompson Creek, and at a spot on Sucker Creek just north of Holikachuk (Figure 9-13).

Grayling households traveled along several waterways in search of moose in 2011 (Figure 9-14). Many households reported following a circuit from Grayling to Holikachuk (via Shageluk and Holikachuk sloughs), south on the Innoko River past Shageluk and back to the Yukon River at Holy Cross, and finally traveling up the Yukon River past Anvik and back to Grayling. Households also reported searching for moose in a variety of sloughs and rivers that connect to this circuit, including Yankee Slough, Sucker Creek, the Iditarod River, Reindeer Lake, and Bonasila River.

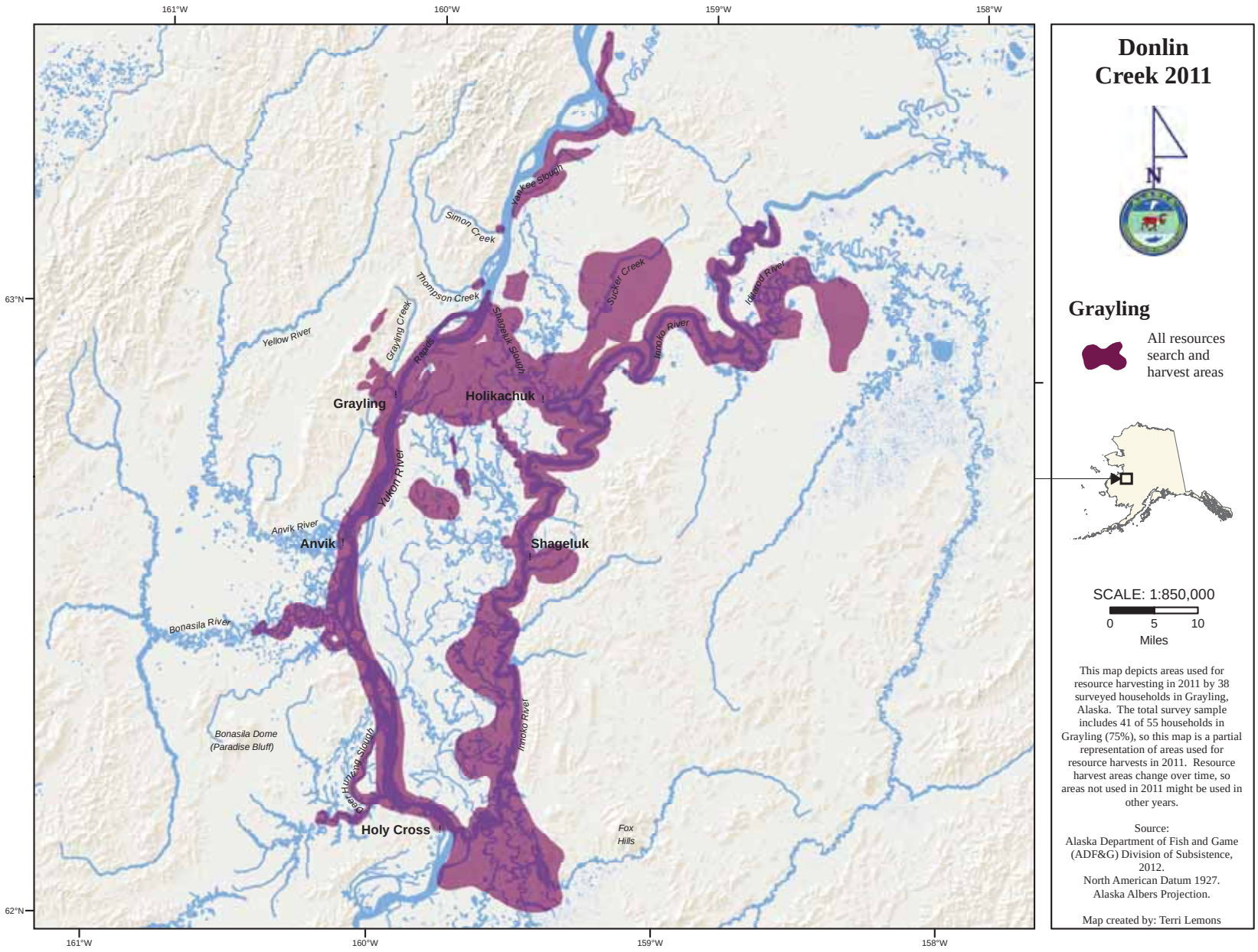


Figure 9-11.–All resources search and harvest areas, Grayling, 2011.

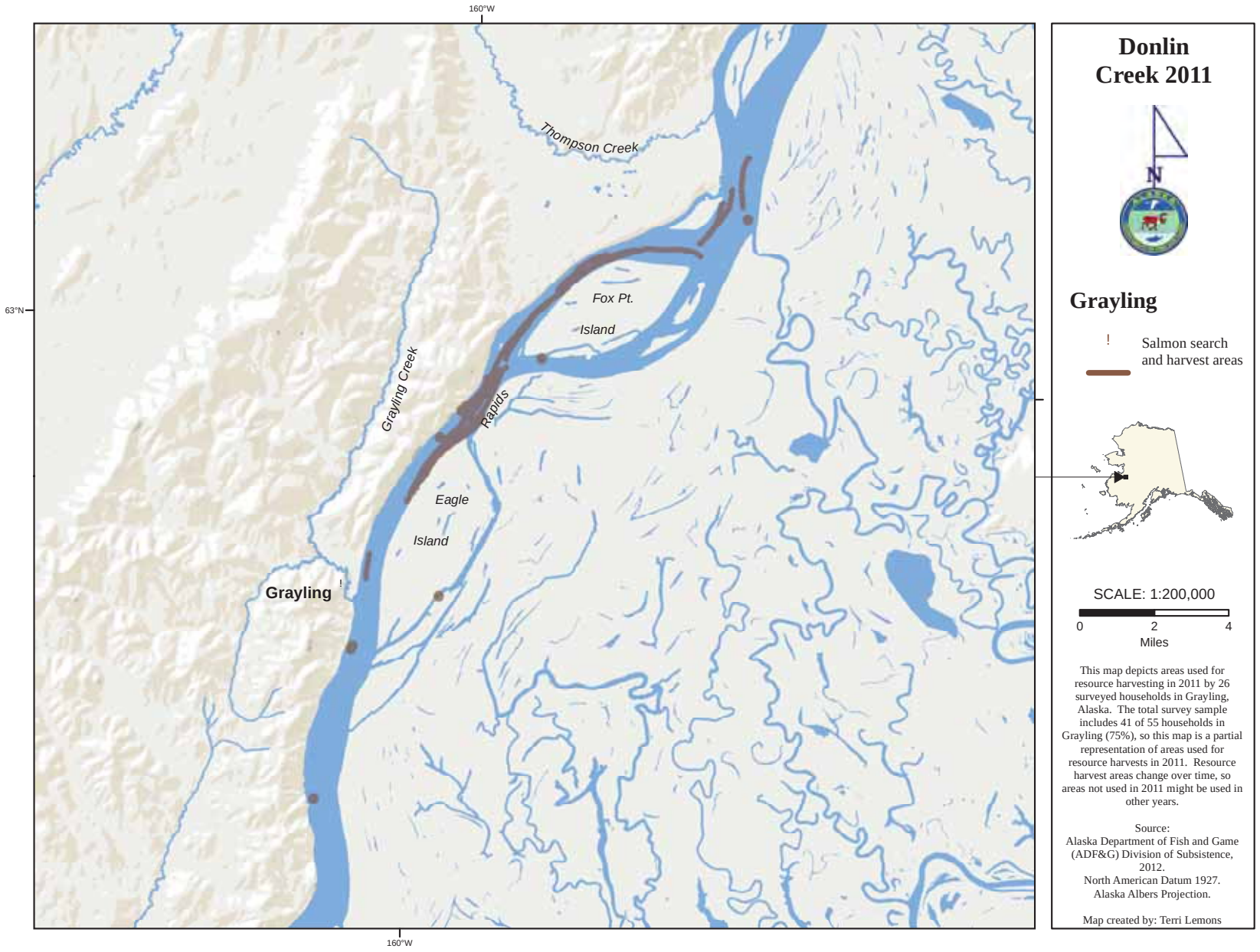


Figure 9-12.–Salmon search and harvest areas, Grayling, 2011.

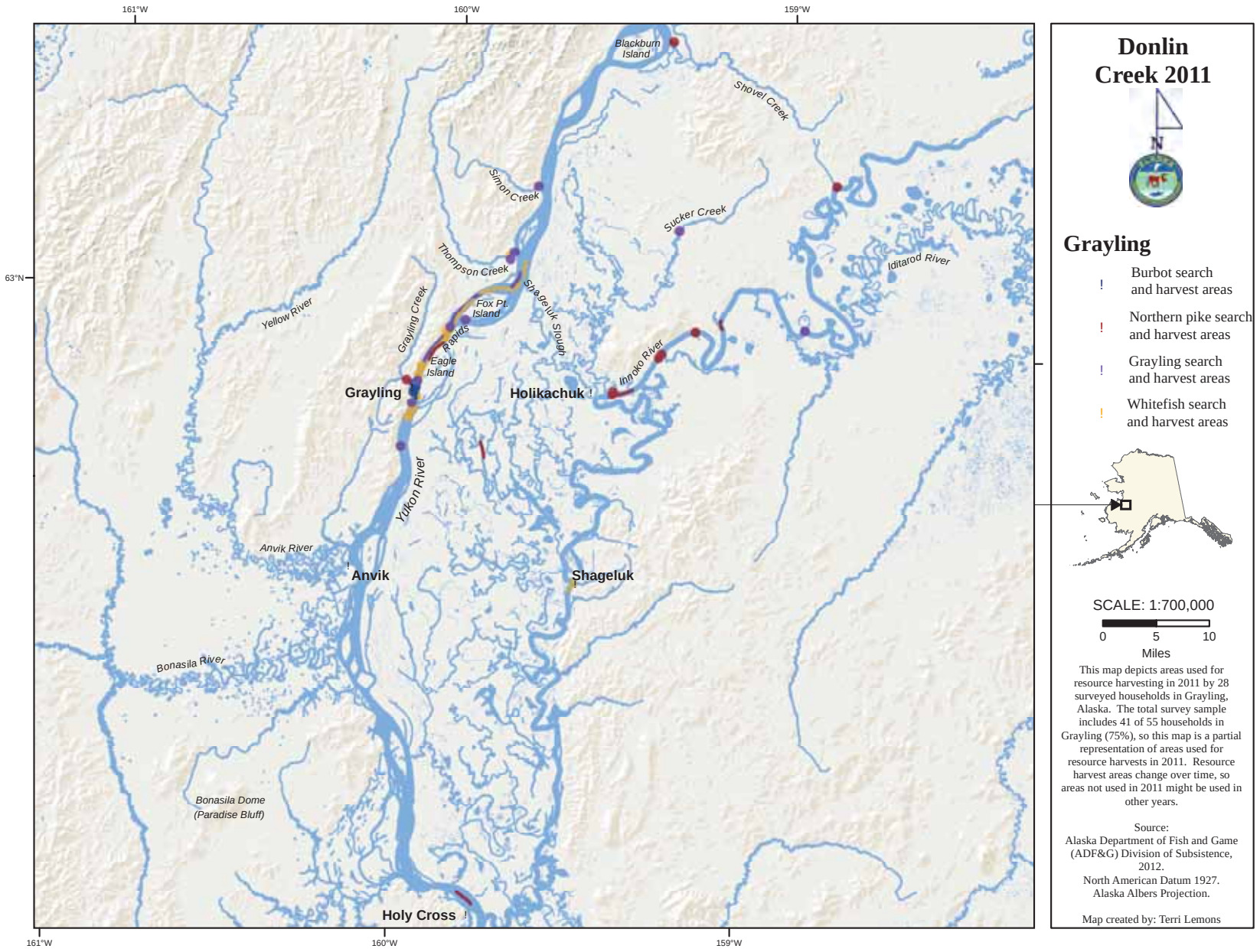


Figure 9-13.–Burbot, northern pike, Arctic grayling, and whitefishes search and harvest areas, Grayling, 2011.

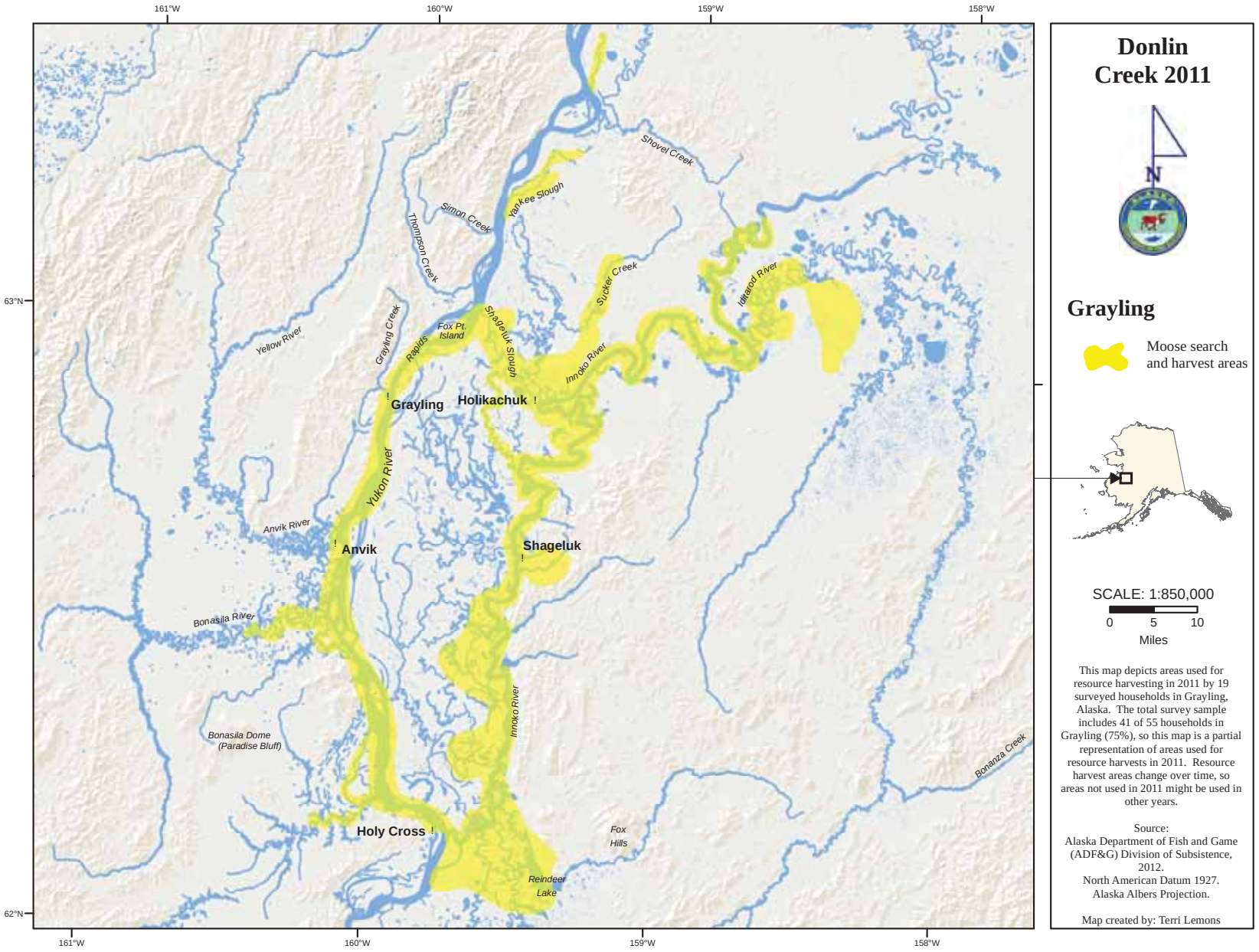


Figure 9-14.–Moose search and harvest areas, Grayling, 2011.

Grayling households participated in a fair amount of trapping for subsistence depicted in Figure 9-15. The most important areas for trapping activities in 2011 were in the lakes and sloughs in the area between the Yukon River and the Innoko River (between Grayling and Holikachuk). Another important area for trapping was on Sucker Creek north of Holikachuk. Individual trap lines were not mapped for confidentiality purposes.

The map depicting search and harvest areas for birds shows distinctive areas for ducks and geese, and other birds such as ptarmigan and grouse (Figure 9-16). Ptarmigan and grouse (primarily grouse) were hunted in close proximity of the village of Grayling, including on Eagle Island. Migratory waterfowl were harvested in specific locations on the Yukon River (a flyway at the south side of Fox Point Island and on 2 islands across from the village of Anvik), in an area just west of the village of Shageluk, and on the Innoko River from Holikachuk east to just north of the mouth of the Iditarod River. The flyway at Fox Point Island has consistently hosted geese, said one respondent. He said that there is a sandbar at this location and during spring, any exposed sand gets whipped around by the wind and:

> Once the sun gets a little foot hold, and the sand gets brown, and it blows all around there, the sun will melt that sand bar. And that makes one of the first clearings you know. So, that would be the first open ground that's around the country. The geese see that, and I guess they must know it from generations. (021312KGX02)

Grayling households primarily harvest ducks in the fall, but geese are easier to harvest in the spring.

Grayling households harvested berries and greens over a large area. Households traveled to various areas along the Yukon River, to the south side of Fox Point Island, up Shageluk Slough to Holikachuk Slough, and south just past Shageluk (Figure 9-17). Much of this area is similar to harvest search areas for large land mammals and other species because many households participate in gathering berries and greens while participating in other harvest activities. One key respondent recalled that historically, there were a lot of blueberries and low-bush cranberries around Holikachuk: "There was a spot there on the west side of the airport that you could just fill up 10 five-gallon buckets with [low-bush] cranberries. Probably still there" (021112KGX01). The historical ties to the land around Holikachuk explain the continued use of this traditional harvest area by Grayling households.

Harvest Assessments

Researchers asked respondents to assess their own harvests in 2 ways: whether they got more, less, or about the same amount of 7 resource categories in 2011 as in past years, and whether they got "enough" of each of the 7 resource categories. Households also were asked to provide reasons if their use was different or if they were unable to get enough of a resource. If they did not get enough of a resource, they were asked to evaluate the severity of the impact to their household as a result of not getting enough. They were further asked whether they did anything differently (such as supplement with store-bought food or switch to a different subsistence resource) because they did not get enough. This section discusses responses to those questions.

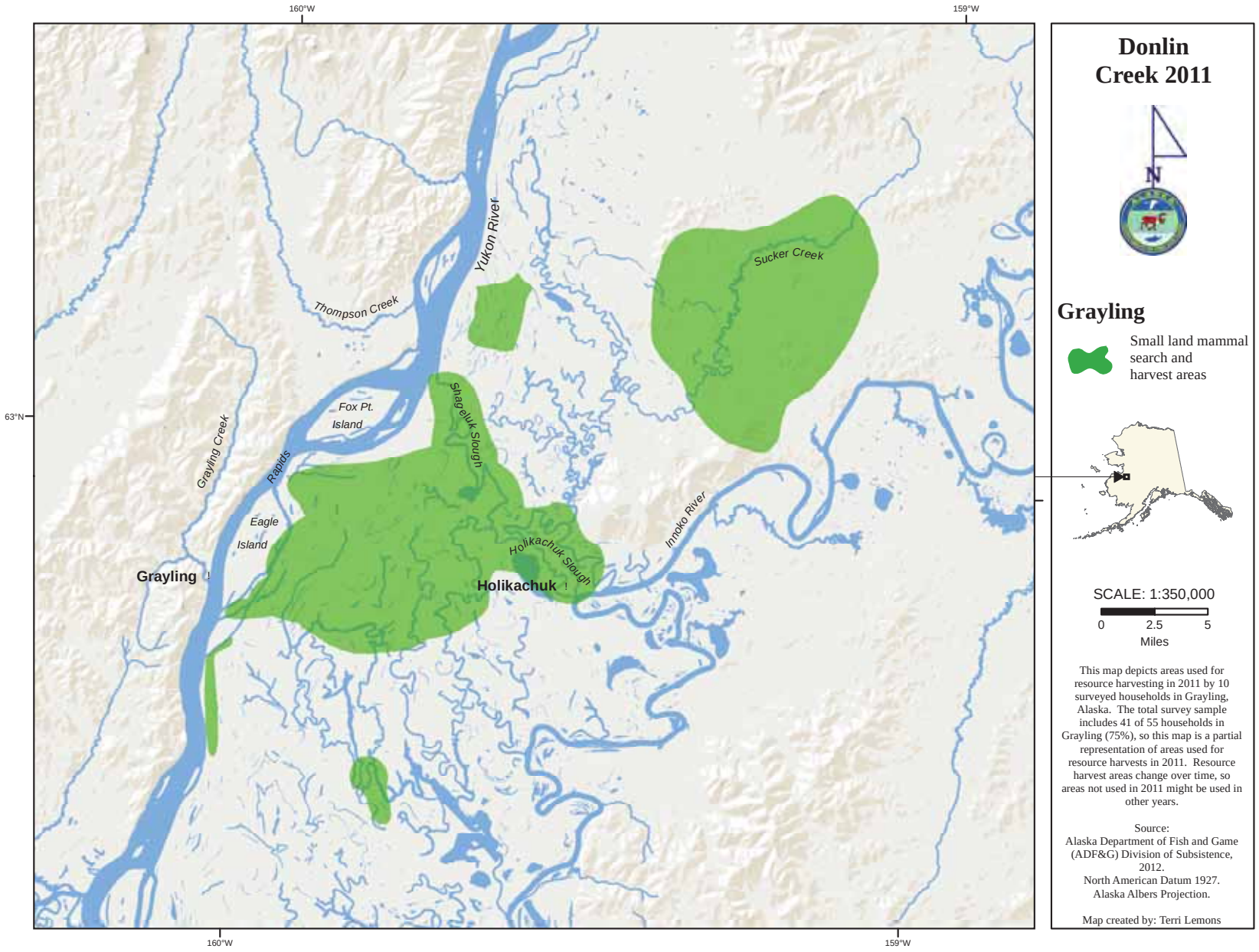


Figure 9-15.–Small land mammal search and harvest areas, Grayling, 2011.

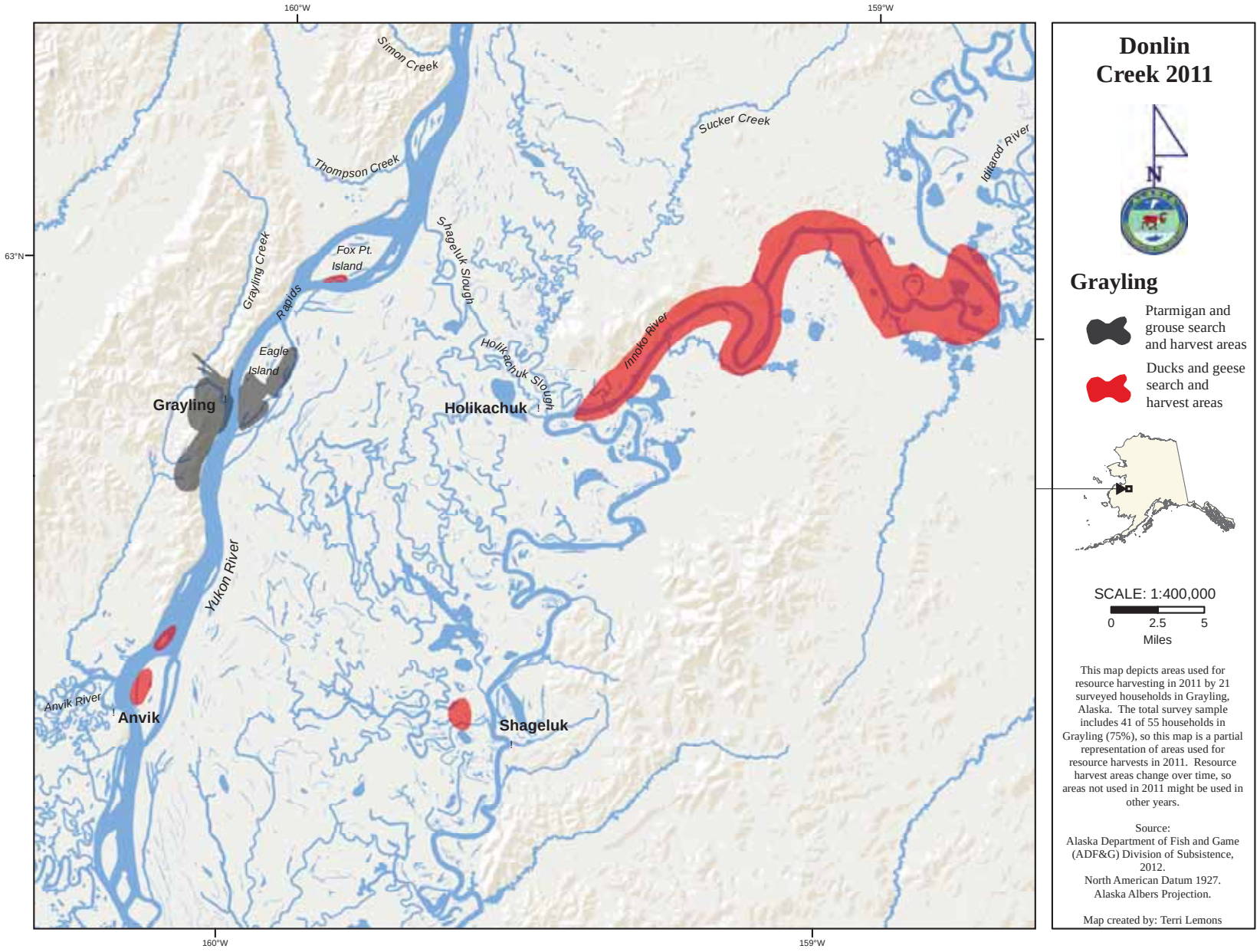


Figure 9-16.–Ptarmigan, grouse, ducks, and geese search and harvest areas, Grayling, 2011.

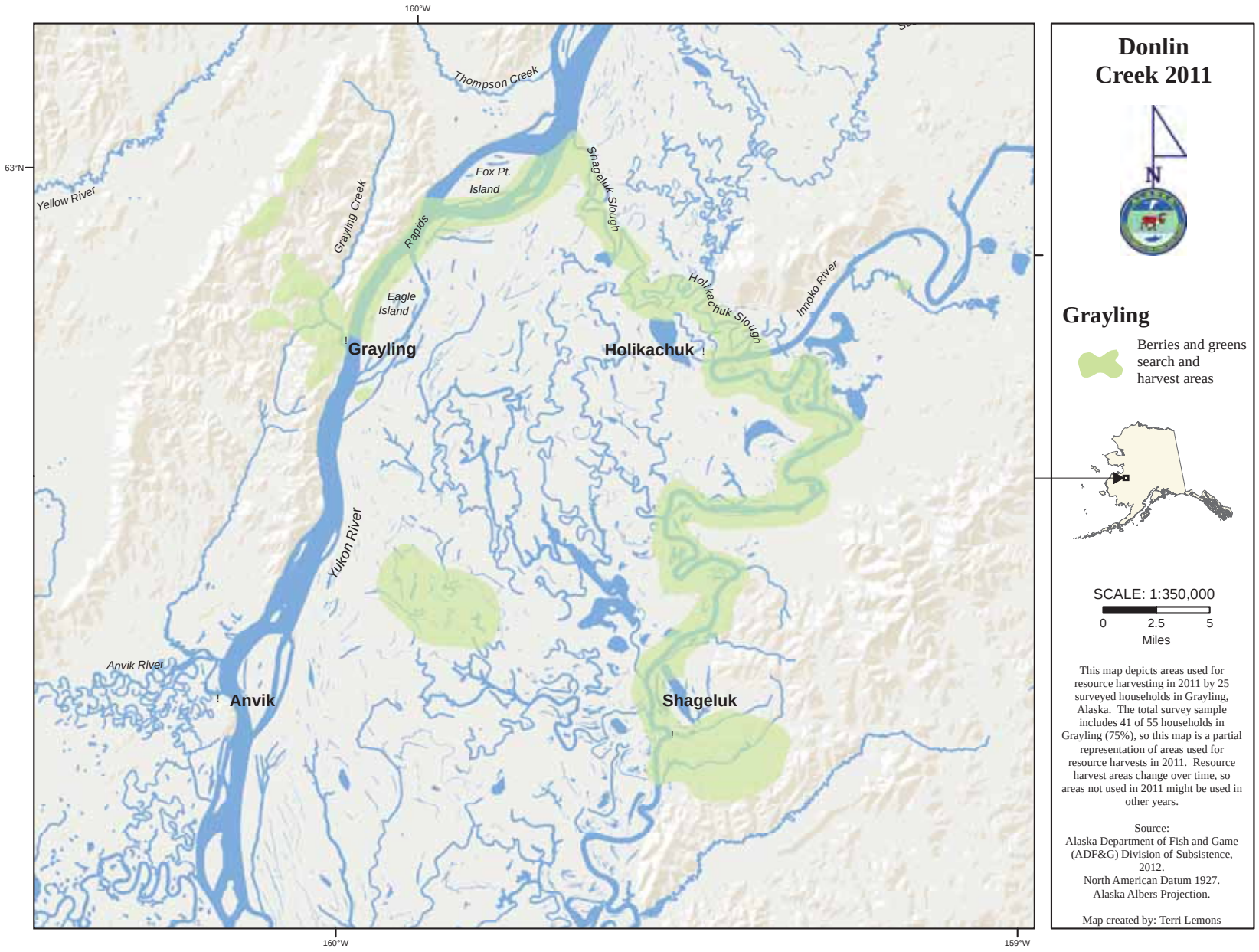


Figure 9-17.–Berries and greens search and harvest areas, Grayling, 2011.

Together, Figure 9-18 and Figure 9-19 provide a broad overview of households' harvests. Because not everyone uses all resource categories, some households did not respond to the assessment questions. Additionally, some households that do typically use a resource category simply did not answer questions. While the percentages displayed in these figures were calculated including all surveyed households (including those that did not respond to the question), the bars specifically highlight responses provided by households reporting that they typically use the resource category. Generally, the results are presented in this section as they appear in the figures, but it is important to remember that they are not limited only to households that ordinarily use the resource. Additional details are provided in cases where further analysis lends clarity to the discussion of use patterns.

Salmon fishing sustains Grayling households with 100% of households reporting that they used this resource. In 2011, 59% of 41 surveyed households reported that they got enough salmon and 41% said they did not get enough. However, their use has declined from recent years; 63.4% of households said they used less salmon, 25.8% said they used the same amount, and 9.8% reported using more salmon. Households provided a variety of reasons as to why their use in 2011 differed from recent years (Appendix tables D8-6 through D8-9). For households who used less in 2011 than in recent years, the major contributing factors were regulations (7 households), didn't get enough (5 households), did not receive (4 households), and resource availability or resources too far (3 households each). Respondents who said they simply didn't get enough were likely prevented from fishing as much as they may have wanted because of regulations or other conditions. One woman explained how the tightened regulations affected her family's ability to harvest king salmon:

> We caught only a third of what we usually get last year, last summer…. Because the closures, and because we didn't have a lot of help out here. You know there was just me, and I work … And we had just 1 boat out. Somebody from Anvik game me some, about 25 fish out of a net (021112KGX01).

The few households that used more said they had increased success or received more. When asked to evaluate the impact to their household from not getting enough salmon to meet their needs (on a scale ranging from "not noticeable" to "severe"), 47% of households rated the impact as "minor," 41% rated it as "major," and 12% as "severe" (Appendix Table D8-10).

Households were also asked whether their household got enough of a particular resource. If the answer was "no," then they were asked to provide reasons as to why they were not able to get what they needed. In Grayling, Chinook salmon was the most commonly cited resource that households said they did not get enough of (18 households), followed by blueberries (16 households), and moose (14 households). Several other resources were listed, but these 3 were by far the most commonly named resources (Appendix Table D8-13). Households that did not get enough Chinook salmon listed a variety of reasons as to why including regulations, not getting enough or unsuccessful, and not being given any (Appendix tables D8-11 and D8-12). Because they were unable to get enough to meet their needs, 60% of households that did not get enough salmon said they had to do something differently such as purchase more food from the store.

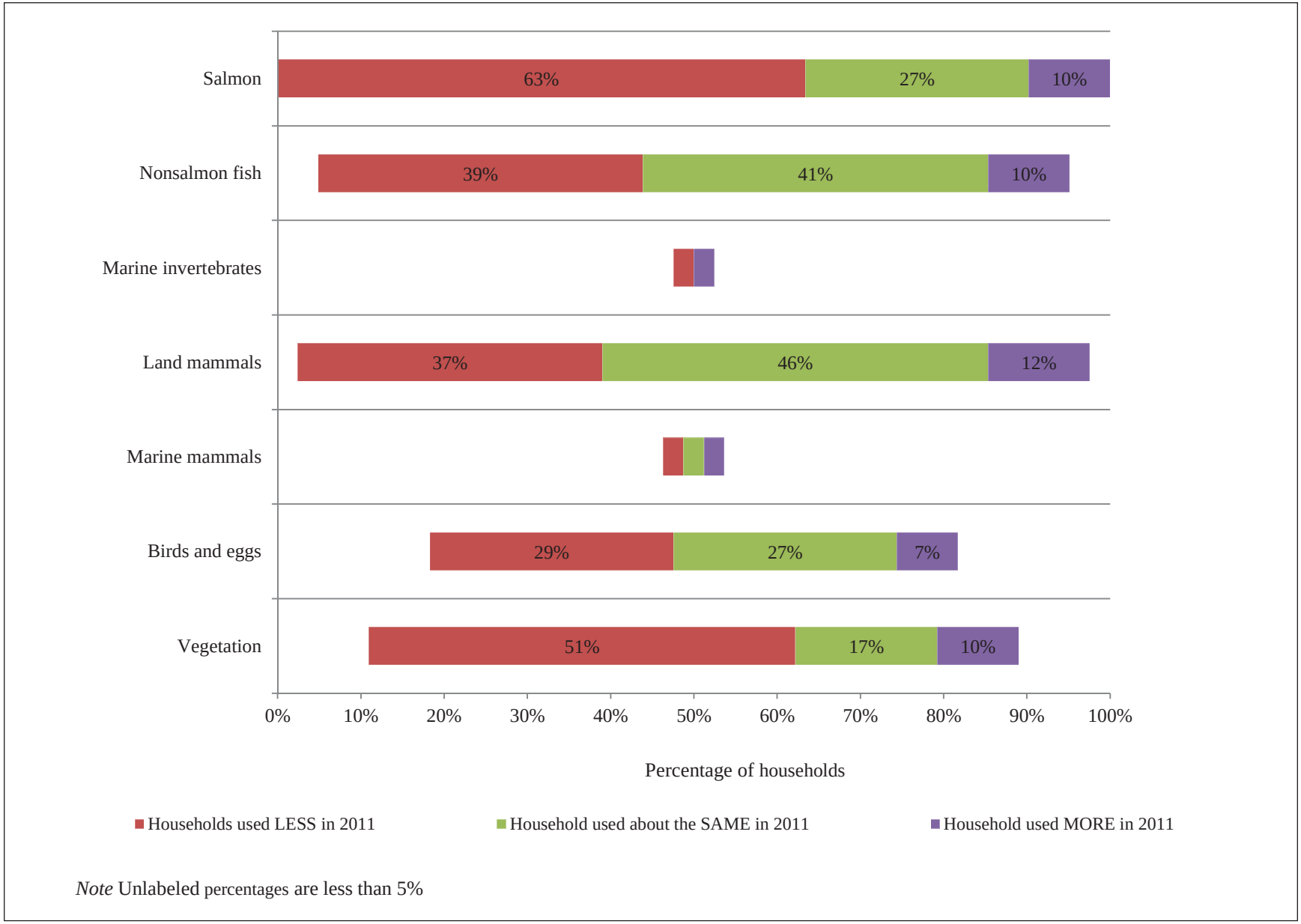
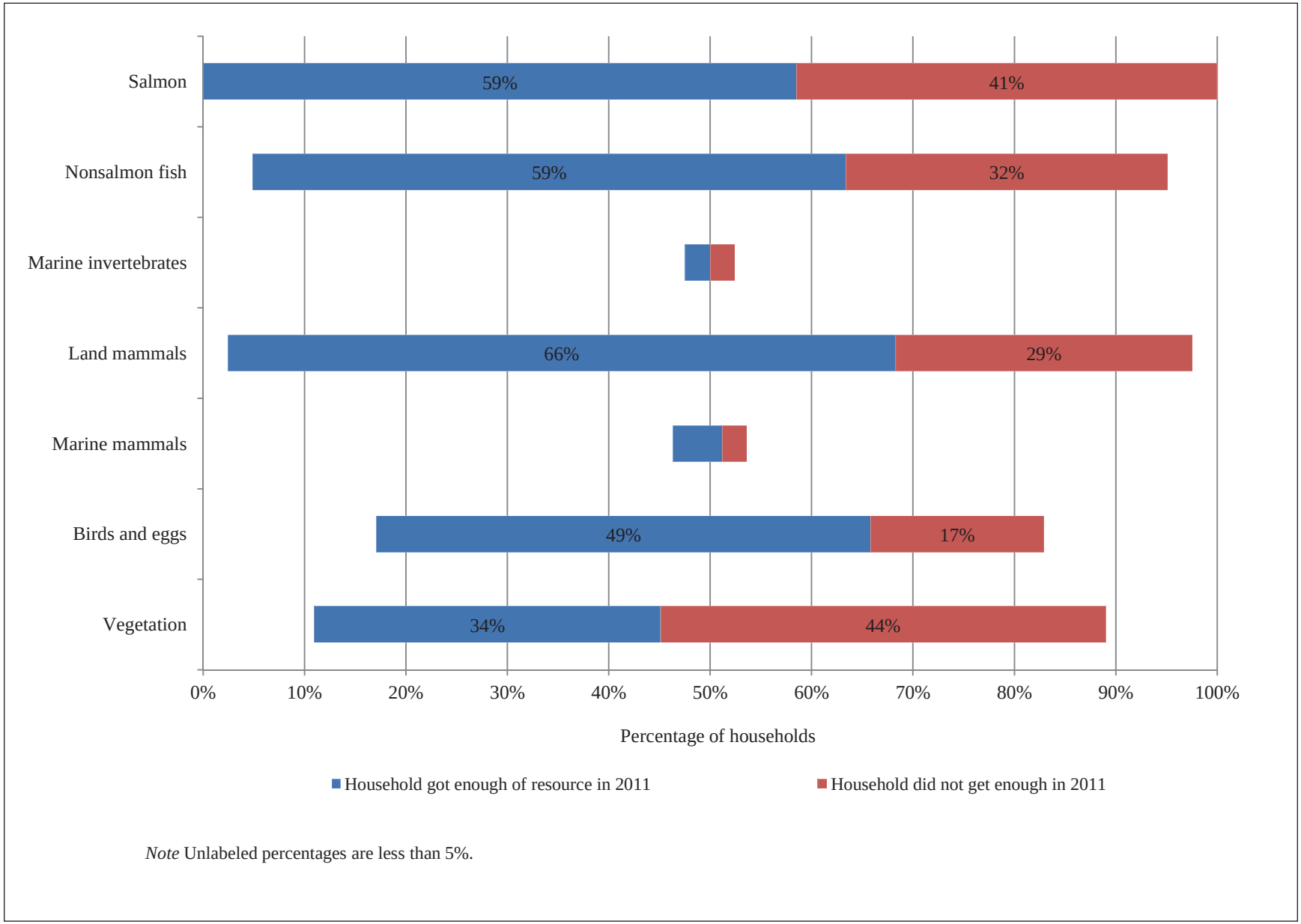


Figure 9-18.–Number of households using a resource and reporting LESS, SAME, or MORE use as compared to previous years, Grayling, 2011.



Note Unlabeled percentages are less than 5%.

Figure 9-19.–Number of households reporting getting enough resources, Grayling, 2011.

Nonsalmon fish species are also important contributors to the diets of Grayling residents because of their year-round availability. Fifty-nine percent of Grayling households reported that they got enough nonsalmon fish during the study year, and 32% said they did not get enough. This is similar to respondents' assessment of salmon species. However, 39% of households said they used less nonsalmon in 2011; 42.5% said they used the same amount, and 9.8 % said they used more in 2011. Reasons provided for using less nonsalmon fish included not getting enough (6 households), and unsuccessful or not receiving (3 households each). The 4 households that used more nonsalmon fish said they either had increased success (2 households), increased their effort (1 household), or offered another reason that is unlisted (1 household). Few households (27%) that said they did not get enough nonsalmon fish reported doing something differently because they did not get what they needed. Harvests of nonsalmon fish have declined in recent years, suggesting that households are either getting accustomed to having less nonsalmon fish available – or perhaps that the cultural importance to express gratitude for the harvest that was available creates a reluctance to report not getting enough of a certain resource on a harvest survey.

Like fish, land mammals such as moose and beaver are important sources of sustenance for Grayling households. Of 41 households, 39 said they use land mammals. In 2011, 66% of all 41 households said they got enough, whereas 29% said they did not get enough. Few households (less than 12%) reported using more land mammals in 2011 than in recent years; more commonly households said they either used less (37%) or the same amount (46%) in 2010. Hunting and trapping for land mammals typically is associated with high expenses, especially as prices of gasoline and oil (for motor boats) continue to rise. The primary reason households said they used less land mammals in 2011 than in recent years was because they were not successful when they went hunting (6 households). For households who did not get enough land mammals, 25% described it as having a minor impact on the household, whereas 75% said it was either a major or severe impact for their household. All of households that said they did not get enough land mammals said that because of a shortage of the resources and that they bought more commercial foods to make up for that shortage. This high percentage of households having to replace their subsistence food with store-bought food is significant, especially considering the lack of availability and the high cost of food sold in rural Alaska.

Grayling households who said they use the various species that fall into the "birds and eggs" resource category primarily referred to birds rather than eggs. Of all 41 households surveyed, 49% said they got enough birds and eggs, whereas 17% said they did not get enough. This indicates that a majority of households that use birds and eggs are able to harvest enough to meet their needs.

Berries and greens (including firewood) are another widely used resource in Grayling. Of all households, 34% said they got enough berries and greens in 2011; 44% did not get enough. Use of these resources has declined, with 51% of all households reporting that in 2011, they used less berries and greens than in recent years. Seventeen percent said they used the same amount, and 10% said they used more in 2011. Households that reported less use than in recent years cited problems getting enough (6 households), resource availability (5 households), low effort (4 households), or other reasons such as family, weather, or work. Households that said they did not get enough blueberries primarily said they either did not get enough when out berry

Photo by Brittany Retherford

Figure 9-20.–The Grayling Native Store is run by a local staff of residents. The store is also the source of many non-subsistence grocery purchases.

picking, or their effort was low. Households that did not get enough moose said they were not able to get enough, the resource was not available, or they were not given any.

Few households use marine invertebrates (e.g. clams or shrimp) in Grayling due to lack of local availability. Marine mammals and marine mammal products (e.g. seal oil) are not commonly used by Grayling households. Only 3 households responded to this question; 2 said they got enough and 1 did not.

JOBS AND INCOME

Living in rural Alaska can be expensive with high prices associated with almost every aspect of daily life. Opportunities for wage earning jobs are often limited but are still an important part of the mixed subsistence and cash economy (Figure 9-20). Researchers asked respondents in Grayling about both earned income (jobs held and wages earned by all household members 16 years old and older) and other income (Alaska Permanent Fund dividend, Social Security, public assistance, etc.). The survey also asked respondents about

Table 9-8. – Estimated earned and other income, Grayling, 2011.

Income source	Number of people	Number of households	Total for community	Mean per household[a]	Percentage of total[b]
Earned income					
Local government	44.3	34.7	$537,908	$9,780	28.6%
Services	32.2	23.2	$322,314	$5,860	17.2%
Federal government	12.1	13.0	$84,230	$1,531	4.5%
Construction	5.4	5.8	$72,472	$1,318	3.9%
Other employment	6.7	7.2	$60,216	$1,095	3.2%
State government	5.4	5.8	$57,995	$1,054	3.1%
Retail trade	5.4	5.8	$24,390	$443	1.3%
Transportation, communication, and utilities	1.3	1.4	$12,740	$232	0.7%
Earned income subtotal	**97.5**	**50.7**	**$1,172,265**	**$21,314**	**62.4%**
Other income					
Alaska Permanent Fund dividend		51.0	$211,239	$3,841	11.2%
Food stamps		24.1	$172,602	$3,138	9.2%
Native corporation dividend		49.6	$75,594	$1,374	4.0%
Unemployment		17.4	$70,596	$1,284	3.8%
Social Security		9.4	$53,681	$976	2.9%
Pension/retirement		8.0	$51,305	$933	2.7%
Energy assistance		36.2	$20,712	$377	1.1%
Meeting honoraria		5.4	$15,757	$286	0.8%
Disability		1.3	$14,488	$263	0.8%
TANF (temporary cash assistance for needy families)		1.3	$9,256	$168	0.5%
Child support		9.4	$7,220	$131	0.4%
Longevity bonus		2.7	$4,123	$75	0.2%
Adult public assistance		0.0	$0	$0	0.0%
Supplemental Security income		0.0	$0	$0	0.0%
Workers' compensation/insurance		0.0	$0	$0	0.0%
Veterans assistance		0.0	$0	$0	0.0%
Other		0.0	$0	$0	0.0%
Foster care		0.0	$0	$0	0.0%
Citgo fuel voucher		0.0	$0	$0	0.0%
Other income subtotal		**52.3**	**$706,572**	**$12,847**	**37.6%**
Community income total			**$1,878,837**	**$34,161**	**100.0%**

Source ADF&G Division of Subsistence household surveys, 2012.

a. The mean is calculated using the total number of households in the community, not the number of households for this income category.

b. Income by category as a percentage of the total community income from all sources (wage-based income and non-wage-based income.)

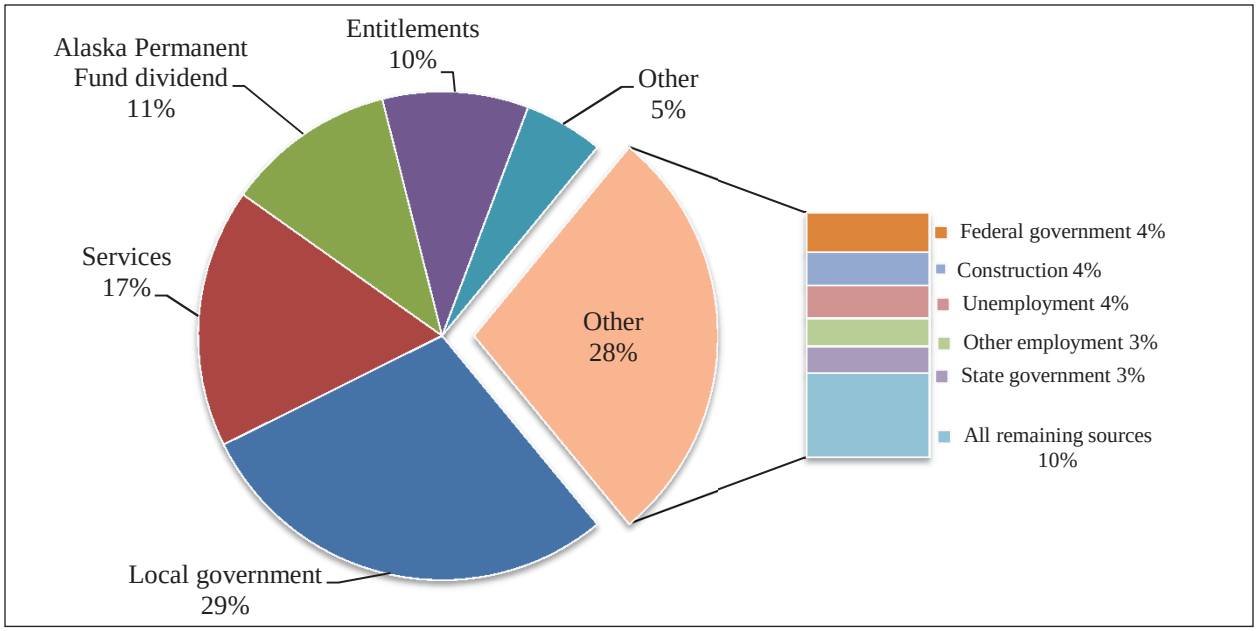


Figure 9-21.–Top 10 income sources ranked by estimated amount, Grayling, 2011.

months worked and their work schedule. Income information is displayed in Table 9-8 and Appendix tables D1-4 and D8-14.

For 2011, Grayling households earned or received an estimated $1.9 million, of which $1.2 million (63%) was from wage employment and $705,572 (38%) was from other sources (Table 9-8). Average household income was $34,161 and per capita income was an estimated $8,819. The top 3 sources of income for Grayling households were local government (29%), services (17%), and the Alaska Permanent Fund dividend (11%). Grayling is governed by both a city council and a tribal council, which provide numerous services to community residents. Local government also includes teachers and other school district personnel. Service occupations include health care, social services, education and tourism or guiding related businesses. The ANCSA village corporation for Grayling is Hee-Yea-Lingde Corporation, which has its headquarters in the village. The regional corporation is Doyon, Limited. Several households hold shares in one or both of these corporations, but some respondents reported shares in neighboring village corporations.

Figure 9-21 depicts the percentage of community income by source, whether earned income or other income. Though the survey data are confidential, 29% of households in Grayling declined to provide complete earnings information. As such, income data may not provide a full description of the economic profile of Grayling.

In 2011, 98 individuals—or 71% of adults—held some form of employment during 2011. The typical worker held an average of 1.6 jobs, though at least 1 person reported 5 separate jobs in 2011. Employed adults reported having employment for an average 8.6 months, with 42% reporting working year-round. Most households in Grayling had at least 1 adult that was employed during 2011, but an estimated 4 households reported no employed adults. The average number of employed workers per household was 1.8 people,

though at least 1 household reported 4 employed adults. The survey also asked respondents whether the jobs they held were full-time, part-time, shift, on-call (occasional), or part-time (shift). In Grayling, 53% of employed adults had full-time jobs, while 41% reported having part-time jobs. Twenty-nine percent of adults said the nature of their employment schedule was on-call. In comparison, the 2006–2010 American Community Survey (ACS) reported a local unemployment rate of 40% (ADLWD 2014).

The wage economy in Grayling has changed over the past century, but there have always been limited opportunities for work. Income earning opportunities ranged from trapping, to cutting firewood for heating homes or selling to the wood-burning steamboats, to selling extra fish during the summer season, to cannery jobs. During the 1950s and 1960s, many men left Grayling for the Naknek cannery during the summer months, "so the women and some of the men stayed back …and the kids" (021112KGX01). A commercial fishery for chum salmon roe provided good income for several households during the 1970s and 1980s, but this fishery declined, and today people are less interested in purchasing a permit.

In 2011, 31 individuals held commercial fishing permits. Grayling has a unique geographical location in Alaska: it is located 350 river miles from the mouth of the Yukon River, but lies less than 50 miles from the coast. This geographic location makes it eligible to be included in the CDQ program added to in 1996 to the Magnuson–Stevens Act and represented by the Yukon Delta Fisheries Development Association (YDFDA). A subsidiary of YDFDA is Kwik'pak Fisheries, LLC., which employs some Grayling residents. A local commercial fishery exists for Arctic lamprey, but the fishery was not as successful in 2011 as in previous years due to ice conditions (YDFDA 2010:4). The previous year, more than 32,000 lb of lamprey were sold for a value of $41,000 (YDFDA 2010:3).

In summer months, regular visits from barges on the Yukon River supply Grayling households, but during winter, any food, clothing, or gear and equipment must be freighted into the community by air. High prices characterize most aspects of rural life. As part of the survey, respondents were asked to identify how much they paid for everyday household expenses (rent/mortgage, fuel oil, TV) during the study year. They were also asked how much money they spent to pursue subsistence harvest activities, such as how much they spent to pay for gas to go hunting, fishing, and berry picking. Since gear and equipment (boats, snowmachines, ATVs) are often long-term investments for households, respondents were also asked how much they initially paid for these items that were used during the study year and to estimate how often they needed to replace them. Answers to these questions varied significantly as some respondents kept careful records of their expenses, while others did not and were only able to provide estimates. Respondents were also asked whether they owned or used different equipment during the study year. Information gathered from this section is displayed in Table 9-9.

In 2011, Grayling households spent an estimated $772,731 on every day household and subsistence hunting and fishing-related expenses. The average household spent $14,050, with food as the single most costly category. The average household spent $7,555 on groceries. The average household spent $1,067 on subsistence-related expenses, including gasoline ($618 per household), ammunition ($119 per household), equipment parts ($173 per household), and other supplies ($156 household). This number is likely much

Table 9-9. – Estimated annual expenses, Grayling, 2011.

Household expenses	Number of households	Total for community	Mean per household	Percentage of category	Percentage of total
Total expenses	**55.0**	**$772,731**	**$14,050**	**100.0%**	**100.0%**
Housing	55.0	$298,521	$5,428	100.0%	38.6%
Rent/mortgage	13.4	$43,120	$784	14.4%	5.6%
Stove oil	26.8	$50,324	$915	16.9%	6.5%
Firewood	20.1	$13,988	$254	4.7%	1.8%
Electricity	53.7	$68,037	$1,237	22.8%	8.8%
Propane	36.2	$21,011	$382	7.0%	2.7%
Water/sewer/garbage	52.3	$61,188	$1,113	20.5%	7.9%
Telephone	47.0	$14,139	$257	4.7%	1.8%
Television	29.5	$26,714	$486	8.9%	3.5%
Groceries	55.0	$415,517	$7,555	100.0%	53.8%
Store-bought groceries	55.0	$415,517	$7,555	100.0%	53.8%
Subsistence–customary trade	0.0	$0	$0	0.0%	0.0%
Subsistence	55.0	$58,693	$1,067	100.0%	7.6%
Gasoline	38.9	$33,986	$618	57.9%	4.4%
Ammunition	33.5	$6,564	$119	11.2%	0.8%
Equipment parts	20.1	$9,540	$173	16.3%	1.2%
Other supplies	20.1	$8,603	$156	14.7%	1.1%

Source ADF&G Division of Subsistence household surveys, 2012.

lower than what household actually spent on activities related to hunting, fishing, and gathering wild foods. Many households were able to easily estimate how much they recalled spending to purchase food at the local store or for shipments of food because the amount was typically stable from month to month. Subsistence-related activities vary widely throughout the year, however, and several respondents struggled to determine a dollar amount for how much they spent specifically on gasoline for hunting and fishing during the study year.

In 2011, 81% of households said they used both boat and motor for subsistence harvest-related activities; 38% of households said they used snowmachines, 33% used ATVs, and 35% used trucks. In total, Grayling households owned an estimated 44 boats and motors, 21 snowmachines, 18 ATVs, and 19 trucks. Seventy-one percent of households used some other kind of subsistence equipment (net, etc.). Vehicles and equipment not used for subsistence activities were not counted. The total investment Grayling households paid for their vehicles and equipment was $516,016. Boats and motors were replaced less often than other equipment (Table 9-10).

Table 9-10. – Estimated equipment costs and household use, Grayling, 2011.

	Equipment used for subsistence					
	Boats	Boat motors	Nets	Snowmachines	4-wheelers (ATVs)	Trucks/cars
All households						
Using						
Estimated number	43.7	43.7	37.2	20.8	18.3	19.3
Percentage	79.5%	79.5%	67.6%	37.8%	33.3%	35.1%
Owning						
Estimated number	24.0	24.0	22.3	20.8	18.3	13.4
Percentage	43.6%	43.6%	40.5%	37.8%	33.3%	24.3%
Mean owned	0.6	0.6	0.5	0.6	0.4	0.3
Total estimated owned in the community	31.0	32.4	26.8	32.7	21.4	14.9
Mean original cost per household	$2,876	$1,932	$225	$1,891	$1,529	$1,258
Total estimated community cost	$158,162	$106,279	$12,375	$103,980	$84,118	$69,208
Estimated annual community cost	$29,075	$20,963	$3,779	$25,420	$16,130	$7,626
Only households owning						
Mean owned	1.3	1.4	1.2	1.6	1.2	1.1
Maximum owned	3	3	3	3	3	2
Mean original purchase cost	$6,597	$4,433	$555	$4,996	$4,588	$5,173
Minimum original purchase cost	$1,250	$400	$250	$833	$200	$1,500
Maximum original purchase cost	$15,000	$7,000	$800	$7,950	$9,000	$7,000
Median original purchase cost	$4,000	$4,375	$550	$2,583	$4,717	$5,000
Mean replacement time (years)	6.9	6.1	3.3	4.2	9.0	9.7
Minimum replacement time (years)	0	0	0	1	2	7
Maximum replacement time (years)	15	15	5	12	15	12
Median replacement time (years)	7.3	7.0	3.0	3.0	10.0	10.0

Source ADF&G Division of Subsistence household surveys, 2012.

Food Security

Respondents were asked a short series of questions intended to assess their household's food security, that is, "access by all people at all times to enough food for an active, healthy life" (Nord et al. 2008:2). The food security questions were modeled on questions developed by the U.S. Department of Agriculture (USDA), modified by ADF&G to account for differences in access to subsistence and store-bought foods. Core questions and Grayling responses are summarized in Figure 9-22.

Based on their responses to various food conditions (whether a household worried about having enough food, whether food that the household had lasted, etc.), households were categorized as being either food secure or food insecure (Bickel et al. 2000). Food secure households were broken down further into 2 subcategories—either high food security or marginal food security. Food insecure households were also divided into 2 subcategories: low food security or very low food security. Households with high food security did not report any indications of food access problems and gave little to no indication of diet changes taking place as a result of this anxiety. Households with marginal food security reported 1 or 2 instances of food access problems or other limitations. Households with low food security were those that reported reduced quality, variety, or desirability of their diet. Households characterized as having very low food security were those that reported multiple instances of disrupted eating patterns and reduced food intake or change in diet (Coleman-Jensen and Nord 2013).

As a rural community, Grayling is heavily dependent on subsistence resources as a food source. However, all households rely on a combination of store-bought and subsistence foods for sustenance. Grayling has 1 store, which is frequented by many residents, but high prices and lack of variety and availability are, as in many rural communities, a persistent concern. It is common practice for some Grayling families to travel to Anchorage to grocery shop or place bulk orders, but this is also expensive.

In Grayling, 90% of surveyed households had high or marginal food security (Figure 9-23). Ten percent of households had low food security, and 0% of households reported very low food security. The percentage of food secure households is slightly higher than state and national food security levels from 2011. Because the sources of food for rural Alaska residents often differ from those for the greater United States' population, it is important to explore the conditions that exist in Grayling households concerning food availability, quality, sufficiency, and the corresponding relationship to changes in food intake or diet.

In 2011, an estimated 15% of households in Grayling worried that they did not have enough food at some point during the previous 12 months, whereas, 29% of households said they lacked the resources they needed to get food (including resources they needed to hunt, fish, gather, or buy food). Twenty percent of households felt that the food they did have not only did not last the duration of the previous 12 months, but that they were unable to get more food. More specifically, 27% of households said that their subsistence foods ran out, and they were unable to get more, whereas no households reported that their store-bought food ran out, and they were unable to get more. To evaluate the severity of the food security conditions, household respondents were asked to respond to various statements about whether they had to change their

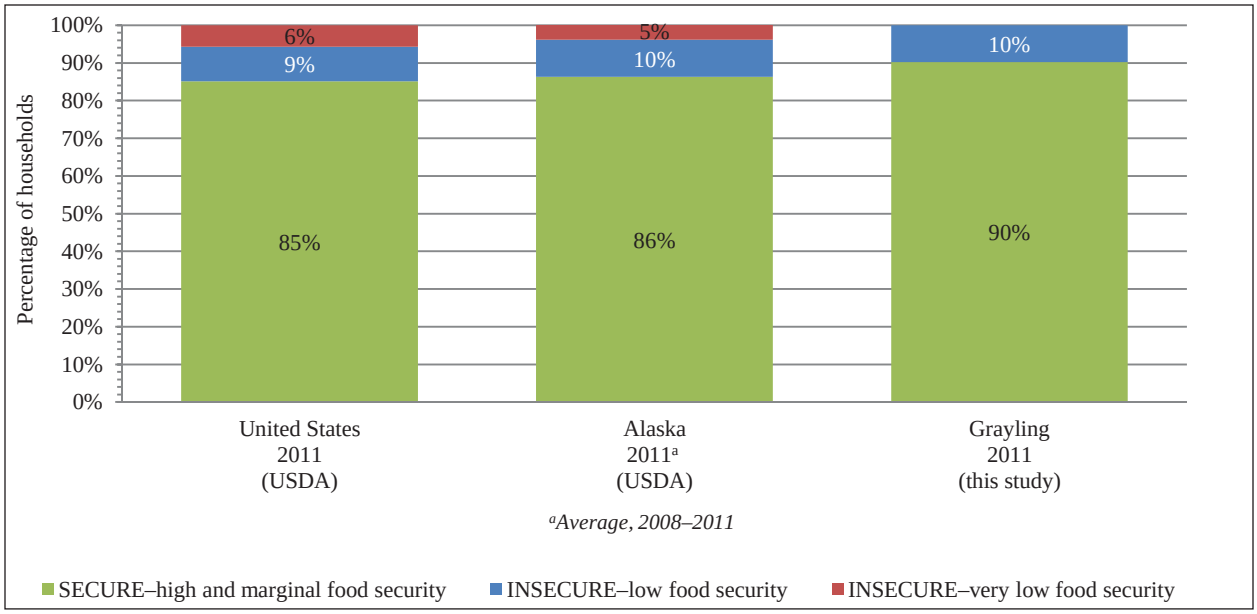


Figure 9-22.–Food security categories, Grayling, 2011.

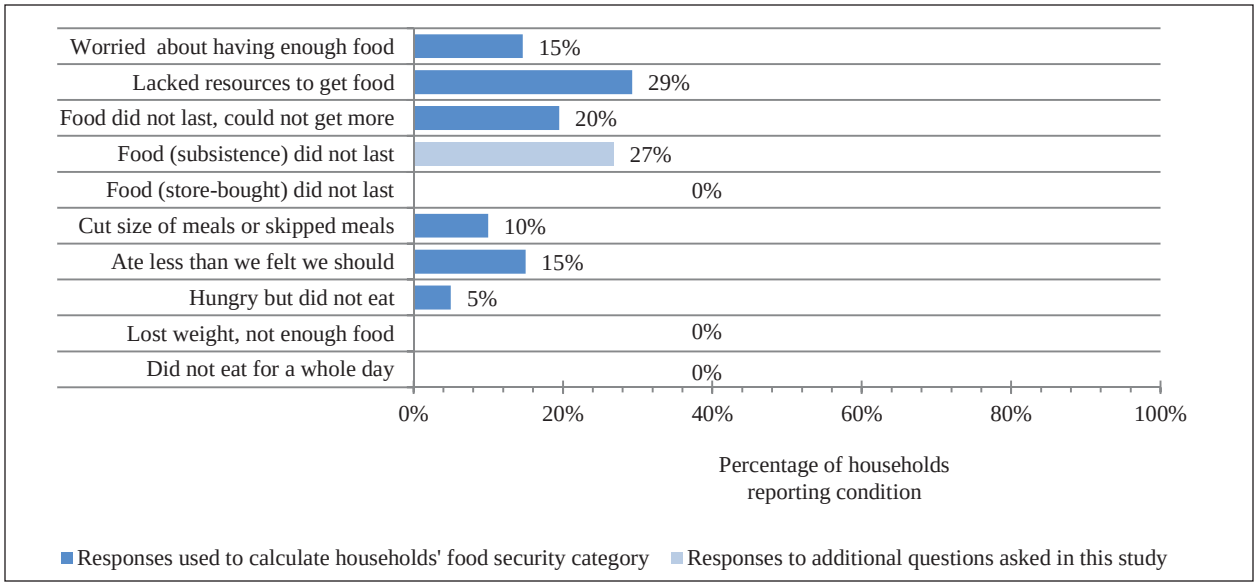
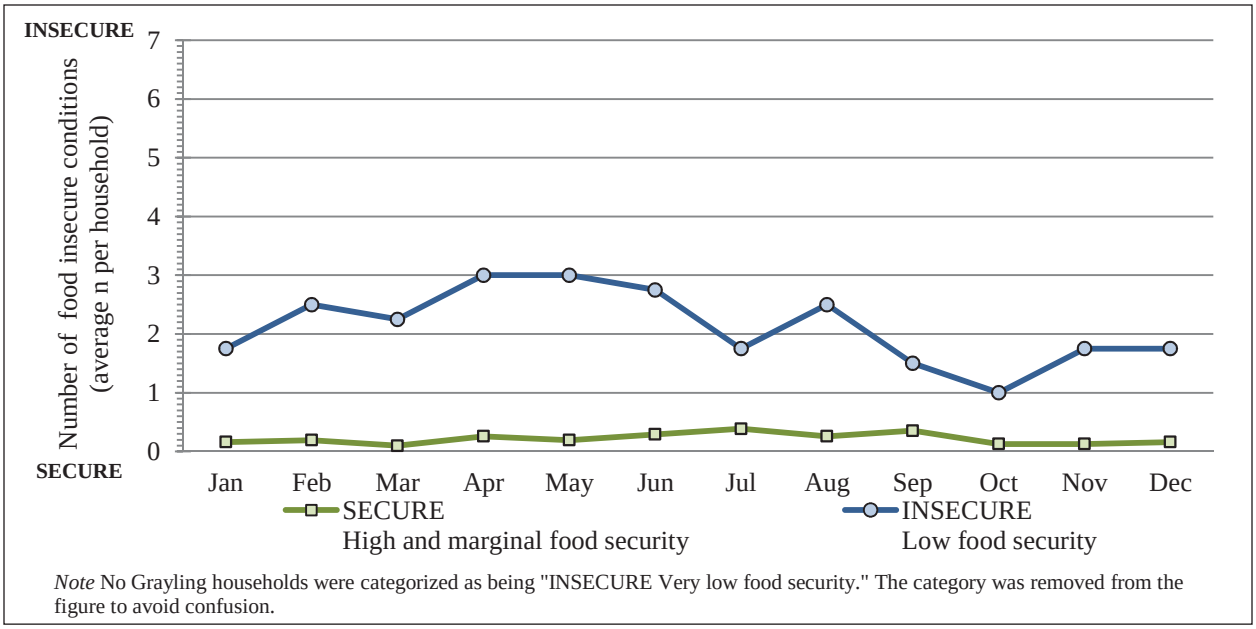


Figure 9-23.–Food insecure conditions results, Grayling, 2011.



Note No Grayling households were categorized as being "INSECURE Very low food security." The category was removed from the figure to avoid confusion.

Figure 9-24.–Food insecure conditions by month and by household category, Grayling, 2011.

food intake as a result of food shortage. In Grayling, 15% of households said that in 2011 there was at least 1 occasion when they ate less than they felt they should, with 5% of households responding that they were hungry but did not eat. No one reported losing weight or not eating for a whole day because of lack of food, the 2 indicators of most severe food conditions.

Households were also asked the months during the year that food shortages or other insecure conditions persisted for them. Figure 9-24 depicts the seasonal variations in food security. In Grayling, households that were food secure in 2011 experienced this condition year-round. However, food insecure households experienced a seasonal shift in their security. Households identified April, May, and June as the months when they had the greatest anxiety about their food situation. This anxiety declined somewhat during July, rose in August, and declined in September and October. November, December, January, and February found households experiencing a steady rise in anxiety about food security. This could coincide with the availability of subsistence resources, combined with the specific conditions and access to these resources in 2011. The dip in July coincides with the harvest of salmon on the Yukon River, but closures and declining salmon runs may have caused anxiety toward the end of summer as households worried about the amount of food they had been able to put away for winter. Successful moose hunting in September may have provided some relief to these households, depicted by a drop in anxiety about food conditions. With colder temperatures in the fall months, households expend more money to heat their homes, which could help to explain the slow rise in food insecurity beginning in October and continuing through until spring. Households that were not able to put away enough fish or moose meat in 2010 might have contributed to an anxious spring. While most all households in Grayling share wild foods as a way to redistribute subsistence harvests (see “Wild

Food Networks"), those with low food security conditions might be the ones who consider themselves to be the most likely to benefit from sharing networks (such as elders or working families), or are themselves high harvesters and consider wild food availability to be a more stable source of food security than store-bought food.

Wild Food Networks

Redistribution of subsistence foods, including sharing, barter and customary trade among households and neighboring communities is an important traditional practice in Grayling and is guided by cultural systems and rules. These wild food networks also have strong cultural and social implications. Sharing resources is rooted in long-standing traditional practices, described by one elder man:

> Well, I do like the old Indian way, when I get something I pass it around. And you share with everybody… you don't keep the animal for yourself. And them days, you get a moose and you give it to everybody in town. You don't keep very much yourself. (021512KGX03)

Sharing practices are changing as a result of resource availability and local preferences, but there are still many similarities to traditional practices. One respondent felt that people were not sharing to the same extent as they had in the past, but the practice is still considered an important part of local culture. She said that, for example, "a couple of guys will go out together and they'll split a moose up. They'll give the bones away. They'll give away ribs. And they will give to the elders. You know, like somebody that can't get out." (021112KGX01) An estimated 27% of households harvested 70% of the total community harvest, suggesting that there was a group of households that specialize in the harvest of wild foods. The pattern of a small number of households harvesting a large portion of the total community harvest is common in rural, predominately Alaska Native communities (Wolfe 1987).

Sharing wild resources can provide a vital source of nourishment and connection for households. One respondent explained his practice of sharing foods with households that might not have the resources necessary to harvest their own foods, such as fish:

> If I was out fishing and I caught a lot of fish and I know I was going to get some more, if I know of a family that can't go out and [go fishing] because financially they couldn't afford to go out with the high price of gas and everything and running a boat and a motor. And I have a boat and motor and if I know a family[that] don't have fish, I'd go and share it with them, make sure they have some for themselves and their families. We always look out for each other. (021412KGX05)

One respondent explained how traditionally, trading networks were important to obtain supplies needed for things such as sewing high-quality footwear (021112KGX01). She said that Grayling households would trade with coastal Eskimos for bearded seal (*ugruk)* skin, which was an important material in boots worn during springtime wet weather because, unlike moose skin, seal skin is waterproof. Since seal are not avail-

able locally, these established trading networks allowed for Grayling households to access resources that were important for survival, but which they could not harvest themselves. Some sharing practices are still based on a barter system—both locally and more widespread throughout the state. Some households may, for example, be skilled in harvesting a particular kind of nonsalmon fish species or fur-bearing animal, and other households will swap resources with this household to have access to the resource. One respondent explained:

> …everything I do is on the barter system. I don't sell fish. You know, somebody asks me for something, I ask them for something back. If they got it, then I got it. If they don't have it, I don't have it. That's how we do it out here. We trade for dried moose meat, bear fat, anything. Anything we don't get that particular year we trade for. Once in a while I'll trade strips for berries. I don't sell them though. I got extended family. Once in a while if they send me something then I send something back. That's the old way. They say the old way, long time ago, if you give somebody something they give you something back even if it's little. My aunties and my grandma used to do it all the time. (021512KGX03)

The comprehensive harvest survey administered in this study collected quantitative data to determine the rates of giving away and receiving foods, as well as patterns of sharing between households. For every single resource, survey respondents were asked whether they gave away or received that resource, and those results are reported in the tables in the "Harvest and Use" section of this report.

For particular key resource categories and species (i.e. salmon, moose, caribou, berries, etc.), households were asked who in the household harvested or processed the resources they used as well as which other households or communities harvested or processed subsistence foods the household used. Confidentiality was preserved by allocating each household a random number ID. If a household lived in another community, the name of the community was recorded. Data are displayed in Figure 9-25. Figure 9-25 depicts a network of wild food exchanges between (village) households and with households in other communities. The nodes are shaped according to the demographic structure of the household (couple, single male, single female), and colored according to the age of the head or heads of household. A developing household head is less than 40 years old; a mature household head is 40 to 59 years old, and an elder household head is 60 years old or older. Grey boxes are unsurveyed households. Blue circles connote a household in another community. The size of each node is scaled to represent the household's total subsistence harvest; the larger the node, the greater that household's total harvest. Arrowed lines show the direction of the exchange and are weighted to show multiple exchanges. However, arrowed lines only indicate resources flowing into an individual household; the network diagram cannot imply patterns of reciprocity. Likewise, the diagram does not illustrate other relationships which occur in subsistence sharing networks such as providing financial support for the harvesting effort, or receiving food from an intermediary instead of directly from those harvesting or processing the resources. Households near the center of the network diagram are more connected than oth-

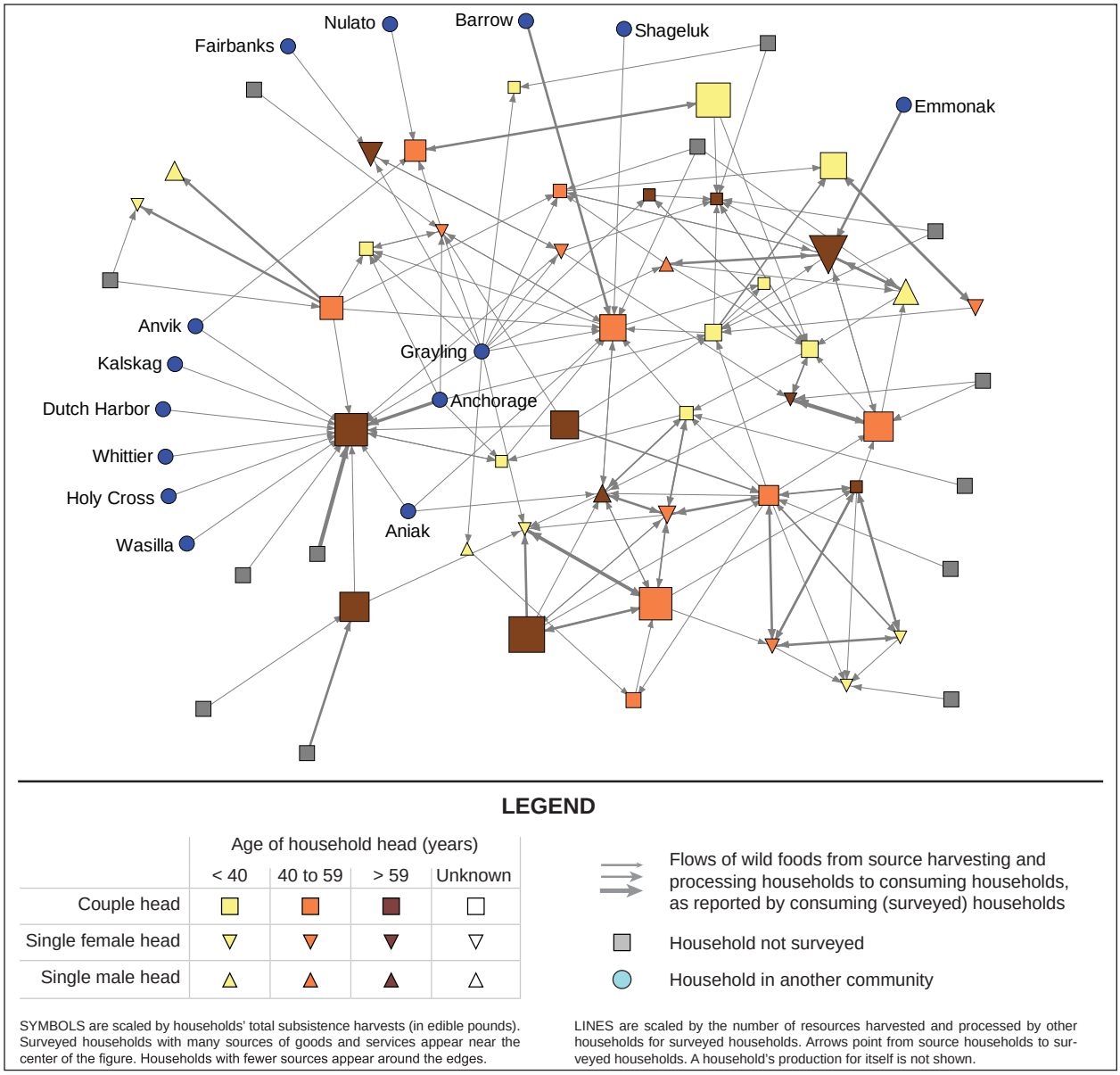


Figure 9-25.–Wild food harvesting and processing network, Grayling, 2011.

ers. Households (represented by nodes) migrate to the center of the diagram as they receive more resources from other households; those households closer to the periphery of the diagram receive fewer resources.

Grayling is depicted as a blue circle as well because some households preferred not to name the household that was the source of a resource, so instead the source was simply named "Grayling." Anchorage and Fairbanks were named as sources of wild foods by several households, however because it is an urban center, Anchorage is more likely an intermediary community rather than the locale where the resources were harvested.

As discussed previously, there is a long-standing close relationship between residents of Anvik, Shageluk, Holy Cross, and Grayling. The numerous connections between these communities demonstrate this relationship. There continues to be a high level of mobility between these communities and the resource use areas surrounding them (Brown et al. 2005:4). One key respondent described this connection as multi-layered as a result of shared cultural and religious traditions and family ties.

> Shageluk and Grayling and Anvik are Episcopalian, so we have that connection. But, you know, when you live in Holikachuk, it was really something to see somebody from Anvik. You know, almost like a rock star or somebody came because they had to come so far, by dog team. Everybody came by dog team. It was even further from Holy Cross, so, we'd see Genevieve Newman and Bertha Wolf who were sisters, and they were, they had these fancy parkas, and they came; they'd come a couple times to some of the parties. But it was a big excitement in the village. (021112KGX01)

Wild foods are often shared between households in the 4 communities and this was the case in 2011, as Figure 9-25 depicts. Other communities named as sources of wild resources in 2011 included Emmonak, Barrow, Nulato, Fairbanks, Anchorage, Aniak, Wasilla, Holy Cross, Whittier, Dutch Harbor, and Kalskag.

One of the most notable characteristics of the network figure for Grayling is that every household in the village has at least 1 connection with at least 1 other household. Grey squares depict households that were not surveyed, but since they may have given a resource to a household that was surveyed, they show up in the network diagram. However, because not all households were surveyed, not all incidences of sharing in Grayling were recorded. Despite this, patterns emerge in the network diagram, notably that the household that reported the most number of incidences of receiving wild foods is an elder couple household.

One Grayling man said he typically harvested more than his household needs because he helps provide for other families: "I just harvest enough that I need, which is usually maybe about 20 to 30, and I give a lot of it away to the elders or people that want them because people like fresh fish and that's why. It's a lot of hard work but I do it anyway." (021312KGX02)

Comparisons with Prior Results

> I don't know, for me, it's just part of everyday life, you know. It's hard to think about it in terms of change, or what's not changed. There's probably a lot of change with, I did it all my life. Lived in Holikachuk, lived in Grayling. I see a lot of change, but like I say, it's everyday life for me. I can't really tell you. (021512KGX03)

Seasonal subsistence harvest patterns can fluctuate over time as a result of a variety of factors, including environmental, technological, economic, and social changes and influences within a community. This section takes a look at past studies, both qualitative and quantitative, and compares them with the 2011 comprehensive subsistence harvest data collected as part of this study. The first ethnographic accounts of Holikachuk

people were provided by Glazunov and Zagoskin (Osgood 1940; Zagoskin 1967; VanStone 1979a; Wheeler 1998). Most recently, Wheeler (1998) conducted a comprehensive survey along with a rich ethnographic analysis of the role of cash in the subsistence economies of these lower–middle Yukon villages in 1990. In 2005, a study on contemporary subsistence uses of nonsalmon fish by residents of the GASH villages was published by the Alaska Department of Fish and Game Division of Subsistence (Brown et al. 2005). ADF&G also conducted a 3-year study in 2002, 2003, and 2004 on harvest patterns and trends of large land animals that included Grayling (Brown et al. 2004; Brown and Koster 2005).[8] Wolfe and Scott (2010) looked at continuity and change in Yukon salmon fisheries over time; they conducted a comprehensive survey in Grayling in 2008 as part of their study. Finally, in 2010, ADF&G researchers conducted a study on local observations of climate change, "Climate Change and Impacts on Subsistence Fisheries in the Yukon River Drainage, Alaska." Postseason subsistence salmon fishery and harvest information has been collected by ADF&G since 1961; however, data since 1988 is most comparable with the 2011 data because of similarities in study methodologies (see "Discussion" for more information).

This section will focus on the comparisons between this study and the comprehensive survey studies conducted in 1990–1991 and 2008 but also will include comparisons with other data from other studies where it is available. The 1990–1991 study found that Grayling had an estimated population of 204 residents, which is comparable to the estimated population for this study (212 residents). However, there was a significant shift in the size of the per capita harvest. Wheeler (1998) estimated a per capita harvest of 894 lb of wild foods (or a total 182,343 lb). In 2008, Wolfe and Scott (2010) estimated a per capita harvest of 725 lb (a total of 115,775 lb.), however this estimate does not include salmon specifically harvested for dog food. In 2011, the per capita harvest was 246 lb (or a total 52,094 lb) including salmon harvested for dog food. Notably, subsistence harvests appear to have declined over the 3 study years, but there has also been an important change in the composition of harvest (Figure 9-26). While Grayling households have long relied on salmon and moose, it appears that households have increased their reliance on salmon—and decreased their reliance on other species, even key species such as moose. In 1990–1991, salmon made up 42% of the total resources harvested by weight. In 2008, salmon accounted for 55% of the total subsistence harvest by weight, and in 2011, salmon made up 50% of total resources. Large game (primarily moose) composed 33% of the total harvests in 1990–1991, but dropped to 23% of total resources harvested in 2008 and 24% in 2011. Harvests of nonsalmon fish in 1990–1991 were 17% of total harvests, compared with 16% of total subsistence harvest in 2008 and 15% in 2011.

Despite the fact that salmon made up a higher percentage of the overall subsistence harvests in 2008 and 2011 than in 1990–1991, the overall decline in pounds of salmon harvested is apparent between the 3 study years. The fishery harvest information, collected annually in Grayling, also captures the decline in salmon harvests (Figure 9-27). The total pounds of salmon harvested in 1990–1991 (76,358 lb) decreased in 2008 to 63,473 lb and was 3 times the amount harvested in 2011 (25,829 lb). Between the 2 years, the summer

8. *See also* Brown, Caroline, and David S. Koster. *In prep.* The 2004–2005 Harvest of Moose, Caribou, and Bear in the Lower–Middle Yukon River Communities of Grayling, Anvik, Shageluk, and Holy Cross. Fairbanks: Alaska Department of Fish and Game, Division of Subsistence Technical Paper 305.

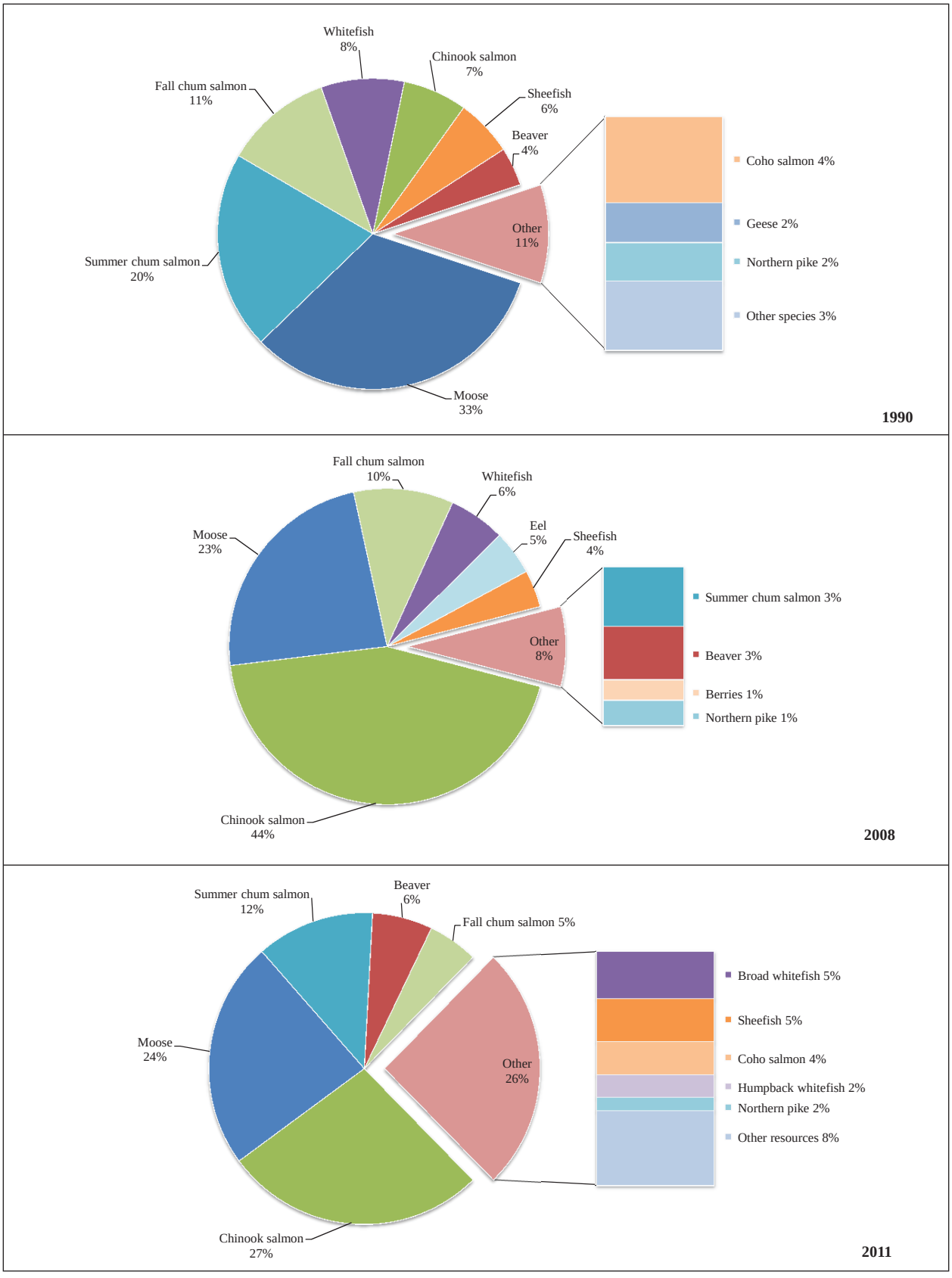


Figure 9-26.–Top 10 species harvests ranked by estimated edible weight, Grayling, 1990, 2008, and 2011.

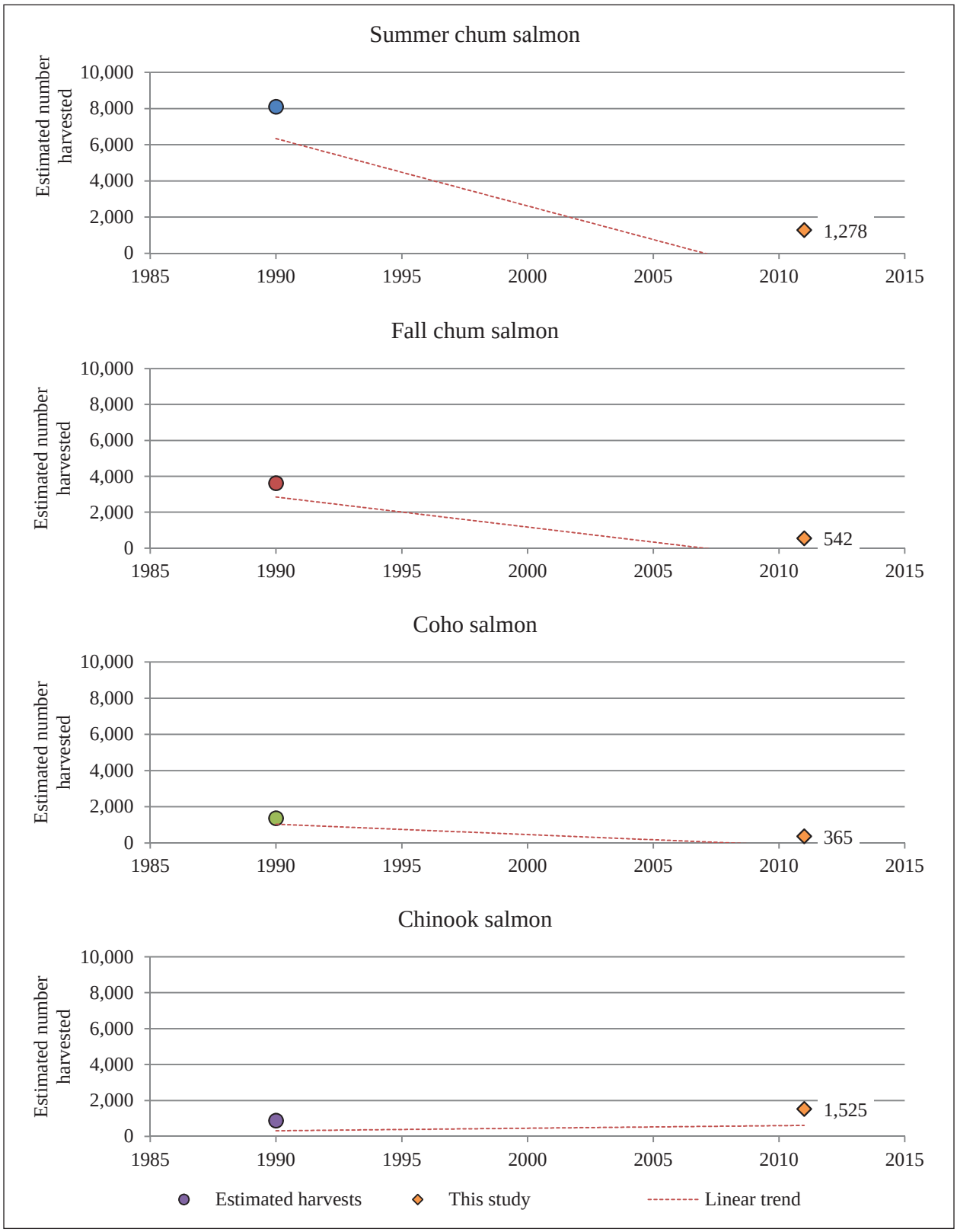


Figure 9-27.–Estimated total number of summer chum, fall chum, coho, and Chinook salmon harvested by residents, Grayling, 1990–2011.

chum harvests have declined the most significantly—from an estimated 37,232 lb in 1990–1991 to 3,397 lb in 2008 and 6,414 lb in 2011. This is likely the result of the decline in the use of dog teams and in the loss of chum roe markets in the mid-1990s. Likewise, in 1990–1991, 20,250 lb of fall chum were harvested in the earlier study, while only 11,273 lb were harvested in 2008 and 2,717 lb in this study (2011). Chinook salmon made up 12,061 lb in the earlier study, but 48,575 lb in 2008 and 14,184 lb in 2011. It is important to note that 2008 was the last year without restrictions to subsistence or significant environmental conditions that interfered with subsistence harvest opportunity. In 2011, restrictions to subsistence fishing included first pulse protection (no fishing on the first pulse of Chinook salmon throughout the length of the river to the border), and net size reductions, dramatically decreasing the total subsistence harvest. This latter comparison illustrates that not only were more Chinook salmon harvested in 2008 and 2011 than in the earlier study, but also that Chinook salmon have become the most commonly harvested salmon species. The Division of Commercial Fisheries, ADF&G, also collects annual salmon harvest estimates during a post-season survey; those data show a similar shift to Chinook salmon harvests over time and in 2008 specifically, however, that survey documents significantly lower harvests: 1,761 Chinook salmon compared to 3,282 in Wolfe and Scott (2010) and 1,012 fall chum compared to 2,088 (the harvests of summer chum and coho salmon were similar and very low in both studies). These differences could be explained by methodological differences, including sample sizes and compositions. Subsistence economies are characterized in part by their flexibility, and it appears that during the past several decades, there has been an increased reliance on king salmon. One respondent explained that:

> …king salmon were not really caught in this area until about maybe [19]73. I know ‘cause my brother, my brother … and my cousin…, they were the first ones to start catching kings by a lot, because they went over and went to work … on the Kuskokwim in Aniak. And there, they were commercial fishing kings by drifting, and nobody know how to drift around here you know. Nobody didn’t drift. (021312KGX02)

As has been noted previously, several households in Grayling have commercial fishing permits and were at one time actively involved in the fishery for summer chum roe, which likely explains the high harvests of this species during the 1990–1991 study.

Wheeler found that in 1990–1991, 100% of households harvested both nonsalmon and salmon species. This is obviously a high rate of participation, with every household directly involved with harvesting activities. Results from 2008 and 2011 showed that while participation is still high, it has dropped. In 2008, 96% of households reported harvesting either salmon or nonsalmon fishes (Wolfe and Scott 2010). In 2011, 85% of households harvested either nonsalmon or salmon fish species. In 2005, a report by the Division of Subsistence was published detailing the role of nonsalmon fish in the lives of residents of Grayling, Anvik, Shageluk, and Holy Cross (Brown et al. 2005).

Table 9-11. – Total estimated edible pounds of whitefishes, northern pike, sheefish, and Arctic lamprey, Grayling, 1990–2002, and 2011.

	Total estimated edible pounds (lb)		
	1990	2002	2011
Whitefishes	15,637.0	15,991.0	4,083.0
Northern pike	3,047.0	2,340.0	761.0
Sheefish	10,730.0	4,698.0	2,447.0
Arctic lamprey	–	22,448.0	242.0

Sources ADF&G Community Subsistence Information System (CSIS); ADF&G Division of Subsistence household surveys, 2012.
Note "–" indicates data was not available.

Whitefish harvests were fairly consistent between 1990 and 2002, but similarly declined in 2008 (6,400 lb) and 2011 (4,083 lb), roughly one-quarter of the earlier estimates (Table 9-11). There was a similar sharp decline in harvests of northern pike and sheefish. Demographic changes do not appear to be the cause of these shifts because Grayling's population has remained relatively stable since the 1980 U.S. Census, hovering around 200 people. Instead, the decline could be attributed to other factors, including an increased reliance on king salmon during summer months, decreasing reliance on sled dogs as a form of transportation, changes in preference, resource availability, access issues, and employment activity, including simply fewer people participating in nonsalmon fishing activities.

In 2002, an estimated 22,448 pounds of lamprey were harvested, compared with an estimated 5,016 lb in 2008 and 242 pounds harvested in 2011. Lamprey are not available year-round but are only available during a short period of time usually in late November. There is little data available about the population structures and dynamics of Arctic lamprey in the Yukon River and so there are also no abundance estimates. Further, Grayling fishers are faced with the constant risk of missing the entire run of lamprey; these 2 reasons may explain highly variable annual harvests. Further, fishers targeted lamprey as dog food in those earlier years where in 2011, fewer fish were harvested for dog food as dog teams in the area decreased. Since 2003, there has been an experimental commercial fishery for lamprey on the Yukon River—that first year only 42 lb were harvested, but in 2003, the harvest was 49,657 lb and was worth $62,000.

Participation in land mammal game hunting activities has also shown a downward trend between the 1990, 2008, and 2011 comprehensive years (Figure 9-28). In 1990, 83% of households harvested land mammals, whereas, in 2011, only 49% of households reported harvesting land mammals. From 2002 to 2004, harvests of moose ranged from 28 moose to 36 moose per year. A total 59 estimated moose were harvested in 1990, 48 in 2008, and 23 moose were harvested in 2011, showing a marked decline. Recent studies in Alaska have shown that harvest ticket systems for reporting big game harvests may substantially underestimate harvests of big game taken by hunters residing in Alaska's rural communities (Andersen and Alexander 1992). "On average, the reported harvest represented approximately 28% of the harvest documented in the baseline studies (Andersen and Alexander 1992).

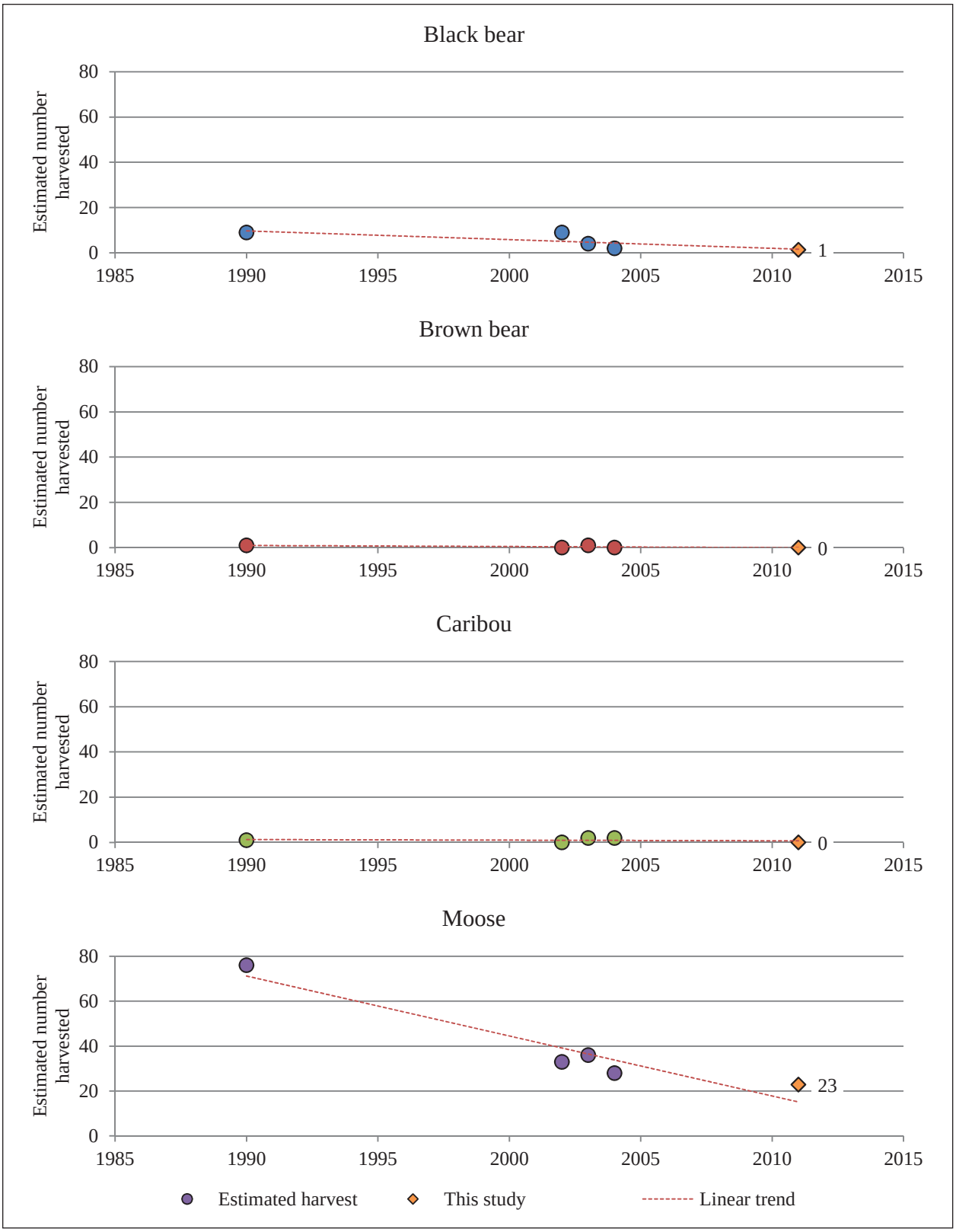


Figure 9-28.–Estimated total number of black bear, caribou, and moose harvested by residents, Grayling, 1990–2011.

Wheeler (1998) found that "for residents of Grayling, fall moose hunting generally occurs within 10 miles of the Yukon River, from 5 miles south of Grayling up until Blackburn Island, and along the Innoko river to approximately 25 miles past Dementi" (Wheeler 1998:171). In 2011, households traveled significantly further to search for moose, indicating that recent reports of declining moose availability in the Innoko River area accompanied by an increase in competition for moose hunting has had an impact on subsistence hunters in Grayling.

One respondent said that the bear population has increased in recent years, explaining that it was:

> …because they're so well-fed. You know, it's the process of what natural evolution. If you're well fed you can produce more, more offspring, and they'll survive. Usually though brown bears, or black, any bears that come through town the whole town comes out and kills them. Well, there's fish, I mean, we don't target chum anymore. So there's a lot of chum. To eat… There's just nothing, nobody's killing them. You know, a long time ago, my mom never ate meat, but the men mostly ate it. It was because of the strong spirit, especially up the way, they'll say…it has such a strong spirit. Men, or women and girls couldn't eat it. So, somebody'd kill a bear, in the spring, you know, it was always in the spring, mostly, and they'd bring some to dinner, had mom, either was allergic or wouldn't touch it. So I had to cook it. I would cook it in the pressure cooker. I always heard there was worms. It was tasty, but uhh, very few people eat bear meat. (021112KGX01)

In 1990, Wheeler found that households harvested a total 11 black bear and 3 brown bear. It appears that overall harvests of both species of bear are declining, with 9 black bear harvested in 2002, 4 in 2003, and 2 in 2004. Eight black bears were reported harvested in 2008 (Wolfe and Scott 2010). Only 1 black bear was harvested in 2011. This is likely a result of changes in both dietary preference and hunting practices as well as annual variation in opportunistic encounters with bears.

Trapping furbearers and hunting small game is an important practice in Grayling. In 1990, Grayling households harvested 242 beavers, 304 marten, 144 hares, 25 fox, 15 wolves, 11 river otters, and 8 weasels. In 2008, Grayling households harvested 200 beavers, 482 marten, 15 fox, 8 wolves, 10 wolverines, 3 mink, 8 muskrat, 10 weasels, and 11 river otters. By comparison, in 2011, Grayling households harvested 109 beavers, 685 marten, 12 fox, 31 tree squirrels, 7 wolves, and 13 wolverines. The higher price for marten fur in 2011 may explain the significantly higher marten harvests. Trapping trends tend to mimic fur market trends as many trappers rely on selling their furs as a way to earn cash. Low fur prices in the early 1990s may explain the lower harvests, though Wheeler stressed that many trappers engage in this activity as a way to affirm cultural identity "since trapping provides a way for people to get out on the land" (Wheeler 1998:174). Traplines are typically handed down from one generation to the next, and trappers do not infringe upon other traplines without permission.

Participation in hunting for migratory and other kinds of birds, such as ptarmigan and grouse, appears to have declined. In 1990, 71% of households reported harvesting migratory birds, while 81% said they harvested other birds. In 2008, 52% reported harvesting migratory birds and 82% said they harvested up-

land game birds. In 2011, 22% of households harvested migratory birds, and 56% of households harvested other birds. As result, it is not surprising that the harvests between the 2 years are different. The greatest difference is in the overall harvest of migratory birds. In 1990, 4,385 edible pounds of migratory birds were harvested, whereas in 2008, only 531 edible pounds were harvested and in 2011, only 1,161 edible pounds were harvested. In 1990 1,650 lbs of other birds were harvested, compared with 745 lbs in 2008 and 511 lb harvested in 2011. One respondent expressed a concern with bird flu, which he said explained the declining interest in harvesting migratory birds.

Participation in harvesting berries and greens also showed a slight decrease between the 3 comprehensive study years as well. In 1990, 81% of households said they harvested berries; 20% of households said they harvested plants, and 98% harvested wood. In comparison, in 2008, 82% said they harvested berries, 7% harvested other plants, and 85% harvested wood. In 2011, 68% of households said they harvested berries; 27% harvested plants, and 59% harvested wood. The most commonly harvested berry in 1990 was cranberries, (1,078 lb), followed by blueberries (578 lb) and salmonberries (14 lb). In 2008, the harvest of berries was reported only as a resource category rather than by species. In 2011, blueberries were the most commonly harvested berry (431 lb), followed by low and high bush cranberries (225 lb combined), and crowberries (115 lb). A total 89 lb of greens were harvested in 2011, compared with 56 lb harvested in 1990. There is a marked difference in the amount of wood harvested in 1990 (664 cords) and 2011 (118 cords). This may be explained by a 2 factors: a decreasing reliance on wood as a heating source and also possibly the presence of woodcutting as a commercial enterprise in 2011. Several households reported that they received wood in place of oil as part of a state-funded energy voucher program. Though this wood was harvested locally, it was considered a commercial commodity and not counted as part of the overall subsistence harvests.

Conclusion

While Grayling households have experienced a variety of changes since the 1950s when residents began moving from the village of Holikachuk to the present day village of Grayling, there continues to be an important reliance on the harvests and uses of wild foods. Fish and moose continue to be the mainstay of the diet of Grayling households, though the composition of that harvest is constantly in flux, responding to local availability, dietary preferences, and other factors such as changing regulations and rising cost of living expenditures.

For subsistence users in Grayling, the importance of wild foods extends beyond access to wild foods. Participation in the process of hunting and gathering wild foods is important for young people to learn about their natural environment and traditions—and several key respondents expressed the continued need to share knowledge with new generations. Sharing of wild foods is a key cultural practice and serves to bind the community together. The practice of providing food for elders or others who are unable to go hunting or fishing is still common; the role of sharing of foods at community celebrations and gatherings is an important local custom.

Grayling households that use subsistence foods are susceptible to changes in regulatory regimes, environmental changes, and other factors that impact the availability of resources. This study helps to document those changes and the contemporary role of wild foods in the lives of Grayling residents. Ongoing research in Grayling and the surrounding GASH villages will continue to highlight the challenges faced by rural residents of this area and their continued success at living a subsistence way of life.

Chapter 10: Comprehensive Survey Results Russian Mission, 2011

Elizabeth Mikow

In the winter of 2012, researchers interviewed 46 out of 79 households (58%) in Russian Mission. The surveyed households reported harvesting 76,735 edible pounds of wild foods between January and December 2011. Expanding for the 33 unsurveyed households, Russian Mission's estimated total harvest of wild foods in 2011 was 132,289 lb (±18%). The average harvest per household was 1,675 lb; the average per capita harvest was 329 lb.

Fish composed over half of the community's total estimated harvest, with 61% (80,301 lb) of the total estimated harvest of wild foods coming from both salmon and nonsalmon fish species. Figure 10-1 portrays the importance of this resource category, showing the top 10 species by edible weight harvested by residents of Russian Mission. Nine out of the top 10 resources are fish species: Chinook salmon, lamprey, northern pike, summer chum salmon, humpback whitefish, sheefish, burbot, fall chum salmon, and coho salmon. The land mammal harvest, composed mostly of moose, accounted for 31% (43,187 lb) of the total estimated harvest in 2011. Birds and eggs composed a small portion of the total harvest (3%, 3,804 lb), and vegetation (both berries and edible plants) contributed 1% (1,890 lb). Marine mammals supplied less than 1% of the total annual subsistence harvest.

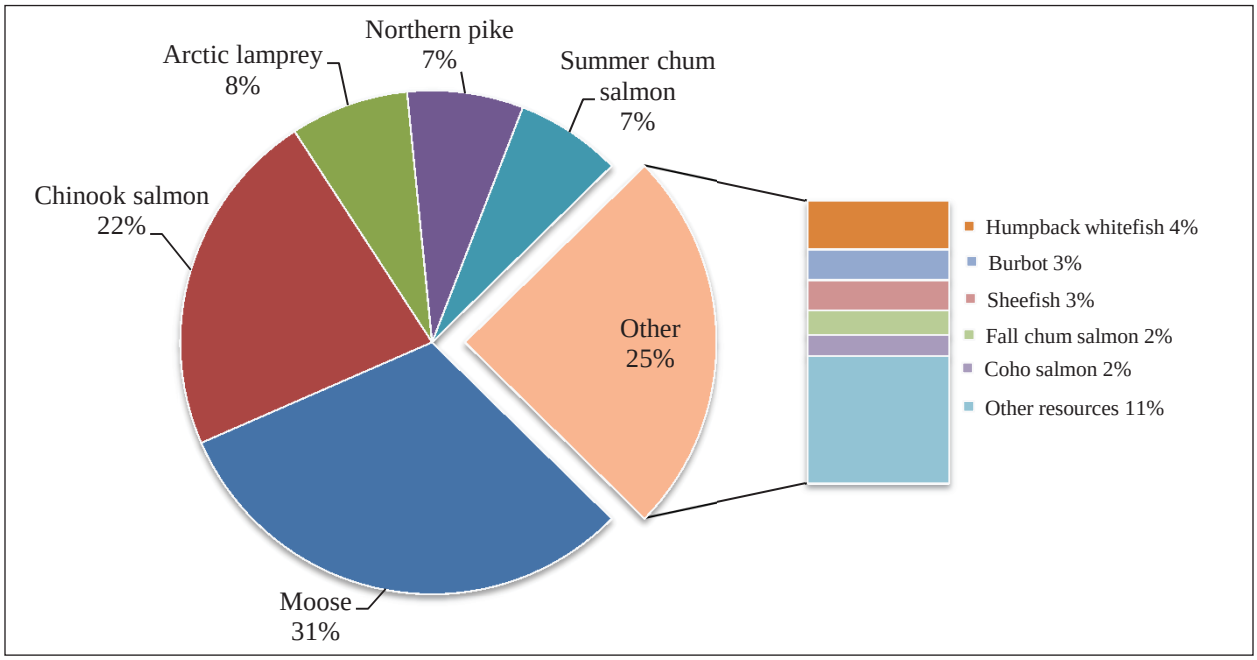


Figure 10-1.–Top 10 species harvests ranked by estimated edible weight, Russian Mission, 2011.

Photo by Alida Trainor

Figure 10-2.–View of Russian Mission from the bluff in January, 2012

This chapter summarizes findings from the household surveys, including demographic characteristics, responses to harvest assessment questions, harvest estimates, reported employment and income, and responses to food security questions. Harvest numbers are expanded estimates. Results from this survey are available online as a part of the CSIS.

ADF&G staff conducted 5 ethnographic interviews with knowledgeable Russian Mission subsistence users, ranging from 30 to 70 years of age. All participated in subsistence activities in some way. Three women and 2 men described their current and prior subsistence practices, including species targeted, types of gear used, timing of harvest, intergenerational transfer of knowledge, distribution and sharing of resources, processing and preservation of wild foods, and use areas. They were also asked about changes in subsistence practices and patterns, the health of fish and game populations, and the environment.

About Russian Mission

Russian Mission is located on the west bank of the Yukon River, approximately 70 air miles northeast of the regional hub of Bethel and 376 miles west of Anchorage.[1] In the vicinity of the community, the west bank of the Yukon River is composed of a number of small ranges of hills, and Russian Mission sits on the

1. Alaska Department of Commerce, Community, and Economic Development (ADCCED) Division of Community and Regional Affairs, Juneau: "Alaska Community Database Online: Community Information." Accessed August 2013. http://commerce.alaska.gov/cra/DCRAExternal/community.

terraces of a south-facing bluff. In contrast, the east bank of the Yukon River across from the community is a floodplain dotted with numerous lakes and sloughs (Pete 1991c:8) (Figure 10-2).

According to oral tradition, the original site of the permanent Native settlement was about one-half of a mile upriver from the contemporary community on the west bank. The village was called *Kangiqucuk,* meaning "a little bit of bay" (Pete 1991c:13). According to elder informants in the early 1990s, this settlement was the oldest village on the Yukon River in Southwest Alaska and was settled in the early 1600s (Stüssi 1997:57). According to oral tradition, the small pox epidemic, which began in 1838, decimated the population of the permanent settlement. With the exception of one couple, who chose to relocate to a common fish camp location downriver of the bluff, the entire population was lost (Pete 1991c). The bluff was called *Iquk,* meaning "end or tip" (Pete 1991c:13; Jacobson 1984:174). The origin of the Yup'ik name for the community comes from this relocation event, as the couple was referred to as "*Iqugmiurluuk,"* or the "two poor, dear inhabitants of Iquk." It follows that the community created by the founding couple is known as *Iqugmiut,* meaning "inhabitants of the settlement of the end or tip" (Pete 1991c:13). In contrast, other oral traditions hold that this couple moved to the location of the contemporary community in the early 1700s (prior to the smallpox epidemic); this would mean that there was an established community in place prior to the arrival of the Russians in the 1830s (Stüssi 1997:57). The first recorded placename for the community was "Ikogmiut" in 1842, in a direct reference to the Yup'ik community (Orth 1971; Zagoskin 1967). Nelson incorrectly used the term "Ikogmut" to refer to all Yupik residents of the Yukon River region from Paimiut (located approximately 35 miles upriver from Russian Mission near Paimiut Slough) downriver to the mouths of the river (Nelson 1899:86).

The early post-contact history of Iqugmiut was intrinsically tied with the Russian colonial period in Alaska. The Russian American Company entered the Yukon–Kuskokwim Delta more formally beginning in 1818, possibly due to the decline of fur-bearing animals in the Aleutians and the Gulf of Alaska (Black 1984:28). Several trading posts were established on the Kuskokwim and in Norton Sound between 1819 and 1832; in 1835, traders sought a suitable location for this purpose on the Yukon. Andrei Glazunov, a navigator and explorer of Russian-Alaskan descent, established a post in Iqugmiut in 1836. He based his decision largely on the perceived friendly nature of the native inhabitants of the community, and the convenience of a nearby portage to the Kuskokwim River. He chose this location despite the fact that Anvik had been chosen the previous year as the future site of the trading post (Black 2004:201–202; Stüssi 1997:121; Zagoskin 1967). Despite the early success of the post in Iqugmiut, the smallpox epidemic of 1838 produced an air of hostility towards the Russian settlers from the native population of the Yukon–Kuskokwim Delta (Oswalt 1990). The post was attacked and its inhabitants massacred in the spring of 1839 in what is assumed to be retaliation for this devastating epidemic, most probably at the hands of Yupiit from the Bethel area (VanStone 1979b:58; Stüssi 1997:121). While the trading post was rebuilt in the fall of 1840, Natives in the area were afraid of retaliation and, consequently, less open to trade. While business did pick up in 1842 as these concerns diminished, it did not increase enough to meet the expectations of the Russian American Company. Russian agents thought that trade between indigenous groups was hindering trade with the Russian posts, and there

were efforts made to find ways to eliminate the practice (Zagoskin 1967:196–197; VanStone 1979b:65, 67). This, combined with the community's proximity to the Kolmakovskiy post (located near Napaimute on the Kuskokwim River), led Russian traders to close the post at Iqugmiut in 1846 (VanStone 1979b:79–80; Stüssi 1997:123).

As the contemporary name of the community suggests, the Russian Orthodox Church also had a significant presence in Iqugmiut. Alaska Natives of the Yukon–Kuskokwim delta region were exposed to Russian Orthodoxy in the 1830s by the presence of the trading posts and the priests who visited them in order to minister to the Russian staff (Black 1984:xiv; Pete 1991c:14) After being consecrated bishop of the newly established diocese of Kamchatka, the Kurils, and the Aleutian Islands, Ioann Veniaminov commissioned Iakov Netsvetov to serve as a missionary to the Yukon River. Netsvetov, a priest of Russian–Alaskan ancestry, was allowed a significant level of independence when choosing the location for his mission. His choice of Iqugmiut was likely influenced by the community's close proximity to a portage to the Kuskokwim River and the presence of former trader Andrei Glazunov (Black 1984:xv; Black 2004:240). Netsvetov began his mission in 1845, and mobilized the construction of the first Russian Orthodox Church on the Yukon River. The structure was completed in 1851 and has been rebuilt on 3 separate occasions throughout the years (Netsvetov 1984:281). Netsvetov was an active missionary to the surrounding region and stayed in the community until 1863. He kept a journal recording his experiences, including rich descriptions of relations between indigenous groups in the area, sharing patterns, and environmental observations (Black 1984). Following the sale and transfer of Alaska to the Americans between 1867 and 1868, the Russian Orthodox Church began to consolidate its holdings in Sitka and to close remote parishes. The church buildings in Iqugmiut were left in the hands of Zachary Belkov, a church reader (a layperson authorized to lead some parts of the church service) of Russian–Alaskan heritage. He was ordained in 1876 and served the church until 1895 (VanStone 1979b:97). Today, the church in Iqugmiut still stands (although it has been rebuilt at least 3 times over the years), and Russian Orthodoxy remains the primary faith for the majority of residents in the community into the present-day (Stüssi 1997:50–51).

Little information about Iqugmiut exists about the immediate period following the American takeover of Alaska (1867), when gold exploration and steamboat services brought American settlers to the region. Elderly respondents in 1984 remembered their grandparents collecting wood to sell to steamboats. Likewise, following the Nome gold rush in 1898, inhabitants of the community engaged in the trade of dried salmon to mail carriers for use as dog food for their dog teams (Pete 1991c:15–16). One of the most devastating effects of the American colonial period was the introduction of diseases to the Native population of Alaska. The first waves of influenza accompanying this new increase in settler population came through the Pribilofs, St. Michael, and Nome in 1900, with measles simultaneously spreading throughout the region. People in villages were dying by the hundreds, receiving aid when possible from largely overwhelmed Bureau of Indian Affairs doctors and U.S. Army personnel. Waves of epidemics in all regions of Alaska occurred after contact in both the Russian and American colonial period, but the "Great Sickness" of 1900 may have been among the most devastating. Official estimates of the number of victims of this sickness run as high as

2,000 statewide and may, in fact, be conservative (Fortuine 1989). Decimated village populations prompted consolidation of settlements in some cases (Mikow 2010), and this appears to be the case for the inhabitants of Dogfish Village who relocated to Iqugmiut following the epidemic (Pete 1991c:16). This trend of relocation to larger settlements occurred with other settlements in the vicinity of Iqugmiut, which has drawn its population from a portion of the former residents of Paimiut, Ohogamiut, and Iquarmiut as well (Pete 1991c:10–11). Other outside influences were brought into the region by the discovery of gold deposits in the Marshall district beginning in 1913, with further discoveries made on Kako Creek (located approximately 5 miles upriver from the community) and its tributaries in 1920 (Higgs 1995:32). The gold deposits, however, were not large and relatively fewer people were brought into the region in comparison with larger strikes at Nome or Iditarod (Pete 1991c:17). The population of Iqugmiut continued to increase after 1940 (Levin 1991:214). Further population shifts between 1950 and 1960 were caused by the creation of a school in the community and a governmental edict requiring children to attend educational institutions (Pete 1991c:18).

The community was officially renamed Russian Mission in 1900, although this name prompted some confusion because Chuathbaluk was also known as "Russian Mission" until the 1960s. The community of Russian Mission was incorporated in 1970 as a second class city and is governed by a federally recognized traditional council and a city government. The community is predominately Yup'ik, with 95.8% of residents being Alaska Native as of the 2010 US Census. Russian Mission has its own water treatment facility for water obtained via well, and most homes are connected to the piped sewage system. There is 1 school located in the community, which was recently rebuilt in 2011. Employment to residents is provided by the health clinic, the school, local government, local businesses, and commercial fishing. Other sources of employment include seasonal work such as construction and BLM firefighting, and some residents earn income through trapping. Subsistence remains vitally important to the community, as its economy is characterized as a mixed subsistence-cash economy.[2]

Seasonal Round

The subsistence activities undertaken by residents of Russian Mission vary with the timing of resource availability. The next section offers a general overview of the seasonal round of harvest efforts by the community. The information offered here comes largely from interviews with key respondents taken during the survey effort in 2012 and is supplemented by earlier research (Pete 1991c). When possible, both historical and contemporary information from interviews is incorporated to illustrate changes to subsistence patterns that have occurred over time.

The seasonal round of subsistence activities in Russian Mission begins with the arrival of spring and the accompanying return of migratory birds. Ducks, geese, and swans are harvested in April and May, during the time immediately before and following breakup (012212RSH2). In the past, this effort took place during

2. Alaska Department of Commerce, Community, and Economic Development (ADCCED) Division of Community and Regional Affairs, Juneau: "Alaska Community Database Online: Community Information." Accessed August 2013. http://commerce.alaska.gov/cra/DCRAExternal/community.

trips to spring camps, and older residents recall participating in a wide range of subsistence activities alongside bird hunting, including hunting for muskrat and beaver and harvesting fish species (01UN12RSH4). This practice of combining waterfowl hunting with other harvesting activities endures into the present, with bird hunting combined with activities such as bear hunting and setting up fish camps in the late spring (Pete 1991c:112). While some harvest of migratory birds occurs in the fall, one key respondent stated that a majority of the bird hunting in the community takes place in the spring; this is partially due to the feathers being "larger" and more difficult to pluck in birds harvested in the fall months. Residents discontinue the harvest of bird species during the nesting period (012212RSH3). Eggs of migratory waterfowl and other birds are targeted for harvest somewhat later in the spring in late May and early June (Pete 1991c:111). Elderly and middle-aged respondents remembered that the harvest of eggs was more common in the past, and that this resource is no longer harvested at the same levels today (012212RSH2, 01UN12RSH4). Pete (1991c) noted that respondents in 1984 explained that the practice had declined since the mid-1970s (Pete 1991c:111). Also following breakup, sheefish are the first species to run up the Yukon River in large numbers. In late May and early June, residents of Russian Mission use setnets placed in eddies to fish for salmon species. This placement is doubly effective as the sheefish run often overlaps the beginning of the Chinook salmon run (Pete 1991c:93). Sheefish can be obtained year-round, but are best in the spring because "they're very healthy, fat. Very, very fat" (012212RSH3). Bears are also taken in the spring as they emerge from their dens, particularly in the months of April and May (Pete 1991c:107).

During the late spring and early summer, Russian Mission residents begin to focus their subsistence activities on harvesting salmon. Chinook salmon arrive first, generally in late May or early June. This run is followed in rapid succession by the first run of chum salmon, known as "summer" chum (Pete 1991c:29). Following the summer chum salmon run, sockeye and pink salmon enter the Yukon River in limited quantities, generally in mid to late June. Households do not focus on these species as much as the later runs of fall chum and coho salmon, which enter the river later. These species are harvested until late September (Pete 1991c).

Historically, residents of Russian Mission used a variety of gear types to harvest salmon, including dip nets, traps with fences, and nets (both drift and setnets) made of a variety of different materials (willow, sinew, baleen, or seal skin). The gear type depended upon the species targeted and the environmental conditions; for example, Chinook salmon, which are more likely to swim in the mid-river and arrive when ice and debris are still in the water, were generally not taken with traps or fish wheels. Smaller salmon species which tend to migrate closer to the river bank were more easily taken by these methods, however, in the case of higher water levels, dip and set or driftnets would be used (Pete 1991c:35). Elder key respondents recalled that a fish wheel was in operation in front of the community, which was used communally, and the harvest was shared amongst families in Russian Mission:

> Morning, this family will go check it, there's lot, there's different family camps, and if he takes enough of that fish and gives some of it to this next family, it doesn't matter if they're related to you or not. And then lunch time this one and this one and that one and that one, it just go up and down checking the fish wheel and sharing the catch with everybody, and when they get enough fill, they

> shut that fish wheel down up here and wait until these ones are all dry and then they if they need a little bit more they turn it on again. (012212RSH1)

In 1984, and during the 2012 study year, a majority of all salmon species harvested were taken with subsistence set and driftnets.

Other fish were harvested concurrently with salmon fishing efforts. Community members also fish for Dolly Varden and Arctic grayling during the summer months, generally with rod and reel. Other incidental catches of these species come from salmon and whitefish nets (Pete 1991c:96). In the late summer and into the early fall, berry harvesting is another important subsistence activity undertaken by residents of Russian Mission. A variety of species are harvested in the community, including salmonberries, crowberries, low-bush cranberries, highbush cranberries, and raspberries. Most berries are gathered during day trips from the community but may also be harvested during fish camps and moose hunting trips (Pete 1991c:119). In the summer, bears are occasionally taken, most often when they wander too close to fish camps (012212RSH3).

In the fall, moose hunting becomes a major focus of subsistence activities, with a majority of the effort taking place in September (Pete 1991c:69). Elders remembered a time when moose were not common around the community. One respondent described her uncle telling her about the first moose he encountered in the 1940s:

> And then they got to this corner there's this big animal with big nose watching right—It wanna be a deer, the reindeer or caribou, it couldn't be, it was too big, really big—they were scared of it, so they went backwards (laughing). It was—they didn't know what to call it. (012112RSH5)

Moose populations began increasing in the area around Russian Mission around the 1940s as they began migrating downriver on the Yukon River corridor (Pete 1991c:81).

Today, moose hunting is often a family effort, with immediate and extended kin groups working together and splitting the expensive cost of gasoline for the excursions (012212RSH2, 012212RSH1, 012212RSH3). One respondent explained that the fall months are also optimal for the harvest of black bears, which are taken opportunistically during moose hunting and berry harvesting efforts; the timing of black bear hunting is related to the berry-rich diet of these animals during this time of the year, which gives the meat a more appealing taste (012212RSH1). Also during the fall, whitefish are harvested as they migrate downstream, both before and after freeze up. They are taken with setnets, in open water and under the ice, and residents of Russian Mission also jig through the ice for these species (Pete 1991c:97). One respondent stated that the best time to catch whitefish was between August and September, when their numbers are high and they are "pretty healthy and fat" (012212RSH3).

Another important species targeted in the late fall is Arctic lamprey, which are referred to locally as eels. They are an important source of dog food for those that have dog teams, but are also used for human consumption (012212RSH3). These fish migrate up the Yukon River in large, concentrated runs right around

freeze-up and offer the shortest window for harvest of any fish species on the river (Pete 1991c:102). One key respondent explained the difficulty lamprey can present in terms of timing the harvest:

> They came through; they are sometimes hard to find. Like if they come through the night, or through early morning hours and nobody's down there, we're never going to see them till next year. (012212RSH3)

Environmental conditions must also be adequate for a successful harvest, with thick ice on the river and strong currents, which appear to prompt the eels to form tighter schools. Trenches or holes are cut into the ice, and eels are harvested with either dip nets or eel "rakes." The rakes are constructed out of long wooden poles with protruding nails or other sharp objects attached to them (chicken wire or old saw blades), and are swept through holes in the ice in order to allow the eels to wrap themselves around the nails (Pete 1991c:102).

Throughout the winter, residents of Russian Mission continue to fish for nonsalmon species, by jigging through the ice and with the use of setnets. Burbot, also known locally as "lush," can be taken incidentally in whitefish nets prior to freeze-up, and are targeted after freeze-up through late February primarily with setnets under the ice and by jigging. Community residents also begin harvesting Alaska blackfish following freeze-up using funnel shaped traps constructed out of wood, chicken wire, or hardware cloth. These traps are set when waterways in the vicinity of Russian Mission begin to freeze, and are often left in place and monitored throughout the winter into the month of April (Pete 1991c:100).

Winter subsistence activities also include trapping and hunting furbearing animals, including beaver, river otter, lynx, marten, mink, muskrat, red fox, wolf, and wolverine. Trapping activities generally begin in November or December and are timed with improvement of fur quality and the ease of winter travel (Pete 1991c:118). One key respondent remembered going out with his father to check their family trap line by dog team. He noted that the practice of trapping has declined in recent years. Despite this, some young people in the community have become active in harvesting furbearers, and trapping still remains an important subsistence activity (012212RSH3). Small game such as ptarmigan, spruce grouse, and snowshoe hare are also harvested throughout the winter into the early spring months (Pete 1991c:113).

Demographics

The 46 surveyed households included 234 people. Expanding for the 33 unsurveyed households, the population of Russian Mission at the time of the survey was 402. Household sizes ranged from 1 to 10 people, with an average of 5 people per household. The average age was 24 years; the oldest person included in the survey effort was 77 years of age. On average, Russian Mission residents had lived in the community for 20 years, with a maximum of 68 years. For a full list of demographic characteristics, see Appendix Table D1-2. Of survey respondents, 61% of household heads reported Russian Mission as their birthplace. The nearby community of Kalskag was listed as the birthplace for 7% of household heads and was the second most commonly reported birthplace (Appendix Table D1-1). The Yukon–Kuskokwim Portage trail runs between

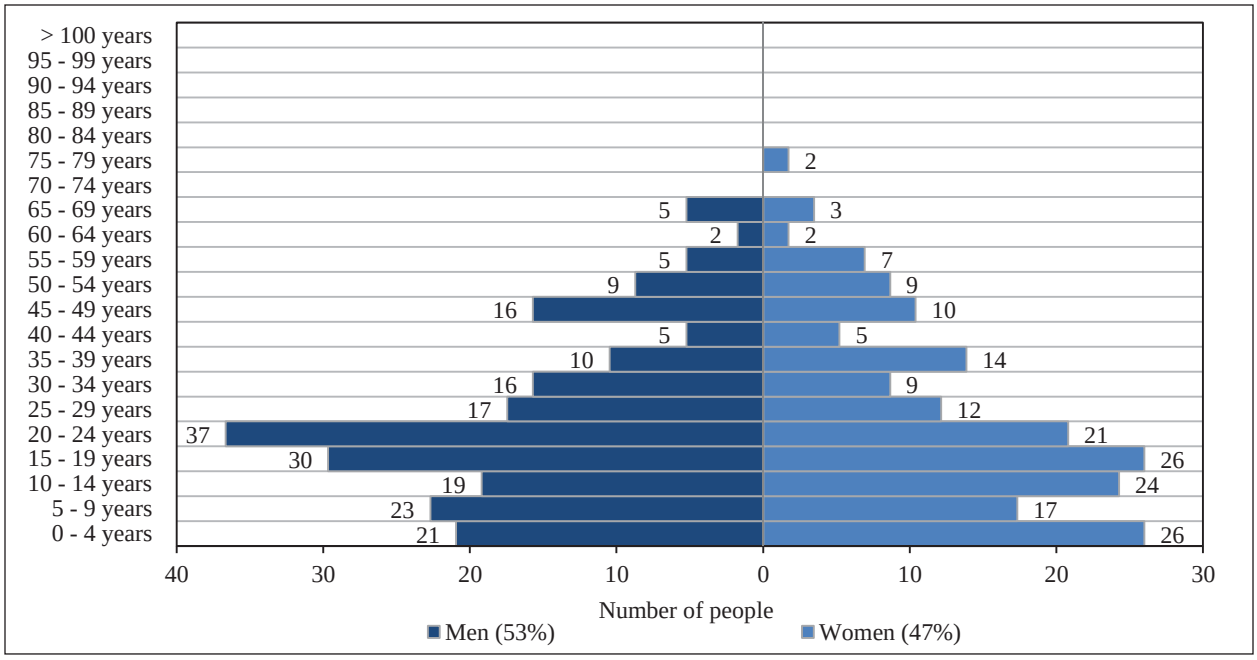


Figure 10-3.–Population profile, Russian Mission, 2011.

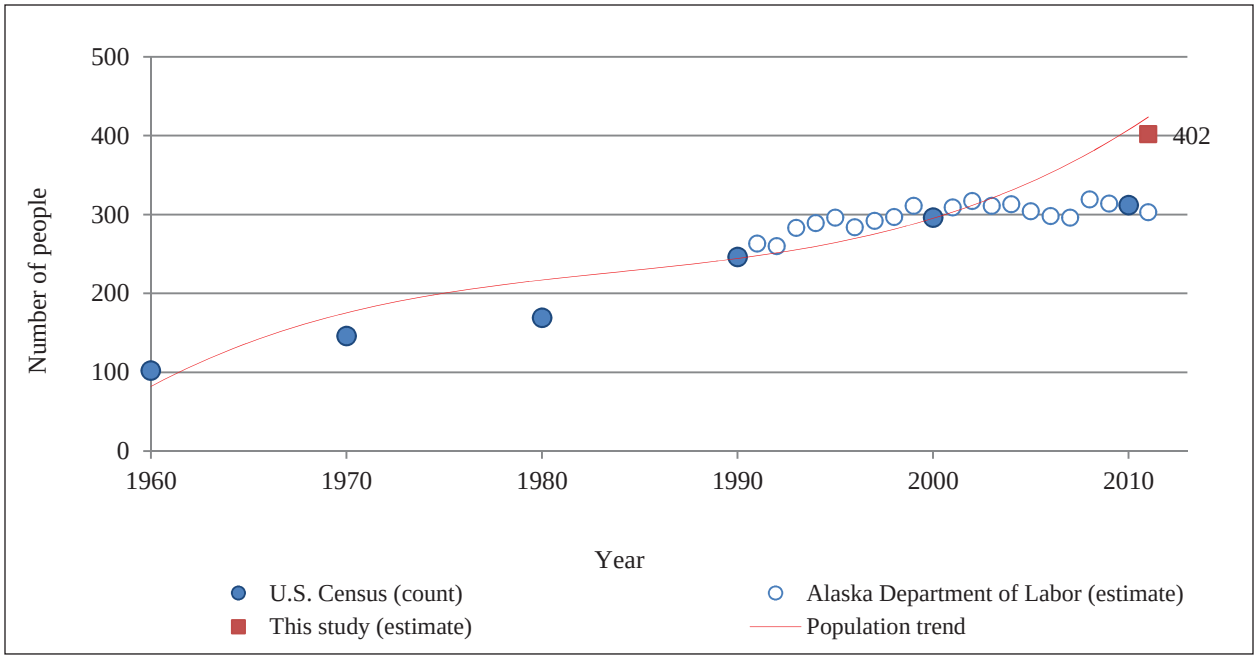


Figure 10-4.–Population history, Russian Mission, 2011.

the 2 communities, and elder respondents described family members buying supplies and children attending school in Kalskag in the 1940s (012212RSH3). An estimated 96% of the population of Russian Mission was Alaska Native during the study year. Figure 10-3 portrays the population profile of the community, with a majority of the residents being under the age of 25. According to the profile, 53% of the population is male, while 47% is female.

Russian Mission's population has grown overall in the past 50 years (Figure 10-4), according to U.S. Census Bureau decennial estimates (portrayed as the blue dots) and the yearly estimates provided by the Alaska Department of Labor (portrayed as the white dots). The Alaska Department of Labor estimate for 2011 was 303 individuals, a difference of 25% from this project's estimate of 402 individuals. There are a number of factors that could explain this difference, including difference in methodology, season of survey, definitions of residency, and sampling differences. Because our sample achievement was 58% of an attempted census, it is possible that larger households were overrepresented. This may have led to a higher population estimate in this study.

Wild Food Uses and Harvests

The primary purpose of the household survey was to collect information about the harvest and uses of edible wild foods. Tables and figures in this section summarize responses to the harvest and use questions expanded for unsurveyed households. Respondents were asked whether their household used or tried to harvest each resource during the study year. If they tried to harvest a resource, they were asked how much they harvested and for other details of the harvest, such as gear type, sex of the animal, or month of harvest. Households were also asked if they received or gave away any wild foods. Tables 10-1 through 10-6 show the results of these survey questions in the amount of estimated edible pounds harvested for each category in addition to the percentages of households reporting harvesting activities, receiving wild foods, or giving them away.

Ninety-eight percent of households reported using at least 1 wild resource and the same percentage of households reported harvesting activities, collectively harvesting 78 different types of resources during the study year (Figure 10-5). On average, households used 20 resources and harvested 16 (Appendix Table D9-1). The most widely used resource category by Russian Mission households was fish (98%), which was also the resource most commonly harvested (by an estimated 91% of households). This resource category also accounted for over one-half of the community's total subsistence harvest (80,301 lb or 61%), and comprised 9 out of the top 10 resources (Figure 10-6). The next most widely used category was land mammals (96% of households), accounting for 34% of the total estimated harvest. Vegetation, which includes berries and edible plants, composed only 1% of the total estimated harvest for the community but was used by a vast majority of households (89%).

Sharing, roughly measured by instances of households giving away and receiving subsistence foods, was most often practiced involving fish and land mammals, with an estimated 70% of Russian Mission house-

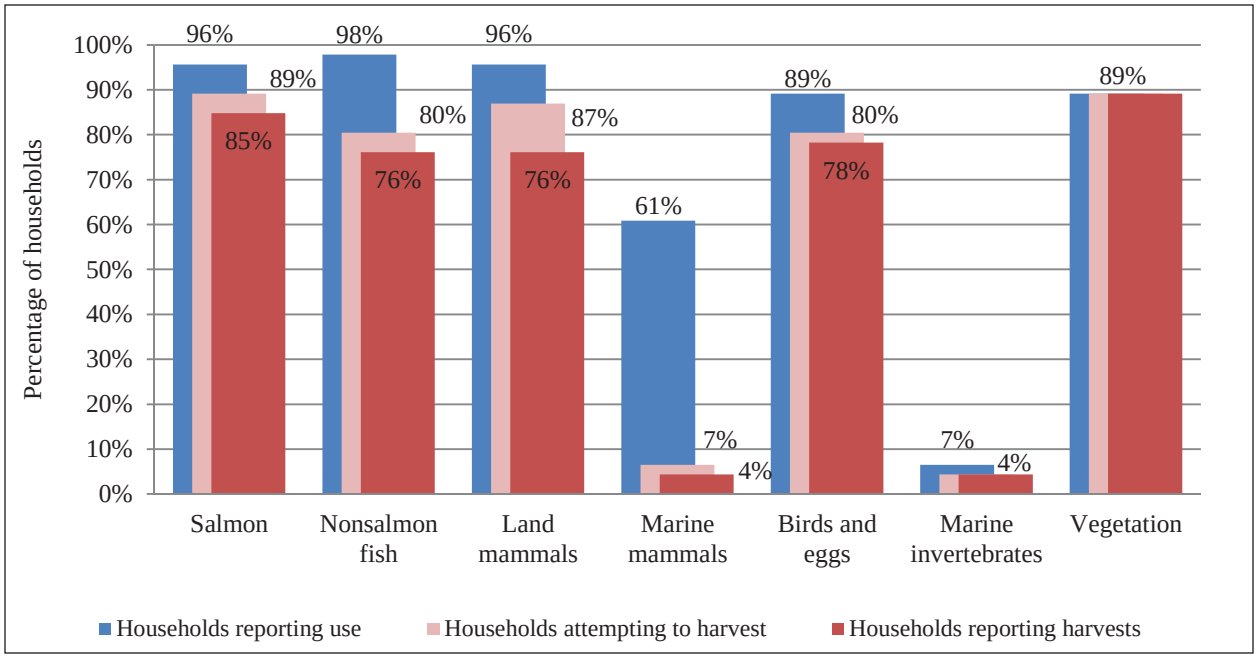


Figure 10-6.–Percentages of households using, attempting to harvest, or harvesting subsistence resources by category, Russian Mission, 2011.

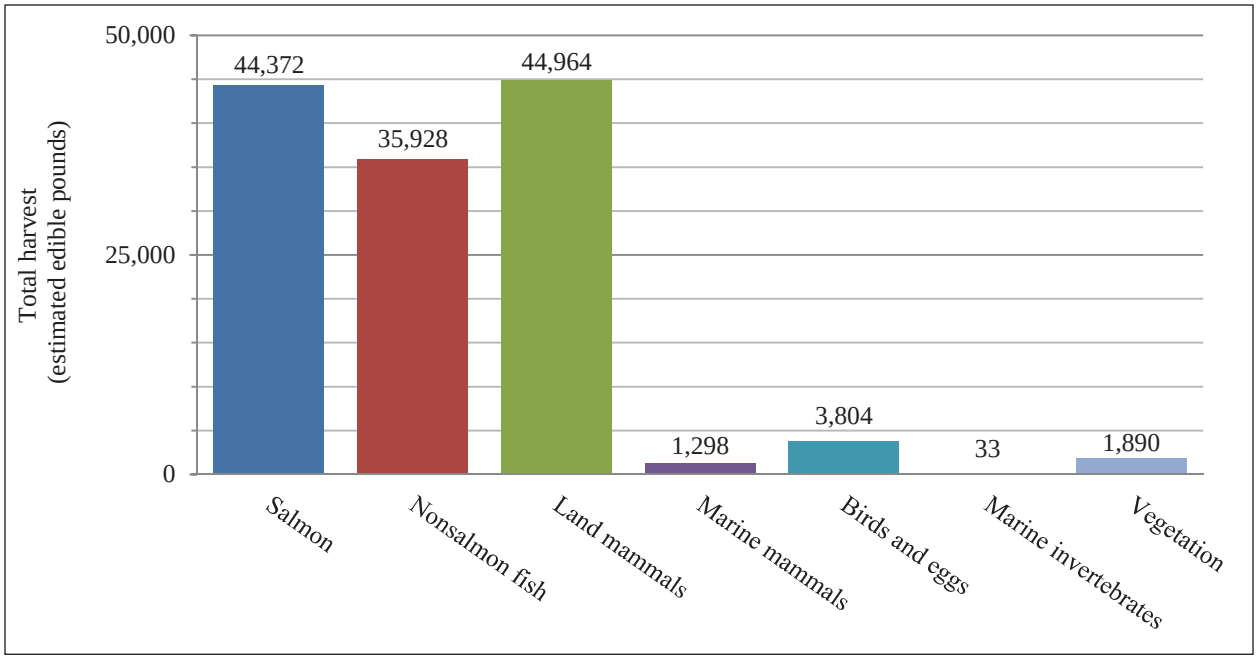


Figure 10-5.–Total estimated edible pounds harvested by the community by resource category, Russian Mission, 2011.

holds reporting both receiving and giving away fish. Fifty-seven percent of households reported receiving land mammals, while 63% reported giving these resources away.

Salmon species accounted for 34% of the community's total estimated harvest, contributing a total of 44,372 lb. Chinook salmon alone contributed 29,549 edible pounds (74 lb per capita) and composed 67% of the total salmon harvest. This resource contributed 22% to the total estimated harvest of the community in 2011. Summer chum salmon contributed an additional 8,978 edible pounds (7%) to Russian Mission's harvest of wild foods, followed by fall chum salmon (2,809 lb, 2%), and coho salmon (2,444 lb, 2%) (Table 10-1).

The 2011 subsistence fish harvests came primarily from gillnets, either used as setnets or for drifting (Figure 10-7); 94% (41,601 lb) of the total fish harvest taken by these means. One exception was sockeye salmon; 97% of which were taken with rod and reel. Because this species is not abundant on the Yukon River, these fish may have been harvested elsewhere. Key respondents confirmed the use of set- and driftnets in a majority of the 2011 salmon harvest, explaining that drifting was the preferred method (012212RSH1, 012212RSH3). In fact, 73% of the total salmon harvest was taken with the use of driftnets. In 2010, the Board of Fisheries limited the maximum mesh size for all nets used for subsistence, commercial, and personal uses on the Yukon River to 7.5 inches (Hayes and Estensen 2011). The regulatory change became effective in 2011. One key respondent commented on differing opinions regarding the impact of this regulatory change:

> Yeah. Some people don't like it; other people love it. I'm kind of in-between those, because with the smaller one you catch more, but you catch more…a lot of the smaller ones. With a bigger [mesh] you let a lot of the smaller ones go. And although you have less you still have bigger fish. So, I'm kind of in-between that. (012212RSH1)

Discussed above, setnets and driftnets account for the majority of salmon harvests. However, elder residents of Russian Mission recalled that a communal fish wheel operated in front of the community until the 1960s (012112RSH5).

Salmon fishing is a group effort, largely undertaken by family groups at summer fish camps in the area. Key respondents discussed the fact that each individual at fish camp has a role to play in the harvest and processing of the salmon. One respondent described the activities of his family's camp, run in conjunction with his sister's family fish camp in the immediate vicinity:

> Most of the time I'm out getting wood and whatnot for the smokehouse—preparing it. And then everybody has their own little jobs at camp. Some people are going out fishing; some people are getting wood; some people are cutting; some people are smoking. You know, just…it's an organized chaos. (012212RSH1)

Fish camps provide an avenue for children to learn harvesting and processing activities, and they contribute to the subsistence efforts from an early age. One respondent explained that the first jobs she had as a child were hauling fish from the boats and cleaning them with water. Once she was old enough to be trusted with

Table 10-1. – Estimated use and harvest of fish, Russian Mission, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Fish										
Salmon										
Summer chum salmon	63.0%	52.2%	52.2%	13.0%	21.7%	8,977.8 lb	113.6 lb	22.3 lb	1,789.4 ind	± 28%
Fall chum salmon	37.0%	28.3%	28.3%	10.9%	10.9%	2,809.0 lb	35.6 lb	7.0 lb	559.9 ind	± 42%
Unknown chum salmon	2.2%	2.2%	2.2%	0.0%	2.2%	129.2 lb	1.6 lb	0.3 lb	25.8 ind	± 130%
Coho salmon	47.8%	34.8%	34.8%	21.7%	13.0%	2,444.0 lb	30.9 lb	6.1 lb	479.2 ind	± 38%
Chinook salmon	84.8%	73.9%	69.6%	37.0%	28.3%	29,548.6 lb	374.0 lb	73.5 lb	3,176.5 ind	± 24%
Pink salmon	2.2%	2.2%	2.2%	0.0%	0.0%	109.9 lb	1.4 lb	0.3 lb	34.3 ind	± 130%
Sockeye salmon	4.3%	4.3%	4.3%	2.2%	2.2%	353.8 lb	4.5 lb	0.9 lb	59.0 ind	± 126%
Unknown salmon	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**95.7%**	**89.1%**	**84.8%**	**50.0%**	**43.5%**	**44,372.4 lb**	**561.7 lb**	**110.4 lb**	**6,124.0 ind**	**± 21%**
Char										
Dolly Varden	10.9%	10.9%	8.7%	2.2%	2.2%	319.4 lb	4.0 lb	0.8 lb	213.0 ind	± 126%
Lake trout	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**10.9%**	**10.9%**	**8.7%**	**2.2%**	**2.2%**	**319.4 lb**	**4.0 lb**	**0.8 lb**	**213.0 ind**	**± 126%**
Trout										
Rainbow trout	8.7%	8.7%	8.7%	0.0%	0.0%	31.3 lb	0.4 lb	0.1 lb	22.3 ind	± 73%
Subtotal	**8.7%**	**8.7%**	**8.7%**	**0.0%**	**0.0%**	**31.3 lb**	**0.4 lb**	**0.1 lb**	**22.3 ind**	**± 73%**
Whitefishes										
Sheefish	41.3%	32.6%	32.6%	10.9%	13.0%	3,514.6 lb	44.5 lb	8.7 lb	540.7 ind	± 46%
Broad whitefish	58.7%	32.6%	30.4%	34.8%	17.4%	1,122.8 lb	14.2 lb	2.8 lb	802.0 ind	± 51%
Bering cisco	4.3%	2.2%	2.2%	2.2%	0.0%	24.0 lb	0.3 lb	0.1 lb	17.2 ind	± 130%
Least cisco	4.3%	0.0%	0.0%	4.3%	2.2%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Humpback whitefish	52.2%	41.3%	34.8%	28.3%	23.9%	5,605.6 lb	71.0 lb	13.9 lb	1,868.5 ind	± 53%
Round whitefish	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown whitefishes	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**82.6%**	**58.7%**	**52.2%**	**50.0%**	**30.4%**	**10,267.1 lb**	**130.0 lb**	**25.5 lb**	**3,228.4 ind**	**± 37%**
Anadromous/marine fish										
Pacific herring	2.2%	0.0%	0.0%	2.2%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Pacific herring roe	2.2%	0.0%	0.0%	2.2%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Unknown smelt	13.0%	2.2%	0.0%	13.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Pacific tomcod	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Saffron cod	2.2%	0.0%	0.0%	2.2%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Pacific halibut	13.0%	4.3%	4.3%	8.7%	6.5%	180.3 lb	2.3 lb	0.4 lb	180.3 lb	± 124%
Arctic lamprey	41.3%	32.6%	30.4%	21.7%	17.4%	10,068.4 lb	127.4 lb	25.1 lb	16,780.7 ind	± 69%
Stickleback (needlefish)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Subtotal	**52.2%**	**34.8%**	**32.6%**	**32.6%**	**23.9%**	**10,248.7 lb**	**129.7 lb**	**25.5 lb**		**± 68%**
Other freshwater fish										
Alaska blackfish	28.3%	13.0%	13.0%	17.8%	13.3%	1,555.2 lb	19.7 lb	3.9 lb	1,555.2 lb	± 59%
Burbot	63.0%	47.8%	43.5%	33.3%	22.2%	3,539.5 lb	44.8 lb	8.8 lb	786.6 ind	± 48%
Arctic grayling	17.4%	15.2%	15.2%	2.2%	0.0%	97.9 lb	1.2 lb	0.2 lb	65.3 ind	± 63%
Northern pike	73.9%	65.2%	60.9%	22.7%	36.4%	9,869.0 lb	124.9 lb	24.6 lb	2,193.1 ind	± 38%
Longnose sucker	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**91.3%**	**76.1%**	**71.7%**	**45.7%**	**43.5%**	**15,061.7 lb**	**190.7 lb**	**37.5 lb**		**± 32%**
All fish	**97.8%**	**95.7%**	**91.3%**	**69.6%**	**69.6%**	**80,300.5 lb**	**1,016.5 lb**	**199.8 lb**		**± 23%**
All resources	**97.8%**	**97.8%**	**97.8%**	**91.3%**	**84.8%**	**132,289.3 lb**	**1,674.5 lb**	**329.2 lb**		**± 18%**

Source ADF&G Division of Subsistence household surveys, 2012.

Note "All resources" include all species of fish, wildlife, and plants reported on the survey.

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

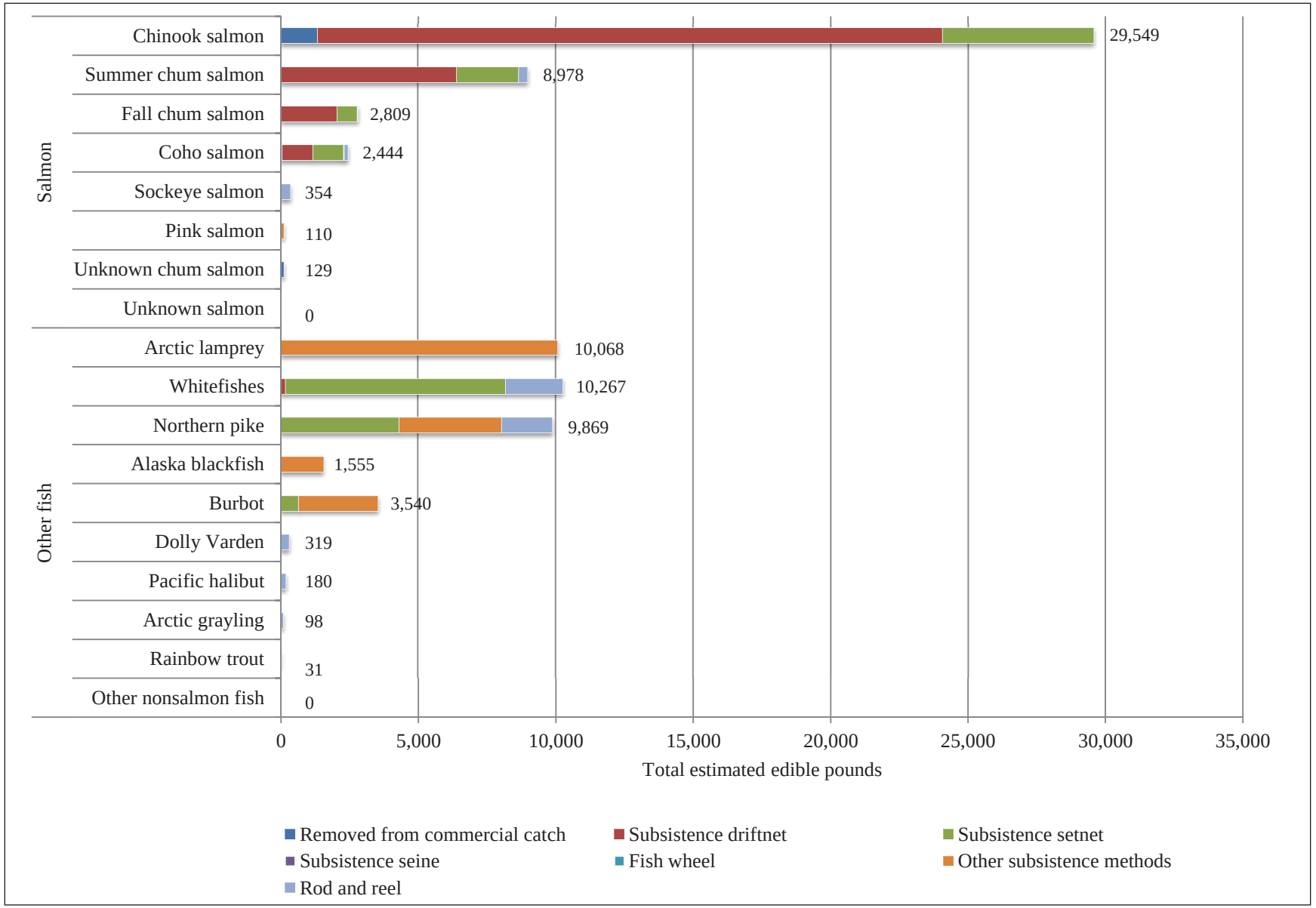


Figure 10-7.–Fish harvest by gear type, Russian Mission, 2011.

a knife, she participated in the fishing effort and learned to cut salmon from her mother.. This pattern was repeated with her own children (012212RSH2).

In terms of processing the salmon, a key respondent explained the techniques used at their family fish camp. The fish are cut into either slabs or strips and then hung to dry for 3 days, after which time they are hung in the smokehouse. The smoking process takes approximately a week, and the finished product is frozen (012212RSH2). The process of drying and smoking salmon can be more difficult when the weather is cool and rainy, and one key respondent noted that cooler than average temperatures in recent summers had made smoking fish more of a challenge (01UN12RSH4).

Key respondent comments confirmed the importance of salmon species to the community, particularly Chinook salmon. One key respondent stated this was because they are "fatter and have more meat and a higher oil content" (01UN12RSH4). All respondents expressed concern that the size and abundance of Chinook salmon had decreased in recent years. When asked if there were any notable changes to salmon populations, one key respondent commented:

> Very much decreasing, it's, it's really, numbers of salmon we're getting now is way, way down. Way down. There's, you know even in the past, even there was a lot of salmon, we'd only take what we need, you know…. There'd still be a lot of fish passing through….Nowadays it's, it's really different, you know. There's hardly, there's some fish, but they're not like they used to be. They're, back then you'd be able to put our fish net into the river and….we'd use setnets. And sometimes we'd just set them out, we'd come from the beach and set them out to the anchor and we'd come back and check and take what we need and then take the net out. That's how much fish there was here. (012212RSH3)

The same respondent stated that he and some other fishers in the area chose to only take limited catches of salmon during the last season in order to help protect the population. He went on to explain: "And then I show them, my grandkids…. I say, 'I'm saving my fish this year for these guys.' It's just what some of us do; there's other fisherman that are doing the same."

Various whitefish species as well as Arctic lampreys and northern pike comprised a majority of the nonsalmon fish harvest. Nonsalmon fish species overall contributed 52 lb per capita. Residents of Russian Mission harvested an estimated 10,068 lb of Arctic lamprey, 9,869 lb of northern pike, 6,728 lb of broad and humpback whitefishes, and 3,515 lb of sheefish. Additional harvests of burbot (3,540 lb) and Alaska blackfish (1,555 lb) also contributed significant edible pounds to the estimated community harvest.

A large component of the Arctic lamprey harvest was used to feed dogs (8,392 individuals, 50% of total harvest), while 317 whitefishes, 628 northern pike, and 105 burbot were also fed to dogs. Of the salmon harvest, 158 fall chum (28% of the total harvest for this species) and 167 summer chum salmon (9%) were harvested specifically to feed dogs. Lesser amounts of coho salmon (75, 16%) and Chinook salmon (3, less than 1%) were harvested for this purpose (Appendix Table D9-2).

Photo by Elizabeth Mikow

Figure 10-8.–A Russian Mission resident runs his dog team in the late afternoon. While not as common as they once were, there are still residents with dog teams in the community

A local musher highlighted the importance of Arctic lamprey for the feeding of his dog team, explaining that not getting enough of this species made it difficult to maintain his team (012212RSH3) (Figure 10-8). An elder respondent recalled an interesting use of Arctic lamprey during her childhood. She remembered her family using eel oil in lamps to illuminate the inside of the sod house they stayed in during spring camp; this was used when the family ran out of kerosene, often used in combination with other animal oil, including that taken from other fish or from bears (012112RSH5).

Gear types varied by species. As noted above, nets were a primary gear for the total fish harvest; 78% of the (8,006 lb) whitefish harvest was taken with setnet and 2% (160 lb) was taken with driftnet. A portion of the northern pike harvested in 2011 was taken with setnet (43% or 4,289 lb) and a portion of the burbot harvest (19% or 657 lb) was taken by this method as well. Several nonsalmon species of fish were primarily taken with rod and reel, including rainbow trout, Arctic grayling, halibut (harvested in coastal locations), Dolly Varden, and portions of the northern pike and whitefish harvests (19% or 1,832 lb and 20% or 2,102 lb, respectively). Some fish species were taken with "other subsistence methods," including jigging in the case of a majority of the burbot harvest (81% or 2,883 lb) and a portion of the northern pike harvest (38% or 3,748 lb).

Table 10-2. – Estimated use and harvest of marine invertebrates, Russian Mission, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Marine invertebrates										
Freshwater clams	2.2%	2.2%	2.2%	0.0%	0.0%	25.8 lb	0.3 lb	0.1 lb	8.6 gal	± 130%
Unknown clams	2.2%	0.0%	0.0%	2.2%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
King crab	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown Tanner crab	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown crab	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown mussels	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Octopus	2.2%	0.0%	0.0%	2.2%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Shrimp	2.2%	2.2%	2.2%	2.2%	0.0%	6.9 lb	0.1 lb	0.0 lb	3.4 gal	± 130%
Unknown marine invertebrates	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Subtotal	**6.5%**	**4.3%**	**4.3%**	**4.3%**	**0.0%**	**32.6 lb**	**0.4 lb**	**0.1 lb**		**± 106%**
All marine invertebrates	**6.5%**	**4.3%**	**4.3%**	**4.3%**	**0.0%**	**32.6 lb**	**0.4 lb**	**0.1 lb**		**± 106%**
All resources	**97.8%**	**97.8%**	**97.8%**	**91.3%**	**84.8%**	**132,289.3 lb**	**1,674.5 lb**	**329.2 lb**		**± 18%**

Source ADF&G Division of Subsistence household surveys, 2012.
Note "All resources" include all species of fish, wildlife, and plants reported on the survey.
a. Summary rows that include incompatible units of measure have been left blank.

Russian Mission respondents reported limited use (7% of households) and harvest (4% of households) of marine invertebrates in 2011. Two percent of households reported using and harvesting freshwater clams and shrimp, which contributed 0.1 lb per capita. A further 2% of households reported using unknown clams and octopus; both resources were reported as being received by respondents (Table 10-2).

Land mammals made up an estimated 34% of Russian Mission's 2011 subsistence harvest, with moose comprising the majority of the edible weight (41,172 lb or 92%). This resource contributed 103 lb per capita. (Table 10-3). The second largest contributor to the total estimated land mammal harvest was black bear (1,288 lb or 3%), and this resource contributed 3 lb per capita. For large land mammals, caribou also contributed an additional 727 lb of edible weight to the community's harvest (2 lb per capita), and Russian Mission residents harvested an estimated total of 59 moose, 9 black bear, and 5 caribou in 2011. Moose hunting, like many other subsistence activities in Russian Mission, is often undertaken in familial groups and used as an opportunity to teach the younger generation hunting and processing practices. Several key respondents remembered being taken out on moose hunting expeditions at an early age. The respondents agreed that the first job given a child was to "just watch" the process. When older children take their first moose, it is a traditional practice for the family to give the meat away to every household in the community (012212RSH3, 012212RSH1, 012212RSH2). Indeed, moose is one of the most widely shared resources in the community; in 2011, 53% of households reported giving the resource away, and 52% of households reported receiving it. One key respondent explained how households share the resource when they are lucky in their hunting efforts:

Table 10-3. – Estimated use and harvest of land and marine mammals, Russian Mission, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Land mammals										
Large land mammals										
Bison	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Black bear	19.6%	13.0%	8.7%	10.9%	6.5%	1,288.0 lb	16.3 lb	3.2 lb	8.6 ind	± 67%
Brown bear	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Caribou	10.9%	4.3%	4.3%	6.5%	4.3%	726.5 lb	9.2 lb	1.8 lb	5.2 ind	± 96%
Moose	91.3%	87.0%	58.7%	52.2%	53.3%	41,172.3 lb	521.2 lb	102.5 lb	58.8 ind	± 20%
Muskox	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Dall sheep	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**93.5%**	**87.0%**	**60.9%**	**52.2%**	**54.3%**	**43,186.8 lb**	**546.7 lb**	**107.5 lb**	**72.6 ind**	**± 19%**
Small land mammals										
Beaver	32.6%	32.6%	28.3%	6.5%	19.6%	1,236.5 lb	16.0 lb	3.1 lb	138.7 ind	± 48%
Coyote	0.0%	0.0%	0.0%	0.0%	0.0%	*Not usually eaten*			0.0 ind	± 0%
Red fox	10.9%	13.0%	10.9%	0.0%	2.2%	*Not usually eaten*			58.4 ind	± 115%
Snowshoe hare	34.8%	34.8%	34.8%	2.2%	10.9%	412.2 lb	5.3 lb	1.0 lb	217.7 ind	± 41%
Jackrabbit	2.2%	2.2%	2.2%	0.0%	0.0%	3.4 lb	0.0 lb	0.0 lb	1.7 ind	± 130%
River (land) otter	8.7%	6.5%	4.3%	4.3%	0.0%	*Not usually eaten*			12.0 ind	± 113%
Lynx	4.3%	10.9%	4.3%	0.0%	0.0%	41.2 lb	0.5 lb	0.1 lb	12.0 ind	± 130%
Marmot	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Marten	17.4%	17.4%	17.4%	0.0%	4.4%	*Not usually eaten*			170.0 ind	± 55%
Mink	6.5%	6.5%	6.5%	0.0%	0.0%	34.3 lb	0.4 lb	0.1 lb	20.6 ind	± 102%
Muskrat	2.2%	6.5%	2.2%	0.0%	2.2%	1.3 lb	0.0 lb	0.0 lb	1.7 ind	± 130%
Porcupine	10.9%	10.9%	10.9%	0.0%	4.3%	48.1 lb	0.6 lb	0.1 lb	15.5 ind	± 84%
Arctic ground (parka) squirrel	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Red (tree) squirrel	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Weasel	0.0%	2.2%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Wolf	2.2%	6.5%	2.2%	0.0%	0.0%	*Not usually eaten*			5.2 ind	± 130%
Wolverine	2.2%	10.9%	2.2%	0.0%	2.2%	*Not usually eaten*			3.4 ind	± 130%
Subtotal	**56.5%**	**52.2%**	**50.0%**	**13.0%**	**30.4%**	**1,777.1 lb**	**22.5 lb**	**4.4 lb**	**656.9 ind**	**± 40%**
Marine mammals										
Bearded seal	4.3%	0.0%	0.0%	4.3%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Ringed seal	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Spotted seal	6.5%	0.0%	0.0%	6.5%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown seal	54.3%	4.3%	2.2%	52.2%	2.2%	96.2 lb	1.2 lb	0.2 lb	1.7 ind	± 130%
Walrus	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Beluga whale	26.1%	4.3%	2.2%	23.9%	6.5%	1,202.2 lb	15.2 lb	3.0 lb	1.7 ind	± 130%
Bowhead whale	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**60.9%**	**6.5%**	**4.3%**	**58.7%**	**6.5%**	**1,298.3 lb**	**16.4 lb**	**3.2 lb**	**3.4 ind**	**± 121%**
All land mammals	**95.7%**	**87.0%**	**76.1%**	**56.5%**	**63.0%**	**44,963.8 lb**	**569.2 lb**	**111.9 lb**		**± 19%**
All marine mammals	**60.9%**	**6.5%**	**4.3%**	**58.7%**	**6.5%**	**1,298.3 lb**	**16.4 lb**	**3.2 lb**		**± 121%**
All resources	**97.8%**	**97.8%**	**97.8%**	**91.3%**	**84.8%**	**132,289.3 lb**	**1,674.5 lb**	**329.2 lb**		**± 18%**

Source ADF&G Division of Subsistence household surveys, 2012.

Note "All resources" include all species of fish, wildlife, and plants reported on the survey.

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

> We just do the same thing, we keep some and give some of it to others. Because, you know, it's hard work putting away the moose, and then we just, we'll just be putting away what we can and give some to family members. And they'll put them away, because we know that family members will end up hunting; they'll do the same thing. They'll put some away, what they need, and then give some to us. So, it makes things, for moose, it makes things a lot easier doing that. (012212RSH3)

When asked about the moose population, all key respondents stated that they felt the population was healthy and growing. A majority of moose harvests occurred in the fall during the month of September (94%); lesser harvests (6%) took place in January and February (Appendix Table D9-3).

Key respondents also discussed the harvest and use of bear species. While no brown bears were harvested during the study year, key respondent interviews noted that residents used to hunt bear more often and as a result, elders are more partial to the meat than others in the community (012212RSH2). Key respondents described the opportunistic nature of contemporary black bears harvests, which usually occur in combination with moose hunting or berry picking. Bears are also taken at fish camps when they come too close to the harvesting and processing activities taking place there (012212RSH1, 012212RSH3). One elder key respondent recalled that hunters in the past would use a dog, specifically trained to track down bears, to lead the hunting party (012112RSH5). A majority of black bear harvests (80%) in 2011 occurred in September, while 20% took place in November.

When asked about the harvest and use of caribou, key respondents explained that they do not often target this resource because of the distance necessary to travel in order to hunt herds in the region (012212RSH3,012122RSH1. Reported caribou harvests in 2011 took place in the wintertime; 67% of caribou were harvested in March, and 33% of the harvest occurred in February (Appendix Table D9-3).

Russian Mission residents also reported small harvests of other smaller mammal species, with beaver providing the largest contribution to the harvest of this resource category (1,237 lb or 3% of the total estimated harvest of land mammals). This resource contributed 3 lb per capita. Other small mammal harvests included snowshoe hare, jackrabbit (Alaska hare), lynx, mink, muskrat, and porcupine. Of furbearers, which are typically not used for food, households reported the harvest of 170 marten, 58 red fox, 12 river otters, 5 wolves, and 3 wolverines. A majority of the furbearer harvest took place in the fall and winter months during the study year (Appendix Table D9-4). Some key respondents explained that they had helped their fathers run their trap lines during their childhood, recalling the sometimes all-day excursions by dog team to check and re-bait the line (012212RSH1, 012212RSH3). One respondent pointed out that he felt trapping was becoming more popular in the community:

> I'm surprised actually. People…a lot of these younger, younger kids are…they're out trapping. When I…came back to Russian Mission that's what I noticed, was a lot of these younger kids…because when I left, you know, there was only maybe about 2, 3 people a year trapping. Now there's, you know, 15, 20 kids are doing it. (012212RSH1)

Another key respondent explained that his son has taken up trapping recently, and, while he himself had learned to trap from his father, his son was instead learning most of his techniques from instructional online videos (012212RSH3).

Kwik'Pak fisheries, LLC began purchasing furs from local trappers on the Yukon River in recent years, and trappers in Russian Mission have taken advantage of this program. The fur buying program extends to 17 communities and also hosts workshops on trapping techniques and fur handling in villages. Trapping supplies are also sold to trappers at cost, and the program is gaining popularity and providing a source of cash income to residents of participating villages (Jeff Sutter, fur manager Kwik'Pak Fisheries, LLC, Mountain Village, personal communication, September 2013). This program may be part of the reason for an increased interest in fur trapping among younger residents of Russian Mission.

In terms of furbearer populations, key respondents stated that they felt the animals were healthy and their numbers were high. It was noted that, despite high beaver and marten populations in the area, it is still necessary to know the prime locations to set trap lines. Foxes are numerous, even in the immediate area around Russian Mission, according to respondents. Wolf populations have increased markedly, according to one respondent; the increase is particularly notable in terms of the increased predation on moose in the area. The increased predation is not of major concern though, as one respondent explained, "I think we have quite a bit of moose. I'm not complaining about the wolves; I really like how they look… looking at the beauty. They're really nice looking" (012212RSH3).

Because of Russian Mission's location on the lower Yukon River, far removed from the coast, it is not surprising that respondents reported limited harvest of marine mammals during 2011. This resource category contributed a total of 3 lb per capita to the community's estimated harvest (Table 10-3). While 61% of households reported using the resource, only 4% reported harvesting any marine mammal species. An estimated 2 beluga whales (1,202 edible pounds) were taken near the coast outside of the range of the maps used for the study, as well as 2 unknown seals (96 lb). Residents explained that the seals were taken as a part of the subsistence program at the school, in which local subsistence users take children out to learn subsistence hunting and fishing practices. For harvest timing of the limited marine mammal harvest, see Appendix Table D9-5. Fifty-four percent of households used unknown seals, and 52% received it; the high rate of use of this resource can likely be attributed to sharing of seals harvested in the school program and to seal oil obtained through sharing, barter, and trade networks that are common all over the state (Magdanz et al. 2002). This same pattern may account for the relatively high usage of beluga whale (26% of households) in comparison with the low harvest levels (2%).

Eighty-nine percent of Russian Mission households used birds and eggs in 2011, and this resource category collectively contributed 3,804 edible lb (3% of the total harvest) to the estimated total community harvest (Table 10-4). This resource category contributed 10 lb per capita overall to Russian Mission households. Migratory birds made up over one-half of this harvest, an estimated 70% (2,621 edible pounds). Mallards were the most commonly and heavily harvested species of duck, followed by northern pintails and wigeons. Surveyed households reported harvests of 4 species of goose: white-fronted, cackling Canada geese, lesser

Table 10-4. – Estimated use and harvest of birds, Russian Mission, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Migratory birds										
Ducks										
Bufflehead	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Canvasback	2.2%	2.2%	0.0%	2.2%	2.2%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Common eider	2.2%	2.2%	0.0%	0.0%	2.2%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown eider	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Goldeneye	19.6%	21.7%	19.6%	2.2%	4.3%	54.8 lb	0.7 lb	0.1 lb	68.5 ind	± 47%
Harlequin	6.5%	6.5%	6.5%	0.0%	2.2%	14.6 lb	0.2 lb	0.0 lb	29.2 ind	± 86%
Mallard	58.7%	56.5%	54.3%	8.7%	23.9%	307.4 lb	3.9 lb	0.8 lb	307.4 ind	± 25%
Common merganser	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Red-breasted merganser	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Unknown merganser	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Long-tailed duck	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Northern pintail	34.8%	34.8%	32.6%	6.5%	8.7%	108.1 lb	1.4 lb	0.3 lb	135.2 ind	± 35%
Scaup	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Black scoter	21.7%	13.0%	10.9%	13.0%	2.2%	43.3 lb	0.5 lb	0.1 lb	48.1 ind	± 62%
Surf scoter	2.2%	0.0%	0.0%	2.2%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
White-winged scoter	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Northern shoveler	6.5%	6.5%	6.5%	0.0%	0.0%	8.2 lb	0.1 lb	0.0 lb	13.7 ind	± 88%
Green-winged teal	19.6%	19.6%	17.4%	2.2%	0.0%	16.0 lb	0.2 lb	0.0 lb	53.2 ind	± 57%
Wigeon	39.1%	32.6%	32.6%	11.1%	4.4%	108.1 lb	1.4 lb	0.3 lb	154.5 ind	± 39%
Unknown ducks	2.2%	2.2%	0.0%	0.0%	2.2%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**73.9%**	**65.2%**	**63.0%**	**28.3%**	**26.1%**	**660.6 lb**	**8.4 lb**	**1.6 lb**	**809.8 ind**	**± 24%**
Geese										
Brant	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Cackling goose	28.3%	28.3%	26.1%	6.5%	8.7%	142.2 lb	1.8 lb	0.4 lb	118.5 ind	± 60%
Lesser Canada goose	50.0%	43.5%	41.3%	23.9%	13.0%	403.9 lb	5.1 lb	1.0 lb	192.3 ind	± 31%
Unknown Canada goose	10.9%	6.5%	4.3%	6.5%	2.2%	14.4 lb	0.2 lb	0.0 lb	12.0 ind	± 99%
Emperor goose	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Snow goose	34.8%	23.9%	23.9%	15.2%	8.7%	169.9 lb	2.2 lb	0.4 lb	73.8 ind	± 47%
White-fronted goose	58.7%	47.8%	47.8%	19.6%	13.0%	667.7 lb	8.5 lb	1.7 lb	278.2 ind	± 32%
Unknown goose	8.7%	8.7%	8.7%	0.0%	4.3%	11.1 lb	0.1 lb	0.0 lb	5.4 ind	± 94%
Subtotal	**80.4%**	**65.2%**	**63.0%**	**43.5%**	**26.1%**	**1,409.3 lb**	**17.8 lb**	**3.5 lb**	**680.3 ind**	**± 28%**
Other migratory birds										
Tundra (whistling) swan	23.9%	21.7%	21.7%	6.5%	4.3%	480.9 lb	6.1 lb	1.2 lb	48.1 ind	± 41%
Sandhill crane	8.7%	10.9%	8.7%	0.0%	6.5%	70.2 lb	0.9 lb	0.2 lb	7.0 ind	± 77%
Whimbrel	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**28.3%**	**26.1%**	**26.1%**	**6.5%**	**10.9%**	**551.1 lb**	**7.0 lb**	**1.4 lb**	**55.1**	**± 40%**
Other birds										
Spruce grouse	52.2%	52.2%	52.2%	6.5%	10.9%	553.0 lb	7.0 lb	1.4 lb	553.0 ind	± 36%
Sharp-tailed grouse	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Ruffed grouse	19.6%	19.6%	19.6%	6.5%	4.3%	99.6 lb	1.3 lb	0.2 lb	99.6 ind	± 48%
Ptarmigan	39.1%	39.1%	39.1%	6.5%	6.5%	490.7 lb	6.2 lb	1.2 lb	490.7 ind	± 48%
Subtotal	**60.9%**	**60.9%**	**60.9%**	**8.7%**	**13.0%**	**1,143.4 lb**	**14.5 lb**	**2.8 lb**	**1,143.4 ind**	**± 29%**
All migratory birds	**84.8%**	**69.6%**	**67.4%**	**56.5%**	**32.6%**	**2,620.9 lb**	**33.2 lb**	**6.5 lb**		**± 24%**
All other birds	**60.9%**	**60.9%**	**60.9%**	**8.7%**	**13.0%**	**1,143.4 lb**	**14.5 lb**	**2.8 lb**		**± 29%**
All resources	**97.8%**	**97.8%**	**97.8%**	**91.3%**	**84.8%**	**132,289.3 lb**	**1,674.5 lb**	**329.2 lb**		**± 18%**

Source ADF&G Division of Subsistence household surveys, 2012.

Note "All resources" include all species of fish, wildlife, and plants reported on the survey.

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

Table 10-5. – Estimated use and harvest of bird eggs, Russian Mission, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Bird eggs										
Duck eggs	8.7%	8.7%	8.7%	0.0%	2.2%	7.7 lb	0.10 lb	0.0 lb	51.5 ind	± 69%
Unknown goose eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.00 lb	0.0 lb	0.0 ind	± 0%
Swan eggs	4.3%	4.3%	4.3%	0.0%	2.2%	11.9 lb	0.15 lb	0.0 lb	18.9 ind	± 91%
Unknown shorebird eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.00 lb	0.0 lb	0.0 ind	± 0%
Unknown gull eggs	6.5%	6.5%	6.5%	0.0%	2.2%	20.1 lb	0.25 lb	0.1 lb	67.0 ind	± 89%
Arctic tern eggs	2.2%	2.2%	2.2%	0.0%	0.0%	0.4 lb	0.01 lb	0.0 lb	8.6 ind	± 130%
Unknown eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 ind	± 0%
Subtotal	**13.0%**	**13.0%**	**13.0%**	**0.0%**	**4.3%**	**40.2 lb**	**0.5 lb**	**0.1 lb**	**146.0 ind**	**± 70%**
All birds and eggs	**89.1%**	**80.4%**	**78.3%**	**58.7%**	**39.1%**	**3,804.4 lb**	**48.2 lb**	**9.5 lb**		**± 23%**
All resources	**97.8%**	**97.8%**	**97.8%**	**91.3%**	**84.8%**	**132,289.3 lb**	**1,674.5 lb**	**329.2 lb**		**± 18%**

Source ADF&G Division of Subsistence household surveys, 2012.
Note "All resources" include all species of fish, wildlife, and plants reported on the survey.
a. Summary rows that include incompatible units of measure have been left blank.

Canada geese, and snow geese, as well as a few unidentified geese. Respondents also reported more limited harvests of tundra swans and sandhill cranes. Thirty-nine percent of the migratory bird harvest occurred during the spring time, while 61% occurred in the fall (Appendix Table D9-6). Other birds, such as grouses and ptarmigans, contributed 1,143 edible pounds to the estimated community harvest; these species comprised 3% of the harvest of this resource category. Harvests of other birds occurred mainly in the fall (60%) and winter (34%). Russian Mission residents reported limited harvests of duck, gull, and swan eggs; eggs contributed an additional 40 lb (Table 10-5).

Key respondents explained that the bird populations in the area around Russian Mission appeared to be steady and healthy, although an elder respondent explained that there used to be larger flocks, “But in the fall time when we go up berry picking—this is a real story. Up here when we go up with boat from the island, they’ll fly and it’ll like darken the sky” (01UN12RSH4). Other respondents indicated that their hunting areas had changed somewhat, due to the changes in sandbars on the river and the growth of willows at formerly good hunting spots (012212RSH3, 012212RSH1). As mentioned in a previous section, egg gathering has declined in Russian Mission in recent years.

Vegetation was the third most widely used resource category after fish and land mammals, although they contributed only 1% of the total community harvest in 2011 (5 lb per capita) (Table 10-6). An estimated 89% of households reported using and harvesting this resource. Berries provided the bulk of the harvest, comprising 88% of the total harvest of plants for the community. Residents reported the use and harvest of blueberries, crowberries, salmonberries, raspberries, cranberries, and currants. 2011 was touted as a particularly bad berry year, and one elder respondent explained that a fire in the area had decimated what had originally been a very good blueberry patch. She went on to explain that, when she was growing up, elders cautioned there would be changes to the land during her lifetime, “They say if you don’t take care of the

Table 10-6. – Estimated use and harvest of vegetation, Russian Mission, 2011.

	Percentage of households					Estimated pounds harvested			Total estimated amount[a] harvested by community	95% conf. limit
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total for community	Mean per household	Mean per capita		
Berries										
Blueberry	56.5%	54.3%	50.0%	15.6%	4.3%	422.5 lb	5.3 lb	1.1 lb	105.6 gal	± 26%
Lowbush cranberry	19.6%	19.6%	17.4%	4.3%	2.2%	74.2 lb	0.9 lb	0.2 lb	18.5 gal	± 67%
Highbush cranberry	17.4%	19.6%	17.4%	0.0%	4.3%	73.7 lb	0.9 lb	0.2 lb	18.4 gal	± 49%
Crowberry	50.0%	43.5%	39.1%	17.4%	4.3%	455.1 lb	5.8 lb	1.1 lb	113.8 gal	± 39%
Gooseberry	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Currants	2.2%	2.2%	2.2%	0.0%	2.2%	3.4 lb	0.0 lb	0.0 lb	0.9 gal	± 130%
Raspberry	52.2%	52.2%	47.8%	8.7%	6.5%	471.4 lb	6.0 lb	1.2 lb	117.9 gal	± 34%
Salmonberry	23.9%	17.4%	17.4%	10.9%	4.3%	161.5 lb	2.0 lb	0.4 lb	40.4 gal	± 52%
Subtotal	**82.6%**	**73.9%**	**71.7%**	**30.4%**	**17.4%**	**1,661.9 lb**	**21.0 lb**	**4.1 lb**	**415.5 gal**	**± 27%**
Plants/greens/mushrooms										
Wild rhubarb	32.6%	30.4%	30.4%	2.2%	2.2%	143.6 lb	1.8 lb	0.4 lb	35.9 gal	± 38%
Eskimo potato	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Fiddlehead ferns	8.7%	6.5%	6.5%	2.2%	2.2%	3.9 lb	0.0 lb	0.0 lb	3.9 gal	± 82%
Nettle	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Hudson's Bay (Labrador) tea	21.7%	19.6%	19.6%	2.2%	2.2%	10.0 lb	0.1 lb	0.0 lb	10.0 gal	± 48%
Mint	4.3%	4.3%	4.3%	0.0%	0.0%	5.2 lb	0.1 lb	0.0 lb	5.2 gal	± 96%
Sourdock	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Spruce tips	2.2%	2.2%	2.2%	0.0%	2.2%	17.2 lb	0.2 lb	0.0 lb	17.2 gal	± 130%
Willow leaves	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Wild celery	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Wild rose hips	8.7%	8.7%	8.7%	0.0%	0.0%	9.2 lb	0.1 lb	0.0 lb	2.3 gal	± 101%
Yarrow	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Unknown mushrooms	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Fireweed	4.3%	4.3%	4.3%	0.0%	2.2%	10.3 lb	0.1 lb	0.0 lb	2.6 gal	± 96%
Stinkweed	13.0%	13.0%	13.0%	2.2%	8.7%	28.3 lb	0.4 lb	0.1 lb	28.3 gal	± 59%
Punk	21.7%	19.6%	15.2%	2.2%	10.9%	0.0 lb	0.0 lb	0.0 lb	234.4 gal	± 73%
Puffballs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Unknown vegetation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0 lb	0.0 lb	0.0 lb	0.0 gal	± 0%
Subtotal	**63.0%**	**60.9%**	**58.7%**	**8.7%**	**26.1%**	**227.7 lb**	**2.9 lb**	**0.6 lb**	**339.7 gal**	**± 25%**
Wood										
Wood	78.3%	73.9%	73.9%	13.0%	23.9%	0.0 lb	0.0 lb	0.0 lb	464.8 cord	± 46%
Subtotal	**78.3%**	**73.9%**	**73.9%**	**13.0%**	**23.9%**	**0.0 lb**	**0.0 lb**	**0.0 lb**	**464.8 cord**	**± 46%**
All vegetation	**89.1%**	**89.1%**	**89.1%**	**39.1%**	**45.7%**	**1,889.5 lb**	**23.9 lb**	**4.7 lb**		**± 26%**
All resources	**97.8%**	**97.8%**	**97.8%**	**91.3%**	**84.8%**	**132,289.3 lb**	**1,674.5 lb**	**329.2 lb**		**± 18%**

Source ADF&G Division of Subsistence household surveys, 2012.

Note "All resources" include all species of fish, wildlife, and plants reported on the survey.

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

land, the berries wouldn't grow back." This was connected to the idea that people are not sharing the way they once did, and extended to encompass other resources experiencing perceived declines as well, notably salmon (012112RSH5). Other edible plants comprised 12% of the vegetation harvest, and included wild rhubarb, fiddlehead ferns, Hudson Bay tea, mint, spruce tips, wild rose hips, fireweed, and stinkweed. In addition, punk (a fungus found on birch trees) was also harvested. This resource is often used an additive to tobacco or as a mosquito repellent. Firewood was used by 78% of households and harvested by 74%; residents harvested an estimated 465 cords because of its importance as source of fuel for heating homes.

Harvest Areas

As part of the survey, households were asked to mark on a map the areas where they harvested or searched for resources. From these data, maps were produced for each community depicting the harvest and search areas for the following species or resource categories in 2011: berries and greens, ptarmigans and grouses, ducks and geese, moose, black bear, caribou, burbot, northern pike, sheefish, other whitefishes, salmon, and small land mammals. Figure 10-9 summarizes all the mapped data collected from Russian Mission. Households in the community reported a combined use of 987 square miles for subsistence activities during the study year. For all resources, Russian Mission respondents reported search and harvest areas radiating away from the community both downstream and upstream, as well as more distant areas such as the vicinity of Mountain Village and in the Kuskokwim River drainage.

Russian Mission respondents reported search and harvest areas for salmon species during the 2011 survey period, on various sections of the Yukon River (Figure 10-10). The majority of these reported search areas spanned approximately 20 continuous miles on the main stem of the Yukon, with residents reporting drifting activity from Roosevelt Island 12 miles downstream from the community to Johnson Island approximately 6 miles upstream from Russian Mission. A smaller drifting area was reported in the vicinity of Dogfish village and spanned approximately 7 miles. Another small drifting area (spanning approximately 4 miles) was reported downstream from Russian Mission, approximately 10 miles upstream from Marshall. Setnet locations were reported at the mouth of Kako Creek in the vicinity of Johnson Island, and in the vicinity of Pearl Island (approximately 22 miles upstream).

In 2011, majority of the search and harvest areas for nonsalmon fish species were reported as being within 15 miles of Russian Mission (Figure 10-11). For sheefish, respondents reported a search and harvest area radiating approximately 7 miles both downriver and upriver from the community. This area included drifting activities (indicated by lines) as well as harvest by setnets and the use of rod and reel (both activities are indicated by dots). The drifting areas for sheefish, although less extensive, do overlap drift areas for salmon fishing. This is likely due to the overlapping nature of the sheefish and Chinook salmon runs and the similarity in gear types used to harvest these species. Other locations reported as search and harvest areas for sheefish included Portage Slough and the mouth of 12 Mile Slough. Respondents also reported whitefish search and harvests in the immediate vicinity of Russian Mission, with a majority of this resource taken with the use of setnets. Other search and harvest areas included Portage Slough and Kako Creek. Residents also reported search and harvest areas for burbot in the immediate vicinity of the community, within 5 miles down and upstream of Russian Mission. One search and harvest area was reported approximately 23 miles upstream of the community across from Pearl Island. Search and harvest areas for northern pike were the most diverse of any of the nonsalmon fish species. Residents did report harvests in the immediate vicinity of the community, but search and harvest locations ranged from approximately 30 miles downstream to approximately 60 miles upstream from Russian Mission; search and harvest locations included Portage Slough, near Pearl Island, Paimiut Slough, and Horse Island in the vicinity of Holy Cross.

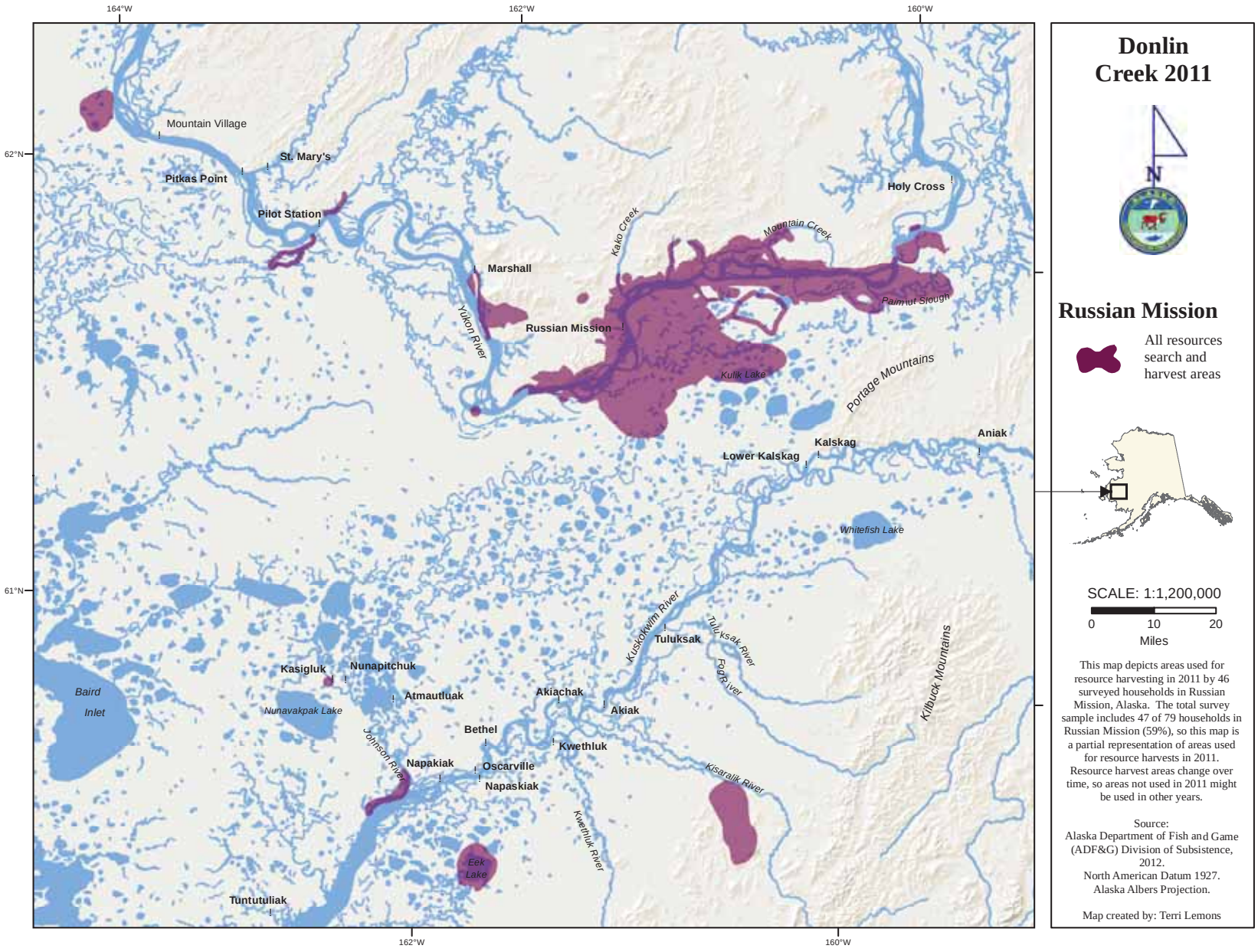


Figure 10-9.–All resources search and harvest areas, Russian Mission, 2011.

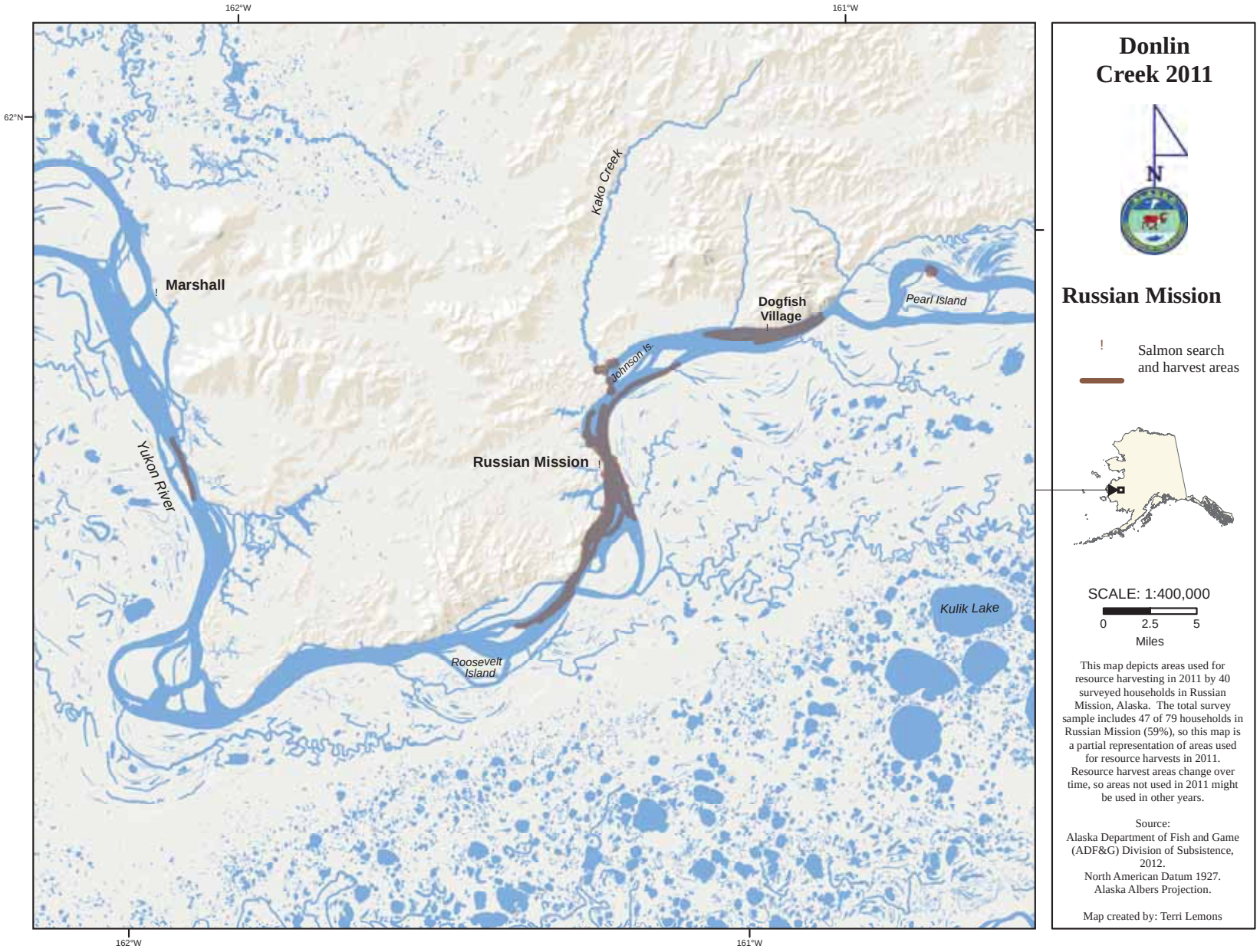


Figure 10-10.–Salmon search and harvest areas, Russian Mission, 2011.

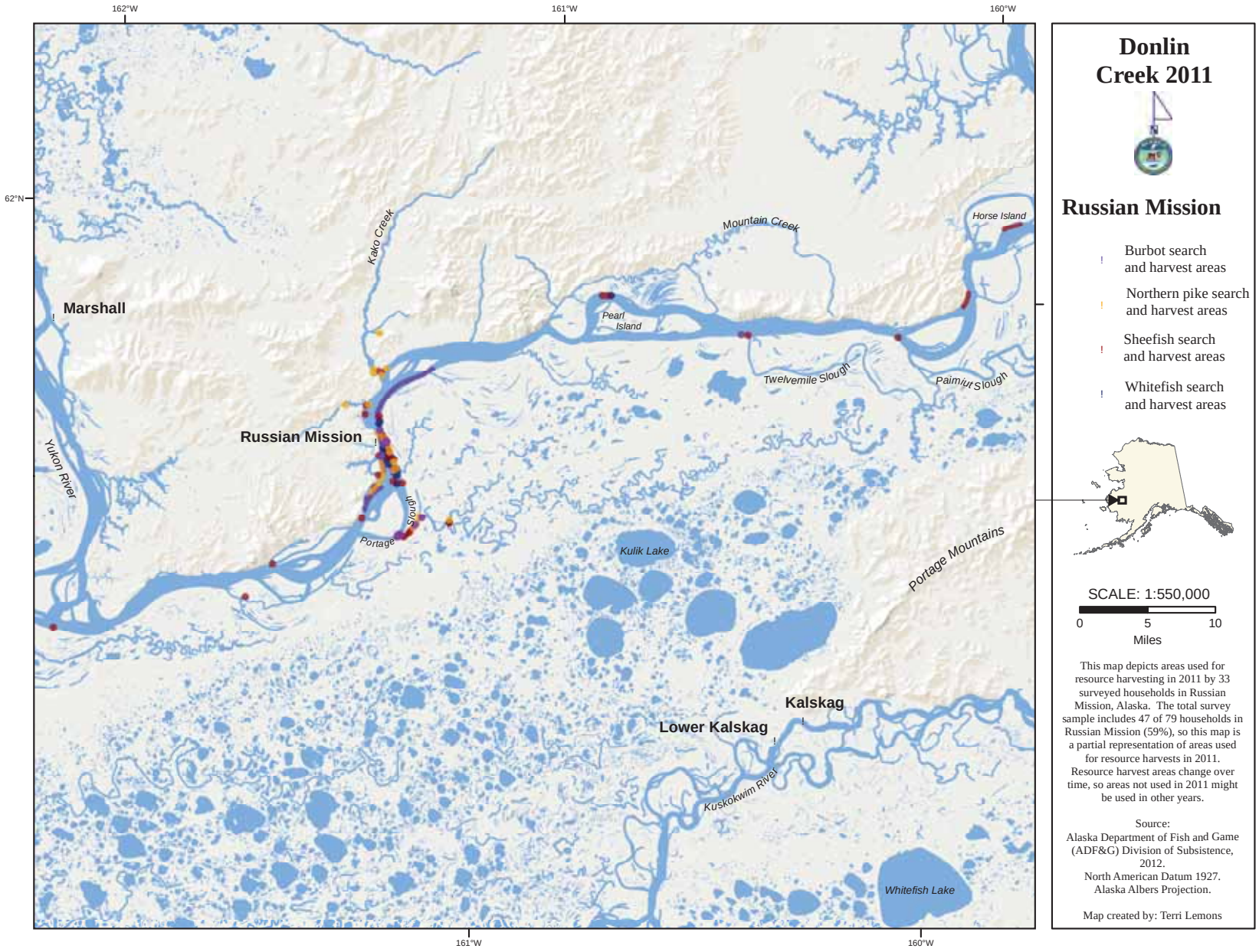


Figure 10-11.–Burbot, northern pike, sheefish, and whitefishes search and harvest areas, Russian Mission, 2011.

Russian Mission respondents reported using a wide area in the pursuit of large land mammals (Figure 10-12). For moose, households reported a large search area of approximately 62 miles along the mainstem of the Yukon River, ranging from 12 miles downstream of the community to approximately 50 miles upstream in the vicinity of Paimiut Slough. Search areas were also reported along Mountain Creek north of the Yukon River and in the vicinity of Portage Slough and Kulik Lake. Another search area for moose was in the area of Marshall, extending downstream and to the east of that community. For black bear, Russian Mission respondents reported an approximately 20 mile search and harvest area (which overlapped a section of the moose search and harvest area) along Portage Slough and into feeder creeks in the Portage Lakes region. A larger search area for black bear was reported along Paimiut Slough and spanned approximately 28 miles. In 2011, there was 1 reported search and harvest area for caribou spanning approximately 26 square miles. This area is in the vicinity of the Kisaralik River, south of the Kuskokwim River. The difficulty in accessing this resource is indicated by the great distance necessary to travel in order to harvest caribou; the reported search and harvest area is 80 miles south of Russian Mission. This sentiment was echoed by a key respondent, who stated that few families make the long trip in the pursuit of this resource (012212RSH3).

Search and harvest areas for small land mammals, both those hunted primarily for food and others taken only for fur, often overlapped with those used for large land mammals (Figure 10-13). They did not extend as far up the Kuskokwim River, however, and were more centralized in the vicinity of Russian Mission. Respondents reported 1 large search and harvest area extending south from the community, and encompassing approximately 360 square miles. Despite the size of this search and harvest area, residents of Russian Mission reported only occasionally going further than 15 miles outside of the village in pursuit of small game, including near Flora Island and Portage Slough. Smaller search and harvest area were reported south of Mountain Creek in the vicinity of Twelvemile Slough, along waterways in the vicinity of Pilot Station, and near the community of Kasigluk.

Russian Mission respondents reported search and harvest areas for birds during 2011, this was broken into 2 categories—ptarmigans and grouses, and ducks and geese (Figure 10-14). Hunting areas for ptarmigans and grouses were largely centered on the community itself, extending south to Flora Island and north along Kako Creek. One more distant search area was reported east of the community along Mountain Creek. Search and harvest areas for ducks and geese, in contrast, were spread out over a much larger distance in 2011. Respondents reported hunting along an approximately 50 mile stretch of the Yukon River, both downstream and upstream from the community. One small search and harvest area was reported on Arbor Island in the immediate vicinity of Marshall. Respondents also reported traveling greater distances in pursuit of resources in the area of the Kuskokwim River drainage. Russian Mission residents described search and harvest areas along the Johnson River and in the vicinity of Eek Lake.

The harvest of edible plants and berries often occurs opportunistically with other subsistence activities in the summer and fall (Figure 10-15). As a result, use areas often matched those mapped for summer fishing and fall land mammal hunting. Trips taken specifically for berries were generally in the immediate vicinity of the community; however 1 search and harvest area was reported downstream from Mountain Village and

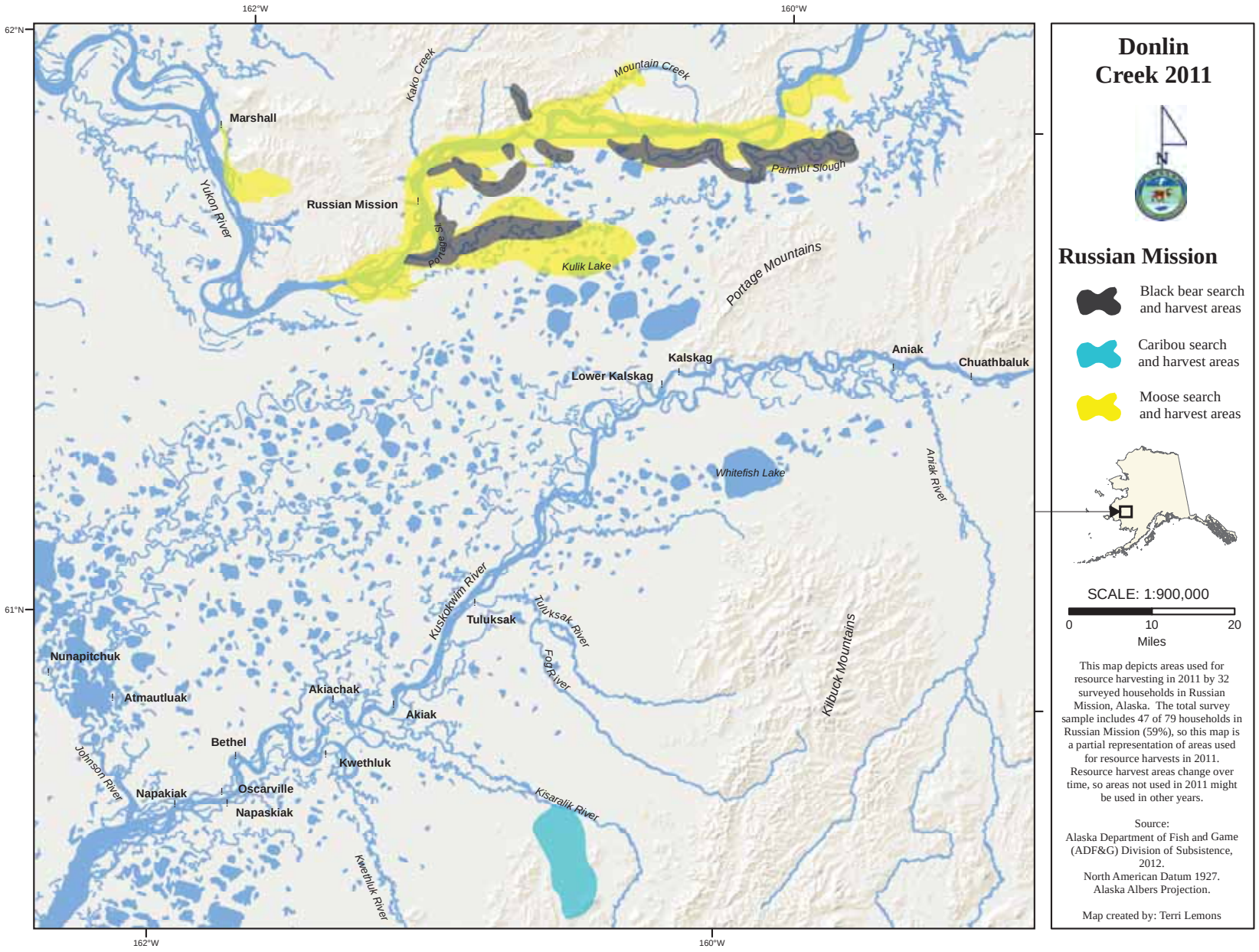


Figure 10-12.–Black bear, caribou, and moose search and harvest areas, Russian Mission, 2011.

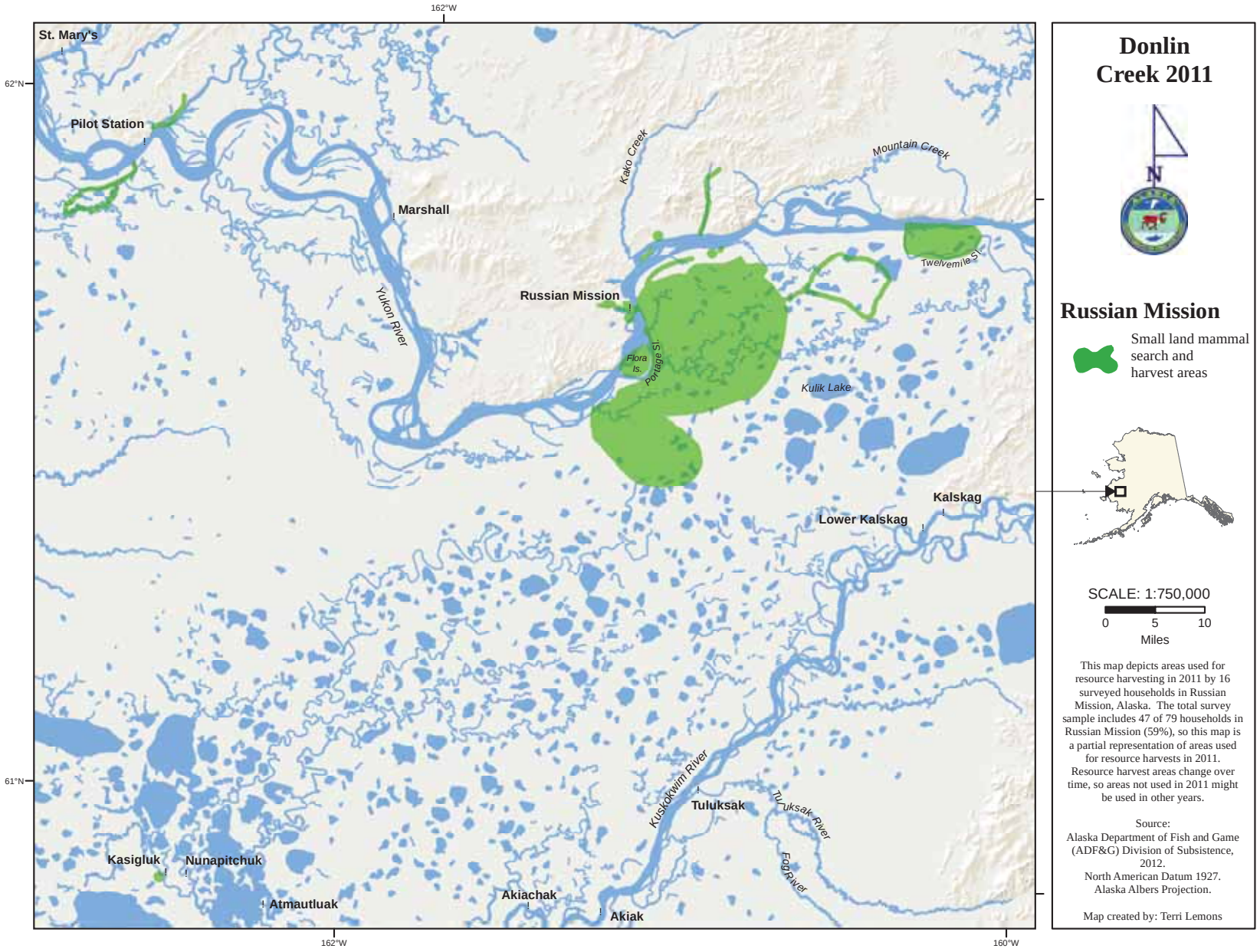


Figure 10-13.–Small land mammal search and harvest areas, Russian Mission, 2011.

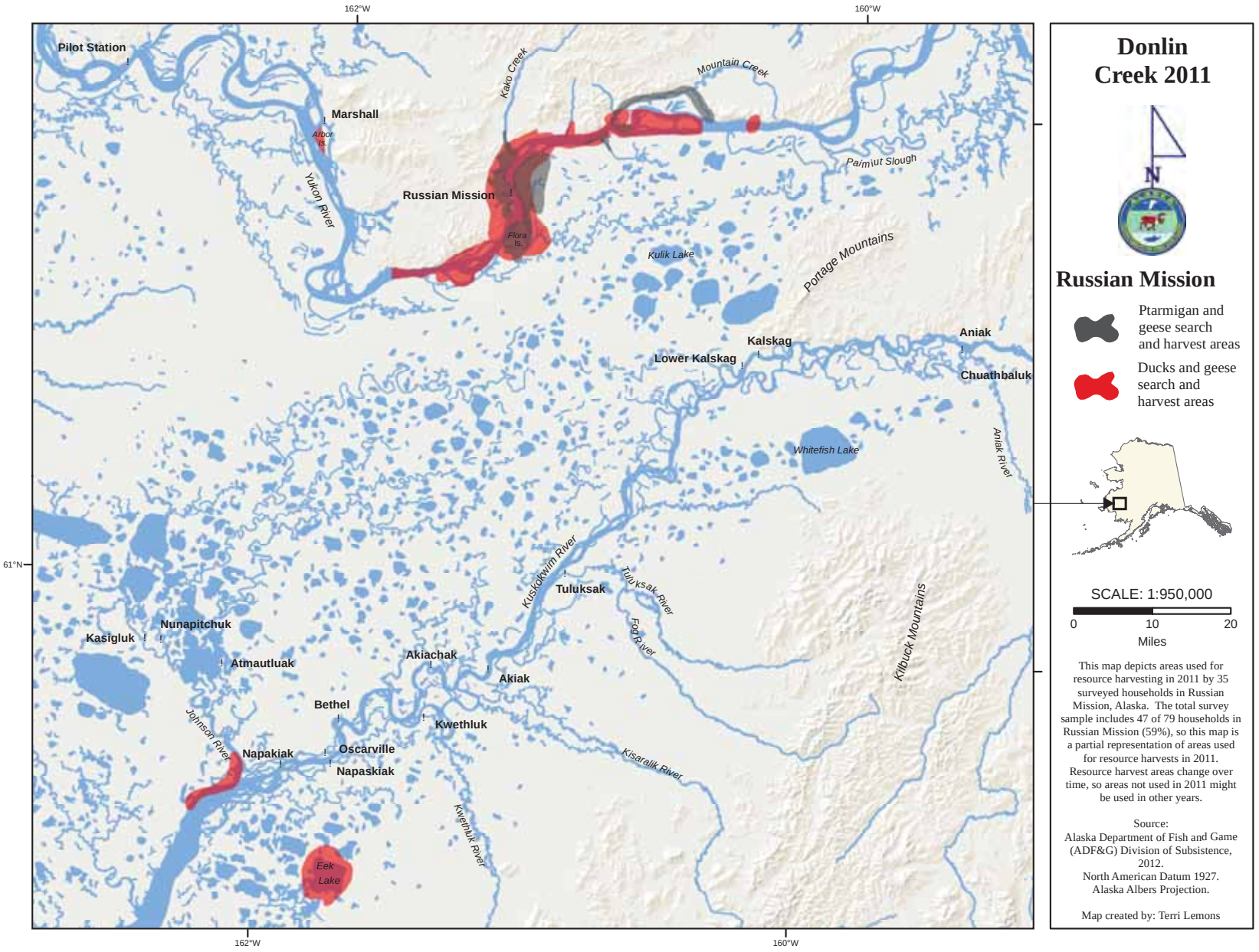


Figure 10-14.–Ptarmigan, grouse, ducks, and geese search and harvest areas, Russian Mission, 2011.

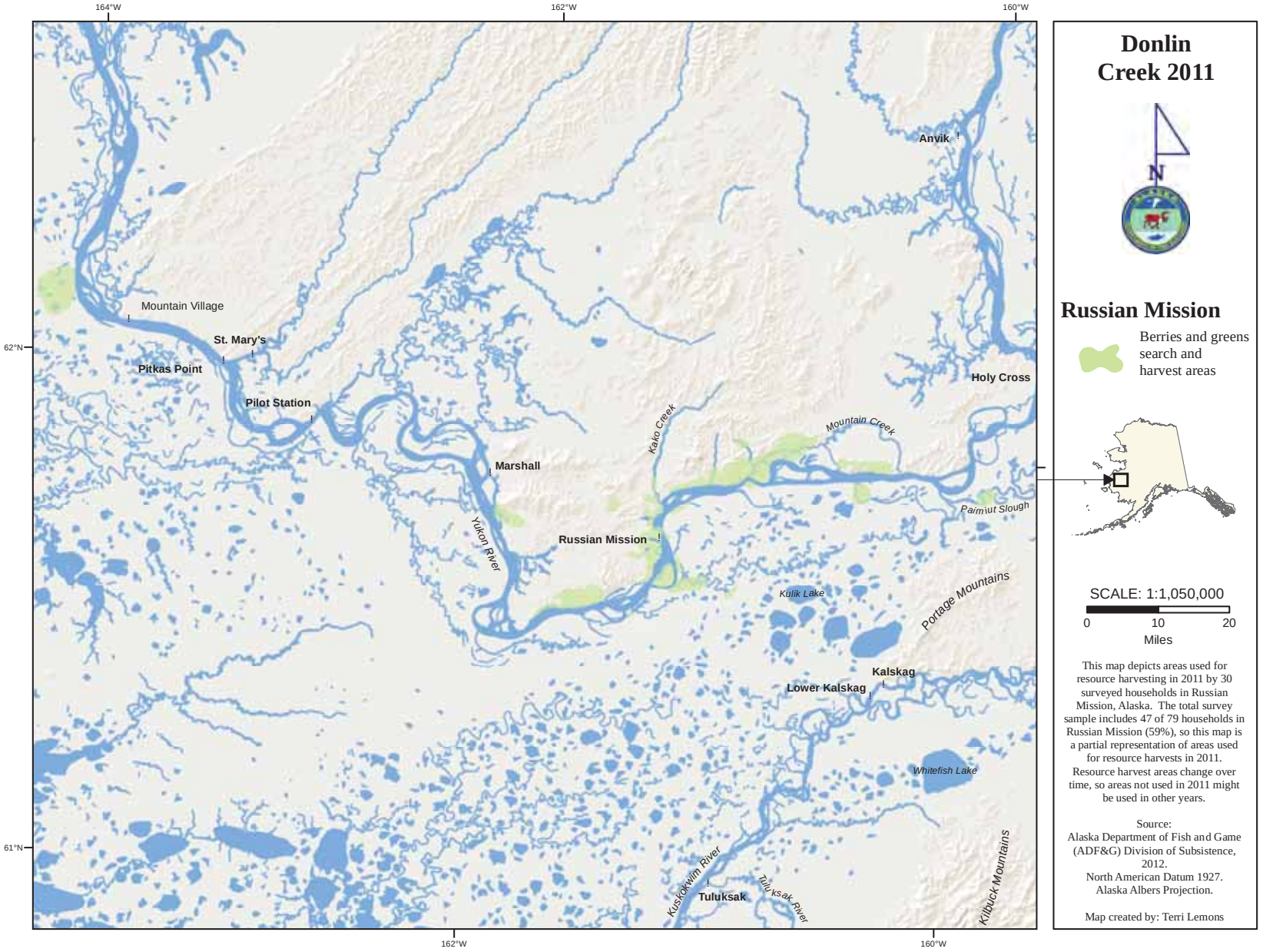


Figure 10-15.–Berries and greens search and harvest areas, Russian Mission, 2011.

did not overlap with search areas for other resources. Respondents overwhelmingly reported that 2011 was a very poor year for berry harvests due to poor weather conditions.

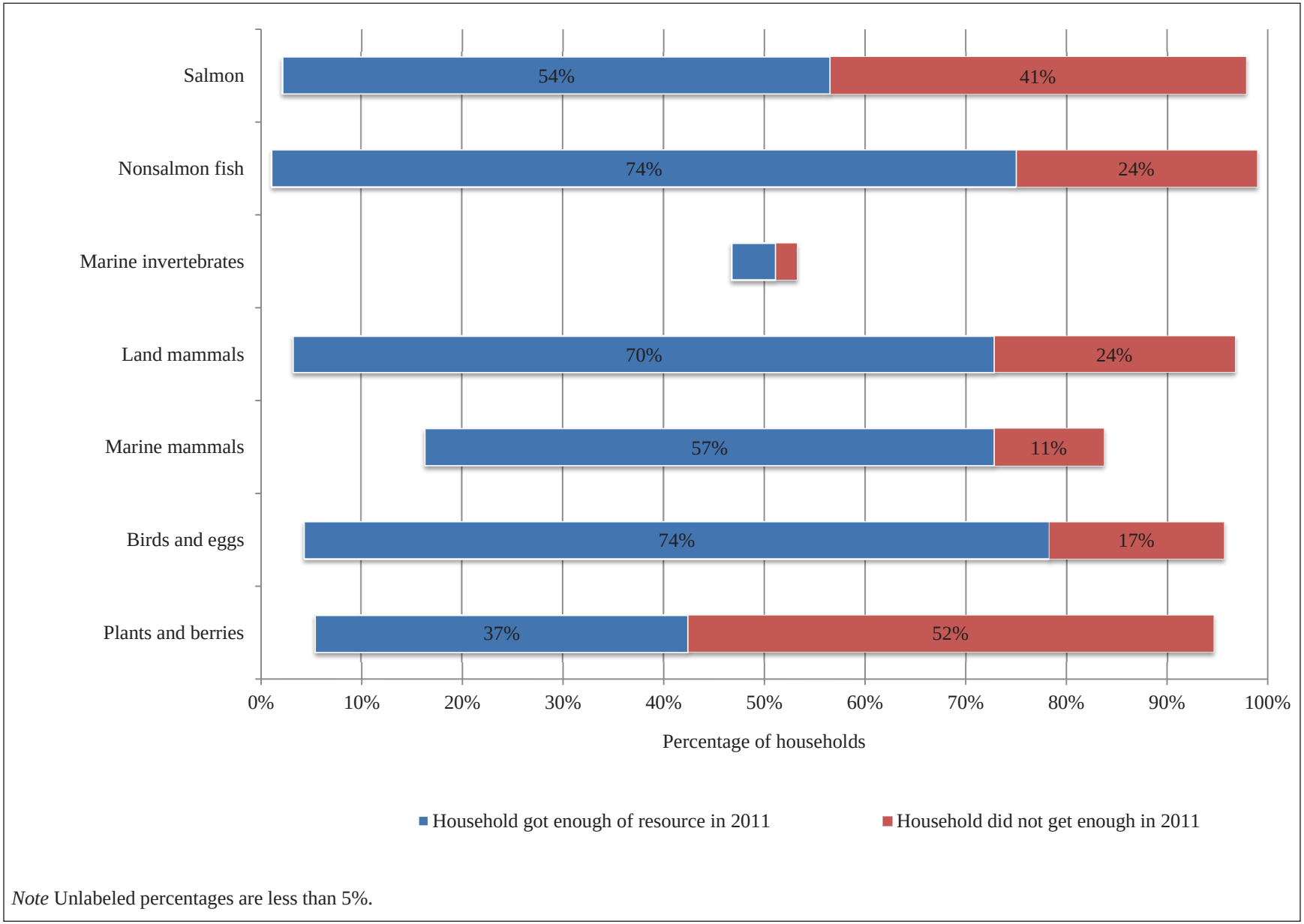
Harvest Assessments

Researchers asked respondents to assess their own harvests in 2 ways: whether they got more, less, or about the same amount of 7 resource categories in 2011 as in past years, and whether they got "enough" of each of the 7 resource categories. Households also were asked to provide reasons if their use was different or if they were unable to get enough of a resource (Appendix tables D9-7 through D9-10). If they did not get enough of a resource, they were asked to evaluate the severity of the impact to their household as a result of not getting enough (Appendix Table D9-11). They were further asked whether they did anything differently (such as supplement with store food or switch to a different subsistence resource) because they did not get enough. This section discusses responses to those questions (Appendix tables D9 through D13).

Together, Figure 10-16 and Figure 10-17 provide a broad overview of households' harvests. Because not everyone uses all resource categories, some households did not respond to the assessment questions. Additionally, some households that do typically use a resource category simply did not answer questions. While the percentages displayed in these figures were calculated including all surveyed households (including those that did not respond to the question), the bars specifically highlight responses provided by households reporting that they typically use the resource category. Generally, the results are presented in this section as they appear in the figures, but it is important to remember that they are not limited to only households that ordinarily use the resource. Additional details are provided in cases where further analysis lends clarity to the discussion of use patterns.

Taken together, the Figure 10-16 and Figure 10-17 show consistency in use patterns for the 2011 harvest of wild resources by Russian Mission households. For all resource categories except berries and greens (and marine invertebrates, which few households harvested or used), over one-half of respondents who provided responses said they got enough in 2011 (Figure 10-16). Likewise, a majority of respondents reported using the same or more of every resource category with the exception of berries and greens (Figure 10-17).

Large land mammals composed a significant portion of Russian Mission's total estimated harvest in 2011 (33%) and was a resource category where the majority of respondents (70%) stated that they got enough during the study year. Correspondingly, 67% of households reported using the same or more of the resource in 2011. Although a majority of households reported getting enough land mammals, the consequences of not getting enough were pronounced; 27% of respondents stated that the impact was minor and 64% described it as major (Appendix Table D9-11) For households that reported not getting enough large land mammals and provided a response to what kind they needed, 72% reported needing more moose. Of Russian Mission



Note Unlabeled percentages are less than 5%.

Figure 10-16.–Number of households reporting getting enough resources, Russian Mission, 2011.

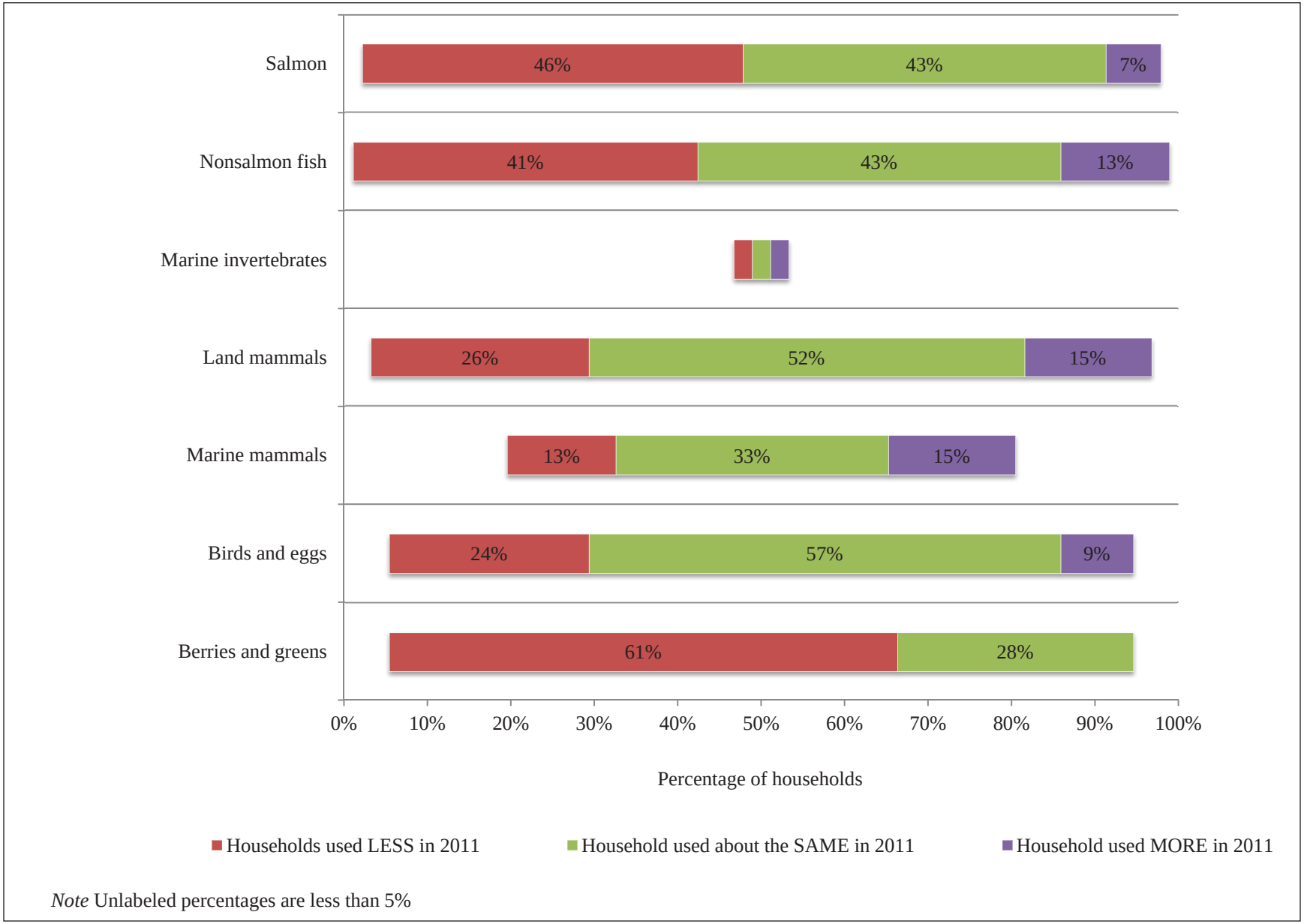


Figure 10-17.–Number of households using a resource and reporting LESS, SAME, or MORE use as compared to previous years, Russian Mission, 2011.

respondents who did not get enough land mammals and did things differently, 75% reported using more store-bought groceries and 25% asked others for help (Appendix Table D9-13).

Salmon also composed a sizeable portion of the community's total estimated harvest (34%), although, in comparison with large land mammals, fewer respondents reported getting enough. For this resource category, 54% of respondents reported getting enough during the study year; correspondingly, 50% of households reported using the same or more salmon in 2011. Of those who reported not getting enough salmon, the consequences were also pronounced; 42% said it had a minor impact on them; 47% described the impact as major, and 11% described it as severe. Of those households that reported not getting enough salmon and provided a response to what kind they needed, 89% reported needing more Chinook salmon. When asked why they did not get enough salmon, the most common reasons given were regulations, lack of time, and resource unavailability (Appendix Table D9-14).

Berries and greens was the only resource category where a majority of respondents (52%) reported not getting enough during the study year. Sixty-one percent of responding households reported using less of this resource in 2011, and this is the only category that no respondents reported using more of during the study year. The impacts of not getting enough berries and greens were apparent; 33% stated that the impacts were minor; 63% described them as major, and 13% said the impact was severe. Over one-half of responding households who did not get enough berries and greens did things differently; Ninety percent used more commercial foods; 5% bought or bartered berries, and 5% made do without the resource.

Jobs, Income, and Expenses

Respondents were asked about both earned income (jobs held and wages earned by all household members aged 16 years and older) and unearned income (from sources such as the Alaska Permanent Fund dividend, Social Security, and public assistance). The survey also asked about months worked and individual work schedules. In order to contextualize income information, respondents were asked about household expenses (for example, housing, utilities, food, and subsistence-related expenses) and also the cost and replacement rate of subsistence equipment (such as motors, boats, ATVs, etc.).

In 2011, Russian Mission households earned or received an estimated $4 million, of which $2.9 million (71%) came from wage employment and $1.2 million (29%) came from other sources (Table 10-7). Figure 10-18 shows the percentages of the top 10 estimated sources of income. The primary source of income was local government jobs, which included city and tribal government occupations. This category accounted for 47% of all income in Russian Mission, an estimated $1,898,394 in wages. Services, which includes health care, social services, and local stores, was the second largest employment category; this income source accounted for $479,720 in wages and composed 12% of the community's cash economy. The third largest income category was entitlements which accounted for $436,195 and composed 11% of the cash section of the local economy. The Alaska Permanent Fund dividend was the fourth largest income source and also encompassed 11% of the cash flow into Russian Mission for an estimated $402,119. Transportation, com-

Table 10-7. – Estimated earned and other income, Russian Mission, 2011.

Income source	Number of people	Number of households	Total for community	Mean per household[a]	Percentage of total[b]
Earned income					
Local government	89.3	52.7	$1,898,394	$24,030	46.8%
Services	27.5	26.3	$479,720	$6,072	11.8%
Transportation, communication, and utilities	8.6	9.4	$175,001	$2,215	4.3%
Federal government	3.4	3.8	$134,790	$1,706	3.3%
Mining	3.4	3.8	$83,271	$1,054	2.1%
State government	5.2	5.6	$53,742	$680	1.3%
Retail trade	3.4	3.8	$25,507	$323	0.6%
Other employment	1.7	1.9	$7,326	$93	0.2%
Agriculture, forestry, and fishing	3.4	3.8	$4,444	$56	0.1%
Earned income subtotal	**144.5**	**67.7**	**$2,862,195**	**$36,230**	**70.6%**
Other income					
Alaska Permanent Fund dividend		72.1	$435,326	$5,510	10.7%
Food stamps		46.4	$402,119	$5,090	9.9%
Unemployment		30.9	$122,824	$1,555	3.0%
Native corporation dividend		61.8	$78,552	$994	1.9%
Social Security		10.3	$53,484	$677	1.3%
TANF (temporary cash assistance for needy families)		10.3	$26,453	$335	0.7%
Energy assistance		34.3	$24,277	$307	0.6%
Disability		5.2	$12,903	$163	0.3%
Longevity bonus		5.2	$7,896	$100	0.2%
Adult public assistance		3.4	$7,623	$96	0.2%
Citgo fuel voucher		17.2	$7,398	$94	0.2%
Meeting honoraria		8.6	$6,989	$88	0.2%
Child support		6.9	$5,806	$73	0.1%
Other		3.4	$1,754	$22	0.0%
Rental income		1.7	$1,237	$16	0.0%
Supplemental Security income		0.0	$0	$0	0.0%
Pension/retirement		0.0	$0	$0	0.0%
Workers' compensation/insurance		0.0	$0	$0	0.0%
Veterans assistance		0.0	$0	$0	0.0%
Foster care		0.0	$0	$0	0.0%
Other income subtotal		**72.1**	**$1,194,640**	**$15,122**	**29.4%**
Community income total			**$4,056,836**	**$51,352**	**100.0%**

Source ADF&G Division of Subsistence household surveys, 2012.

a. The mean is calculated using the total number of households in the community, not the number of households for this income category.

b. Income by category as a percentage of the total community income from all sources (wage-based income and non-wage-based income.)

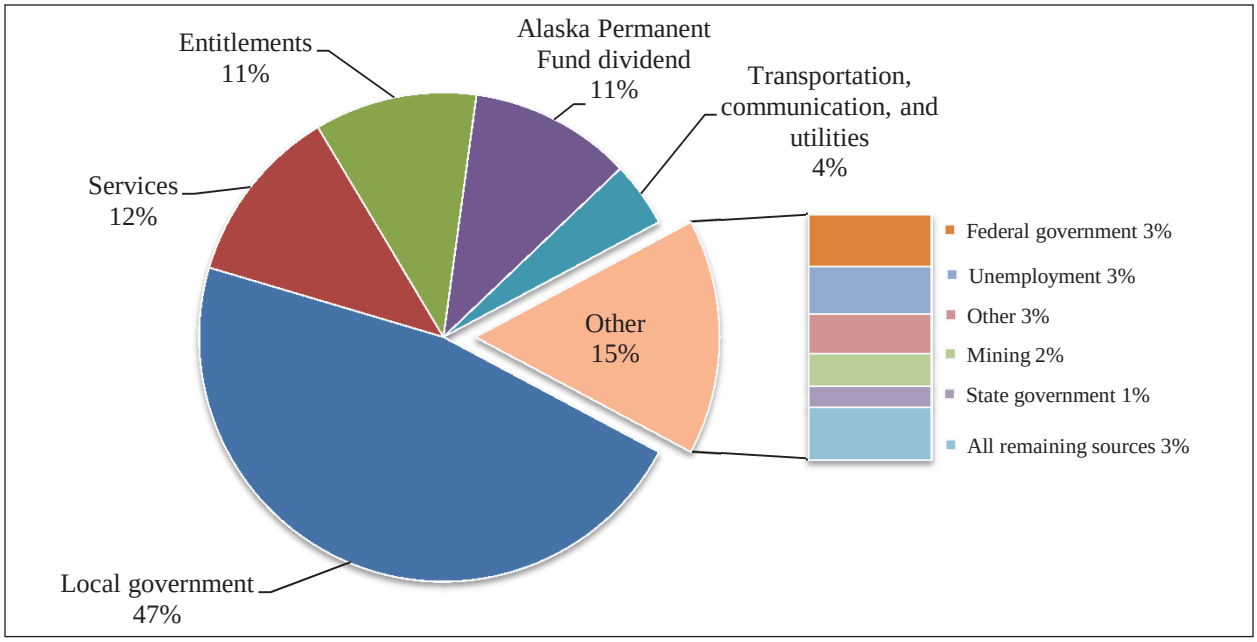


Figure 10-18.–Top 10 income sources ranked by estimated amount, Russian Mission, 2011.

munication, and utilities was the fifth largest category of income for the community providing $175,001 in wages (4%).

The mean household income for the study year was an estimated $51,352, and households reported an average of approximately 3 jobs per household. Approximately 145 (54%) of the community's estimated 266 adults were employed in 2011, and the survey recorded a total of 182 jobs in the community (Appendix Table D1-4). Although over one-half of the adults in the community are employed, these opportunities are often limited due to the seasonal nature of work in the area (firefighting, construction, and limited commercial fishing opportunities). The mean number of months employed was approximately 9, and only 39% of adults in the community were employed year-round in 2011 (Appendix Table D9-15).

Income information can be better understood in terms of the expense of living in rural Alaska; Russian Mission residents spent an estimated $1,817,437 on basic living expenses, including housing, utilities, groceries, and subsistence (Table 10-8). The mean amount spent per household was $23,006 on all expenses. Of housing and utilities related expenses, heating oil was the largest expense in this category (26%); households spent on average $2,138 for stove oil in 2011. Rent or mortgage was the second largest expense in this category (23%), and households spent on average $1,900. The third biggest expense for respondents was electricity, with households spending on average $1,801 for the year. Groceries accounted for a considerable expense for community households in 2011; the community as a whole spent an estimated $988,047 for store-bought foods during the study year, or about $12,507 per household.

Comparable to heating oil, subsistence expenses were significant. Households spent on average $2,115 for expenses related to the procurement of wild foods. For this category, gasoline accounted for the largest percentage of expense by far (69%). Other expenses in this category included money spent on ammunition,

Table 10-8. – Estimated annual expenses, Russian Mission, 2011.

Household expenses	Number of households	Total for community	Mean per household	Percentage of category	Percentage of total
Total expenses	**79.0**	**$1,817,437**	**$23,006**	**100.0%**	**100.0%**
Housing	79.0	$662,267	$8,383	100.0%	36.4%
Rent/mortgage	44.7	$150,062	$1,900	22.7%	8.3%
Stove oil	61.8	$168,935	$2,138	25.5%	9.3%
Firewood	0.0	$0	$0	0.0%	0.0%
Electricity	68.7	$142,259	$1,801	21.5%	7.8%
Propane	18.9	$8,586	$109	1.3%	0.5%
Water/sewer/garbage	58.4	$60,113	$761	9.1%	3.3%
Telephone	72.1	$92,921	$1,176	14.0%	5.1%
Television	37.8	$39,392	$499	5.9%	2.2%
Groceries	79.0	$988,047	$12,507	100.0%	54.4%
Store-bought groceries	77.3	$988,047	$12,507	100.0%	54.4%
Subsistence–customary trade	0.0	$0	$0	0.0%	0.0%
Subsistence	79.0	$167,123	$2,115	100.0%	9.2%
Gasoline	68.7	$115,078	$1,457	68.9%	6.3%
Ammunition	63.5	$17,313	$219	10.4%	1.0%
Equipment parts	0.0	$0	$0	0.0%	0.0%
Other supplies	48.1	$34,732	$440	20.8%	1.9%

Source ADF&G Division of Subsistence household surveys, 2012.

equipment parts, and other supplies. The survey form also asked respondents about the equipment they used for subsistence in 2011, the expense of machinery when purchased, and the expected service life of the equipment (Table 10-9). Boats and snowmachines were the most commonly used subsistence equipment (by 56% of respondents). The average cost of a boat for residents of the community (at the time of purchase) was $7,221, and respondents expected the equipment to last on average 15 years. Motors for boats were used by 54% of respondents and cost on average $6,653 with an average life expectancy of 8 years. Snowmachines cost on average $6,507 and were expected to last 6 years before requiring replacement. ATVs were used by 23% of respondents for subsistence and cost on average $6,683; respondents reported an average service life for ATVs of 8 years. No respondent reported the use of trucks or cars for subsistence in 2011.

Food Security

Respondents were asked a short series of questions intended to assess their household's food security; that is, "access by all people at all times to enough food for an active, healthy life" (Nord et al. 2009:2). The food security questions were modeled on those developed by the USDA and modified by ADF&G to account for differences in access to subsistence and store-bought foods. The severity of food insecure conditions increases as the food security questions are read in descending order on the left hand side of Figure 10-19. Core questions and Russian Mission responses are summarized in the figure.

Table 10-9. – Estimated equipment costs and household use, Russian Mission, 2011.

	Equipment used for subsistence					
	Boats	Boat motors	Nets	Snowmachines	4-wheelers (ATVs)	Trucks/cars
All households						
Using						
Estimated number	55.7	53.9	0.0	55.7	23.3	0.0
Percentage	70.5%	68.2%	0.0%	70.5%	29.5%	0.0%
Owning						
Estimated number	50.3	47.8	0.0	53.9	21.5	0.0
Percentage	63.6%	60.5%	0.0%	68.2%	27.3%	0.0%
Mean owned	0.7	0.7	0.0	1.0	0.3	0.0
Total estimated owned in the community	57.5	57.0	0.0	82.6	25.1	0.0
Mean original cost per household	$4,595	$4,023	$0	$4,437	$1,823	$0
Total estimated community cost	$363,033	$317,795	$0	$350,515	$143,995	$0
Estimated annual community cost	$16,366	$27,659	$0	$40,646	$12,473	$0
Only households owning						
Mean owned	1.1	1.2	0.0	1.5	1.2	0.0
Maximum owned	3	3	0	5	2	0
Mean original purchase cost	$7,221	$6,653	$0	$6,507	$6,683	$0
Minimum original purchase cost	$400	$200	$0	$250	$200	$0
Maximum original purchase cost	$20,000	$16,000	$0	$15,000	$7,500	$0
Median original purchase cost	$5,000	$5,600	$0	$3,900	$7,000	$0
Mean replacement time (years)	14.6	7.9	0.0	6.4	8.0	0.0
Minimum replacement time (years)	0	0	0	0	5	0
Maximum replacement time (years)	50	15	0	20	15	0
Median replacement time (years)	11.5	7.0	0.0	5.0	5.0	0.0

Source ADF&G Division of Subsistence household surveys, 2012.

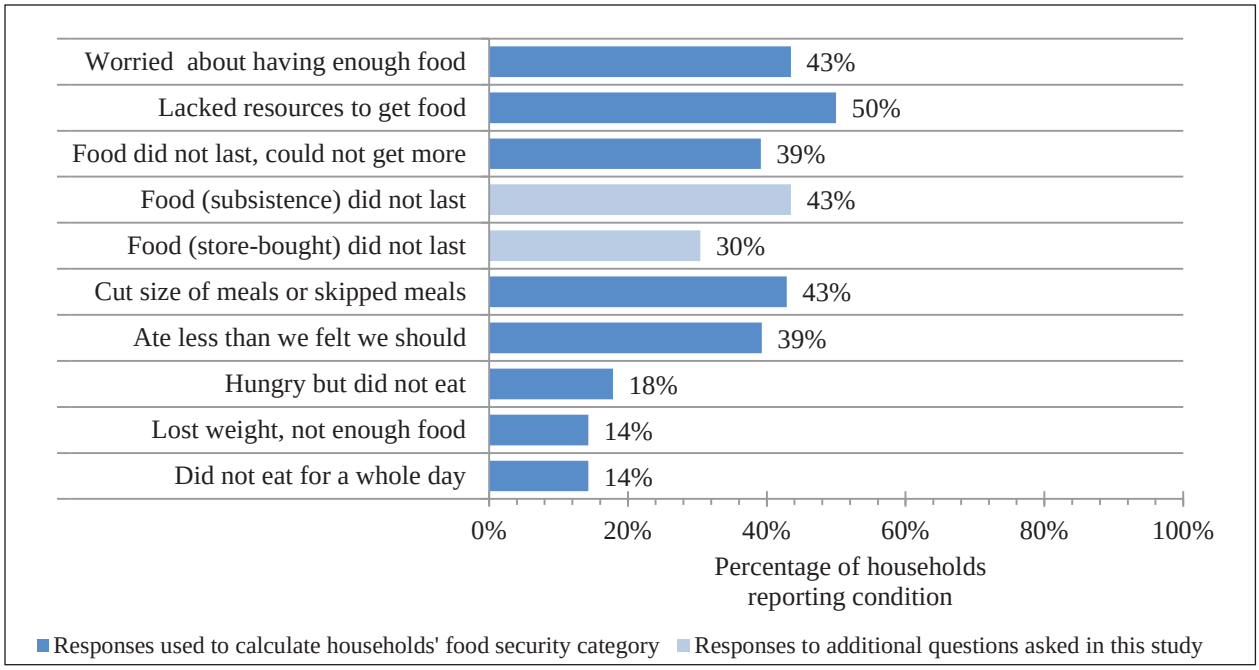


Figure 10-19.–Food insecure conditions results, Russian Mission, 2011.

Based on the responses to these questions, households were generally categorized as being food secure or food insecure following a USDA protocol (Bickel et al. 2000). In this analysis, households that reported high or marginal food security were considered food secure. These households expressed no more than 2 limitations in obtaining food and did not reduce the quality or quantity of their food intake. The limitations expressed by food secure households were less severe and manifested as anxiety or worry about having enough food. Food insecure households were classified as having either low or very low food security. Households with low food security reduced the quality, variety, or desirability of their food, but the quantity was not reduced. Households characterized as having very low food security were those that reported multiple instances of disrupted eating patterns and reduced food intake (Coleman-Jensen and Nord 2013).

In Russian Mission in 2011, 63% of households reported being food secure (39% of surveyed households had high food security and 24% had marginal food security). Of the remaining households, 24% reported low food security and 13% reported very low food security. Figure 10-20 compares Russian Mission's food security status with that of the State of Alaska and the United States. Surveyed households in the community reported lower food security compared to both state and national averages. More than one-third of the households in the community (37%) can be described as food insecure, indicated by the blue and red portions of the bars in Figure 10-20.

The food insecurity conditions with the greatest effects on respondents centered on situations in which a household did not have the resources they needed to obtain food, or the food they obtained did not last. An estimated 50% of households in Russian Mission said they could not get the kinds of foods they wanted because of a lack of resources such as not having what they needed to hunt, fish, gather, or buy goods.

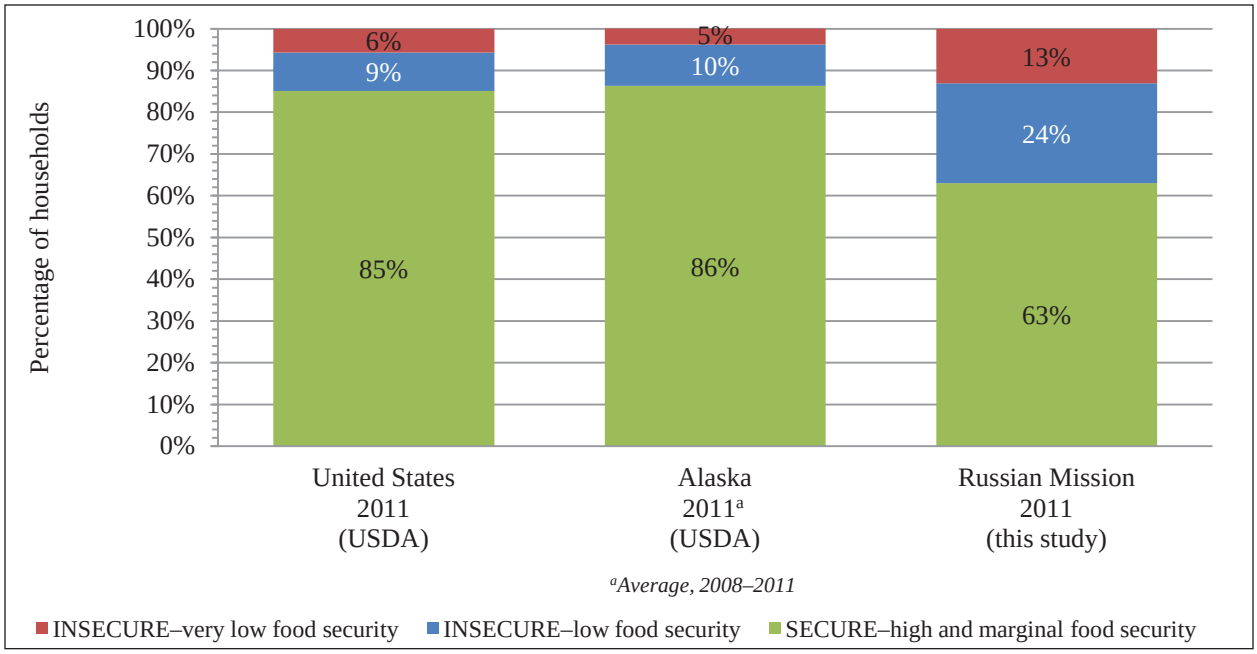


Figure 10-20.–Food security categories, Russian Mission, 2011.

Thirty-nine percent of surveyed households reported that food in general did not last and they could not get more; a higher percentage reported this situation in the case of subsistence food (43%) in comparison with store-bought food (30%).

Seasonal changes appear to influence the food security of Russian Mission households (Figure 10-21). For those households characterized by very low food security, the highest number of food insecure conditions was reported between October and April; one exception to this pattern was a dip in food insecure conditions in May, followed by an increase in June through September. The pattern of higher levels of food insecurity in the months between October and April was mirrored for households characterized by low food security, and they also reported an increase in food insecure conditions in June. It is unclear what the cause of increased food insecure conditions in Russian Mission during the summer months, but one possible explanation is that the poorer Chinook salmon runs of the past few years have had an impact on households' assessment of their own food security. As mentioned earlier, respondents have expressed concern over the abundance of salmon species, particularly Chinook, which enter the river generally in late May and early June. Additionally, of those who reported needing more salmon, 89% reported that they needed more Chinook salmon. It is possible that the decreased abundance of this species has impacted food insecure households. Another possibility is that less financially secure households may not have had the monetary resources to engage in in heavy harvest of fish species during this timeframe, particularly salmon. The rapid increase of food insecurity conditions in the fall and winter months for both "low" and "very low" food security households is not explained by the availability of food alone; one explanation may be that the fall season brings the onset of cooler temperatures and associated increased heating expenses that reduce monetary resources for purchasing store-bought foods during the coldest months of the year.

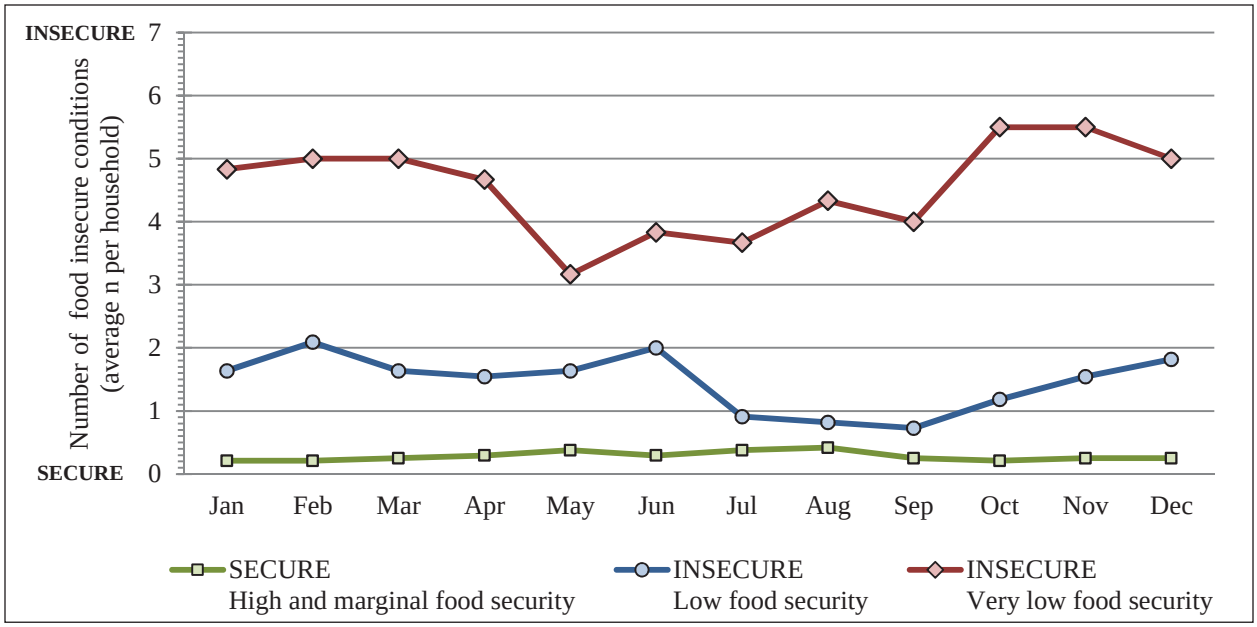


Figure 10-21.–Food insecure conditions by month and by household category, Russian Mission, 2011.

Wild Food Networks

While many households in rural Alaska are active in harvesting and processing wild foods, few are without connections to networks of sharing, bartering, and trading, which serve to distribute subsistence foods across the state. Networks between villages, especially those which are predominately Alaska Native, are common. Networks within individual communities illustrate sharing connections and patterns between households. On the Yukon–Kuskokwim Delta, as in other places in Alaska, traditional modes of sharing and exchange are a prominent feature of local communities, with the redistribution of wild resources occurring through lines of kinship and social connections (Wolfe 1981). Cooperation between households also occurs in joint harvesting and processing ventures, which are often organized between related family units.

Figure 10-22 depicts the cooperative pattern of harvesting and processing activities between respondent households in Russian Mission. At the end of each resource category discussed in the survey, respondents were asked to identify who harvested and processed the resource their household used during the study year. However, these relationships only indicate resources flowing into an individual household; the network diagram cannot imply patterns of reciprocity. Likewise, the diagram does not illustrate other relationships that occur in subsistence sharing networks such as providing financial support for the harvesting effort, or receiving food from an intermediary instead of directly from those harvesting or processing the resources.

In 2011 Russian Mission, 35% of households harvested 70% of subsistence resources, suggesting that there was a core group of households specializing in the harvest of wild foods and who served as primary distributors of resources throughout the community. The relatively low number of households that harvest

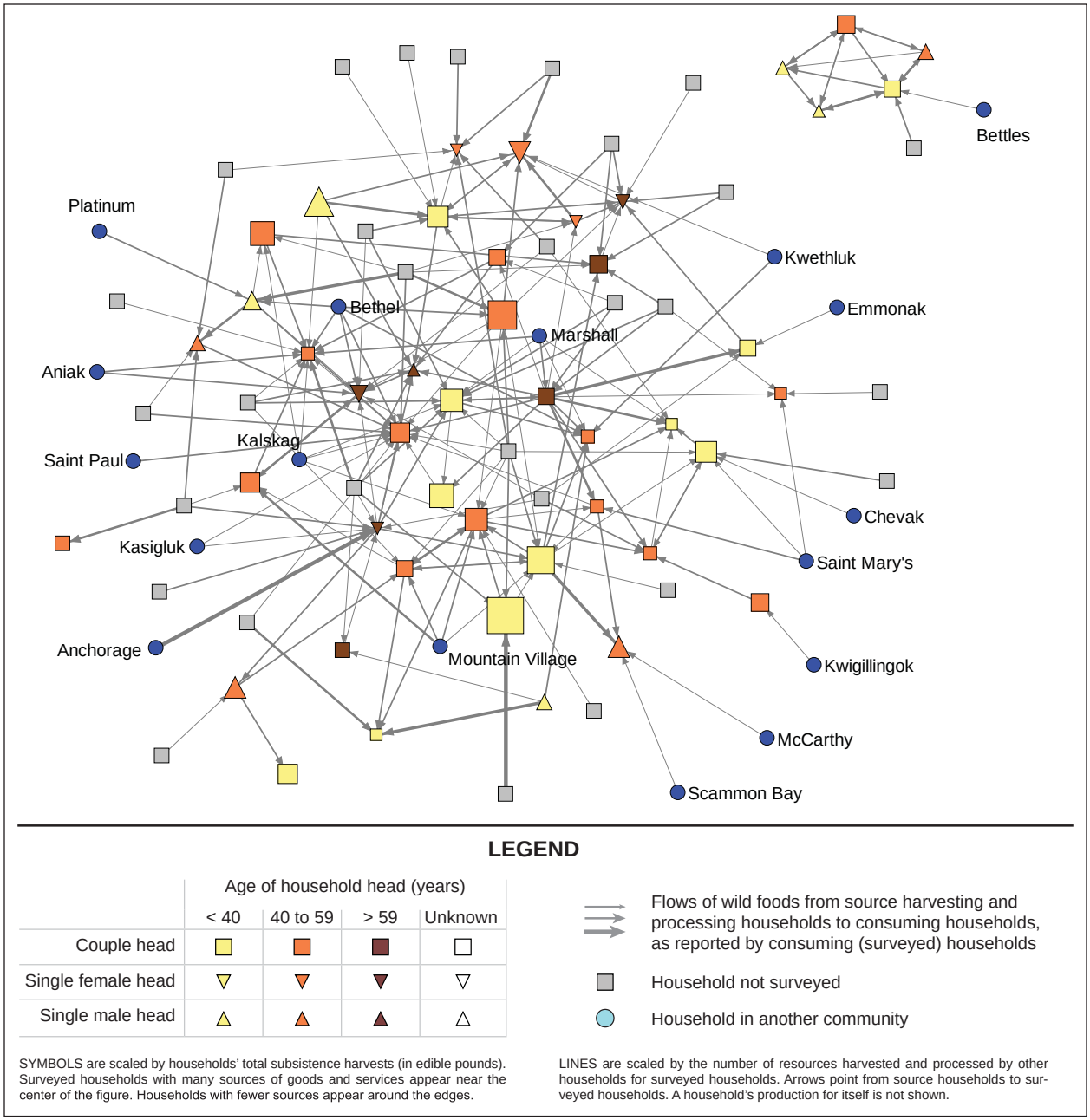


Figure 10-22.–Wild food harvesting and processing network, Russian Mission, 2011.

a high percentage of the community total is a common pattern in most rural, predominately Alaska Native communities (Wolfe et al. 2010). In Figure 10-22, these specialized harvesting households are depicted by the larger nodes. The size of node corresponds to the amount of edible pounds harvested by the particular household.

There were several high-harvesting households in Russian Mission during the study year. The highest harvesting households were generally headed by a couple and were either under the age of 40 or between 40 and 59 years of age; one high harvesting household was headed by a single active male under the age of 40. Magdanz et al. (2002) argued that higher harvest levels are connected to the maturity level of the household; the highest producers tend to be mature couples, active elder households, and single active males. This pattern appears to hold true in network data collected in Russian Mission for the study year. One point of similarity among the heavy harvesting households in Russian Mission is a relatively large family size, which may allow for a steady labor pool for the undertaking of subsistence activities. Many of the households with large harvests also had substantial sources of income, which may have helped to defray the often expensive costs of undertaking subsistence activities.

Certain types of households, such as those with inactive elders or a single parent, were more likely to receive help from others. One key respondent explained the role of sharing in fostering security for households in need:

> What I mean is, you look at village-life…everybody shares with everybody, you know, make sure nobody goes hungry, and if somebody does, you know all he has to do is come visit and then, you know they…right there, banquet. (012212RSH1)

Households in the center of the diagram have multiple sharing connections with other households in the community. When examining the diagram, it is important to note the weight of the lines connecting households; the thicker lines indicate more resources flowing into a particular household. A number of elder households are located nearer to the center of the diagram, due to the fact that they received wild foods from multiple households in the community. Other households headed by single females were also nearer to the center of the diagram.

There were no isolated households in Russian Mission in 2011, indicating that all respondents are connected in some form to the food distribution network of sharing, barter, and trade. Of note, however, is the group of households (found in the right-hand corner of the diagram), which are separated from the larger network of the community, but cooperate with each other. Three of these households are headed by single males, and 2 are headed by a couple; all households in this cooperative network are headed by individuals or couples under the age of 59. This smaller network is also connected to the community of Bettles.

Respondents in the larger network extending beyond Russian Mission also reported connections to a total of 16 other communities around the state of Alaska. Households reported exchange relationships with households in Platinum, Aniak, Saint Paul, Kasigluk, Anchorage, Kalskag, Bethel, Mountain Village, Marshall,

Kwethluk, Emmonak, Chevak, Saint Marys, Kwigillingok, McCarthy, and Scammon Bay. A majority of these communities are located on the Yukon–Kuskowkim Delta and may be connected to Russian Mission through family ties. The sharing network did also extend as far as Saint Paul in the Pribilof Islands and the road communities of Anchorage and McCarthy

Because of the lack of comparable data, little can be said about what changes (if any) have occurred over time to the networks of distribution and cooperation in Russian Mission. According to some elder respondents, however, the social aspect of subsistence, while still strong today, was even stronger in the past:

> Long ago they used to share everything that they catch, and we're told to share everything that you catch and taught to share. Because if you share you get ten percent more than how much you give; it will come back tenfold. And right now they…we don't do that anymore. (012112RSH5)

Comparisons with Prior Results

This section discusses the results of the 2011 study in comparison to previously collected data. Historical quantitative information on subsistence harvests in Russian Mission is limited. This was the first comprehensive subsistence harvest survey conducted by ADF&G in the community. However, the Division of Subsistence gathered ethnographic data on the use of wild resources in Russian Mission and collected harvest information for salmon species and moose in 1985 (Pete 1991c). Other information was collected by the Division of Subsistence in 1991 about the use of subsistence-caught fish used for dog teams (Andersen 1992). Subsistence salmon surveys have been completed in the community in most years from 1960 to 2010, though due to methodological differences, only the portion of the dataset beginning in 1988 is comparable with this survey. ADF&G also recorded brown bear harvests in 1991 (C. Hensel unpublished data); other large land mammal data from Russian Mission were collected by the U.S Fish and Wildlife Service (Weekley et al. 2011). Migratory bird surveys were conducted by ADF&G from 2004 to 2008 (Naves 2011), and information on waterfowl harvests exists in a 1964–1965 study on the Yukon–Kuskokwim Delta (Klein 1966). This section discusses current results from the 2011 comprehensive survey in a comparative light with previous studies.

Figure 10-23 portrays the total harvest of 4 species of salmon from 1990–2011. Harvests of all 3 varieties—Chinook, chum salmon, and coho salmon—have generally declined over the last 2 decades. A number of factors, including the health of salmon runs, regulatory changes, weather events, and community harvest effort cause fluctuations in harvest levels. For Chinook salmon, the average number of fish harvested in the time period 1990–1999 was 2,005 salmon, compared to 1,951 salmon in the years 2000 to 2010. The 2 lowest harvest years during the 2 decades of data for Chinook salmon occurred in 2009 (978 harvested salmon) and 2010 (924 salmon). Commercial harvests of Chinook salmon on the Yukon River have shown a dramatic decline since 1998, and subsistence harvests were not within amounts necessary for subsistence in 2000, 2002, and 2008–2010 (Hayes et al.; JTC 2010). In 2008, escapement goals were not met for Canadian-origin Chinook salmon. This led to unprecedented restrictions on subsistence fishing in 2009, reducing subsistence

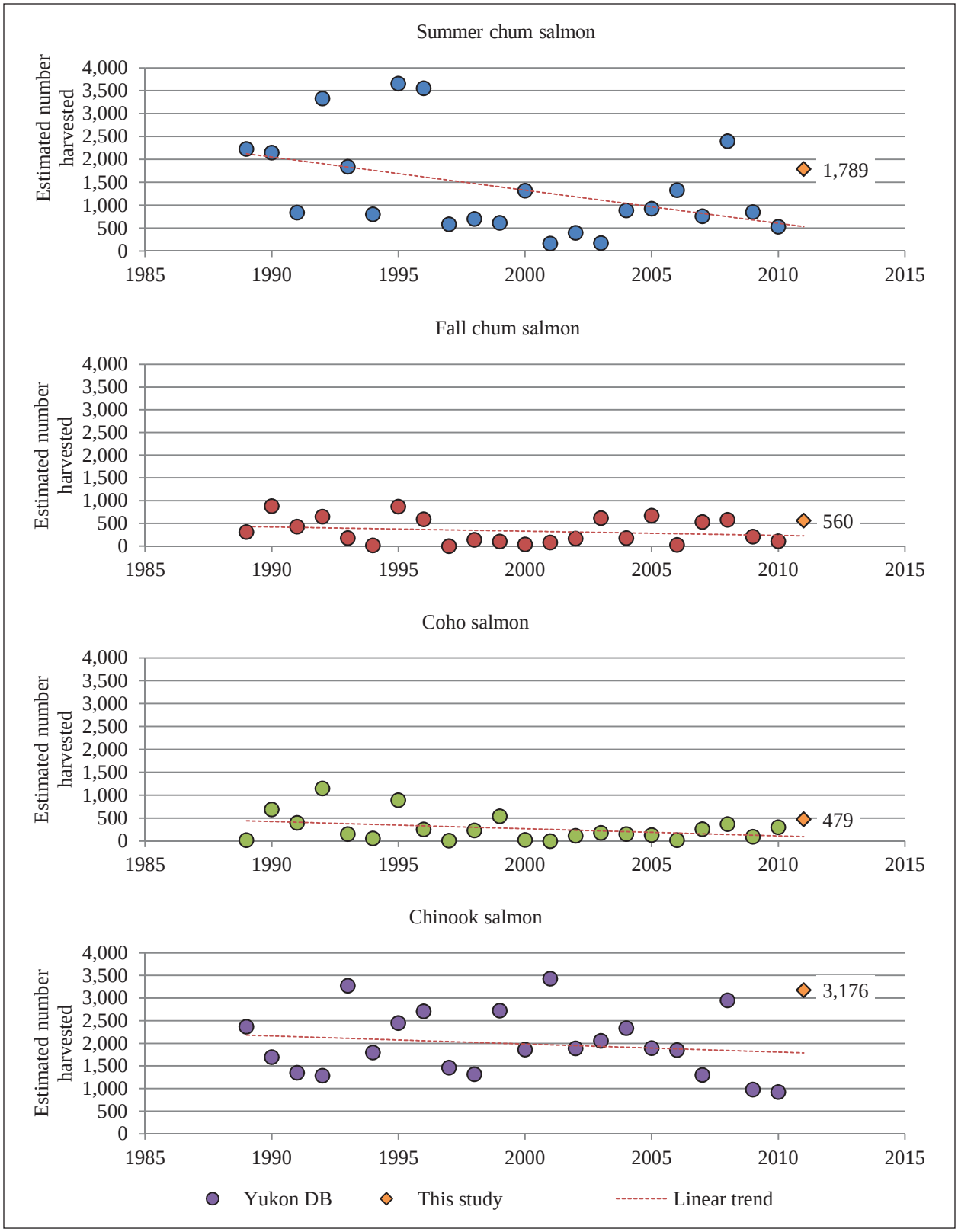


Figure 10-23.–Estimated total number of summer chum, fall chum, coho, and Chinook salmon harvested by residents, Russian Mission, 1990–2011.

fishing time to approximately half of the regularly scheduled fishing time and closing subsistence fishing for one week to protect the first pulse of Chinook salmon throughout the Alaska portion of the Yukon River (Howard et al. 2009). In 2011 fishing effort was impacted by gas prices and poor weather conditions including high water, heavy debris, and persistent rain. When it became clear that escapement for Canadian-bound Chinook would not be met, fishers were asked to take voluntary conservation efforts (Estensen et al. 2012)”event-place”:”Anchorage”,”author”:[{“family”:”Estensen”,”given”:”Jeffrey L.”},{“family”:”Haye s”,”given”:”Steve”},{“family”:”Buckelew”,”given”:”Stacey”},{“family”:”Green”,”given”:”Dayna”},{“fa mily”:”Bergstrom”,”given”:”Daniel J.”}],”issued”:{“date-parts”:[[“2012”]]}}],”schema”:”https://github. com/citation-style-language/schema/raw/master/csl-citation.json”} . This study recorded an estimated harvest of 3,177 Chinook salmon in 2011, the third highest harvest represented in this data. As mentioned in the demographic section, it is possible that this study’s estimate of population may be high, which would lead to expanded harvest estimates also being slightly inflated. It is also important to note that harvest information collected in the postseason salmon surveys may differ from results collected in this comprehensive survey due to timing of data collection and differences in methodology such as sampling strategies.

Despite the higher harvest numbers in 2011, the highest recorded harvest of Chinook salmon over the last 2 decades occurred in 2001, when Russian Mission fishers harvested an estimated 11 fish (102 lbs) per capita (total estimated harvest of 3,428 salmon). In comparison, the estimated harvest for the community was 3,177 Chinook salmon in 2011 or 8 fish (74 lbs) per capita. A similar pattern can be seen in the case of summer chum salmon; average harvests from 1990 to 1999 were 1,806 individual fish, while average harvests from 2000–2010 were 884 fish. This highest harvest of this species occurred in 1995, with a total estimated harvested of 3,653 individual fish. The lowest recorded harvest in the time period 1990–2011 occurred in 2001 when the community harvested 165 summer chum salmon, and harvest levels in 2000–2011 were never greater than 2,400 fish. This study estimated that 1,789 summer chum salmon were taken in 2011, or 4 fish per person. This stands in contrast to the 1995 harvest, in which the community harvested an estimated 13 fish per person. For fall chum salmon, harvest levels declined between the 2 decades of data; in the time frame 1990–1999, Russian Mission fishers caught an average 382 fall chum salmon, while the average harvest was 288 salmon from 2000–2010. The highest harvest record for the community during the past 2 decades was 878 salmon in 1990, while the lowest harvest occurred in 1997 when no fall chum salmon were harvested by the community. The community has not attained harvest levels above 700 fall chum salmon since 2000, and this study recorded a total estimated harvest of 560 fish in 2011. Average harvests of coho salmon have similarly decreased over time; Russian Mission fishers harvested an average of 437 coho salmon in the time period 1990–1999, while the community had an average harvest of 150 coho salmon in 2000–2010. The highest harvest for the community in the past 2 decades occurred in 1992 when 1,148 individual fish were taken (4 salmon per capita). The 2011 study year represented the fourth highest harvest, with 479 coho salmon (1 fish per capita) harvested by Russian Mission.

Other points of comparison for the 2011 salmon harvest data can be found in previous Division of Subsistence research. Pete (1991c) recorded salmon harvest data for Russian Mission in 1985, and a compari-

son with this study also indicates a decline in salmon harvests over time. As noted above, it is important to contextualize harvest numbers for individual years in ways that control for community population changes. In 1985, per capita levels of Chinook salmon were an estimated 135 lb of Chinook salmon; in 2011, those levels dropped to 74 lb per person. For summer chum salmon, residents harvested an estimated 51 lb per person in 1985, while harvest levels were an estimated 22 lb per person in 2011. Fall chum salmon harvests in Russian Mission show a similar decrease over time; the estimated harvest in 1985 was 22 lb per person, compared to 7 lb per person in 2011. In 1985, Russian Mission fishers harvested an estimated 18 lb per person of coho salmon, while the per capita harvest of this species in 2011 was 6 lb per person. Although a lesser harvested species on the Yukon River, data for pink salmon exists for both 1985 and this study year; community fishers reported harvesting an estimated 7 lb per capita of pink salmon in 1985, compared to less than 1 lb per person in 2011.

Every key respondent interviewed in the community expressed concern over the abundance of salmon and the decrease in harvests in recent years. One resident described the impact to his family fish camp in 2011, after explaining that the decrease in salmon abundance had become most noticeable in the last decade:

> Yeah, that's very less than normal. Way, way down…from what we need. We're already gone, our freezers are empty. But, but since the fish were so low….I told my family, "I'm going to let the rest of my fish go by." I said, "There's other times that we can fish. Right now the fish are so way down that I'm going to let the rest of my fish go, go alive, you know." (012212RSH3)

Several key respondents also expressed concern about the health of the salmon that they are harvesting, explaining that some individual fish display evidence of disease. One respondent explained that this was a recent phenomenon: "Yeah [they have], white spots what we never used to see before—we see them… now (01UN12RSH4)." The respondent described *Ichthyophonus hoferi*, a protozoan parasite which is found in species of marine and anadromous fish. This parasite was first identified in Chinook salmon in the Yukon River drainage in 1988, and fishers and processors have reported an increase in the number of cases over the years (Kahler et al. 2007).

Ethnographic research conducted in Russian Mission by the Division of Subsistence in 1991 on the use of subsistence-caught fish for the feeding of dog teams in the Yukon River drainage offers a point of comparison for both the use of salmon and nonsalmon fish as dog food between the 2 study years (Andersen 1992). It is also important to note that the 1991 study only surveyed active mushers in Russian Mission and combined all salmon species together in the results. In contrast, this study estimated the use of each fish species as dog food for all households. In 1991, the Division of Subsistence surveyed 7 mushers in the community, which represented a 100% sample of those using dog teams during the study year. A total of 1,730 salmon were harvested for use as dog food in 1991, while 403 salmon were harvested for the same purpose in 2011. For nonsalmon fish, Russian Mission mushers reported harvesting 1,617 nonsalmon fish (excluding blackfish and lamprey) and an additional 4,650 lb of blackfish and lamprey for dog food in 1991. In 2011, community households reported harvesting 1,055 nonsalmon fish for this purpose, as well as 5,344 lb of lamprey.

Other points of comparison for the 2011 comprehensive survey in Russian Mission exist for large land mammal harvests. In 1985, Pete (1991c) recorded moose harvests in the community. During that study year respondents reported taking 33 moose (98 lb per capita), while residents reported greater harvest levels in the 2011 study (59 moose, 103 lb per capita). More recently, Weekley et al. (2011) collected land mammal harvest data in 2009–2010. According to Weekley et al. (2011), Russian Mission residents harvested an estimated 51 moose (123 lb per capita) between February 2009 and January 2010. This is a similar figure to the 2011 estimated harvest mentioned above (59 moose, 103 lb per capita). There were varied views among key respondents as to the size of the moose population in the area. One resident expressed some concern over the sex composition of the population and his concern over harvesting cows:

> I think we got less. I think…I think so. Some people will disagree with me, but I think it's…I think we got less. Less bulls. I mean, there's a lot of moose, but there's mainly cows, and I don't like the idea of cow seasons. I hate it…..Shoot one cow, you shoot about twenty moose. (012212RSH1)

This respondent did mention that he felt that some of the population change was due to migration of moose towards the coast, however, others felt the moose population was very healthy:

> It's building up now, I think. I think we have a build-up of moose, 'cause, yeah, some of the moose are even getting in our way. You have to wait, wait for them to move away before we can go. Our moose population, I think, is good. (012212RSH3)

In 2011, Russian Mission reported higher levels of caribou harvest (an estimated 5 caribou, 2 lb per capita) in comparison with the 2009–2010 study when no harvest was reported. Caribou harvests do tend to vary annually based on the migration of the herd, and access to the herd is influenced by the location of the herd in relation to the community. Russian Mission residents reported similar rates of harvest for both black bear and brown bear between the 2 study years; in 2009–2010, respondents harvested an estimated 14 black bears (4 edible pounds per capita), while the community harvested an estimated 9 black bears (3 lb per capita). There was no reported brown bear harvest in the community in either of the study years. No harvest of muskox was reported in either study, although a few households (5%) reported using and receiving the resource in 2009–2010. No use of muskox was reported by respondents in 2011. The community harvested greater numbers of both wolf (5 individuals) and wolverine (3 individuals) in 2011. The 2009–2010 study recorded no harvest of either resource, although use of both was reported.

Klein (1966) offers annual estimates of waterfowl usage by villages on the Yukon–Kuskokwim Delta based on data gathered by the Alaska Cooperative Wildlife Research Unit from April to June 1964 and in February 1965. However, the methods used for the survey in the 1960s were significantly different from the approach taken by the comprehensive study in 2011. In the former study, researchers acquired harvest data at one community meeting and estimated the total harvest of ducks and geese. This makes it difficult to draw any concrete conclusion from the comparison of contemporary results with the earlier data gathered in

1964–1965, because the estimates in the earlier study may not be accurate. Despite this discrepancy some aspects of similarity and difference exist between the 2 reports from very different time periods.

In the earlier study, Russian Mission hunters reported harvesting 360 geese during spring and fall hunting seasons, and harvested an estimated 680 geese in 2011. Although the 1964–1965 study does not show a breakdown of the harvest by species, species are ranked in order of their relative importance as described by the respondents in each community during the study year; Canada geese were the only species of goose rated as important in Russian Mission in 1964–1965. During the study year in 2011, it appears that the importance of Canada geese species remains high in Russian Mission (the community harvested an estimated 323 individuals in 2011). The second most harvested species of goose in 2011, however, was not ranked in importance during the 1964–1965 study; community residents harvested an estimated 278 white-fronted geese during the 2011 study year.

The 1964–1965 study also recorded harvests of mallards and northern pintails by Russian Mission hunters, the former being ranked of higher importance than the latter. Total harvest numbers (again, not differentiated by species) for the study year were 800 ducks, in comparison with the approximately 443 mallards and northern pintails taken in 2011. In 2011, mallards were the most heavily harvested species of duck, indicating that the importance of this resource remains high in the community. The second-most heavily harvested species of duck, however, was not mentioned in the 1964–1965 study; Russian Mission hunters reported harvesting an estimated 155 wigeons in 2011. Overall (including species not mentioned in the 1964–1965 study), community residents harvested a total of 810 ducks during the study year. Other points of comparison exist for swans and cranes in both the 1964–1965 and 2011 studies; hunters reported harvesting 60 swans and 5 cranes in the earlier study, while the community harvested an estimated 48 swans and 7 cranes in 2011.

While the harvest levels between the studies appear on the surface to be somewhat similar, the population of Russian Mission has increased significantly since the Klein study. In 1963, the population of the community was estimated to be 123 people, while this baseline study estimates a population of 402. Per capita harvest estimates suggest a magnitude of difference between the 2 studies. Hunters in the community harvested approximately 3 geese per person in 1964–1965, compared to 1.6 geese per person in 2011. Russian Mission harvested approximately 6.5 ducks per person in 1964–1965, compared to approximately 2 ducks per person in 2011. Hunters harvested approximately 0.49 swans and 0.04 cranes per person in 1964–1965, compared to 0.12 swans and 0.02 cranes per person in 2011. With differences in methodology between the 2 studies in mind, it appears that rates of harvest have decreased over time. One key respondent did describe changes to the bird populations in the vicinity of Russian Mission during his lifetime, noting that sandbars that were once good hunting locations have become overgrown with vegetation. He went on to explain that as a result hunting areas of changed:

> That could be the problem. ‘Cause there’s some other hunters that go at least 10–23 miles away from here, from Russian Mission, and they come back and say there’s a lot of geese. They talk about geese being lots, lots. So, you know, it could be the change in our area, that the ducks and geese are going to the place where they feel more comfortable. (012212RSH1)

Migratory bird harvests have been documented annually by the Alaska Migratory Bird Co-Management Council (AMBCC) since 2004, and results are available from the years 2004–2009 (Naves 2010a; Naves 2010b; Naves 2011). These harvests, however, are reported on a sub-regional level, and community specific figures are not available. Russian Mission was surveyed in 4 out of the 7 study years, with the exception of 2004, 2007, and 2010. Although Russian Mission’s specific harvest of migratory birds cannot be readily gleaned from the AMBCC findings, the lower Yukon regions, of which Russian Mission is a part, experienced lower bird harvests in 2007 and 2008. In 2009 and 2010, harvest levels for the region increased compared to the lower numbers noted in the previous 2 years.

Conclusion

Overall, Russian Mission respondents highlighted the importance of subsistence activities to their community and the challenges and changes to these vital activities that subsistence users have faced over the course of their lifetimes. The availability of certain resources was of concern—particularly Chinook salmon—and respondents emphasized the importance of protecting these resources for future generations. Regulatory issues, especially in terms of subsistence salmon restrictions, were mentioned as challenges to obtaining the wild resources that residents depend upon. Respondents also reported economic limitations to subsistence hunting and fishing, particularly the high cost of living in the village, the price of gasoline, and the lack of employment opportunities. Despite these challenges, respondents described the importance and effectiveness of the sharing network in their community in taking care of those in need. Russian Mission residents have illustrated that they are able to adapt their changing circumstances that affect their uses and harvests of wild foods, and subsistence activities remain of vital importance to the community.

Chapter 11: Summary and Discussion

Andrew R. Brenner

The objective of the third phase of the Donlin Gold Subsistence Research Program was to describe the contemporary subsistence uses of fish, wildlife, and plant resources by 5 Kuskokwim River and 3 Yukon River communities. In contrast to previous phases of this research program in Central Kuskokwim River communities (2010) and lower and middle Kuskokwim River communities (2011), research in this phase included a relatively widespread assemblage of communities with differing subregional affiliations. Research in the communities of Napakiak and Napaskiak provided additional context to the subsistence harvest and use patterns of the lower Kuskokwim River subregion, explored in depth in the second phase of this research program in 2011. Research in the communities of McGrath, Takotna, and Nikolai documented current subsistence harvest and use patterns for all communities in the upper Kuskokwim River subregion, with the exception of the small community of Telida. Research in the Yukon River communities of Russian Mission, Anvik, and Grayling provided a partial representation of subsistence harvest and use patterns for communities in the Lower and Lower–Middle Yukon River that currently and historically have shared certain subsistence use areas with several nearby Kuskokwim River communities.

Due to the numerous differences between communities in the Lower Kuskokwim River, Upper Kuskokwim River, and Yukon River, subsistence harvest and use information is discussed separately by subregion, while demographic, jobs and income, food security, and land use information is discussed on a broader, comparative scale. Subsistence information for McGrath, Nikolai, and Takotna is discussed in the section "Subsistence in the Upper Kuskokwim River: Summary of 2011 Data and Regional Overview." Lower Kuskokwim community results are contextualized with results from previous research in the section "Napakiak and Napaskiak: Relationships with other Lower Kuskokwim River Communities." Russian Mission, Grayling, and Anvik are discussed in the section "Yukon River Communities: Subregional Patterns and Relationships with Kuskokwim River Communities." Drainagewide patterns are reviewed in a final section of this chapter.

Subsistence in the Upper Kuskokwim River: Summary of 2011 Data and Regional Overview

For the purposes of this discussion, Upper Kuskokwim River communities include McGrath, Nikolai, Takotna, and Telida as defined by Stokes (1985). The following section provides a subregional summary of 2011 subsistence harvest data for the surveyed upper Kuskokwim River communities of McGrath, Nikolai, and Takotna, as well as a historically contextualized overview of harvest and use patterns for moose and caribou.

The Upper Kuskokwim River region (hereafter Upper Kuskokwim) communities share a similar natural environment and resource base, a common Athabascan cultural background, and the communities of McGrath and Takotna also have relatively long histories of Euro–American settlement in the area dating back to early 20th century mining efforts. Despite these regional patterns, demographic characteristics are relatively variable between communities. As such, an in-depth discussion of intercommunity demographic and economic trends is not provided for this region as was for the central (C. L. Brown et al. 2012) and lower (C. L. Brown et al. 2013) Kuskokwim River regions; this information is better understood on an individual community basis as provided in previous chapters.

Residents of surveyed Upper Kuskokwim communities described long traditions of engaging in a diversity of subsistence activities, including harvesting large and small mammals, multiple species of salmon and nonsalmon fish, birds, and a variety of edible and medicinal plants. Many residents expressed that access to subsistence resources is essential to maintaining their cultural heritage as well as family and community ties. Between January and December 2011, residents of the 3 surveyed upper Kuskokwim River communities harvested an estimated total of 151,053 edible pounds of subsistence resources, with an estimated average harvest of 288 lb per capita. Estimated harvests for each community ranged from 162 lb per capita in Takotna to 499 lb per capita in Nikolai.

The 2011 harvest patterns of the 3 surveyed communities largely mirror historical patterns for the Upper Kuskokwim River, typified by a resource base with a heavy reliance on large land mammals, as well as salmon and nonsalmon fish species, and supplemented with harvests of small land mammals, birds, and berries and greens. Trapping furbearers continues as a common activity in all 3 communities and represents a substantial source of income for some households. The use of locally harvested firewood as a heating source is ubiquitous and very important in this region; the average Upper Kuskokwim River household harvested 4.4 cords of firewood in 2011.

In contrast to downriver regions, a larger percentage of the annual wild food harvest in Upper Kuskokwim River communities typically comes from large land mammals rather than from fish. Nevertheless, salmon and nonsalmon fish species form a large component of the annual subsistence harvest, particularly for the communities of McGrath and Nikolai. Figure 11-1 shows the 10 wild fish and game species that contributed most to subsistence harvests in the 3 study communities. In these 3 communities, 10 species provided 88% of the annual harvest in terms of edible pounds. The importance of moose in particular was evident: moose composed nearly half (48%) of the total subsistence harvest. Approximately one-third (33%) of the harvest by usable weight was comprised of 6 fish species: Chinook, coho, chum, and sockeye salmon, sheefish, and northern pike. Black bears, beavers, and blueberries each contributed between 2 and 3% of the total subsistence harvest by edible weight.

Comparison of 2011 harvest data for the 3 surveyed communities to harvest data from past subsistence studies in the region (Stokes 1985; Holen et al. 2006), together with ethnographic information collected as part of this study, provides insight into recent harvest patterns. While historical patterns in harvest data for

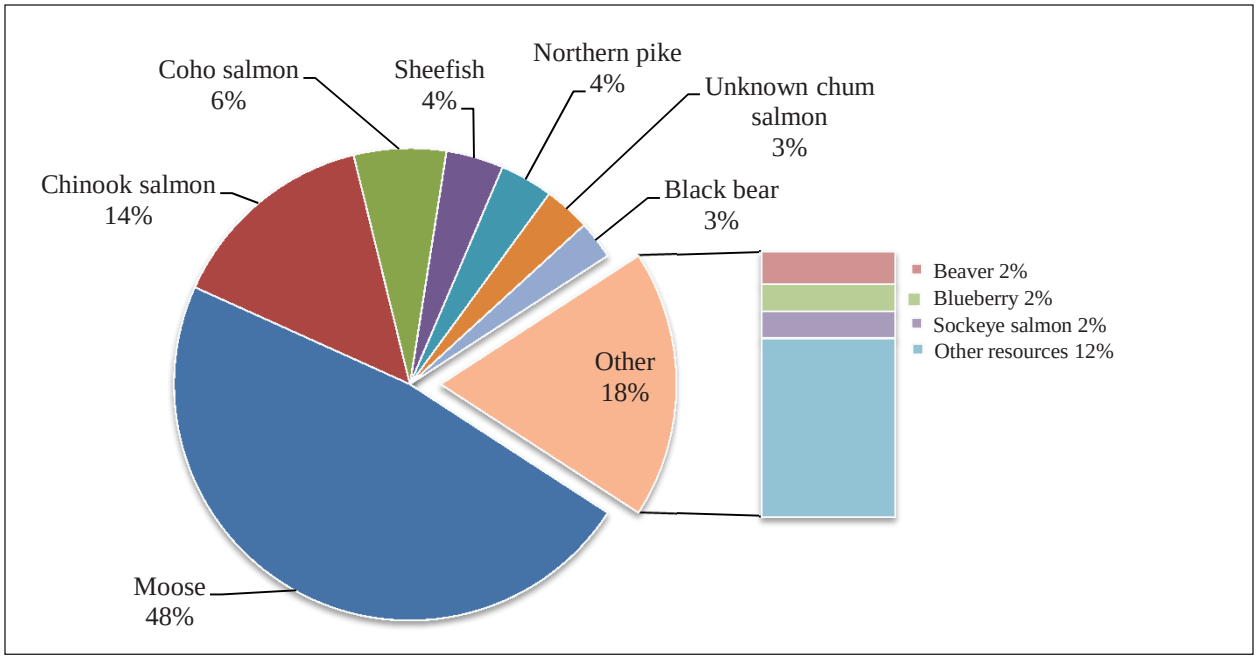


Figure 11-1.–Percent of total harvest by resource, upper Kuskokwim River area communities, 2011.

individual communities are provided in previous chapters, the following section provides information on factors that have affected harvest and use patterns for moose and caribou on a regional scale in recent years.[1]

Moose have been an important component of the subsistence harvest in the upper Kuskokwim River region since moose populations expanded into the area in the early 20th century (Stokes 1983:13). Moose contributed far more to the subsistence harvest of all 3 surveyed communities in 2011 than any other single species in terms of total edible weight contribution. According to respondents, the major factors affecting moose hunting in the Upper Kuskokwim region include moose population densities and economic challenges to accessing moose hunting locations.

Most residents in the 3 study communities described that increases in moose populations in the past decade have improved moose hunting success rates. A major factor affecting moose population densities in the area has been predation on moose by wolves, black bears, and brown bears, and many respondents were supportive of a predator control program that began in 2003 (Keech et al. 2011). This program was widely viewed as responsible for increasing the number of moose available to hunters. Residents described that in general, moose populations in 2011 were high enough to provide for adequate harvest levels, although several respondents voiced concern that moose mortality related to heavy snowfall in the winter of 2011–2012 would lead to a reduction in moose harvests in future years.

Many residents commented on the economic challenges associated with moose hunting in recent years, largely related to the combined effects of high gasoline prices and limited job opportunities in the region.

1. These sections focus primarily on moose and caribou due to recent changes affecting harvest and use patterns not discussed in historical sources. More comprehensive information on general harvest and use patterns for these resources and others is provided in Stokes 1984, while an in depth discussion of recent changes in salmon fishing patterns in the upper Kuskokwim River region is provided in Ikuta et al. 2013 (Socioeconomic patterns in subsistence salmon fisheries: historical and contemporary trends in 5 Kuskokwim River communities and overview of the 2012 season).

Moose hunting for most area residents involves extensive travel by boat along local river corridors. The cost of gasoline,which routinely averages twice the per gallon cost of fuel in urban areas of the state, and the cost of equipment needed for this type of hunting were described as necessary hardships by many residents: "The price of fuel is just a huge, huge thing…[But] folks are still going to scrounge up the gas to go hunt moose… even if it's $15 per gallon. They are going to still use a motor boat and go hunt moose" (04052012MCG6). Despite this local commitment to moose hunting even during economically challenging times, access to moose hunting locations and success rates for moose hunters were likely impacted by economic conditions, including the cost of gasoline. Several area households specifically described high gas prices as the primary reason they did not get enough moose in the study year.

In the past, user conflicts between local and nonlocal hunters were a particularly problematic issue in the Upper Kuskokwim (Stickney 1980:1); however, several developments, including the establishment of the Upper Kuskokwim Controlled Use Area in the early 1980s[2], and the now common practice of meat distribution to McGrath households by non-local hunter guiding operations have reduced such conflicts in recent years.

Caribou

Ethnographic information collected during this study suggests that caribou harvests in the upper Kuskokwim River region are highly influenced by variable caribou populations and distributions. Respondents in all study communities described that while the caribou harvest in 2011 was minimal, with a total estimated harvest of 4 individual caribou in the 3 study communities, caribou often formed a larger component of the total subsistence harvest over the past century, and caribou is still viewed as an important resource in the region.

Caribou in the upper Kuskokwim River region are primarily located in several small herds with limited distributions in area uplands,[3] although as recently as the 1990s the much larger Mulchatna caribou herd migrated through the area (Seavoy 2011:116), and residents hunted animals from this herd. Respondents in Nikolai described that during the first half of the 20th century, caribou harvests often contributed as much to area residents' diets as moose did. Most of these caribou were harvested from herds in the Alaska Range foothills when people from the area led a relatively nomadic life prior to the mid-20th century period that often included annual travel to the Alaska Range. During the second half of the 20th century, caribou harvests likely declined throughout the region as moose became more available near communities, but caribou remained an important supplement to the moose harvest in all 3 surveyed communities.

Despite the lack of specific data, local residents assert that the 5 local caribou herds have experienced population declines in recent years, particularly following the locally observed absorption of caribou from herds south of the Kuskokwim River into the Mulchatna herd as it migrated through the area in the 1990s. Consistent with these declines, recent caribou harvests have been minimal. Considering the variability in caribou herds' populations and harvests by area residents over the past century, the contribution of caribou

2. The Upper Kuskokwim River Controlled Use Area prohibits the use of aircraft for moose hunting in a portion of Game Management Subunit 19D largely corresponding to the mainstem Kuskokwim River near McGrath, portions of the Takotna River, and a large section of the North Fork Kuskokwim River. See also http://www.adfg.alaska.gov/index.cfm?adfg=protectedareas.controlleduse&area=CU_uprkusko
3. Beaver Mountains Herd, Sunshine Mountains Herd, Big River-Farewell Herd, Rainy Pass Herd, and Tonzona Herd.

to the total subsistence harvest in future years will likely continue to fluctuate according to the availability of caribou in the area. As such, the caribou harvest in 2011 should not necessarily be considered representative of future harvests.

Napakiak and Napaskiak: Relationships to Other Lower Kuskokwim River Communities

Research in the communities of Napakiak and Napaskiak was conducted in part to develop a more comprehensive description of subsistence harvest and use patterns in the lower Kuskokwim River region than was possible in Brown et al. (2013) for the communities of Akiak, Kwethluk, Oscarville, and Tuluksak. While Napakiak and Napaskiak differ from each other as well as from other communities in terms of land use areas and in subsistence harvest patterns for several species, in many respects they are similar to other lower Kuskokwim River communities in terms of overall subsistence harvest and use patterns described in more detail by Brown et al. (2013:311–337). The following section provides a brief overview of these similarities and differences.

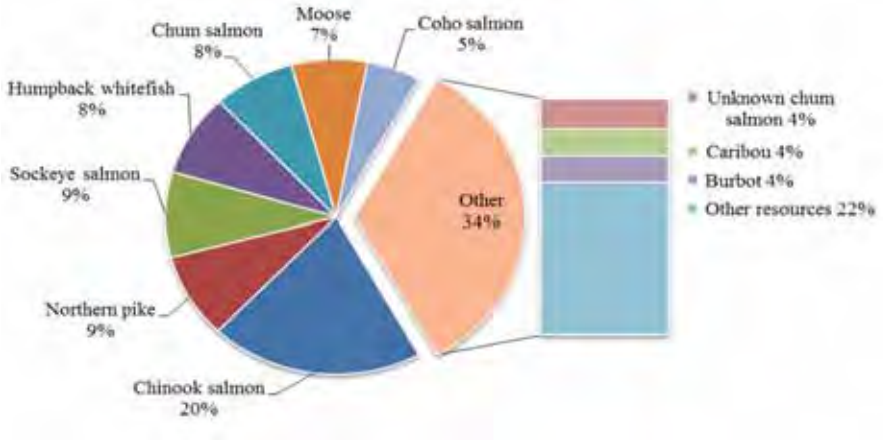
Figure 11-2 shows the top 10 resources harvested in Napakiak and Napaskiak in relation to the subregional top 10 resources for the 4 previously surveyed lower Kuskokwim River region communities.[4] The similarities between harvest compositions in Napakiak, Napaskiak, and the subregional average are apparent; nearly all of the top 10 species are the same between the 3 charts, although proportions of these species vary from community to community. Ethnographic information further confirms the shared resource base for these 2 communities in relation to the broader subregion. Despite this overall similarity, there are particular nuances to the subsistence profile of Napakiak and Napaskiak, some of which may be influenced by their geographic location closer to the Bering Sea coast than previously surveyed communities, and immediately at the mouth of the Johnson River in the case of Napakiak.

Napakiak and Napaskiak are farther downriver than previously surveyed communities other than Oscarville, and as a result the marine environment is likely more accessible to residents in these communities. The combined per capita harvest of marine resources[5] in Napakiak and Napaskiak was among the highest in the lower Kuskokwim when considered alongside the 4 previously surveyed communities (Figure 11-3). While this relationship is not particularly strong across all communities—for example, Kwethluk and Oscarville provide an exception in that their per capita marine mammal harvest was in fact higher than that in Napakiak—it is likely that there is a general trend of increasing marine resource use along a gradient from upriver to downriver communities.

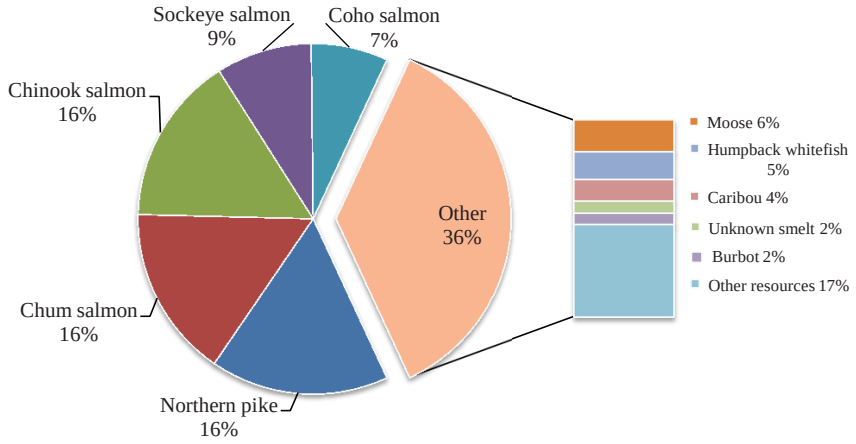
An additional difference between Napakiak and other surveyed lower Kuskokwim River region communities relates to Napakiak residents' high harvest of northern pike. Northern pike represented 16% of the total subsistence harvest in Napakiak in comparison to 8% in Napaskiak and 7% in previously surveyed lower Kuskokwim River region communities. Such high harvest levels for northern pike are likely related

4. Study year 2010: Akiak, Kwethluk, Oscarville, and Tuluksak.
5. Marine fish species (including herring, herring roe, Pacific tomcod, saffron cod, flounder, and halibut), and marine mammals.

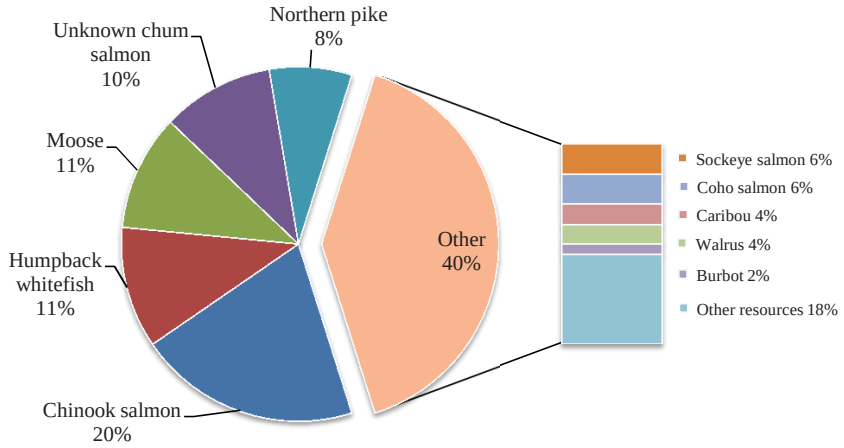
Lower Kuskokwim River communities,* 2010 and 2011 subregional average



Napakiak, 2011



Napaskiak, 2011



* 2010: Akiak, Kwethluk, Oscarville, and Tuluksak
2011: Napakiak and Napaskiak

Figure 11-2.–Top 10 species harvests ranked by estimated edible weight, lower Kuskokwim River communities, 2010 and 2011, Napakiak, 2011, and Napaskiak, 2011.*

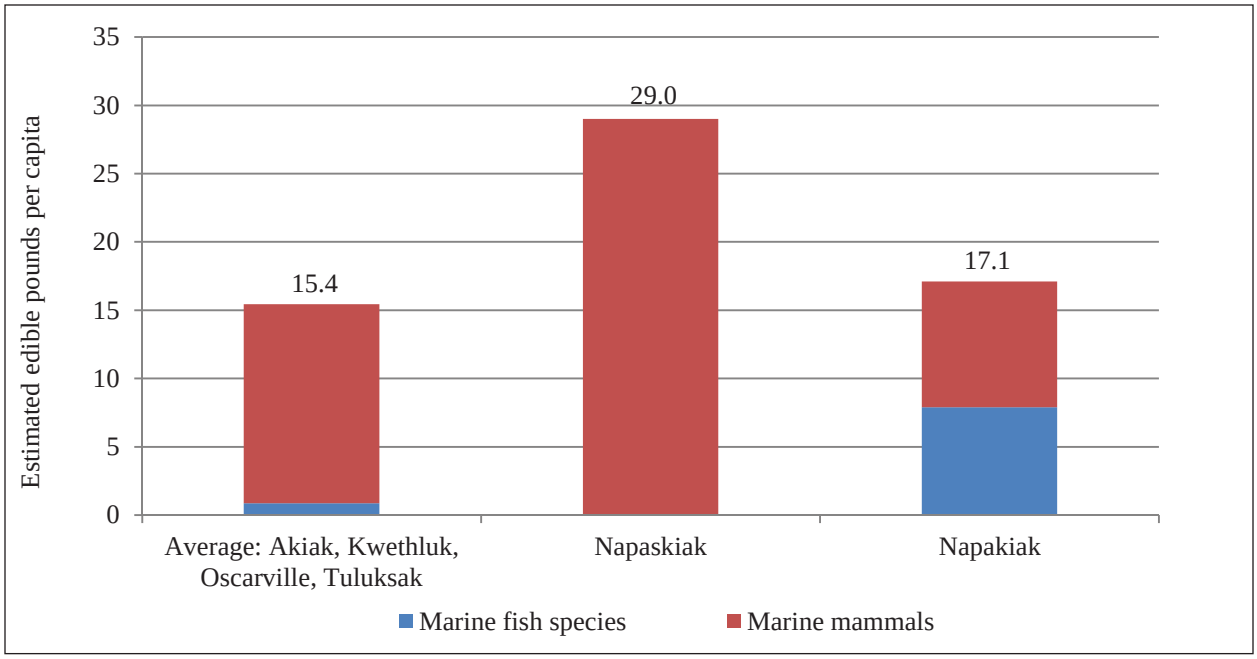


Figure 11-3.–Marine resources harvests: Napakiak and Napaskiak in relation to other lower Kuskokwim River communities, 2011.

to Napakiak's geographic location directly at the mouth of the Johnson River, an area known throughout the lower Kuskokwim River for its concentration of northern pike. Residents typically harvest pike by jigging through ice during the spring months.

Yukon River Communities: Subregional Context and Relationships with Kuskokwim River Communities.

The first Yukon River community data collected as part of the Donlin Creek Mine Subsistence Research Program occurred in this third phase of the project; previous data collection efforts focused exclusively on Kuskokwim River communities. Anvik, Grayling, and Russian Mission were selected for inclusion in this study largely due to their location near the Paimiut Slough portage area and so their proximity to the Kuskokwim River and the proposed Donlin Creek Mine site. Subsistence harvest and use patterns in these 3 Yukon River communities differ from previously described Kuskokwim River communities, reflecting the two drainages' different resource characteristics as well as unique historical and socioeconomic backgrounds. In spite of these differences, numerous relationships have emerged throughout this research that highlight the interconnectedness of Yukon and Kuskokwim River communities. The following section describes the subregional context of surveyed Yukon River communities' subsistence harvest and use patterns, highlights differences between the Yukon and Kuskokwim rivers that influence these patterns, and describes relationships between communities across the two drainages that are important to understanding subsistence in Western Alaska.

The proximity of Anvik, Grayling, and Russian Mission to each other in a broadly defined geographic subregion distinguishes them in some ways from the Kuskokwim River communities included in this research program. As described in individual community chapters, Russian Mission is a primarily Central Yup'ik community and the most upriver village in the Lower Yukon River subregion, while Anvik and Grayling are Deg Hit'an and Holikachuk Athabascan communities located in the lower Middle Yukon River, sometimes referred to as the "GASH"[6] subregion that borders the Lower Yukon subregion. Pete (1991c) provided detailed descriptions of subsistence harvest and use patterns for Lower Yukon communities; Wheeler (1992; 1998) described subsistence harvest and use patterns for the GASH area. Also, Wolfe and Scott (2010) provide comprehensive susbsietnce harvest data for Grayling and Anvik from 2008. Despite differing cultural affiliations, the subsistence resource base and regulatory context of these 3 communities is similar, and their harvest patterns generally reflect this similarity, especially when compared to Kuskokwim River communities.

The subregional harvest patterns of the 3 participating Yukon River communities show the heavy reliance on large land mammals and fish that is characteristic of largely boreal forest, riverine communities in Alaska. On average, households from these 3 communities harvested 11 different resources and used about 15 resources. The average household harvest ranged from 947 edible pounds to 1,675 lb. Per capita harvests ranged from 246 lb to 391 lb, with an average of 312 lb per person. While the total subsistence harvest for all 3 communities shows large contributions of nonsalmon fish species, birds, and vegetation species, residents of Russian Mission, Anvik, and Grayling harvested more moose and salmon than any other resource or resource category in 2011. It is important to keep in mind, however, that Chinook salmon returns to the Yukon River have been poor or below average since the early 2000s; in 2011, Yukon River fishers experienced significant restrictions on their Chinook salmon fishing practices and fishers were encouraged to actively take less than they needed or would take during years of healthy returns (Fall et al. 2013). It is unclear how these restrictions affect the harvest profile presented here, but it is likely that reliance on salmon, particularly Chinook salmon, would have been even stronger.

These patterns stand in contrast to those found in lower, central, or upper regions of the Kuskokwim River. Figure 11-4 shows the per capita subsistence harvest in edible pounds by resource category for Russian Mission, Anvik, and Grayling in relation to Kuskokwim River communities by subregional average. The harvest composition of the 3 Yukon River communities differs from the 3 Kuskokwim River subregions; in contrast to the harvest dominated by salmon and nonsalmon fish species in the lower Kuskokwim, by salmon in the central Kuskokwim, and by land mammals in the upper Kuskokwim River region, the harvest composition of Yukon river communities shows a high proportion of the harvest made up of both salmon and land mammals, with intermediate harvests of nonsalmon fish species.

A number of environmental and regulatory conditions specific to the Yukon River may account for these differences. Several environmental factors distinguish Yukon River communities from nearby Kuskokwim River communities, including a relatively robust moose population in comparison to the lower and central Kuskokwim River regions, the presence of large runs of Arctic lamprey, and the presence of distinct summer

6. A commonly used acronym that refers to Grayling, Anvik, Shageluk, and Holy Cross.

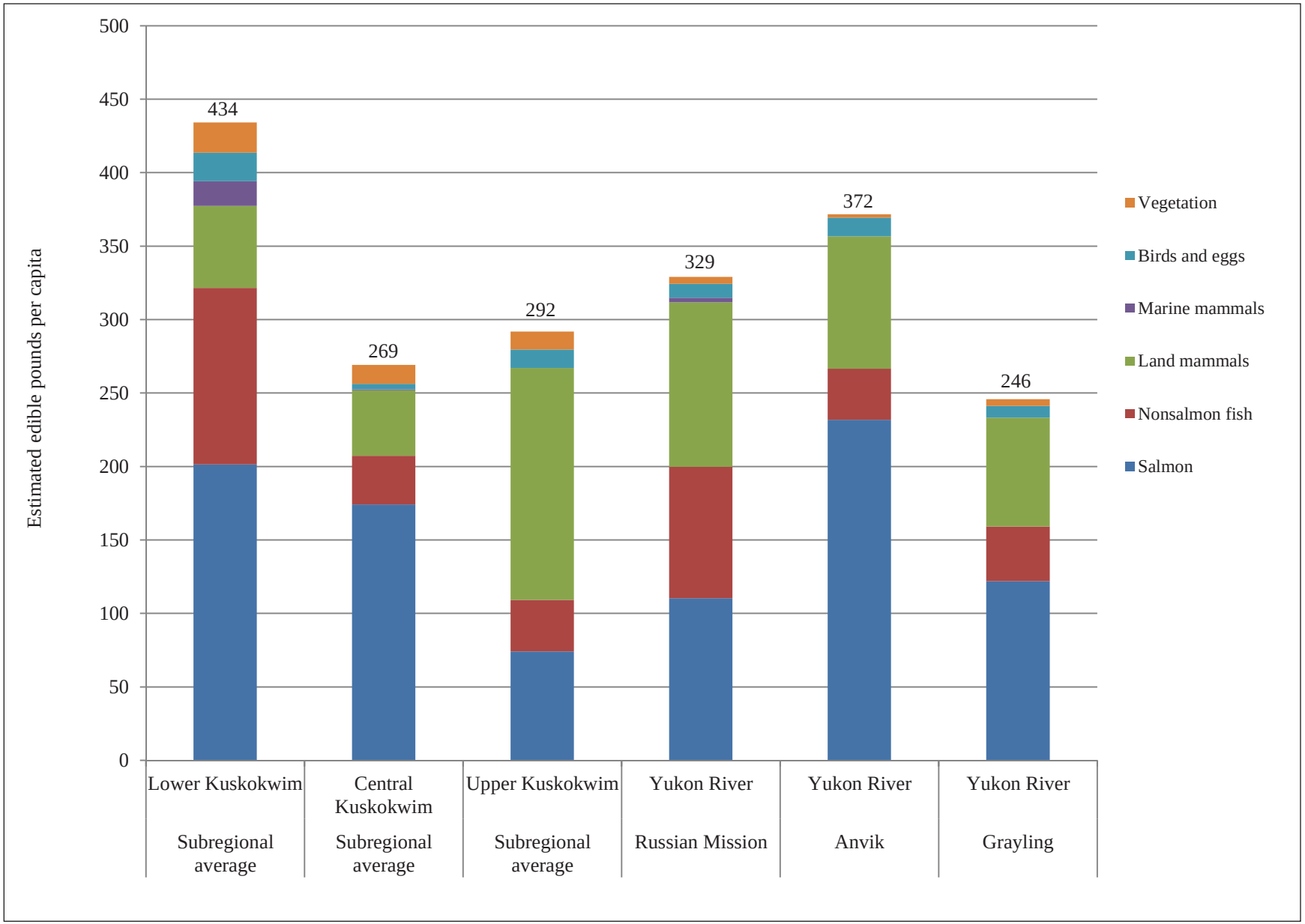


Figure 11-4.–Per capita harvest by category comparisons, Kuskokwim and Yukon river communities, 2011.

and fall chum salmon runs on the Yukon River. As previously described, salmon management on the Yukon River during the study year for these communities was more conservative than on the Kuskokwim River, and this may also account for some of the difference in harvest composition.

While harvest patterns between the Yukon and Kuskokwim rivers are distinct, historical information as well as subsistence sharing data, land use mapping data, and ethnographic data collected as part of this research program attest to the extensive interconnectedness of Kuskokwim and Yukon river communities in Western Alaska. Information from previous subsistence research in the region provides multiple examples of inter-drainage sharing or trade of subsistence resources as well as inter-drainage travel for subsistence hunting and fishing (Jonrowe n.d. [c1980]:4; Stokes 1985:289; Brelsford, Peterson, and Haynes 1987:23; Andrews 1989:327; Coffing 1991:69, 146, 173).

More recent data from Kuskokwim and Yukon river communities collected during the 3 phases of the Donlin Creek Mine Subsistence Research Program also highlight the extensive sharing networks between the two rivers. Table 11-1 presents information on the sharing of subsistence resources between Kuskokwim and Yukon river communities surveyed as part of this extended survey effort. Further, network figures for each of the 22 participating communities provide information about food exchanges between households within the community and between community households and other communities. In nearly every community surveyed, there are exchange connections between Yukon and Kuskokwim communities. For example, Brown et al. (2012:54) documents subsistence food exchanges between households in Aniak and at least 6 Lower or lower Middle Yukon River communities. The proximity of Aniak to the Yukon River at the Paimiut Slough area partially explains these connections. However, communities in other parts of the Kuskokwim River also connect to Yukon River communities through food exchange networks. In this study, McGrath households reported sharing relationships with at least 5 Yukon communities, and Kwethluk households reported connections to at least 3 Yukon communities (C. L. Brown et al. 2013:156).

In Table 11-1, marked cells indicate at least 1 instance of sharing between a Kuskokwim River community and a Yukon River community. Sharing information was collected primarily to identify the role of subsistence sharing networks between households in individual communities rather than sharing between communities, and not all households in each community were surveyed. In addition, data have not been collected for multiple communities in each drainage, and data were omitted for several communities due to concerns for the confidentiality of respondents. As a result, this table is not comprehensive and should be read to portray a minimum of sharing connections. In spite of these limitations, it is clear that extensive sharing of subsistence resources occurs between individual Yukon and Kuskokwim river communities. Further, the sharing of subsistence resources between communities connects the drainages in important ways: a disruption or change in the acquisition of resources in Aniak, for example, may well have implications for subsistence food acquisition in Yukon River communities that exchange resources with Aniak households.

Beyond sharing patterns that mark the social relationships between this area of the Yukon River and Kuskokwim River communities, the connections between Yukon and Kuskokwim river communities can be seen in the aggregated search and harvest areas for the communities included in the Donlin Creek Mine

Table 11-1. – Community sharing network, Kuskokwim and Yukon river communities, 2011.

	Kotlik	Alakanuk	Emmonak	Mountain Village	Pilot Station	Marshall	Russian Mission	Holy Cross	Anvik	Grayling	Shageluk	Nulato	Kaltag	Galena	Ruby
Tuntutuliak						X								X	
Napakiak					X										
Napaskiak	X					X								X	
Nunapitchuk												X			
Kasigluk							X								
Bethel				X		X	X							X	
Kwethluk				X		X	X								
Akiak			X		X		X								
Tuluksak			X	X		X	X							X	
Lower Kalskag						X	X								
Upper Kalskag						X	X	X	X					X	
Aniak			X			X	X	X	X	X	X				
Chuathbaluk															
Napaimute		X		X	X		X	X							
Crooked Creek							X								
McGrath	X				X			X	X	X	X		X		X
Takotna								X							

Subsistence Research Program. Figure 11-5 shows a clear overlap of use areas beginning in the lower Yukon River around Mountain Village, extending upriver to Holy Cross and up the Innoko River, including land areas both south and north of the Yukon River around Russian Mission and Paimiut Slough. Indeed, much of the overlap around Paimiut Slough, including the lower reaches of GMU 21E, is strongly influenced by the harvest and use of 2 resources: moose and nonsalmon fish, specifically northern pike.

In the past 2 decades, and increasingly in recent years, low moose populations in the Central Kuskokwim area (GMU 19A) have led to increased use of GMU 21E for moose hunting by Kuskokwim River residents. The use of GMU 21E by Kuskokwim River residents for subsistence hunting and fishing is not a new occurrence: some central Kuskokwim River respondents in this study described lifelong ties to certain areas in GMU 21E. However, following moose population declines in the area beginning in the early 1990s (Seavoy 2010:287; C. L. Brown et al. 2012:355–359), there has been an increase in moose hunting in GMU 21E by residents from both lower and central Kuskokwim River communities who formerly hunted moose in GMU 19A. This practice likely increased further following BOG actions in March 2006 that closed a portion of GMU 19A to all moose hunting and placed the rest under a Tier II hunt structure. While related user conflicts in this area were not discussed extensively by respondents in any of the participating communities as part of the Donlin Gold study, planning processes, including the Central Kuskokwim and Yukon–Innoko moose management planning efforts that occurred between 2002 and 2006 (ADF&G 2004; 2006), as well as the multiple BOG deliberations on GMU 19A moose regulations, clearly outlined local concerns about hunting access to and pressure on the area around Paimiut Slough and into GMU 21E. The area remains an important hunt location for users from GMUs 21E, 19A, and 18 because of the relatively abundant moose populations.

Paimiut Slough and the Innoko drainage are also focal spots for the harvest of northern pike. Since at least the mid-2000s, residents of the GASH region have expressed concern about the seasonal catch and release practices of sport anglers in the Reindeer Lake and Innoko River area during the summer as well as the winter subsistence harvests of northern pike by Kuskokwim River residents in Paimiut Slough (C. Brown et al. 2005). Concerns over the harvest of northern pike near Paimiut Slough culminated in a proposal to the BOF in January 2013, submitted by the GASH Fish and Game Advisory Committee, to establish bag and possession limits in all of the Innoko River drainage, including all waters draining into and waters of the Yukon River from Holy Cross downstream to and including Paimiut Slough (Alaska Board of Fisheries 2012). The proposal would have instituted a daily harvest limit for northern pike out of the area, effectively requiring fishermen to go home once they obtained the daily limit to process and store their catch before returning later for additional fishing. For fishers from the Kuskokwim River or the Lower Yukon, this could entail traveling great distances for just a few fish at a time. The proposal was ultimately not adopted into regulation in the absence of a demonstrated biological concern for the northern pike populations in the area, but it remains an issue of conflict with users from outside of the immediate area and attests to the importance of the general area to the subsistence pursuits of users from a broad region covering the Kuskokwim and Yukon rivers.

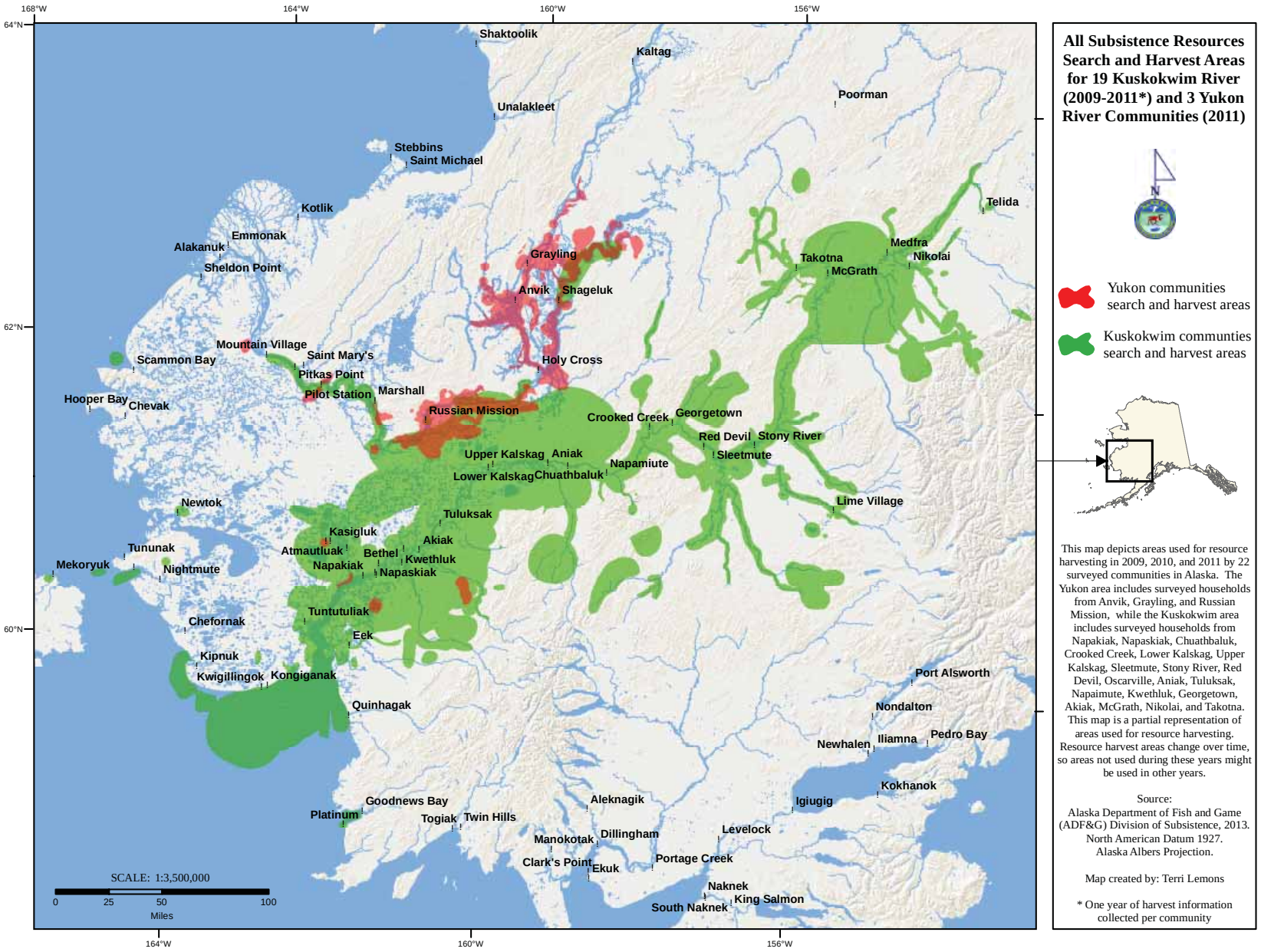


Figure 11-5.–All subsistence resources search and harvest areas for 19 Kuskokwim River (2009–2011) and 3 Yukon River communities (2011).*

In sum, several points emerge in the consideration of subsistence harvest and use patterns between the Yukon and Kuskokwim rivers. While differences exist in the actual patterns of subsistence harvests, the relative ease in access between the two drainages results in an overall pattern of overlap in harvest areas. This access, together with historical relationships and more recent connections described in earlier ethnographic literature, suggests that decreasing abundance of resources in one drainage (particularly moose) could potentially lead to increasing use in the other. As such, despite being separate river systems, changes in the subsistence resource base of one river may affect subsistence practices and patterns of the other.

Drainagewide Patterns

In addition to requesting information about subsistence harvest quantities and sharing, surveys recorded information on demographics, jobs and income, food security, and subsistence land use areas. The following sections describe this information in the context of all communities surveyed from 2009–2011 on a broad scale, highlighting key drainage-wide patterns.

DEMOGRAPHICS

The 17 permanent Kuskokwim River communities surveyed in this study had a total estimated population of 4,365 with an average of 257 individuals per community. An estimated 87% of residents in the 17 study communities are Alaska Native, the majority having Yup'ik (primarily lower and central Kuskokwim River) and/or Athabascan heritage (primarily central and upper Kuskokwim River). Populations ranged from 31.9 in the smallest community of Red Devil to 713 in Kwethluk, the largest community in this study. In general, Lower Kuskokwim River communities have shown dramatic growth over the past 30 years while most Central and Upper Kuskokwim River communities' populations have remained relatively stable or decreased (ADLWD 2014). Related to these differences in population growth, most communities in the Lower Kuskokwim River are large relative to the Central and Upper Kuskokwim River regions, and there is a trend towards a higher average age and smaller household size along a downriver to upriver gradient (Figure 11-6).

JOBS AND INCOME

Respondents throughout this study emphasized the relationship between monetary income and subsistence harvests. Cash was widely described as essential to many subsistence activities that require the purchase of manufactured equipment, supplies, and fuel, yet many respondents also described occasional conflicts between standard work schedules and the flexibility that is often required for subsistence harvest and processing activities. Surveys in all study communities collected information on income from employment as well as from other sources. Figure 11-7 shows per capita income for surveyed Kuskokwim River communities other than Georgetown and Napaimute. The large difference between per capita income in the regional and

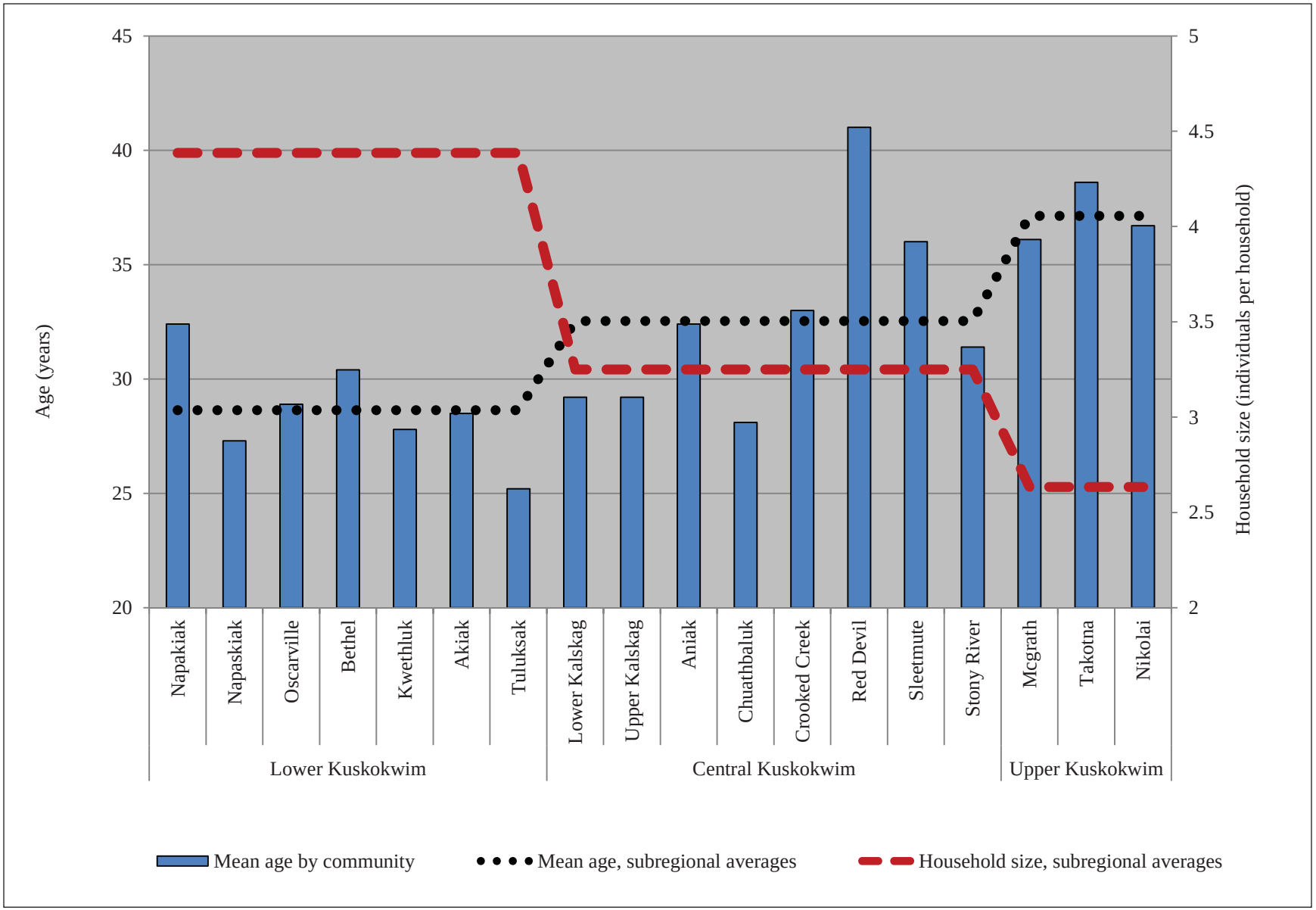


Figure 11-6.–Average household size, Kuskokwim and Yukon river communities, 2011.

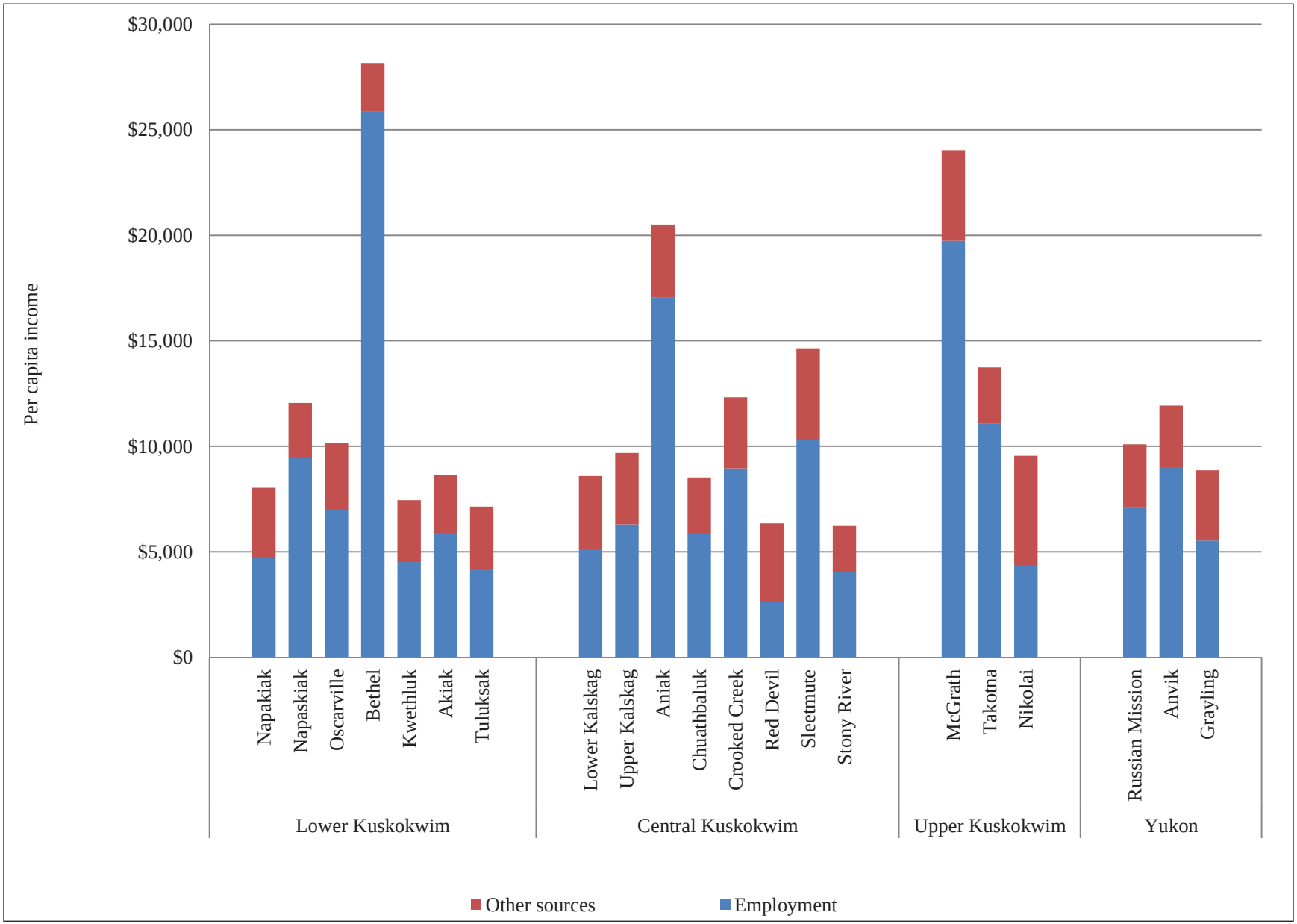


Figure 11-7.–Comparison of per capita income by community, Kuskokwim and Yukon river communities, 2011.

subregional hub communities of Bethel[7], Aniak, and McGrath is apparent, and is primarily due to more employment opportunities in these communities. While relationships between demographic variables, employment characteristics, and subsistence harvests have been explored in previous research (Wolfe 1981; Wolfe et al. 1984) at this time an in-depth analysis of similar relationships applicable to the Kuskokwim River has not been completed for this study but remains an avenue for future research. It is apparent, however, that the levels of cash income in most Kuskokwim River communities, including the regional and subregional hubs, do not easily provide for local residents' food needs alone, underlining the need for continued subsistence harevsts. While subsistence hunting and resources figure prominently in the cultural and social fabric of these communities, they are also important economically, Respondents emphasized that low levels of cash income combined with the high cost of store bought food in surveyed communities result in subsistence foods being vital for many households.[8]

FOOD SECURITY

As described in the Methods chapter, the "food security" component of the survey used a modified version of a standard national questionnaire to assess whether or not each surveyed household had enough food to eat, whether from subsistence sources or from market sources.

The percentage of food secure (high or marginal food security) households in all surveyed Kuskokwim and Yukon river communities ranged from a low of 52% in Lower Kalskag to a high of 94% for Napaimute households. The percentage of households that reported very low food security ranged from 0% in Napaskiak, Oscarville, Napaimute, Crooked Creek, and Grayling to a high of 22% in Lower Kalskag. Figure 11-8 and Figure 11-9 show the average food security score for all Kuskokwim and Yukon river communities surveyed in phases 1–3 of this project alongside state and national averages (top of figure), as well as scores for individual communities (bottom of figure) grouped by river and ordered from downriver to upriver.

Community level responses to food security questions/statements reported in this study can be compared to responses collected on State of Alaska and national levels. In 2011, food security reports from Alaska households were similar to those from all U.S. households: 85% of United States and 86% of Alaska households were food secure, 9% of United States and 10% of Alaska households reported low food security, and 6% of United States and 5% of Alaska households reported very low food security. Comparing state and national results to the average for all communities surveyed for study years 2009–2011, the average indicates that total food security is generally lower in most Kuskokwim River communities than for the Alaska statewide and United States national averages. Similar to other results presented in this study, food

7. While Bethel was not included as a study community in this project, its role as a regional hub community warranted inclusion here for the purpose of comparison. Bethel data were collected in 2013 for study year 2012 as part of a separate project (Ikuta, Hiroko, David M. Runfola, and David S. Koster. In prep. *Bethel Subsistence, 2012: Wild Resource Harvests and Uses, Land Use Patterns, and Subsistence Economy in the Hub Community of the Yukon–Kuskokwim Delta*. Fairbanks: Alaska Department of Fish and Game, Division of Subsistence Technical Paper No. 393).

8. Data collected in surveyed communities in 2012 indicates cost of food ranged from 193% to 247% of the cost of foods purchased in Anchorage, Alaska (http://www.uaf.edu/files/ces/fcs/2012q1data.pdf). Per capita income for all communities was lower, and in some cases much lower, than the Alaska statewide per capita income estimate of $32,537 developed for the 2010 federal census (http://quickfacts.census.gov/qfd/states/02000.html).

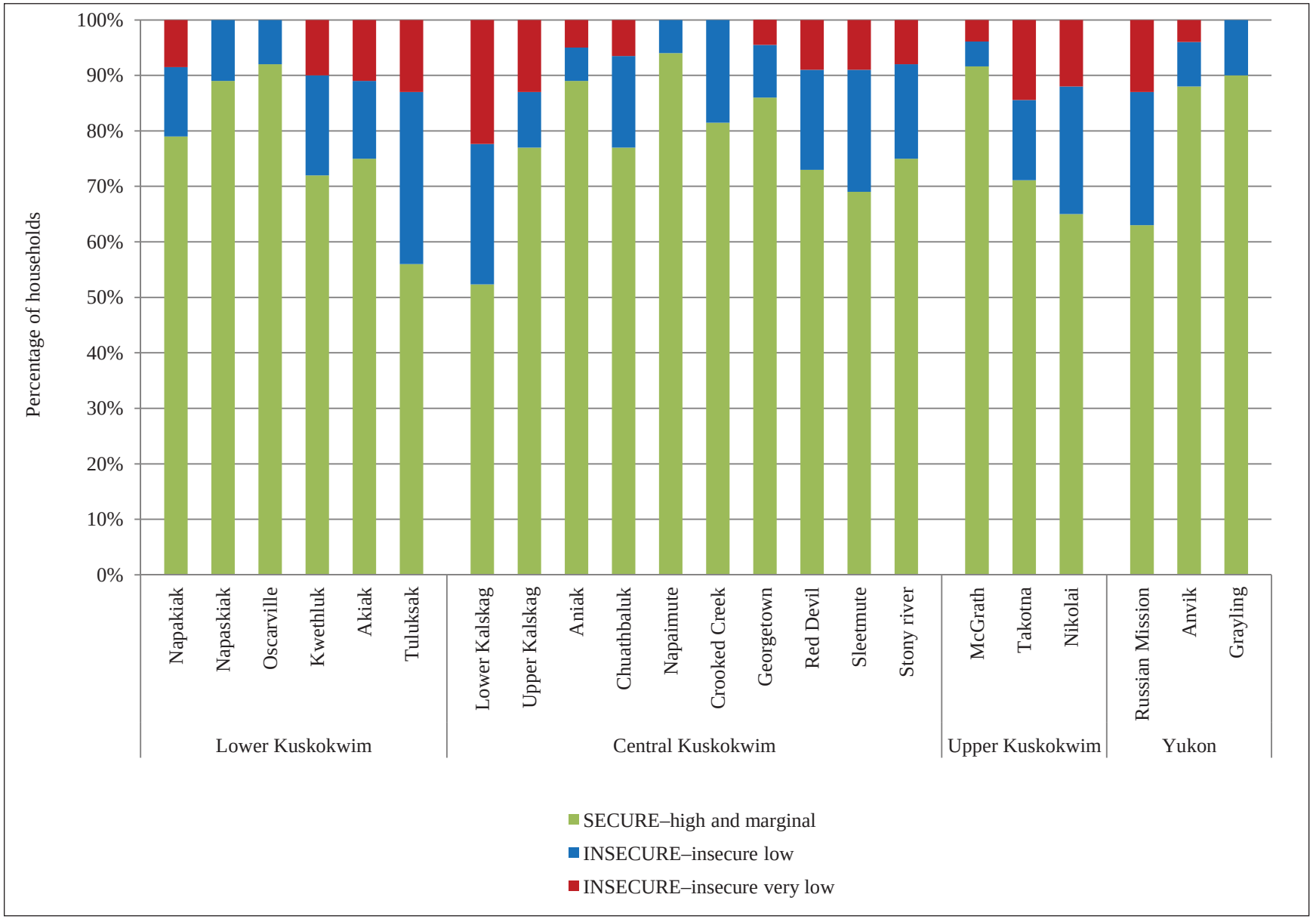


Figure 11-8.–Comparison categories of food security, Kuskokwim and Yukon river communities, 2011.

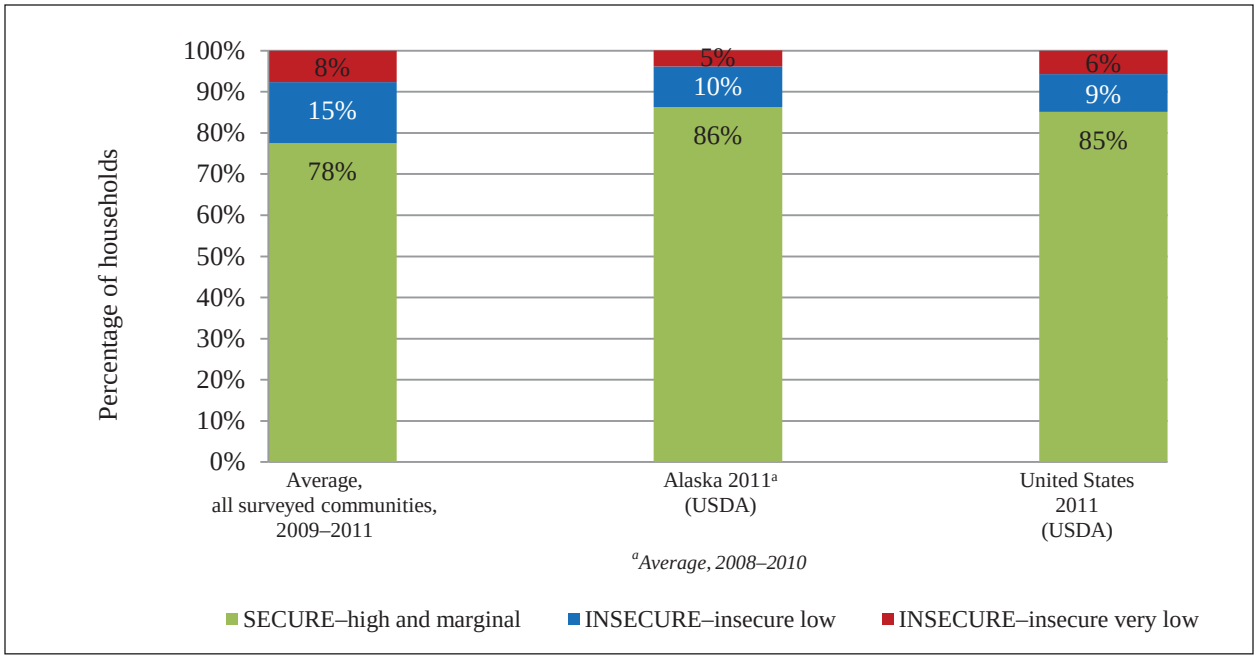


Figure 11-9.–Food security categories, Kuskokwim and Yukon river communities, 2011.

security data for one year do not necessarily reflect larger patterns within communities that may occur over multiple years. However, data collected for each community establish the beginning of a data set that, when combined with additional years' data, could be helpful in understanding community and regional food security patterns over a longer time scale. While multiple respondents emphasized that subsistence food plays an essential role in maintaining food security on a household and community level, patterns between food security, demographic variables, community income levels, and subsistence harvests are complex and have not been clearly defined at this time.

Harvest Areas

As described in the Methods section, subsistence land use mapping data were collected in all phases of this research; most surveyed households provided information on the search and harvest areas they used for subsistence during the study year for their community. Figure 11-10 depicts a partial representation of areas used by subregion for subsistence resource harvesting in 2009, 2010, and 2011. Land use information was only collected for 1 year in each of the 22 communities where land use information was collected; resource harvest areas change over time, so areas not used during one year may be used in other years. Residents of the 4 study subregions utilized extensive subsistence resource search and harvest areas, in total encompassing approximately 24,691 square miles (slightly larger than the state of West Virginia). While each community and subregion has unique land use patterns influenced by multiple factors, residents in all regions described particularly extensive use of river corridors and surrounding areas. The following sections provide an overview of land use areas by subregion and highlight areas of overlap between different subregions that are

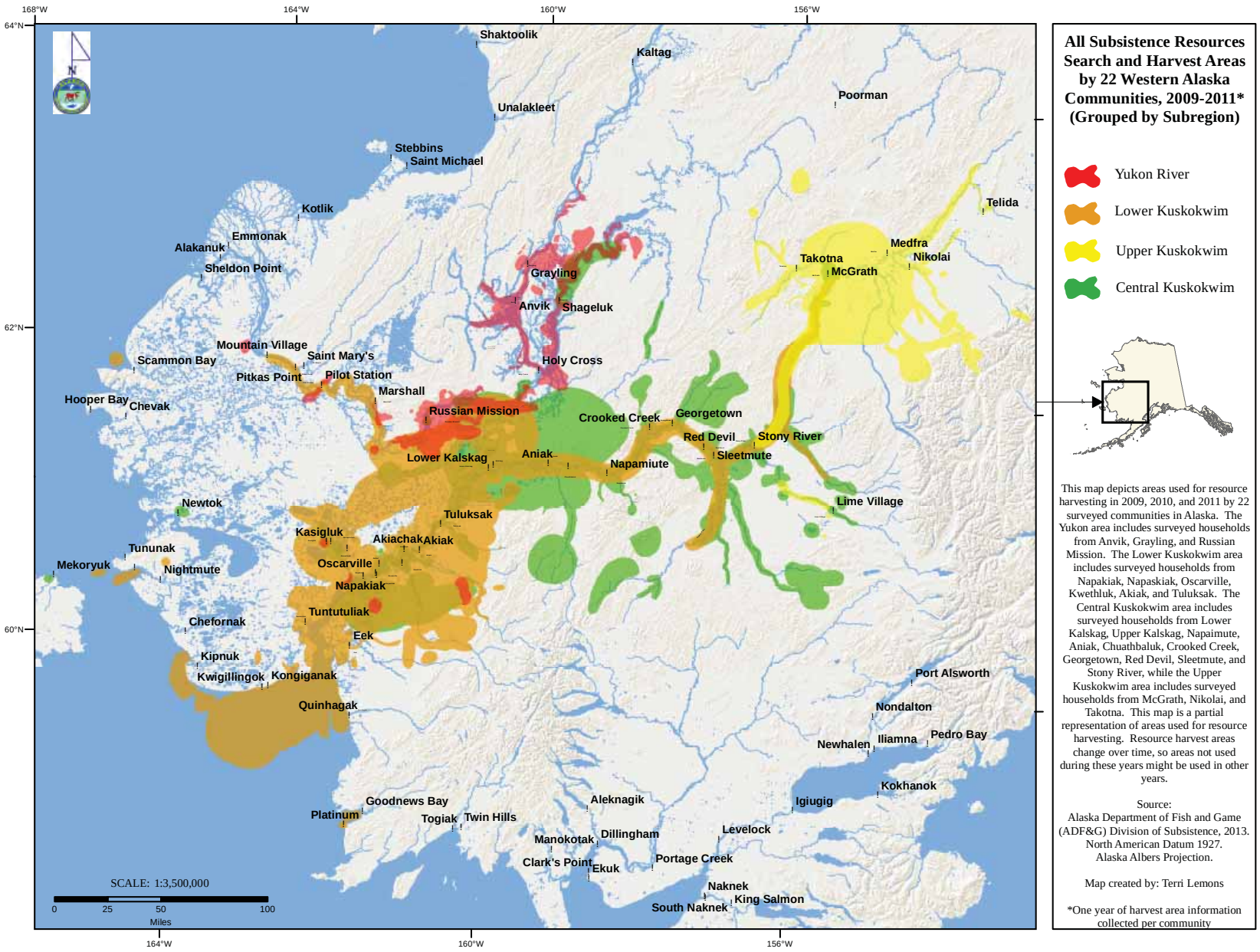


Figure 11-10.–All subsistence resources search and harvest areas by 22 Western Alaska communities, 2009–2011 (grouped by subregion).*

important to understanding regionwide subsistence relationships. It is important to note that the number of communities surveyed in each subregion varied; this likely accounts for much of the apparent disparity in size between different subregions' search and harvest areas.

Residents of the 6 Lower Kuskokwim River communities reported nearly continuous search and harvest areas ranging from Kuskokwim Bay and extending upriver along the mainstem of the Kuskokwim River and its tributaries to the community of McGrath. Search and harvest areas also included areas in the vicinity of the tundra villages of Atmautluak, Nunapitchuk, and Kasigluk, areas extending to the northern Johnson River drainage and Portage Lakes region, areas on the Yukon River extending from Mountain Village to approximately 30 miles upriver from the community of Russian Mission, and areas along the Bering Sea Coast ranging from Scammon Bay in the north and south to Goodnews Bay.

Residents of the 10 Central Kuskokwim River communities described search and harvest areas extending along the mainstem of the Kuskokwim River, ranging from Tuntutuliak to approximately 25 miles upriver from Stony River. Other land use areas included the Aniak, Holtina–Hoholitna, Stony, George, and Swift river drainages; much of the area near Bethel ranging from south of the Kuskokwim River and into the Kilbuck Mountains, areas extending north of the Kuskokwim River in the Portage Lakes region and extending along a stretch of the Yukon River in the vicinity of Russian Mission and Holy Cross, and smaller land use areas near Mekoryuk, Newtok, along the Innoko River near Shageluk, and near McGrath.

Residents of the 3 Upper Kuskokwim River communities also reported nearly continuous search and harvest areas, although these areas were comparatively more limited in geographic scope, likely related to small populations and number of communities in this subregion. Respondents described use areas along the mainstem of the Kuskokwim River from Stony River to Telida, which is located on the Swift Fork of the Kuskokwim River. Search areas included areas south of the Kuskokwim River, including the Big River and South Fork drainages, north along the Takotna River, and the upper reaches of the Innoko River drainage, and also included smaller search and harvest areas along the Stony River near Lime Village and along the Kuskokwim River near Red Devil, Georgetown, Crooked Creek, and Aniak

Residents of the 3 surveyed Yukon River communities reported that their search and harvest areas generally were limited to the mainstem of the Yukon River and the Innoko River drainage. Respondents described fairly continuous use areas along the Yukon River, beginning approximately 10 miles downriver from Russian Mission and ending approximately 30 miles upriver of Grayling; other search and harvest areas included the Anvik and Innoko river drainages, the Portage Lakes region, and distinct locations on the Yukon River near Marshall, Pilot Station, and Mountain Village. Respondents also pointed out use areas in the Kuskokwim River region, which included the mouth of the Johnson River, areas east of Tuntutuliak, areas south of Tuluksak, and a small area near the tundra villages of Atmautluak, Nunapitchuk, and Kasigluk.

While each subregion exhibited unique land use patterns, it is clear that there are areas of significant overlap between different subregions. The main Kuskokwim River corridor is extremely important to subsistence users in all 3 Kuskokwim River subregions, and overlapping use areas between subregions are particularly

noticeable in the pursuit of moose. Multiple Lower Kuskokwim River residents described search areas for moose extending into the Central Kuskokwim River region, and all 3 Kuskokwim subregions described utilizing the mainstem of the river immediately upstream of Stony River for this purpose. Caribou search and harvest areas were also shared to some extent between the Lower and Central Kuskokwim river regions, especially in the Eek Lake region. Residents from both the Lower and Central Kuskokwim River regions also reported limited areas of overlap for salmon fishing along the mainstem of the Kuskokwim River, both for drifting gillnetting and setnet sites. Whitefish Lake in the area near Lower and Upper Kalskag was another area utilized by both the Lower and Central Kuskokwim region to harvest nonsalmon fish, ducks and geese, and berries and greens.

As mentioned previously in the section "Yukon–Kuskokwim Relationships" there were several areas of overlap between Yukon and Kuskokwim river communities. The Middle Yukon area near Russian Mission is used by Yukon River residents as well as Central and Lower Kuskokwim River residents for moose hunting. Yukon and Central Kuskokwim river residents both utilized the Innoko River drainage near Shageluk for this purpose. Interestingly, while residents of the Lower Kuskokwim subregion described search and harvest areas for moose on the mainstem of the Yukon River from Russian Mission to Mountain Village, there was very little moose hunting activity reported in that region by surveyed Yukon River communities. This may reflect the ability of surveyed Yukon River respondents to harvest moose close to their communities relative to many Kuskokwim River communities where moose densities are generally lower. Yukon River residents reported limited search and harvest areas in the Kuskokwim River drainage, including using the area near Eek Lake and the Kisaralik River, to harvest caribou, and the area surrounding the mouth of the Johnson River to harvest nonsalmon fish species.

Overlapping areas between the 4 subregions highlight the flexibility of harvest areas in response to changing resource distribution. For example, multiple respondents described the willingness to travel great distances in pursuit of highly desirable resources such as moose if these were not available near their own community, and these great distances are evidenced in subsistence land use data. Although more limited in scope, this also appears to be the case for caribou search and harvest areas utilized by Lower and Central Kuskokwim as well as Yukon River residents. Other areas of overlap, particularly between the Lower and Central Kuskokwim subregions, appear to be based on geographic proximity between subregions and particularly productive areas (Whitefish Lake).

Family or personal connections between subregions are also common throughout Western Alaska, and this factor cannot be discounted when examining similar use areas by residents of multiple subregions. There are multiple instances throughout this research of subsistence users having family or personal ties to a particular area outside of their current residency; many of these residents described that returning, often on an annual basis, to family areas to participate seasonally in subsistence activities is extremely important. Related to this, there are likely many subsistence users with family ties to the areas described throughout all 3 phases of this research program who lived outside of the study communities during data collection and for whom land use information may not have been collected due to survey limitations. As a result of these

realities and the limits of single year data collection, use areas depicted here should always be considered a minimum representation of the extent of land use over time and by all individuals who identify with the area as subsistence users.

Conclusion

The results of this 2011 survey further contribute to filling a data gap regarding subsistence in Western Alaska. Analyses of harvest levels for specific species, demographics, harvest areas, and local economies help to characterize contemporary subsistence patterns in Western Alaska and also contribute to knowledge of subsistence statewide. This survey also collected harvest assessment data for multiple subsistence resources, information on subsistence food distribution networks, and information on food security levels for all of the study communities; in all cases, this is the first time these types of data were collected.

Communities in Western Alaska have experienced a great deal of change in their subsistence patterns, despite continuing their historical and traditional hunting, fishing, trapping, and gathering practices. Given the dearth of historical harvest data, it is difficult to track changes in harvest levels over time across species. However, several issues emerge that have variable effects on the communities of the Yukon and Kuskokwim river drainages. Annual salmon returns, especially Chinook salmon, have been poor in both rivers for the last several years, causing hardship for most users. Fishers have dealt with increasingly conservative management of subsistence fishing, in some cases including extended closures of the fisheries. For most communities on the Lower Kuskokwim and Yukon rivers, salmon account for the majority of their total subsistence harvests and Chinook salmon usually constitute a majority of the salmon harvest; a decline in fishing opportunities for Chinook salmon poses serious concerns for many subsistence based communities. Many households in this study alone discussed the need to replace Chinook salmon with other subsistence species, store-bought food, or to simply go without. It remains to be seen what the long term effects of these declines will be or how communities will reorganize their subsistence harvests to accommodate lesser salmon harvests should the declines continue. Populations of moose, another central resource in most of the communities in this study, are increasing in the Lower Kuskokwim area, have increased in the Upper Kuskokwim as a result of predator control efforts, and appear to be stable in GMUs 21E and 21A. However, continued lack of opportunity in the Lower Kuskokwim and in the Central Kuskokwim regions force many residents to travel great distances to harvest moose and put increased pressure on those areas with stable moose populations.

All of these issues underscore the vulnerability of subsistence economies but also the resilience of communities in the face of change. While historical harvest data are limited, results indicate that for many communities in this study, harvest levels for certain subsistence resources have likely declined over the past few decades. Respondents discussed changes in their harvesting practices, including decreases in resource availability as described above for Chinook salmon, employment conflicts, increases in costs of fuel, and reported changes in weather patterns and landscape characteristics. In spite of apparent declines in subsistence harvests for some communities, results indicate that harvests in Western Alaska remain among the

highest in the state (Fall 2014). Respondents also continuously reported a local emphasis on the importance of subsistence hunting, fishing, and gathering, seen, for example, in the dense subsistence sharing networks that linked many, if not all, households in each community. Such cultural patterns provide a clear measure against the insecurity of fluctuating harvests and external pressures. In sum, subsistence in Western Alaska remains a vital part of cultural, economic, and social aspects of community life. However, these communities also regularly experience a great deal of pressure that can affect their subsistence practices, highlighting the need for sound management of resources and the continuing regulatory protection of subsistence patterns.

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Appendix A–Survey Instrument

Appendix A–Survey

COMPREHENSIVE SUBSISTENCE SURVEY

NAPAKIAK, ALASKA

From January 1, 2011 to December 31, 2011

DONLIN CREEK PHASE 3

This survey is used to estimate subsistence harvests and to describe community subsistence economies. We will publish a summary report, and send it to all households in your community. We share this 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 subsistence, 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:		
STRATUM ID:	1	1
COMMUNITY ID:	NAPAKIAK	237
INTERVIEWER:		
INTERVIEW DATE:		
START TIME:		
STOP TIME:		
DATA CODED BY:		
DATA ENTERED BY:		
SUPERVISOR:		

PHOTO BY JAMES VAN LANEN

COOPERATING ORGANIZATIONS

NAPAKIAK I.R.A. COUNCIL
BOX 34069
NAPAKIAK, AK 99634

(907) 589-2135

DIVISION OF SUBSISTENCE
ALASKA DEPTARTMENT OF FISH & GAME
1300 COLLEGE RD
FAIRBANKS, AK 99701

907-459-7320

Page 1

HOUSEHOLD MEMBERS

HOUSEHOLD ID

First, I would like to ask about the people in your household, permanent members of your household who sleep at your house. This includes students who return home every summer. I am NOT interested in people who lived with you temporarily, even if they stayed several months.

Last year, that is, between January 1, 2011, and December 31, 2011, WHO were the head or heads of this household?

Is this person answering questions on this survey?		How is this person related to HEAD 1?	Is this person MALE or FEMALE?	Is this person an ALASKA NATIVE?	How OLD is this person?	Except for school or military service, has this person always lived in Napakiak?	*If person has NOT always lived in Napakiak*			
							WHEN did they LAST move here?	From WHERE did this person move?	Where is this person's birth home?*	TOTAL years lived here?
								community in Alaska OR state in the U.S. OR country		
ID#	*circle*	*relation*	*circle*	*circle*	*age*	*circle*	*year*			*years*
HEAD	Y N		M F	Y N		Y N				
1										
NEXT, enter spouse or partner - if household has a SINGLE HEAD, leave HEAD 2 row BLANK, and move to PERSON 3										
HEAD	Y N		M F	Y N		Y N				
2										
BELOW, enter children (eldest to youngest), grandchildren, grandparents, or anyone else living full-time in this household										
PERSON 3			M F	Y N		Y N				
3	0									
PERSON 4			M F	Y N		Y N				
4	0									
PERSON 5			M F	Y N		Y N				
5	0									
PERSON 6			M F	Y N		Y N				
6	0									
PERSON 7			M F	Y N		Y N				
7	0									
PERSON 8			M F	Y N		Y N				
8	0									
PERSON 9			M F	Y N		Y N				
9	0									
PERSON 10			M F	Y N		Y N				
10	0									
PERSON 11			M F	Y N		Y N				
11	0									
PERSON 12			M F	Y N		Y N				
12	0									
PERSON 13			M F	Y N		Y N				
13	0									
PERSON 14			M F	Y N		Y N				
14	0									

* *"BIRTH HOME" means the place this person's PARENTS WERE LIVING when this person was born.*

PERMANENT HH MEMBERS: 01 **NAPAKIAK: 237**

HOUSEHOLD PARTICIPATION

HOUSEHOLD ID

This page asks about your household members' participation in subsistence activities, such as fishing, hunting, gathering, or processing subsistence foods.

Starting with the first head of household, and thinking just about LAST YEAR, did this person...

Repeat for each person in the household. Responses should be on the same row on the left and right pages.

	Fish		Big Game		Marine Mammals		Birds & Eggs		Plants & Berries		Hunting Effort
	...try to fish or shellfish?	...process fish or shellfish?	...hunt for or try to trap land animals?	...process land animals?	...hunt for marine mammals?	...process marine mammals?	...hunt for birds or gather eggs?	...process birds or eggs?	...gather berries or plants?	...process berries or plants?	How many days did this person hunt MOOSE in 2011?
ID #	*circle each activity reported for each person. make no mark in other cells*										
HEAD 1	try to catch fish or shfish?	process fish or shfish?	hunt for land animals	process land animals	hunt for marine mamls	process marine mmls	hunt or gather birds or eggs	process birds or eggs	gather berries or plants	process plants	DAYS
NEXT, enter participation for spouse or partner. If household has a SINGLE HEAD, leave HEAD 2 row BLANK											
HEAD 2	try to catch fish or shfish?	process fish or shfish?	hunt for land animals	process land animals	hunt for marine mamls	process marine mmls	hunt or gather birds or eggs	process birds or eggs	gather berries or plants	process plants	DAYS
BELOW, enter participation for children, grandchildren, grandparents, or anyone else living full-time in this household											
PERSON 3	try to catch fish or shfish?	process fish or shfish?	hunt for land animals	process land animals	hunt for marine mamls	process marine mmls	hunt or gather birds or eggs	process birds or eggs	gather berries or plants	process plants	DAYS
PERSON 4	try to catch fish or shfish?	process fish or shfish?	hunt for land animals	process land animals	hunt for marine mamls	process marine mmls	hunt or gather birds or eggs	process birds or eggs	gather berries or plants	process plants	DAYS
PERSON 5	try to catch fish or shfish?	process fish or shfish?	hunt for land animals	process land animals	hunt for marine mamls	process marine mmls	hunt or gather birds or eggs	process birds or eggs	gather berries or plants	process plants	DAYS
PERSON 6	try to catch fish or shfish?	process fish or shfish?	hunt for land animals	process land animals	hunt for marine mamls	process marine mmls	hunt or gather birds or eggs	process birds or eggs	gather berries or plants	process plants	DAYS
PERSON 7	try to catch fish or shfish?	process fish or shfish?	hunt for land animals	process land animals	hunt for marine mamls	process marine mmls	hunt or gather birds or eggs	process birds or eggs	gather berries or plants	process plants	DAYS
PERSON 8	try to catch fish or shfish?	process fish or shfish?	hunt for land animals	process land animals	hunt for marine mamls	process marine mmls	hunt or gather birds or eggs	process birds or eggs	gather berries or plants	process plants	DAYS
PERSON 9	try to catch fish or shfish?	process fish or shfish?	hunt for land animals	process land animals	hunt for marine mamls	process marine mmls	hunt or gather birds or eggs	process birds or eggs	gather berries or plants	process plants	DAYS
PERSON 10	try to catch fish or shfish?	process fish or shfish?	hunt for land animals	process land animals	hunt for marine mamls	process marine mmls	hunt or gather birds or eggs	process birds or eggs	gather berries or plants	process plants	DAYS
PERSON 11	try to catch fish or shfish?	process fish or shfish?	hunt for land animals	process land animals	hunt for marine mamls	process marine mmls	hunt or gather birds or eggs	process birds or eggs	gather berries or plants	process plants	DAYS
PERSON 12	try to catch fish or shfish?	process fish or shfish?	hunt for land animals	process land animals	hunt for marine mamls	process marine mmls	hunt or gather birds or eggs	process birds or eggs	gather berries or plants	process plants	DAYS
PERSON 13	try to catch fish or shfish?	process fish or shfish?	hunt for land animals	process land animals	hunt for marine mamls	process marine mmls	hunt or gather birds or eggs	process birds or eggs	gather berries or plants	process plants	DAYS
PERSON 14	try to catch fish or shfish?	process fish or shfish?	hunt for land animals	process land animals	hunt for marine mamls	process marine mmls	hunt or gather birds or eggs	process birds or eggs	gather berries or plants	process plants	DAYS

PERMANENT HH MEMBERS: 01 **NAPAKIAK: 237**

EMPLOYMENT STATUS

HOUSEHOLD ID

The next few pages ask about jobs, income, expenses, and equipment. We ask about these things because we are trying to understand all parts of the community economy. Many people use wages from jobs to support subsistence activities, and subsistence equipment can be very expensive.

Starting with the first head of your household, what job or jobs did he or she have last year?

INCLUDE EVERY PERSON 16 YEARS AND OLDER ON THIS PAGE, EVEN IF THEY DO NOT HAVE A JOB!

For each member of this household born before 1996, list EACH JOB held last year. For household members who did not have a job, write: RETIRED, UNEMPLOYED, STUDENT, HOMEMAKER, DISABLED, etc. There should be AT LEAST one row for each member of this household born before 1996 (this includes anyone who is 16 years old or older).

order | role | res.	Person Code from page 2	What kind of work did he or she do in this job?	For whom did he or she work in this job?	In the past year, what months did he or she work in this job?	WORK SCHEDULE...** FULL TIME	PART TIME	SHIFT - FULL TIME	ON-CALL, VARIES	SHIFT - PART TIME	In the past year how much did he or she earn in this job?
	00	job title*	employer	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										
	2ND JOB			J F M A M J J A S O N D	FT	PT	SF	OC	SP	$ / Yr
2 6 910100000										
	3RD JOB			J F M A M J J A S O N D	FT	PT	SF	OC	SP	$ / Yr
3 6 910100000										
	4TH JOB			J F M A M J J A S O N D	FT	PT	SF	OC	SP	$ / Yr
4 6 910100000										
	5TH JOB			J F M A M J J A S O N D	FT	PT	SF	OC	SP	$ / Yr
5 6 910100000										
	6TH JOB			J F M A M J J A S O N D	FT	PT	SF	OC	SP	$ / Yr
6 6 910100000										
	7TH JOB			J F M A M J J A S O N D	FT	PT	SF	OC	SP	$ / Yr
7 6 910100000										
	8TH JOB			J F M A M J J A S O N D	FT	PT	SF	OC	SP	$ / Yr
8 6 910100000										
	9TH JOB			J F M A M J J A S O N D	FT	PT	SF	OC	SP	$ / Yr
9 6 910100000										
	10TH JOB			J F M A M J J A S O N D	FT	PT	SF	OC	SP	$ / Yr
10 6 910100000										

* If a person FISHES COMMERCIALLY or is otherwise SELF-EMPLOYED, list that as a separate job. For job title, enter COMMERCIAL FISHER, CARVER, SEWER, BAKER, etc. Work schedule usually will be ON CALL. For gross income from self-employment, enter revenue minus expenses.

If a person does not earn money from any kind of work, enter RETIRED, UNEMPLOYED, DISABLED, STUDENT, or HOMEMAKER or other appropriate description as the job title. Leave employer, months worked, schedule, and gross income blank.

** WORK SCHEDULE

FT - Fulltime (35+ hours/week)	1
PT - Parttime (<35 hours/week)	2
SF - Shift (2 wks on/2 off, etc.)	3
OC - On Call, Irregular	4
SP - Shift - part time	5
-- - Unemployed	0

*** GROSS INCOME is the same as TAXABLE INCOME on a W-2 form. Self-employment,

EMPLOYMENT: 23 **NAPAKIAK: 237**

OTHER INCOME

THIS PAGE IS ONLY FOR INCOME THAT IS NOT EARNED FROM WORKING

HOUSEHOLD ID

Between JANUARY 1, 2011, and DECEMBER 31, 2011…
…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 2011? *circle one*	TOTAL amount all members of your household received from _____ in 2011. *dollars*
DIVIDENDS	ALASKA PERMANENT FUND DIVIDEND	Y N	$ /YR
	32		
	NATIVE CORPORATION DIVIDENDS	Y N	$ /YR
	13		

Alaska PFD IN 2011	
1	*PFD = $1,281*
2	*PFDs = $2,562*
3	*PFDs = $3,843*
4	*PFDs = $5,124*
5	*PFDs = $6,405*
6	*PFDs = $7,686*
7	*PFDs = $8,967*
8	*PFDs = $10,248*
9	*PFDs = $11,529*
10	*PFDs = $12,810*
11	*PFDs = $14,091*
12	*PFDs = $15,372*

Regional Corporations	*Dividend*
Calista Corp	*$ 2.75*
Doyon Ltd	*$ 3.88*

Village Corporation(s)	*Dividend*
Kuskokwim Native Association	*$ 2.00*

Between JANUARY 1, 2011, and DECEMBER 31, 2011…
…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 **NAPAKIAK: 237**

EXPENSES & EQUIPMENT

HOUSEHOLD ID

EXPENSES

I'm going to read a list of household expenses...
Please tell me how much these expenses were for your household between JANUARY 1, 2011, and DECEMBER 31, 2011.

HOUSING-RELATED

HOUSING	MONTHLY Total dollars	ANNUAL Total dollars
RENT OR MORTGAGE	$ /MO	$ /YR
920,100,000		
STOVE OIL *(winter)*	$ /MO	$ /YR
STOVE OIL *(summer)*	$ /MO	
930,100,000		
FIREWOOD	$ /MO	$ /YR
930,100,300		
ELECTRICITY *(winter)*	$ /MO	$ /YR
ELECTRICITY *(summer)*	$ /MO	
920,200,000		
PROPANE	$ /MO	$ /YR
930,100,200		
WATER-SEWER GARBAGE	$ /MO	$ /YR
920,200,000		
TELEPHONE	$ /MO	$ /YR
920,200,300		
TELEVISION *(cable or satellite)*	$ /MO	$ /YR
920,200,400		

FOOD

GROCERIES	MONTHLY Total dollars	ANNUAL Total dollars
GROCERIES *(store-bought)*	$ /MO	$ /YR
940,100,100		
SUBSISTENCE FOODS *("customary trade")*	$ /MO	$ /YR
0		

SUBSISTENCE

SUBSISTENCE	MONTHLY Total dollars	ANNUAL Total dollars
GASOLINE *(used for subsistence)*	$ /MO	$ /YR
930,300,000		
AMMUNITION *(used for subsistence)*	$ /MO	$ /YR
980,520,300		
EQUIPMENT PARTS *(used for subsistence)*	$ /MO	$ /YR
940,200,000		
OTHER SUPPLIES *(used for subsistence)*	$ /MO	$ /YR

SURVEYORS: Monthly OR annual amounts are OK. When monthly expenses change (as for stove oil), collect average winter and summer amounts. Use these to estimate annual total.

CODERS: enter annual amounts only, calculating from monthly amounts as necessary.

EQUIPMENT

Now I'm going to read a list of equipment that people use to harvest subsistence foods.

Between JANUARY 1, 2011, and DECEMBER 31, 2011...
A ...did your household USE _____ for subsistence?
B ...how many working _____ did your household OWN?" *(Count only working equipment used for subsistence)*
C ...how much did these _____ COST your household? *(Enter original cost of all working equipment used for subsistence)*
D How often do you replace your _____? Every (blank) YEARS?

EQUIPMENT

Read names below; in blanks above	A Use?	B Own	C Cost	D Years
SNOWMACHINES *(used for subsistence)*	Y N		$	
980,210,100				
4-WHEELERS (ATVs) *(used for subsistence)*	Y N		$	
980,210,200				
TRUCKS OR CARS *(used for subsistence)*	Y N		$	
980,220,000				

EQUIPMENT

Read names below; in blanks above	A Use?	B Own	C Cost	D Years
BOATS *(used for subsistence)*	Y N		$	
980,110,000				
MOTORS *(for boat used for subsistence)*	Y N		$	
980,120,000				
NETS *(used for subsistence)*	Y N		$	
980,510,000				

HOUSEHOLD EXPENSES & EQUIPMENT: 25, 69 **NAPAKIAK: 237**

CASH NETWORKS

HOUSEHOLD ID

NETWORKS

Between JANUARY 1, 2011, and DECEMBER 31, 2011, who paid your expenses and who owned equipment your household used for subsistence?

role	People in your household enter person code from page 2	People in other households or other communities enter local HH code (000) or airport code (XXX)
PAID HOUSEHOLD EXPENSES 920,000,000		
BOUGHT FOODS *(store & traditional)* 940,100,100		
PAID SUBS. EXPENSES		
OWNED SUBS. EQUIPMENT 980,000,000		

If money came from unemployment, TANF, CITGO, or another institutional source, list the PERSON or HOUSEHOLD who RECEIVED the income.

NOTES

CASH NETWORKS: 67 NAPAKIAK: 237

RETAINED COMMERCIAL HARVESTS

HOUSEHOLD ID

1. Do you or members of your household USUALLY participate in commercial fisheries? ..... Y N

2. During the last year (between JANUARY 1, 2011, AND DECEMBER 31, 2011), did you or members of your household PARTICIPATE in a commercial fishery? ..... Y N

IF the answer to QUESTION 2 is NO, go to the subsistence harvests section.

IF the answer is YES, continue on this page…

During the last year,[1] did you or members of your household….

A …FISH commercially for _____?

B …KEEP any _____ from your commercial catch for your own use[2] or to share?

C Was the _____ that you kept INCIDENTAL[4] catch?

If KEEP is "yes"

Please estimate how many fish ALL MEMBERS OF YOUR HOUSEHOLD removed from commercial harvests for personal use during the last year.

Include COMMERCIALLY HARVESTED fish that members of this household gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If helping others, report ONLY THIS HOUSEHOLD'S share.

Read names below in blanks above	*A COM FISH?*	*B KEEP?*	*C INCI?*	How many were removed for your OWN USE?[5] *number*	How many were removed for your CREW?[5] *number*	How many were removed to give to OTHERS? *number*	Units[3] *specify*	*comments*
CHINOOK SALMON *KING SALMON*	Y N	Y N	Y N					
113,000,001								
SOCKEYE SALMON *RED SALMON*	Y N	Y N	Y N					
115,000,001								
COHO SALMON	Y N	Y N	Y N					
112,000,001								
CHUM SALMON *DOG SALMON*	Y N	Y N	Y N					
111,000,001								
PINK SALMON *HUMPIES*	Y N	Y N	Y N					
114,000,001								
HERRING	Y N	Y N	Y N					
120,200,001								
HALIBUT	Y N	Y N	Y N					
121,800,001								
CLAMS	Y N	Y N	Y N					
500,600,001								
CRABS	Y N	Y N	Y N					
501,000,001								
	Y N	Y N	Y N					

RETAINED COMMERCIAL HARVESTS continued on next page…

1 *"LAST YEAR" means between JANUARY 1, 2011, and DECEMBER 31, 2011.*
2 *"USE" includes eating, feeding to dogs, sharing or trading with others, etc.*
3 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.*
4 *"INCIDENTAL CATCH" means the fish kept was not being commercially fished. For example, a king salmon kept from a chum commerical fishery.*
5 *Double counting (captains' removals for crew members and crew members' removal for own uses) is fixed in analysis. Collect both.*

RETAINED COMMERCIAL HARVESTS

HOUSEHOLD ID

Fish on this page are fished for commercial and subsistence purposes at the same time, and subsistence permits are not required.

...RETAINED COMMERCIAL HARVESTS continued from previous page.

During the last year,[1]
did you or members of your household....

A ...FISH commercially for _____?
B ...KEEP any _____ from your commercial catch for your own use[2] or to share?
C Was the _____ that you kept INCIDENTAL catch?

If KEEP is "yes"

Read names below in blanks above	A COM FISH?	B KEEP?	C INCI?	*Report retained harvest on SUBSISTENCE HARVEST pages.* *comments*
LAMPREY *EEL*	Y N	Y N	Y N	
122,000,001				
SHEEFISH	Y N	Y N	Y N	
125,600,001				
BROAD WHITEFISH	Y N	Y N	Y N	
126,404,001				
HUMPBPACK WHITEFISH	Y N	Y N	Y N	
126,408,001				
LEAST CISCO	Y N	Y N	Y N	
126,406,061				
BERING CISCO	Y N	Y N	Y N	
126,406,041				
	Y N	Y N	Y N	
	Y N	Y N	Y N	
	Y N	Y N	Y N	

During the last year, did your household fish COMMERCIALLY for any other kind of fish?..... Y N

IF YES, enter the name in a blank row above, and answer the questions in that row.

1 *"LAST YEAR" means between JANUARY 1, 2011, and DECEMBER 31, 2011.*
2 *"USE" includes eating, feeding to dogs, sharing or trading with others, etc.*
3 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.*
4 *"INCIDENTAL CATCH" means the fish kept was not being commercially fished. For example, a king salmon kept from a chum commerical fishery.*

COMMERCIALLY HARVESTED RESOURCES: 03 **NAPAKIAK: 237**

SUBSISTENCE HARVESTS: SALMON

HOUSEHOLD ID

1. Do you or members of your household USUALLY fish for salmon for subsistence? ..... Y N

2. During the last year (between JANUARY 1, 2011, AND DECEMBER 31, 2011), did you or members of your household USE or TRY TO FISH FOR salmon? ..... Y N

IF the answer to QUESTION 2 is NO, go to the SALMON summary page.

IF the answer is YES, continue on this page…

During the last year[1], did you or members of your household….

A …use[2] _____?
B …receive _____ from another HH or community?
C …give _____ to another HH or community?
D …try[2] to harvest _____?
E …actually harvest any _____?

IF harvest is YES

Please estimate how many salmon ALL MEMBERS OF YOUR HOUSEHOLD got for subsistence uses during the last year. How many were…

INCLUDE salmon that members of this household gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If fishing with or helping others, report ONLY THIS HOUSEHOLD'S share of the harvest.

Read names below in blanks above	A USE?	B REC?	C GIVE?	D TRY?	E HAR?	Caught with a SET NET	Caught with a DRIFT NET	Caught with a SEINE NET	Caught with a FISH WHEEL	Caught with a ROD & REEL[3]	Caught with OTHER GEAR *(specify type)*	Units[4]	How many of THOSE were used for dog food?
						number harvested by each gear type					*amount / type*	*specify*	*dogfood*
CHINOOK SALMON *TARYAQVAK*	Y N	Y N	Y N	Y N	Y N						/		
113,000,000													
SOCKEYE SALMON *CAYAK*	Y N	Y N	Y N	Y N	Y N						/		
115,000,000													
COHO SALMON *QAKIIYAK*	Y N	Y N	Y N	Y N	Y N						/		
112,000,000													
SUMMER CHUM SALMON *KANGITNEQ*	Y N	Y N	Y N	Y N	Y N						/		
111,010,000													
FALL CHUM SALMON *KANGITNEQ*	Y N	Y N	Y N	Y N	Y N						/		
111,020,000													
PINK SALMON *AMAQAYAK*	Y N	Y N	Y N	Y N	Y N						/		
114,000,000													
SALMON - UNKNOWN	Y N	Y N	Y N	Y N	Y N						/		
119,000,000													
	Y N	Y N	Y N	Y N	Y N						/		
	Y N	Y N	Y N	Y N	Y N						/		

During the last year, did your household use any other kind of salmon? ..... Y N

IF YES, enter the name in a blank row above, and answer the questions in that row.

1 *"LAST YEAR" means between JANUARY 1, 2011, and DECEMBER 31, 2011.*
2 *"USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.*
3 *"ROD AND REEL" includes fish caught in open water with a hook and and a line attached to a rod or a pole. Jigging through the ice is "other ge*
4 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.*

NON-COMMERCIAL SALMON: 04 **NAPAKIAK: 237**

SUBSISTENCE SUMMARY: SALMON

HOUSEHOLD ID

If this household did NOT USE or HARVEST salmon last year, go to the ASSESSMENT section below.
Otherwise, continue with mapping, network, and assessment sections...

MAPPING — *Refer to data collection maps and mapping instructions to map salmon...*

NETWORKS — *...then ask the network and assessment questions below*

During the last year[1],

...who CAUGHT the SALMON your household used? (Enter most important sources first.) 110,000,000

role	People in your household enter person codc from page 2	People in other households or other communities enter local HH code (000) or airport code (XXX)"
CAUGHT SALMON 1		
...who PROCESSED the SALMON your household used? (Enter most important sources first.)		
PROCESSED SALMON 2		
...who else GAVE SALMON to your household? (Enter most important sources first.)		
GAVE SALMON TO US → 3		

ASSESSMENTS: 110,000,000

To conclude our salmon section, I am going to ask a few general questions about salmon.

During the last year[1],

...did your household use LESS, SAME, or MORE salmon than in recent years? X L S M

X = do not use

If LESS or MORE...

WHY was your use different? _____ 1

_____ 2

During the last year[1],

...did your household GET ENOUGH salmon? Y N

If NO...

What KIND of salmon did you need? _____

WHY did your household NOT get enough salmon? _____ 1

_____ 2

How would you describe the impact to your household of not getting enough last year? not noticable? (0) minor? (1) major? (2) severe? (3)

Did your household do anything DIFFERENTLY because you did NOT get enough salmon? Y N

IF YES...

What did your household do differently? _____ 1

_____ 2

NETWORKS & ASSESSMENTS OF SALMON: 66, 67 — **NAPAKIAK: 237**

SUBSISTENCE HARVESTS: WHITEFISH

HOUSEHOLD ID

1. Do you or members of your household USUALLY fish for whitefish for subsistence? ..... Y N

2. During the last year (between JANUARY 1, 2011, AND DECEMBER 31, 2011), did you or members of your household USE or TRY TO FISH FOR whitefish? ..... Y N

IF the answer to QUESTION 2 is NO, go to the next harvest page.

IF the answer is YES, continue on this page…

During the last year[1], did you or members of your household….

A …use[2] _____?
B …receive _____ from another HH or community?
C …give _____ to another HH or community?
D …try[2] to harvest _____?
E …actually harvest any _____?

IF harvest is YES

Please estimate how many whitefish ALL MEMBERS OF YOUR HOUSEHOLD got for subsistence uses during the last year. How many were…

INCLUDE whitefish that members of this household gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If fishing with or helping others, report ONLY THIS HOUSEHOLD'S share of the harvest.

Read names below in blanks above	A USE?	B REC?	C GIVE?	D TRY?	E HAR?	Caught with a SET NET	Caught with a DRIFT NET	Caught with a SEINE NET	Caught with a FISH WHEEL	Caught with a ROD & REEL[3]	Caught with OTHER GEAR *(specify type)*	Units[4]	How many of THOSE were used for dog food?
						number harvested by each gear type					*amount / type*	*specify*	*dogfood*
SHEEFISH *CIIQ*	Y N	Y N	Y N	Y N	Y N						/		
125,600,000													
HUMPBACK WHITEFISH *CINGIKEGGLIQ*	Y N	Y N	Y N	Y N	Y N						/		
126,408,000													
BROAD WHITEFISH *AKAKIIK*	Y N	Y N	Y N	Y N	Y N						/		
126,404,000													
ROUND WHITEFISH *CEV'EQ*	Y N	Y N	Y N	Y N	Y N						/		
126,412,000													
BERING CISCO *IMARPINRAQ*	Y N	Y N	Y N	Y N	Y N						/		
126,406,040													
LEAST CISCO *IITULIQ*	Y N	Y N	Y N	Y N	Y N						/		
126,406,060													
UNKNOWN WHITEFISH	Y N	Y N	Y N	Y N	Y N						/		
126,499,000													
	Y N	Y N	Y N	Y N	Y N						/		
	Y N	Y N	Y N	Y N	Y N						/		

During the last year, did your household use any other kind of whitefish? ..... Y N

IF YES, enter the name in a blank row above, and answer the questions in that row.

1 *"LAST YEAR" means between JANUARY 1, 2011, and DECEMBER 31, 2011.*
2 *"USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.*
3 *"ROD AND REEL" includes fish caught in open water with a hook and and a line attached to a rod or a pole. Jigging through the ice is "other gea*
4 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.*

HARVESTS: OTHER FISH

HOUSEHOLD ID

1. Do you or members of your household USUALLY fish for other fish for subsistence, such as BURBOT (LUSH MANINGNAQ), SMELT (QUSUUQ), or any other other fish? ..... Y N
2. During the last year (between JANUARY 1, 2011, AND DECEMBER 31, 2011), did you or members of your household USE or TRY TO FISH FOR other fish? ..... Y N

IF the answer to QUESTION 2 is NO, go to the next harvest page.

IF the answer is YES, continue on this page…

During the last year[1], did you or members of your household….

A …use[2] _____?
B …receive _____ from another HH or community?
C …give _____ to another HH or community?
D …try[2] to harvest _____?
E …actually harvest any _____?

IF harvest is YES

Please estimate how many other fish ALL MEMBERS OF YOUR HOUSEHOLD got for subsistence uses during the last year. How many were…

INCLUDE other fish that members of this household gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If fishing with or helping others, report ONLY THIS HOUSEHOLD'S share of the harvest.

Read names below in blanks above	A USE?	B REC?	C GIVE?	D TRY?	E HAR?	Caught with a SET NET	Caught with a DRIFT NET	Caught with a SEINE NET	Caught with a FISH WHEEL	Caught with a ROD & REEL[3]	Caught with OTHER GEAR *(specify type)*	Units[4]	How many of THOSE were used for dog food?
						number harvested by each gear type					*amount / type*	*specify*	*dogfood*
BURBOT *LUSH MANINGNAQ*	Y N	Y N	Y N	Y N	Y N						/		
124,800,000													
NORTHERN PIKE *LUQRUUYAK*	Y N	Y N	Y N	Y N	Y N						/		
125,500,000													
SMELT *QUSUUQ*	Y N	Y N	Y N	Y N	Y N						/		
120,400,000													
GRAYLING *CULUGPAUK*	Y N	Y N	Y N	Y N	Y N						/		
125,200,000													
RAINBOW TROUT *TALAARIQ*	Y N	Y N	Y N	Y N	Y N						/		
126,204,000													
DOLLY VARDEN *CHAR IQALLUGPIK*	Y N	Y N	Y N	Y N	Y N						/		
125,006,000													
LAKE TROUT *CIKIGNAQ*	Y N	Y N	Y N	Y N	Y N						/		
125,010,000													
BLACKFISH *CAN'GIIQ*	Y N	Y N	Y N	Y N	Y N						/		
124,600,000													
STICKLEBACK *NEEDLEFISH QUARRUUK*	Y N	Y N	Y N	Y N	Y N						/		
123,800,000													
LAMPREY *EEL NEMERNAQ*	Y N	Y N	Y N	Y N	Y N						/		
122,000,000													

1 *"LAST YEAR" means between JANUARY 1, 2011, and DECEMBER 31, 2011.*
2 *"USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.*
3 *"ROD AND REEL" includes fish caught in open water with a hook and and a line attached to a rod or a pole. Jigging through the ice is "other ge*
4 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.*

NON-SALMON FINFISH: 06 **NAPAKIAK: 237**

HARVESTS: OTHER FISH

HOUSEHOLD ID

OTHER FISH continued from previous page…

During the last year[1], did you or members of your household….

A …use[2] _____?
B …receive _____ from another HH or community?
C …give _____ to another HH or community?
E …try[2] to harvest _____?
E …actually harvest any _____?

IF harvest is YES

Please estimate how many other fish ALL MEMBERS OF YOUR HOUSEHOLD got for subsistence uses during the last year. How many were…

INCLUDE other fish that members of this household gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If fishing with or helping others, report ONLY THIS HOUSEHOLD'S share of the harvest.

Read names below in blanks above	A USE?	B REC?	C GIVE?	D TRY?	E HAR?	Caught with a SET NET	Caught with a DRIFT NET	Caught with a SEINE NET	Caught with a FISH WHEEL	Caught with a ROD & REEL[3]	Caught with OTHER GEAR *(specify type)*	Units[4]	How many of THOSE were used for dog food?
						number harvested by each gear type					*amount / type*	*specify*	*dogfood*
HERRING *IQALLUARPAK*	Y N	Y N	Y N	Y N	Y N						/		
120,200,000													
HALIBUT *CAGIQ*	Y N	Y N	Y N	Y N	Y N						/		
121,800,000													
PACIFIC TOMCOD	Y N	Y N	Y N	Y N	Y N						/		
121,008,000													
SAFFRON COD *TOMCOD IQALLUAQ*	Y N	Y N	Y N	Y N	Y N						/		
121,010,000													
SUCKER *CUNGARTAQ*	Y N	Y N	Y N	Y N	Y N						/		
126,000,000													
HERRING ROE *ELQUAQ*	Y N	Y N	Y N	Y N	Y N						/		
120,300,000													
	Y N	Y N	Y N	Y N	Y N						/		
	Y N	Y N	Y N	Y N	Y N						/		
	Y N	Y N	Y N	Y N	Y N						/		
	Y N	Y N	Y N	Y N	Y N						/		
	Y N	Y N	Y N	Y N	Y N						/		

During the last year, did your household use any other kind of other fish?..... Y N

IF YES, enter the name in a blank row above, and answer the questions in that row.

1 *"LAST YEAR" means between JANUARY 1, 2011, and DECEMBER 31, 2011.*
2 *"USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.*
3 *"ROD AND REEL" includes fish caught in open water with a hook and and a line attached to a rod or a pole. Jigging through the ice is "other gea*
4 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.*

NON-SALMON FINFISH: 06 **NAPAKIAK: 237**

SUBSISTENCE SUMMARY: FISH OTHER THAN SALMON

HOUSEHOLD ID

If this household did NOT USE or HARVEST fish other than salmon last year, go to the ASSESSMENT section below.
Otherwise, continue with mapping, network, and assessment sections...

MAPPING *Refer to data collection maps and mapping instructions to map fish other than salmon...*

NETWORKS *...then ask the network and assessment questions below*

During the last year[1],

...who CAUGHT the WHITEFISH your household used? (Enter most important sources first.) 126,400,000

role	People in your household: enter person code from page 2	People in other households or other communities: enter local HH code (000) or airport code (XXX)"
CAUGHT WHITEFISH 1		
...who PROCESSED the WHITEFISH your household used? (Enter most important sources first.)		
PROCESSED WHITEFISH 2		
...who else GAVE WHITEFISH to your household? (Enter most important sources first.)		
GAVE WHITEFISH TO US 3		

During the last 12 months...

...who CAUGHT the OTHER FISH your household used? (Enter most important sources first.) 960,300,500

role	People in your household: enter person code from page 2	People in other households or other communities: enter local HH code (000) or airport code (XXX)"
CAUGHT OTHER FISH 1		
...who PROCESSED the OTHER FISH your household used? (Enter most important sources first.)		
PROCESSED OTHER FISH 2		
...who else GAVE OTHER FISH to your household? (Enter most important sources first.)		
GAVE OTHER FISH TO US 3		

ASSESSMENTS: 100,000,002

To conclude our fish other than salmon section, I am going to ask a few general questions about fish other than salmon.

During the last year[1],

...did your household use LESS, SAME, or MORE fish other than salmon than in recent years? X L S M

X = do not use

If LESS or MORE...

WHY was your use different? _____ 1

_____ 2

During the last year[1],

...did your household GET ENOUGH fish other than salmon? Y N

If NO...

What KIND of fish other than salmon did you need? _____

WHY did your household NOT get enough fish other than salmon? _____ 1

_____ 2

How would you describe the impact to your household of not getting enough last year? not noticable? (0) minor? (1) major? (2) severe? (3)

Did your household do anything DIFFERENTLY because you did NOT get enough fish other than salmon? Y N

IF YES...

What did your household do differently? _____ 1

_____ 2

NETWORKS & ASSESSMENTS OF FISH OTHER THAN SALMON: 66, 67 **NAPAKIAK: 237**

SUBSISTENCE HARVESTS: MARINE INVERTEBRATES

HOUSEHOLD ID

1. Do you or members of your household USUALLY get marine invertebrates for subsistence, such as KING CRAB (PUPSULEK), MUSSELS (QAPILAAQ), or any other marine invertebrates?..... Y N
2. During the last year (between JANUARY 1, 2011, AND DECEMBER 31, 2011), did you or members of your household USE or TRY TO GET marine invertebrates?..... Y N

IF the answer to QUESTION 2 is NO, go to the MARINE INVERTEBRATES summary page.

IF the answer is YES, continue on this page...

During the last year[1], did you or members of your household....

A ...use[2] _____?
B ...receive _____ from another HH or community?
C ...give _____ to another HH or community?
D ...try[2] to harvest _____?
E ...actually harvest any _____?

IF harvest is YES

Please estimate how many marine invertebrates ALL MEMBERS OF YOUR HOUSEHOLD got for subsistence uses during the last year.
INCLUDE marine invertebrates that members of this household gave away, ate fresh, lost to spoilage, or got by helping others. If harvest with or helping others, report ONLY this household's share of the harvest.

Read names below in blanks above	A USE?	B REC?	C GIVE?	D TRY?	E HAR?	How many did your HH get? *amount*	Units[3] *specify*	*comments*
KING CRAB *PUPSULEK*	Y N	Y N	Y N	Y N	Y N		IND	
501,008,000								
TANNER CRAB *PUPSULEK*	Y N	Y N	Y N	Y N	Y N		IND	
501,012,000								
MUSSELS *QAPILAAQ*	Y N	Y N	Y N	Y N	Y N		GAL	
502,099,000								
CLAMS *ALIRUAQ*	Y N	Y N	Y N	Y N	Y N		GAL	
500,600,000								
SHRIMP *CUNGARALUKVAK*	Y N	Y N	Y N	Y N	Y N		GAL	
503,400,000								
OTHER INVERTEBRATES	Y N	Y N	Y N	Y N	Y N		GAL	
509,900,000								
	Y N	Y N	Y N	Y N	Y N		GAL	
	Y N	Y N	Y N	Y N	Y N		GAL	
	Y N	Y N	Y N	Y N	Y N		GAL	
	Y N	Y N	Y N	Y N	Y N		GAL	

During the last year, did your household use any other kind of marine invertebrates?..... Y N

IF YES, enter the name in a blank row above, and answer the questions in that row.

1 *"LAST YEAR" means between JANUARY 1, 2011, and DECEMBER 31, 2011.*
2 *"USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.*
3 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc*

MARINE INVERTEBRATES: 08 **NAPAKIAK: 237**

SUBSISTENCE SUMMARY: MARINE INVERTEBRATES

HOUSEHOLD ID

If this household did NOT USE or HARVEST marine invertebrates last year, go to the ASSESSMENT section below.
Otherwise, continue with mapping, network, and assessment sections...

MAPPING — *Refer to data collection maps and mapping instructions to map marine invertebrates...*

NETWORKS — *...then ask the network and assessment questions below*

During the last year[1],

...who HARVESTED (GOT) the INVERTEBRATES your household used? (Enter most important sources first.) 602,020,002

role	People in your household: enter person code from page 2	People in other households or other communities: enter local HH code (000) or airport code (XXX)"
HARVESTED (GOT') INVERTEBRATES 1		
...who PROCESSED the INVERTEBRATES your household used? (Enter most important sources first.)		
PROCESSED INVERTEBRATES 2		
...who else GAVE INVERTEBRATES to your household? (Enter most important sources first.)		
GAVE INVERTEBRATES TO US 3		

ASSESSMENTS: 500,000,000

To conclude our marine invertebrates section, I am going to ask a few general questions about marine invertebrates.

During the last year[1],

...did your household use LESS, SAME, or MORE marine invertebrates than in recent years? X L S M

X = do not use

If LESS or MORE...

WHY was your use different? _____ 1

_____ 2

During the last year[1],

...did your household GET ENOUGH marine invertebrates? Y N

If NO...

What KIND of marine invertebrates did you need? _____

WHY did your household NOT get enough marine invertebrates? _____ 1

_____ 2

How would you describe the impact to your household of not getting enough last year? not noticable? (0) minor? (1) major? (2) severe? (3)

Did your household do anything DIFFERENTLY because you did NOT get enough marine invertebrates? Y N

IF YES...

What did your household do differently? _____ 1

_____ 2

NETWORKS & ASSESSMENTS OF MARINE INVERTEBRATES: 66, 67 — **NAPAKIAK: 237**

SUBSISTENCE HARVESTS: LARGE LAND ANIMALS

HOUSEHOLD ID

1. Do you or members of your household USUALLY hunt large land animals for subsistence, such as MOOSE (TUNTUVAK), CARIBOU (TUNTUQ), or any other large land animals?..... Y N
2. During the last year (between JANUARY 1, 2011, AND DECEMBER 31, 2011), did you or members of your household USE or TRY TO HUNT large land animals?..... Y N

IF the answer to QUESTION 2 is NO, go to the next harvest page.

IF the answer is YES, continue on this page…

During the last year[1], did you or members of your household….

A …use[2] _____?
B …receive _____ from another HH or community?
C …give _____ to another HH or community?
D …try[2] to harvest _____?
E …actually harvest any _____?

IF harvest is YES

Please estimate how many large land animals ALL MEMBERS OF YOUR HOUSEHOLD got for subsistence uses during the last year.
INCLUDE large land animals that members of this household gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If hunting with or helping others, report ONLY this household's share of the harvest.

Read names below in blanks above	A USE?	B REC?	C GIVE?	D TRY?	E HAR?	SEX	January	February	March	April	May	June	July	August	September	October	November	December	Unknown	Units[3]
							number killed in each month													specify
MOOSE *TUNTUVAK*	Y N	Y N	Y N	Y N	Y N	BULL														IND
211,800,000						COW														IND
211,800,001						UNKNOWN														IND
211,800,002																				
211,800,009																				
CARIBOU *TUNTUQ*	Y N	Y N	Y N	Y N	Y N	BULL														IND
211,000,000						COW														IND
211,000,001						UNKNOWN														IND
211,000,002																				
211,000,009																				
BLACK BEAR *TAN'GERLIQ*	Y N	Y N	Y N	Y N	Y N															IND
210,600,000																				
BROWN BEAR *TAQUKAQ*	Y N	Y N	Y N	Y N	Y N															IND
210,800,000																				
SHEEP *EPNAIQ*	Y N	Y N	Y N	Y N	Y N															IND
212,200,000																				
BISON	Y N	Y N	Y N	Y N	Y N															IND
210,400,000																				
MUSKOX	Y N	Y N	Y N	Y N	Y N															IND
212,000,000																				
	Y N	Y N	Y N	Y N	Y N															IND

During the last year, did your household use any other kind of large land animals?..... Y N

IF YES, enter the name in a blank row above, and answer the questions in that row.

1 *"LAST YEAR" means between JANUARY 1, 2011, and DECEMBER 31, 2011.*
2 *"USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.*
3 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc*

LAND MAMMALS: 10 **NAPAKIAK: 237**

SUBSISTENCE HARVESTS: SMALL LAND ANIMALS

HOUSEHOLD ID

1. Do you or members of your household USUALLY hunt small land animals for subsistence, such as BEAVER (PALUQTAQ), SNOWSHOE HARE (MAQARUAQ), or any other small land animals?..... Y N
2. During the last year (between JANUARY 1, 2011, AND DECEMBER 31, 2011), did you or members of your household USE or TRY TO HUNT small land animals?..... Y N

IF the answer to QUESTION 2 is NO, go to the next harvest page.

IF the answer is YES, continue on this page…

During the last year[1], did you or members of your household….

A …use[2] _____?
B …receive _____ from another HH or community?
C …give _____ to another HH or community?
D …try[2] to harvest _____?
E …actually harvest any _____?

IF harvest is YES

Please estimate how many small land animals ALL MEMBERS OF YOUR HOUSEHOLD got for subsistence uses during the last year.

INCLUDE small land animals that members of this household gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If hunting with or helping others, report ONLY this household's share of the harvest.

Read names below in blanks above	A USE?	B REC?	C GIVE?	D TRY?	E HAR?	January	February	March	April	May	June	July	August	September	October	November	December	Unknown	Units[3]	Number Used For Food or for Food & Fur
						number killed in each month													*specify*	
BEAVER *PALUQTAQ*	Y N	Y N	Y N	Y N	Y N														IND	
220,200,000																				
MUSKRAT *KANAQLAK*	Y N	Y N	Y N	Y N	Y N														IND	
222,400,000																				
SNOWSHOE HARE *MAQARUAQ*	Y N	Y N	Y N	Y N	Y N														IND	
221,004,000																				
ARCTIC HARE *QAYUQEGGLIQ*	Y N	Y N	Y N	Y N	Y N														IND	
221,002,000																				
PORCUPINE *ISSALUUQ*	Y N	Y N	Y N	Y N	Y N														IND	
222,600,000																				
TREE SQUIRREL *QIGUIQ*	Y N	Y N	Y N	Y N	Y N														IND	
222,804,000																				
PARKA SQUIRREL (GROUND) *QANGANAQ*	Y N	Y N	Y N	Y N	Y N														IND	
222,802,000																				
MARMOT *CIKIGPAK*	Y N	Y N	Y N	Y N	Y N														IND	
221,800,000																				
	Y N	Y N	Y N	Y N	Y N														IND	
	Y N	Y N	Y N	Y N	Y N														IND	

During the last year, did your household use any other kind of small land animals?..... Y N

IF YES, enter the name in a blank row above, and answer the questions in that row.

1 *"LAST YEAR" means between JANUARY 1, 2011, and DECEMBER 31, 2011.*
2 *"USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.*
3 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc*

LAND MAMMALS: 10 **NAPAKIAK: 237**

SUBSISTENCE HARVESTS: FUR ANIMALS

HOUSEHOLD ID

1. Do you or members of your household USUALLY hunt or trap for fur animals for subsistence, such as MARTEN (QAVCICUARAQ), WOLF (KEGLUNEQ), or any other fur animals? ..... Y N
2. During the last year (between JANUARY 1, 2011, AND DECEMBER 31, 2011), did you or members of your household USE or TRY TO HUNT OR TRAP FOR fur animals? ..... Y N

IF the answer to QUESTION 2 is NO, go to the LAND ANIMALS summary page.

IF the answer is YES, continue on this page…

During the last year[1], did you or members of your household….

A …use[2] _____?
B …receive _____ from another HH or community?
C …give _____ to another HH or community?
D …try[2] to harvest _____?
E …actually harvest any _____?

IF harvest is YES

Please estimate how many fur animals ALL MEMBERS OF YOUR HOUSEHOLD got for subsistence uses during the last year.
INCLUDE fur animals that members of this household gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If hunting or trapping with or helping others, report ONLY this household's share of the

Read names below in blanks above	A USE?	B REC?	C GIVE?	D TRY?	E HAR?	January	February	March	April	May	June	July	August	September	October	November	December	Unknown	Units[3]	Number Used For Food or for Food & Fur
						number caught in each month													specify	
MARTEN *QAVCICUARAQ*	Y N	Y N	Y N	Y N	Y N														IND	
222,000,000																				
WOLVERINE *TERIKANIAQ*	Y N	Y N	Y N	Y N	Y N														IND	
223,400,000																				
WOLF *KEGLUNEQ*	Y N	Y N	Y N	Y N	Y N														IND	
223,200,000																				
RED FOX *KAVIAQ*	Y N	Y N	Y N	Y N	Y N														IND	
220,804,000																				
LAND OTTER *CUIGNILNGUQ*	Y N	Y N	Y N	Y N	Y N														IND	
221,200,000																				
LYNX *TERTULI*	Y N	Y N	Y N	Y N	Y N														IND	
221,600,000																				
MINK *IMARMIUTAQ*	Y N	Y N	Y N	Y N	Y N														IND	
222,200,000																				
WEASEL *NARULIGIQ*	Y N	Y N	Y N	Y N	Y N														IND	
223,000,000																				
COYOTE *KAYU*	Y N	Y N	Y N	Y N	Y N														IND	
220,400,000																				
ARCTIC FOX *QATERLIARAQ*	Y N	Y N	Y N	Y N	Y N														IND	
220,802,000																				

During the last year, did your household use any other kind of fur animals? ..... Y N

IF YES, enter the name in a blank row above, and answer the questions in that row.

1 *"LAST YEAR" means between JANUARY 1, 2011, and DECEMBER 31, 2011.*
2 *"USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.*
3 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc*

FURBEARERS: 14 **NAPAKIAK: 237**

SUBSISTENCE SUMMARY: LAND ANIMALS

HOUSEHOLD ID

If this household did NOT USE or HARVEST land animals last year, go to the ASSESSMENT section below.
Otherwise, continue with mapping, network, and assessment sections...

MAPPING — *Refer to data collection maps and mapping instructions to map land animals...*

NETWORKS — *...then ask the network and assessment questions below*

During the last year[1],

...who HARVESTED (GOT) the MOOSE your household used? (Enter most important sources first.) 211,800,000

role	People in your household: enter person code from page 2	People in other households or other communities: enter local HH code (000) or airport code (XXX)"
HARVESTED (GOT) MOOSE 1		

...who PROCESSED the MOOSE your household used? (Enter most important sources first.)

PROCESSED MOOSE 2		

...who else GAVE MOOSE to your household? (Enter most important sources first.)

GAVE MOOSE TO US 3		

During the last 12 months...

...who HARVESTED (GOT) the CARIBOU your household used? (Enter most important sources first.) 211,000,000

role	People in your household: enter person code from page 2	People in other households or other communities: enter local HH code (000) or airport code (XXX)"
HARVESTED (GOT) CARIBOU 1		

...who PROCESSED the CARIBOU your household used? (Enter most important sources first.)

PROCESSED CARIBOU 2		

...who else GAVE CARIBOU to your household? (Enter most important sources first.)

GAVE CARIBOU TO US 3		

ASSESSMENTS: 200,000,000

To conclude our land animals section, I am going to ask a few general questions about land animals.

During the last year[1],

...did your household use LESS, SAME, or MORE land animals than in recent years? X L S M

X = do not use

If LESS or MORE...

WHY was your use different? _____ 1

_____ 2

During the last year[1],

...did your household GET ENOUGH land animals? Y N

If NO...

What KIND of land animals did you need? _____

WHY did your household NOT get enough land animals? _____ 1

_____ 2

How would you describe the impact to your household of not getting enough last year? not noticable? (0) minor? (1) major? (2) severe? (3)

Did your household do anything DIFFERENTLY because you did NOT get enough land animals? Y N

IF YES...

What did your household do differently? _____ 1

_____ 2

NETWORKS & ASSESSMENTS OF LAND ANIMALS: 66, 67 **NAPAKIAK: 237**

SUBSISTENCE HARVESTS: MARINE MAMMALS

HOUSEHOLD ID

1. Do you or members of your household USUALLY hunt marine mammals for subsistence? ..... Y N

2. During the last year (between JANUARY 1, 2011, AND DECEMBER 31, 2011), did you or members of your household USE or TRY TO HUNT marine mammals? ..... Y N

IF the answer to QUESTION 2 is NO, go to the MARINE MAMMALS summary page.

IF the answer is YES, continue on this page…

During the last year[1], did you or members of your household….

A …use[2] _____?
B …receive _____ from another HH or community?
C …give _____ to another HH or community?
D …try[2] to harvest _____?
E …actually harvest any _____?

IF harvest is YES

Please estimate how many marine mammals ALL MEMBERS OF YOUR HOUSEHOLD killed for subsistence uses during the last year.
INCLUDE marine mammals that members of this household gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If hunting with or helping others, report ONLY this household's share of the harvest.

Read names below in blanks above	A USE?	B REC?	C GIVE?	D TRY?	E HAR?	January	February	March	April	May	June	July	August	September	October	November	December	Unknown	Units[3] specify	comments
						number killed in each month														
BEARDED SEAL *MAKLAK*	Y N	Y N	Y N	Y N	Y N														IND	
300,802,000																				
RINGED SEAL *NAYIQ*	Y N	Y N	Y N	Y N	Y N														IND	
300,810,000																				
SPOTTED SEAL *ISSURIQ*	Y N	Y N	Y N	Y N	Y N														IND	
300,812,000																				
SEAL OIL *UQUQ ETC.*	Y N	Y N	Y N	Y N	Y N															
300,899,000																				
BELUKHA WHALE *CETUAQ, WHITE MANGTAK*	Y N	Y N	Y N	Y N	Y N														IND	
301,602,000																				
BOWHEAD WHALE *BLACK MANGTAK*	Y N	Y N	Y N	Y N	Y N														IND	
301,606,000																				
WALRUS *ASVEQ*	Y N	Y N	Y N	Y N	Y N														IND	
301,400,000																				
RIBBON SEAL *QASRULIQ*	Y N	Y N	Y N	Y N	Y N														IND	
300,808,000																				
	Y N	Y N	Y N	Y N	Y N														IND	
	Y N	Y N	Y N	Y N	Y N														IND	

During the last year, did your household use any other kind of marine mammals? ..... Y N

IF YES, enter the name in a blank row above, and answer the questions in that row.

1 *"LAST YEAR" means between JANUARY 1, 2011, and DECEMBER 31, 2011.*
2 *"USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.*
3 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc*

MARINE MAMMALS: 12 **NAPAKIAK: 237**

SUBSISTENCE SUMMARY: MARINE MAMMALS

HOUSEHOLD ID

If this household did NOT USE or HARVEST marine mammals last year, go to the ASSESSMENT section below.
Otherwise, continue with mapping, network, and assessment sections...

MAPPING *Refer to data collection maps and mapping instructions to map marine mammals...*

NETWORKS *...then ask the network and assessment questions below*

During the last year[1],

...who HARVESTED (GOT) the SEALS your household used? (Enter most important sources first.) 300,800,009

role	People in your household: enter person code from page 2	People in other households or other communities: enter local HH code (000) or airport code (XXX)"
HARVESTED (GOT) SEALS 1		

...who PROCESSED the SEALS your household used? (Enter most important sources first.)

PROCESSED SEALS 2		

...who else GAVE SEALS to your household? (Enter most important sources first.)

GAVE SEALS TO US 3	→	

During the last 12 months...

...who HARVESTED (GOT) the WHALES your household used? (Enter most important sources first.) 301,600,009

role	People in your household: enter person code from page 2	People in other households or other communities: enter local HH code (000) or airport code (XXX)"
HARVESTED (GOT) WHALES 1		

...who PROCESSED the WHALES your household used? (Enter most important sources first.)

PROCESSED WHALES 2		

...who else GAVE WHALES to your household? (Enter most important sources first.)

GAVE WHALES TO US 3	→	

ASSESSMENTS: 300,000,000

To conclude our marine mammals section, I am going to ask a few general questions about marine mammals.

During the last year[1],

...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 _____

During the last year[1],

...did your household GET ENOUGH marine mammals? ..... Y N

If NO...

What KIND of marine mammals did you need? ..... _____

WHY did your household NOT get enough marine mammals? ..... 1 _____

2 _____

How would you describe the impact to your household of not getting enough last year? ..... not noticable? (0) minor? (1) major? (2) severe? (3)

Did your household do anything DIFFERENTLY because you did NOT get enough marine mammals? ..... Y N

IF YES...

What did your household do differently? ..... 1 _____

2 _____

NETWORKS & ASSESSMENTS OF MARINE MAMMALS: 66, 67 **NAPAKIAK: 237**

HARVESTS: DUCKS

HOUSEHOLD ID

1. Do you or members of your household USUALLY hunt ducks for subsistence, such as MALLARD (CURCURPAK), GOLDENEYE (ANARNISSAGAQ), or any other ducks? ..... Y N
2. During the last year (between JANUARY 1, 2009, AND DECEMBER 31, 2009), did you or members of your household USE or TRY TO HUNT ducks? ..... Y N

IF the answer to QUESTION 2 is NO, go to the next harvest page.

IF the answer is YES, continue on this page…

During the last year[1], did you or members of your household….

A …use[2] _____?
B …receive _____ from another HH or community?
C …give _____ to another HH or community?
D …try[2] to harvest _____?
E …actually harvest any _____?

IF harvest is YES

Please estimate how many ducks ALL MEMBERS OF YOUR HOUSEHOLD killed for subsistence uses during the last year.

INCLUDE ducks that members of this household gave away, ate fresh, lost to spoilage, or got by helping others. If hunting with or helping others, report ONLY this household's share of the harvest.

Read names below in blanks above	A USE?	B REC?	C GIVE?	D TRY?	E HAR?	January February March November December WINTER	April May June SPRING	July August SUMMER	September October FALL	Season of harvest unknown	Units[3]
						number killed in each season				number	specify
MALLARD *CURCURPAK*	Y N	Y N	Y N	Y N	Y N						IND
410,214,000											
NORTHERN PINTAIL *UQSUQAQ*	Y N	Y N	Y N	Y N	Y N						IND
410,220,000											
GOLDENEYE *ANARNISSAGAQ*	Y N	Y N	Y N	Y N	Y N						IND
410,210,000											
WIGEON *KATKEGGLIQ*	Y N	Y N	Y N	Y N	Y N						IND
410,236,000											
GREEN WINGED TEAL *TENGESQAAQ*	Y N	Y N	Y N	Y N	Y N						IND
410,232,060											
NORTHERN SHOVELER *CUQCURPAK*	Y N	Y N	Y N	Y N	Y N						IND
410,230,000											
SCAUP *BLUEBILL KEP'ALEK*	Y N	Y N	Y N	Y N	Y N						IND
410,226,000											
BUFFLEHEAD *PUGTAQUTAYAGAQ*	Y N	Y N	Y N	Y N	Y N						IND
410,202,000											
HARLEQUIN DUCK *CETUSKARAQ*	Y N	Y N	Y N	Y N	Y N						IND
410,212,000											
LONG-TAILED DUCK *AARRANGIQ*	Y N	Y N	Y N	Y N	Y N						IND
410,218,000											

DUCKS continued on next page…

1 *"LAST YEAR" means between JANUARY 1, 2011, and DECEMBER 31, 2011.*
2 *"USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.*
3 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc*

BIRDS AND EGGS: 15 **NAPAKIAK: 237**

HARVESTS: DUCKS

HOUSEHOLD ID

DUCKS continued from previous page…

During the last year[1], did you or members of your household....

- A ...use[2] _____?
- B ...receive _____ from another HH or community?
- C ...give _____ to another HH or community?
- E ...try[2] to harvest _____?
- E ...actually harvest any _____?

IF harvest is YES

Please estimate how many ducks ALL MEMBERS OF YOUR HOUSEHOLD killed for subsistence uses during the last year.

INCLUDE ducks that members of this household gave away, ate fresh, lost to spoilage, or got by helping others. If hunting with or helping others, report ONLY this household's share of the harvest.

Read names below in blanks above	A USE?	B REC?	C GIVE?	D TRY?	E HAR?	January February March November December	April May June	July August	September October	Season of harvest unknown	Units[3]
						WINTER	SPRING	SUMMER	FALL		
						number killed in each season				*number*	*specify*
CANVASBACK	Y N	Y N	Y N	Y N	Y N						IND
410,204,000											
BLACK SCOTER *KUKUMYARAK*	Y N	Y N	Y N	Y N	Y N						IND
410,228,020											
SURF SCOTER *AKACAKAYAK*	Y N	Y N	Y N	Y N	Y N						IND
410,228,040											
WHITE-WINGED SCOTER *AKACAKAYAK*	Y N	Y N	Y N	Y N	Y N						IND
410,228,060											
COMMON EIDER *METRAQ*	Y N	Y N	Y N	Y N	Y N						IND
410,206,020											
OTHER EIDERS	Y N	Y N	Y N	Y N	Y N						IND
410,206,990											
COMMON MERGANSER *PAYIQ*	Y N	Y N	Y N	Y N	Y N						IND
410,216,020											
RED-BREASTED MERGANSER *PAYIQ*	Y N	Y N	Y N	Y N	Y N						IND
410,216,040											
UNKNOWN MERGANSER	Y N	Y N	Y N	Y N	Y N						IND
410,216,990											
UNKNOWN DUCKS	Y N	Y N	Y N	Y N	Y N						IND
410,299,000											
LOONS *TUULLEK*	Y N	Y N	Y N	Y N	Y N						IND
411,216,990											
	Y N	Y N	Y N	Y N	Y N						IND

During the last year, did your household use any other kind of ducks?..... Y N

IF YES, enter the name in a blank row above, and answer the questions in that row.

* *"LAST YEAR" means between JANUARY 1, 2011, and DECEMBER 31, 2011.*

** *"USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.*

*** *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc*

BIRDS AND EGGS: 15 **NAPAKIAK: 237**

SUBSISTENCE HARVESTS: GEESE

HOUSEHOLD ID

1. Do you or members of your household USUALLY hunt geese for subsistence, such as CANADA GEESE (BIG/LESSER LAGIQ), WHITE-FRONTED GEESE (LAGILUGPIAQ), or any other geese?..... Y N
2. During the last year (between JANUARY 1, 2011, AND DECEMBER 31, 2011), did you or members of your household USE or TRY TO HUNT geese?..... Y N

IF the answer to QUESTION 2 is NO, go to the next harvest page.

IF the answer is YES, continue on this page…

During the last year[1], did you or members of your household….

A …use[2] _____?
B …receive _____ from another HH or community?
C …give _____ to another HH or community?
D …try[2] to harvest _____?
E …actually harvest any _____?

IF harvest is YES

Please estimate how many geese ALL MEMBERS OF YOUR HOUSEHOLD killed for subsistence uses during the last year.

INCLUDE geese that members of this household gave away, ate fresh, lost to spoilage, or got by helping others. If hunting with or helping others, report ONLY this household's share of the harvest.

Read names below in blanks above	A USE?	B REC?	C GIVE?	D TRY?	E HAR?	January February March November December WINTER	April May June SPRING	July August SUMMER	September October FALL	Season of harvest unknown	Units[3]
						number killed in each season				*number*	*specify*
CANADA GEESE *BIG/LESSER LAGIQ*	Y N	Y N	Y N	Y N	Y N						IND
410,404,080											
CANADA GEESE *SMALL/CACKLER LAKCAQ*	Y N	Y N	Y N	Y N	Y N						IND
410,404,040											
CANADA GEESE *UNKNOWN SPECIES*	Y N	Y N	Y N	Y N	Y N						IND
410,404,990											
WHITE-FRONTED GEESE *LAGILUGPIAQ*	Y N	Y N	Y N	Y N	Y N						IND
410,410,000											
BRANT *NEQLERNAQ*	Y N	Y N	Y N	Y N	Y N						IND
410,402,000											
EMPEROR GEESE *NACAULLEK*	Y N	Y N	Y N	Y N	Y N						IND
410,406,000											
SNOW GEESE *KANGUQ*	Y N	Y N	Y N	Y N	Y N						IND
410,408,000											
UNKNOWN GEESE	Y N	Y N	Y N	Y N	Y N						IND
410,499,000											
	Y N	Y N	Y N	Y N	Y N						IND
	Y N	Y N	Y N	Y N	Y N						IND

During the last year, did your household use any other kind of geese?..... Y N

IF YES, enter the name in a blank row above, and answer the questions in that row.

1 *"LAST YEAR" means between JANUARY 1, 2011, and DECEMBER 31, 2011.*
2 *"USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.*
3 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc*

BIRDS AND EGGS: 15 **NAPAKIAK: 237**

SUBSISTENCE HARVESTS: OTHER BIRDS

HOUSEHOLD ID

1. Do you or members of your household USUALLY hunt other birds for subsistence, such as SPRUCE GROUSE (EGTUK), SHARP-TAILED GROUSE, , or any other other birds? ..... Y N
2. During the last year (between JANUARY 1, 2011, AND DECEMBER 31, 2011), did you or members of your household USE or TRY TO HUNT other birds? ..... Y N

IF the answer to QUESTION 2 is NO, go to the next harvest page.

IF the answer is YES, continue on this page…

During the last year[1], did you or members of your household….

- A …use[2] _____?
- B …receive _____ from another HH or community?
- C …give _____ to another HH or community?
- D …try[2] to harvest _____?
- E …actually harvest any _____?

IF harvest is YES

Please estimate how many other birds ALL MEMBERS OF YOUR HOUSEHOLD got for subsistence uses during the last year.

INCLUDE other birds that members of this household gave away, ate fresh, lost to spoilage, or got by helping others. If hunting with or helping others, report ONLY this household's share of the harvest.

Read names below in blanks above	A USE?	B REC?	C GIVE?	D TRY?	E HAR?	January February March November December WINTER	April May June SPRING	July August SUMMER	September October FALL	Season of harvest unknown	Units[3]
						number got in each season				*number*	*specify*
SPRUCE GROUSE *EGTUK*	Y N	Y N	Y N	Y N	Y N						IND
421,802,020											
RUFFED GROUSE *EGELRUCIAYULI*	Y N	Y N	Y N	Y N	Y N						IND
421,802,060											
SHARP-TAILED GROUSE	Y N	Y N	Y N	Y N	Y N						IND
421,802,040											
PTARMIGAN *QANQIIQ*	Y N	Y N	Y N	Y N	Y N						IND
421,804,990											
SANDHILL CRANE *QUCILLGAQ*	Y N	Y N	Y N	Y N	Y N						IND
410,802,000											
TUNDRA SWAN *QUGYUK*	Y N	Y N	Y N	Y N	Y N						IND
410,604,000											
WHIMBREL *PIPIPIAQ*	Y N	Y N	Y N	Y N	Y N						IND
411,009,040											
SNOWY OWL *ANIPA*	Y N	Y N	Y N	Y N	Y N						IND
422,002,000											
BRISTLE-THIGHED CURLEW *CIIVIKAAQ*	Y N	Y N	Y N	Y N	Y N						IND
411,009,020											
	Y N	Y N	Y N	Y N	Y N						IND

During the last year, did your household use any other kind of other birds? ..... Y N

IF YES, enter the name in a blank row above, and answer the questions in that row.

1 *"LAST YEAR" means between JANUARY 1, 2011, and DECEMBER 31, 2011.*

2 *"USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.*

3 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc*

BIRDS AND EGGS: 15 **NAPAKIAK: 237**

SUBSISTENCE HARVESTS: EGGS

HOUSEHOLD ID

1. Do you or members of your household USUALLY gather eggs for subsistence, such as DUCK EGGS, , or any other eggs?..... Y N
2. During the last year (between JANUARY 1, 2011, AND DECEMBER 31, 2011), did you or members of your household USE or TRY TO GATHER eggs?..... Y N

IF the answer to QUESTION 2 is NO, go to the BIRD & EGG summary page.

IF the answer is YES, continue on this page...

During the last year[1], did you or members of your household...
- A ...use[2] _____?
- B ...receive _____ from another HH or community?
- C ...give _____ to another HH or community?
- D ...try[2] to harvest _____?
- E ...actually harvest any _____?

IF harvest is YES

Please estimate how many eggs ALL MEMBERS OF YOUR HOUSEHOLD got for subsistence uses during the last year.
INCLUDE eggs that members of this household gave away, ate fresh, lost to spoilage, or got by helping others. If gathering with or helping others, report ONLY this household's share of the harvest.

Read names below in blanks above	A USE?	B REC?	C GIVE?	D TRY?	E HAR?	How many did you gather? *amount*	Units[3] *specify*	*comments*
DUCK EGGS	Y N	Y N	Y N	Y N	Y N			
430,200,000 GEESE EGGS	Y N	Y N	Y N	Y N	Y N			
430,400,000 SWAN EGGS	Y N	Y N	Y N	Y N	Y N			
430,600,000 GULL EGGS	Y N	Y N	Y N	Y N	Y N			
431,212,990 SHORE BIRD EGGS	Y N	Y N	Y N	Y N	Y N			
431,099,000 UNKNOWN EGGS	Y N	Y N	Y N	Y N	Y N			
439,900,000	Y N	Y N	Y N	Y N	Y N			
	Y N	Y N	Y N	Y N	Y N			
	Y N	Y N	Y N	Y N	Y N			
	Y N	Y N	Y N	Y N	Y N			
	Y N	Y N	Y N	Y N	Y N			IND

During the last year, did your household use any other kind of eggs?..... Y N

IF YES, enter the name in a blank row above, and answer the questions in that row.

1 *"LAST YEAR" means between JANUARY 1, 2011, and DECEMBER 31, 2011.*
2 *"USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.*
3 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc*

BIRDS AND EGGS: 15 **NAPAKIAK: 237**

SUBSISTENCE SUMMARY: BIRDS & EGGS

HOUSEHOLD ID

If this household did NOT USE or HARVEST birds & eggs last year, go to the ASSESSMENT section below.
Otherwise, continue with mapping, network, and assessment sections...

MAPPING — *Refer to data collection maps and mapping instructions to map birds & eggs...*

NETWORKS — *...then ask the network and assessment questions below*

During the last year[1],

...who HARVESTED (GOT) the BIRDS your household used? (Enter most important sources first.) 430,000,000

role	People in your household: enter person code from page 2	People in other households or other communities: enter local HH code (000) or airport code (XXX)"
HARVESTED (GOT') BIRDS 1		

...who PROCESSED the BIRDS your household used? (Enter most important sources first.)

role	People in your household: enter person code from page 2	People in other households or other communities: enter local HH code (000) or airport code (XXX)"
PROCESSED BIRDS 2		

...who else GAVE BIRDS to your household? (Enter most important sources first.)

role	People in your household: enter person code from page 2	People in other households or other communities: enter local HH code (000) or airport code (XXX)"
GAVE BIRDS TO US → 3		

During the last 12 months...

...who GATHERED the EGGS your household used? (Enter most important sources first.) 121,200,002

role	People in your household: enter person code from page 2	People in other households or other communities: enter local HH code (000) or airport code (XXX)"
GATHERED EGGS 1		

...who PROCESSED the EGGS your household used? (Enter most important sources first.)

role	People in your household: enter person code from page 2	People in other households or other communities: enter local HH code (000) or airport code (XXX)"
PROCESSED EGGS 2		

...who else GAVE EGGS to your household? (Enter most important sources first.)

role	People in your household: enter person code from page 2	People in other households or other communities: enter local HH code (000) or airport code (XXX)"
GAVE EGGS TO US → 3		

ASSESSMENTS: 400,000,000

To conclude our birds & eggs section, I am going to ask a few general questions about birds & eggs.

During the last year[1],

...did your household use LESS, SAME, or MORE birds & eggs than in recent years? X L S M
X = do not use

If LESS or MORE...

WHY was your use different? _____ 1
_____ 2

During the last year[1],

...did your household GET ENOUGH birds & eggs? Y N

If NO...

What KIND of birds & eggs did you need? _____

WHY did your household NOT get enough birds & eggs? _____ 1
_____ 2

How would you describe the impact to your household of not getting enough last year? not noticable? (0) minor? (1) major? (2) severe? (3)

Did your household do anything DIFFERENTLY because you did NOT get enough birds & eggs? Y N

IF YES...

What did your household do differently? _____ 1
_____ 2

NETWORKS & ASSESSMENTS OF BIRDS & EGGS: 66, 67 — **NAPAKIAK: 237**

SUBSISTENCE HARVESTS: BERRIES

HOUSEHOLD ID

1. Do you or members of your household USUALLY pick berries for subsistence, such as BLUEBERRIES (CURAQ), BLACKBERRIES (CROWBERRIES TAN'GERPAK), or any other berries? ..... Y N
2. During the last year (between JANUARY 1, 2011, AND DECEMBER 31, 2011), did you or members of your household USE or TRY TO PICK berries? ..... Y N

IF the answer to QUESTION 2 is NO, go to the next harvest page.

IF the answer is YES, continue on this page…

During the last year[1], did you or members of your household….

A …use[2] _____?
B …receive _____ from another HH or community?
C …give _____ to another HH or community?
D …try[2] to harvest _____?
E …actually harvest any _____?

IF harvest is YES

Please estimate how many berries ALL MEMBERS OF YOUR HOUSEHOLD got for subsistence uses during the last year.
INCLUDE berries that members of this household gave away, ate fresh, lost to spoilage, or got by helping others. If picking with or helping others, report ONLY this household's share of the harvest.

Read names below in blanks above	A USE?	B REC?	C GIVE?	D TRY?	E HAR?	How many did you pick? *amount*	Units[3] *specify*	*comments*
BLUEBERRIES *CURAQ*	Y N	Y N	Y N	Y N	Y N		GAL	
601,002,000								
SALMONBERRY *NAUNRAQ*	Y N	Y N	Y N	Y N	Y N		GAL	
601,022,000								
BLACKBERRIES *CROWBERRIES TAN'GERPAK*	Y N	Y N	Y N	Y N	Y N		GAL	
601,007,000								
LOW-BUSH CRANBERRIES *TUMAGLIQ*	Y N	Y N	Y N	Y N	Y N		GAL	
601,004,000								
HIGH-BUSH CRANBERRIES *MERCUULLUGPAK*	Y N	Y N	Y N	Y N	Y N		GAL	
601,006,000								
RASPBERRY	Y N	Y N	Y N	Y N	Y N		GAL	
601,020,000								
CURRANTS *AGALRUSSAQ*	Y N	Y N	Y N	Y N	Y N		GAL	
601,012,000								
GOOSEBERRY	Y N	Y N	Y N	Y N	Y N		GAL	
601,010,000								
NAGOONBERRY *PUYURAGAQ*	Y N	Y N	Y N	Y N	Y N		GAL	
601,018,000								
	Y N	Y N	Y N	Y N	Y N		GAL	

During the last year, did your household use any other kind of berries? ..... Y N

IF YES, enter the name in a blank row above, and answer the questions in that row.

1 *"LAST YEAR" means between JANUARY 1, 2011, and DECEMBER 31, 2011.*
2 *"USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.*
3 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc*

PLANTS: 17 **NAPAKIAK: 237**

SUBSISTENCE HARVESTS: GREENS

HOUSEHOLD ID

1. Do you or members of your household USUALLY pick greens for subsistence, such as WILD RHUBARB (ANGUKAQ), HUDSON BAY TEA (LABRADOR TEA AYUK), or any other greens?..... Y N
2. During the last year (between JANUARY 1, 2011, AND DECEMBER 31, 2011), did you or members of your household USE or TRY TO PICK greens?..... Y N

IF the answer to QUESTION 2 is NO, go to the next harvest page.

IF the answer is YES, continue on this page…

During the last year[1], did you or members of your household….

A …use[2] _____?
B …receive _____ from another HH or community?
C …give _____ to another HH or community?
D …try[2] to harvest _____?
E …actually harvest any _____?

IF harvest is YES

Please estimate how many greens ALL MEMBERS OF YOUR HOUSEHOLD got for subsistence uses during the last year.
INCLUDE greens that members of this household gave away, ate fresh, lost to spoilage, or got by helping others. If picking with or helping others, report ONLY this household's share of the harvest.

Read names below in blanks above	A USE?	B REC?	C GIVE?	D TRY?	E HAR?	How many did you pick? *amount*	Units[3] *specify*	*comments*
WILD RHUBARB *ANGUKAQ*	Y N	Y N	Y N	Y N	Y N		GAL	
602,006,000								
FIREWEED *CIILQAAQ*	Y N	Y N	Y N	Y N	Y N		GAL	
602,042,000								
STINKWEED *CAIGGLUK*	Y N	Y N	Y N	Y N	Y N		GAL	
602,044,000								
HUDSON BAY TEA *LABRADOR TEA AYUK*	Y N	Y N	Y N	Y N	Y N		GAL	
602,018,000								
FIDDLEHEAD FERNS *CETUGUARAQ*	Y N	Y N	Y N	Y N	Y N		GAL	
602,014,000								
WILD CELERY *TARNAK*	Y N	Y N	Y N	Y N	Y N		GAL	
602,032,000								
WILD PARSLEY *MECUQELUGAK*	Y N	Y N	Y N	Y N	Y N		GAL	
602,034,000								
SOURDOCK *QUAGCIQ*	Y N	Y N	Y N	Y N	Y N		GAL	
602,028,000								
WILLOW LEAVES *ENRILINGUAQ*	Y N	Y N	Y N	Y N	Y N		GAL	
602,031,000								
UNKNOWN GREENS	Y N	Y N	Y N	Y N	Y N		GAL	
602,048,000								

During the last year, did your household use any other kind of greens?..... Y N

IF YES, enter the name in a blank row above, and answer the questions in that row.

1 *"LAST YEAR" means between JANUARY 1, 2011, and DECEMBER 31, 2011.*
2 *"USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.*
3 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc*

PLANTS: 17 **NAPAKIAK: 237**

SUBSISTENCE HARVESTS: OTHER PLANTS

HOUSEHOLD ID

1. Do you or members of your household USUALLY get other plants for subsistence, such as ESKIMO POTATO (MARALLAK), MUSHROOMS (PALUKUTAQ), or any other other plants? ..... Y N
2. During the last year (between JANUARY 1, 2011, AND DECEMBER 31, 2011), did you or members of your household USE or TRY TO GET other plants? ..... Y N

IF the answer to QUESTION 2 is NO, go to the next BERRIES & GREENS summary page.

IF the answer is YES, continue on this page…

During the last year[1], did you or members of your household….

A …use[2] _____?
B …receive _____ from another HH or community?
C …give _____ to another HH or community?
D …try[2] to harvest _____?
E …actually harvest any _____?

IF harvest is YES

Please estimate how many other plants ALL MEMBERS OF YOUR HOUSEHOLD got for subsistence uses during the last year.
INCLUDE other plants that members of this household gave away, ate fresh, lost to spoilage, or got by helping others. If harvest with or helping others, report ONLY this household's share of the harvest.

Read names below in blanks above	A USE?	B REC?	C GIVE?	D TRY?	E HAR?	How many did you get? *amount*	Units[3] *specify*	*comments*
ESKIMO POTATO *MARALLAK*	Y N	Y N	Y N	Y N	Y N		GAL	
602,009,000								
ROSE HIPS *TUUTARUAQ*	Y N	Y N	Y N	Y N	Y N		GAL	
602,036,000								
MUSHROOMS *PALUKUTAQ*	Y N	Y N	Y N	Y N	Y N		GAL	
602,040,000								
PUFFBALLS *PUYUNGUAQ*	Y N	Y N	Y N	Y N	Y N		GAL	
602,046,020								
PUNK *ARAGAQ*	Y N	Y N	Y N	Y N	Y N		GAL	
602,046,010								
YARROW *TEPTUKUYUK*	Y N	Y N	Y N	Y N	Y N		GAL	
602,037,000								
MOUSEFOODS *ANLLEQ*	Y N	Y N	Y N	Y N	Y N		GAL	
602,060,000								
SPRUCE TIPS	Y N	Y N	Y N	Y N	Y N		GAL	
602,030,000								
FIREWOOD	Y N	Y N	Y N	Y N	Y N			*If UNIT is sled or boat load, enter sizes per load* *N of LOGS = LENGTH= DIAMETER=*
604,000,000								*In coding, convert boat and sled loads to CORD*
OTHER WILD GREENS	Y N	Y N	Y N	Y N	Y N		GAL	
602,038,000								

During the last year, did your household use any other kind of other plants? ..... Y N

IF YES, enter the name in a blank row above, and answer the questions in that row.

1 *"LAST YEAR" means between JANUARY 1, 2011, and DECEMBER 31, 2011.*
2 *"USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.*
3 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc*

PLANTS: 17 **NAPAKIAK: 237**

SUBSISTENCE SUMMARY: BERRIES & GREENS

HOUSEHOLD ID

If this household did NOT USE or HARVEST berries & greens last year, go to the ASSESSMENT section below.
Otherwise, continue with mapping, network, and assessment sections...

MAPPING — *Refer to data collection maps and mapping instructions to map berries & greens...*

NETWORKS — *...then ask the network and assessment questions below*

During the last year[1],

...who PICKED the PLANTS your household used? (Enter most important sources first.) 602,043,002

role	People in your household: enter person codc from page 2	People in other households or other communities: enter local HH code (000) or airport code (XXX)"
PICKED PLANTS 1		

...who PROCESSED the PLANTS your household used? (Enter most important sources first.)

role	People in your household: enter person codc from page 2	People in other households or other communities: enter local HH code (000) or airport code (XXX)"
PROCESSED PLANTS 2		

...who else GAVE PLANTS to your household? (Enter most important sources first.)

role	People in your household: enter person codc from page 2	People in other households or other communities: enter local HH code (000) or airport code (XXX)"
GAVE PLANTS TO US 3		

During the last 12 months...

...who CUT the FIREWOOD your household used? (Enter most important sources first.) 602,042,002

role	People in your household: enter person codc from page 2	People in other households or other communities: enter local HH code (000) or airport code (XXX)"
CUT FIREWOOD 1		

...who PROCESSED the FIREWOOD your household used? (Enter most important sources first.)

role	People in your household: enter person codc from page 2	People in other households or other communities: enter local HH code (000) or airport code (XXX)"
PROCESSED FIREWOOD 2		

...who else GAVE FIREWOOD to your household? (Enter most important sources first.)

role	People in your household: enter person codc from page 2	People in other households or other communities: enter local HH code (000) or airport code (XXX)"
GAVE FIREWOOD TO US 3		

ASSESSMENTS: 601,000,000

To conclude our berries & greens section, I am going to ask a few general questions about berries & greens.

During the last year[1],

...did your household use LESS, SAME, or MORE berries & greens than in recent years? X L S M
X = do not use

If LESS or MORE...

WHY was your use different? 1 _____ 2 _____

During the last year[1],

...did your household GET ENOUGH berries & greens? Y N

If NO...

What KIND of berries & greens did you need? _____

WHY did your household NOT get enough berries & greens? 1 _____ 2 _____

How would you describe the impact to your household of not getting enough last year? not noticable? (0) minor? (1) major? (2) severe? (3)

Did your household do anything DIFFERENTLY because you did NOT get enough berries & greens? Y N

IF YES...

What did your household do differently? 1 _____ 2 _____

NETWORKS & ASSESSMENTS OF BERRIES & GREENS: 66, 67 **NAPAKIAK: 237**

ASSESMENTS

HOUSEHOLD ID

SUBSISTENCE ASSESSMENTS: ALL RESOURCES

0

To conclude our subsistence harvest section, I am going to ask a few general questions about ALL SUBSISTENCE RESOURCES.

Last year…

…did your household use LESS, SAME, or MORE subsistence resources 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 subsistence resources? Y N

If NO…

What KIND of subsistence resources did you need? _____

WHY did your household NOT get enough all resources? 1 _____

2 _____

How would you describe the impact to your household of not getting enough all resources last year? …not noticable? (0) …minor? (1) …major? (2) severe? (3)

Did your household do anything DIFFERENTLY because you did NOT get enough all resources? Y N

IF YES…

What did your household do differently? 1 _____

2 _____

HEALTH IMPACT ASSESSMENTS

Now I am going to ask about the foods members of your household EAT. In this section, we are interested in all foods: subsistence foods you harvested, foods you received from others, and foods you purchased at a store. We want to…

…determine how often subsistence foods are eaten,

…identify the most important subsistence foods in your community, AND

…identify foods that substitute for subsistence foods, when subsistence foods are not available.

In a normal week, how often are subsistence 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 (?)	About ONCE a day (?)	2 OR 3 times a day (?)	3 OR MORE times a day (?)

(circle ONE response)

If this household does NOT USE subsistence foods, go to the next page.

Otherwise, continue below…

Please list the TOP FIVE SUBSISTENCE FOODS members of your household eat every year. Include subsistence foods that may not be available now, but are important at other times of the year. Please list most important foods first.

	Subsistence Food 1	*Subsistence Food 2*	*Subsistence Food 3*	*Subsistence Food 4*	*Subsistence Food 5*
TOP FIVE SUBSISTENCE FOODS					

If your household CANNOT GET SUBSISTENCE FOODS, what do members of your household eat instead? Include alternate foods that may not be available now, but are important at other times of the year. Please list most important foods first.

	Other Food	*Other Food*	*Other Food*	*Other Food*	*Other Food*
OTHER FOODS (1 to 5)					
OTHER FOODS (6 to 10)					

ASSESSMENTS: 66 **NAPAKIAK: 237**

FOOD SECURITY

HOUSEHOLD ID

The questions on this page have been asked all over the United States to find out if Americans have enough to eat. We would like to know if people in your community have enough to eat. I am going to read you FIVE statements about different food situations. Please tell me whether EACH statement was true for your household (HH) in the last 12 months.

Think about all your household's food, both subsistence and store-bought...

STATEMENT 1. We WORRIED that our household would not have ENOUGH FOOD. HH2

In the last 12 months, was this ever true for your household? N Y ? → if Y

If YES...

...in which months did this happen? J F M A M J J A S O N D

...did this happen because your HH couldn't get SUBSISTENCE foods, your HH couldn't get STORE-BOUGHT foods, or your HH couldn't get BOTH KINDS of food? SUB STOR BOTH

STATEMENT 2. We could not get the kinds of foods we wanted to eat because of a LACK OF RESOURCES. HH4

By "lack of resources," we mean your household (HH) did NOT have what you needed to hunt, fish, gather, or buy food.

In the last 12 months, was this ever true for your household? N Y ? → if Y

If YES...

...in which months did this happen? J F M A M J J A S O N D

...did this happen because your HH couldn't get SUBSISTENCE foods,your HH couldn't get STORE-BOUGHT foods, or your HH couldn't get BOTH KINDS of food? SUB STOR BOTH

STATEMENT 3. The food we had JUST DID NOT LAST, and we could not get more. HH3

In the last 12 months, was this ever true for your household? N Y ? → if Y

If YES, in which months did this happen? J F M A M J J A S O N D

Now, think just about your household's SUBSISTENCE food...

STATEMENT 4. The SUBSISTENCE food we had just did not last, and we could not get more.

In the last 12 months, was this ever true for your household? N Y ?

If YES, in which months did this happen? J F M A M J J A S O N D

Now, think just about your household's STORE-BOUGHT food...

STATEMENT 5. The STORE-BOUGHT food we had just did not last, and we could not get more.

In the last 12 months, was this ever true for your household? N Y ?

If YES, in which months did this happen? J F M A M J J A S O N D

If Statements 1, 2, AND 3 were ALL "NO," go to the next page.

If any ONE of Statements 1, 2, OR 3 was "YES," continue on this page...

In the last 12 months, did you or other adults in your household ever CUT THE SIZE OF YOUR MEALS OR SKIP MEALS because the HH could not get the food that was needed? AD1 N Y ?

If YES, in which months did this happen? J F M A M J J A S O N D

In the last 12 months, did you or other adults in your household ever EAT LESS THAN YOU FELT YOU SHOULD because the HH could not get the food that was needed? AD2 N Y ?

In the last 12 months, were adults in the HH ever HUNGRY BUT DID NOT EAT because there was not enough food? AD3 N Y ?

In the last 12 months, did adults in the HH LOSE WEIGHT because there was not enough food? AD4 N Y ?

In the last 12 months, did you or other adults in your household ever NOT EAT FOR A WHOLE DAY because there was not enough food? AD5 N Y ?

If YES, in which months did this happen? J F M A M J J A S O N D

FOOD SECURITY: 201 NAPAKIAK: 237

COMMENTS & SUMMARY

HOUSEHOLD ID

QUESTIONS, COMMENTS, CONCERNS

Do you have any questions, comments, or concerns?

INTERVIEW SUMMARY

Use this space for interviewer's comments about survey, especially factors that might have affected the household's responses.

BE SURE TO FILL IN THE STOP TIME ON THE FIRST PAGE!!!!

INTERVIEW SUMMARY: 30

NAPAKIAK: 237

Appendix B–TEK Interview Protocol

Lower Kuskokwim Baseline Project

Part 1. Demographic Information
In the beginning of each interview, I recommend asking some basic demographic questions:

1. name
2. year/location born
3. parents names and where from?
4. how long has respondent been hunting/fishing?

Then, it is often useful to take the seasonal round approach when doing interviews and let people answer the questions below through the structure of a description of the parts of the seasonal round that they participate in. That way, you can also document seasonal camps used in the past or currently used by respondent. **[Keep in mind that you do not have to do it this way, but the species sections below are ordered by a seasonal round. Skip around if that works better for you and your respondent.]**

Beginning in the spring with bird hunting…

Part 2. Migratory Bird hunting

1. Please describe your current migratory bird hunting practices:

a. what are the primary species you try to get every year? Do you collect eggs (which kinds?)

b. who do you hunt with year to year? How is this determined?

c. if you are successful, what do you do with the birds – how do you distribute/share it?

d. How do you preserve/process your harvest?

e. how do you feel the different bird populations are doing right now? Why do you think the population is declining/increasing? Are the different bird species healthy?

f. Are there environmental factors that contribute to changes in bird migrations and hunting? (changing weather patterns, changing habitat, etc)

g. are younger people learning to hunt birds? If so, how do they do that? How did you learn?

h. can you show us where you hunt now (or in the last 5 years?) what about the last 10 or 20 years? Have those areas changed at all?

i. are there any rules about hunting or the treatment of birds during hunting/harvest?

j. native names for birds or other aspects of bird hunting? Do you remember any traditional stories about birds or bird hunting in your village?

k. are there any natural seasonal indicators that you use to know when the birds will come?

Part 3. Non-salmon fishing – ask questions for each species (households are likely to harvest multiple species. While we want to document all species they harvest, the most important species to cover will be: whitefish [differentiate species if possible], sheefish, and pike. If a household heavily harvests another species, document that as much as possible.**)**

1. Please describe your current non-salmon fishing practices:

a. which species do you harvest? Timing of that harvest (for each species)?

b. do you fish with other people? How is this determined?

c. what are the primary means you use to harvest different species of non-salmon? (gear type by species?)

d. what do you do with the non-salmon you harvest – how do you distribute/share it?

e. are younger people learning to fish? If so, how do they do that? How did you learn?

f. how do you feel the non-salmon population is doing right now? Why do you think the population is declining/increasing? Are the non- salmon healthy?

g. Have your fishing areas changed at all? (map changes in area – currently and 10-20 years ago)

h. if there are changes to your fishing areas, what explains those changes? (environmental conditions, personal circumstances, traditional areas, changes in the fish population, regulations, etc)

i. Are there environmental factors that contribute to changes in non-salmon fishing? (weather, river conditions, etc)

g. which parts of the fish do you use? How do you preserve/process these parts?

h. are there any rules about fishing or the treatment of fish/nets during fishing?

i. native names for non- salmon species or other aspects of fishing? Do you remember any traditional stories about non-salmon species or fishing in your village?

Part 4. Salmon fishing

1. Please describe your current salmon fishing practices:

a. do you fish with other people? How is this determined?

b. which species do you harvest? Timing of that harvest?

c. what are the primary means you use to harvest salmon? (gear type by species?)

d. what do you do with the salmon you harvest – how do you distribute/share it?

e. which parts of the salmon do you use? How do you preserve/process these parts?

f. how do you feel the salmon population is doing right now? Why do you think the population is declining/increasing? Are the salmon healthy?

g. Have your fishing areas changed at all? (map changes in area – currently and 10-20 years ago)

h. if there are changes to your fishing areas, what explains those changes? (environmental conditions, personal circumstances, traditional areas, changes in the fish population, regulations, etc)

i. Are there environmental factors that contribute to changes in salmon fishing? (weather, river conditions, etc)

j. many people say that the elders used observations of the environment (changes in the land or water, weather, other animals' behavior) to know when salmon were coming and how many might come. Do you remember any of these 'natural indicators'?

k. are younger people learning to fish? If so, how do they do that? How did you learn?

l. are there any rules about fishing or the treatment of fish/nets during fishing?

m. native names for salmon species or other aspects of fishing? Do you remember any traditional stories about salmon or fishing in your village?

Part 5. Moose hunting

1. Please describe your current moose hunting practices

a. who do you hunt with year to year? How is this determined?

b. if you are successful, what do you do with the moose – how do you distribute/share it?

c. which parts of the moose do you use? How do you preserve/process these parts?

d. how do you feel the moose population is doing right now? Why do you think the population is declining/increasing (e.g. predation concerns, hard winters, good habitat, etc?)? Are the moose healthy?

e. Are there environmental factors that contribute to changes in moose hunting? (weather, river conditions, etc)

f. are younger people learning to hunt? If so, how do they do that? How did you learn?

g. can you show us where you hunt now (or in the last 5 years?) what about the last 10 or 20 years? Have those areas changed at all?

h. are there any rules about hunting or the treatment of moose or other animals during moose hunting/harvest?

i. native names for moose or other aspects of moose hunting? Do you remember any traditional stories about moose or moose hunting in your village?

Part 6. Other large game hunting (brown bear, black bear, caribou)

1. Please describe your current big game hunting practices (for each…)

a. who do you hunt with year to year? How is this determined?

b. if you are successful, what do you do with the bear/caribou – how do you distribute/share it?

c. which parts of the bear/caribou do you use? How do you preserve/process these parts?

d. how do you feel the bear/caribou population is doing right now? Why do you think the population is declining/increasing? Are they healthy?

e. can you show us where you hunt now (or in the last 5 years?) what about the last 10 or 20 years? Have those areas changed at all?

f. Are there environmental factors that contribute to changes in bear/caribou hunting? (weather, river conditions, winter conditions, migratory routes (caribou), etc)

g. are younger people learning to hunt? If so, how do they do that? How did you learn?

h. are there any rules about hunting or the treatment of bear/caribou or other animals during moose hunting/harvest?

i. native names for bear/caribou or other aspects of bear/caribou hunting? Do you remember any traditional stories about bear/caribou or bear/caribou hunting in your village?

Part 7. Trapping

1. Please describe your current trapping practices:

a. do you trap with anyone else? How is this determined?

b. how do you 'hold' your trapline? From whom (if anyone) did you get it/take it over?

c. are younger people learning to trap? If so, how do they do that? How did you learn?

d. what species do you trap? Why?

e. how do you feel the population of the animals you trap is doing right now? Why do you think the population is declining/increasing? Are the species you trap healthy?

f. can you show us where you trap now (or in the last 5 years?) what about the last 10 or 20 years? Have those areas changed at all?

g. Are there environmental factors that contribute to changes in trapping? (changing weather, snow pack, river conditions, etc)

Part 8. Marine mammals

1. Please describe your current marine mammal hunting practices (for each…)

a. who do you hunt with year to year? How is this determined?

b. if you are successful, what do you do with the animal(s) – how do you distribute/share it?

c. which parts of the aniaml do you use? How do you preserve/process these parts?

d. how do you feel the various marine mammal populations are doing right now? Why do you think the population is declining/increasing? Are they healthy?

e. can you show us where you hunt now (or in the last 5 years?) what about the last 10 or 20 years? Have those areas changed at all?

f. Are there environmental factors that contribute to changes in marine mammal hunting? (weather, sea ice or river conditions, locations, etc)

g. are younger people learning to hunt? If so, how do they do that? How did you learn?

h. are there any rules about hunting or the treatment of marine mammal species?

i. native names for marine mammal species or other aspects of marine mammal hunting? Do you remember any traditional stories about marine mammal species or marine mammal hunting in your village?

Appendix C–Conversion Factors

The following tables present conversion factors used in determining how many pounds were harvested of each resource surveyed. For instance, if respondents reported harvesting 100 individual Arctic lamprey, the quantity would be multiplied by the appropriate conversion factor (in this case .60) to show a harvest of 60 lb of Arctic lamprey. Due to regional differences in the range of fish and wildlife resources, this appendix contains 2 tables of conversion factors, one for each study region.

Conversion factors from units of measure into edible pounds, Kuskokwim area communities, 2011.

Resource	Scientific Name	Reported units	Conversion to pounds
Summer chum salmon	*Oncorhynchus keta*	Individual	5.09
Fall chum salmon	*Oncorhynchus keta*	Individual	5.09
Coho salmon	*Oncorhynchus kisutch*	Individual	5.29
Chinook salmon	*Oncorhynchus tshawytscha*	Individual	9.45
Pink salmon	*Oncorhynchus gorbuscha*	Individual	2.81
Sockeye salmon	*Oncorhynchus nerka*	Individual	5.04
Unknown salmon	*Oncorhynchus spp.*	Individual	7.29
Pacific herring	*Clupea pallasi*	Gallons	6.00
Pacific herring roe		Gallons	5.50
Eulachon (hooligan, candlefish)	*Thaleichthys pacificus*	Gallons	3.25
Unknown smelt		Gallons	6.00
Pacific tomcod	*Microgadus proximus*	Individual	0.50
Saffron cod	*Eleginus gracilis*	Individual	0.75
Flounder		Individual	1.10
Lingcod	*Ophiodon elongatus*	Individual	4.00
Pacific halibut	*Hippoglossus stenolepis*	Pounds	1.00
Arctic lamprey	*Lampetra spp.*	Individual	0.60
Black rockfish	*Sebastes melanops*	Individual	1.50
Yelloweye rockfish	*Sebastes ruberrimus*	Individual	1.50
Alaska blackfish	*Dallia pectoralis*	Pounds	1.00
Burbot	*Lota lota*	Individual	4.50
Dolly Varden	*Salvelinus malma*	Individual	1.50
Lake trout	*Salvelinus namaycush*	Individual	2.00
Arctic grayling	*Thymallus arcticus*	Individual	1.50
Northern pike	*Esox lucius*	Individual	5.00
Sheefish	*Stenodus leucichthys*	Individual	6.50
Longnose sucker	*Catostomus catostomus*	Individual	1.00
Rainbow trout	*Oncorhynchus mykiss*	Individual	2.00
Broad whitefish	*Coregonus nasus*	Individual	1.40
Bering cisco	*Coregonus laurettae*	Individual	1.40
Least cisco	*Coregonus sardinella*	Individual	1.00
Humpback whitefish	*Coregonus pidschian*	Individual	3.00

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Resource	Scientific Name	Reported units	Conversion to pounds
Round whitefish	*Prosopium cylindraceum*	Individual	1.50
Unknown whitefishes		Individual	2.43
Unknown nonsalmon fish		Individual	3.00
Bison	*Bison bison*	Individual	450.00
Black bear	*Ursus americanus*	Individual	150.00
Brown bear	*Ursus arctos*	Individual	200.00
Caribou	*Rangifer tarandus*	Individual	150.00
Deer	*Odocoileus hemionus*	Individual	42.50
Moose	*Alces alces*	Individual	715.00
Muskox	*Ovibos moschatus*	Individual	295.00
Dall sheep	*Ovis dalli*	Individual	100.00
Beaver	*Castor canadensis*	Individual	20.00
Coyote	*Canis latrans*	Individual	0.00
Arctic fox	*Vulpes lagopus*	Individual	0.00
Red fox	*Vulpes vulpes*	Individual	0.00
Red fox–cross phase	*Vulpes vulpes*	Individual	0.00
Arctic hare	*Lepus arcticus*	Individual	3.00
Snowshoe hare	*Lepus americanus*	Individual	3.00
Jackrabbit	*Lepus othus*	Individual	2.00
River (land) otter	*Lontra canadensis*	Individual	3.00
Lynx	*Lynx canadensis*	Individual	4.00
Marmot	*Marmota spp.*	Individual	5.00
Marten	*Martes spp.*	Individual	0.00
Mink	*Neovison vison*	Individual	2.50
Muskrat	*Ondatra zibethicus*	Individual	0.75
Porcupine	*Erethizon dorsatum*	Individual	4.50
Arctic ground (parka) squirrel	*Spermophilus parryii*	Individual	0.75
Red (tree) squirrel	*Tamiasciurus hudsonicus*	Individual	0.75
Weasel	*Mustela nivalis*	Individual	0.00
Wolf	*Canis lupus*	Individual	0.00
Wolverine	*Gulo gulo*	Individual	0.00
Reindeer–feral		Individual	62.50
Bearded seal	*Erignathus barbatus*	Individual	420.00
Ringed seal	*Histriophoca fasciata*	Individual	63.00
Spotted seal	*Phoca largha*	Individual	56.00
Unknown seal		Individual	56.00
Walrus	*Odobenus rosmarus*	Individual	1100.00
Beluga whale	*Delphinapterus leucas*	Individual	1000.00
Bowhead whale	*Balaena mysticetus*	Individual	28677.00
Unknown whale		Individual	600.00
Bufflehead	*Bucephala albeola*	Individual	1.50

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Resource	Scientific Name	Reported units	Conversion to pounds
Canvasback	*Aythya valisineria*	Individual	1.10
Common eider	*Somateria mollissima*	Individual	2.21
King eider	*Somateria spectabilis*	Individual	1.43
Unknown eider		Individual	2.21
Goldeneye	*Bucephala spp.*	Individual	0.80
Harlequin	*Histrionicus histrionticus*	Individual	1.50
Mallard	*Anas platyrhynchos*	Individual	1.95
Common merganser	*Mergus merganser*	Individual	1.27
Red-breasted merganser	*Mergus serrator*	Individual	0.62
Unknown merganser		Individual	0.95
Long-tailed duck	*Clangula hyemalis*	Individual	1.50
Northern pintail	*Anas acuta*	Individual	1.50
Scaup		Individual	0.90
Black scoter	*Melanitta nigra*	Individual	0.90
Surf scoter	*Melanitta perspicillata*	Individual	0.90
White-winged scoter	*Melanitta fusca*	Individual	2.29
Northern shoveler	*Anas clypeata*	Individual	1.09
Green-winged teal	*Anas crecca*	Individual	0.52
Wigeon	*Anas spp.*	Individual	1.31
Unknown ducks		Individual	1.82
Brant	*Branta bernicla*	Individual	6.00
Cackling goose	*Branta hutchinsii minima*	Individual	1.20
Lesser Canada goose	*Branta canadensis parvipes*	Individual	3.98
Unknown Canada goose		Individual	1.96
Emperor goose	*Chen canagica*	Individual	2.50
Snow goose	*Chen caerulescens*	Individual	3.99
White-fronted goose	*Anser albifrons*	Individual	4.24
Unknown goose		Individual	4.18
Tundra (whistling) swan	*Cygnus columbianus*	Individual	11.21
Sandhill crane	*Grus canadensis*	Individual	10.00
Whimbrel	*Numenius phaeopus*	Individual	0.10
Unknown loon		Individual	3.00
Spruce grouse	*Falcipennis canadensis*	Individual	1.00
Sharp-tailed grouse	*Tympanuchus phasianellus*	Individual	1.00
Ruffed grouse	*Bonasa umbellus*	Individual	1.00
Unknown grouse		Individual	1.00
Ptarmigan	*Lagopus spp.*	Individual	1.00
Duck eggs		Individual	0.15
White-fronted goose eggs	*Anser spp.*	Individual	0.25
Goose eggs		Individual	0.30
Swan eggs		Individual	0.63

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Resource	Scientific Name	Reported units	Conversion to pounds
Sandhill crane eggs	*Grus canadensis*	Individual	0.63
Whimbrel eggs	*Numenius phaeopus*	Individual	0.30
Unknown shorebird eggs		Individual	0.05
Unknown gull eggs		Individual	0.30
Arctic tern eggs	*Sterna paradisaea*	Individual	0.05
Ptarmigan eggs		Individual	0.10
Unknown eggs		Individual	0.22
Freshwater clams		Gallons	3.00
Unknown clams		Gallons	3.00
King crab		Individual	2.10
Tanner crab (opillio)	*Chionoecetes opilio*	Individual	1.60
Unknown Tanner crab	*Chionoecetes spp.*	Individual	1.60
Unknown crab		Individual	2.10
Unknown mussels		Gallons	1.50
Oyster		Gallons	3.00
Scallops		Gallons	1.00
Shrimp		Gallons	2.00
Unknown marine invertebrates		Gallons	2.13
Blueberry	*Vaccinium uliginosum alpinum*	Gallons	4.00
Lowbush cranberry	*Vaccinum vitis-idaea minus*	Gallons	4.00
Highbush cranberry	*Viburnum edule*	Gallons	4.00
Crowberry	*Empetrum nigrum*	Gallons	4.00
Gooseberry	*Ribes oxyacanthoides*	Gallons	4.00
Currants	*Ribes spp.*	Gallons	4.00
Raspberry	*Rubus idaeus*	Gallons	4.00
Salmonberry	*Rubus spectabilis*	Gallons	4.00
Other wild berry		Gallons	4.00
Wild rhubarb	*Polygonum alaskanum*	Gallons	4.00
Eskimo potato	*Hedysarum alpinum*	Gallons	4.00
Fiddlehead ferns		Gallons	1.00
Nettle	*Urtica spp.*	Gallons	1.00
Hudson's Bay (Labrador) tea	*Ledum palustre*	Gallons	1.00
Mint	*Mentha spp.*	Gallons	1.00
Sourdock	*Rumex fenestratus*	Gallons	1.00
Spruce tips	*Picea spp.*	Gallons	1.00
Willow leaves	*Salix spp.*	Gallons	1.00
Wild celery	*Angelica lucida*	Gallons	1.00
Wild rosehips	*Rosa acicularis*	Gallons	4.00
Yarrow	*Achillea spp.*	Gallons	1.00
Other wild greens		Gallons	1.00
Unknown mushrooms		Gallons	1.00

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Resource	Scientific Name	Reported units	Conversion to pounds
Fireweed	*Epilobium angustifolium*	Gallons	4.00
Stinkweed	*Artemisia tilesii*	Gallons	1.00
Punk		Gallons	0.00
Puffballs		Gallons	4.00
Unknown greens from land		Gallons	1.00
Mouse foods		Gallons	1.00

Note This table does not include resources where harvests were reported in pounds, where conversion factors were not known, or where the resource was not eaten (e.g., firewood).

Conversion factors from units of measure into edible pounds, Yukon area communities, 2011.

Resource	Scientific Name	Reported units	Conversion to pounds
Summer chum salmon	*Oncorhynchus keta*	Individual	5.02
Fall chum salmon	*Oncorhynchus keta*	Individual	5.02
Coho salmon	*Oncorhynchus kisutch*	Individual	5.10
Chinook salmon	*Oncorhynchus tshawytscha*	Individual	9.30
Pink salmon	*Oncorhynchus gorbuscha*	Individual	3.20
Sockeye salmon	*Oncorhynchus nerka*	Individual	6.00
Unknown salmon	*Oncorhynchus spp.*	Individual	7.25
Pacific herring	*Clupea pallasi*	Gallons	6.00
Pacific herring roe		Gallons	5.50
Eulachon (hooligan, candlefish)	*Thaleichthys pacificus*	Gallons	3.25
Unknown smelt		Gallons	6.00
Pacific tomcod	*Microgadus proximus*	Individual	0.50
Saffron cod	*Eleginus gracilis*	Individual	0.75
Flounder		Individual	1.10
Lingcod	*Ophiodon elongatus*	Individual	4.00
Pacific halibut	*Hippoglossus stenolepis*	Pounds	1.00
Arctic lamprey	*Lampetra spp.*	Individual	0.60
Black rockfish	*Sebastes melanops*	Individual	1.50
Yelloweye rockfish	*Sebastes ruberrimus*	Individual	1.50
Alaska blackfish	*Dallia pectoralis*	Pounds	1.00
Burbot	*Lota lota*	Individual	4.50
Dolly Varden	*Salvelinus malma*	Individual	1.50
Lake trout	*Salvelinus namaycush*	Individual	2.00
Arctic grayling	*Thymallus arcticus*	Individual	1.50
Northern pike	*Esox lucius*	Individual	4.50
Sheefish	*Stenodus leucichthys*	Individual	6.50
Longnose sucker	*Catostomus catostomus*	Individual	2.00
Rainbow trout	*Oncorhynchus mykiss*	Individual	1.40
Broad whitefish	*Coregonus nasus*	Individual	4.00
Bering cisco	*Coregonus laurettae*	Individual	1.40
Least cisco	*Coregonus sardinella*	Individual	1.00
Humpback whitefish	*Coregonus pidschian*	Individual	3.00
Round whitefish	*Prosopium cylindraceum*	Individual	1.00
Unknown whitefishes		Individual	3.77
Unknown nonsalmon fish		Individual	3.00
Bison	*Bison bison*	Individual	450.00
Black bear	*Ursus americanus*	Individual	150.00
Brown bear	*Ursus arctos*	Individual	200.00
Caribou	*Rangifer tarandus*	Individual	141.00
Deer	*Odocoileus hemionus*	Individual	42.50

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Resource	Scientific Name	Reported units	Conversion to pounds
Moose	*Alces alces*	Individual	700.00
Muskox	*Ovibos moschatus*	Individual	295.00
Dall sheep	*Ovis dalli*	Individual	80.00
Beaver	*Castor canadensis*	Individual	30.00
Coyote	*Canis latrans*	Individual	0.00
Arctic fox	*Vulpes lagopus*	Individual	0.00
Red fox	*Vulpes vulpes*	Individual	0.00
Red fox–cross phase	*Vulpes vulpes*	Individual	0.00
Arctic hare	*Lepus arcticus*	Individual	3.00
Snowshoe hare	*Lepus americanus*	Individual	3.00
Jackrabbit	*Lepus othus*	Individual	2.00
River (land) otter	*Lontra canadensis*	Individual	3.00
Lynx	*Lynx canadensis*	Individual	4.00
Marmot	*Marmota spp.*	Individual	5.00
Marten	*Martes spp.*	Individual	0.00
Mink	*Neovison vison*	Individual	2.50
Muskrat	*Ondatra zibethicus*	Individual	0.75
Porcupine	*Erethizon dorsatum*	Individual	5.00
Arctic ground (parka) squirrel	*Spermophilus parryii*	Individual	0.75
Red (tree) squirrel	*Tamiasciurus hudsonicus*	Individual	0.75
Weasel	*Mustela nivalis*	Individual	0.00
Wolf	*Canis lupus*	Individual	0.00
Wolverine	*Gulo gulo*	Individual	0.00
Reindeer–feral		Individual	62.50
Bearded seal	*Erignathus barbatus*	Individual	420.00
Ringed seal	*Histriophoca fasciata*	Individual	63.00
Spotted seal	*Phoca largha*	Individual	56.00
Unknown seal		Individual	56.00
Walrus	*Odobenus rosmarus*	Individual	560.00
Beluga whale	*Delphinapterus leucas*	Individual	700.00
Bowhead whale	*Balaena mysticetus*	Individual	28677.00
Unknown whale		Individual	600.00
Bufflehead	*Bucephala albeola*	Individual	1.50
Canvasback	*Aythya valisineria*	Individual	1.90
Common eider	*Somateria mollissima*	Individual	2.21
King eider	*Somateria spectabilis*	Individual	1.43
Unknown eider		Individual	2.21
Goldeneye	*Bucephala spp.*	Individual	1.54
Harlequin	*Histrionicus histrionticus*	Individual	1.50
Mallard	*Anas platyrhynchos*	Individual	1.95
Common merganser	*Mergus merganser*	Individual	1.27

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Resource	Scientific Name	Reported units	Conversion to pounds
Red-breasted merganser	*Mergus serrator*	Individual	0.62
Unknown merganser		Individual	0.95
Long-tailed duck	*Clangula hyemalis*	Individual	1.50
Northern pintail	*Anas acuta*	Individual	1.50
Scaup		Individual	0.90
Black scoter	*Melanitta nigra*	Individual	0.90
Surf scoter	*Melanitta perspicillata*	Individual	0.90
White-winged scoter	*Melanitta fusca*	Individual	2.29
Northern shoveler	*Anas clypeata*	Individual	1.09
Green-winged teal	*Anas crecca*	Individual	0.52
Wigeon	*Anas spp.*	Individual	1.31
Unknown ducks		Individual	1.51
Brant	*Branta bernicla*	Individual	6.00
Cackling goose	*Branta hutchinsii minima*	Individual	1.20
Lesser Canada goose	*Branta canadensis parvipes*	Individual	3.98
Unknown Canada goose		Individual	1.96
Emperor goose	*Chen canagica*	Individual	2.50
Snow goose	*Chen caerulescens*	Individual	3.99
White-fronted goose	*Anser albifrons*	Individual	4.24
Unknown goose		Individual	3.68
Tundra (whistling) swan	*Cygnus columbianus*	Individual	11.21
Sandhill crane	*Grus canadensis*	Individual	10.00
Whimbrel	*Numenius phaeopus*	Individual	0.10
Unknown loon		Individual	3.00
Spruce grouse	*Falcipennis canadensis*	Individual	1.00
Sharp-tailed grouse	*Tympanuchus phasianellus*	Individual	1.00
Ruffed grouse	*Bonasa umbellus*	Individual	1.00
Unknown grouse		Individual	1.00
Ptarmigan	*Lagopus spp.*	Individual	1.00
Duck eggs		Individual	0.15
White-fronted goose eggs	*Anser spp.*	Individual	0.25
Goose eggs		Individual	0.30
Swan eggs		Individual	0.63
Sandhill crane eggs	*Grus canadensis*	Individual	0.63
Whimbrel eggs	*Numenius phaeopus*	Individual	0.30
Unknown shorebird eggs		Individual	0.05
Unknown gull eggs		Individual	0.30
Arctic tern eggs	*Sterna paradisaea*	Individual	0.05
Ptarmigan eggs		Individual	0.10
Unknown eggs		Individual	0.22
Freshwater clams		Gallons	3.00

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Resource	Scientific Name	Reported units	Conversion to pounds
Unknown clams		Gallons	3.00
King crab		Individual	2.10
Tanner crab (opillio)	*Chionoecetes opilio*	Individual	1.60
Unknown Tanner crab	*Chionoecetes spp.*	Individual	1.60
Unknown crab		Individual	2.10
Unknown mussels		Gallons	1.50
Oyster		Gallons	3.00
Scallops		Gallons	1.00
Shrimp		Gallons	2.00
Unknown marine invertebrates		Gallons	2.13
Blueberry	*Vaccinium uliginosum alpinum*	Gallons	4.00
Lowbush cranberry	*Vaccinum vitis-idaea minus*	Gallons	4.00
Highbush cranberry	*Viburnum edule*	Gallons	4.00
Crowberry	*Empetrum nigrum*	Gallons	4.00
Gooseberry	*Ribes oxyacanthoides*	Gallons	4.00
Currants	*Ribes spp.*	Gallons	4.00
Raspberry	*Rubus idaeus*	Gallons	4.00
Salmonberry	*Rubus spectabilis*	Gallons	4.00
Other wild berry		Gallons	4.00
Wild rhubarb	*Polygonum alaskanum*	Gallons	4.00
Eskimo potato	*Hedysarum alpinum*	Gallons	4.00
Fiddlehead ferns		Gallons	1.00
Nettle	*Urtica spp.*	Gallons	1.00
Hudson's Bay (Labrador) tea	*Ledum palustre*	Gallons	1.00
Mint	*Mentha spp.*	Gallons	1.00
Sourdock	*Rumex fenestratus*	Gallons	1.00
Spruce tips	*Picea spp.*	Gallons	1.00
Willow leaves	*Salix spp.*	Gallons	1.00
Wild celery	*Angelica lucida*	Gallons	1.00
Wild rosehips	*Rosa acicularis*	Gallons	4.00
Yarrow	*Achillea spp.*	Gallons	1.00
Other wild greens		Gallons	1.00
Unknown mushrooms		Gallons	1.00
Fireweed	*Epilobium angustifolium*	Gallons	4.00
Stinkweed	*Artemisia tilesii*	Gallons	1.00
Punk		Gallons	0.00
Puffballs		Gallons	4.00
Unknown greens from land		Gallons	1.00
Mouse foods		Gallons	1.00

Note This table does not include resources where harvests were reported in pounds, where conversion factors were not known, or where the resource was not eaten (e.g., firewood).

Appendix D–Additional Tables

Table D1-1. – Residents of parents of household heads when born for 8 Kuskokwim and Yukon river communities, 2011.

Residence of parents of household heads	Community of residence of household head							
	Anvik	Grayling	McGrath	Napakiak	Napaskiak	Nikolai	Russian Mission	Takotna
Anchorage	2.6%	1.5%	1.7%	0.0%	1.0%	0.0%	0.0%	8.7%
Aniak	0.0%	1.5%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%
Anvik	66.7%	6.2%	1.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Balance of Fairbanks North Star Census Sub-Area	0.0%	0.0%	0.0%	0.0%	2.0%	0.0%	0.0%	0.0%
Bethel	0.0%	0.0%	0.6%	0.0%	5.1%	0.0%	2.6%	0.0%
Chevak	0.0%	0.0%	0.0%	2.3%	0.0%	0.0%	0.0%	0.0%
Chuathbaluk	0.0%	0.0%	0.0%	1.1%	0.0%	0.0%	0.0%	0.0%
Copper Center	2.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Cordova	0.0%	0.0%	0.0%	1.1%	0.0%	0.0%	0.0%	0.0%
Crooked Creek	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%	0.0%
Eek	0.0%	0.0%	0.0%	2.3%	0.0%	0.0%	0.0%	0.0%
Fairbanks	7.7%	0.0%	1.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Galena	0.0%	0.0%	0.0%	1.1%	0.0%	0.0%	0.0%	0.0%
Grayling	2.6%	44.6%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%
Holikachuk	2.6%	18.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Holy Cross	2.6%	1.5%	4.7%	0.0%	0.0%	0.0%	0.0%	4.3%
Homer	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%
Kaltag	2.6%	3.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Kasigluk	0.0%	0.0%	0.0%	0.0%	2.0%	0.0%	0.0%	0.0%
Ketchikan	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%
King Cove	2.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Kipnuk	0.0%	0.0%	0.0%	1.1%	1.0%	0.0%	0.0%	0.0%
Kongiganak	0.0%	0.0%	0.0%	0.0%	3.0%	0.0%	1.3%	0.0%
Koyukuk	2.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Kwethluk	0.0%	0.0%	0.0%	2.3%	2.0%	0.0%	0.0%	0.0%
Kwigillingok	0.0%	0.0%	0.0%	2.3%	1.0%	0.0%	1.3%	0.0%
Lime Village	0.0%	0.0%	3.5%	0.0%	0.0%	0.0%	0.0%	0.0%
Marshall (Fortuna Ledge)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%	0.0%
McGrath	0.0%	0.0%	23.3%	0.0%	0.0%	0.0%	0.0%	0.0%
Mountain Village	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%	0.0%
Napakiak	0.0%	0.0%	0.0%	68.2%	0.0%	0.0%	1.3%	0.0%
Napaskiak	0.0%	0.0%	0.0%	0.0%	70.7%	0.0%	1.3%	0.0%
Nikolai	0.0%	0.0%	3.5%	0.0%	0.0%	83.3%	0.0%	0.0%
Nome	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%
Nunapitchuk	0.0%	0.0%	0.0%	3.4%	1.0%	0.0%	0.0%	0.0%
Oscarville	0.0%	0.0%	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%
Palmer	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%
Pilot Station	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	2.6%	0.0%
Quinhagak	0.0%	0.0%	0.0%	1.1%	0.0%	0.0%	0.0%	0.0%
Red Devil	0.0%	0.0%	1.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Russian Mission	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	60.5%	0.0%
Scammon Bay	0.0%	0.0%	0.0%	1.1%	0.0%	0.0%	0.0%	0.0%
Seward	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%
Shageluk	0.0%	6.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Sleetmute	0.0%	0.0%	1.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Saint Marys (Andreafsky)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%	0.0%
Stony River	0.0%	0.0%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%

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Table D1-1.–Page 2 of 2.

Residence of parents of household heads	Community of residence of household head							
	Anvik	Grayling	McGrath	Napakiak	Napaskiak	Nikolai	Russian Mission	Takotna
Takotna	0.0%	0.0%	1.7%	0.0%	0.0%	0.0%	0.0%	34.8%
Tuntutuliak	0.0%	0.0%	0.0%	1.1%	2.0%	0.0%	0.0%	0.0%
Upper Kalskag	0.0%	0.0%	1.2%	1.1%	0.0%	0.0%	0.0%	0.0%
Whittier	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%
Kalskag	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.6%	0.0%
Old Stuyahok	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%
Paimiut	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%	0.0%
Kasigluk and Eek	0.0%	0.0%	0.0%	1.1%	0.0%	0.0%	0.0%	0.0%
Red Devil to Sleetmute	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%
Holy Cross and Paimiut	2.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Nunam Iqua (Sheldon Point) and Black River	0.0%	0.0%	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%
Other U.S.	2.6%	1.5%	14.0%	0.0%	7.1%	16.7%	11.8%	47.8%
Foreign	0.0%	0.0%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%
Outside Alaska	0.0%	12.3%	29.1%	8.0%	0.0%	0.0%	0.0%	0.0%
Missing	0.0%	3.1%	2.3%	1.1%	0.0%	0.0%	3.9%	4.3%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D1-2. – Demographic and sample characteristics in 8 Kuskokwim and Yukon river communities, 2011.

	Community							
Characteristics	Anvik	Grayling	McGrath	Napakiak	Napaskiak	Nikolai	Russian Mission	Takotna
Sample achievement								
Sampled households	24	41	108	56	56	26	46	14
Eligible households	32	55	142	89	96	39	79	22
Percentage sampled	75.0%	74.5%	76.1%	62.9%	58.3%	66.7%	58.2%	63.6%
Sampled population	66	158	271	199	280	78	234	33
Estimated population	88.0	212.0	356.3	316.3	480.0	117.0	401.9	51.9
Household size								
Mean	2.8	3.9	2.5	3.6	5.0	3.0	5.1	2.4
Minimum	1	1	1	1	1	1	1	1
Maximum	10	8	7	9	11	9	10	5
Age								
Mean	33.3	28.3	36.1	32.4	27.3	36.7	24.4	38.6
Minimum	1	0	0	1	0	1	0	0
Maximum	84	89	84	95	84	83	77	85
Median	26.9	23.1	19.0	27.4	23.5	30.9	20.2	21.7
Sex								
Estimated male								
Number	46.7	102.0	185.4	168.5	246.9	70.5	214.7	34.6
Percentage	53.0%	48.1%	52.0%	53.3%	51.4%	60.3%	53.4%	66.7%
Estimated female								
Number	41.3	110.0	170.9	147.8	233.1	46.5	187.2	17.3
Percentage	47.0%	51.9%	48.0%	46.7%	48.6%	39.7%	46.6%	33.3%
Length of residency								
Population								
Mean	26.9	23.1	19.0	27.4	23.5	30.9	20.2	21.7
Minimum	0	0	0	1	0	1	0	0
Maximum	84	86	74	95	84	83	68	82
Household heads								
Mean	36.0	35.5	23.9	42.9	38.4	45.7	34.1	24.6
Minimum	0	1	1	1	2	2	0	0
Maximum	84	86	74	95	84	83	68	51
Alaska Native								
Estimated households								
Number	29.3	52.3	86.8	79.3	87.4	37.5	70.4	14.1
Percentage	91.7%	95.1%	61.1%	89.1%	91.1%	96.2%	89.1%	64.3%
Estimated population								
Number	84.0	205.2	210.4	301.6	461.1	106.5	384.7	26.7
Percentage	95.5%	96.8%	59.0%	95.4%	96.1%	91.0%	95.7%	51.5%

Source ADF&G Division of Subsistence household surveys, 2012

Table D1-3. – Estimates of moose hunting effort by hunters in surveyed communities, 2011.

	All hunters					Successful (harvesting) households			
Community	Estimated total harvest	Number of hunters	Estimated days hunted	Hunting days/hunter	Moose/hunter	Number of hunters[a]	Estimated days hunted	Hunting days/hunter	Hunting days/ moose harvested
All[b]	269.3	453.1	3064.3	18.2	1.6	164.7	1205.4	7.3	7.2
Anvik	14.7	48.0	533.3	11.1	0.3	14.7	162.3	11.1	11.1
Grayling	22.8	55.0	311.5	5.7	0.4	21.5	112.5	5.2	4.9
McGrath	76.3	165.0	1307.3	7.9	0.5	74.9	633.5	8.5	8.3
Napakiak	12.7	45.3	177.9	3.9	0.3	11.9	33.1	2.8	2.6
Napaskiak	29.1	112.7	606.9	5.4	0.3	29.1	178.2	6.1	6.1
Nikolai	42.0					*no data available*			
Russian Mission	58.8					*no data available*			
Takotna	12.9	27.1	127.4	4.7	0.5	12.6	85.9	6.8	6.8

Source ADF&G Division of Subsistence household surveys, 2012.

a. A maximum of 1 hunter is counted per moose harvested.

b. Statistics for overall harvest effort computed based upon only those communities where days hunted moose per person was asked.

Table D1-4. – Employment characteristics for selected Kuskokwim and Yukon river communities, 2011.

	Community							
	Anvik	Grayling	McGrath	Napakiak	Napaskiak	Nikolai	Russian Mission	Takotna
All adults								
Number	64.0	137.4	266.2	217.9	313.0	88.5	266.2	43.8
Mean weeks employed	27.4	25.9	33.2	19.7	23.7	16.0	20.6	20.1
Employed adults								
Number	45.3	97.5	215.7	121.8	194.9	51.3	144.5	26.5
Percentage	70.8%	71.0%	81.0%	55.9%	62.3%	58.0%	54.3%	60.6%
Jobs								
Number	57.3	151.3	292.0	141.5	228.4	69.0	182.1	37.1
Mean	1.3	1.6	1.4	1.2	1.2	1.3	1.3	1.4
Minimum	1	1	1	1	1	1	1	1
Maximum	3	5	5	3	3	4	3	4
Months employed								
Mean	9.2	8.6	9.5	8.9	9.1	6.6	8.7	7.7
Minimum	2	1	1	1	1	1	1	2
Maximum	12	12	12	12	12	12	12	12
Percentage employed year-round	57.1%	42.4%	57.3%	37.7%	38.0%	34.5%	39.2%	33.3%
Mean weeks employed	38.8	36.5	41.0	35.2	38.0	27.6	37.9	33.2
Households								
Number	32	55	142	89	96	39	79	22
Employed								
Number	25.3	50.7	132.1	71.2	86.6	30.5	67.7	16.5
Percentage	79.2%	92.1%	93.0%	80.0%	90.2%	78.3%	85.7%	75.0%
Jobs per employed household								
Mean	2.3	2.7	2.2	2.0	2.5	2.2	2.6	2.3
Minimum	1	1	1	1	1	1	1	1
Maximum	5	10	6	4	7	8	8	6
Employed adults								
Minimum	1	1	1	1	1	1	1	1
Maximum	5	4	4	4	4	3	5	3
Mean								
Employed households	1.8	1.9	1.6	1.7	2.3	1.7	2.1	1.6
Total households	1.4	1.8	1.5	1.4	2.0	1.3	1.8	1.2
Mean person-weeks of employment	71.4	61.5	66.2	60.8	82.6	44.5	77.9	55.4

Source ADF&G Division of Subsistence household surveys, 2012.

Table D2-1. – Resource harvest and use characteristics, McGrath, 2011.

Characteristic	
Mean number of resources used per household	
Minimum	0
Maximum	41
95% confidence limit (±)	5.9%
Mean	14
Median	13
Mean number of resources attempted to harvest per household	
Minimum	0
Maximum	38
95% confidence limit (±)	7.0%
Mean	12
Median	10
Mean number of resources harvested per household	
Minimum	0
Maximum	35
95% confidence limit (±)	7.2%
Mean	10
Median	8
Mean number of resources received per household	
Minimum	0
Maximum	25
95% confidence limit (±)	8.1%
Mean	5
Median	4
Mean number of resources given away per household	
Minimum	0
Maximum	25
95% confidence limit (±)	10.3%
Mean	4
Median	3
Household harvest (lb)	
Minimum	0.0
Maximum	2,535.9
Mean	593.3
Median	514
Total estimated harvest weight (lb)	84,254.7
Community per capita estimated harvest (lb)	236.5
Percentage of households using any resource	99.1%
Percentage of households attempting to harvest any resource	96.3%
Percentage of households harvesting any resource	96.3%
Percentage of households receiving any resource	92.6%
Percentage of households giving away any resource	76.9%
Number of households in sample	108
Number of resources available	145

Source ADF&G Division of Subsistence household survey, 2012.

Table D2-2. – Estimated harvest of salmon and nonsalmon fish for consumption by dogs, McGrath, 2011.

Resource	Amount	Pounds
Nonsalmon fish		
Unknown smelt	0.0 gal	0.0 lb
Burbot	0.0 ind	0.0 lb
Other nonsalmon fish	0.0	0.0 lb
Rainbow trout	0.0 ind	0.0 lb
Dolly Varden	0.0 ind	0.0 lb
Longnose sucker	39.4 ind	27.6 lb
Alaska blackfish	0.0 ind	0.0 lb
Northern pike	36.8 ind	184.1 lb
Whitefishes	51.3 ind	250.1 lb
Arctic grayling	2.6 ind	1.8 lb
Salmon		
Unknown salmon	0.0 ind	0.0 lb
Pink salmon	0.0 ind	0.0 lb
Sockeye salmon	0.0 ind	0.0 lb
Chum salmon	462.8 ind	2,356.3 lb
Chinook salmon	32.9 ind	310.6 lb
Coho salmon	500.9 ind	2,650.0 lb
Total	**1,126.8**	**5,780.5 lb**
Whitefishes		
Bering cisco	0.0 ind	0.0 lb
Unknown whitefishes	0.0 ind	0.0 lb
Least cisco	0.0 ind	0.0 lb
Round whitefish	0.0 ind	0.0 lb
Broad whitefish	6.6 ind	9.2 lb
Humpback whitefish	2.6 ind	5.3 lb
Sheefish	42.1 ind	235.6 lb
Subtotal	**51.3 ind**	**250.1 lb**
Other fish		
Pacific herring	0.0 gal	0.0 lb
Eulachon (hooligan, candlefish)	0.0 gal	0.0 lb
Pacific tomcod	0.0 ind	0.0 lb
Saffron cod	0.0 ind	0.0 lb
Lingcod	0.0 ind	0.0 lb
Arctic lamprey	0.0 ind	0.0 lb
Yelloweye rockfish	0.0 ind	0.0 lb
Stickleback (needlefish)	0.0 gal	0.0 lb
Lake trout	0.0 ind	0.0 lb
Black rockfish	0.0 ind	0.0 lb
Pacific halibut	0.0 lb	0.0 lb
Subtotal	**0.0**	**0.0 lb**

Source ADF&G Division of Subsistence household surveys, 2012.
Note summary rows that include incompatible units of measure have been left blank.

Table D2-3. – Estimated large land mammal and wolf harvest by month and sex, McGrath, 2011.

	Bison	Black bear	Brown bear	Caribou			Deer	Moose			Muskox	Dall sheep	Wolf
Harvest month	Unknown	Unknown	Unknown	Male	Female	Unknown	Unknown	Male	Female	Unknown	Unknown	Unknown	Unknown
January	0.0	0.0	0.0	1.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.8
February	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	0.0	0.0	0.0	0.0	10.5
March	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3
April	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
May	0.0	7.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3
June	0.0	13.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
July	0.0	6.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
August	0.0	5.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
September	0.0	7.9	0.0	0.0	0.0	0.0	0.0	73.6	0.0	0.0	0.0	0.0	0.0
October	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
November	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
December	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.9
Unknown	0.0	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 harvest	**0.0**	**40.8**	**1.3**	**1.3**	**1.3**	**0.0**	**0.0**	**76.3**	**0.0**	**0.0**	**0.0**	**0.0**	**28.9**

Source ADF&G Division of Subsistence household surveys, 2012.

Table D2-4. – Estimated small land mammal harvest by month, McGrath, 2011.

	Estimated harvest by month												
Resource	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk
Beaver	6.6	6.6	27.6	5.3	69.7	36.8	3.9	1.3	7.9	0.0	7.9	6.6	0.0
Coyote	2.6	2.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Arctic fox	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red fox	10.5	13.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.6	10.5	0.0
Snowshoe hare	40.8	51.3	6.6	0.0	13.1	0.0	0.0	0.0	3.9	2.6	15.8	14.5	0.0
Jackrabbit	0.0	2.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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	1.3	0.0
Lynx	15.8	25.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.9	6.6	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
Marten	173.6	73.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	243.2	256.4	13.1
Mink	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	6.6	0.0
Muskrat	0.0	0.0	0.0	0.0	11.8	9.2	1.3	0.0	0.0	0.0	0.0	0.0	0.0
Porcupine	0.0	0.0	0.0	0.0	2.6	1.3	0.0	0.0	1.3	1.3	0.0	1.3	1.4
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
Red (tree) squirrel	2.6	2.6	0.0	0.0	0.0	32.9	32.9	40.8	0.0	0.0	2.6	2.6	15.8
Weasel	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0
Wolf	11.8	10.5	1.3	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	3.9	0.0
Wolverine	5.3	5.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.9	5.3	0.0
Total harvest	**272.2**	**193.3**	**38.1**	**5.3**	**98.6**	**80.2**	**38.1**	**42.1**	**13.1**	**3.9**	**287.9**	**315.6**	**30.3**

Source ADF&G Division of Subsistence household surveys, 2012.

Table D2-5. – Estimated bird harvest by season, McGrath, 2011.

Resource	Estimated harvest by season				
	Winter	Summer	Spring	Fall	Season unknown
Bufflehead	0.0	0.0	0.0	0.0	0.0
Canvasback	0.0	0.0	0.0	0.0	0.0
Common eider	0.0	0.0	0.0	0.0	0.0
Unknown eider	0.0	0.0	0.0	0.0	0.0
Goldeneye	0.0	0.0	5.3	0.0	0.0
Harlequin	0.0	0.0	1.3	0.0	0.0
Mallard	0.0	15.8	81.5	47.3	0.0
Common merganser	0.0	0.0	0.0	0.0	0.0
Red-breasted merganser	0.0	0.0	0.0	0.0	0.0
Unknown merganser	0.0	0.0	0.0	0.0	0.0
Long-tailed duck	0.0	0.0	6.6	0.0	0.0
Northern pintail	0.0	0.0	51.3	23.7	0.0
Scaup	0.0	0.0	6.6	0.0	0.0
Black scoter	0.0	0.0	0.0	0.0	0.0
Surf scoter	0.0	0.0	0.0	0.0	0.0
White-winged scoter	0.0	0.0	0.0	0.0	0.0
Northern shoveler	0.0	0.0	18.4	0.0	0.0
Green-winged teal	0.0	0.0	3.9	60.5	0.0
Wigeon	0.0	0.0	10.5	13.1	0.0
Unknown ducks	0.0	0.0	0.0	0.0	0.0
Brant	0.0	0.0	0.0	0.0	0.0
Cackling goose	0.0	0.0	3.9	0.0	0.0
Canada goose	0.0	2.6	32.9	11.8	0.0
Canada/cackling goose	0.0	0.0	0.0	0.0	0.0
Emperor goose	0.0	0.0	0.0	0.0	0.0
Snow goose	0.0	2.6	0.0	0.0	0.0
White-fronted goose	0.0	0.0	121.0	9.2	0.0
Unknown goose	0.0	0.0	0.0	0.0	0.0
Tundra (whistling) swan	0.0	0.0	2.6	0.0	0.0
Sandhill crane	0.0	1.3	11.8	0.0	0.0
Whimbrel	0.0	0.0	0.0	0.0	0.0
Spruce grouse	90.7	11.8	21.0	1,143.9	23.9
Sharp-tailed grouse	5.3	0.0	0.0	27.6	0.0
Ruffed grouse	28.9	0.0	13.1	352.4	3.7
Ptarmigan	35.5	0.0	3.9	50.0	6.4
Total harvest	**160.4**	**34.2**	**395.8**	**1,739.5**	**34.0**

Source ADF&G Division of Subsistence household surveys, 2012.

Table D2-6. – Estimated marine mammal harvest by month, McGrath, 2011.

	Estimated harvest by month												
Resource	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk
Bearded seal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ringed seal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Spotted seal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown seal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walrus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Beluga whale	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bowhead whale	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown whale	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total harvest	**0.0**	**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, 2012.

Table D2-7. – Reasons use of resources were less than recent years, by category, McGrath, 2011.

	Reasons for less use as compared to recent years															
	Salmon		Nonsalmon fish		Marine invertebrates		Land mammals		Marine mammals		Birds and eggs		Berries and greens		All resources	
Reason	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Family or personal	4.0	10.8%	2.0	6.9%	2.0	50.0%	6.0	22.2%	0.0	0.0%	4.0	16.7%	5.0	16.1%	8.0	21.6%
Resource availibilty	7.0	18.9%	2.0	6.9%	1.0	25.0%	0.0	0.0%	0.0	0.0%	4.0	16.7%	10.0	32.3%	7.0	18.9%
Resources too far	1.0	2.7%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
No equipment/equipment problems	2.0	5.4%	2.0	6.9%	0.0	0.0%	1.0	3.7%	0.0	0.0%	1.0	4.2%	1.0	3.2%	2.0	5.4%
Did not recieve	5.0	13.5%	4.0	13.8%	1.0	25.0%	1.0	3.7%	0.0	0.0%	0.0	0.0%	1.0	3.2%	1.0	2.7%
Did not try/low effort	3.0	8.1%	5.0	17.2%	0.0	0.0%	3.0	11.1%	0.0	0.0%	3.0	12.5%	5.0	16.1%	2.0	5.4%
Unsuccessful (unlucky)	2.0	5.4%	0.0	0.0%	0.0	0.0%	7.0	25.9%	0.0	0.0%	4.0	16.7%	0.0	0.0%	4.0	10.8%
Weather/environment	3.0	8.1%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	4.2%	2.0	6.5%	2.0	5.4%
Other	1.0	2.7%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	2.7%
Working/not enough time	4.0	10.8%	9.0	31.0%	0.0	0.0%	1.0	3.7%	0.0	0.0%	4.0	16.7%	5.0	16.1%	9.0	24.3%
Regulations	3.0	8.1%	0.0	0.0%	0.0	0.0%	1.0	3.7%	0.0	0.0%	0.0	0.0%	0.0	0.0%	2.0	5.4%
Resources too small/diseased	1.0	2.7%	1.0	3.4%	0.0	0.0%	1.0	3.7%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Did not get enough	3.0	8.1%	3.0	10.3%	0.0	0.0%	2.0	7.4%	1.0	100.0%	2.0	8.3%	3.0	9.7%	1.0	2.7%
Did not need	0.0	0.0%	1.0	3.4%	0.0	0.0%	1.0	3.7%	0.0	0.0%	1.0	4.2%	1.0	3.2%	3.0	8.1%
Did not give any away	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Too expensive (fuel)	2.0	5.4%	2.0	6.9%	0.0	0.0%	2.0	7.4%	0.0	0.0%	1.0	4.2%	0.0	0.0%	1.0	2.7%
Use other resources	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	3.7%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D2-8. – Summary of households responding to less use than recent years by category, McGrath, 2011.

	Household response summary for reasons for less use compared to recent years															
	Salmon		Nonsalmon fish		Marine invertebrates		Land mammals		Marine mammals		Birds and eggs		Berries and greens		All resources	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Total households surveyed	108.0	100.0%	108.0	100.0%	108.0	100.0%	108.0	100.0%	108.0	100.0%	108.0	100.0%	108.0	100.0%	108.0	100.0%
Households responding	100.0	92.6%	92.0	85.2%	16.0	14.8%	103.0	95.4%	14.0	13.0%	79.0	73.1%	102.0	94.4%	108.0	100.0%
Households reporting less use	37.0	37.0%	30.0	32.6%	5.0	31.3%	29.0	28.2%	2.0	14.3%	26.0	32.9%	32.0	31.4%	38.0	35.2%
Households providing reasons	37.0	100.0%	29.0	96.7%	4.0	80.0%	27.0	93.1%	1.0	50.0%	24.0	92.3%	31.0	96.9%	37.0	97.4%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D2-9. – Reasons use of resources were more than recent years, by category, McGrath, 2011.

	Salmon		Nonsalmon fish		Marine invertebrates		Land mammals		Marine mammals		Birds and eggs		Berries and greens		All resources	
Reason	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Increased availability	0.0	0.0%	3.0	21.4%	0.0	0.0%	1.0	6.3%	1.0	33.3%	1.0	9.1%	6.0	40.0%	3.0	14.3%
Used other resources	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Good weather	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Received more	5.0	26.3%	3.0	21.4%	5.0	100.0%	5.0	31.3%	2.0	66.7%	1.0	9.1%	1.0	6.7%	0.0	0.0%
Needed more	3.0	15.8%	1.0	7.1%	0.0	0.0%	1.0	6.3%	0.0	0.0%	1.0	9.1%	5.0	33.3%	8.0	38.1%
Increased effort	2.0	10.5%	2.0	14.3%	0.0	0.0%	2.0	12.5%	0.0	0.0%	6.0	54.5%	0.0	0.0%	3.0	14.3%
Got more help	0.0	0.0%	1.0	7.1%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Other	4.0	21.1%	4.0	28.6%	0.0	0.0%	1.0	6.3%	0.0	0.0%	1.0	9.1%	1.0	6.7%	4.0	19.0%
Regulations	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Traveled farther	2.0	10.5%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Increased success	3.0	15.8%	1.0	7.1%	0.0	0.0%	5.0	31.3%	0.0	0.0%	1.0	9.1%	2.0	13.3%	5.0	23.8%
Needed less	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Store-bought too expensive	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	6.3%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D2-10. – Summary of households responding to more use than recent years, by category, McGrath, 2011.

	Household response summary for reasons for more use compared to recent years															
	Salmon		Nonsalmon fish		Marine invertebrates		Land mammals		Marine mammals		Birds and eggs		Berries and greens		All resources	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Total households surveyed	108.0	100.0%	108.0	100.0%	108.0	100.0%	108.0	100.0%	108.0	100.0%	108.0	100.0%	108.0	100.0%	108.0	100.0%
Households responding	100.0	92.6%	92.0	85.2%	16.0	14.8%	103.0	95.4%	14.0	13.0%	79.0	73.1%	102.0	94.4%	108.0	100.0%
Households reporting less use	19.0	19.0%	14.0	15.2%	5.0	31.3%	16.0	15.5%	3.0	21.4%	11.0	13.9%	16.0	15.7%	22.0	20.4%
Households providing reasons	19.0	100.0%	14.0	100.0%	5.0	100.0%	16.0	100.0%	3.0	100.0%	11.0	100.0%	15.0	93.8%	21.0	95.5%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D2-11. – Reported impact to households responding that they did not get enough of a type of resource, McGrath, 2011.

		Households not getting enough _____ .						Impact to those not getting enough _____ .							
	Sampled	Valid responses		Did not get enough		No response		Not noticable		Minor		Major		Severe	
Resource category	households	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Salmon	108.0	100.0	92.6%	33.0	33.0%	1.0	3.0%	7.0	21.2%	19.0	57.6%	4.0	12.1%	2.0	6.1%
Nonsalmon fish	108.0	95.0	88.0%	25.0	26.3%	0.0	0.0%	6.0	24.0%	13.0	52.0%	5.0	20.0%	1.0	4.0%
Marine invertebrates	108.0	36.0	33.3%	11.0	30.6%	1.0	9.1%	5.0	45.5%	5.0	45.5%	0.0	0.0%	0.0	0.0%
Land mammals	108.0	103.0	95.4%	23.0	22.3%	0.0	0.0%	2.0	8.7%	10.0	43.5%	10.0	43.5%	1.0	4.3%
Marine mammals	108.0	33.0	30.6%	5.0	15.2%	0.0	0.0%	4.0	80.0%	1.0	20.0%	0.0	0.0%	0.0	0.0%
Birds and eggs	108.0	85.0	78.7%	17.0	20.0%	1.0	5.9%	3.0	17.6%	9.0	52.9%	4.0	23.5%	0.0	0.0%
Berries and greens	108.0	103.0	95.4%	29.0	28.2%	1.0	3.4%	4.0	13.8%	17.0	58.6%	5.0	17.2%	2.0	6.9%
All resources	108.0	108.0	100.0%	28.0	25.9%	0.0	0.0%	2.0	7.1%	13.0	46.4%	12.0	42.9%	1.0	3.6%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D2-12. – Households reporting doing things differently as the result of not getting enough of a resource, McGrath, 2011.

		Households not getting enough _____.				Households doing something different because they did not get enough.			
	Sampled	Valid responses		Did not get enough		Valid responses		Did something different	
	households	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Salmon	108.0	102.0	94.4%	33.0	32.4%	32.0	97.0%	19.0	59.4%
Nonsalmon fish	108.0	96.0	88.9%	25.0	26.0%	25.0	100.0%	17.0	68.0%
Marine invertebrates	108.0	36.0	33.3%	11.0	30.6%	10.0	90.9%	3.0	30.0%
Land mammals	108.0	103.0	95.4%	23.0	22.3%	23.0	100.0%	20.0	87.0%
Marine mammals	108.0	33.0	30.6%	5.0	15.2%	4.0	80.0%	0.0	0.0%
Birds and eggs	108.0	85.0	78.7%	17.0	20.0%	15.0	88.2%	10.0	66.7%
Berries and greens	108.0	105.0	97.2%	29.0	27.6%	29.0	100.0%	15.0	51.7%
All resources	108.0	108.0	100.0%	28.0	25.9%	28.0	100.0%	21.0	75.0%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D2-13. – Things households reported doing differently as the result of not getting enough of a resource, McGrath, 2011.

	Valid responses	Bought/bartered		Used more commercial foods		Replaced with other subsistence foods		Asked others for help		Made do without		Increased effort to harvest		Obtained food from other sources		Got public assistance	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Salmon	19.0	0.0	0.0%	15.0	78.9%	1.0	5.3%	1.0	5.3%	2.0	10.5%	0.0	0.0%	1.0	5.3%	0.0	0.0%
Nonsalmon fish	17.0	0.0	0.0%	12.0	70.6%	0.0	0.0%	1.0	5.9%	3.0	17.6%	0.0	0.0%	1.0	5.9%	0.0	0.0%
Marine invertebrates	3.0	0.0	0.0%	2.0	66.7%	1.0	33.3%	0.0	0.0%	1.0	33.3%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Land mammals	20.0	0.0	0.0%	19.0	95.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	5.0%	0.0	0.0%
Marine 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	0.0%	0.0	0.0%
Birds and eggs	10.0	0.0	0.0%	7.0	70.0%	2.0	20.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	10.0%	0.0	0.0%
Berries and greens	15.0	0.0	0.0%	12.0	80.0%	0.0	0.0%	0.0	0.0%	4.0	26.7%	0.0	0.0%	0.0	0.0%	0.0	0.0%
All resources	22.0	0.0	0.0%	20.0	90.9%	1.0	4.5%	0.0	0.0%	1.0	4.5%	2.0	9.1%	0.0	0.0%	0.0	0.0%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D2-14. – Households reporting that they did not get enough of a resource, McGrath, 2011.

Resource by category	Households reporting wanting more	Reasons														
		No reason given	Personal/ family	Resource not available	Too far to get it	No equipment/ equipment problems	Not given any	No hunting/ low effort	Unsuccessful (unlucky)	Weather/ environment	Other	Working/ no time	Regulations	Resources too small/ diseased	Gas prices too high	Did not get enough
DID NOT get enough: McGrath																
Resource not specified	4	2.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All resources	2	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fish	8	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	4.0	2.0	0.0	1.0	0.0
Salmon	12	4.0	0.0	2.0	0.0	0.0	0.0	0.0	1.0	0.0	1.0	2.0	2.0	0.0	0.0	2.0
Coho salmon	13	0.0	2.0	2.0	0.0	0.0	2.0	0.0	1.0	2.0	1.0	1.0	1.0	0.0	0.0	0.0
Chinook salmon	20	0.0	1.0	2.0	0.0	0.0	1.0	2.0	2.0	2.0	1.0	4.0	3.0	0.0	1.0	0.0
Sockeye salmon	9	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	3.0	2.0	0.0	1.0	1.0
Nonsalmon fish	4	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	1.0	0.0	0.0	0.0	0.0
Pacific halibut	4	0.0	1.0	0.0	0.0	0.0	2.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Alaska blackfish	1	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Arctic grayling	5	0.0	0.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Northern pike	4	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Sheefish	6	1.0	1.0	0.0	0.0	0.0	1.0	0.0	1.0	0.0	1.0	2.0	1.0	0.0	0.0	0.0
Longnose sucker	1	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Whitefishes	10	0.0	1.0	1.0	0.0	0.0	2.0	2.0	1.0	0.0	0.0	2.0	0.0	0.0	1.0	0.0
Broad whitefish	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Black bear	2	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Deer	1	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Moose	26	3.0	5.0	5.0	0.0	0.0	1.0	1.0	11.0	1.0	2.0	6.0	2.0	0.0	0.0	2.0
Beaver	1	0.0	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	0.0
Marten	2	1.0	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	0.0
Seal	1	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown seal oil	3	1.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walrus	1	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Whale	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Birds and eggs	3	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0
Ducks	7	0.0	1.0	1.0	0.0	0.0	0.0	0.0	2.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0
Geese	9	1.0	1.0	0.0	0.0	0.0	0.0	0.0	3.0	2.0	0.0	0.0	0.0	0.0	0.0	1.0
White-fronted geese	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Grouse	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Spruce grouse	5	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	2.0	0.0	0.0	0.0	1.0
Ruffed grouse	3	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
Clams	2	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crabs	5	0.0	0.0	3.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
King crab	2	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Scallops	1	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Shrimp	1	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Berries	11	4.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	2.0	1.0	0.0	1.0	1.0
Blueberry	20	4.0	3.0	3.0	0.0	0.0	1.0	0.0	0.0	2.0	1.0	4.0	0.0	0.0	0.0	4.0
Lowbush cranberry	7	0.0	1.0	2.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	1.0
Highbush cranberry	2	0.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Crowberry	3	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Salmonberry	5	0.0	1.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0
Wild rhubarb	1	1.0	0.0	0.0	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 mushrooms	2	0.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wood	9	2.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	1.0	2.0	0.0	0.0	1.0	0.0

Source ADF&G Division of Subsistence household surveys, 2012.

Table D2-15. – Reported job schedules, McGrath, 2011.

	Jobs		Employed persons		Employed households	
Schedule	Number	Percentage	Number	Percentage	Number	Percentage
Full-time	156.8	53.7%	148.1	68.7%	106.5	80.6%
Part-time	71.9	24.6%	60.4	28.0%	44.0	33.3%
Shift	4.3	1.5%	4.3	2.0%	4.3	3.2%
On-call (occasional)	48.9	16.7%	40.3	18.7%	35.5	26.9%
Part-time shift	1.4	0.5%	1.4	0.7%	1.4	1.1%
Schedule not reported	8.6	3.0%	7.2	3.3%	5.7	4.3%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D3-1. – Resource harvest and use characteristics, Napakiak, 2011.

Characteristic	
Mean number of resources used per household	
Minimum	0
Maximum	56
95% confidence limit (±)	10.0%
Mean	21
Median	20
Mean number of resources attempted to harvest per household	
Minimum	0
Maximum	50
95% confidence limit (±)	13.0%
Mean	16
Median	13
Mean number of resources harvested per household	
Minimum	0
Maximum	47
95% confidence limit (±)	13.3%
Mean	15
Median	12
Mean number of resources received per household	
Minimum	0
Maximum	28
95% confidence limit (±)	15.1%
Mean	8
Median	6
Mean number of resources given away per household	
Minimum	0
Maximum	34
95% confidence limit (±)	18.8%
Mean	7
Median	4
Household harvest (lb)	
Minimum	0.0
Maximum	12,682.0
Mean	1,739.2
Median	1,031
Total estimated harvest weight (lb)	154,784.6
Community per capita estimated harvest (lb)	489.4
Percentage of households using any resource	96.4%
Percentage of households attempting to harvest any resource	92.9%
Percentage of households harvesting any resource	91.1%
Percentage of households receiving any resource	85.7%
Percentage of households giving away any resource	73.2%
Number of households in sample	56
Number of resources available	142

Source ADF&G Division of Subsistence household survey, 2012.

Table D3-2. – Estimated harvest of salmon and nonsalmon fish for consumption by dogs, Napakiak, 2011..

Resource	Amount	Pounds
Nonsalmon fish		
Other nonsalmon fish	0.0	0.0 lb
Rainbow trout	0.0 ind	0.0 lb
Pacific herring sac roe	0.0 gal	0.0 lb
Pacific herring	0.0 gal	0.0 lb
Pacific halibut	0.0 lb	0.0 lb
Burbot	0.0 ind	0.0 lb
Unknown smelt	0.0 gal	0.0 lb
Alaska blackfish	7.9 lb	7.9 lb
Whitefishes	111.3 ind	381.4 lb
Northern pike	0.0 ind	0.0 lb
Salmon		
Unknown salmon	0.0 ind	0.0 lb
Pink salmon	0.0 ind	0.0 lb
Coho salmon	0.0 ind	0.0 lb
Chinook salmon	15.9 ind	150.2 lb
Sockeye salmon	7.9 ind	40.1 lb
Chum salmon	32.4 ind	164.8 lb
Total	**175.4**	**744.4 lb**
Whitefishes		
Bering cisco	0.0 ind	0.0 lb
Least cisco	0.0 ind	0.0 lb
Unknown whitefishes	0.0 ind	0.0 lb
Round whitefish	0.0 ind	0.0 lb
Sheefish	31.8 ind	206.6 lb
Broad whitefish	39.7 ind	55.6 lb
Humpback whitefish	39.7 ind	119.2 lb
Subtotal	**111.3 ind**	**381.4 lb**
Other fish		
Pacific tomcod	0.0 ind	0.0 lb
Saffron cod	0.0 ind	0.0 lb
Arctic lamprey	0.0 ind	0.0 lb
Stickleback (needlefish)	0.0 gal	0.0 lb
Lake trout	0.0 ind	0.0 lb
Longnose sucker	0.0 ind	0.0 lb
Arctic grayling	0.0 ind	0.0 lb
Flounder	0.0 ind	0.0 lb
Dolly Varden	0.0 ind	0.0 lb
Subtotal	**0.0**	**0.0** lb

Source ADF&G Division of Subsistence household surveys, 2012.
Note summary rows that include incompatible units of measure have been left blank.

Table D3-3. – Estimated large land mammal and wolf harvest by month and sex, Napakiak, 2011.

	Bison	Black bear	Brown bear	Caribou			Moose			Muskox	Dall sheep	Wolf
Harvest month	Unknown	Unknown	Unknown	Male	Female	Unknown	Male	Female	Unknown	Unknown	Unknown	Unknown
January	0.0	0.0	0.0	1.6	0.0	6.4	1.6	0.0	0.0	0.0	0.0	0.0
February	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
March	0.0	0.0	0.0	1.6	1.6	0.0	0.0	0.0	0.0	1.6	0.0	0.0
April	0.0	0.0	0.0	0.0	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
June	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
July	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
August	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
September	0.0	0.0	0.0	1.6	0.0	0.0	9.5	0.0	0.0	0.0	0.0	0.0
October	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
November	0.0	0.0	0.0	7.9	0.0	9.5	0.0	0.0	0.0	0.0	0.0	0.0
December	0.0	0.0	0.0	6.4	1.6	0.0	1.6	0.0	0.0	0.0	0.0	0.0
Unknown	0.0	0.0	0.0	1.6	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0
Total harvest	**0.0**	**0.0**	**0.0**	**20.7**	**6.4**	**17.5**	**12.7**	**0.0**	**0.0**	**1.6**	**0.0**	**0.0**

Source ADF&G Division of Subsistence household surveys, 2012.

Table D3-4. – Estimated small land mammal harvest by month, Napakiak, 2011.

	Estimated harvest by month												
Resource	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk
Beaver	0.0	0.0	1.6	0.0	0.0	0.0	1.6	9.5	11.1	20.7	0.0	1.6	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
Red fox	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.4	4.8	0.0
Arctic hare	0.0	14.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	1.6	15.9	9.5
Snowshoe hare	0.0	3.2	41.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	76.3	122.4	63.6
Jackrabbit	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
River (land) otter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.2	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
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
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
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
Muskrat	0.0	0.0	0.0	0.0	1.6	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	1.6	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
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
Weasel	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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
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
Total harvest	**0.0**	**19.1**	**42.9**	**0.0**	**1.6**	**0.0**	**3.2**	**9.5**	**14.3**	**22.3**	**84.2**	**144.6**	**73.1**

Source ADF&G Division of Subsistence household surveys, 2012.

Table D3-5. – Estimated marine mammal harvest by month, Napakiak, 2011.

	Estimated harvest by month												
Resource	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk
Bearded seal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0
Ringed seal	0.0	0.0	0.0	11.1	14.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6
Spotted seal	0.0	0.0	0.0	7.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8
Unknown seal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walrus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Beluga whale	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bowhead whale	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total harvest	**0.0**	**0.0**	**0.0**	**19.1**	**14.3**	**0.0**	**0.0**	**0.0**	**0.0**	**1.6**	**0.0**	**0.0**	**3.4**

Source ADF&G Division of Subsistence household surveys, 2012.

Table D3-6. – Estimated bird harvest by season, Napakiak, 2011.

	Estimated harvest by season				
Resource	Winter	Summer	Spring	Fall	Season unknown
Bufflehead	0.0	0.0	48.5	0.0	0.0
Canvasback	0.0	0.0	12.7	3.2	0.0
Common eider	0.0	0.0	15.9	0.0	0.0
Unknown eider	0.0	0.0	0.0	0.0	0.0
Goldeneye	0.0	0.0	76.3	20.7	0.0
Harlequin	0.0	0.0	3.2	0.0	0.0
Mallard	0.0	0.0	93.7	77.8	0.0
Common merganser	0.0	0.0	0.0	0.0	0.0
Red-breasted merganser	0.0	0.0	0.0	0.0	0.0
Unknown merganser	0.0	0.0	0.0	0.0	0.0
Long-tailed duck	0.0	0.0	41.3	15.9	0.0
Northern pintail	0.0	0.0	108.5	113.2	0.0
Scaup	0.0	0.0	256.4	178.7	0.0
Black scoter	0.0	0.0	447.4	69.8	0.0
Surf scoter	0.0	0.0	200.5	9.8	0.0
White-winged scoter	0.0	0.0	184.4	1.7	0.0
Northern shoveler	0.0	0.0	16.3	33.8	0.0
Green-winged teal	0.0	0.0	31.8	20.7	0.0
Wigeon	0.0	0.0	64.3	21.4	0.0
Unknown ducks	0.0	0.0	41.3	0.0	0.8
Brant	0.0	0.0	15.9	0.0	0.0
Cackling goose	0.0	0.0	337.3	57.6	0.0
Canada goose	0.0	0.0	136.7	39.7	0.0
Canada/cackling goose	0.0	0.0	0.0	0.0	0.0
Emperor goose	0.0	0.0	38.1	0.0	0.0
Snow goose	0.0	0.0	7.9	0.0	0.0
White-fronted goose	0.0	0.0	274.4	23.3	0.0
Unknown goose	0.0	0.0	9.5	0.0	0.4
Tundra (whistling) swan	0.0	0.0	47.7	33.4	0.0
Sandhill crane	0.0	0.0	90.6	3.2	0.0
Whimbrel	0.0	0.0	0.0	0.0	0.0
Unknown loon	0.0	0.0	0.0	0.0	0.0
Spruce grouse	0.0	0.0	0.0	0.0	0.0
Sharp-tailed grouse	0.0	0.0	0.0	0.0	0.0
Ruffed grouse	0.0	0.0	0.0	0.0	0.0
Ptarmigan	1,160.8	0.0	573.9	23.8	48.8
Total harvest	**1,160.8**	**0.0**	**3,174.8**	**747.7**	**50.0**

Source ADF&G Division of Subsistence household surveys, 2012.

Table D3-7. – Reasons use of resources were less than recent years, by category, Napakiak, 2011.

	Reasons for less use as compared to recent years															
	Salmon		Nonsalmon fish		Marine invertebrates		Land mammals		Marine mammals		Birds and eggs		Berries and greens		All resources	
Reason	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Family or personal	1.0	5.9%	2.0	13.3%	0.0	0.0%	1.0	6.7%	2.0	20.0%	1.0	7.7%	1.0	4.8%	1.0	5.0%
Resource availibilty	3.0	17.6%	1.0	6.7%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	7.7%	7.0	33.3%	2.0	10.0%
Resources too far	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
No equipment/equipment problems	4.0	23.5%	1.0	6.7%	0.0	0.0%	3.0	20.0%	2.0	20.0%	2.0	15.4%	3.0	14.3%	8.0	40.0%
Did not recieve	0.0	0.0%	1.0	6.7%	0.0	0.0%	2.0	13.3%	4.0	40.0%	0.0	0.0%	1.0	4.8%	1.0	5.0%
Did not try/low effort	3.0	17.6%	4.0	26.7%	0.0	0.0%	2.0	13.3%	1.0	10.0%	4.0	30.8%	5.0	23.8%	4.0	20.0%
Unsuccessful (unlucky)	3.0	17.6%	2.0	13.3%	0.0	0.0%	5.0	33.3%	0.0	0.0%	1.0	7.7%	0.0	0.0%	1.0	5.0%
Weather/environment	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Other	2.0	11.8%	2.0	13.3%	0.0	0.0%	1.0	6.7%	1.0	10.0%	1.0	7.7%	0.0	0.0%	0.0	0.0%
Working/not enough time	1.0	5.9%	2.0	13.3%	0.0	0.0%	0.0	0.0%	0.0	0.0%	2.0	15.4%	3.0	14.3%	1.0	5.0%
Regulations	0.0	0.0%	1.0	6.7%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Resources too small/diseased	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Did not get enough	0.0	0.0%	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	5.0%
Did not need	2.0	11.8%	0.0	0.0%	0.0	0.0%	1.0	6.7%	0.0	0.0%	1.0	7.7%	0.0	0.0%	3.0	15.0%
Did not give any away	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Too expensive (fuel)	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	7.7%	1.0	4.8%	0.0	0.0%
Use other resources	0.0	0.0%	0.0	0.0%	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, 2012.

Table D3-8. – Summary of households responding to less use than recent years, by category, Napakiak, 2011.

	Household response summary for reasons for less use compared to recent years															
	Salmon		Nonsalmon fish		Marine invertebrates		Land mammals		Marine mammals		Birds and eggs		Berries and greens		All resources	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Total households surveyed	56.0	100.0	56.0	100.0	56.0	100.0	56.0	100.0	56.0	100.0	56.0	100.0	56.0	100.0	56.0	100.0
Households responding	52.0	92.9%	46.0	82.1%	2.0	3.6%	52.0	92.9%	33.0	58.9%	45.0	80.4%	47.0	83.9%	54.0	96.4%
Households reporting less use	21.0	40.4%	15.0	32.6%	0.0	0.0%	18.0	34.6%	10.0	30.3%	16.0	35.6%	23.0	48.9%	22.0	40.7%
Households providing reasons	17.0	81.0%	15.0	100.0%	0.0	0.0%	15.0	83.3%	10.0	100.0%	13.0	81.3%	21.0	91.3%	20.0	90.9%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D3-9. – Reasons use of resources were more than recent years, by category, Napakiak, 2011.

	Reasons for more use as compared to recent years															
	Salmon		Nonsalmon fish		Marine invertebrates		Land mammals		Marine mammals		Birds and eggs		Berries and greens		All resources	
Reason	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Increased availability	0.0	0.0%	2.0	25.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	33.3%	0.0	0.0%
Used other resources	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Good weather	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Received more	0.0	0.0%	1.0	12.5%	0.0	0.0%	4.0	57.1%	3.0	50.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Needed more	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	33.3%	1.0	16.7%
Increased effort	3.0	42.9%	2.0	25.0%	0.0	0.0%	0.0	0.0%	3.0	50.0%	1.0	33.3%	0.0	0.0%	2.0	33.3%
Got more help	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Other	1.0	14.3%	1.0	12.5%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	33.3%	1.0	16.7%
Regulations	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Traveled farther	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Increased success	3.0	42.9%	3.0	37.5%	0.0	0.0%	4.0	57.1%	0.0	0.0%	2.0	66.7%	0.0	0.0%	2.0	33.3%
Needed less	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Store-bought too expensive	0.0	0.0%	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	16.7%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D3-10. – Summary of households responding to more use than recent years, by category, Napakiak, 2011.

	Household response summary for reasons for more use compared to recent years															
	Salmon		Nonsalmon fish		Marine invertebrates		Land mammals		Marine mammals		Birds and eggs		Berries and greens		All resources	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Total households surveyed	56.0	100.0%	56.0	100.0%	56.0	100.0%	56.0	100.0%	56.0	100.0%	56.0	100.0%	56.0	100.0%	56.0	100.0%
Households responding	52.0	92.9%	46.0	82.1%	2.0	3.6%	52.0	92.9%	33.0	58.9%	45.0	80.4%	47.0	83.9%	54.0	96.4%
Households reporting more use	7.0	13.5%	9.0	19.6%	7.0	350.0%	7.0	13.5%	6.0	18.2%	5.0	11.1%	3.0	6.4%	7.0	13.0%
Households providing reasons	7.0	100.0%	8.0	88.9%	7.0	100.0%	7.0	100.0%	6.0	100.0%	3.0	60.0%	3.0	100.0%	6.0	85.7%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D3-11. – Reported impact to households responding that they did not get enough of a type of resource, Napakiak, 2011.

	Households not getting enough _____ .							Impact to those not getting enough _____ .							
	Sampled	Valid responses		Did not get enough		No response		Not noticable		Minor		Major		Severe	
Resource category	households	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Salmon	56.0	53.0	94.6%	14.0	26.4%	0.0	0.0%	3.0	21.4%	6.0	42.9%	4.0	28.6%	1.0	7.1%
Nonsalmon fish	56.0	47.0	83.9%	6.0	12.8%	0.0	0.0%	1.0	16.7%	3.0	50.0%	1.0	16.7%	1.0	16.7%
Marine invertebrates	56.0	13.0	23.2%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Land mammals	56.0	52.0	92.9%	10.0	19.2%	0.0	0.0%	1.0	10.0%	6.0	60.0%	2.0	20.0%	1.0	10.0%
Marine mammals	56.0	39.0	69.6%	5.0	12.8%	0.0	0.0%	1.0	20.0%	1.0	20.0%	2.0	40.0%	1.0	20.0%
Birds and eggs	56.0	45.0	80.4%	4.0	8.9%	0.0	0.0%	1.0	25.0%	2.0	50.0%	0.0	0.0%	1.0	25.0%
Berries and greens	56.0	47.0	83.9%	11.0	23.4%	0.0	0.0%	2.0	18.2%	2.0	18.2%	4.0	36.4%	3.0	27.3%
All resources	56.0	54.0	96.4%	14.0	25.9%	0.0	0.0%	0.0	0.0%	5.0	35.7%	7.0	50.0%	2.0	14.3%

Source ADF&G Household surveys, 2011.

Table D3-12. – Households reporting doing things differently as the result of not getting enough of a resource, Napakiak, 2011.

		Households not getting enough _____.				Households doing something different because they did not get enough.			
	Sampled households	Valid responses		Did not get enough		Valid responses		Did something different	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Salmon	56.0	53.0	94.6%	14.0	26.4%	14.0	100.0%	10.0	71.4%
Nonsalmon fish	56.0	47.0	83.9%	6.0	12.8%	6.0	100.0%	4.0	66.7%
Marine invertebrates	56.0	13.0	23.2%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Land mammals	56.0	52.0	92.9%	10.0	19.2%	10.0	100.0%	9.0	90.0%
Marine mammals	56.0	39.0	69.6%	5.0	12.8%	5.0	100.0%	2.0	40.0%
Birds and eggs	56.0	47.0	83.9%	4.0	8.5%	4.0	100.0%	2.0	50.0%
Berries and greens	56.0	51.0	91.1%	11.0	21.6%	11.0	100.0%	9.0	81.8%
All resources	56.0	55.0	98.2%	14.0	25.5%	13.0	92.9%	9.0	69.2%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D3-13. – Things households reported doing differently as the result of not getting enough of a resource, Napakiak, 2011.

	Valid responses	Bought/bartered		Used more commercial foods		Replaced with other subsistence foods		Asked others for help		Made do without		Increased effort to harvest		Obtained food from other sources		Got public assistance	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Salmon	9.0	3.0	33.3%	1.0	11.1%	1.0	11.1%	3.0	33.3%	1.0	11.1%	0.0	0.0%	1.0	11.1%	0.0	0.0%
Nonsalmon fish	4.0	0.0	0.0%	2.0	50.0%	0.0	0.0%	2.0	50.0%	1.0	25.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Marine invertebrates	0.0	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Land mammals	9.0	0.0	0.0%	7.0	77.8%	0.0	0.0%	1.0	11.1%	1.0	11.1%	1.0	11.1%	0.0	0.0%	0.0	0.0%
Marine mammals	2.0	0.0	0.0%	1.0	50.0%	0.0	0.0%	0.0	0.0%	1.0	50.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Birds and eggs	2.0	0.0	0.0%	1.0	50.0%	0.0	0.0%	0.0	0.0%	1.0	50.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Berries and greens	9.0	0.0	0.0%	4.0	44.4%	0.0	0.0%	1.0	11.1%	2.0	22.2%	0.0	0.0%	3.0	33.3%	0.0	0.0%
All resources	10.0	1.0	10.0%	9.0	90.0%	0.0	0.0%	2.0	20.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D3-14. – Households reporting that they did not get enough of a resource, Napakiak, 2011.

Resource by category	Households reporting wanting more	Reasons														
		No reason given	Personal/ family	Resource not available	Too far to get it	No equipment/ equipment problems	Not given any	No hunting/ low effort	Unsuccessful (unlucky)	Weather/ environment	Other	Working/ no time	Regulations	Resources too small/ diseased	Gas prices too high	Did not get enough
DID NOT get enough: Napakiak																
Resource not specified	5	0.0	1.0	0.0	0.0	0.0	0.0	1.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All resources	2	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fish	1	0.0	0.0	0.0	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	1	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chum salmon	1	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Summer chum	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Coho salmon	3	0.0	1.0	0.0	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	14	2.0	2.0	2.0	0.0	0.0	0.0	1.0	1.0	0.0	2.0	0.0	1.0	0.0	0.0	1.0
Sockeye salmon	4	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Nonsalmon fish	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pacific herring	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Northern pike	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Whitefishes	2	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Caribou	9	0.0	2.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
Moose	10	0.0	2.0	0.0	0.0	0.0	0.0	1.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
Bearded seal	1	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ringed seal	1	0.0	1.0	0.0	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 seal oil	3	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Beluga whale	1	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Birds and eggs	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	0.0	0.0	0.0
Ducks	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Geese	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ptarmigan	1	0.0	1.0	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
Unknown eggs	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Berries	3	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Blueberry	4	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Crowberry	3	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Raspberry	1	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Salmonberry	8	0.0	0.0	2.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	3.0	0.0	0.0	1.0	0.0
Plants/greens/mushrooms	1	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sourdock	1	0.0	0.0	0.0	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, 2012.

Table D3-15. – Reported job schedules, Napakiak, 2011.

	Jobs		Employed persons		Employed households	
Schedule	Number	Percentage	Number	Percentage	Number	Percentage
Full-time	72.5	51.3%	67.1	55.1%	48.1	67.5%
Part-time	49.5	35.0%	44.1	36.2%	33.8	47.5%
Shift	1.8	1.3%	1.8	1.4%	1.8	2.5%
On-call (occasional)	17.7	12.5%	14.1	11.6%	14.2	20.0%
Part-time shift	0.0	0.0%	0.0	0.0%	0.0	0.0%
Schedule not reported	0.0	0.0%	0.0	0.0%	0.0	0.0%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D4-1. – Resource harvest and use characteristics, Napaskiak, 2011.

Characteristic	
Mean number of resources used per household	
Minimum	2
Maximum	48
95% confidence limit (±)	9.1%
Mean	22
Median	21
Mean number of resources attempted to harvest per household	
Minimum	0
Maximum	44
95% confidence limit (±)	12.1%
Mean	17
Median	16
Mean number of resources harvested per household	
Minimum	0
Maximum	42
95% confidence limit (±)	12.3%
Mean	16
Median	15
Mean number of resources received per household	
Minimum	0
Maximum	37
95% confidence limit (±)	14.4%
Mean	8
Median	7
Mean number of resources given away per household	
Minimum	0
Maximum	41
95% confidence limit (±)	21.6%
Mean	8
Median	5
Household harvest (lb)	
Minimum	0.0
Maximum	16,310.4
Mean	2,049.6
Median	1,758
Total estimated harvest weight (lb)	196,762.9
Community per capita estimated harvest (lb)	409.9
Percentage of households using any resource	100.0%
Percentage of households attempting to harvest any resource	94.6%
Percentage of households harvesting any resource	92.9%
Percentage of households receiving any resource	98.2%
Percentage of households giving away any resource	80.4%
Number of households in sample	56
Number of resources available	142

Source ADF&G Division of Subsistence household survey, 2012.

Table D4-2. – Estimated harvest of salmon and nonsalmon fish for consumption by dogs, Napaskiak, 2011.

Resource	Amount	Pounds
Nonsalmon fish		
Other nonsalmon fish	0.0	0.0 lb
Arctic grayling	0.0 ind	0.0 lb
Dolly Varden	0.0 ind	0.0 lb
Rainbow trout	0.0 ind	0.0 lb
Unknown smelt	23.1 gal	138.7 lb
Alaska blackfish	42.7 lb	42.7 lb
Burbot	92.3 ind	415.4 lb
Northern pike	0.0 ind	0.0 lb
Whitefishes	7,715.7 ind	19,287.7 lb
Salmon		
Unknown salmon	0.0 ind	0.0 lb
Pink salmon	0.0 ind	0.0 lb
Coho salmon	788.6 ind	4,171.5 lb
Sockeye salmon	0.0 ind	0.0 lb
Chum salmon	742.6 ind	3,780.9 lb
Chinook salmon	0.0 ind	0.0 lb
Total	**9,405.0**	**27,836.87 lb**
Whitefishes		
Unknown whitefishes	0.0 ind	0.0 lb
Bering cisco	34.3 ind	48.0 lb
Sheefish	0.0 ind	0.0 lb
Round whitefish	51.4 ind	51.4 lb
Least cisco	1,020.0 ind	1,020.0 lb
Broad whitefish	1,038.5 ind	1,454.0 lb
Humpback whitefish	5,571.4 ind	16,714.3 lb
Subtotal	**7,715.7 ind**	**19,287.7 lb**
Other fish		
Pacific herring	0.0 gal	0.0 lb
Pacific tomcod	0.0 ind	0.0 lb
Saffron cod	0.0 ind	0.0 lb
Pacific halibut	0.0 lb	0.0 lb
Arctic lamprey	0.0 ind	0.0 lb
Stickleback (needlefish)	0.0 gal	0.0 lb
Lake trout	0.0 ind	0.0 lb
Longnose sucker	0.0 ind	0.0 lb
Unknown nonsalmon fish	0.0 ind	0.0 lb
Subtotal	**0.0**	**0.0 lb**

Source ADF&G Division of Subsistence household surveys, 2012.
Note summary rows that include incompatible units of measure have been left blank.

Table D4-3. – Estimated large land mammal and wolf harvest by month and sex, Napaskiak, 2011.

	Bison	Black bear	Brown bear	Caribou			Moose			Muskox	Dall sheep	Wolf
Harvest month	Unknown	Unknown	Unknown	Male	Female	Unknown	Male	Female	Unknown	Unknown	Unknown	Unknown
January	0.0	0.0	0.0	3.4	0.0	0.0	1.7	0.0	0.0	0.0	0.0	0.0
February	0.0	0.0	0.0	1.7	0.0	0.0	0.0	3.4	0.0	0.0	0.0	0.0
March	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
April	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
June	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
July	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
August	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
September	0.0	0.0	0.0	0.0	0.0	0.0	24.0	0.0	0.0	0.0	0.0	0.0
October	0.0	0.0	0.0	1.7	5.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
November	0.0	0.0	0.0	36.0	5.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
December	0.0	0.0	0.0	1.7	0.0	5.1	0.0	0.0	0.0	0.0	0.0	0.0
Unknown	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0
Total harvest	**0.0**	**0.0**	**0.0**	**44.6**	**10.3**	**5.5**	**25.7**	**3.4**	**0.0**	**0.0**	**0.0**	**0.0**

Source ADF&G Division of Subsistence household surveys, 2012.

Table D4-4. – Estimated small land mammal harvest by month, Napaskiak, 2011.

	Estimated harvest by month												
Resource	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk
Beaver	0.0	0.0	0.0	0.0	6.9	0.0	0.0	0.0	6.9	0.0	0.0	12.0	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
Red fox	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Snowshoe hare	5.1	8.6	18.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.6	0.0
Jackrabbit	0.0	0.0	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.9	0.0
River (land) otter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.4	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
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
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
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
Muskrat	0.0	0.0	0.0	0.0	10.3	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	3.4	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
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
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
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
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
Total harvest	**5.1**	**8.6**	**20.6**	**0.0**	**17.1**	**3.4**	**0.0**	**0.0**	**6.9**	**0.0**	**3.4**	**39.4**	**0.0**

Source ADF&G Division of Subsistence household surveys, 2012.

Table D4-5. – Estimated marine mammal harvest by month, Napaskiak, 2011.

	Estimated harvest by month												
Resource	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk
Bearded seal	0.0	0.0	0.0	5.1	1.7	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ringed seal	0.0	0.0	0.0	3.4	24.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Spotted seal	0.0	0.0	0.0	0.0	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.4
Unknown seal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walrus	0.0	0.0	0.0	3.4	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Beluga whale	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bowhead whale	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total harvest	**0.0**	**0.0**	**0.0**	**12.0**	**32.6**	**1.7**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**15.4**

Source ADF&G Division of Subsistence household surveys, 2012.

Table D4-6. – Estimated bird harvest by season, Napaskiak, 2011.

	Estimated harvest by season				
Resource	Winter	Summer	Spring	Fall	Season unknown
Bufflehead	0.3	0.3	29.4	29.4	0.0
Canvasback	0.0	0.0	25.7	22.3	0.0
Common eider	0.0	0.0	0.0	0.0	0.0
King eider	0.0	0.0	0.0	0.0	0.0
Unknown eider	0.0	0.0	0.0	0.0	0.0
Goldeneye	0.0	0.0	145.7	48.0	0.0
Harlequin	0.0	0.0	32.6	20.6	0.0
Mallard	0.0	0.0	237.7	72.0	0.0
Common merganser	0.0	0.0	0.0	0.0	0.0
Red-breasted merganser	0.0	0.0	0.0	0.0	0.0
Unknown merganser	0.0	0.0	0.0	0.0	0.0
Long-tailed duck	0.0	0.0	141.5	27.4	0.0
Northern pintail	0.0	0.0	109.8	87.4	0.0
Scaup	0.0	0.0	872.1	217.7	0.0
Black scoter	0.0	6.9	690.5	137.1	0.0
Surf scoter	0.0	0.0	145.7	17.1	0.0
White-winged scoter	0.0	0.0	624.0	34.3	0.0
Northern shoveler	0.0	0.0	120.0	51.4	0.0
Green-winged teal	0.0	0.0	34.3	20.6	0.0
Wigeon	0.0	0.0	66.9	65.1	0.0
Unknown ducks	0.0	0.0	56.6	0.0	0.0
Brant	0.0	0.0	25.7	0.0	0.0
Cackling goose	0.0	0.0	815.3	77.1	0.0
Canada goose	0.0	0.0	263.6	60.0	0.0
Canada/cackling goose	0.0	0.0	44.6	10.3	0.0
Emperor goose	0.0	0.0	0.0	0.0	0.0
Snow goose	0.0	0.0	8.6	0.0	0.0
White-fronted goose	0.0	0.0	924.3	63.4	0.0
Unknown goose	0.0	0.0	42.9	0.0	0.0
Tundra (whistling) swan	0.0	0.0	51.4	6.9	0.0
Sandhill crane	0.0	0.0	90.7	0.0	0.0
Whimbrel	0.0	0.0	0.0	0.0	0.0
Spruce grouse	0.0	0.0	1.7	0.0	0.0
Sharp-tailed grouse	0.0	0.0	0.0	0.0	0.0
Ruffed grouse	0.0	0.0	0.0	1.7	0.0
Ptarmigan	351.4	0.0	1,155.4	0.0	44.3
Total harvest	**351.7**	**7.1**	**6,756.5**	**1,070.0**	**44.3**

Source ADF&G Division of Subsistence household surveys, 2012.

Table D4-7. – Reasons use of resources were less than recent years, by category, Napaskiak, 2011.

	Reasons for less use as compared to recent years															
	Salmon		Nonsalmon fish		Marine invertebrates		Land mammals		Marine mammals		Birds and eggs		Berries and greens		All resources	
Reason	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Family or personal	4.0	19.0%	4.0	25.0%	1.0	100.0%	0.0	0.0%	0.0	0.0%	1.0	10.0%	4.0	26.7%	6.0	35.3%
Resource availibilty	3.0	14.3%	1.0	6.3%	0.0	0.0%	1.0	7.7%	0.0	0.0%	0.0	0.0%	4.0	26.7%	1.0	5.9%
Resources too far	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
No equipment/equipment problems	1.0	4.8%	0.0	0.0%	0.0	0.0%	1.0	7.7%	0.0	0.0%	0.0	0.0%	2.0	13.3%	1.0	5.9%
Did not recieve	0.0	0.0%	4.0	25.0%	0.0	0.0%	3.0	23.1%	3.0	60.0%	3.0	30.0%	1.0	6.7%	3.0	17.6%
Did not try/low effort	1.0	4.8%	5.0	31.3%	0.0	0.0%	1.0	7.7%	1.0	20.0%	2.0	20.0%	3.0	20.0%	1.0	5.9%
Unsuccessful (unlucky)	0.0	0.0%	0.0	0.0%	0.0	0.0%	5.0	38.5%	0.0	0.0%	1.0	10.0%	0.0	0.0%	0.0	0.0%
Weather/environment	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Other	3.0	14.3%	0.0	0.0%	0.0	0.0%	1.0	7.7%	1.0	20.0%	0.0	0.0%	2.0	13.3%	0.0	0.0%
Working/not enough time	1.0	4.8%	0.0	0.0%	0.0	0.0%	1.0	7.7%	0.0	0.0%	2.0	20.0%	1.0	6.7%	3.0	17.6%
Regulations	8.0	38.1%	0.0	0.0%	0.0	0.0%	2.0	15.4%	0.0	0.0%	0.0	0.0%	0.0	0.0%	2.0	11.8%
Resources too small/diseased	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Did not get enough	0.0	0.0%	1.0	6.3%	0.0	0.0%	0.0	0.0%	1.0	20.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Did not need	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Did not give any away	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Too expensive (fuel)	0.0	0.0%	1.0	6.3%	0.0	0.0%	1.0	7.7%	0.0	0.0%	2.0	20.0%	1.0	6.7%	3.0	17.6%
Use other resources	0.0	0.0%	0.0	0.0%	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, 2012.

Table D4-8. – Summary of households responding to less use than recent years, by category, Napaskiak, 2011.

	Household response summary for reasons for less use compared to recent years															
	Salmon		Nonsalmon fish		Marine invertebrates		Land mammals		Marine mammals		Birds and eggs		Berries and greens		All resources	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Total households surveyed	56.0	100.0%	56.0	100.0%	56.0	100.0%	56.0	100.0%	56.0	100.0%	56.0	100.0%	56.0	100.0%	56.0	100.0%
Households responding	53.0	94.6%	47.0	83.9%	2.0	3.6%	49.0	87.5%	33.0	58.9%	48.0	85.7%	50.0	89.3%	54.0	96.4%
Households reporting less use	24.0	45.3%	16.0	34.0%	1.0	50.0%	13.0	26.5%	6.0	18.2%	12.0	25.0%	17.0	34.0%	18.0	33.3%
Households providing reasons	21.0	87.5%	16.0	100.0%	1.0	100.0%	13.0	100.0%	5.0	83.3%	10.0	83.3%	15.0	88.2%	17.0	94.4%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D4-9. – Reasons use of resources were more than recent years, by category, Napaskiak, 2011.

	Reasons for less more as compared to recent years															
	Salmon		Nonsalmon fish		Marine invertebrates		Land mammals		Marine mammals		Birds and eggs		Berries and greens		All resources	
Reason	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Increased availability	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	12.5%	1.0	20.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Used other resources	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Good weather	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Received more	0.0	0.0%	0.0	0.0%	0.0	0.0%	2.0	25.0%	1.0	20.0%	1.0	20.0%	0.0	0.0%	1.0	20.0%
Needed more	0.0	0.0%	1.0	50.0%	0.0	0.0%	2.0	25.0%	1.0	20.0%	1.0	20.0%	1.0	20.0%	2.0	40.0%
Increased effort	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	2.0	40.0%	2.0	40.0%	0.0	0.0%
Got more help	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Other	2.0	66.7%	1.0	50.0%	0.0	0.0%	3.0	37.5%	2.0	40.0%	1.0	20.0%	1.0	20.0%	2.0	40.0%
Regulations	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Traveled farther	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Increased success	1.0	33.3%	0.0	0.0%	0.0	0.0%	1.0	12.5%	0.0	0.0%	1.0	20.0%	1.0	20.0%	0.0	0.0%
Needed less	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Store-bought too expensive	0.0	0.0%	0.0	0.0%	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, 2012.

Table D4-10. – Summary of households responding to more use than recent years, by category, Napaskiak, 2011.

	Household response summary for reasons for more use compared to recent years															
	Salmon		Nonsalmon fish		Marine invertebrates		Land mammals		Marine mammals		Birds and eggs		Berries and greens		All resources	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Total households surveyed	56.0	100.0%	56.0	100.0%	56.0	100.0%	56.0	100.0%	56.0	100.0%	56.0	100.0%	56.0	100.0%	56.0	100.0%
Households responding	53.0	94.6%	47.0	83.9%	2.0	3.6%	49.0	87.5%	33.0	58.9%	48.0	85.7%	50.0	89.3%	54.0	96.4%
Households reporting more use	4.0	7.5%	2.0	4.3%	7.0	350.0%	8.0	16.3%	6.0	18.2%	5.0	10.4%	5.0	10.0%	5.0	9.3%
Households providing reasons	3.0	75.0%	2.0	100.0%	7.0	100.0%	8.0	100.0%	5.0	83.3%	5.0	100.0%	5.0	100.0%	5.0	100.0%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D4-11. – Reported impact to households responding that they did not get enough of a type of resource, Napaskiak, 2011.

		Households not getting enough _____ .						Impact to those not getting enough _____ .							
	Sampled	Valid responses		Did not get enough		No response		Not noticable		Minor		Major		Severe	
Resource category	households	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Salmon	56.0	54.0	96.4%	16.0	29.6%	1.0	6.3%	0.0	0.0%	10.0	62.5%	3.0	18.8%	2.0	12.5%
Nonsalmon fish	56.0	47.0	83.9%	8.0	17.0%	1.0	12.5%	0.0	0.0%	6.0	75.0%	1.0	12.5%	0.0	0.0%
Marine invertebrates	56.0	9.0	16.1%	1.0	11.1%	0.0	0.0%	0.0	0.0%	1.0	100.0%	0.0	0.0%	0.0	0.0%
Land mammals	56.0	50.0	89.3%	10.0	20.0%	0.0	0.0%	1.0	10.0%	6.0	60.0%	2.0	20.0%	1.0	10.0%
Marine mammals	56.0	37.0	66.1%	3.0	8.1%	0.0	0.0%	1.0	33.3%	1.0	33.3%	1.0	33.3%	0.0	0.0%
Birds and eggs	56.0	49.0	87.5%	4.0	8.2%	0.0	0.0%	0.0	0.0%	3.0	75.0%	1.0	25.0%	0.0	0.0%
Berries and greens	56.0	52.0	92.9%	10.0	19.2%	1.0	10.0%	1.0	10.0%	4.0	40.0%	3.0	30.0%	1.0	10.0%
All resources	56.0	53.0	94.6%	10.0	18.9%	0.0	0.0%	1.0	10.0%	5.0	50.0%	1.0	10.0%	3.0	30.0%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D4-12. – Households reporting doing things differently as the result of not getting enough of a resource, Napaskiak, 2011

		Households not getting enough _____.				Households doing something different because they did not get enough.			
		Valid responses		Did not get enough		Valid responses		Did something different	
	Sampled households	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Salmon	56.0	56.0	100.0%	16.0	28.6%	15.0	93.8%	8.0	53.3%
Nonsalmon fish	56.0	50.0	89.3%	8.0	16.0%	7.0	87.5%	3.0	42.9%
Marine invertebrates	56.0	9.0	16.1%	1.0	11.1%	1.0	100.0%	0.0	0.0%
Land mammals	56.0	55.0	98.2%	10.0	18.2%	8.0	80.0%	5.0	62.5%
Marine mammals	56.0	41.0	73.2%	3.0	7.3%	2.0	66.7%	1.0	50.0%
Birds and eggs	56.0	53.0	94.6%	4.0	7.5%	4.0	100.0%	1.0	25.0%
Berries and greens	56.0	55.0	98.2%	10.0	18.2%	9.0	90.0%	7.0	77.8%
All resources	56.0	55.0	98.2%	10.0	18.2%	10.0	100.0%	7.0	70.0%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D4-13. – Things households reported doing differently as the result of not getting enough of a resource, Napaskiak, 2011.

	Valid responses	Bought/bartered		Used more commercial foods		Replaced with other subsistence foods		Asked others for help		Made do without		Increased effort to harvest		Obtained food from other sources		Got public assistance	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Salmon	9.0	0.0	0.0%	5.0	55.6%	3.0	33.3%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	11.1%	0.0	0.0%
Nonsalmon fish	3.0	0.0	0.0%	2.0	66.7%	0.0	0.0%	0.0	0.0%	1.0	33.3%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Marine invertebrates	0.0	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Land mammals	6.0	0.0	0.0%	6.0	100.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Marine mammals	1.0	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	100.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Birds and eggs	1.0	0.0	0.0%	1.0	100.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Berries and greens	7.0	0.0	0.0%	6.0	85.7%	0.0	0.0%	0.0	0.0%	1.0	14.3%	0.0	0.0%	0.0	0.0%	0.0	0.0%
All resources	7.0	0.0	0.0%	4.0	57.1%	0.0	0.0%	3.0	42.9%	1.0	14.3%	0.0	0.0%	0.0	0.0%	0.0	0.0%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D4-14. – Households reporting that they did not get enough of a resource, Napaskiak, 2011.

		Reasons														
Resource by category	Households reporting wanting more	No reason given	Personal/ family	Resource not available	Too far to get it	No equipment/ equipment problems	Not given any	No hunting/ low effort	Unsuccessful (unlucky)	Weather/ environment	Other	Working/ no time	Regulations	Resources too small/ diseased	Gas prices too high	Did not get enough
DID NOT get enough: Napaskiak																
Resource not specified	3	0.0	1.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0
Fish	3	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Salmon	4	0.0	1.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0
Chum salmon	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Summer chum	1	0.0	1.0	0.0	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	4	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	1.0	0.0
Chinook salmon	15	1.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	2.0	1.0	8.0	0.0	1.0	0.0
Sockeye salmon	4	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0
Burbot	1	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Northern pike	1	0.0	0.0	0.0	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	0	0.0	0.0	0.0	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	4	0.0	1.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Broad whitefish	1	1.0	0.0	0.0	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	1	1.0	0.0	0.0	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	8	1.0	1.0	0.0	0.0	0.0	1.0	0.0	3.0	0.0	1.0	0.0	1.0	0.0	0.0	0.0
Moose	10	1.0	1.0	0.0	0.0	0.0	1.0	1.0	4.0	0.0	2.0	0.0	1.0	0.0	0.0	0.0
Bearded seal	1	0.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ringed seal	2	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown seal oil	1	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walrus	1	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ducks	2	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Black scoter	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Canada geese	1	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
White-fronted geese	1	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sandhill crane	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Chitons (bidarkis, gumboots)	1	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Clams	1	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crabs	1	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Berries	4	0.0	1.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Blueberry	2	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lowbush cranberry	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Salmonberry	7	1.0	2.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	2.0	0.0	0.0	1.0	0.0

Source ADF&G Division of Subsistence household surveys, 2012.

Table D4-15. – Reported job schedules, Napaskiak, 2011.

	Jobs		Employed persons		Employed households	
Schedule	Number	Percentage	Number	Percentage	Number	Percentage
Full-time	179.6	78.6%	163.7	84.0%	84.7	97.8%
Part-time	29.3	12.8%	29.2	15.0%	20.7	23.9%
Shift	3.9	1.7%	3.9	2.0%	3.8	4.3%
On-call (occasional)	9.8	4.3%	9.7	5.0%	9.4	10.9%
Part-time shift	0.0	0.0%	0.0	0.0%	0.0	0.0%
Schedule not reported	5.9	2.6%	3.9	2.0%	1.9	2.2%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D5-1. – Resource harvest and use characteristics, Nikolai, 2011.

Characteristic	
Mean number of resources used per household	
Minimum	2
Maximum	54
95% confidence limit (±)	16.3%
Mean	19
Median	19
Mean number of resources attempted to harvest per household	
Minimum	4
Maximum	53
95% confidence limit (±)	17.7%
Mean	21
Median	14
Mean number of resources harvested per household	
Minimum	2
Maximum	48
95% confidence limit (±)	19.8%
Mean	15
Median	12
Mean number of resources received per household	
Minimum	0
Maximum	31
95% confidence limit (±)	20.6%
Mean	9
Median	6
Mean number of resources given away per household	
Minimum	0
Maximum	30
95% confidence limit (±)	28.4%
Mean	7
Median	4
Household harvest (lb)	
Minimum	10.0
Maximum	5,908.8
Mean	1,497.9
Median	663
Total estimated harvest weight (lb)	58,416.4
Community per capita estimated harvest (lb)	499.3
Percentage of households using any resource	100.0%
Percentage of households attempting to harvest any resource	100.0%
Percentage of households harvesting any resource	100.0%
Percentage of households receiving any resource	92.3%
Percentage of households giving away any resource	84.6%
Number of households in sample	26
Number of resources available	133

Source ADF&G Division of Subsistence household survey, 2012.

Table D5-2. – Estimated harvest of salmon and nonsalmon fish for consumption by dogs, Nikolai, 2011.

Resource	Amount	Pounds
Nonsalmon fish		
Other nonsalmon fish	0.0	0.0 lb
Burbot	0.0 ind	0.0 lb
Dolly Varden	0.0 ind	0.0 lb
Rainbow trout	0.0 ind	0.0 lb
Arctic grayling	15.0 ind	10.5 lb
Longnose sucker	244.5 ind	171.2 lb
Northern pike	133.5 ind	667.5 lb
Whitefishes	217.5 ind	352.5 lb
Salmon		
Unknown salmon	0.0 ind	0.0 lb
Pink salmon	0.0 ind	0.0 lb
Sockeye salmon	30.0 ind	151.2 lb
Chum salmon	307.5 ind	1,565.5 lb
Coho salmon	15.0 ind	79.4 lb
Chinook salmon	25.5 ind	241.0 lb
Total	**988.50**	**3,238.72 lb**
Whitefishes		
Unknown whitefishes	0.0 ind	0.0 lb
Broad whitefish	0.0 ind	0.0 lb
Round whitefish	0.0 ind	0.0 lb
Least cisco	37.5 ind	37.5 lb
Sheefish	0.0 ind	0.0 lb
Bering cisco	75.0 ind	105.0 lb
Humpback whitefish	105.0 ind	210.0 lb
Subtotal	**217.5 ind**	**352.5 lb**
Other fish		
Pacific herring	0.0 gal	0.0 lb
Unknown smelt	0.0 gal	0.0 lb
Pacific tomcod	0.0 ind	0.0 lb
Saffron cod	0.0 ind	0.0 lb
Pacific halibut	0.0 lb	0.0 lb
Arctic lamprey	0.0 ind	0.0 lb
Stickleback (needlefish)	0.0 gal	0.0 lb
Alaska blackfish	0.0 lb	0.0 lb
Lake trout	0.0 ind	0.0 lb
Subtotal	**0.0**	**0.0 lb**

Source ADF&G Division of Subsistence household surveys, 2012.
Note summary rows that include incompatible units of measure have been left blank.

Table D5-3. – Estimated large land mammal and wolf harvest by month and sex, Nikolai, 2011.

	Bison	Black bear	Brown bear	Caribou			Moose			Muskox	Dall sheep	Wolf
Harvest month	Unknown	Unknown	Unknown	Male	Female	Unknown	Male	Female	Unknown	Unknown	Unknown	Unknown
January	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	1.5
February	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
March	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
April	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
May	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
June	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
July	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
August	0.0	7.5	0.0	1.5	0.0	0.0	6.0	0.0	0.0	0.0	0.0	0.0
September	0.0	7.5	3.0	0.0	0.0	0.0	33.0	0.0	0.0	0.0	0.0	0.0
October	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
November	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0
December	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5
Unknown	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 harvest	**0.0**	**21.0**	**3.0**	**1.5**	**0.0**	**0.0**	**39.0**	**3.0**	**0.0**	**0.0**	**0.0**	**3.0**

Source ADF&G Division of Subsistence household surveys, 2012.

Table D5-4. – Estimated small land mammal harvest by month, Nikolai, 2011.

	Estimated harvest by month												
Resource	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk
Beaver	0.0	6.0	18.0	7.5	25.5	0.0	0.0	4.5	9.0	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	1.5	0.0
Red fox	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Snowshoe hare	4.5	0.0	4.5	0.0	0.0	0.0	0.0	0.0	0.0	15.0	4.5	7.5	0.0
Jackrabbit	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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	1.5	0.0
Lynx	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.5	9.0	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
Marten	10.5	12.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	76.5	99.0	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
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
Porcupine	0.0	7.5	1.5	0.0	1.5	6.0	7.5	7.5	10.5	0.0	0.0	7.5	0.0
Arctic ground (parka) squirrel	0.0	0.0	0.0	0.0	15.0	0.0	0.0	7.5	15.0	0.0	0.0	0.0	0.0
Red (tree) squirrel	0.0	0.0	0.0	4.5	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	3.0	0.0
Wolf	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	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	1.5	0.0
Total harvest	**16.5**	**25.5**	**24.0**	**12.0**	**42.0**	**6.0**	**7.5**	**19.5**	**34.5**	**15.0**	**88.5**	**132.0**	**0.0**

Source ADF&G Division of Subsistence household surveys, 2012.

Table D5-5. – Estimated bird harvest by season, Nikolai, 2011.

	Estimated harvest by season				
Resource	Winter	Summer	Spring	Fall	Season unknown
Bufflehead	0.0	0.0	90.0	0.0	0.0
Canvasback	0.0	0.0	16.5	0.0	0.0
Common eider	0.0	0.0	0.0	0.0	0.0
Unknown eider	0.0	0.0	0.0	0.0	0.0
Goldeneye	0.0	0.0	22.5	0.0	0.0
Harlequin	0.0	0.0	3.0	0.0	0.0
Mallard	0.0	0.0	99.0	4.5	0.0
Common merganser	0.0	0.0	0.0	0.0	0.0
Red-breasted merganser	0.0	0.0	0.0	0.0	0.0
Unknown merganser	0.0	0.0	0.0	0.0	0.0
Long-tailed duck	0.0	0.0	0.0	0.0	0.0
Northern pintail	0.0	0.0	195.0	0.0	0.0
Scaup	0.0	0.0	9.0	0.0	0.4
Black scoter	0.0	0.0	9.0	0.0	0.0
Surf scoter	0.0	0.0	4.5	0.0	0.0
White-winged scoter	0.0	0.0	0.0	0.0	0.0
Northern shoveler	0.0	0.0	9.0	0.0	0.0
Green-winged teal	0.0	0.0	58.5	0.0	0.0
Wigeon	0.0	0.0	172.5	0.0	0.0
Unknown ducks	0.0	0.0	0.0	0.0	0.0
Brant	0.0	0.0	0.0	0.0	0.0
Cackling goose	0.0	0.0	6.0	0.0	0.0
Canada goose	0.0	19.5	151.5	0.0	0.0
Canada/cackling goose	0.0	0.0	0.0	0.0	0.0
Emperor goose	0.0	0.0	0.0	0.0	0.0
Snow goose	0.0	0.0	0.0	0.0	0.0
White-fronted goose	0.0	0.0	117.0	0.0	0.0
Unknown goose	0.0	0.0	0.0	0.0	0.0
Tundra (whistling) swan	0.0	0.0	4.5	0.0	0.0
Sandhill crane	0.0	1.5	0.0	0.0	0.0
Whimbrel	0.0	0.0	0.0	0.0	0.0
Spruce grouse	15.0	37.5	3.0	367.5	0.0
Sharp-tailed grouse	6.0	0.0	0.0	3.0	0.0
Ruffed grouse	33.0	1.5	0.0	109.5	0.0
Ptarmigan	39.0	0.0	0.0	39.0	0.0
Total harvest	**93.0**	**60.0**	**970.5**	**523.5**	**0.4**

Source ADF&G Division of Subsistence household surveys, 2012.

Table D5-6. – Reasons use of resources were less than recent years, by category, Nikolai, 2011.

	Reasons for less use as compared to recent years															
	Salmon		Nonsalmon fish		Marine invertebrates		Land mammals		Marine mammals		Birds and eggs		Berries and greens		All resources	
Reason	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Family or personal	3.0	23.1%	1.0	9.1%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	8.3%	0.0	0.0%	1.0	14.3%
Resource availibilty	1.0	7.7%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	4.0	33.3%	5.0	55.6%	3.0	42.9%
Resources too far	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
No equipment/equipment problems	1.0	7.7%	1.0	9.1%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	8.3%	0.0	0.0%	0.0	0.0%
Did not recieve	1.0	7.7%	1.0	9.1%	1.0	100.0%	0.0	0.0%	1.0	100.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Did not try/low effort	2.0	15.4%	5.0	45.5%	0.0	0.0%	1.0	12.5%	0.0	0.0%	1.0	8.3%	1.0	11.1%	1.0	14.3%
Unsuccessful (unlucky)	2.0	15.4%	0.0	0.0%	0.0	0.0%	2.0	25.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	14.3%
Weather/environment	1.0	7.7%	1.0	9.1%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	8.3%	1.0	11.1%	0.0	0.0%
Other	0.0	0.0%	1.0	9.1%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Working/not enough time	3.0	23.1%	1.0	9.1%	0.0	0.0%	0.0	0.0%	0.0	0.0%	2.0	16.7%	3.0	33.3%	1.0	14.3%
Regulations	1.0	7.7%	0.0	0.0%	0.0	0.0%	1.0	12.5%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Resources too small/diseased	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Did not get enough	0.0	0.0%	0.0	0.0%	0.0	0.0%	2.0	25.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Did not need	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	12.5%	0.0	0.0%	2.0	16.7%	0.0	0.0%	0.0	0.0%
Did not give any away	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Too expensive (fuel)	1.0	7.7%	2.0	18.2%	0.0	0.0%	2.0	25.0%	0.0	0.0%	3.0	25.0%	0.0	0.0%	3.0	42.9%
Use other resources	0.0	0.0%	0.0	0.0%	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, 2012.

Table D5-7. – Summary of households responding to less use than recent years, by category, Nikolai, 2011.

	Household response summary for reasons for less use compared to recent years															
	Salmon		Nonsalmon fish		Marine invertebrates		Land mammals		Marine mammals		Birds and eggs		Berries and greens		All resources	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Total households surveyed	26.0	100.0%	26.0	100.0%	26.0	100.0%	26.0	100.0%	26.0	100.0%	26.0	100.0%	26.0	100.0%	26.0	100.0%
Households responding	25.0	96.2%	25.0	96.2%	5.0	19.2%	25.0	96.2%	2.0	7.7%	26.0	100.0%	24.0	92.3%	25.0	96.2%
Households reporting less use	13.0	52.0%	12.0	48.0%	1.0	20.0%	10.0	40.0%	1.0	50.0%	13.0	50.0%	9.0	37.5%	7.0	28.0%
Households providing reasons	13.0	100.0%	11.0	91.7%	1.0	100.0%	8.0	80.0%	1.0	100.0%	12.0	92.3%	9.0	100.0%	7.0	100.0%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D5-8. – Reasons use of resources were more than recent years, by category, Nikolai, 2011.

	Reasons for more use as compared to recent years															
	Salmon		Nonsalmon fish		Marine invertebrates		Land mammals		Marine mammals		Birds and eggs		Berries and greens		All resources	
Reason	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Increased availability	0.0	0.0%	1.0	20.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	16.7%	0.0	0.0%
Used other resources	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Good weather	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Received more	2.0	66.7%	0.0	0.0%	1.0	14.3%	0.0	0.0%	0.0	0.0%	1.0	100.0%	0.0	0.0%	0.0	0.0%
Needed more	0.0	0.0%	2.0	40.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	16.7%	0.0	0.0%
Increased effort	0.0	0.0%	1.0	20.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	2.0	28.6%
Got more help	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Other	0.0	0.0%	1.0	20.0%	1.0	14.3%	1.0	33.3%	0.0	0.0%	0.0	0.0%	2.0	33.3%	3.0	42.9%
Regulations	1.0	33.3%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Traveled farther	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Increased success	0.0	0.0%	0.0	0.0%	0.0	0.0%	2.0	66.7%	0.0	0.0%	0.0	0.0%	2.0	33.3%	2.0	28.6%
Needed less	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Store-bought too expensive	0.0	0.0%	0.0	0.0%	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, 2012.

Table D5-9. – Summary of households responding to more use than recent years, by category, Nikolai, 2011.

	Household response summary for reasons for more use compared to recent years															
	Salmon		Nonsalmon fish		Marine invertebrates		Land mammals		Marine mammals		Birds and eggs		Berries and greens		All resources	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Total households surveyed	26.0	100.0%	26.0	100.0%	26.0	100.0%	26.0	100.0%	26.0	100.0%	26.0	100.0%	26.0	100.0%	26.0	100.0%
Households responding	25.0	96.2%	25.0	96.2%	5.0	19.2%	25.0	96.2%	2.0	7.7%	26.0	100.0%	24.0	92.3%	25.0	96.2%
Households reporting more use	3.0	12.0%	5.0	20.0%	7.0	140.0%	3.0	12.0%	0.0	0.0%	1.0	3.8%	6.0	25.0%	7.0	28.0%
Households providing reasons	3.0	100.0%	5.0	100.0%	7.0	100.0%	3.0	100.0%	0.0	0.0%	1.0	100.0%	6.0	100.0%	7.0	100.0%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D5-10. – Reported impact to households responding that they did not get enough of a type of resource, Nikolai, 2011.

		Households not getting enough _____ .						Impact to those not getting enough _____ .							
	Sampled	Valid responses		Did not get enough		No response		Not noticable		Minor		Major		Severe	
Resource category	households	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Salmon	26.0	24.0	92.3%	13.0	54.2%	0.0	0.0%	2.0	15.4%	6.0	46.2%	5.0	38.5%	0.0	0.0%
Nonsalmon fish	26.0	24.0	92.3%	11.0	45.8%	0.0	0.0%	1.0	9.1%	6.0	54.5%	4.0	36.4%	0.0	0.0%
Marine invertebrates	26.0	23.0	88.5%	6.0	26.1%	1.0	16.7%	2.0	33.3%	2.0	33.3%	1.0	16.7%	0.0	0.0%
Land mammals	26.0	25.0	96.2%	14.0	56.0%	0.0	0.0%	2.0	14.3%	5.0	35.7%	6.0	42.9%	1.0	7.1%
Marine mammals	26.0	23.0	88.5%	1.0	4.3%	0.0	0.0%	0.0	0.0%	1.0	100.0%	0.0	0.0%	0.0	0.0%
Birds and eggs	26.0	25.0	96.2%	10.0	40.0%	1.0	10.0%	3.0	30.0%	4.0	40.0%	2.0	20.0%	0.0	0.0%
Berries and greens	26.0	25.0	96.2%	14.0	56.0%	1.0	7.1%	0.0	0.0%	8.0	57.1%	5.0	35.7%	0.0	0.0%
All resources	26.0	25.0	96.2%	11.0	44.0%	0.0	0.0%	1.0	9.1%	6.0	54.5%	4.0	36.4%	0.0	0.0%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D5-11. – Things households reported doing differently as the result of not getting enough of a resource, Nikolai, 2011.

	Valid	Bought/bartered		Used more commercial foods		Replaced with other subsistence foods		Asked others for help		Made do without		Increased effort to harvest		Obtained food from other sources		Got public assistance	
	responses	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Salmon	8.0	1.0	12.5%	6.0	75.0%	0.0	0.0%	0.0	0.0%	2.0	25.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Nonsalmon fish	7.0	1.0	14.3%	5.0	71.4%	0.0	0.0%	0.0	0.0%	1.0	14.3%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Marine invertebrates	2.0	0.0	0.0%	2.0	100.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Land mammals	11.0	0.0	0.0%	9.0	81.8%	2.0	18.2%	0.0	0.0%	1.0	9.1%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Marine 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	0.0%	0.0	0.0%
Birds and eggs	8.0	0.0	0.0%	7.0	87.5%	1.0	12.5%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Berries and greens	10.0	1.0	10.0%	7.0	70.0%	0.0	0.0%	2.0	20.0%	0.0	0.0%	1.0	10.0%	0.0	0.0%	0.0	0.0%
All resources	10.0	0.0	0.0%	6.0	60.0%	2.0	20.0%	0.0	0.0%	1.0	10.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D5-12. – Reported job schedules, Nikolai, 2011.

	Jobs		Employed persons		Employed households	
Schedule	Number	Percentage	Number	Percentage	Number	Percentage
Full-time	17.7	25.6%	17.7	34.5%	13.6	44.4%
Part-time	19.5	28.2%	17.7	34.5%	15.3	50.0%
Shift	0.0	0.0%	0.0	0.0%	0.0	0.0%
On-call (occasional)	15.9	23.1%	12.4	24.1%	11.9	38.9%
Part-time shift	5.3	7.7%	5.3	10.3%	5.1	16.7%
Schedule not reported	10.6	15.4%	8.9	17.2%	6.8	22.2%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D6-1. – Resource harvest and use characteristics, Takotna, 2011.

Characteristic	
Mean number of resources used per household	
Minimum	1
Maximum	33
95% confidence limit (±)	35.5%
Mean	9
Median	6
Mean number of resources attempted to harvest per household	
Minimum	0
Maximum	25
95% confidence limit (±)	33.4%
Mean	7
Median	5
Mean number of resources harvested per household	
Minimum	0
Maximum	25
95% confidence limit (±)	35.5%
Mean	7
Median	4
Mean number of resources received per household	
Minimum	0
Maximum	10
95% confidence limit (±)	35.7%
Mean	3
Median	2
Mean number of resources given away per household	
Minimum	0
Maximum	5
95% confidence limit (±)	32.3%
Mean	2
Median	1
Household harvest (lb)	
Minimum	0.0
Maximum	1,277.6
Mean	381.0
Median	500.5
Total estimated harvest weight (lb)	8,382.1
Community per capita estimated harvest (lb)	161.6
Percentage of households using any resource	100.0%
Percentage of households attempting to harvest any resource	92.9%
Percentage of households harvesting any resource	92.9%
Percentage of households receiving any resource	92.9%
Percentage of households giving away any resource	78.6%
Number of households in sample	14
Number of resources available	137

Source ADF&G Division of Subsistence household survey, 2012.

Table D6-2. – Estimated harvest of salmon and nonsalmon fish for consumption by dogs, Takotna, 2011.

Resource	Amount	Pounds
Nonsalmon fish		
Other nonsalmon fish	0.0	0.0 lb
Whitefishes	0.0 ind	0.0 lb
Northern pike	0.0 ind	0.0 lb
Arctic grayling	0.0 ind	0.0 lb
Salmon		
Chum salmon	0.0 ind	0.0 lb
Pink salmon	0.0 ind	0.0 lb
Sockeye salmon	0.0 ind	0.0 lb
Unknown salmon	0.0 ind	0.0 lb
Chinook salmon	0.0 ind	0.0 lb
Coho salmon	0.0 ind	0.0 lb
Total	**0.0**	**0.0 lb**
Whitefishes		
Sheefish	0.0 ind	0.0 lb
Broad whitefish	0.0 ind	0.0 lb
Bering cisco	0.0 ind	0.0 lb
Least cisco	0.0 ind	0.0 lb
Humpback whitefish	0.0 ind	0.0 lb
Round whitefish	0.0 ind	0.0 lb
Unknown whitefishes	0.0 ind	0.0 lb
Subtotal	**0.0 ind**	**0.0 lb**
Other fish		
Pacific herring	0.0 gal	0.0 lb
Eulachon (hooligan, candlefish)	0.0 gal	0.0 lb
Unknown smelt	0.0 gal	0.0 lb
Pacific tomcod	0.0 ind	0.0 lb
Saffron cod	0.0 ind	0.0 lb
Pacific halibut	0.0 lb	0.0 lb
Arctic lamprey	0.0 ind	0.0 lb
Stickleback (needlefish)	0.0 gal	0.0 lb
Alaska blackfish	0.0 lb	0.0 lb
Burbot	0.0 ind	0.0 lb
Dolly Varden	0.0 ind	0.0 lb
Lake trout	0.0 ind	0.0 lb
Longnose sucker	0.0 ind	0.0 lb
Rainbow trout	0.0 ind	0.0 lb
Subtotal	**0.0**	**0.0 lb**

Source ADF&G Division of Subsistence household surveys, 2012.
Note summary rows that include incompatible units of measure have been left blank.

Table D6-3. – Estimated large land mammal and wolf harvest by month and sex, Takotna, 2011.

	Bison	Black bear	Brown bear	Caribou			Moose			Muskox	Dall sheep	Wolf
Harvest month	Unknown	Unknown	Unknown	Male	Female	Unknown	Male	Female	Unknown	Unknown	Unknown	Unknown
January	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6
February	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6
March	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
April	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
June	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
July	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
August	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
September	0.0	0.0	0.0	0.0	0.0	0.0	12.6	0.0	0.0	0.0	0.0	0.0
October	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
November	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6
December	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6
Unknown	0.0	6.3	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
Total harvest	**0.0**	**6.3**	**0.0**	**0.0**	**0.0**	**0.0**	**12.9**	**0.0**	**0.0**	**0.0**	**0.0**	**6.3**

Source ADF&G Division of Subsistence household surveys, 2012.

Table D6-4. – Estimated small land mammal harvest by month, Takotna, 2011.

	Estimated harvest by month												
Resource	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk
Beaver	3.1	3.1	3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0
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
Red fox	3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.1	3.1	0.7
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
Jackrabbit	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
River (land) otter	0.0	0.0	3.1	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	3.1	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
Marten	141.4	110.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	125.7	110.0	110.0
Mink	1.6	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.4
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
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
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
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
Weasel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.1
Wolf	1.6	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	1.6	0.0
Wolverine	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0	0.0
Total harvest	**150.9**	**117.9**	**6.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**132.0**	**121.0**	**122.2**

Source ADF&G Division of Subsistence household surveys, 2012.

Table D6-5. – Estimated marine mammal harvest by month, Takotna, 2011.

	Estimated harvest by month												
Resource	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk
Bearded seal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ringed seal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Spotted seal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown seal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walrus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Beluga whale	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bowhead whale	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total harvest	**0.0**	**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, 2012.

Table D6-6. – Estimated bird harvest by season, Takotna, 2011.

	Estimated harvest by season				
Resource	Winter	Summer	Spring	Fall	Season unknown
Bufflehead	0.0	0.0	0.0	0.0	0.0
Canvasback	0.0	0.0	0.0	0.0	0.0
Common eider	0.0	0.0	0.0	0.0	0.0
Unknown eider	0.0	0.0	0.0	0.0	0.0
Goldeneye	0.0	0.0	0.0	0.0	0.0
Harlequin	0.0	0.0	0.0	0.0	0.0
Mallard	0.0	0.0	7.9	0.0	0.0
Common merganser	0.0	0.0	0.0	0.0	0.0
Red-breasted merganser	0.0	0.0	0.0	0.0	0.0
Unknown merganser	0.0	0.0	0.0	0.0	0.0
Long-tailed duck	0.0	0.0	0.0	0.0	0.0
Northern pintail	0.0	0.0	3.1	0.0	0.0
Scaup	0.0	0.0	0.0	0.0	0.0
Black scoter	0.0	0.0	0.0	0.0	0.0
Surf scoter	0.0	0.0	0.0	0.0	0.0
White-winged scoter	0.0	0.0	0.0	0.0	0.0
Northern shoveler	0.0	0.0	0.0	0.0	0.0
Green-winged teal	0.0	0.0	0.0	0.0	0.0
Wigeon	0.0	0.0	0.0	0.0	0.0
Unknown ducks	0.0	0.0	0.0	0.0	0.0
Brant	0.0	0.0	0.0	0.0	0.0
Cackling goose	0.0	0.0	0.0	0.0	0.0
Canada goose	0.0	0.0	1.6	0.0	0.0
Canada/cackling goose	0.0	0.0	0.0	0.0	0.0
Emperor goose	0.0	0.0	0.0	0.0	0.0
Snow goose	0.0	0.0	0.0	0.0	0.0
White-fronted goose	0.0	0.0	4.7	0.0	0.0
Unknown goose	0.0	0.0	0.0	0.0	0.0
Tundra (whistling) swan	0.0	0.0	0.0	0.0	0.0
Sandhill crane	0.0	0.0	0.0	0.0	0.0
Whimbrel	0.0	0.0	0.0	0.0	0.0
Spruce grouse	0.0	0.0	0.0	378.7	0.0
Sharp-tailed grouse	0.0	0.0	0.0	0.0	0.0
Ruffed grouse	0.0	0.0	0.0	26.7	0.0
Ptarmigan	28.3	0.0	0.0	0.0	78.6
Total harvest	**28.3**	**0.0**	**17.3**	**405.4**	**78.6**

Source ADF&G Division of Subsistence household surveys, 2012.

Table D6-7. – Reasons use of resources were less than recent years, by category, Takotna, 2011.

	Reasons for less use as compared to recent years															
	Salmon		Nonsalmon fish		Marine invertebrates		Land mammals		Marine mammals		Birds and eggs		Berries and greens		All resources	
Reason	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Family or personal	1.0	11.1%	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	10.0%
Resource availibilty	4.0	44.4%	0.0	0.0%	0.0	0.0%	1.0	16.7%	0.0	0.0%	0.0	0.0%	2.0	22.2%	1.0	10.0%
Resources too far	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
No equipment/equipment problems	2.0	22.2%	1.0	11.1%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	11.1%	1.0	10.0%
Did not recieve	1.0	11.1%	1.0	11.1%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Did not try/low effort	1.0	11.1%	4.0	44.4%	0.0	0.0%	2.0	33.3%	0.0	0.0%	1.0	33.3%	3.0	33.3%	3.0	30.0%
Unsuccessful (unlucky)	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Weather/environment	0.0	0.0%	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	10.0%
Other	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Working/not enough time	2.0	22.2%	3.0	33.3%	0.0	0.0%	2.0	33.3%	0.0	0.0%	2.0	66.7%	4.0	44.4%	4.0	40.0%
Regulations	0.0	0.0%	1.0	11.1%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Resources too small/diseased	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Did not get enough	1.0	11.1%	0.0	0.0%	0.0	0.0%	1.0	16.7%	0.0	0.0%	0.0	0.0%	1.0	11.1%	0.0	0.0%
Did not need	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Did not give any away	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Too expensive (fuel)	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Use other resources	0.0	0.0%	0.0	0.0%	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, 2012.

Table D6-8. – Summary of households responding to less use than recent years, by category, Takotna, 2011.

	Household response summary for reasons for less use compared to recent years															
	Salmon		Nonsalmon fish		Marine invertebrates		Land mammals		Marine mammals		Birds and eggs		Berries and greens		All resources	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Total households surveyed	14.0	100.0%	14.0	100.0%	14.0	100.0%	14.0	100.0%	14.0	100.0%	14.0	100.0%	14.0	100.0%	14.0	100.0%
Households responding	10.0	71.4%	11.0	78.6%	1.0	7.1%	14.0	100.0%	1.0	7.1%	9.0	64.3%	12.0	85.7%	13.0	92.9%
Households reporting less use	9.0	90.0%	9.0	81.8%	0.0	0.0%	7.0	50.0%	0.0	0.0%	3.0	33.3%	9.0	75.0%	10.0	76.9%
Households providing reasons	9.0	100.0%	9.0	100.0%	0.0	0.0%	6.0	85.7%	0.0	0.0%	3.0	100.0%	9.0	100.0%	10.0	100.0%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D6-9. – Reasons use of resources were more than recent years, by category, Takotna, 2011.

	Reasons for more use as compared to recent years															
	Salmon		Nonsalmon fish		Marine invertebrates		Land mammals		Marine mammals		Birds and eggs		Berries and greens		All resources	
Reason	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Increased availability	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Used other resources	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Good weather	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Received more	0.0	0.0%	0.0	0.0%	1.0	100.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Needed more	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Increased effort	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Got more help	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Other	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Regulations	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Traveled farther	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Increased success	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	100.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Needed less	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Store-bought too expensive	0.0	0.0%	0.0	0.0%	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, 2012.

Table D6-10. – Summary of households responding to more use than recent years, by category, Takotna, 2011.

	Household response summary for reasons for more use compared to recent years															
	Salmon		Nonsalmon fish		Marine invertebrates		Land mammals		Marine mammals		Birds and eggs		Berries and greens		All resources	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Total households surveyed	14.0	100.0%	14.0	100.0%	14.0	100.0%	14.0	100.0%	14.0	100.0%	14.0	100.0%	14.0	100.0%	14.0	100.0%
Households responding	10.0	71.4%	11.0	78.6%	1.0	7.1%	14.0	100.0%	1.0	7.1%	9.0	64.3%	12.0	85.7%	13.0	92.9%
Households reporting more use	0.0	0.0%	0.0	0.0%	1.0	100.0%	2.0	14.3%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Households providing reasons	0.0	0.0%	0.0	0.0%	1.0	100.0%	1.0	50.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D6-11. – Households reporting doing things differently as the result of not getting enough of a resource, Takotna, 2011.

		Households not getting enough _____.				Households doing something different because they did not get enough.			
	Sampled households	Valid responses		Did not get enough		Valid responses		Did something different	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Salmon	14.0	12.0	85.7%	3.0	25.0%	3.0	100.0%	3.0	100.0%
Nonsalmon fish	14.0	14.0	100.0%	5.0	35.7%	2.0	40.0%	0.0	0.0%
Marine invertebrates	14.0	8.0	57.1%	2.0	25.0%	1.0	50.0%	0.0	0.0%
Land mammals	14.0	14.0	100.0%	3.0	21.4%	2.0	66.7%	2.0	100.0%
Marine mammals	14.0	8.0	57.1%	1.0	12.5%	0.0	0.0%	0.0	0.0%
Birds and eggs	14.0	14.0	100.0%	4.0	28.6%	4.0	100.0%	1.0	25.0%
Berries and greens	14.0	12.0	85.7%	8.0	66.7%	8.0	100.0%	4.0	50.0%
All resources	14.0	14.0	100.0%	5.0	35.7%	5.0	100.0%	4.0	80.0%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D6-12. – Things households reported doing differently as the result of not getting enough of a resource, Takotna, 2011.

	Valid responses	Bought/bartered		Used more commercial foods		Replaced with other subsistence foods		Asked others for help		Made do without		Increased effort to harvest		Obtained food from other sources		Got public assistance	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Salmon	3.0	0.0	0.0%	3.0	100.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Nonsalmon fish	0.0	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Marine invertebrates	0.0	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Land mammals	2.0	0.0	0.0%	2.0	100.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Marine 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	0.0%	0.0	0.0%
Birds and eggs	1.0	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	100.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Berries and greens	4.0	0.0	0.0%	3.0	75.0%	0.0	0.0%	0.0	0.0%	1.0	25.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
All resources	4.0	0.0	0.0%	3.0	75.0%	0.0	0.0%	0.0	0.0%	1.0	25.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D6-13. – Reported impact to households responding that they did not get enough of a type of resource, Takotna, 2011.

	Households not getting enough _____ .							Impact to those not getting enough _____ .							
	Sampled	Valid responses		Did not get enough		No response		Not noticable		Minor		Major		Severe	
Resource category	households	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Salmon	14.0	12.0	85.7%	3.0	25.0%	0.0	0.0%	0.0	0.0%	2.0	66.7%	1.0	33.3%	0.0	0.0%
Nonsalmon fish	14.0	13.0	92.9%	5.0	38.5%	3.0	60.0%	1.0	20.0%	1.0	20.0%	0.0	0.0%	0.0	0.0%
Marine invertebrates	14.0	7.0	50.0%	2.0	28.6%	1.0	0.0%	1.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Land mammals	14.0	14.0	100.0%	3.0	21.4%	2.0	66.7%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	33.3%
Marine mammals	14.0	7.0	50.0%	1.0	14.3%	1.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Birds and eggs	14.0	12.0	85.7%	4.0	33.3%	1.0	25.0%	1.0	25.0%	1.0	25.0%	1.0	25.0%	0.0	0.0%
Berries and greens	14.0	12.0	85.7%	8.0	66.7%	0.0	0.0%	3.0	37.5%	1.0	12.5%	4.0	50.0%	0.0	0.0%
All resources	14.0	13.0	92.9%	5.0	38.5%	1.0	20.0%	1.0	20.0%	1.0	20.0%	1.0	20.0%	1.0	20.0%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D6-14. – Households reporting that they did not get enough of a resource, Takotna, 2011.

		Reasons														
Resource by category	Households reporting wanting more	No reason given	Personal/ family	Resource not available	Too far to get it	No equipment/ equipment problems	Not given any	No hunting/ low effort	Unsuccessful (unlucky)	Weather/ environment	Other	Working/ no time	Regulations	Resources too small/ diseased	Gas prices too high	Did not get enough
DID NOT get enough: Takotna																
Resource not specified	1	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fish	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Salmon	2	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Coho salmon	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Chinook salmon	2	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Arctic grayling	4	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Northern pike	2	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Sheefish	1	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Large land mammals	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Moose	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0
Beaver	1	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Birds and eggs	2	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Ducks	1	1.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Geese	1	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Grouse	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Spruce grouse	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Clams	1	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Berries	3	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Blueberry	6	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0
Lowbush cranberry	4	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	1.0
Highbush cranberry	1	0.0	0.0	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
Crowberry	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Salmonberry	1	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fiddlehead ferns	2	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0

Source ADF&G Division of Subsistence household surveys, 2012.

Table D6-15. – Reported job schedules, Takotna, 2011.

	Jobs		Employed persons		Employed households	
Schedule	Number	Percentage	Number	Percentage	Number	Percentage
Full-time	14.1	38.1%	12.4	46.7%	12.8	77.8%
Part-time	23.0	61.9%	15.9	60.0%	12.8	77.8%
Shift	0.0	0.0%	0.0	0.0%	0.0	0.0%
On-call (occasional)	0.0	0.0%	0.0	0.0%	0.0	0.0%
Part-time shift	0.0	0.0%	0.0	0.0%	0.0	0.0%
Schedule not reported	0.0	0.0%	0.0	0.0%	0.0	0.0%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D7-1. – Resource harvest and use characteristics, Anvik, 2011.

Characteristic	
Mean number of resources used per household	
Minimum	2
Maximum	27
95% confidence limit (±)	13.5%
Mean	11
Median	9
Mean number of resources attempted to harvest per household	
Minimum	0
Maximum	28
95% confidence limit (±)	18.3%
Mean	10
Median	7
Mean number of resources harvested per household	
Minimum	0
Maximum	27
95% confidence limit (±)	19.7%
Mean	9
Median	7
Mean number of resources received per household	
Minimum	0
Maximum	7
95% confidence limit (±)	17.4%
Mean	3
Median	3
Mean number of resources given away per household	
Minimum	0
Maximum	15
95% confidence limit (±)	34.7%
Mean	2
Median	1
Household harvest (lb)	
Minimum	0.0
Maximum	3,889.8
Mean	1,075.0
Median	825
Total estimated harvest weight (lb)	34,400.9
Community per capita estimated harvest (lb)	390.9
Percentage of households using any resource	100.0%
Percentage of households attempting to harvest any resource	91.7%
Percentage of households harvesting any resource	87.5%
Percentage of households receiving any resource	83.3%
Percentage of households giving away any resource	54.2%
Number of households in sample	24
Number of resources available	136

Source ADF&G Division of Subsistence household survey, 2012.

Table D7-2. – Estimated harvest of salmon and nonsalmon fish for consumption by dogs, Anvik, 2011.

Resource	Amount	Pounds
Nonsalmon fish		
Other nonsalmon fish	0.0	0.0 lb
Dolly Varden	0.0 ind	0.0 lb
Burbot	0.0 ind	0.0 lb
Arctic grayling	0.0 ind	0.0 lb
Northern pike	105.3 ind	316.0 lb
Whitefishes	320.3 ind	1,354.2 lb
Salmon		
Unknown chum salmon	0.0 ind	0.0 lb
Pink salmon	0.0 ind	0.0 lb
Sockeye salmon	0.0 ind	0.0 lb
Unknown salmon	0.0 ind	0.0 lb
Fall chum salmon	126.7 ind	635.5 lb
Coho salmon	0.0 ind	0.0 lb
Summer chum salmon	413.3 ind	2,073.8 lb
Chinook salmon	0.0 ind	0.0 lb
Total	**965.6**	**4,379.5 lb**
Whitefishes		
Round whitefish	0.0 ind	0.0 lb
Unknown whitefishes	0.0 ind	0.0 lb
Least cisco	0.0 ind	0.0 lb
Humpback whitefish	7.0 ind	20.9 lb
Sheefish	40.0 ind	240.0 lb
Broad whitefish	273.3 ind	1,093.3 lb
Subtotal	**320.3 ind**	**1,354.2 lb**
Other fish		
Pacific herring	0.0 gal	0.0 lb
Unknown smelt	0.0 gal	0.0 lb
Pacific tomcod	0.0 ind	0.0 lb
Saffron cod	0.0 ind	0.0 lb
Pacific halibut	0.0 lb	0.0 lb
Arctic lamprey	0.0 ind	0.0 lb
Stickleback (needlefish)	0.0 gal	0.0 lb
Alaska blackfish	0.0 ind	0.0 lb
Lake trout	0.0 ind	0.0 lb
Longnose sucker	0.0 ind	0.0 lb
Rainbow trout	0.0 ind	0.0 lb
Subtotal	**0.0**	**0.0 lb**

Source ADF&G Division of Subsistence household surveys, 2012.
Note summary rows that include incompatible units of measure have been left blank.

Table D7-3. – Estimated large land mammal and wolf harvest by month and sex, Anvik, 2011.

	Bison	Black bear	Brown bear	Caribou			Moose			Muskox	Dall sheep	Wolf
Harvest month	Unknown	Unknown	Unknown	Male	Female	Unknown	Male	Female	Unknown	Unknown	Unknown	Unknown
January	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
February	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3
March	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3
April	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
June	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
July	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
August	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
September	0.0	0.0	0.0	0.0	0.0	0.0	14.7	0.0	0.0	0.0	0.0	0.0
October	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
November	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
December	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	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 harvest	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**14.7**	**0.0**	**0.0**	**0.0**	**0.0**	**2.7**

Source ADF&G Division of Subsistence household surveys, 2012.

Table D7-4. – Estimated small land mammal harvest by month, Anvik, 2011.

	Estimated harvest by month												
Resource	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk
Beaver	0.0	13.3	41.3	0.0	1.3	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
Red fox	1.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.3	4.0
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	26.7
Jackrabbit	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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	2.7
Lynx	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	2.7
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
Marten	6.7	8.0	6.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0	8.0	270.7
Mink	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.3	0.0	6.7
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
Porcupine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0
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
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
Weasel	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wolf	0.0	1.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wolverine	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total harvest	**14.7**	**25.3**	**49.3**	**0.0**	**1.3**	**0.0**	**0.0**	**0.0**	**1.3**	**0.0**	**13.3**	**20.0**	**313.3**

Source ADF&G Division of Subsistence household surveys, 2012.

Table D7-5. – Estimated bird harvest by season, Anvik, 2011.

	Estimated harvest by season				
Resource	Winter	Summer	Spring	Fall	Season unknown
Bufflehead	0.0	0.0	0.0	0.0	0.0
Canvasback	0.0	0.0	0.0	0.0	0.0
Common eider	0.0	0.0	0.0	0.0	0.0
Unknown eider	0.0	0.0	0.0	0.0	0.0
Goldeneye	0.0	0.0	0.0	0.0	0.0
Harlequin	0.0	0.0	0.0	0.0	0.0
Mallard	0.0	0.0	62.7	70.7	0.0
Common merganser	0.0	0.0	0.0	0.0	0.0
Red-breasted merganser	0.0	0.0	0.0	0.0	0.0
Unknown merganser	0.0	0.0	0.0	0.0	0.0
Long-tailed duck	0.0	0.0	0.0	0.0	0.0
Northern pintail	0.0	0.0	18.7	38.7	0.0
Scaup	0.0	0.0	0.0	0.0	0.0
Black scoter	0.0	0.0	0.0	0.0	0.0
Surf scoter	0.0	0.0	0.0	0.0	0.0
White-winged scoter	0.0	0.0	0.0	0.0	0.0
Northern shoveler	0.0	0.0	6.7	0.0	0.0
Green-winged teal	0.0	0.0	29.3	17.3	0.0
Wigeon	0.0	0.0	13.3	13.3	0.0
Unknown duck	0.0	0.0	0.0	0.0	0.0
Brant	0.0	0.0	8.0	0.0	0.0
Cackling goose	0.0	0.0	0.0	0.0	0.0
Canada goose	0.0	0.0	13.3	5.3	0.0
Canada/cackling goose	0.0	0.0	66.7	21.3	0.0
Emperor goose	0.0	0.0	0.0	0.0	0.0
Snow goose	0.0	0.0	4.0	5.3	0.0
White-fronted goose	0.0	0.0	22.7	13.3	0.0
Unknown goose	0.0	0.0	0.0	0.0	0.0
Tundra (whistling) swan	0.0	0.0	0.0	0.0	0.0
Sandhill crane	0.0	0.0	0.0	0.0	0.0
Whimbrel	0.0	0.0	0.0	0.0	0.0
Spruce grouse	0.0	20.0	0.0	153.3	0.0
Sharp-tailed grouse	0.0	0.0	0.0	0.0	0.0
Ruffed grouse	6.7	20.0	0.0	100.0	0.0
Ptarmigan	29.3	0.0	0.0	0.0	0.0
Total harvest	**36.0**	**40.0**	**245.3**	**438.7**	**0.0**

Source ADF&G Division of Subsistence household surveys, 2012.

Table D7-6. – Reasons use of resources were less than recent years, by category, Anvik, 2011.

	Reasons for less use as compared to recent years															
	Salmon		Nonsalmon fish		Marine invertebrates		Land mammals		Marine mammals		Birds and eggs		Berries and greens		All resources	
Reason	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Family or personal	1.0	12.5%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	14.3%	2.0	40.0%
Resource availibilty	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	5.0	71.4%	0.0	0.0%
Resources too far	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
No equipment/equipment problems	1.0	12.5%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Did not recieve	1.0	12.5%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Did not try/low effort	1.0	12.5%	2.0	66.7%	0.0	0.0%	1.0	14.3%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	20.0%
Unsuccessful (unlucky)	1.0	12.5%	0.0	0.0%	0.0	0.0%	4.0	57.1%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Weather/environment	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	14.3%	0.0	0.0%	0.0	0.0%	1.0	14.3%	0.0	0.0%
Other	1.0	12.5%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Working/not enough time	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	14.3%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Regulations	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Resources too small/diseased	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	14.3%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Did not get enough	1.0	12.5%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	20.0%
Did not need	1.0	12.5%	1.0	33.3%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	100.0%	0.0	0.0%	0.0	0.0%
Did not give any away	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Too expensive (fuel)	0.0	0.0%	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	20.0%
Use other resources	0.0	0.0%	0.0	0.0%	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, 2012.

Table D7-7. – Summary of households responding to less use than recent years, by category, Anvik, 2011.

	Household response summary for reasons for less use compared to recent years															
	Salmon		Nonsalmon fish		Marine invertebrates		Land mammals		Marine mammals		Birds and eggs		Berries and greens		All resources	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Total households surveyed	24.0	100.0%	24.0	100.0%	24.0	100.0%	24.0	100.0%	24.0	100.0%	24.0	100.0%	24.0	100.0%	24.0	100.0%
Households responding	24.0	100.0%	16.0	66.7%	2.0	8.3%	23.0	95.8%	1.0	41.7%	16.0	66.7%	20.0	83.3%	23.0	95.8%
Households reporting less use	8.0	33.3%	3.0	18.8%	0.0	0.0%	7.0	30.4%	0.0	0.0%	1.0	6.3%	8.0	40.0%	5.0	21.7%
Households providing reasons	8.0	100.0%	3.0	100.0%	0.0	0.0%	7.0	100.0%	0.0	0.0%	1.0	100.0%	7.0	87.5%	5.0	100.0%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D7-8. – Reasons use of resources were more than recent years, by category, Anvik, 2011.

	Reasons for more use as compared to recent years															
	Salmon		Nonsalmon fish		Marine invertebrates		Land mammals		Marine mammals		Birds and eggs		Berries and greens		All resources	
Reason	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Increased availability	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Used other resources	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Good weather	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Received more	0.0	0.0%	0.0	0.0%	1.0	100.0%	0.0	0.0%	1.0	100.0%	1.0	33.3%	0.0	0.0%	0.0	0.0%
Needed more	1.0	20.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	2.0	50.0%	2.0	50.0%
Increased effort	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	100.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	25.0%
Got more help	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Other	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Regulations	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Traveled farther	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Increased success	4.0	80.0%	2.0	100.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	2.0	66.7%	1.0	25.0%	1.0	25.0%
Needed less	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	25.0%	0.0	0.0%
Store-bought too expensive	0.0	0.0%	0.0	0.0%	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, 2012.

Table D7-9. – Summary of households responding to more use than recent years, by category, Anvik, 2011.

	Household response summary for reasons for more use compared to recent years															
	Salmon		Nonsalmon fish		Marine invertebrates		Land mammals		Marine mammals		Birds and eggs		Berries and greens		All resources	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Total households surveyed	24.0	100.0%	24.0	100.0%	24.0	100.0%	24.0	100.0%	24.0	100.0%	24.0	100.0%	24.0	100.0%	24.0	100.0%
Households responding	24.0	100.0%	16.0	66.7%	2.0	8.3%	23.0	95.8%	1.0	4.2%	16.0	66.7%	20.0	83.3%	23.0	95.8%
Households reporting more use	5.0	20.8%	2.0	12.5%	1.0	50.0%	1.0	4.3%	1.0	100.0%	3.0	18.8%	4.0	20.0%	4.0	17.4%
Households providing reasons	5.0	100.0%	2.0	100.0%	1.0	100.0%	1.0	100.0%	1.0	100.0%	3.0	100.0%	4.0	100.0%	4.0	100.0%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D7-10. – Reported impact to households responding that they did not get enough of a type of resource, Anvik, 2011.

		Households not getting enough _____ .						Impact to those not getting enough _____ .							
	Sampled	Valid responses		Did not get enough		No response		Not noticable		Minor		Major		Severe	
Resource category	households	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Salmon	24.0	24.0	100.0%	4.0	16.7%	0.0	0.0%	1.0	25.0%	2.0	50.0%	0.0	0.0%	1.0	25.0%
Nonsalmon fish	24.0	16.0	66.7%	3.0	18.8%	0.0	0.0%	0.0	0.0%	2.0	66.7%	1.0	33.3%	0.0	0.0%
Marine invertebrates	24.0	2.0	8.3%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Land mammals	24.0	23.0	95.8%	5.0	21.7%	1.0	20.0%	0.0	0.0%	3.0	60.0%	0.0	0.0%	1.0	20.0%
Marine mammals	24.0	1.0	4.2%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Birds and eggs	24.0	16.0	66.7%	1.0	6.3%	1.0	100.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Berries and greens	24.0	21.0	87.5%	11.0	52.4%	1.0	9.1%	3.0	27.3%	7.0	63.6%	0.0	0.0%	0.0	0.0%
All resources	24.0	23.0	95.8%	4.0	17.4%	0.0	0.0%	0.0	0.0%	1.0	25.0%	2.0	50.0%	1.0	25.0%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D7-11. – Households reporting doing things differently as the result of not getting enough of a resource, Anvik, 2011.

		Households not getting enough _____.				Households doing something different because they did not get enough.			
	Sampled households	Valid responses		Did not get enough		Valid responses		Did something different	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Salmon	24.0	24.0	100.0%	4.0	16.7%	3.0	75.0%	2.0	66.7%
Nonsalmon fish	24.0	16.0	66.7%	3.0	18.8%	3.0	100.0%	3.0	100.0%
Marine invertebrates	24.0	2.0	8.3%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Land mammals	24.0	23.0	95.8%	5.0	21.7%	4.0	80.0%	4.0	100.0%
Marine mammals	24.0	1.0	4.2%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Birds and eggs	24.0	17.0	70.8%	1.0	5.9%	0.0	0.0%	0.0	0.0%
Berries and greens	24.0	21.0	87.5%	11.0	52.4%	10.0	90.9%	3.0	30.0%
All resources	24.0	24.0	100.0%	4.0	16.7%	4.0	100.0%	3.0	75.0%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D7-12. – Things households reported doing differently as the result of not getting enough of a resource, Anvik, 2011.

	Valid responses	Bought/bartered		Used more commercial foods		Replaced with other subsistence foods		Asked others for help		Made do without		Increased effort to harvest		Obtained food from other sources		Got public assistance	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Salmon	2.0	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	50.0%	0.0	0.0%	0.0	0.0%	1.0	50.0%	0.0	0.0%
Nonsalmon fish	3.0	1.0	33.3%	0.0	0.0%	1.0	33.3%	0.0	0.0%	0.0	0.0%	1.0	33.3%	0.0	0.0%	0.0	0.0%
Marine invertebrates	0.0	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Land mammals	4.0	0.0	0.0%	1.0	25.0%	1.0	25.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	25.0%	0.0	0.0%
Marine 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	0.0%	0.0	0.0%
Birds and eggs	0.0	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Berries and greens	3.0	1.0	33.3%	1.0	33.3%	0.0	0.0%	0.0	0.0%	1.0	33.3%	0.0	0.0%	0.0	0.0%	0.0	0.0%
All resources	3.0	0.0	0.0%	3.0	100.0%	0.0	0.0%	1.0	33.3%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D7-13. – Households reporting that they did not get enough of a resource, Anvik, 2011.

		Reasons														
Resource by category	Households reporting wanting more	No reason given	Personal/ family	Resource not available	Too far to get it	No equipment/ equipment problems	Not given any	No hunting/ low effort	Unsuccessful (unlucky)	Weather/ environment	Other	Working/ no time	Regulations	Resources too small/ diseased	Gas prices too high	Did not get enough
DID NOT get enough: Anvik																
Resource not specified	1	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Salmon	1	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Summer chum	2	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Coho salmon	1	0.0	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	0.0
Chinook salmon	4	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Northern pike	1	1.0	0.0	0.0	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	3	2.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Moose	3	1.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Marten	1	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mallard	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Geese	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Berries	2	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Blueberry	10	2.0	1.0	6.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Lowbush cranberry	3	0.0	1.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Highbush cranberry	2	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crowberry	1	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Raspberry	1	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Salmonberry	1	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wood	1	1.0	0.0	0.0	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, 2012.

Table D7-14. – Reported job schedules, Anvik, 2011.

	Jobs		Employed persons		Employed households	
Schedule	Number	Percentage	Number	Percentage	Number	Percentage
Full-time	19.5	34.1%	19.4	42.9%	16.0	63.2%
Part-time	19.5	34.1%	16.8	37.1%	14.7	57.9%
Shift	3.9	6.8%	3.9	8.6%	4.0	15.8%
On-call (occasional)	11.7	20.5%	10.4	22.9%	9.3	36.8%
Part-time shift	2.6	4.5%	2.6	5.7%	2.7	10.5%
Schedule not reported	0.0	0.0%	0.0	0.0%	0.0	0.0%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D8-1. – Resource harvest and use characteristics, Grayling, 2011.

Characteristic	
Mean number of resources used per household	
Minimum	3
Maximum	42
95% confidence limit (±)	10.9%
Mean	12
Median	9
Mean number of resources attempted to harvest per household	
Minimum	0
Maximum	33
95% confidence limit (±)	12.9%
Mean	10
Median	8
Mean number of resources harvested per household	
Minimum	0
Maximum	31
95% confidence limit (±)	13.3%
Mean	9
Median	7
Mean number of resources received per household	
Minimum	0
Maximum	19
95% confidence limit (±)	15.8%
Mean	5
Median	3
Mean number of resources given away per household	
Minimum	0
Maximum	26
95% confidence limit (±)	22.0%
Mean	5
Median	2
Household harvest (lb)	
Minimum	0.0
Maximum	3,363.8
Mean	947.2
Median	392
Total estimated harvest weight (lb)	52,093.9
Community per capita estimated harvest (lb)	245.8
Percentage of households using any resource	100.0%
Percentage of households attempting to harvest any resource	97.6%
Percentage of households harvesting any resource	97.6%
Percentage of households receiving any resource	90.2%
Percentage of households giving away any resource	68.3%
Number of households in sample	41
Number of resources available	139

Source ADF&G Division of Subsistence household survey, 2012.

Table D8-2. – Estimated harvest of salmon and nonsalmon fish for consumption by dogs, Grayling, 2011.

Resource	Amount	Pounds
Nonsalmon fish		
Other nonsalmon fish	0.0	0.0 lb
Eulachon (hooligan, candlefish)	0.0 ind	0.0 lb
Rainbow trout	0.0 ind	0.0 lb
Burbot	0.0 ind	0.0 lb
Northern pike	13.4 ind	40.2 lb
Arctic grayling	47.0 ind	47.0 lb
Arctic lamprey	0.0 ind	0.0 lb
Whitefishes	419.0 ind	1,505.3 lb
Salmon		
Unknown chum salmon	0.0 ind	0.0 lb
Pink salmon	0.0 ind	0.0 lb
Unknown salmon	0.0 ind	0.0 lb
Sockeye salmon	67.1 ind	362.2 lb
Coho salmon	13.4 ind	68.4 lb
Fall chum salmon	71.3 ind	357.6 lb
Summer chum salmon	570.1 ind	2,860.4 lb
Chinook salmon	0.0 ind	0.0 lb
Total	**1,201.3**	**5,241.1 lb**
Whitefishes		
Bering cisco	0.0 ind	0.0 lb
Least cisco	13.4 ind	13.4 lb
Unknown whitefishes	0.0 ind	0.0 lb
Round whitefish	13.8 ind	6.9 lb
Sheefish	0.0 ind	0.0 lb
Humpback whitefish	82.5 ind	247.5 lb
Broad whitefish	309.4 ind	1,237.5 lb
Subtotal	**419.0 ind**	**1,505.3 lb**
Other fish		
Pacific herring	0.0 gal	0.0 lb
Unknown smelt	0.0 gal	0.0 lb
Pacific tomcod	0.0 ind	0.0 lb
Saffron cod	0.0 ind	0.0 lb
Pacific halibut	0.0 lb	0.0 lb
Stickleback (needlefish)	0.0 gal	0.0 lb
Alaska blackfish	0.0 ind	0.0 lb
Dolly Varden	0.0 ind	0.0 lb
Lake trout	0.0 ind	0.0 lb
Longnose sucker	0.0 ind	0.0 lb
Subtotal	**0.0**	**0.0 lb**

Source ADF&G Division of Subsistence household surveys, 2012.
Note summary rows that include incompatible units of measure have been left blank.

Table D8-3. – Estimated large land mammal and wolf harvest by month and sex, Grayling, 2011.

	Bison	Black bear	Brown bear	Caribou			Moose			Muskox	Dall sheep	Wolf
Harvest month	Unknown	Unknown	Unknown	Male	Female	Unknown	Male	Female	Unknown	Unknown	Unknown	Unknown
January	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3
February	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
March	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	1.3
April	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
June	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
July	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
August	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0
September	0.0	1.3	0.0	0.0	0.0	0.0	20.1	0.0	0.0	0.0	0.0	1.3
October	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
November	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
December	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7
Unknown	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 harvest	**0.0**	**1.3**	**0.0**	**0.0**	**0.0**	**0.0**	**21.5**	**1.3**	**0.0**	**0.0**	**0.0**	**6.7**

Source ADF&G Division of Subsistence household surveys, 2012.

Table D8-4. – Estimated small land mammal harvest by month, Grayling, 2011.

	Estimated harvest by month												
Resource	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk
Beaver	5.4	32.2	53.7	0.0	14.8	1.3	1.3	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
Red fox	1.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.4	4.0	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
Jackrabbit	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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
Lynx	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	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
Marten	203.9	144.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	111.3	207.9	16.7
Mink	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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
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
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
Red (tree) squirrel	0.0	0.0	0.0	0.0	30.9	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
Wolf	1.3	0.0	1.3	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	2.7	0.0
Wolverine	4.0	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	5.4	0.0
Total harvest	**218.7**	**181.1**	**55.0**	**0.0**	**45.6**	**1.3**	**1.3**	**0.0**	**1.3**	**0.0**	**120.7**	**220.0**	**16.7**

Source ADF&G Division of Subsistence household surveys, 2012.

Table D8-5. – Estimated marine mammal harvest by month, Grayling, 2011.

	Estimated harvest by month												
Resource	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk
Bearded seal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ringed seal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Spotted seal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown seal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walrus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Beluga whale	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bowhead whale	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total harvest	**0.0**	**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, 2012.

Table D8-6. – Estimated bird harvest by season, Grayling, 2011.

	Estimated harvest by season				
Resource	Winter	Summer	Spring	Fall	Season unknown
Bufflehead	0.0	0.0	0.0	0.0	0.0
Canvasback	0.0	0.0	0.0	5.4	0.0
Common eider	0.0	0.0	0.0	0.0	0.0
Unknown eider	0.0	0.0	0.0	0.0	0.0
Goldeneye	0.0	0.0	0.0	8.0	0.0
Harlequin	0.0	0.0	0.0	0.0	0.0
Mallard	0.0	0.0	28.2	44.3	0.0
Common merganser	0.0	0.0	0.0	0.0	0.0
Red-breasted merganser	0.0	0.0	0.0	0.0	0.0
Unknown merganser	0.0	0.0	0.0	0.0	0.0
Long-tailed duck	0.0	0.0	0.0	0.0	0.0
Northern pintail	0.0	0.0	42.9	25.5	0.0
Scaup	0.0	0.0	0.0	0.0	0.0
Black scoter	0.0	0.0	0.0	0.0	0.0
Surf scoter	0.0	0.0	0.0	0.0	0.0
White-winged scoter	0.0	0.0	0.0	0.0	0.0
Northern shoveler	0.0	0.0	0.0	0.0	0.0
Green-winged teal	0.0	0.0	5.4	20.1	0.0
Wigeon	0.0	0.0	22.8	16.1	0.0
Unknown duck	0.0	0.0	1.3	0.0	0.0
Brant	0.0	0.0	0.0	0.0	0.0
Cackling goose	0.0	0.0	0.0	8.0	0.0
Canada goose	0.0	0.0	118.0	33.5	0.0
Canada/cackling goose	0.0	0.0	26.8	0.0	0.0
Emperor goose	0.0	0.0	0.0	0.0	0.0
Snow goose	0.0	0.0	0.0	0.0	0.0
White-fronted goose	0.0	0.0	18.8	16.1	0.0
Unknown goose	0.0	0.0	0.0	0.0	0.0
Tundra (whistling) swan	0.0	0.0	1.3	0.0	0.0
Sandhill crane	0.0	0.0	0.0	0.0	0.0
Whimbrel	0.0	0.0	0.0	0.0	0.0
Spruce grouse	10.7	40.2	0.0	537.9	0.0
Sharp-tailed grouse	0.0	0.0	0.0	0.0	0.0
Ruffed grouse	36.2	13.4	0.0	64.4	0.0
Unknown grouse	0.0	0.0	0.0	26.8	0.0
Total harvest	**47.0**	**53.7**	**265.6**	**806.2**	**0.0**

Source ADF&G Division of Subsistence household surveys, 2012.

Table D8-7. – Reasons use of resources were less than recent years, by category, Grayling, 2011.

	Reasons for less use as compared to recent years															
	Salmon		Nonsalmon fish		Marine invertebrates		Land mammals		Marine mammals		Birds and eggs		Berries and greens		All resources	
Reason	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Family or personal	2.0	7.7%	0.0	0.0%	0.0	0.0%	2.0	13.3%	0.0	0.0%	0.0	0.0%	1.0	4.8%	2.0	12.5%
Resource availibilty	3.0	11.5%	0.0	0.0%	0.0	0.0%	1.0	6.7%	0.0	0.0%	1.0	100.0%	5.0	23.8%	2.0	12.5%
Resources too far	0.0	0.0%	0.0	0.0%	1.0	100.0%	0.0	0.0%	0.0	0.0%	1.0	100.0%	0.0	0.0%	0.0	0.0%
No equipment/equipment problems	3.0	11.5%	1.0	6.3%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	4.8%	1.0	6.3%
Did not recieve	4.0	15.4%	3.0	18.8%	1.0	100.0%	1.0	6.7%	1.0	100.0%	1.0	100.0%	1.0	4.8%	0.0	0.0%
Did not try/low effort	0.0	0.0%	1.0	6.3%	0.0	0.0%	3.0	20.0%	0.0	0.0%	2.0	200.0%	4.0	19.0%	1.0	6.3%
Unsuccessful (unlucky)	1.0	3.8%	3.0	18.8%	0.0	0.0%	6.0	40.0%	0.0	0.0%	1.0	100.0%	1.0	4.8%	4.0	25.0%
Weather/environment	0.0	0.0%	1.0	6.3%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	2.0	9.5%	0.0	0.0%
Other	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	6.7%	0.0	0.0%	2.0	200.0%	2.0	9.5%	1.0	6.3%
Working/not enough time	1.0	3.8%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	4.8%	1.0	6.3%
Regulations	7.0	26.9%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Resources too small/diseased	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Did not get enough	5.0	19.2%	6.0	37.5%	0.0	0.0%	1.0	6.7%	0.0	0.0%	4.0	400.0%	6.0	28.6%	4.0	25.0%
Did not need	0.0	0.0%	1.0	6.3%	0.0	0.0%	1.0	6.7%	0.0	0.0%	1.0	100.0%	0.0	0.0%	1.0	6.3%
Did not give any away	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Too expensive (fuel)	0.0	0.0%	1.0	6.3%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	6.3%
Use other resources	0.0	0.0%	0.0	0.0%	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, 2012.

Table D8-8. – Summary of households responding to less use than recent years, by category, Grayling, 2011.

	Household response summary for reasons for less use compared to recent years															
	Salmon		Nonsalmon fish		Marine invertebrates		Land mammals		Marine mammals		Birds and eggs		Berries and greens		All resources	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Total households surveyed	41.0	100.0%	41.0	100.0%	41.0	100.0%	41.0	100.0%	41.0	100.0%	41.0	100.0%	41.0	100.0%	41.0	100.0%
Households responding	41.0	100.0%	37.0	90.2%	2.0	4.9%	39.0	95.1%	3.0	7.3%	27.0	65.9%	32.0	78.0%	39.0	95.1%
Households reporting less use	26.0	63.4%	16.0	43.2%	1.0	50.0%	15.0	38.5%	1.0	33.3%	13.0	48.1%	21.0	65.6%	18.0	46.2%
Households providing reasons	26.0	100.0%	16.0	100.0%	1.0	100.0%	15.0	100.0%	1.0	100.0%	1.0	7.7%	21.0	100.0%	16.0	88.9%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D8-9. – Reasons use of resources were more than recent years, by category, Grayling, 2011.

	Reasons for more use as compared to recent years															
	Salmon		Nonsalmon fish		Marine invertebrates		Land mammals		Marine mammals		Birds and eggs		Berries and greens		All resources	
Reason	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Increased availability	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	25.0%	0.0	0.0%
Used other resources	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Good weather	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Received more	1.0	33.3%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	25.0%
Needed more	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	100.0%	0.0	0.0%	2.0	50.0%	1.0	25.0%
Increased effort	0.0	0.0%	1.0	25.0%	1.0	100.0%	1.0	20.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Got more help	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Other	0.0	0.0%	1.0	25.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	33.3%	0.0	0.0%	0.0	0.0%
Regulations	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Traveled farther	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Increased success	2.0	66.7%	2.0	50.0%	0.0	0.0%	4.0	80.0%	0.0	0.0%	2.0	66.7%	1.0	25.0%	2.0	50.0%
Needed less	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Store-bought too expensive	0.0	0.0%	0.0	0.0%	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, 2012.

Table D8-10. – Summary of households responding to more use than recent years, by category, Grayling, 2011.

	Household response summary for reasons for more use compared to recent years															
	Salmon		Nonsalmon fish		Marine invertebrates		Land mammals		Marine mammals		Birds and eggs		Berries and greens		All resources	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Total households surveyed	41.0	100.0%	41.0	100.0%	41.0	100.0%	41.0	100.0%	41.0	100.0%	41.0	100.0%	41.0	100.0%	41.0	100.0%
Households responding	41.0	100.0%	37.0	90.2%	2.0	4.9%	39.0	95.1%	3.0	7.3%	27.0	65.9%	32.0	78.0%	39.0	95.1%
Households reporting more use	4.0	9.8%	4.0	10.8%	1.0	50.0%	5.0	12.8%	1.0	33.3%	3.0	11.1%	4.0	12.5%	4.0	10.3%
Households providing reasons	3.0	75.0%	4.0	100.0%	1.0	100.0%	5.0	100.0%	1.0	100.0%	3.0	100.0%	4.0	100.0%	4.0	100.0%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D8-11. – Reported impact to households responding that they did not get enough of a type of resource, Grayling, 2011.

		Households not getting enough _____ .						Impact to those not getting enough _____ .							
	Sampled	Valid responses		Did not get enough		No response		Not noticable		Minor		Major		Severe	
Resource category	households	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Salmon	41.0	41.0	100.0%	17.0	41.5%	0.0	0.0%	0.0	0.0%	8.0	47.1%	7.0	41.2%	2.0	11.8%
Nonsalmon fish	41.0	37.0	90.2%	13.0	35.1%	1.0	7.7%	3.0	23.1%	6.0	46.2%	3.0	23.1%	0.0	0.0%
Marine invertebrates	41.0	2.0	4.9%	1.0	50.0%	0.0	0.0%	0.0	0.0%	1.0	100.0%	0.0	0.0%	0.0	0.0%
Land mammals	41.0	39.0	95.1%	12.0	30.8%	0.0	0.0%	0.0	0.0%	3.0	25.0%	5.0	41.7%	4.0	33.3%
Marine mammals	41.0	3.0	7.3%	1.0	33.3%	0.0	0.0%	1.0	100.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Birds and eggs	41.0	27.0	65.9%	7.0	25.9%	0.0	0.0%	5.0	71.4%	2.0	28.6%	0.0	0.0%	0.0	0.0%
Berries and greens	41.0	32.0	78.0%	18.0	56.3%	0.0	0.0%	2.0	11.1%	8.0	44.4%	3.0	16.7%	5.0	27.8%
All resources	41.0	39.0	95.1%	13.0	33.3%	0.0	0.0%	0.0	0.0%	4.0	30.8%	8.0	61.5%	1.0	7.7%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D8-12. – Households reporting doing things differently as the result of not getting enough of a resource, Grayling, 2011.

		Households not getting enough _____.				Households doing something different because they did not get enough.			
	Sampled households	Valid responses		Did not get enough		Valid responses		Did something different	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Salmon	41.0	41.0	100.0%	17.0	41.5%	17.0	100.0%	10.0	58.8%
Nonsalmon fish	41.0	37.0	90.2%	13.0	35.1%	11.0	84.6%	3.0	27.3%
Marine invertebrates	41.0	2.0	4.9%	1.0	50.0%	1.0	100.0%	1.0	100.0%
Land mammals	41.0	40.0	97.6%	12.0	30.0%	12.0	100.0%	8.0	66.7%
Marine mammals	41.0	5.0	12.2%	1.0	20.0%	1.0	100.0%	0.0	0.0%
Birds and eggs	41.0	30.0	73.2%	7.0	23.3%	7.0	100.0%	2.0	28.6%
Berries and greens	41.0	37.0	90.2%	18.0	48.6%	18.0	100.0%	9.0	50.0%
All resources	41.0	41.0	100.0%	13.0	31.7%	13.0	100.0%	8.0	61.5%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D8-13. – Things households reported doing differently as the result of not getting enough of a resource, Grayling, 2011.

	Valid responses	Bought/bartered		Used more commercial foods		Replaced with other subsistence foods		Asked others for help		Made do without		Increased effort to harvest		Obtained food from other sources		Got public assistance	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Salmon	10.0	0.0	0.0%	6.0	60.0%	3.0	30.0%	0.0	0.0%	1.0	10.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Nonsalmon fish	3.0	0.0	0.0%	3.0	100.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Marine invertebrates	1.0	0.0	0.0%	1.0	100.0%	0.0	0.0%	0.0	0.0%	1.0	100.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Land mammals	8.0	0.0	0.0%	8.0	100.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Marine 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	0.0%	0.0	0.0%
Birds and eggs	2.0	0.0	0.0%	2.0	100.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Berries and greens	9.0	0.0	0.0%	6.0	66.7%	0.0	0.0%	1.0	11.1%	1.0	11.1%	1.0	11.1%	0.0	0.0%	0.0	0.0%
All resources	8.0	0.0	0.0%	8.0	100.0%	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, 2012.

Table D8-14. – Households reporting that they did not get enough of a resource, Grayling, 2011.

		Reasons														
Resource by category	Households reporting wanting more	No reason given	Personal/ family	Resource not available	Too far to get it	No equipment/ equipment problems	Not given any	No hunting/ low effort	Unsuccessful (unlucky)	Weather/ environment	Other	Working/ no time	Regulations	Resources too small/ diseased	Gas prices too high	Did not get enough
DID NOT get enough: Grayling																
Resource not specified	3	2.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fish	3	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0
Fall chum	4	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Coho salmon	1	0.0	0.0	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
Chinook salmon	18	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	3.0	1.0	5.0	1.0	0.0	4.0
Sockeye salmon	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nonsalmon fish	1	0.0	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	0.0
Pacific halibut	1	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Burbot	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Arctic grayling	1	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Northern pike	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0
Sheefish	6	2.0	0.0	0.0	0.0	0.0	1.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
Whitefishes	5	1.0	0.0	0.0	0.0	0.0	1.0	0.0	1.0	0.0	1.0	0.0	1.0	1.0	0.0	0.0
Black bear	1	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Moose	14	2.0	0.0	2.0	0.0	0.0	2.0	1.0	2.0	0.0	2.0	1.0	0.0	1.0	1.0	6.0
Beaver	1	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bowhead whale	1	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Birds and eggs	1	0.0	0.0	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
Ducks	2	1.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Geese	2	1.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Grouse	2	1.0	0.0	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
Spruce grouse	1	0.0	0.0	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
King crab	1	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Shrimp	1	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Berries	4	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0	0.0	1.0	1.0
Blueberry	16	2.0	0.0	2.0	0.0	0.0	0.0	4.0	0.0	1.0	1.0	1.0	0.0	0.0	0.0	5.0
Highbush cranberry	2	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Crowberry	2	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Currants	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Raspberry	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	1.0
Salmonberry	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0
Wild rose hips	2	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0

Source ADF&G Division of Subsistence household surveys, 2012.

Table D8-15. – Reported job schedules, Grayling, 2011.

	Jobs		Employed persons		Employed households	
Schedule	Number	Percentage	Number	Percentage	Number	Percentage
Full-time	56.3	37.2%	51.2	52.5%	34.7	68.6%
Part-time	51.5	34.0%	39.7	40.7%	24.6	48.6%
Shift	4.8	3.2%	5.0	5.1%	4.3	8.6%
On-call (occasional)	37.0	24.5%	28.1	28.8%	18.8	37.1%
Part-time shift	0.0	0.0%	0.0	0.0%	0.0	0.0%
Schedule not reported	1.6	1.1%	1.7	1.7%	1.4	2.9%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D9-1. – Resource harvest and use characteristics, Russian Mission, 2011.

2011.

Characteristic	
Mean number of resources used per household	
Minimum	0
Maximum	42
95% confidence limit (±)	9.2%
Mean	20
Median	19
Mean number of resources attempted to harvest per household	
Minimum	0
Maximum	37
95% confidence limit (±)	11.3%
Mean	17
Median	16
Mean number of resources harvested per household	
Minimum	0
Maximum	33
95% confidence limit (±)	11.7%
Mean	16
Median	15
Mean number of resources received per household	
Minimum	0
Maximum	29
95% confidence limit (±)	14.6%
Mean	7
Median	7
Mean number of resources given away per household	
Minimum	0
Maximum	24
95% confidence limit (±)	18.5%
Mean	6
Median	5
Household harvest (lb)	
Minimum	0.0
Maximum	7,017.0
Mean	1,674.5
Median	1,391.5
Total estimated harvest weight (lb)	132,289.3
Community per capita estimated harvest (lb)	329.2
Percentage of households using any resource	97.8%
Percentage of households attempting to harvest any resource	97.8%
Percentage of households harvesting any resource	97.8%
Percentage of households receiving any resource	91.3%
Percentage of households giving away any resource	84.8%
Number of households in sample	46
Number of resources available	140

Source ADF&G Division of Subsistence household survey, 2012.

Table D9-2. – Estimated harvest of salmon and nonsalmon fish for consumption by dogs, Russian Mission, 2011.

Resource	Amount	Pounds
Nonsalmon fish		
Other nonsalmon fish	0.0	0.0 lb
Rainbow trout	0.0 ind	0.0 lb
Arctic grayling	0.0 ind	0.0 lb
Pacific halibut	0.0 lb	0.0 lb
Dolly Varden	0.0 ind	0.0 lb
Burbot	105.3 ind	474.0 lb
Alaska blackfish	0.0 lb	0.0 lb
Northern pike	628.5 ind	2,828.2 lb
Whitefishes	316.6 ind	888.0 lb
Arctic lamprey	8,391.6 ind	5,034.9 lb
Salmon		
Unknown salmon	0.0 ind	0.0 lb
Unknown chum salmon	0.0 ind	0.0 lb
Pink salmon	0.0 ind	0.0 lb
Sockeye salmon	0.0 ind	0.0 lb
Coho salmon	74.9 ind	381.9 lb
Fall chum salmon	158.0 ind	792.7 lb
Summer chum salmon	166.5 ind	835.5 lb
Chinook salmon	3.4 ind	32.0 lb
Total	**9,844.82**	**5,344.32 lb**
Whitefishes		
Least cisco	0.0 ind	0.0 lb
Round whitefish	0.0 ind	0.0 lb
Unknown whitefishes	0.0 ind	0.0 lb
Bering cisco	0.0 ind	0.0 lb
Sheefish	26.3 ind	171.2 lb
Broad whitefish	96.2 ind	134.6 lb
Humpback whitefish	194.1 ind	582.2 lb
Subtotal	**316.6 ind**	**888.0 lb**
Other fish		
Pacific herring	0.0 gal	0.0 lb
Pacific herring sac roe	0.0 gal	0.0 lb
Unknown smelt	0.0 gal	0.0 lb
Pacific tomcod	0.0 ind	0.0 lb
Saffron cod	0.0 ind	0.0 lb
Stickleback (needlefish)	0.0 gal	0.0 lb
Lake trout	0.0 ind	0.0 lb
Longnose sucker	0.0 ind	0.0 lb
Subtotal	**0.0**	**0.0 lb**

Source ADF&G Division of Subsistence household surveys, 2012.
Note summary rows that include incompatible units of measure have been left blank.

Table D9-3. – Estimated large land mammal and wolf harvest by month and sex, Russian Mission, 2011.

	Bison	Black bear	Brown bear	Caribou			Moose			Muskox	Dall sheep	Wolf
Harvest month	Unknown	Unknown	Unknown	Male	Female	Unknown	Male	Female	Unknown	Unknown	Unknown	Unknown
January	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.0	0.0	0.0	3.4
February	0.0	0.0	0.0	0.0	1.7	0.0	1.7	0.0	0.0	0.0	0.0	1.7
March	0.0	0.0	0.0	0.0	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
April	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
June	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
July	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
August	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
September	0.0	6.9	0.0	0.0	0.0	0.0	53.2	0.0	0.0	0.0	0.0	0.0
October	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
November	0.0	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
December	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.0	0.0	0.0	0.0	0.0
Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0
Total harvest	**0.0**	**8.6**	**0.0**	**0.0**	**5.2**	**0.0**	**56.7**	**1.7**	**0.4**	**0.0**	**0.0**	**5.2**

Source ADF&G Division of Subsistence household surveys, 2012.

Table D9-4. – Estimated small land mammal harvest by month, Russian Mission, 2011.

	Estimated harvest by month												
Resource	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk
Beaver	6.9	20.6	1.7	3.4	6.9	0.0	0.0	5.2	6.9	3.4	5.2	13.7	64.8
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
Red fox	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.0	25.8	30.9	0.0
Snowshoe hare	1.7	13.7	34.3	0.0	0.0	0.0	0.0	0.0	27.5	37.8	13.7	22.3	66.6
Jackrabbit	0.0	0.0	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
River (land) otter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.0	10.3
Lynx	5.2	5.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7
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
Marten	17.2	18.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.2	24.0	104.8
Mink	5.2	5.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.4	6.9
Muskrat	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
Porcupine	0.0	1.7	3.4	0.0	0.0	0.0	0.0	0.0	8.6	0.0	1.7	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
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
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
Wolf	3.4	1.7	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	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total harvest	**39.5**	**70.4**	**41.2**	**3.4**	**6.9**	**0.0**	**0.0**	**5.2**	**46.4**	**41.2**	**53.2**	**94.5**	**255.1**

Source ADF&G Division of Subsistence household surveys, 2012.

Table D9-5. – Estimated marine mammal harvest by month, Russian Mission, 2011.

	Estimated harvest by month												
Resource	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk
Bearded seal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ringed seal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Spotted seal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown seal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7
Walrus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Beluga whale	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.0	0.0	0.0	0.0	0.0
Bowhead whale	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total harvest	**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**

Source ADF&G Division of Subsistence household surveys, 2012.

Table D9-6. – Estimated bird harvest by season, Russian Mission, 2011.

	Estimated harvest by season				
Resource	Winter	Summer	Spring	Fall	Season unknown
Bufflehead	0.0	0.0	0.0	0.0	0.0
Canvasback	0.0	0.0	0.0	0.0	0.0
Common eider	0.0	0.0	0.0	0.0	0.0
Unknown eider	0.0	0.0	0.0	0.0	0.0
Goldeneye	0.0	0.0	21.4	47.1	0.0
Harlequin	0.0	0.0	0.0	29.2	0.0
Mallard	0.0	0.0	118.5	188.9	0.0
Common merganser	0.0	0.0	0.0	0.0	0.0
Red-breasted merganser	0.0	0.0	0.0	0.0	0.0
Unknown merganser	0.0	0.0	0.0	0.0	0.0
Long-tailed duck	0.0	0.0	0.0	0.0	0.0
Northern pintail	0.0	0.0	32.4	102.8	0.0
Scaup	0.0	0.0	0.0	0.0	0.0
Black scoter	0.0	0.0	10.3	37.8	0.0
Surf scoter	0.0	0.0	0.0	0.0	0.0
White-winged scoter	0.0	0.0	0.0	0.0	0.0
Northern shoveler	0.0	0.0	5.2	8.6	0.0
Green-winged teal	0.0	0.0	1.7	51.5	0.0
Wigeon	0.0	0.0	30.9	123.6	0.0
Unknown ducks	0.0	0.0	0.0	0.0	0.0
Brant	0.0	0.0	0.0	0.0	0.0
Cackling goose	0.0	0.0	49.8	68.7	0.0
Canada goose	0.0	0.0	125.4	67.0	0.0
Canada/cackling goose	0.0	0.0	0.0	12.0	0.0
Emperor goose	0.0	0.0	0.0	0.0	0.0
Snow goose	0.0	0.0	41.2	32.6	0.0
White-fronted goose	5.2	0.0	134.0	139.1	0.0
Unknown goose	0.0	0.0	0.1	5.2	0.1
Tundra (whistling) swan	0.0	0.0	24.0	18.9	5.2
Sandhill crane	0.0	1.7	0.1	5.2	0.0
Whimbrel	0.0	0.0	0.0	0.0	0.0
Spruce grouse	0.0	0.0	0.0	541.0	12.0
Sharp-tailed grouse	0.0	0.0	0.0	0.0	0.0
Ruffed grouse	0.0	0.0	1.7	97.9	0.0
Ptarmigan	386.4	0.0	0.0	49.8	54.5
Total harvest	**391.6**	**1.7**	**596.5**	**1,627.0**	**71.8**

Source ADF&G Division of Subsistence household surveys, 2012.

Table D9-7. – Reasons use of resources were less than recent years, by category, Russian Mission, 2011.

	Reasons for less use as compared to recent years															
	Salmon		Nonsalmon fish		Marine invertebrates		Land mammals		Marine mammals		Birds and eggs		Berries and greens		All resources	
Reason	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Family or personal	1.0	4.8%	3.0	16.7%	1.0	100.0%	2.0	16.7%	2.0	28.6%	2.0	18.2%	2.0	7.7%	3.0	15.8%
Resource availibilty	2.0	9.5%	1.0	5.6%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	14.0	53.8%	4.0	21.1%
Resources too far	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	14.3%	0.0	0.0%	0.0	0.0%	0.0	0.0%
No equipment/equipment problems	4.0	19.0%	3.0	16.7%	0.0	0.0%	2.0	16.7%	0.0	0.0%	2.0	18.2%	6.0	23.1%	4.0	21.1%
Did not recieve	0.0	0.0%	3.0	16.7%	0.0	0.0%	2.0	16.7%	3.0	42.9%	0.0	0.0%	0.0	0.0%	2.0	10.5%
Did not try/low effort	1.0	4.8%	4.0	22.2%	0.0	0.0%	3.0	25.0%	1.0	14.3%	4.0	36.4%	1.0	3.8%	1.0	5.3%
Unsuccessful (unlucky)	2.0	9.5%	2.0	11.1%	0.0	0.0%	1.0	8.3%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Weather/environment	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	9.1%	4.0	15.4%	0.0	0.0%
Other	2.0	9.5%	1.0	5.6%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	5.3%
Working/not enough time	2.0	9.5%	0.0	0.0%	0.0	0.0%	1.0	8.3%	0.0	0.0%	0.0	0.0%	1.0	3.8%	0.0	0.0%
Regulations	6.0	28.6%	0.0	0.0%	0.0	0.0%	1.0	8.3%	0.0	0.0%	0.0	0.0%	0.0	0.0%	4.0	21.1%
Resources too small/diseased	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	9.1%	0.0	0.0%	0.0	0.0%
Did not get enough	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Did not need	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	2.0	10.5%
Did not give any away	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Too expensive (fuel)	2.0	9.5%	3.0	16.7%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	9.1%	0.0	0.0%	4.0	21.1%
Use other resources	0.0	0.0%	0.0	0.0%	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, 2012.

Table D9-8. – Summary of households responding to less use than recent years, by category, Russian Mission, 2011.

	Household response summary for reasons for less use compared to recent years															
	Salmon		Nonsalmon fish		Marine invertebrates		Land mammals		Marine mammals		Birds and eggs		Berries and greens		All resources	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Total households surveyed	46.0	100.0%	46.0	100.0%	46.0	100.0%	46.0	100.0%	46.0	100.0%	46.0	100.0%	46.0	100.0%	46.0	100.0%
Households responding	45.0	97.8%	45.0	97.8%	5.0	10.9%	44.0	95.7%	31.0	67.4%	42.0	91.3%	41.0	89.1%	44.0	95.7%
Households reporting less use	21.0	46.7%	19.0	42.2%	1.0	20.0%	13.0	29.5%	7.0	22.6%	12.0	28.6%	28.0	68.3%	20.0	45.5%
Households providing reasons	21.0	100.0%	18.0	94.7%	1.0	100.0%	12.0	92.3%	7.0	100.0%	11.0	91.7%	26.0	92.9%	19.0	95.0%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D9-9. – Reasons use of resources were more than recent years, by category, Russian Mission, 2011.

	Reasons for more use as compared to recent years															
	Salmon		Nonsalmon fish		Marine invertebrates		Land mammals		Marine mammals		Birds and eggs		Berries and greens		All resources	
Reason	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Increased availability	0.0	0.0%	2.0	40.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0	0.0%	1.0	50.0%
Used other resources	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0	0.0%	0.0	0.0%
Good weather	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0	0.0%	0.0	0.0%
Received more	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	5.0	83.3%	1.0	33.3%	0	0.0%	0.0	0.0%
Needed more	1.0	33.3%	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	0.0%
Increased effort	0.0	0.0%	0.0	0.0%	1.0	14.3%	2.0	33.3%	0.0	0.0%	0.0	0.0%	0	0.0%	0.0	0.0%
Got more help	1.0	33.3%	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	0.0%
Other	1.0	33.3%	1.0	20.0%	0.0	0.0%	2.0	33.3%	1.0	16.7%	1.0	33.3%	0	0.0%	1.0	50.0%
Regulations	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0	0.0%	0.0	0.0%
Traveled farther	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0	0.0%	0.0	0.0%
Increased success	0.0	0.0%	2.0	40.0%	0.0	0.0%	2.0	33.3%	0.0	0.0%	1.0	33.3%	0	0.0%	0.0	0.0%
Needed less	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0	0.0%	0.0	0.0%
Store-bought too expensive	0.0	0.0%	0.0	0.0%	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, 2012.

Table D9-10. – Summary of households responding to more use than recent years, by category, Russian Mission, 2011.

	Household response summary for reasons for more use compared to recent years															
	Salmon		Nonsalmon fish		Marine invertebrates		Land mammals		Marine mammals		Birds and eggs		Berries and greens		All resources	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Total households surveyed	46.0	100.0%	46.0	100.0%	46.0	100.0%	46.0	100.0%	46.0	100.0%	46.0	100.0%	46.0	100.0%	46.0	100.0%
Households responding	45.0	97.8%	45.0	97.8%	5.0	10.9%	44.0	95.7%	31.0	67.4%	42.0	91.3%	41.0	89.1%	44.0	95.7%
Households reporting more use	3.0	6.7%	6.0	13.3%	7.0	140.0%	7.0	15.9%	7.0	22.6%	4.0	9.5%	0.0	0.0%	4.0	9.1%
Households providing reasons	3.0	100.0%	5.0	83.3%	7.0	100.0%	6.0	85.7%	6.0	85.7%	3.0	75.0%	0.0	0.0%	2.0	50.0%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D9-11. – Reported impact to households responding that they did not get enough of a type of resource, Russian Mission, 2011.

		Households not getting enough _____ .						Impact to those not getting enough _____ .							
	Sampled	Valid responses		Did not get enough		No response		Not noticable		Minor		Major		Severe	
Resource category	households	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Salmon	46.0	45.0	97.8%	19.0	42.2%	0.0	0.0%	0.0	0.0%	8.0	42.1%	9.0	47.4%	2.0	10.5%
Nonsalmon fish	46.0	45.0	97.8%	11.0	24.4%	0.0	0.0%	2.0	18.2%	4.0	36.4%	3.0	27.3%	2.0	18.2%
Marine invertebrates	46.0	5.0	10.9%	1.0	20.0%	0.0	0.0%	1.0	100.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Land mammals	46.0	44.0	95.7%	11.0	25.0%	1.0	9.1%	0.0	0.0%	3.0	27.3%	7.0	63.6%	0.0	0.0%
Marine mammals	46.0	31.0	67.4%	5.0	16.1%	2.0	40.0%	0.0	0.0%	3.0	60.0%	0.0	0.0%	0.0	0.0%
Birds and eggs	46.0	42.0	91.3%	8.0	19.0%	1.0	12.5%	0.0	0.0%	2.0	25.0%	4.0	50.0%	1.0	12.5%
Berries and greens	46.0	41.0	89.1%	24.0	58.5%	0.0	0.0%	3.0	12.5%	8.0	33.3%	11.0	45.8%	2.0	8.3%
All resources	46.0	44.0	95.7%	16.0	36.4%	0.0	0.0%	0.0	0.0%	4.0	25.0%	10.0	62.5%	2.0	12.5%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D9-12. – Households reporting doing things differently as the result of not getting enough of a resource, Russian Mission, 2011.

		Households not getting enough _____.				Households doing something different because they did not get enough.			
	Sampled households	Valid responses		Did not get enough		Valid responses		Did something different	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Salmon	46.0	45.0	97.8%	19.0	42.2%	19.0	100.0%	11.0	57.9%
Nonsalmon fish	46.0	45.0	97.8%	11.0	24.4%	11.0	100.0%	7.0	63.6%
Marine invertebrates	46.0	5.0	10.9%	1.0	20.0%	1.0	100.0%	0.0	0.0%
Land mammals	46.0	44.0	95.7%	11.0	25.0%	10.0	90.9%	8.0	80.0%
Marine mammals	46.0	31.0	67.4%	5.0	16.1%	3.0	60.0%	0.0	0.0%
Birds and eggs	46.0	42.0	91.3%	8.0	19.0%	7.0	87.5%	5.0	71.4%
Berries and greens	46.0	41.0	89.1%	24.0	58.5%	24.0	100.0%	18.0	75.0%
All resources	46.0	44.0	95.7%	16.0	36.4%	16.0	100.0%	11.0	68.8%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D9-13. – Things households reported doing differently as the result of not getting enough of a resource, Russian Mission, 2011.

	Valid responses	Bought/bartered		Used more commercial foods		Replaced with other subsistence foods		Asked others for help		Made do without		Increased effort to harvest		Obtained food from other sources		Got public assistance	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Salmon	12.0	0.0	0.0%	7.0	58.3%	3.0	25.0%	2.0	16.7%	0.0	0.0%	1.0	8.3%	1.0	8.3%	0.0	0.0%
Nonsalmon fish	7.0	0.0	0.0%	3.0	42.9%	0.0	0.0%	2.0	28.6%	2.0	28.6%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Marine invertebrates	0.0	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Land mammals	8.0	0.0	0.0%	6.0	75.0%	0.0	0.0%	2.0	25.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Marine 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	0.0%	0.0	0.0%
Birds and eggs	5.0	0.0	0.0%	3.0	60.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	20.0%	1.0	20.0%	0.0	0.0%
Berries and greens	19.0	1.0	5.3%	17.0	89.5%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	5.3%	0.0	0.0%	0.0	0.0%
All resources	11.0	0.0	0.0%	9.0	81.8%	0.0	0.0%	2.0	18.2%	3.0	27.3%	0.0	0.0%	0.0	0.0%	1.0	9.1%

Source ADF&G Division of Subsistence household surveys, 2012.

Table D9-14. – Households reporting that they did not get enough of a resource, Russian Mission, 2011.

		Reasons														
Resource by category	Households reporting wanting more	No reason given	Personal/ family	Resource not available	Too far to get it	No equipment/ equipment problems	Not given any	No hunting/ low effort	Unsuccessful (unlucky)	Weather/ environment	Other	Working/ no time	Regulations	Resources too small/ diseased	Gas prices too high	Did not get enough
DID NOT get enough: Russian Mission																
Resource not specified	3	1.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All resources	1	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fish	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	0.0	2.0	0.0
Salmon	10	1.0	1.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	3.0	0.0	0.0	1.0
Chum salmon	3	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	2.0	1.0	0.0	0.0	0.0
Summer chum	1	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Coho salmon	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	1.0	2.0	0.0	0.0	0.0	0.0
Chinook salmon	17	1.0	1.0	2.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	2.0	7.0	0.0	0.0	1.0
Nonsalmon fish	3	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0
Burbot	3	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Northern pike	2	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sheefish	1	0.0	0.0	0.0	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	1	0.0	0.0	0.0	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	9	1.0	1.0	1.0	0.0	0.0	1.0	2.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Land mammals	2	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Large land mammals	1	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Black bear	1	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Moose	8	0.0	1.0	1.0	0.0	0.0	1.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0	1.0	0.0
Beaver	2	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hare	1	0.0	0.0	0.0	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	1	0.0	0.0	0.0	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 seal oil	2	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Birds and eggs	2	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Ducks	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	0.0	1.0	0.0
Mallard	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Green-winged teal	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Geese	5	0.0	1.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Cacklers	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lesser Canada geese	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Snow geese	1	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
White-fronted geese	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Swan	3	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Crane	1	0.0	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	0.0
Octopus	1	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Berries	10	1.0	0.0	5.0	0.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	2.0	0.0	1.0	1.0
Blueberry	17	0.0	0.0	10.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	1.0	0.0	0.0	0.0	0.0
Lowbush cranberry	3	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Highbush cranberry	3	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crowberry	11	0.0	0.0	7.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0
Raspberry	5	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0
Salmonberry	9	0.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0
Plants/greens/mushrooms	2	0.0	1.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wild rhubarb	2	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Eskimo potato	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wood	1	0.0	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	0.0

Source ADF&G Division of Subsistence household surveys, 2012.

Table D9-15. – Reported job schedules, Russian Mission, 2011.

	Jobs		Employed persons		Employed households	
Schedule	Number	Percentage	Number	Percentage	Number	Percentage
Full-time	94.0	51.6%	85.9	59.5%	48.9	72.2%
Part-time	43.1	23.7%	37.1	25.7%	28.2	41.7%
Shift	9.8	5.4%	9.8	6.8%	9.4	13.9%
On-call (occasional)	29.4	16.1%	29.3	20.3%	22.6	33.3%
Part-time shift	0.0	0.0%	0.0	0.0%	0.0	0.0%
Schedule not reported	5.9	3.2%	5.9	4.1%	5.6	8.3%

Source ADF&G Division of Subsistence household surveys, 2012.