

Technical Paper No. 424

Harvest and Use of Wild Resources in Hughes, Alaska, 2014

by

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and

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Division of Subsistence



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Weights and measures (metric)

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

Weights and measures (English)

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

Time and temperature

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

Physics and chemistry

all atomic symbols

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

General

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

Measures (fisheries)

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

Mathematics, statistics

all standard mathematical signs, symbols and abbreviations

alternate hypothesis	H _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 ₀
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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2014**

by

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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.

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ABSTRACT

This report summarizes the harvest and use of wild foods by Hughes, Alaska residents in the calendar year 2014. Objectives of this project were to quantify the amount of resources harvested by residents of Hughes, document lands used to search for and harvest resources, quantify the amount of individual participation in the subsistence economy, and collect comments and concerns relevant to subsistence in Hughes. This information is important for effectively managing fish and wildlife on state and federal lands and for fully providing for the subsistence priority as required by the Alaska National Interest Lands Conservation Act. The last comprehensive resource use information was collected in 1982, and much has changed since then.

This study was a collaborative effort between Alaska Department of Fish and Game, National Park Service, and Hughes Village Council. Results presented in this publication were collected using standard anthropological methods, including a structured household survey and key respondent interviews. Household participation in this project was voluntary; surveys and interviews were conducted under provision of anonymity. Results presented in this report are presented as community aggregates of household activities. Of the 35 permanent households in Hughes, 26 participated in this effort (77%). Almost every household (96%) reported using wild resources. Residents used a total of 54 different resources. The community per capita harvest was 360 lb per person. The results of this project avouch the continuing prominence of wild resource uses in Hughes, Alaska.

Key words: Harvest survey, subsistence harvests, subsistence uses, subsistence fishing, subsistence hunting, Koyukuk River, Hughes, Gates of the Arctic National Park and Preserve, Koyukon Athabaskan.

1. INTRODUCTION

This report provides information about the harvests and uses of fish, wildlife, and wild plant resources by the community of Hughes, Alaska in 2014 (Figure 1-1). In collaboration with Gates of the Arctic National Park and Preserve (GAAR), the Alaska Department of Fish and Game (ADF&G) Division of Subsistence conducted comprehensive harvest surveys, land use mapping, and ethnographic interviews in an effort to update information about subsistence harvests and uses for GAAR resident zone communities. Hughes is the final community to receive updated subsistence information in the central Brooks Range area. Three upper Kobuk River communities were surveyed in 2014 to collect information for a possible transportation corridor to the Ambler mining district (Braem et al. 2015). Other communities in the upper Koyukuk River were surveyed in 2012 to provide information within the area of the proposed Alaska Pipeline Project (Holen et al. 2012).

Harvest information was collected by ADF&G Division of Subsistence research staff and 2 local research assistants. Survey topics included wild resource use including harvest participation, use, distribution, and quantification. Additional questions involved demographics, household income, and food security. Respondents were also asked to contextualize their use of resources in 2014 as compared to other years.

Data from the 26 surveyed households, representing a 77% sample, indicate that Hughes households harvested an estimated 32,448 lb of wild foods in 2014, or 360 lb per person (Table 1-1). Approximately 85% of Hughes households participated in fishing, hunting, or gathering wild resources, and 96% of households used these resources. Households used, on average, 10 resources, but harvested an average of 8. Households typically reported receiving more resources than they gave away.

PROJECT BACKGROUND

Since 1978, the Division of Subsistence has been charged with quantifying wild resource harvests by Alaska residents throughout the state. As of November 1, 2014, the division had administered resource harvest surveys, both comprehensive and targeted, in 227 Alaska communities.¹ Data generated by the Division of Subsistence assist the Alaska Board of Fisheries and Board of Game in establishing the amount reasonably necessary for subsistence for each population or stock with a positive customary and traditional use finding, as required by Alaska statute (AS 16.05.258(b)) in order to assist them in providing reasonable opportunities for subsistence harvests and uses. Harvest information and related socioeconomic data are important for effectively managing fish and wildlife and for fully providing for the subsistence priority as required by state law and the Alaska National Interest Lands Conservation Act (ANILCA). The information collected by the Division of Subsistence is also used in land and resource planning to understand the harvest of wild resources by communities throughout Alaska, especially the locations and timing of hunting, fishing, and gathering activities. In addition, the data can clarify the potential impacts of development on local harvesting patterns.

The National Park Service in Alaska provides for opportunities for subsistence as provisioned by Title VIII of ANILCA. Local rural residents are allowed the opportunity to utilize fish and wildlife resources on national park, preserve, and monument lands. Such uses are deemed a priority consumptive use of the resources and are afforded to rural residents consistent with sound management principles.

The Division of Subsistence employs a household survey to estimate subsistence harvests and to describe community subsistence economies. Community-based harvest reporting has been shown to be a valuable means for collecting reliable harvest data in rural Alaska (Andersen and Alexander 1992). Collecting harvest and use information through in-person household surveys and conducting contextual ethnographic interviews with local key respondents give a more comprehensive picture of a community-wide subsistence economy than investigating reported harvests for individual species such as salmon or large land mammals

1. Alaska Department of Fish and Game (ADF&G) Division of Subsistence, Juneau. "Community Subsistence Information System: CSIS." <http://www.adfg.alaska.gov/sb/CSIS/>. Hereafter *ADF&G CSIS*.

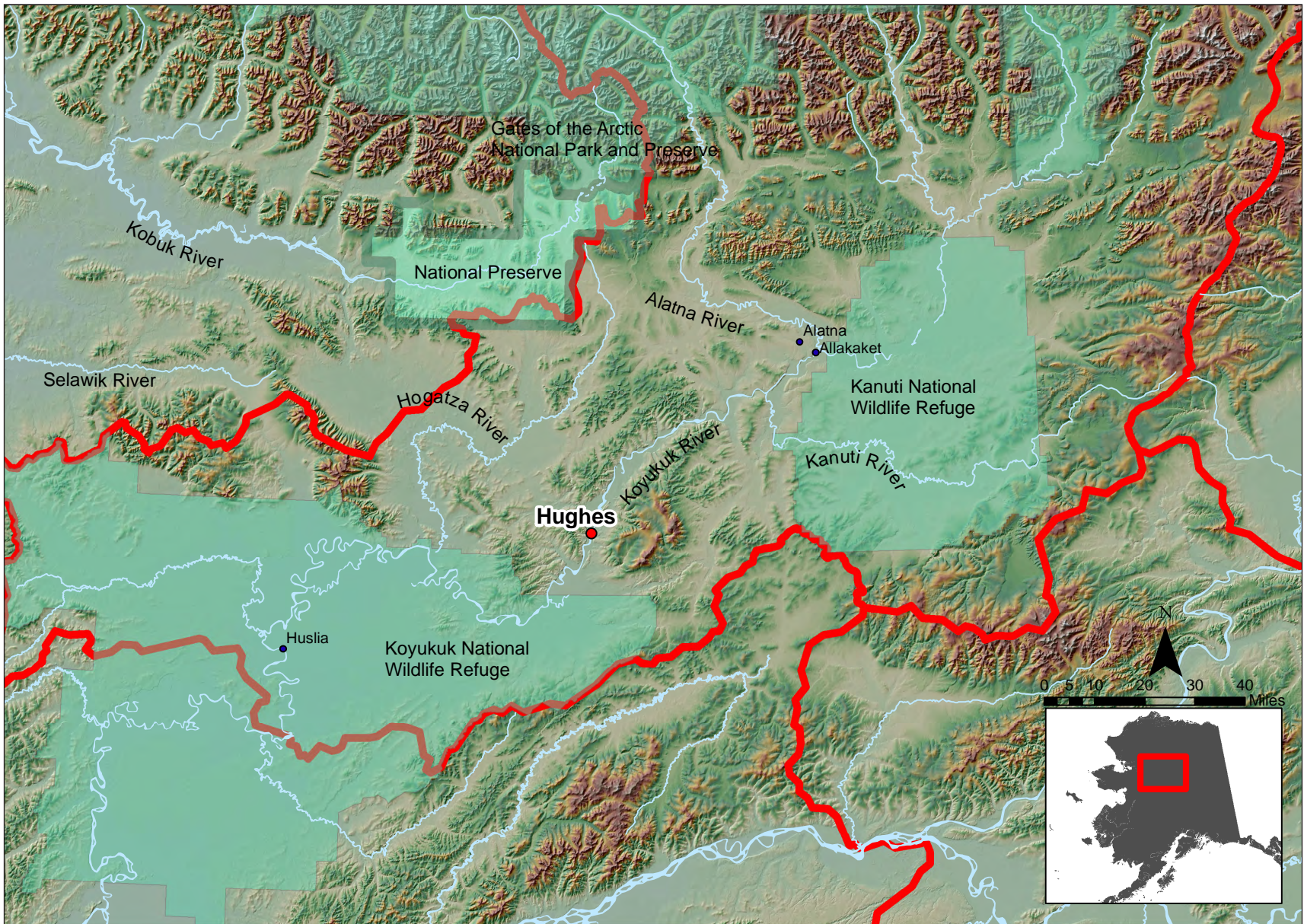


Figure 1-2.—Study area, Hughes, 2014.

Table 1-1.—Resource harvest and use characteristics, Hughes, 2014.

Characteristic	
Mean number of resources used per household	10.3
Minimum	0
Maximum	26
95% confidence limit (±)	12.8%
Median	8.5
Mean number of resources attempted to harvest per household	8.2
Minimum	0
Maximum	24
95% confidence limit (±)	16.2%
Median	8.5
Mean number of resources harvested per household	6.7
Minimum	0
Maximum	22
95% confidence limit (±)	18.7%
Median	5.5
Mean number of resources received per household	4.1
Minimum	0
Maximum	12
95% confidence limit (±)	15.5%
Median	3.0
Mean number of resources given away per household	2.8
Minimum	0
Maximum	12
95% confidence limit (±)	24.9%
Median	1.0
Household harvest (lb)	
Minimum	0
Maximum	11,206
Mean	954.4
Median	212.0
Total harvest weight (lb)	32,448.2
Community per capita harvest (lb)	359.6
Percentage using any resource	96%
Percentage attempting to harvest any resource	85%
Percentage harvesting any resource	77%
Percentage receiving any resource	96%
Percentage giving away any resource	62%
Number of households in sample	26
Number of resources asked about and identified voluntarily by respondents	104

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

(e.g., Schmidt and Chapin 2014). The household survey can include resources and activities that are not monitored through harvest reporting; for example, the harvest of berries, or how resources are shared between households.

A number of long-term environmental changes have been occurring in the upper Koyukuk River basin that could impact rural residents' ways of life. Warmer seasonal temperatures accelerate spring breakup and delay fall freeze-up of the Koyukuk River, a principal travel corridor for area residents. Noticeably decreased snowfall inhibits travel on the numerous winter trails during winter and spring. The reduced snowfall creates dry spring conditions, lengthening the fire season by at least 1 month. Interior Alaska residents have noticed more frequent and severe fires during the summer. The warmer annual temperature has also led to thawing permafrost, draining lakes, and diminishing or eroding waterways (Beck et al. 2011). Lastly, brushy vegetation has spread in many areas and is slowly creeping northward in latitude. The combination of these factors significantly impedes travel, thereby affecting residents' ability to access key harvest sites and culturally-significant areas and to travel to other communities (Wolken et al. 2011). Less is understood on how the myriad of environmental changes will affect the range, abundance, and seasonality of fish and wildlife resources in the upper Koyukuk River basin (Kofinas et al. 2010).

On top of climate-induced stressors, ever-increasing interest in resource extraction propagates the development of new infrastructures in rural Alaska. The Alaska Department of Transportation and Public Facilities (ADOT) is currently tasked with planning a highway corridor from the Dalton Highway to the mineral-rich Ambler Mining District in Northwest Alaska.² This project would cross numerous rivers that drain into the Koyukuk River. To the south, ADOT built the Tofty Road / Tanana Extension Road in 2015, extending the state highway system almost to the community of Tanana. The road is intended to lower the cost of living in the hub community of Tanana and increase economic development along the corridor (ADOT 2014). Similarly to climate change, little is known about how such projects could affect the resources on which the community depends. However, residents' opinions on development and ecological change are framed by historical precedent. Many still recall, through their parents' observations or their own, how the creation of the Trans-Alaska Pipeline System and the associated James Dalton Highway substantially diminished the availability of caribou in the upper Koyukuk River valley (KR3).

The oldest comprehensive survey including Hughes was published in 1974 (Patterson 1974). Regional representatives were contacted to provide resource use information for 5 rural Alaska regions. The results, discussed below, were presented to the Joint Federal-State Land Use Planning Commission for Alaska. The most recent comprehensive subsistence harvest survey in the community of Hughes was conducted in 1982 (Marcotte and Haynes 1985). Marcotte and Haynes (1985) presents a quantitative examination of resource use patterns in the upper Koyukuk River region, following a decade of ethnographic work in the region (Nelson 1983; Nelson et al. 1982). Two targeted studies have been conducted since then on fish resources. Andersen et al. (2004) documented traditional ecological knowledge and contemporary harvest patterns of nonsalmon fish species in the Koyukuk River drainage. Additionally, every year in October, ADF&G collects data on subsistence salmon harvests by residents of Hughes and other communities in the Yukon River drainage (Jallen et al. 2015).

In the face of such changes and challenges facing the central Brooks Range and western Interior regions of Alaska, there is a pressing need for community-based, human-focused research. This study attempts to meet that need.

COMMUNITY BACKGROUND

The Koyukuk River empties the south aspect of the central Brooks Range. The river extends 425 miles on a southwest trajectory—making it the third-longest river in Alaska—before discharging into the Yukon River. The Koyukon Athabascan name for the Koyukuk River, Kk'uyt'ots'ene, signifies “river with willows at its

2. Alaska Industrial Development and Export Authority (AIDEA). Anchorage. “Ambler Mining District Industrial Access Project.” Accessed August 18, 2016. <http://www.ambleraccess.org>



Plate 1-1.—An aerial view of Hughes, Alaska, looking towards the northeast.

headwaters” (McCloskey et al. 2014). This traditional name perhaps gives the most poignant description of its most dominant feature.

Along its length, the Koyukuk River flows through a variety of different habitats. At the river’s furthest northern reaches, the North Fork, John, Wild, and Alatna rivers descend a steep gradient south of the Brooks Range, through alpine meadows south of the continental divide. Upstream of the community of Bettles, the 4 rivers converge into the Koyukuk River, which travels through primarily evergreen forests of stunted spruce and dwarf scrub overlaying continuous permafrost. From Bettles to Hughes, the Koyukuk River tracks a predominantly straight course with few braids or bends until just downstream of Hughes. The river then follows a meandering course through a landscape dominated by a patchwork of mixed deciduous forests and substantial wetlands.

Hughes lies within the continental climate zone. The zone experiences hot summers and very cold winters, with very little precipitation throughout the year. The Koyukuk River adjacent to Hughes is free of ice from June through October (Plate 1-1).³

The land surrounding Hughes has hosted human occupation for at least 10,000 years (Andrews 1977). Very little is known about the earliest inhabitants of the middle Koyukuk River, including whether they were ancestors of present-day residents. After thousands of years in the subarctic soil, very little material culture is left intact. Additionally, the hunter-forager economy of the north necessitated small habitation sites widely distributed through the boreal region.

Despite the challenges of archeological research in this region, archeologists have unearthed a wealth of information at the Batza Tena obsidian source. Located near the Indian River southeast of Hughes, the Batza Tena obsidian source is a unique source of volcanic glass valuable for small tools knapping. Between 1969 and 1971, Clark and McFadyen-Clark surveyed the immediate area of the Batza Tena source and identified 50 site assemblages representing myriad activities by 4 distinct cultural groups occupying the area (Andrews 1977). Furthermore, obsidian from this source has been found in other prehistoric sites throughout Interior and Arctic Alaska, suggesting far-reaching trade networks (McFayden Clark and Clark

3. Alaska Department of Commerce, Community, and Economic Development (ADCCED) Division of Community and Regional Affairs, Juneau. n.d. “Alaska Community Database Online: Community Information.” Accessed August 31, 2016. <http://commerce.alaska.gov/dcra/dcraexternal>

1976). The presence of obsidian likely led to an early and long history of settlement in the Hughes area. Paleoamericans were likely the first to occupy the area approximately 10,000 years ago. It was not until about 2,000 years ago that artifacts could be identified as Athabascan, signifying the end of the Northern Archaic tradition (D. W. Clark 1981).

The Athabascan tradition represented a shift in material culture away from stoneworking and towards manufacturing tools from organic materials, such as wood and caribou bone (Dixon 1985). The shifting material culture was also associated with an expanding use of subsistence resources. Athabascans became true generalists of the north, focusing on more seasonally-available resources such as caribou and fish, and exploiting upland areas (Potter 2008). Kinship-based bands likely moved seasonally to target resources that were only spatially or temporally available, such as spawning fish or migrating caribou (Arundale and Jones 1989). Because these resources can vary annually, it is likely that seasonally-occupied sites could be quickly abandoned.

In the years prior to contact, northern Koyukon Athabascans roamed semi-exclusive territories in small, kin-based bands. They migrated seasonally between different harvest sites, but likely settled together during key times of the year, such as during ceremonial occasions, times of trading opportunities, and times of large harvest opportunities. There was no central authority, though different bands associated with each other through intermarriage and common dialects. Some individuals could be elevated to the status of “big men” by acquiring wealth and status (A. McFayden-Clark 1981).

Just as valuable minerals at the Batza Tena site led to a long history of human occupation in the Hughes area, the discovery of gold led to a surge of immigrants in 1898 (Brown 2007). Waves of Euro-American gold seekers combed the mountains and rivers of the Koyukuk River drainage searching for gold. The influx of foreigners brought an altogether new economy. Western goods, which could earlier be acquired only through lengthy trade networks, became readily available. Mining and transportation companies introduced the concept of wage labor, and trade stores brought store credit (Brown 2007). Settlement patterns changed drastically as trade stores and mining towns developed next to important mineral sources. Local residents chose to live close to the stores for a somewhat dependable source of food and goods. However, because they could not risk living only from goods acquired at the stores, they retained semi-annual migrations with a new focus on exclusive use of prime trapping territories, wood lots, and salmon fishing, all important trade goods in the new mining economy (Arundale and Jones 1981).

The first gold mining was on Hughes Bar (a gravel bar near present-day Hughes) in 1901 (Orth 1971rep.). The diggings were small, and it was not until Walter Isaac, a local Koyukon, found gold on Indian River that the community was founded in 1910 (Madison and Yarber 1980a). Hughes originally was meant to be a supply port and boat landing for the new Indian River gold fields (Orth 1971rep.). The community boomed until 1915 or into the 1920s, depending on different sources (Madison and Yarber 1980a; Orth 1971rep.). As the gold rush waned, at least one trader and a handful of trappers and miners stayed, providing the basis for a mixed cash and subsistence economy. Joe Beetus described Hughes in 1930:

Not many people in Hughes then. Old man Attla was living across the river. Chief John, Old Paul, Little Sammy, Fred Bifft [*sic*], Little Peter, George Butler and the old trader, George Lent, used to have a Store. Few miners and a few white trappers. That’s all. Not many houses. (Madison and Yarber 1980b)

The post office opened in 1942. The U.S. decennial census counted 32 individuals in Hughes when the community was first included in 1940. An airstrip was built shortly after that, in 1950. The school was built in 1956, and the clinic in 1968. Hughes was incorporated as a second class city in 1973, and roads were built the following year. An electrical system was installed in 1981 (Plate 1-2).⁴

4. Alaska Department of Commerce, Community, and Economic Development (ADCCED) Division of Community and Regional Affairs, Juneau. n.d. “Alaska Community Database Online: Community Information.” Accessed August 31, 2016. <http://commerce.alaska.gov/dcra/dcraexternal>



Plate 1-2.—St. Paul's Episcopal Church, located in the center of town.

After decades of developments, residents of the upper Koyukuk River experienced one serious setback. In August 1994, right before the general moose hunting season, the region experienced the worst flooding event since the 1930s (Aho 1994). Approximately 5 feet of water inundated the main part of Hughes, and though not as severely impacted as nearby Allakaket and Alatna, the community was evacuated. The event was declared a national disaster (Meyer 1995).

SEASONAL ROUND

The seasonal round of harvest activities has changed considerably through time, and it often varies year to year depending on a family's circumstances. Historically, because economic circumstances were limited, upper Koyukuk residents likely had to adhere to a strict seasonal schedule of harvesting opportunities. As the economic base changed, individuals had more variability in their annual schedule. Every respondent for this project related differing seasonal cycles in their youth, depending on the circumstances of their families. The seasonal round of activities for any given family is largely dependent on the availability of resources, economic circumstances, and travel conditions. This section relates the seasonal round of harvesting activities in contemporary Hughes. For information concerning the historical seasonal round, readers should refer to McFadyen-Clark (1974).

Increasing daylight hours in late February bring a new vigor to the community. Trapping activity peaks at about this time as residents take advantage of longer daylight hours and peak snow cover. Some trappers target wolves, wolverines, and lynx at this time. Hunters can also make forays into nearby hills in search of caribou. Two common mainstays during the spring, small mammals and birds, are important seasonal resources. In April, as the snow begins to thaw, trappers turn their focus to trapping beavers and muskrats. Migratory geese, ducks, and other birds also return in April and constitute one of the biggest harvest activities of the year.

After breakup, residents begin pursuing fishing opportunities. They set small nets in sloughs to target seasonal movements of nonsalmon fish species as they migrate from wintering to feeding areas. However, when summer arrives, "fish" means salmon. Beginning in the middle of June, chum salmon and Chinook salmon migrate past Hughes towards the Henshaw Creek and South Fork tributaries. Residents generally

set nets near the community, though some travel to camps for fishing. Salmon fishing lasts until August and happens concurrently with berry picking (Plate 1-3).

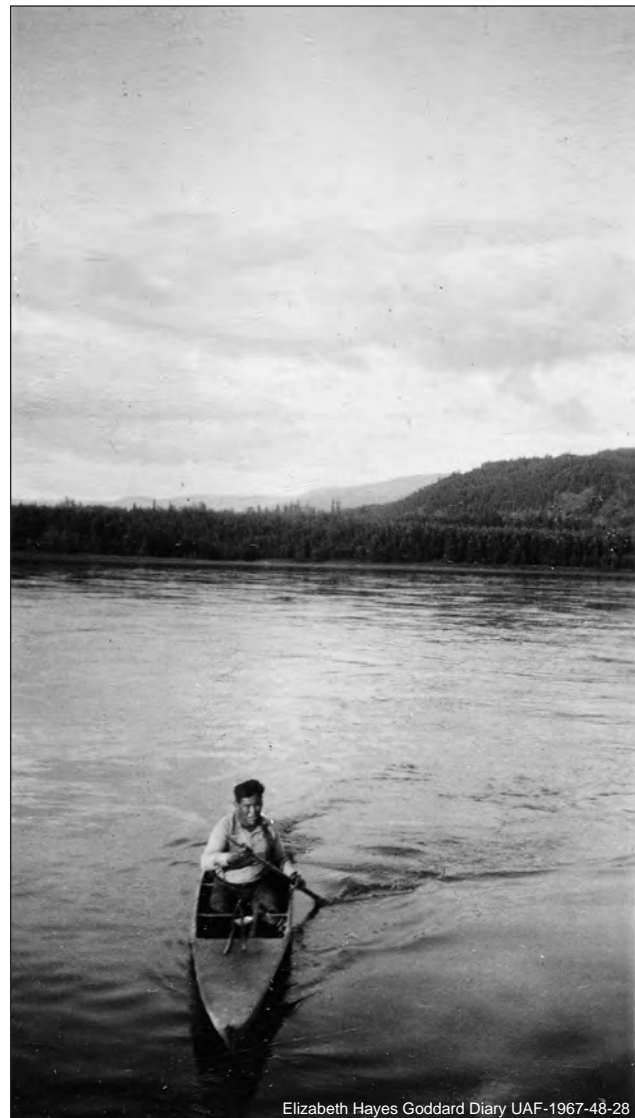
Late August through September is the peak hunting season. Many large animals are in prime body condition after a summer of feeding, and hunters prefer to target them in late fall before they begin to lose their fat. Hunters travel long distances from town in search of moose. On their travels, they will also harvest black bears and waterfowl opportunistically. In late fall—typically late September and October—whitefish species migrate past the community to spawn in the upper Koyukuk River tributaries, allowing for a large harvest opportunity. Hughes residents target them from the community riverbank with seine nets. This collective effort is efficient and fruitful, often leading to a harvest of thousands of fish in a season to be divided among the participants. Nonsalmon fishing for sheefish, northern pike, and burbot continues until freeze-up.

Winter offers fewer opportunities for subsistence activities. Historically, it is a time of the year for ceremonial and social activities. Trapping begins in November, if conditions allow for travel. Small game hunting for hares and ptarmigans continues throughout the year.

REGULATORY CONTEXT

Hughes is situated in Game Management Unit (GMU) 24C, which includes the Hogatza River, the Indian River, and the Koyukuk River drainage upstream from Batza River (Figure 1-1). Most land in this area is managed by the state of Alaska. GMU 24C also includes a small portion of the Koyukuk National Wildlife Refuge and Gates of the Arctic National Park and Preserve, which are managed by the federal government through the U.S. Fish and Wildlife Service (USFWS) and the National Park Service (NPS). Private lands, primarily Native allotments and village and regional corporation lands, are interspersed throughout the region. Game and fisheries management on private lands is under the purview of the State of Alaska through the Alaska Boards of Game and Fisheries.

Interior Alaska communities such as Hughes are heavily dependent on riparian resources, especially salmon. Recent sharp declines in Chinook salmon abundance have caused severe hardship for fishery-dependent communities in the Yukon River fisheries management area, including the Koyukuk River. Regulatory authority for Yukon River salmon management is shared by the Federal Subsistence Board (FSB) and the State of Alaska Board of Fisheries (BOF). However, Yukon River salmon fisheries are also managed in accordance with the Pacific Salmon Treaty with Canada. The highest priority in management of Yukon River salmon populations is biological sustainability of the resources based on principles of sustained yield. The BOF classified Yukon River Chinook salmon as a stock of yield concern in 2000. Since 2001, the subsistence fishery has been based on a schedule



Elizabeth Hayes Goddard Diary UAF-1967-48-28

Plate 1-3.—Man in kayak on Koyukuk River.

implemented chronologically by ADF&G and consistent with migratory timing as the run progresses upstream (5 AAC 01.210(b), 5 AAC 05.310, 5 AAC 05.360, 5 AAC 05.3672, 5 AAC 05.367).

The subsistence fishing schedule for the Koyukuk River is 7 days a week. However, due to insufficient Chinook salmon abundance in 2014, and to protect Alaska-bound stocks, salmon fishing was closed on the Koyukuk River from June 18 to July 2, then restricted with 6-inch-mesh gear or less until July 28 (5 AAC 05.360 (h); Estensen et al. 2015). Assessment projects on the Koyukuk River include the Gisasa River weir downriver of Hughes, and the Henshaw River⁵ weir upriver of Hughes, neither of which have escapement goals. Chinook salmon are also known to occur in the Kanuti, Alatna, John, and South Fork rivers upstream of Hughes.⁶

Resident and nonresident hunting opportunities on state-managed lands are managed by ADF&G. Federal agencies, such as USFWS, have management responsibilities for ensuring subsistence hunting priorities on federal conservation units for federally-qualified rural residents with positive customary and traditional use determinations by the Federal Subsistence Board. Residents of Hughes are required to carry an annual hunting license as well as appropriate harvest tags for moose, bears, caribou, and sheep. Regulations, including methods and means of take, are prescribed by the Alaska Board of Game; however, recent rules by NPS and USFWS increasingly affect the methods and means associated with subsistence and nonsubsistence hunting on these lands.

Due to the remoteness of the region and its large population of moose, the lower portion of the Koyukuk River has attracted nonlocal hunting interest since the 1980s. Due to high levels of hunter competition, ADF&G initiated a planning process for Koyukuk River moose in 2002. As a result of that process, the Koyukuk River has a variety of moose hunting opportunities reflecting different moose densities, user values, and hunter access (5 AAC 85.045 (22)). In addition to the general hunting season in September, a December to April hunting season provides additional opportunity. In the Koyukuk Controlled Use Area and Kanuti Controlled Use Area, beginning downriver of Hughes, the use of aircraft for hunting moose is prohibited. Additionally, some hunters access GMU 24 via the Dalton Highway.

PRIOR RESEARCH CONDUCTED IN HUGHES

Annual Postseason Yukon River Subsistence Salmon Harvest Survey, 1961–2016

This annual project estimates the subsistence and personal use of salmon harvested within the Alaska portion of the Yukon River drainage (Jallen et al. 2015). Harvest information is collected by an in-person survey conducted after the salmon season. Households are selected by a stratified random sampling process, and participation is voluntary. This project captures the subsistence use of fish given to residents from test fishery projects, harvest of all species of salmon, harvest of nonsalmon fish species, fish used for dog food, and households' abilities to meet their needs.

Traditional Ecological Knowledge of Nonsalmon Fishes, 2002

The primary purpose of this project was to collect and document traditional ecological knowledge (TEK) regarding nonsalmon fish species through interviews with local experts, and to conduct a more detailed survey of nonsalmon harvests by species (Andersen et al. 2004). Researchers conducted TEK interviews with a total of 29 individuals from throughout the Koyukuk drainage. The wealth of information they provided on the behaviors, harvests, and uses of fish is summarized by species. In addition to this largely historical perspective, a household harvest survey was conducted to provide estimates of the contemporary annual harvest of nonsalmon fish in Koyukuk River communities.

5. This project did not operate in 2014 due to high water.

6. ADF&G, n.d. "Fish Resource Monitor: Anadromous Waters." Accessed September 29, 2016. <http://extra.sf.adfg.state.ak.us/FishResourceMonitor/?mode=awc>.

Contemporary Resource Use Patterns in the Upper Koyukuk Region, 1982

This report presents the findings of a cooperative study conducted by the National Park Service, the U.S. Fish and Wildlife Service, and the Alaska Department of Fish and Game (Marcotte and Haynes 1985). The report describes hunting, fishing, trapping, and plant gathering activities during a 2-year period, 1981–1983, for the communities of Allakaket, Alatna, Bettles, Evansville, and Hughes. Maps depicting areas used for resource harvesting are presented, as are 1982 harvest levels and general socioeconomic data for each community.

Subsistence Harvests in Five Native Regions, 1973

Patterson (1974) published community harvests from communities in 5 different regions of Alaska, including the Doyon Region. The report was presented to the Joint Federal–State Land Use Planning Commission. Regional staff members were the primary contact for initiating a survey to collect raw harvest data from regional governments, planning committees, and rural residents. Patterson (1974) does not describe in great detail the methods used to collect this information. The only data reported in this study are harvest quantities; the report does not describe harvest participation, success rates, or resource distribution. Without the associated demographic or sampling information to generate comparable estimates, numbers from this study are presented in this report as reported values.

STUDY OBJECTIVES

The project had the following objectives:

- Estimate the harvest and use of subsistence resources such as fish, wildlife, and plants during the calendar year of 2014;
- Map areas used by Hughes residents for subsistence purposes during the study period;
- Collect demographic and income information relevant to the mixed cash-subsistence economy in Hughes;
- Document traditional knowledge regarding wild resource use in Hughes;
- Document local concerns about, or topics related to, fishing and hunting.

FINAL REPORT ORGANIZATION

This report details the results of systematic household surveys, mapping, and ethnographic interviews conducted by staff from ADF&G and local research assistants. It also summarizes resident feedback provided at the community review meeting. The Results chapter includes tables and figures that report findings on demography, employment and income, individual and household participation in subsistence activities, food security, and characteristics of resource harvests and uses. Additional figures show harvest trends over time. Table 1-2 shows selected study findings and will be referenced in later discussions of survey results. Tables and figures are interspersed throughout the Results chapter along with supporting qualitative information. The Discussion chapter includes a comparison of this study with prior findings and respondents' assessments of their harvest and use of wild resources in 2014. Lastly there is a short discussion and a summary of respondents' concerns.

Table 1-2.—Comparison of selected findings, Hughes, 2014.

Category	Community Hughes
Demography	
Population	90.2
Percentage of population that is Alaska Native	100.0%
Percentage of household heads born in Alaska	100.0%
Average length of residency of household heads (years)	29.1
Cash economy	
Average number of months employed	8.0
Percentage of employed adults working year-round	39.3%
Percentage of income from sources other than employment	48.4%
Average household income ^a	\$32,267
Per capita income ^a	\$12,159
Resource harvest and use	
Per capita harvest (pounds usable weight)	359.6
Average household harvest (pounds usable weight)	954.4
Number of resources used by 50% or more households	3.0
Average number of resources used per household	10.3
Average number of resources attempted to be harvested per household	8.2
Average number of resources harvested per household	6.7
Average number of resources received per household	4.1
Average number of resources given away per household	2.8
Percentage of total harvest taken by top 25% ranked households	84.5%
Percentage of households that harvested 70% of harvest	11.5%
Per capita harvest by lowest ranked 50% of households (pounds usable weight)	9.9
Percentage of total harvest taken by lowest ranked 50% of harvesting households	2.7%
Average number of resources used by lowest ranked 50% of households	7.6
Average number of resources used by top 25% ranked households	17.7

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

a. Includes income from sources other than employment.

2. METHODS

ETHICAL PRINCIPLES FOR THE CONDUCT OF RESEARCH

The project was guided by the research principles outlined in the *Alaska Federation of Natives Guidelines for Research*¹ and by the National Science Foundation, Office of Polar Programs in its *Principles for the Conduct of Research in the Arctic*², the *Ethical Principles for the Conduct of Research in the North* (Association of Canadian Universities for Northern Studies 2003), as well as the Alaska confidentiality statute (AS 16.05.815). These principles stress community approval of research designs, informed consent, anonymity or confidentiality of study participants, community review of draft study findings, and the provision of study findings to each study community upon completion of the research.

PROJECT PLANNING AND APPROVALS

The National Park Service (NPS) generated a Task Agreement with the Division of Subsistence in May 2014. To meet NPS management and policy needs, several questions were added to the division’s standard survey instrument regarding the use of raw materials for handicrafts, equipment used for subsistence, and travel methods. Spatial resource harvest and use data would be collected following standard division practices. After initial contracting, ADF&G project staff teleconferenced with the Hudotl’eekkaak’e Tribal Council in January 2015. Staff then traveled to Hughes for a community meeting in February 2015 to present the proposed project to the greater community. After general consent from the community, the tribal council approved the project. Hudotl’eekkaak’e Tribal Council was given the opportunity to further refine research methods, survey dates, and responsibilities. The tribal council coordinated local research assistants.

Table 2-1 lists individual staff involved in all phases of the project.

Table 2-1.–Project staff.

Task	Name	Organization
Northern Regional Program Manager	James Simon	ADF&G Division of Subsistence
Project Manager	Marcy Okada	National Park Service
Principal Investigator	Caroline Brown	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
Data Management Lead	Marylynne L. Kostick	ADF&G Division of Subsistence
Programmer	Marylynne L. Kostick	ADF&G Division of Subsistence
Data Entry	Nicholas Jackson	ADF&G Division of Subsistence
Data Cleaning/Validation	Margaret Cunningham	ADF&G Division of Subsistence
	Margaret Cunningham	ADF&G Division of Subsistence
Data Analysis	Marylynne L. Kostick	ADF&G Division of Subsistence
Cartography	Terri Lemons	ADF&G Division of Subsistence
Editorial Review Lead	Rebecca Dunne	ADF&G Division of Subsistence
Production Lead	Rebecca Dunne	ADF&G Division of Subsistence
Field Research Staff	Seth J. Wilson	ADF&G Division of Subsistence
	Alida Trainor	ADF&G Division of Subsistence
	Alfred Atla Jr.	Hughes Community
Local Research Assistants	Alfred Atla Jr.	Hughes Community
	Monica Williams	Hughes Community

Source ADF&G Division of Subsistence, 2015.

1. Alaska Federation of Natives. 2013. “Alaska Federation of Natives Guidelines for Research.” Alaska Native Knowledge Network. Accessed September 1, 2016. <http://www.ankn.uaf.edu/IKS/afnguide.html>

2. National Science Foundation Interagency Social Science Task Force. 2012. “Principles for the Conduct of Research in the Arctic.” Accessed September 1, 2016. <http://www.nsf.gov/od/opp/arctic/conduct.jsp>

Table 2-2.–Sample achievement, Hughes, 2014.

Sample information	Community Hughes
Number of dwelling units	35
Sample goal	100%
Households surveyed	26
Households failed to be contacted	2
Households declined to be surveyed	6
Households moved or occupied by nonresident	1
Total households attempted to be surveyed	34
Refusal rate	18.8%
Final estimate of permanent households	34
Percentage of total households surveyed	76.5%
Survey weighting factor	1.31
Sampled population	69
Estimated population	34.0

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

SYSTEMATIC HOUSEHOLD SURVEYS

The primary method for collecting subsistence harvest and use information in this project was a systematic household survey. Following receipt of comments at the scoping meetings in Hughes, ADF&G finalized the survey instrument in March 2015. A key goal was to structure the survey instrument to collect demographic, resource harvest and use, and other economic data that are comparable with information collected in other household surveys in the study communities and with data in the CSIS. Appendix A is an example of the survey instrument used in this project. Marcy Okada finalized approval of the instrument with the U.S. Office of Management and Budget.

Subsistence Resource Specialists Seth Wilson and Alida Trainor traveled to Hughes on March 10, 2015 to implement the survey. In Hughes, they worked with local research assistants (LRAs) Monica Williams and Alfred Attla Jr.

Because of the small size of the community, researchers used a census approach to data collection, and attempted to contact every household in Hughes. Household lists were developed by the Hudotl'eekkaak'e Tribal Council and reviewed in the field by researchers and LRAs. Of the 34 confirmed eligible households (defined below), 26 participated in the survey (77% of the community; Table 2-2). The average length per survey was 42 minutes (Table 2-3).

MAPPING LOCATIONS OF SUBSISTENCE HUNTING, FISHING, AND GATHERING ACTIVITIES

During household interviews, the researchers asked respondents to indicate the locations of their fishing, hunting, and gathering activities during the study year. In addition, interviewers asked the respondents to mark on the maps the sites of each harvest, the species harvested, the amounts harvested, and the months of harvest. ADF&G staff established a standard mapping method. Points were used to mark harvest locations, and polygons (circled areas) were used to indicate harvest effort areas, such as areas searched while hunting moose. Some lines were also drawn in order to depict when the harvesting activity did not occur at a specific point, such as traplines.

Harvest locations and fishing, hunting, and gathering search areas for each household were documented on grayscale 11x17" maps. Five different maps were used, showing extents to the northeast, northwest, south, and west of Hughes, as well as centered around the community. The scales ranged between 1:150,000 and 1:350,000. After each household survey, data collected on the maps were reviewed for accuracy.

Table 2-3.—Survey length, Hughes, 2014.

Community	Interview length (in minutes)		
	Average	Minimum	Maximum
Hughes	42	16	75

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

KEY RESPONDENT INTERVIEWS

While researchers were in the study community, they consulted with Hudotl'eekkaak'e Village Council, Hughes community members and LRAs to identify key respondents (e.g., subject-matter experts) to interview. The purpose of the key respondent interviews was to provide additional context for the quantitative data and also to provide information for the community background section, the seasonal round sections, harvest-over-time analysis, and the community comments and concerns section. Key respondent interviews were semi-structured and directed by a key respondent interview protocol designed by ADF&G staff that has proven successful on other comprehensive study projects (Appendix B). In addition to audio-recording interviews, ADF&G staff took notes during interviews to provide additional context for this report. Key respondents were informed that in order to maintain anonymity, interviews would be appropriately coded and individual names would not be included in this report.

DATA ANALYSIS AND REVIEW

Survey Data Entry and Analysis

The harvest surveys were coded by the project staff during fieldwork and reviewed by the project lead for consistency. Responses were coded following standardized conventions used by the Division of Subsistence to facilitate data entry. Information management staff within the Division of Subsistence set up database structures within a Microsoft SQL Server³ at ADF&G in Anchorage to hold the survey data. The database structures included rules, constraints, and referential integrity to ensure that data were entered completely and accurately. Data entry screens were available on an internal network. Daily incremental backups of the database occurred, and transaction logs were backed up hourly. Full backups of the database occurred twice weekly. This ensured that no more than 1 hour of data entry would be lost in the unlikely event of a catastrophic failure. All survey data were entered twice and each set compared in order to minimize data entry errors.

Once data were entered and confirmed, information was processed with the use of Statistical Package for the Social Sciences (SPSS) software, version 21. Initial processing included the performance of standardized logic checks of the data. Logic checks are often needed in complex data sets where rules, constraints, and referential integrity do not capture all of the possible inconsistencies that may appear. Harvest data collected as numbers of animals, or in gallons or buckets, were converted to pounds usable weight using standard factors (see Appendix C, Table C-1 for conversion factors).

ADF&G staff also used SPSS for analyzing the survey information. Analyses included review of raw data frequencies, cross tabulations, table generation, estimation of population parameters, and calculation of confidence intervals for the estimates. Missing information was dealt with on a case-by-case basis according to standardized practices, such as minimal value substitution or using an averaged response for similarly-characterized households. Typically, missing data are an uncommon, randomly-occurring phenomenon in household surveys conducted by the division. In unusual cases where a substantial amount of survey information was missing, the household survey was treated as a “nonresponse” and not included in community estimates. ADF&G researchers documented all adjustments.

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

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

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

$$\bar{h}_i = \frac{h_i}{n_i} \quad (2)$$

where:

H_i = the total estimated harvest (numbers of resource or pounds) for the community i ,

\bar{h}_i = the mean harvest of returned surveys,

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 value of the constant is derived from student's t distribution, and varies slightly depending upon the size of the community. Though there are numerous ways to express the formula below, it contains the components of a SD, V, and SE:

$$C.L. \%(\pm) = \frac{t_{(\alpha/2)} \times \frac{s}{\sqrt{n}} \times \sqrt{\frac{N-n}{N-1}}}{\bar{h}} \quad (3)$$

where:

s = sample standard deviation,

n = sample size,

\bar{h} = mean harvest of returned surveys,

N = population size, and

$t_{\alpha/2}$ = student's t statistic for alpha level ($\alpha = 0.95$) 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 from the mean of the sample.

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

Population Estimates and Other Demographic Information

As noted above, a goal of the research was to collect demographic information for all eligible households in Hughes. For this study, “eligible” was defined as being domiciled in the community when the surveys took place and for at least 6 months during the study year 2014. Because not all households were interviewed, population estimates were calculated by multiplying the average household size of interviewed households by the total number of eligible households, as identified by Division of Subsistence researchers in consultation with community officials and other knowledgeable respondents.

There may be several reasons for the differences among the population estimates for each community generated from the division’s surveys and other demographic data developed by the 2010 federal census (U.S. Census Bureau 2011), the U.S. Census Bureau’s American Community Survey (U.S. Census Bureau n.d.), and the Alaska Department of Labor and Workforce Development (ADLWD n.d.). Sampling of households, depending on when surveys are conducted or eligibility criteria for inclusion in the survey, may explain differences in the population estimates.

Map Data Entry and Analysis

As discussed above, maps were generated based on data collected on 11x17” paper maps. Map features were matched to the survey form to ensure that all harvest data were recorded accurately. Once all data were entered, an ArcGIS file geodatabase was created by ADF&G researchers and maps showing harvest locations for each species created in ArcGIS 10.3 using a standard template for reports. Maps show harvest locations for fish species, harvest areas for plants, berries, wood, and birds, and hunting areas for land mammals. To ensure confidentiality, harvest locations for large land mammals are not produced for the report. Maps were reviewed at a community review meeting to ensure accuracy as well identify any data the community would like to keep confidential.

Food Security Analysis

A “food security” section of the survey used a standard national questionnaire to assess whether or not the household had enough food to eat, whether from subsistence sources or from market sources. The protocol used in this survey was a modified version of the 12-month food security scale questionnaire developed by the U.S. Department of Agriculture (USDA). This questionnaire is administered nationwide each year as part of the annual Current Population Survey (CPS). In 2007, approximately 125,000 U.S. households were interviewed, including 1,653 in Alaska (Nord et al. 2008). From CPS data, the USDA prepares an annual report on food security in the United States.

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

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

COMMUNITY REVIEW MEETINGS

ADF&G staff presented preliminary survey findings and associated search area and harvest maps at a community review meeting. The community review took place on May 4, 2016 at the community hall in Hughes. The Hudotl'eekkaak'e Tribal Council staff organized the meeting. At least 30 individuals were in attendance. The data presentation and questions lasted over an hour.

Community review is an important part of the research and reporting process. The review allows community members an opportunity to add important information and context that the researcher may have missed. It also gives them an opportunity to clarify data that may have been misinterpreted before it is published. Overall, the review affords residents an opportunity to think and reflect about their communal activities in a way that they may not typically do on their own.

Staff received a number of comments and questions regarding ADF&G studies and activities, especially related to moose. With regards to this project, questions generally concerned data accuracy and report distribution. ADF&G mailed a short (4-page) summary of the study findings to every household in the study community.

3. RESULTS

This chapter presents the results from the harvest survey, land use mapping, and ethnographic interviews in Hughes. Harvest quantities typically represent estimated numbers using the methods described above. Confidence intervals can be found in the associated tables and figures. Harvest quantities shown as pounds refer to the total usable yield of the harvested resource.

In March 2015, ADF&G researchers surveyed 26 of the 35 households (77%) in Hughes, Alaska (Table 2-2). Expanding for the 9 unsurveyed households, Hughes’ estimated total harvest of wild foods between January and December 2014 was 32,448 lb (Table 1-1). The average harvest per household was 954 lb; the average harvest per person was 360 lb (Table 1-2). In addition to the comprehensive survey, 3 interviews were conducted with 4 individuals, including 3 elders and 1 active hunter. Two of the individuals were still actively engaged in hunting, fishing, gathering, or preparing subsistence foods. All had spent the majority of their lives in Hughes with some travel away from the community at various times in their lives. By providing a better understanding of the seasonal round, local history, and subsistence activities in the area, the ethnographic interviews contextualize the quantitative harvest and use data collected in the surveys.

POPULATION ESTIMATES AND DEMOGRAPHIC INFORMATION

Community population and demographic indicators contribute contextual information pertinent to the subsistence economy of Hughes. This project estimated the 2014 population of Hughes to be 90 individuals residing in 34 households (Table 3-1). This estimate is much higher than the 5-year American Community Survey (ACS; 63 individuals)¹, although within the margin of error. The ACS is based on responses to a random selection of Alaska households (U.S. Census Bureau 2014). The division estimate is also higher than the previous decadal U.S. Census (2010; 77). However, it is very similar to the Alaska Department of Labor population estimate (89 individuals)², which applies Alaska Permanent Fund dividend applications to the previous U.S. Census as a correction factor (ADLWD, Research and Analysis Section 2016). Figure 3-1 shows the more recent population of Hughes from these various sources. The figure shows

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

	Census (2010)	5-year American Community Survey (2009–2013)		This study (2014)	
		Estimate	Range ^a	Estimate	Range ^b
Total population					
Households	31	35.0	28–42	34.0	-
Population	77	61.0	39–83	90.2	80–101
Alaska Native					
Population	74	61.0	39–83	90.2	80–101
Percentage	96.1%	100.0%	63.9%–136.1%	100.0%	88.4%–111.6%

Sources U.S. Census Bureau (2011) for 2010 estimate; U.S. Census Bureau for American Community Survey (ACS) 2013 estimate (5-year average); and ADF&G Division of Subsistence household surveys, 2015, for 2014 estimate.

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

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

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

1. Alaska Department of Labor and Workforce Development (ADLWD), Research and Analysis Section, Juneau, n.d. Accessed August 30, 2016. <http://live.laborstats.alaska.gov/cen/acsdetails.cfm>

2. ADLWD, Research and Analysis Section, Juneau, n.d. “Population Estimates.” Accessed August 18, 2016. <http://live.laborstats.alaska.gov/pop/>

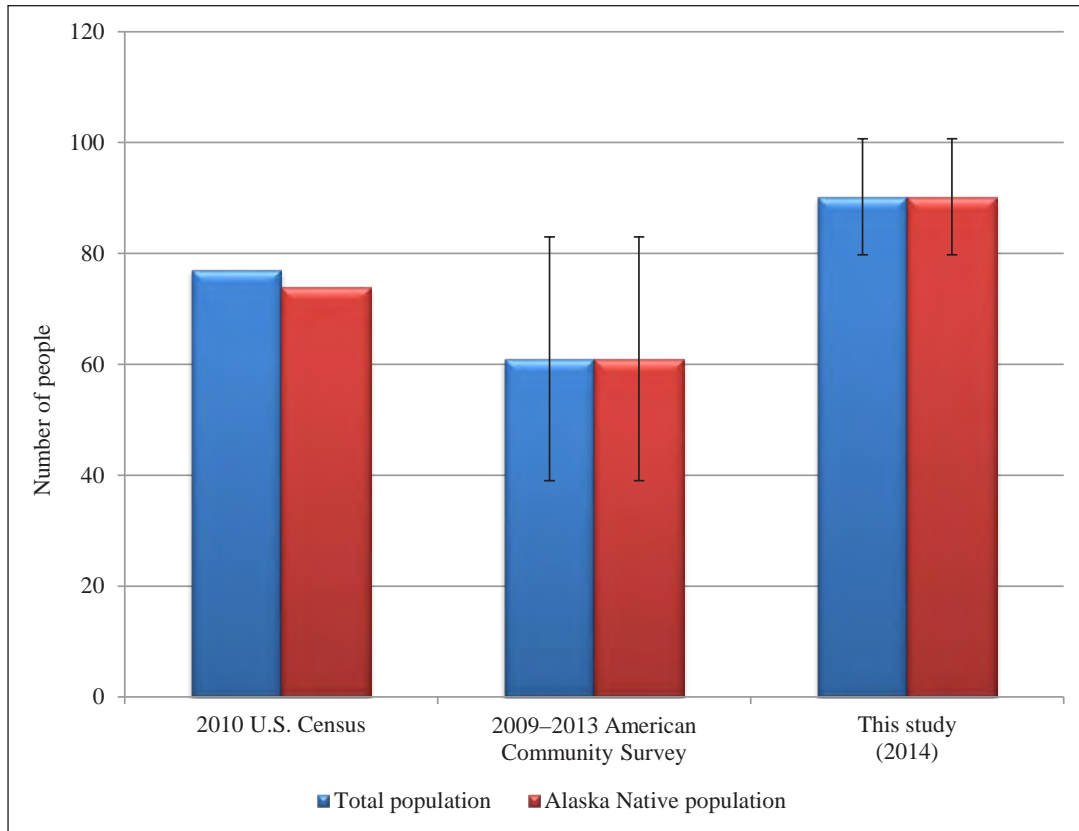


Figure 3-1.—Population estimates, Hughes, 2014.

differences between the 3 estimates, but each depicts a population estimate during a different year or time period. Temporal variation and sampling methodology likely explain the differences. Figure 3-2 shows the historical population of Hughes beginning in 1940 from these various sources. After a steep rise between 1940 and 1960, the population declined slightly in the 1980s and is more recently on the rise again (Plate 3-1). The community has expanded considerably beginning in 2002. It will likely continue to grow due to the natural increase of a high birth rate, shown by a large 0–4 cohort, and low death rate (Figure 3-3). Fourteen individuals (16% of the population) are above the age 65. Of the estimated 90 residents, 59% are male and 41% are female.

Table 3-2 summarizes the surveyed demographic characteristics of Hughes. The mean household size was 3 people. For a regional perspective, the ACS data indicate 2.7 individuals per household in the Yukon-Koyukuk Census area. The average age was 36 years of age. Household heads reported living in the community for an average of 29 years. All households surveyed self-identified as Alaska Native (Plate 3-2).

Hughes is located in the Yukon-Koyukuk Census Area, which during the 2014 study contained a total of 5,514 people.³ The population of the census area has decreased 2% since 2010, in contrast to the increasing population of Hughes. However, other characteristics remain similar: the mean age of the population in the census area was 35.7 years, and also similar to Hughes, there was a greater percentage of males than females (54% male, 46% female). The Yukon-Koyukuk Census Area, including Hughes, has experienced a natural increase between 2010 and 2014. This is due to the birth rate outpacing the rate of deaths. However the census area also experienced an overall 4% net decrease in its population. This implies that the rate outmigration is larger than the natural increase of population.

3. ADLWD, Research and Analysis Section, Juneau, 2016. “Population Estimates, Economic Regions and Boroughs/Census Areas.” Accessed September 6, 2016. <http://live.laborstats.alaska.gov/pop>

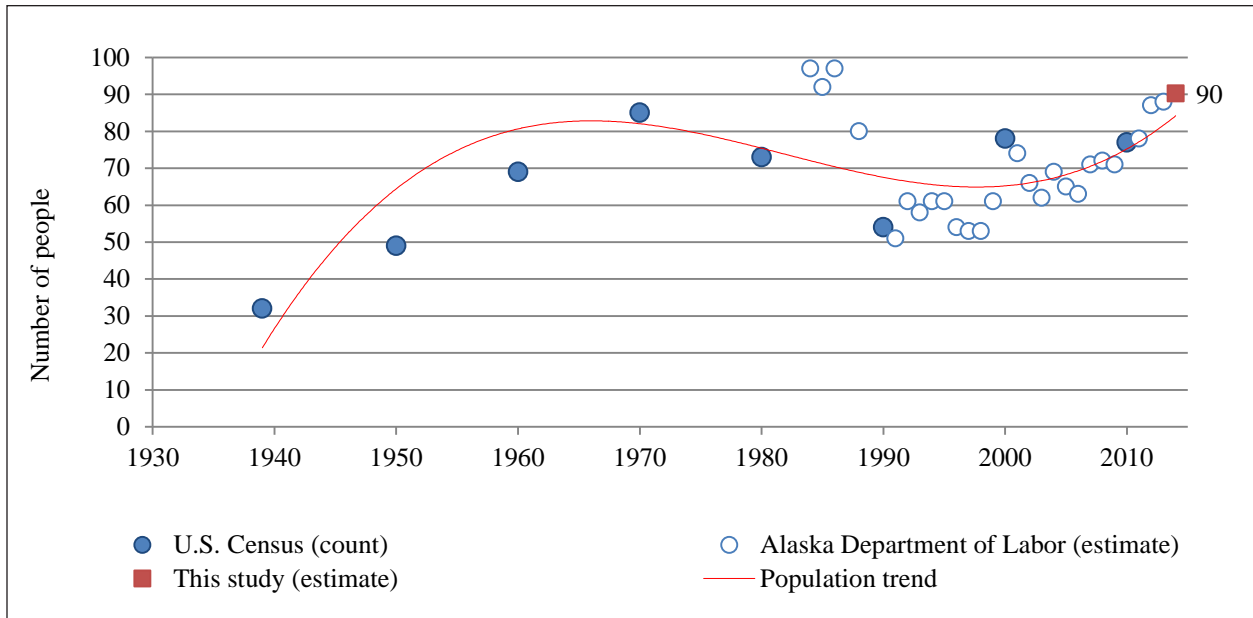


Figure 3-2.—Historical population estimates, Hughes, 1960–2014.



Plate 3-1.—A view of the northern section of housing in 1957.

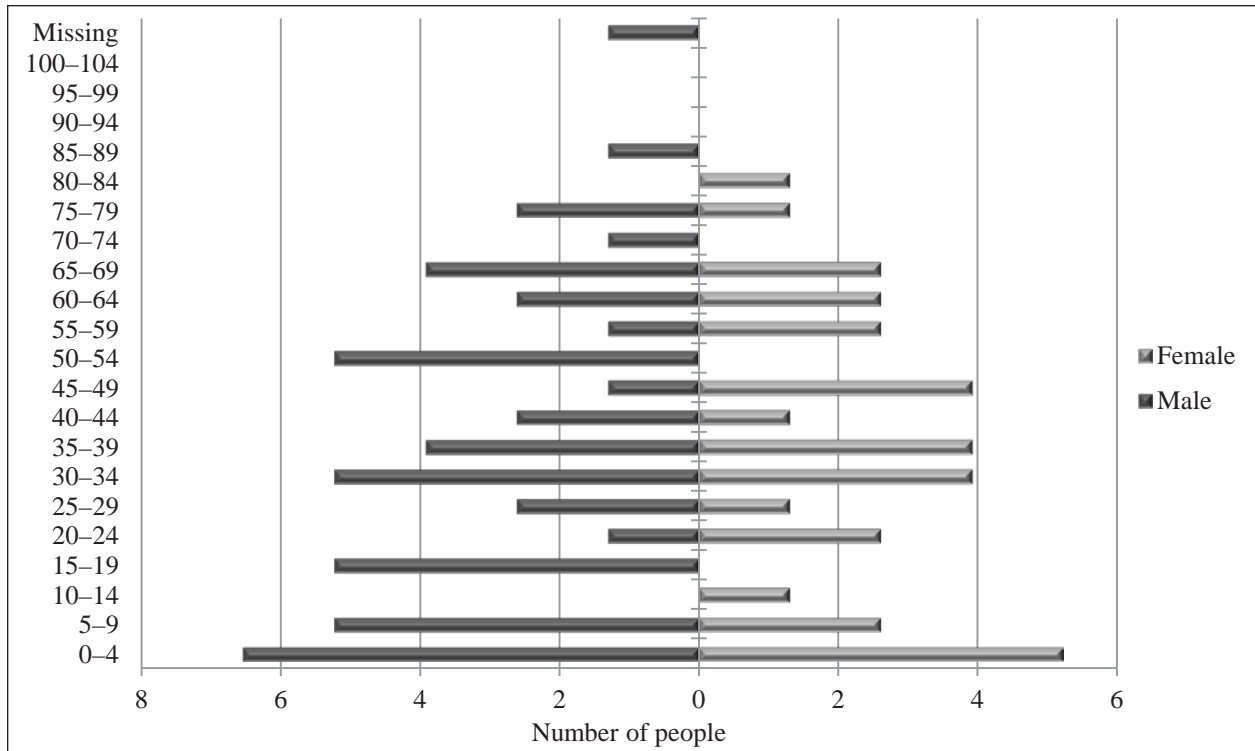


Figure 3-3.—Population profile, Hughes, 2014.



Plate 3-2.—The new section of housing located in the downriver part of Hughes shows population growth.

Table 3-2.—Sample and demographic characteristics, Hughes, 2014.

Characteristics	Community Hughes
Sampled households	26
Eligible households	34
Percentage sampled	76.5%
Sampled population	69
Estimated community population	90.2
Household size	
Mean	2.7
Minimum	1.0
Maximum	6.0
Age	
Mean	35.9
Minimum ^a	0
Maximum	85
Median	35.0
Length of residency	
Total population	
Mean	21.4
Minimum	0
Maximum	80
Heads of household	
Mean	29.1
Minimum	4
Maximum	80
Alaska Native	
Estimated households ^b	
Number	34.0
Percentage	100.0%
Estimated population	
Number	90.2
Percentage	100.0%

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

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

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

Table 3-3.–Birthplaces of household heads, Hughes, 2014.

Birthplace	Percentage
Alatna	2.5%
Ambler	7.5%
Fairbanks	5.0%
Hughes	60.0%
Huslia	5.0%
Kotzebue	2.5%
Nulato	2.5%
Shungnak	2.5%
Tanana	2.5%
Allakaket	10.0%

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

Note "Birthplace" means the place of residence of the parents of the individual when the individual was born.

Table 3-4.–Birthplaces of population, Hughes, 2014.

Birthplace	Percentage
Alatna	1.4%
Ambler	10.1%
Fairbanks	2.9%
Hughes	68.1%
Huslia	4.3%
Kotzebue	1.4%
Nulato	1.4%
Shungnak	1.4%
Tanana	1.4%
Allakaket	7.2%

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

Note "Birthplace" means the place of residence of the parents of the individual when the individual was born.

Outmigration is the long-term trend in rural Alaska (ADCCED 2009). Hamilton et al. (1997) suggests that women are more likely to migrate out of rural communities, contributing to the gender imbalance that exists in the region. Further exacerbating the trend is that men are more likely to return to the community once they have left. Outmigration is also influenced by overcrowding, but this does not seem to be a factor in Hughes: the household size is relatively low (Table 3-2), and there are 9 unoccupied dwelling units in the community⁴. The greatest factor influencing rural Alaska migration is likely household income; those households with a high income are less likely to move and those with a low income lack the means to do so (Martin et al. 2008).

Table 3-3 gives the birthplaces of household heads, and Table 3-4 shows the birthplaces of the population. Most community members were born in Hughes (tables 3-3 and 3-4). Approximately 10% of the population was from Ambler, and 7% was from the neighboring community of Allakaket (Table 3-4).

INCOME AND CASH EMPLOYMENT

Income is a driving component in a household's participation in the mixed subsistence-cash economy. Respondents were asked about both earned income (jobs held and wages earned by all household members 16 years old and older) and other income (e.g., Alaska Permanent Fund dividend, Social Security, Adult Public Assistance). Respondents quantified the amount of income from all sources. For wage employment, they described the work schedule, duration of employment, and nature of work. Hughes households earned or received an estimated \$1.1 million dollars, of which \$565,715 was from wage employment and \$531,370 was from other sources (Table 3-5). The per capita income was \$12,163; mean household income was \$32,267 (tables 3-1 and 3-5). Figure 3-4 and Table 3-6 compare the median income documented by this study to estimates developed by the ACS (\$32,500). Though this study shows slightly lower income than the ACS, the margins of error from both studies overlap.

Figure 3-5 shows the top 10 income sources from wages and other income sources. One-quarter of the community income came from a single source: local government, which includes both tribal and city governments. The 2 greatest sources of income were from Native corporation dividends (15%) and Alaska Permanent Fund dividends (15%). Other significant sources of income included employment in the services industry (which includes education, health care, social services, and guiding) and food stamps⁵.

4. ADLWD, Research and Analysis Section, Juneau, 2016. "2010 Census: Demographic Profiles." Accessed August 18, 2016. <http://live.laborstats.alaska.gov/cen/dp.cfm>

5. The federal Supplemental Nutrition Assistance Program, commonly known as food stamps.

Table 3-5.—Estimated earned and other income, Hughes, 2014.

Income source	Number of employed adults	Number of households	Total for community	-/+ 95% CI	Mean per household	Percentage of total community income
Earned income						
Local government, including tribal	36.8	26.0	\$284,349	\$124,195 – \$798,914	\$8,363	25.9%
Services	7.1	6.8	\$106,940	\$44,057 – \$212,301	\$3,145	9.7%
Federal government	9.9	8.2	\$62,447	\$12,518 – \$177,912	\$1,837	5.7%
Agriculture, forestry, and fishing	-	-	\$30,894	\$2,934 – \$100,593	\$909	2.8%
Retail trade	-	-	\$25,415	\$4,726 – \$75,528	\$747	2.3%
State government	-	-	\$18,483	\$3,201 – \$146,478	\$544	1.7%
Other employment	8.5	6.8	\$18,043	\$2,559 – \$81,386	\$531	1.6%
Transportation,	-	-	\$7,921	\$7,017 – \$24,127	\$233	0.7%
Construction	-	-	\$6,601	\$5,848 – \$20,106	\$194	0.6%
Mining	-	-	\$3,466	\$811 – \$18,811	\$102	0.3%
Manufacturing	-	-	\$1,155	\$208 – \$4,233	\$34	0.1%
Earned income subtotal	48.1	30.1	\$565,715	\$325,360 – \$1,190,095	\$16,639	51.6%
Other income						
Native corporation dividend		34.0	\$167,669	\$91,193 – \$324,020	\$4,931	15.3%
Alaska Permanent Fund dividend		32.7	\$160,140	\$123,185 – \$202,023	\$4,710	14.6%
Supplemental Nutrition Assistance Program (f		9.2	\$68,915	\$20,008 – \$127,631	\$2,027	6.3%
Heating assistance		20.9	\$34,000	\$18,777 – \$50,352	\$1,000	3.1%
Pension / retirement		-	\$28,900	\$0 – \$94,582	\$850	2.6%
Social Security		6.5	\$26,576	\$2,350 – \$101,681	\$782	2.4%
Unemployment		9.2	\$18,949	\$2,635 – \$45,837	\$557	1.7%
Rental income		-	\$12,554	\$0 – \$25,108	\$369	1.1%
Adult Public Assistance (OAA, APD)		-	\$6,691	\$0 – \$20,074	\$197	0.6%
Workers' compensation / insurance		-	\$3,008	\$0 – \$6,015	\$88	0.3%
Disability		-	\$2,889	\$0 – \$8,666	\$85	0.3%
Supplemental Security Income		-	\$739	\$0 – \$3,343	\$22	0.1%
Longevity bonus		-	\$340	\$0 – \$739	\$10	0.0%
TANF (Temporary Assistance for Needy Families)		0.0	\$0	\$0 – \$0	\$0	0.0%
Child support		0.0	\$0	\$0 – \$0	\$0	0.0%
Veteran Disability		0.0	\$0	\$0 – \$0	\$0	0.0%
Other		0.0	\$0	\$0 – \$0	\$0	0.0%
Foster care		0.0	\$0	\$0 – \$0	\$0	0.0%
CITGO fuel voucher		0.0	\$0	\$0 – \$0	\$0	0.0%
Meeting honoraria		0.0	\$0	\$0 – \$0	\$0	0.0%
Other income subtotal		34.0	\$531,370	\$384,708 – \$750,100	\$15,629	48.4%
Community income total			\$1,097,084	\$816,471 – \$1,648,922	\$32,267	100.0%

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

Note For categories with 3 or fewer households responding, economic information has been omitted for confidentiality. However, the information is included in the community totals.

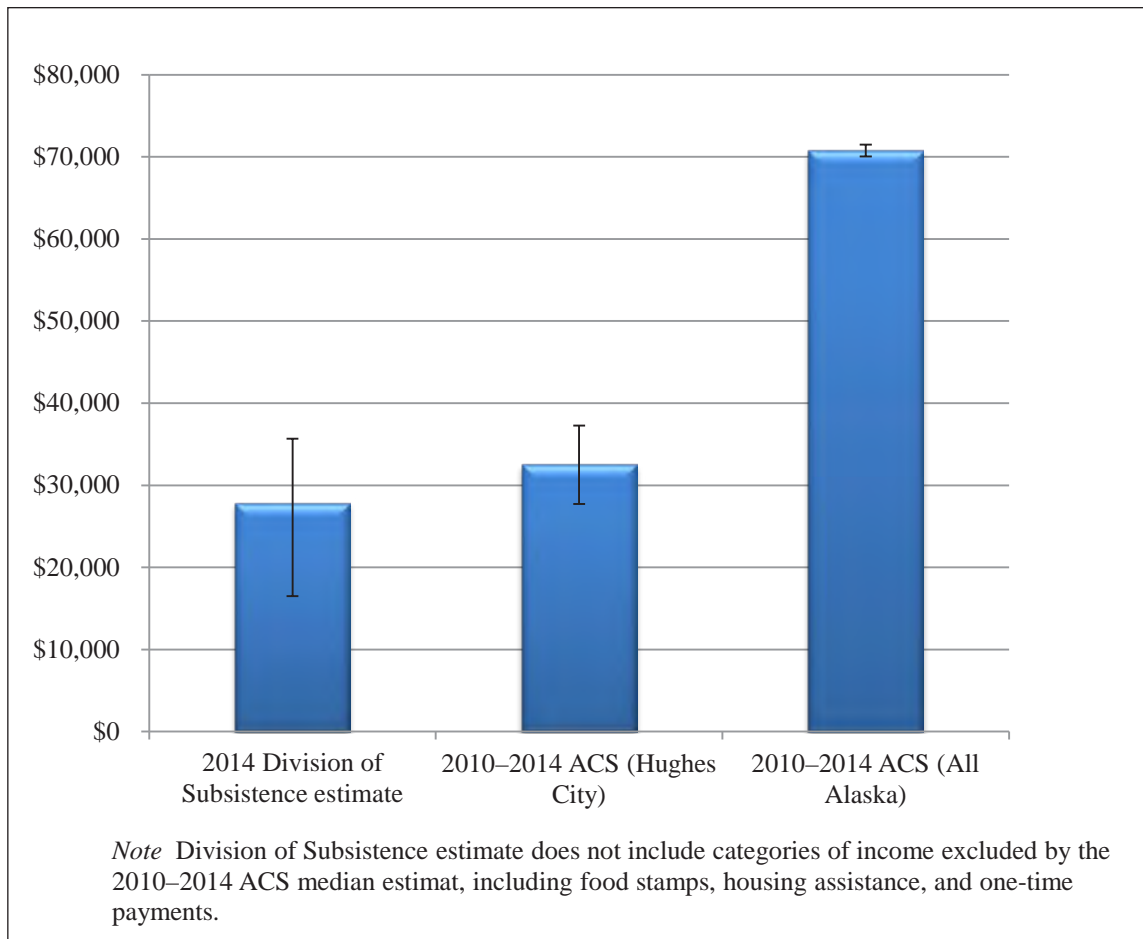


Figure 3-4.—Comparison of median income estimates, Hughes, 2014.

Table 3-6.—Comparison of median income estimates, Hughes, 2014.

Data source	Median ^a	Range ^{b,c}
2014 Division of Subsistence estimate	\$27,845	\$16,510–\$35,654
2010–2014 ACS (Hughes City)	\$32,500	\$27,740–\$37,260
2010–2014 ACS (All Alaska)	\$70,760	\$70,028–\$71,492

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

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

b. Range is a 95% confidence interval of the estimated median.

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

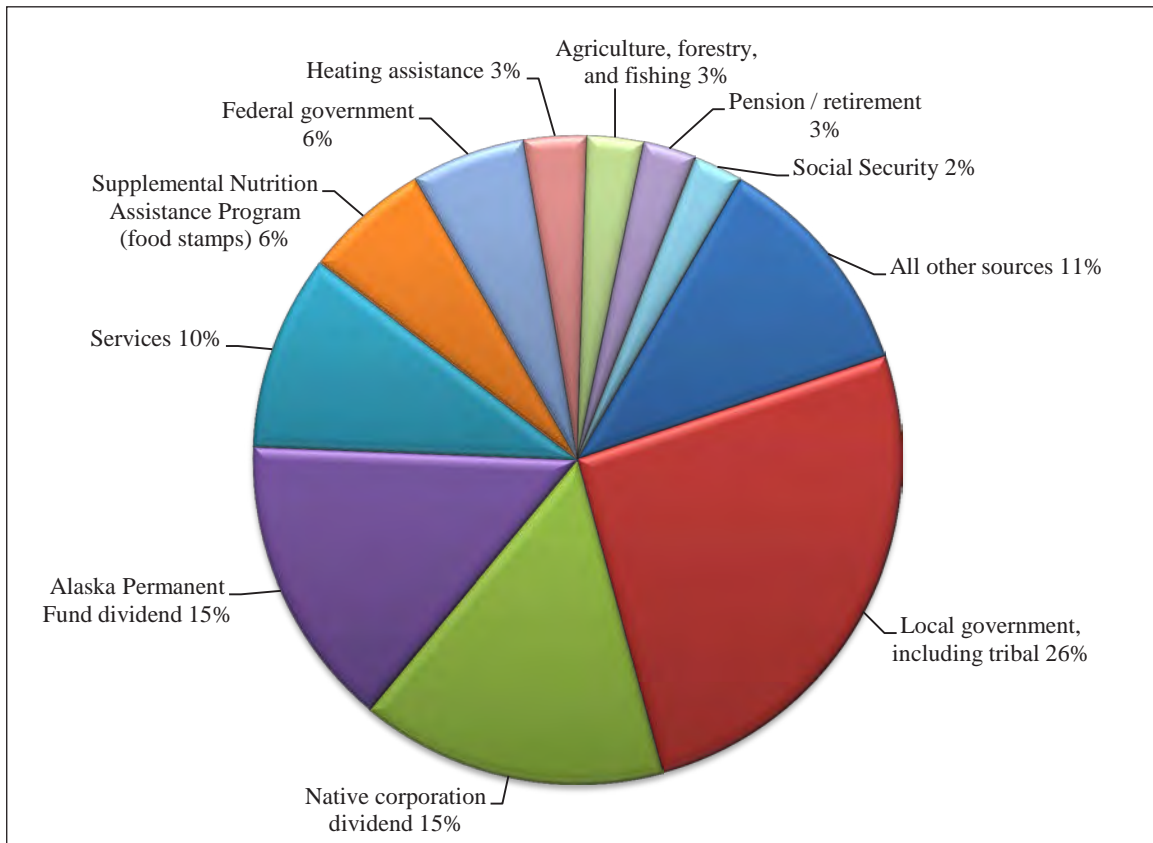


Figure 3-5.—Top income sources, Hughes, 2014.

Table 3-7 lists employment by industry, the estimated number of people employed, households, and the community overall. Wage employment was concentrated in 3 sectors: local government (52% of jobs), federal government (11%), and services (10%; Table 3-7). In the early 1980s, Marcotte and Haynes (1985) documented the types of employment held by individuals in Hughes. In 1982, local government was the largest sector, employing 9 individuals and providing the most full-time, year-round jobs. The Bureau of Land Management provided the highest number of jobs in 1982 through firefighting services, though these lasted on average only a month. Firefighting jobs are included in Figure 3-5 and Table 3-7 in the “Federal Government” category.

Of the 68 adults in Hughes, an estimated 48 were employed for an average of 35 weeks during the study year (Table 3-8). Employed adults held an average of 2 jobs, and 39% were employed year round. At the household level, 89% of the households had at least 1 job per year.

Though the rate of individual and household employment may appear high, 37% of the jobs were full-time jobs documented by this study, meaning that they were at least 37.5 hours per week (Table 3-9). Some of these were likely seasonal jobs. Part-time jobs were the second most common type of jobs, employing 29% of the population. The third most common job schedule was on-call, which includes jobs such as bingo caller or wood chopper, among others.

Table 3-7.—Employment by industry, Hughes, 2014.

Industry	Jobs	Households	Individuals	Percentage of wage earnings
Estimated total number	89.1	30.1	48.1	
Federal government	11.1%	27.3%	20.6%	11.0%
Executive, administrative, and managerial	1.6%	4.5%	2.9%	7.5%
Service occupations	7.9%	18.2%	14.7%	3.0%
Occupation not indicated	1.6%	4.5%	2.9%	0.6%
State government	3.2%	9.1%	5.9%	3.3%
Service occupations	1.6%	4.5%	2.9%	0.8%
Handlers, equipment cleaners, helpers, and laborers	1.6%	4.5%	2.9%	2.5%
Local government, including tribal	52.4%	86.4%	76.5%	50.3%
Executive, administrative, and managerial	1.6%	4.5%	2.9%	2.5%
Social scientists, social workers, religious workers, and lawyers	1.6%	4.5%	2.9%	0.2%
Teachers, librarians, and counselors	1.6%	4.5%	2.9%	1.8%
Writers, artists, entertainers, and athletes	3.2%	9.1%	5.9%	2.5%
Administrative support occupations, including clerical	4.8%	13.6%	8.8%	4.6%
Service occupations	11.1%	27.3%	20.6%	7.7%
Mechanics and repairers	1.6%	4.5%	2.9%	0.6%
Construction and extractive occupations	4.8%	13.6%	8.8%	7.8%
Precision production occupations	6.3%	18.2%	11.8%	6.3%
Transportation and material moving occupations	1.6%	4.5%	2.9%	1.5%
Handlers, equipment cleaners, helpers, and laborers	12.7%	36.4%	23.5%	12.4%
Occupation not indicated	1.6%	4.5%	2.9%	2.5%
Agriculture, forestry, and fishing	4.8%	9.1%	5.9%	5.5%
Executive, administrative, and managerial	1.6%	4.5%	2.9%	1.9%
Agricultural, forestry, and fishing occupations	3.2%	9.1%	5.9%	3.6%
Mining	1.6%	4.5%	2.9%	0.6%
Construction and extractive occupations	1.6%	4.5%	2.9%	0.6%
Construction	1.6%	4.5%	2.9%	1.2%
Transportation and material moving occupations	1.6%	4.5%	2.9%	1.2%
Manufacturing	1.6%	4.5%	2.9%	0.2%
Writers, artists, entertainers, and athletes	1.6%	4.5%	2.9%	0.2%
Transportation, communication, and utilities	1.6%	4.5%	2.9%	1.4%
Transportation and material moving occupations	1.6%	4.5%	2.9%	1.4%
Retail trade	3.2%	9.1%	5.9%	4.5%
Marketing and sales occupations	3.2%	9.1%	5.9%	4.5%
Services	9.5%	22.7%	14.7%	18.9%
Service occupations	1.6%	4.5%	2.9%	5.6%
Construction and extractive occupations	3.2%	9.1%	5.9%	2.1%
Transportation and material moving occupations	1.6%	4.5%	2.9%	5.6%
Handlers, equipment cleaners, helpers, and laborers	3.2%	9.1%	5.9%	5.6%
Industry not indicated	9.5%	22.7%	17.6%	3.2%
Service occupations	6.3%	13.6%	11.8%	1.3%
Handlers, equipment cleaners, helpers, and laborers	3.2%	9.1%	5.9%	1.9%

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

Table 3-8.—Employment characteristics, Hughes, 2014.

Characteristic	Community
	Hughes
All adults	
Number	67.7
Mean weeks employed	24.5
Employed adults	
Number	48.1
Percentage	71.1%
Jobs	
Number	89.1
Mean	1.9
Minimum	1
Maximum	4
Months employed	
Mean	8.0
Minimum	1
Maximum	12
Percentage employed year-round	39.3%
Mean weeks employed	34.5
Households	
Number	34
Employed	
Number	30.1
Percentage	88.5%
Jobs per employed household	
Mean	3.0
Minimum	1
Maximum	6
Employed adults	
Mean	
Employed households	1.6
Total households	1.4
Minimum	1
Maximum	3
Mean person-weeks of employment	48.8

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

Table 3-9.—Reported job schedules, Hughes, 2014.

Schedule	Jobs		Employed persons		Employed households	
	Number	Percentage	Number	Percentage	Number	Percentage
Full-time	32.5	36.5%	25.5	52.9%	20.5	68.2%
Part-time	25.5	28.6%	14.1	29.4%	13.7	45.5%
Shift	1.4	1.6%	1.4	2.9%	1.4	4.5%
On-call (occasional)	19.8	22.2%	15.6	32.4%	15.0	50.0%
Schedule not reported	8.5	9.5%	5.7	11.8%	2.7	9.1%

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

FOOD SECURITY

Survey respondents were asked a set of questions intended to assess their household's food security, defined as, "access by all people at all times to enough food for an active, healthy life" (Coleman-Jensen et al. 2012). The food security questions were modeled after those developed by the U.S. Department of Agriculture (USDA) but modified by ADF&G to account for differences in access to subsistence and store-bought foods. Based on their responses to these questions, households were broadly categorized as being food secure or food insecure following a USDA protocol (Bickel et al. 2000). Food secure households were broken down further into 2 subcategories—high or marginal food security. Food insecure households were divided into 2 subcategories: low food security or very low food security.

Households in the high food security category did not report any food access problems or limitations. Households in the marginal food security category reported 1 or 2 instances of food access problems or limitations—typically anxiety over food sufficiency or a shortage of particular foods in the house—but gave little or no indication of changes in diets or food intake. Households in the low food security category reported reduced quality, variety, or desirability of their diet, but they, too, gave little indication of reduced food intake. Households classified as having very low food security were those that reported multiple instances of disrupted eating patterns and reduced food intake (Coleman-Jensen et al. 2012).

Core questions and responses from Hughes residents are summarized in Figure 3-6. Questions are organized beginning with conditions of least severity (worrying about enough food) to conditions of most severity (not eating for a whole day). As expected, there is a negative relationship between the severity of the question, and the number of positive responses. This is mostly the case, save that fewer households worried about their access of food (19%) relative to several more severe conditions. However, many households said that they lacked the resources (such as boats, motors, nets, or ammunition) to get food (31%). Equal percentages of households said that subsistence and store-bought foods did not last, and they could not get more.

The last 5 statements in Figure 3-6 refer to conditions in which the household was forced to reduce the quality, variety, or desirability of their diet during the study period. Equal percentages of households said that they cut the size of their meals or ate less than they felt they should (16%). Only 4% of surveyed households affirmed the most severe condition—they did not eat for a whole day because of want of food.

Figure 3-7 categorizes households based on their responses to food security conditions listed in the previous figure. Hughes households reported a higher percentage of food insecurity (23%) than Alaska (12%) or the United States (15%). Fifteen percent of Hughes households were categorized as low food security, and 8% of the households were in the very low food security group. Seventy-seven percent of the households were classified as high or marginal food security.

Examining the seasonality of food security lends a more nuanced perspective to the seasonal vulnerability households in rural Alaska. Food secure households reported few to no food insecure conditions during all months of the year (Figure 3-8). Low food security households, portrayed in red, reported no insecure conditions during the summer months, but as many as 4 during the winter season. The very low food security households, shown in green, reported a similar pattern with numerous food insecurity conditions during the coldest winter months, and fewer in spring and summer.

Lastly, Figure 3-9 lends more understanding to the seasonal availability of both subsistence and store-bought foods. The figure reports the percentage of households stating that a particular category of food—subsistence foods, store-bought foods, or both—did not last during specific months. Households reported that all categories of foods were generally available from April to July, and least available from November to January. A smaller portion of households reported that subsistence foods were more available than store-bought foods during all months, except March to June. Store-bought foods followed a similar seasonal trend to subsistence foods, but more households said that they typically do not last as compared to subsistence foods.

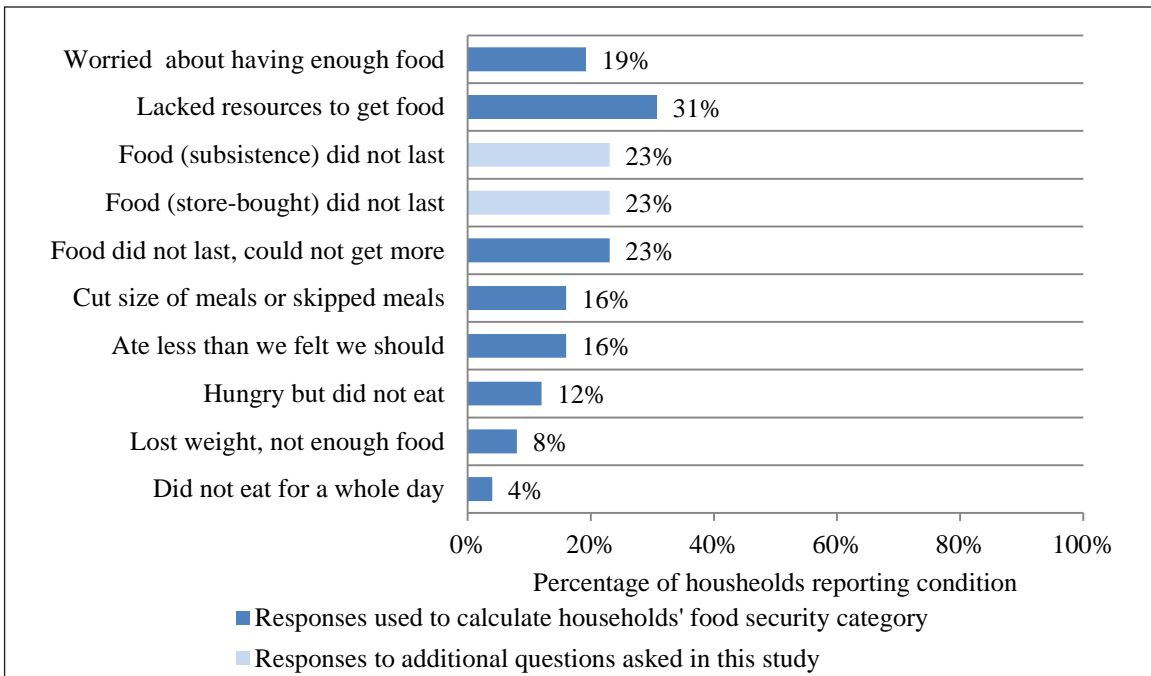


Figure 3-6.—Responses to questions about food insecure conditions, Hughes, 2014.

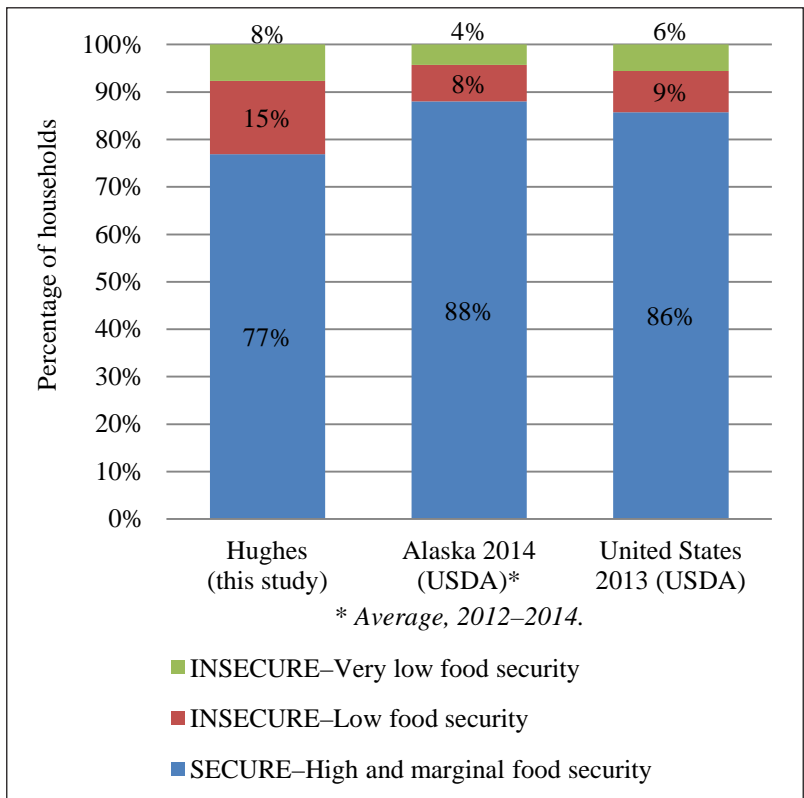


Figure 3-7.—Comparison of food security categories, Hughes, 2014.

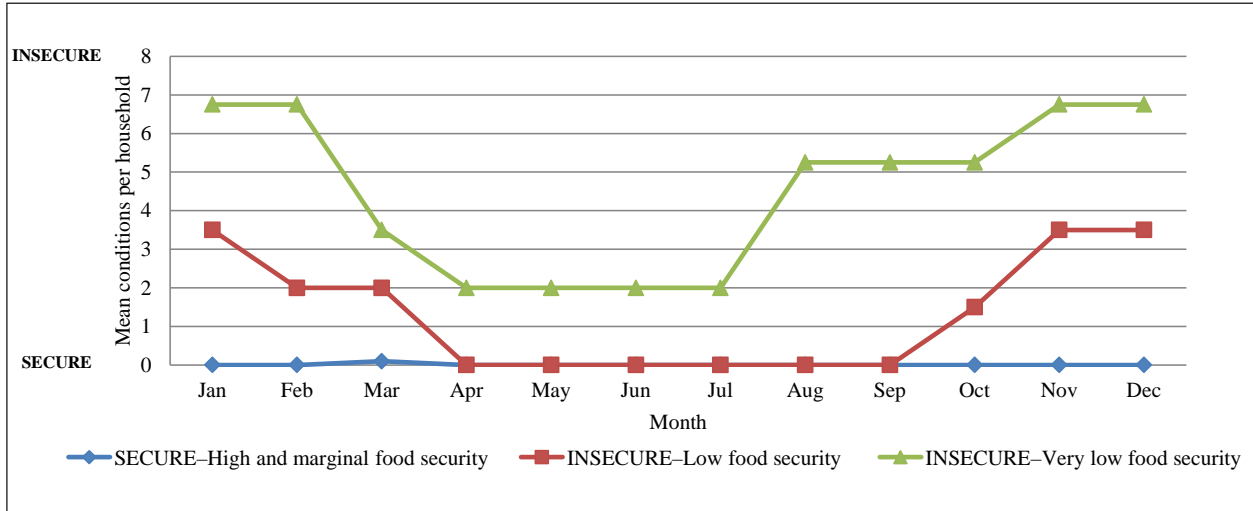


Figure 3-8.—Mean number of food insecure conditions by month and by household security category, Hughes, 2014.

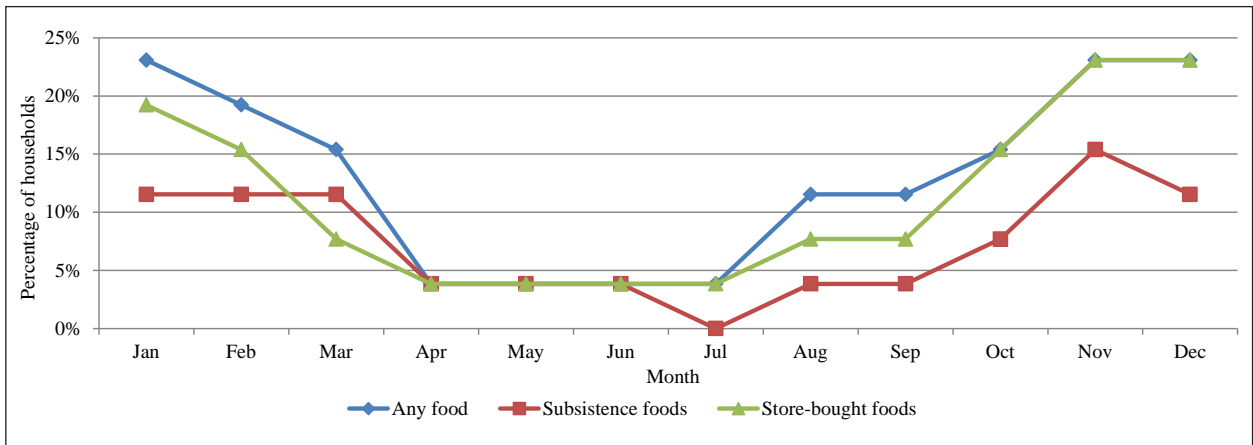


Figure 3-9.—Comparison of months when food did not last, Hughes, 2014.

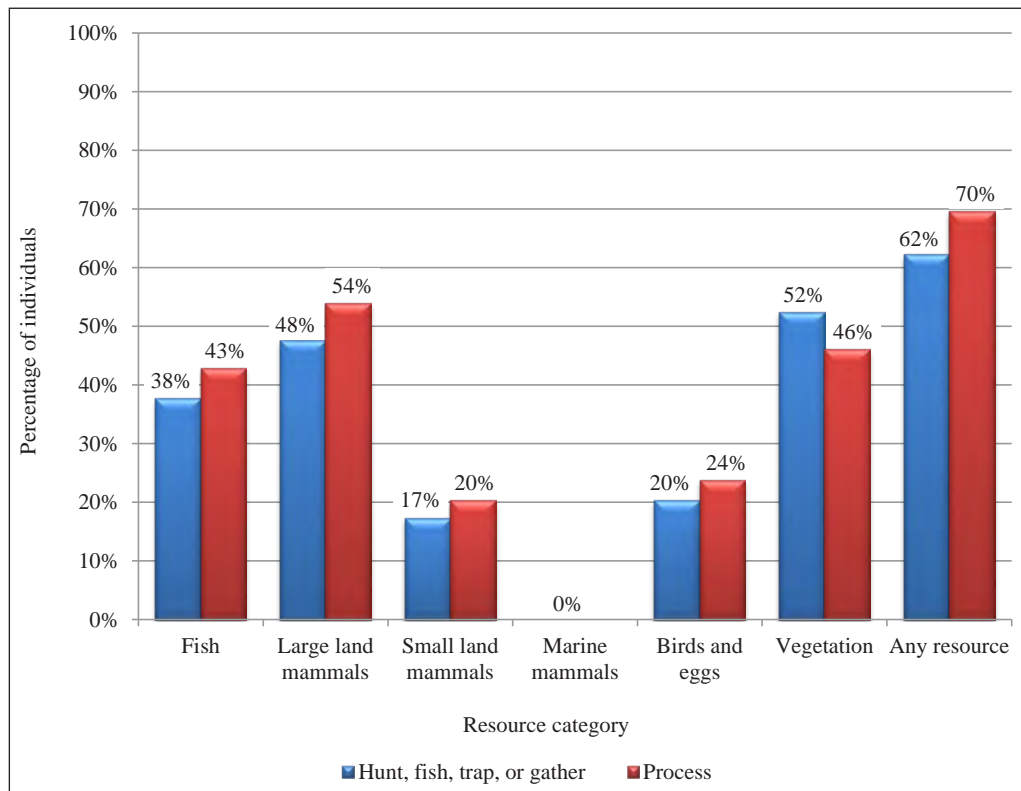


Figure 3-10.—Individual participation in subsistence harvesting and processing activities, Hughes, 2014.

SUMMARY OF HARVEST AND USE PATTERNS

Individual Participation in the Harvesting and Processing of Wild Resources

Figure 3-10 and Appendix C, Table C-2 report levels of individual participation in the harvest and processing of wild resources by all Hughes residents in 2014. Overall, 62% of Hughes residents harvested at least 1 resource, and 70% processed resources during 2014. Large land mammal processing was the most common processing activity, likely because it involves a great deal of work and is usually a communal endeavor. Picking and gathering vegetation was the singular most common harvesting activity. There are very few material requirements to picking vegetation, and it is an activity that can involve all ages of residents, except the very youngest.

The survey included questions about participation in craft activities relating to subsistence efforts or using subsistence resources. Cooking wild foods was the most common “craft” activity (Table 3-10). Respondents reported that cooking duties are fairly common: 68% of individuals cooked wild foods. Sewing was also fairly common among women of most ages. Twenty-seven percent of residents sewed skins or fur. This included both sewing garments and sewing beads onto moose hide. A less common activity was building fish wheels (2%). Additional details about fishing gear are included in the salmon section, below. One percent of individuals built sleds, including dog sleds or sleds for hauling behind a snowmachine. However, these results only represent a single study year; many of these products last a number of years and so are not made on an annual basis.

Figure 3-11 relates materials used to make crafts. Households did report using bark and antlers to make crafts. Most (20%) reported using other raw materials, mostly small mammal fur and moose and caribou hides. Many respondents cited sewing and beading as popular handicrafts.

Table 3-10.—Individual participation in subsistence craft activities, Hughes, 2014.

Total number of people	90.2
Building fish wheels	
Number	1.5
Percentage	2.0%
Building fish traps	
Number	0.0
Percentage	0.0%
Building dog sleds	
Number	5.8
Percentage	6.0%
Sewing skins or fur	
Number	24.7
Percentage	27.0%
Cooking wild foods	
Number	61.1
Percentage	68.0%

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

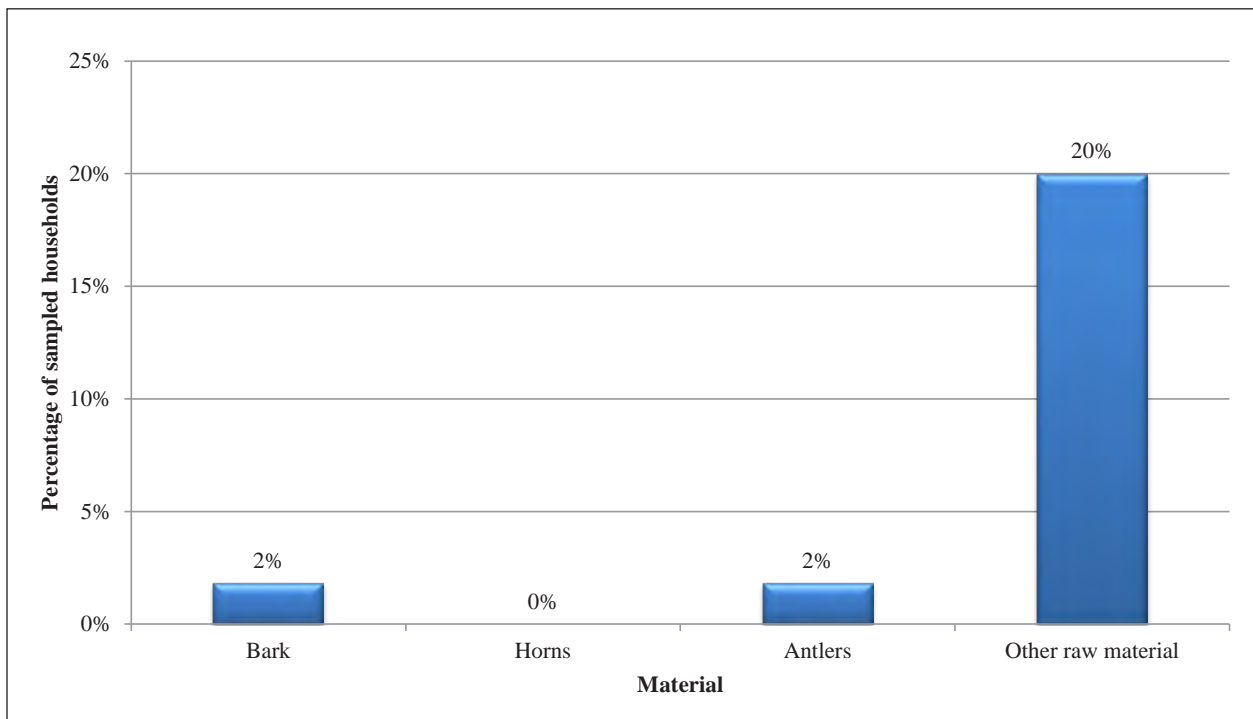


Figure 3-11.—Natural materials used by sampled households for making handicrafts, Hughes, 2014.

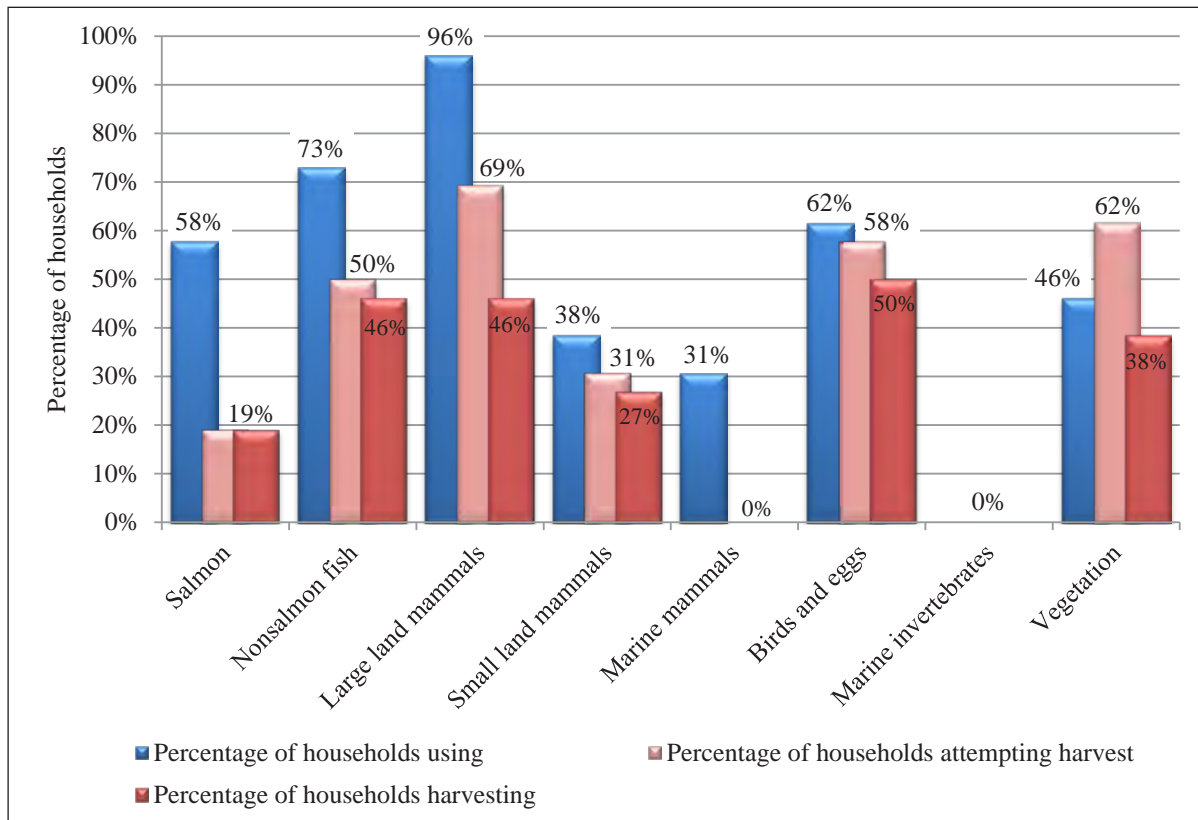


Figure 3-12.—Percentage of households using, attempting to harvest, or harvesting wild resources, by category, Hughes, 2014.

Harvest and Use of Wild Resources at the Household Level

Figure 3-12 shows by resource category the percentages of households that used wild resources, attempted to harvest and harvested wild foods, and shared wild foods. Almost all households used at least 1 species of large land mammals (96%), and most households (69%) attempted to harvest at least 1 species. The success rate was relatively high: 46% of the households harvested big game. The difference between the percentage of households attempting to harvest a resource and those that actually do so denotes potential barriers to a successful harvest, such as regulations, skill, competition, or resource availability. Similarly, far more households attempted to harvest vegetation than actually did. Further comments revealed that berries were scarce in 2014, as will be discussed below. Figure 3-12 also shows resource categories in which the use far exceeds the harvest, suggesting strong patterns of exchange within or outside the community. Such is the case with salmon and marine mammals.

Table 1-1 reports resource harvest and use characteristics for Hughes in 2014 at the household level. The average harvest was 954 lb usable weight per household and 360 lb per person. During the study year, community households harvested an average of 7 kinds of resources and used an average of 10 kinds of resources. The maximum number of resources used by any household was 26. In addition, households gave away an average of 3 kinds of resources. Overall, as many as 104 resources were available for households to harvest in the study area; this included resources that survey respondents identified but were not asked about in the survey instrument. Table C-3 presents common and scientific names for these resources.

Modern equipment enables residents to participate in subsistence activities. Households reported using a number of modes of transportation to access wild resources (Figure 3-13). One-third of households reported using boats to access wild resources. Almost as many households reported using snowmachines, most of which were owned by the households. No households reported leasing or chartering equipment. The most common small, portable equipment reported was chainsaws (Figure 3-14).

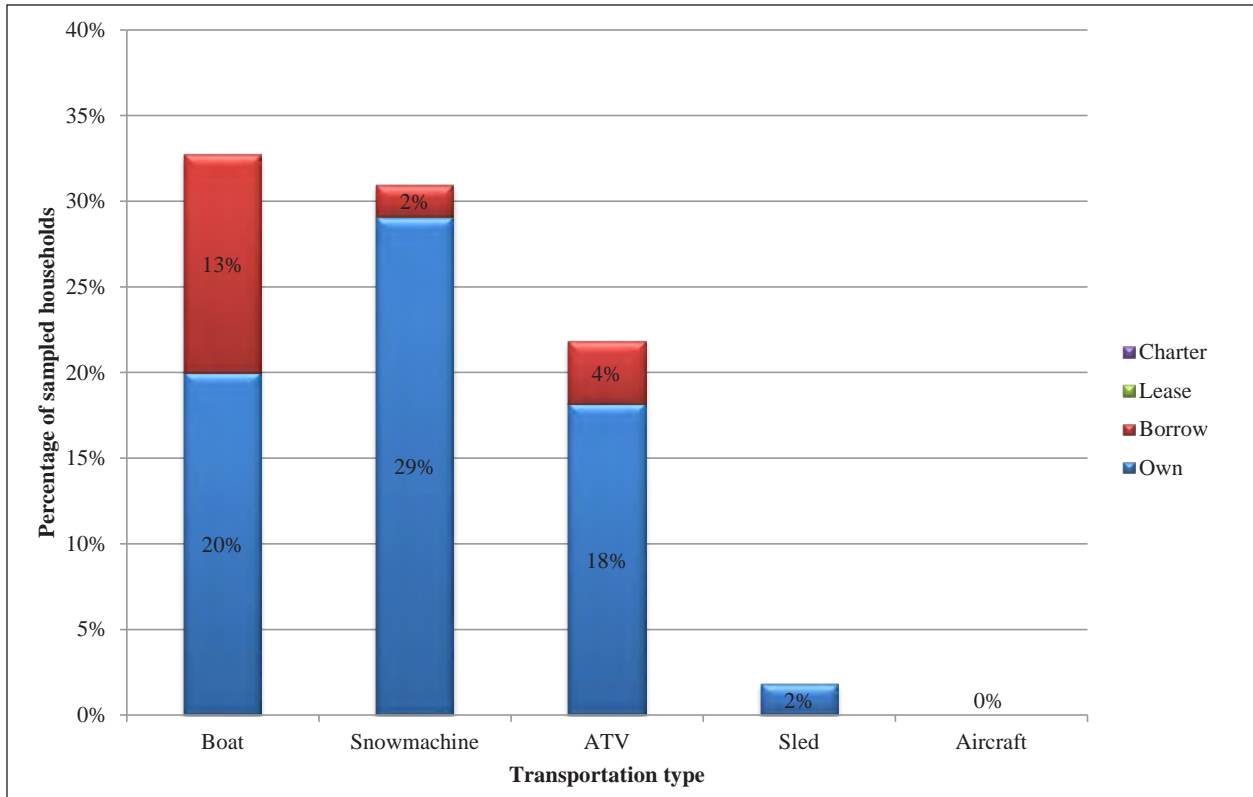


Figure 3-13.—Alternative modes of transportation used by sampled households to access wild resources, Hughes, 2014.

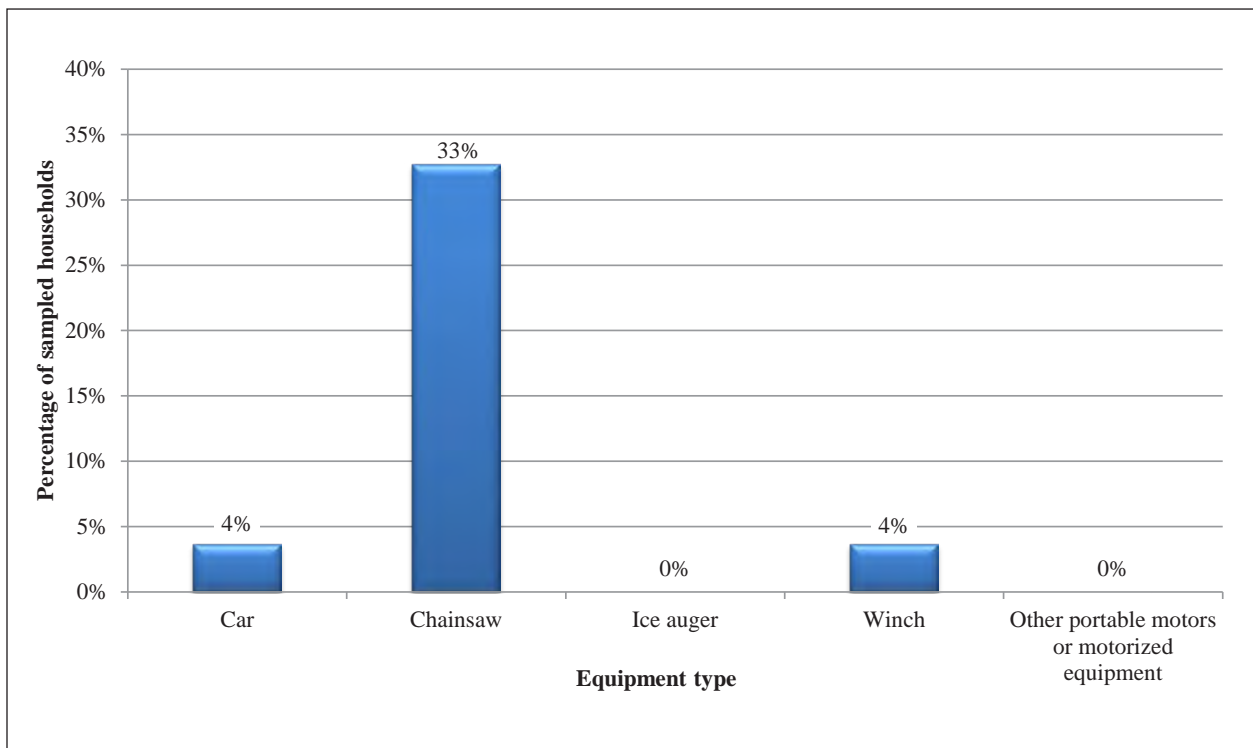


Figure 3-14.—Portable motorized equipment used by sampled households while searching for and harvesting wild resources, Hughes, 2014.

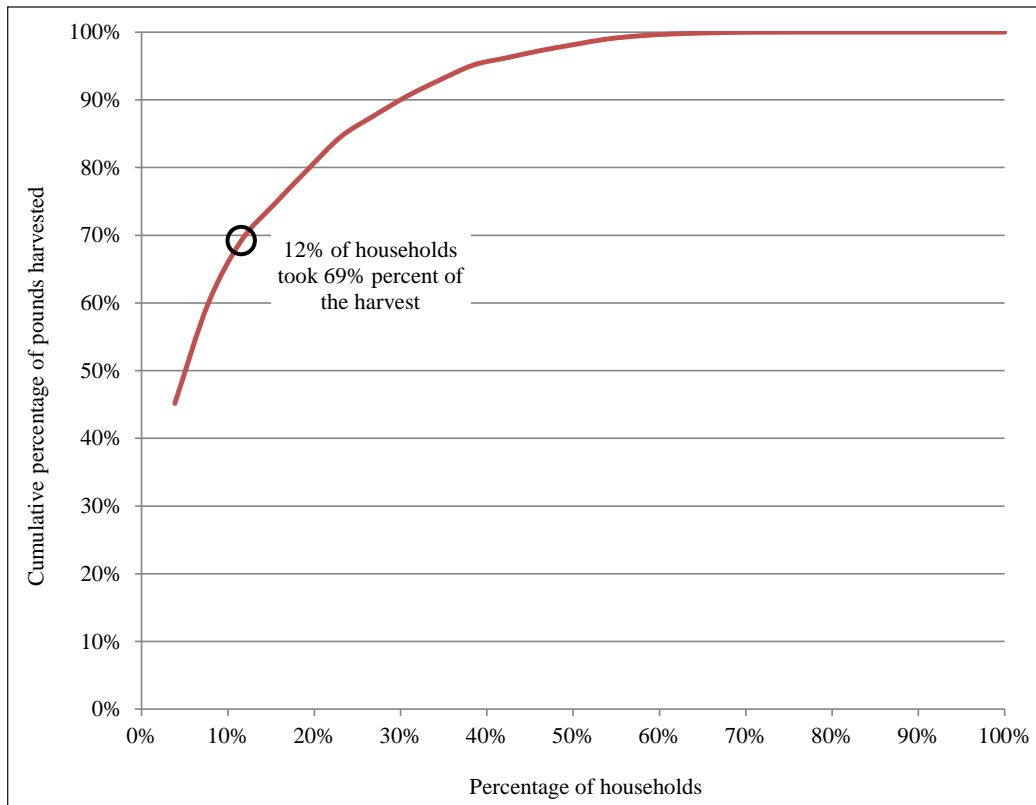


Figure 3-15.—Household specialization, Hughes, 2014.

Sharing of Wild Resources

Household Specialization in Resource Harvesting

Previous studies (Wolfe 1987; Wolfe et al. 2010) have shown that in most rural Alaska communities, a relatively small portion of households produces most of the community’s fish and wildlife harvests, which they share with other households. A recent study of 3,265 households in 66 rural Alaska communities found that about 33% of the households accounted for 76% of subsistence harvests (Magdanz et al. 2009; Wolfe et al. 2010). Although overall the set of very productive households was diverse, factors that were associated with higher levels of subsistence harvests included larger households with a pool of adult male labor, higher wage income, involvement in commercial fishing, and community location.

As shown in Figure 3-15, in the 2014 study year in Hughes, about 69% of the total wild food harvest as estimated in pounds usable weight was harvested by 12% of the community’s households. Previous studies have found a positive association between the ages of household heads and the amount of subsistence foods harvested. Household characteristics associated with higher food production include the presence of multiple working-age males, involvement with commercial fishing, and higher wage incomes. Characteristics common to lower producing households included female household heads, age of elders, non-Native household heads, and single-person households (Wolfe et al. 2010). Household “developmental cycles” (i.e., the relative age or “maturity” of household heads and number of productive household members) have also been associated with harvest levels. Further analysis of the study findings, beyond the scope of this report, might identify characteristics of the highly productive households in Hughes.

Although subsistence harvest surveys collect information based on individual households, in reality, much of the production (harvesting and processing) of subsistence foods is achieved by households within a community that work cooperatively. This cooperation is often organized based on kinship. The organization

of the contemporary mixed market-subsistence economies that are predominant in rural Alaska communities has been documented ethnographically by numerous researchers. Of particular interest for Interior Alaska are reports from McFayden-Clark (1974), Nelson et al. (1978, 1982), and Marcotte and Haynes (1985).

Subsistence foods are widely distributed among households within a community through sharing, barter, and trade (Charnley 1984; Kari 1983; Lonner 1980; Magdanz and Wolfe 1988; Magdanz 1988; Magdanz et al. 2007; Moncrieff 2007; Pete 1991; Schroeder et al. 1987; Stickney 1984; Wolfe et al. 1993). In Koyukon culture, sharing also has additional significance for producing luck (Nelson 1983).⁶ Koyukon people believe that by sharing food, young hunters can curry favor with the older generation, who can in turn distribute luck to younger individuals. Also, items used for subsistence are imbued with luck, and by giving an item to an individual, one also gives the luck that that item carries. One respondent also indicated that sharing food, as the correct thing to do, wards off bad luck.

But you've still got to give it to them. They say in our tradition, something might happen to their kid, to the person that doesn't give it away. Something might happen to their kids. So we usually just give it away. They usually just, all the, like wolverine or wolf, we usually just give it away to people who have potlatch for their family that die, deceased family members. (KR3)

HARVEST QUANTITIES AND COMPOSITION

Table 3-11 reports estimated wild resource harvests and uses by Hughes residents in 2014 and is organized first by general category and then by species. All edible resources are reported in pounds usable weight (see Table C-1 for conversion factors⁷). The harvest category includes resources harvested by any member of the surveyed household during the study year. The use category includes all resources taken, given away, or used by a household, and resources acquired from other harvesters either as gifts, by barter or trade, through hunting partnerships, or as meat given by hunting guides and nonlocal hunters. Purchased foods are not included, but resources such as firewood are included because they are an important part of the subsistence way of life. Differences between harvest and use percentages reflect sharing among households, which results in a wider distribution of wild foods.

Figure 3-16 shows the composition of the 2014 harvest of resources in pounds usable weight. Salmon, both Chinook salmon and chum salmon, contributed the most to the community harvest: nearly 44% of the total harvest was composed of salmon. The second largest harvest in terms of weight was large land mammals (35%); nonsalmon fish accounted for 17% of the harvest.

Figure 3-17 depicts all the land that Hughes residents used for hunting, gathering, and fishing in 2014. This image only represents the land used by respondents to the survey, and not individuals that surveyors were unable to contact or who declined to participate. It also only reflects activities during a single study year. Furthermore, land use areas change annually, reflecting changing resource abundance, travel conditions, and regulatory considerations.

USE AND HARVEST CHARACTERISTICS BY RESOURCE CATEGORY

Table 3-12 lists the top ranked resources used by households; these are resources that households are most likely to eat or use on any given day. The table relates what resources are prominent and socially important in the diets of Hughes residents. Moose meat is ubiquitous in the diets of Hughes residents. Over 96% of the households report that they use the resource. Other resources are used less extensively than moose. For example, the next most common resources—black bear and Canada goose—are used by only 54% of

6. Whereas “luck” in a Euroamerican worldview infers failure or success directly attributed to chance and not to one’s own actions, the Koyukon concept of “luck” refers to “the powerful force that binds humanity to the nature spirits and their moral imperative” (Nelson 1983). So linked with the natural spirits, “luck” is directly created by the proper actions and behavior of individuals.

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

Table 3-11.—Estimated harvests and uses of fish, wildlife, and vegetation resources, Hughes, 2014.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount		95% confidence limit (±) harvest	
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total	Mean per household	Per capita	Total	Unit		Mean per household
All resources	96.2	84.6	76.9	96.2	61.5	32,448.2	954.4	359.6	32,448.2 lb		954.4	46.3
Salmon	57.7	19.2	19.2	50.0	15.4	14,177.8	417.0	157.1	14,177.8 lb		417.0	73.2
Summer chum salmon	42.3	19.2	19.2	30.8	15.4	14,029.2	412.6	155.5	2,788.0 ind		82.0	73.1
Fall chum salmon	15.4	7.7	7.7	7.7	0.0	6.8	0.2	0.1	1.4 ind		0.0	96.1
Unknown chum salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 ind		0.0	0.0
Coho salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 ind		0.0	0.0
Chinook salmon	15.4	7.7	7.7	7.7	3.8	141.7	4.2	1.6	16.3 ind		0.5	96.1
Pink salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 ind		0.0	0.0
Sockeye salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 ind		0.0	0.0
Unknown salmon	7.7	0.0	0.0	7.7	0.0	0.0	0.0	0.0	0.0 ind		0.0	0.0
Nonsalmon fish	73.1	50.0	46.2	42.3	11.5	5,400.0	158.8	59.8	5,400.0 lb		158.8	73.0
Pacific herring	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 gal		0.0	0.0
Pacific herring roe/unspecified	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 gal		0.0	0.0
Pacific halibut	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 lb		0.0	0.0
Burbot	11.5	11.5	11.5	3.8	0.0	49.0	1.4	0.5	20.4 ind		0.6	70.4
Dolly Varden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 ind		0.0	0.0
Lake trout	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 ind		0.0	0.0
Arctic grayling	7.7	7.7	3.8	3.8	0.0	3.5	0.1	0.0	3.9 ind		0.1	99.9
Northern pike	26.9	26.9	26.9	3.8	0.0	395.2	11.6	4.4	282.3 ind		8.3	70.1
Sheefish	46.2	38.5	30.8	23.1	0.0	870.3	25.6	9.6	145.0 ind		4.3	53.6
Longnose sucker	3.8	3.8	3.8	0.0	0.0	130.8	3.8	1.4	65.4 ind		1.9	99.9
Unknown trout	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 ind		0.0	0.0
Broad whitefish	50.0	34.6	34.6	19.2	7.7	681.2	20.0	7.5	486.6 ind		14.3	76.6
Bering cisco	3.8	3.8	3.8	0.0	0.0	40.3	1.2	0.4	28.8 ind		0.8	99.9
Least cisco	26.9	26.9	26.9	3.8	7.7	1,598.0	47.0	17.7	1,598.0 ind		47.0	81.7
Humpback whitefish	46.2	26.9	26.9	26.9	11.5	1,631.8	48.0	18.1	543.9 ind		16.0	79.9
Round whitefish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 ind		0.0	0.0
Unknown whitefishes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 ind		0.0	0.0

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Table 3-11–Page 2 of 4.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount		95% confidence limit (±) harvest	
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total	Mean per household	Per capita	Total	Unit		Mean per household
Large land mammals	96.2	69.2	46.2	73.1	46.2	11,350.8	333.8	125.8	11,350.8 lb		333.8	30.0
Black bear	53.8	34.6	26.9	30.8	23.1	1,569.2	46.2	17.4	15.7 ind		0.5	36.5
Brown bear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 ind		0.0	0.0
Caribou	30.8	26.9	11.5	15.4	3.8	2,720.0	80.0	30.1	20.9 ind		0.6	66.8
Moose	96.2	61.5	34.6	69.2	34.6	7,061.5	207.7	78.3	13.1 ind		0.4	29.1
Dall sheep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 ind		0.0	0.0
Small land mammals	38.5	30.8	26.9	11.5	7.7	804.2	23.7	8.9	804.2 lb		23.7	74.4
Beaver	30.8	23.1	19.2	11.5	7.7	804.2	23.7	8.9	68.0 ind		2.0	74.4
Coyote	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 ind		0.0	0.0
Unknown foxes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 ind		0.0	0.0
Snowshoe hare	0.0	3.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0 ind		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 ind		0.0	0.0
Lynx	3.8	3.8	3.8	0.0	0.0	0.0	0.0	0.0	5.2 ind		0.2	99.9
Marten	11.5	11.5	11.5	0.0	0.0	0.0	0.0	0.0	32.7 ind		1.0	64.8
Mink	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 ind		0.0	0.0
Muskrat	3.8	3.8	3.8	0.0	0.0	0.0	0.0	0.0	13.1 ind		0.4	99.9
Porcupine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 ind		0.0	0.0
Weasel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 ind		0.0	0.0
Gray wolf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 ind		0.0	0.0
Wolverine	11.5	11.5	11.5	0.0	3.8	0.0	0.0	0.0	9.2 ind		0.3	63.6
Marine mammals	30.8	0.0	0.0	30.8	7.7	0.0	0.0	0.0	0.0 lb		0.0	0.0
Bearded seal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 ind		0.0	0.0
Northern fur seal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 ind		0.0	0.0
Spotted seal	3.8	0.0	0.0	3.8	0.0	0.0	0.0	0.0	0.0 ind		0.0	0.0
Unknown seals	15.4	0.0	0.0	15.4	3.8	0.0	0.0	0.0	0.0 ind		0.0	0.0
Steller sea lion	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 ind		0.0	0.0
Beluga whale	3.8	0.0	0.0	3.8	0.0	0.0	0.0	0.0	0.0 ind		0.0	0.0
Bowhead whale	7.7	0.0	0.0	7.7	3.8	0.0	0.0	0.0	0.0 ind		0.0	0.0
Unknown whales	19.2	0.0	0.0	19.2	0.0	0.0	0.0	0.0	0.0 ind		0.0	0.0

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Table 3-11.-Page 3 of 4.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount		95% confidence limit (±) harvest	
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total	Mean per household	Per capita	Total	Unit		Mean per household
Birds and eggs	61.5	57.7	50.0	19.2	26.9	501.3	14.7	5.6	501.3 lb		14.7	29.7
Bufflehead	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 ind		0.0	0.0
Unknown eiders	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 ind		0.0	0.0
Unknown goldeneyes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 ind		0.0	0.0
Mallard	23.1	19.2	19.2	3.8	11.5	41.1	1.2	0.5	21.1 ind		0.6	55.2
Long-tailed duck	7.7	7.7	7.7	0.0	3.8	41.2	1.2	0.5	27.5 ind		0.8	95.1
Northern pintail	11.5	11.5	11.5	0.0	3.8	27.5	0.8	0.3	18.3 ind		0.5	73.7
Black scoter	15.4	15.4	15.4	3.8	11.5	35.3	1.0	0.4	39.2 ind		1.2	59.2
White-winged scoter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 ind		0.0	0.0
Unknown scoter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 ind		0.0	0.0
Northern shoveler	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 ind		0.0	0.0
Unknown teals	3.8	3.8	3.8	0.0	0.0	4.1	0.1	0.0	7.8 ind		0.2	99.9
American wigeon	7.7	7.7	7.7	0.0	3.8	18.8	0.6	0.2	14.4 ind		0.4	90.8
Unknown ducks	3.8	3.8	3.8	0.0	0.0	1.7	0.1	0.0	1.3 ind		0.0	99.9
Unknown	53.8	42.3	38.5	19.2	23.1	88.1	2.6	1.0	73.4 ind		2.2	34.3
Canada/cackling geese												
Snow goose	3.8	3.8	3.8	0.0	3.8	15.7	0.5	0.2	3.9 ind		0.1	99.9
White-fronted goose	26.9	23.1	23.1	3.8	11.5	122.0	3.6	1.4	28.8 ind		0.8	45.4
Unknown swans	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 ind		0.0	0.0
Unknown loons	3.8	3.8	3.8	0.0	3.8	14.2	0.4	0.2	2.6 ind		0.1	99.9
Spruce grouse	42.3	42.3	38.5	3.8	7.7	85.1	2.5	0.9	121.6 ind		3.6	45.7
Sharp-tailed grouse	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 ind		0.0	0.0
Ruffed grouse	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 ind		0.0	0.0
Unknown ptarmigans	15.4	11.5	11.5	3.8	11.5	6.4	0.2	0.1	9.2 ind		0.3	72.9
Unknown duck eggs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 ind		0.0	0.0
Unknown goose eggs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 ind		0.0	0.0
Unknown gull eggs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 ind		0.0	0.0
Marine invertebrates	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 lb		0.0	0.0
Butter clams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 gal		0.0	0.0
Freshwater clams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 gal		0.0	0.0
Razor clams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 gal		0.0	0.0

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Table 3-11.--Page 4 of 4.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount		95% confidence limit (±) harvest	
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total	Mean per household	Per capita	Total	Unit		Mean per household
Marine invertebrates, continued												
Unknown clams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Dungeness crab	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown king crabs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown tanner crabs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown crabs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Vegetation	46.2	61.5	38.5	23.1	19.2	214.1	6.3	2.4	214.1 lb		6.3	48.9
Blueberry	34.6	53.8	15.4	19.2	7.7	71.3	2.1	0.8	17.8	gal	0.5	67.8
Lowbush cranberry	7.7	11.5	7.7	3.8	0.0	15.7	0.5	0.2	3.9	gal	0.1	73.3
Highbush cranberry	11.5	15.4	3.8	3.8	3.8	26.2	0.8	0.3	6.5	gal	0.2	99.9
Crowberry	3.8	3.8	3.8	0.0	3.8	2.6	0.1	0.0	0.7	gal	0.0	99.9
Cloudberry	15.4	15.4	11.5	3.8	3.8	28.8	0.8	0.3	7.2	gal	0.2	74.3
Raspberry	15.4	19.2	7.7	3.8	3.8	11.8	0.3	0.1	2.9	gal	0.1	89.1
Wild rhubarb	3.8	7.7	3.8	0.0	0.0	10.5	0.3	0.1	2.6	gal	0.1	99.9
Eskimo potato	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Hudson's Bay (Labrador)	3.8	3.8	3.8	0.0	0.0	0.3	0.0	0.0	0.3	gal	0.0	99.9
Spruce tips	3.8	3.8	3.8	0.0	3.8	1.3	0.0	0.0	1.3	gal	0.0	99.9
Wild rose hips	3.8	3.8	3.8	0.0	0.0	1.3	0.0	0.0	0.3	gal	0.0	99.9
Other wild greens	7.7	7.7	7.7	0.0	7.7	2.6	0.1	0.0	2.6	gal	0.1	69.2
Unknown mushrooms	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Stinkweed	7.7	7.7	7.7	0.0	3.8	2.6	0.1	0.0	2.6	gal	0.1	69.2
Punk	11.5	11.5	11.5	0.0	3.8	13.1	0.4	0.1	13.1	gal	0.4	72.2
Chaga	3.8	3.8	3.8	0.0	0.0	26.2	0.8	0.3	26.2	gal	0.8	99.9
Mousefoods	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Birch	3.8	3.8	3.8	0.0	0.0	0.0	0.0	0.0	0.0	lb	0.0	0.0
Other wood	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	lb	0.0	0.0

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

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

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

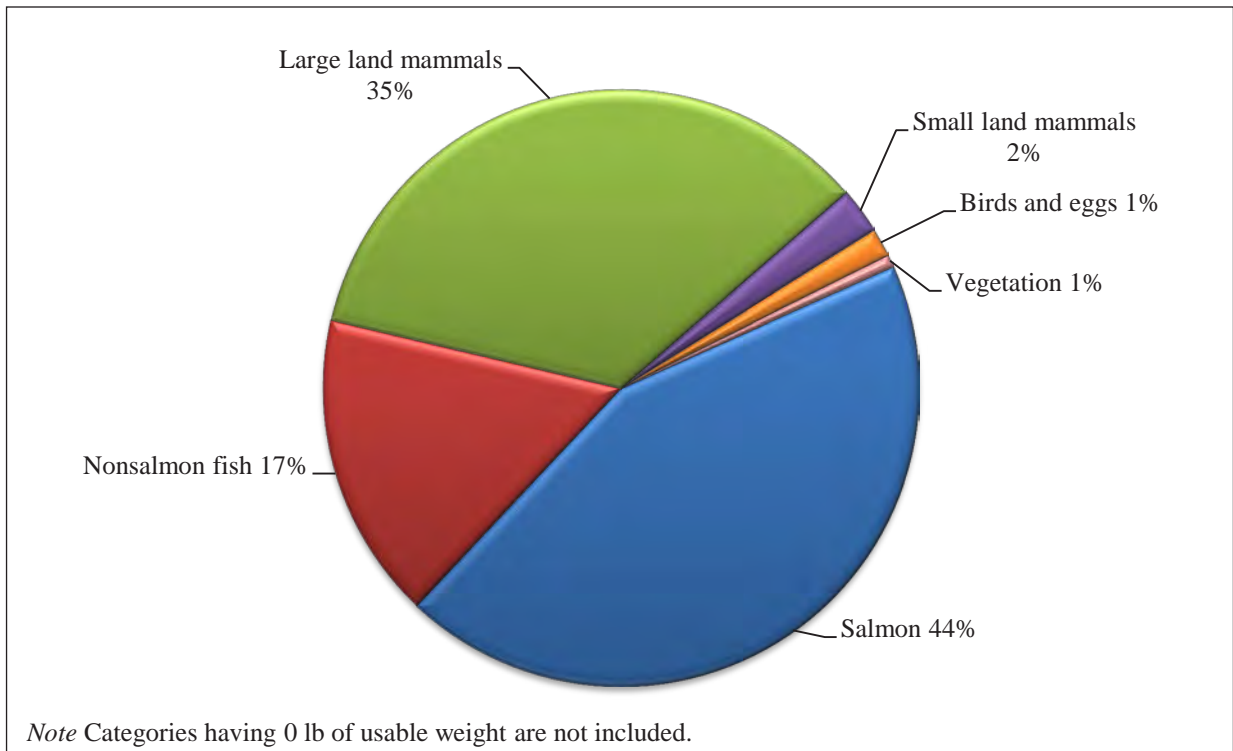


Figure 3-16.—Composition of harvest by resource category in pounds usable weight, Hughes, 2014.

households. Table 3-12 includes at least 1 species from every resource category, reflecting a preference toward diversity of diet.

Figure 3-18 shows the harvest composition by species in edible pounds during the 2014 study year. Top among them are chum salmon, which accounted for 43% of the total harvest. The second largest harvest by weight was moose, which accounted for 22% of the total harvest. Both species are staples among Interior Alaska communities; the harvest of summer chum salmon in particular illustrates that some resources are harvested in large amounts.

Other resources, such as caribou, whitefishes, and bears, contributed far less to the harvest.

Salmon

The salmon harvest by Hughes residents is largely a reflection of species availability, annual regulations, and environmental conditions. The upper Koyukuk River hosts 3 species of salmon which spawn annually in tributaries above Hughes. The chum salmon are part of the Yukon River summer chum salmon run. Often families will travel to the Yukon River to fish for salmon, targeting stronger runs and a greater variety of species. However, this was not the case in 2014, as shown by fishing locations (Figure 3-19). Families also barter or receive fish from Yukon River families, rather than relocating to fish camp for the summer (Plate 3-3). About 58% of the households reported using salmon, though very few (19%) participated directly in the harvest (Table 3-11). Salmon were primarily distributed by 15% of the households to the 50% that said they received the resource.

The Hughes salmon harvest was composed primarily of Yukon River summer chum salmon, as well as a small amount of Chinook (king) salmon (Figure 3-20). Hughes fishers caught 2,806 salmon (14,178 lb) using subsistence gear, and no salmon were removed from commercial harvests for home use or harvested with rod and reel (Table 3-13). Figure 3-21 is a visual representation of the number of salmon harvested by gear type. The entire salmon harvest was caught using gillnets (Table 3-13; Figure 3-21). The chum

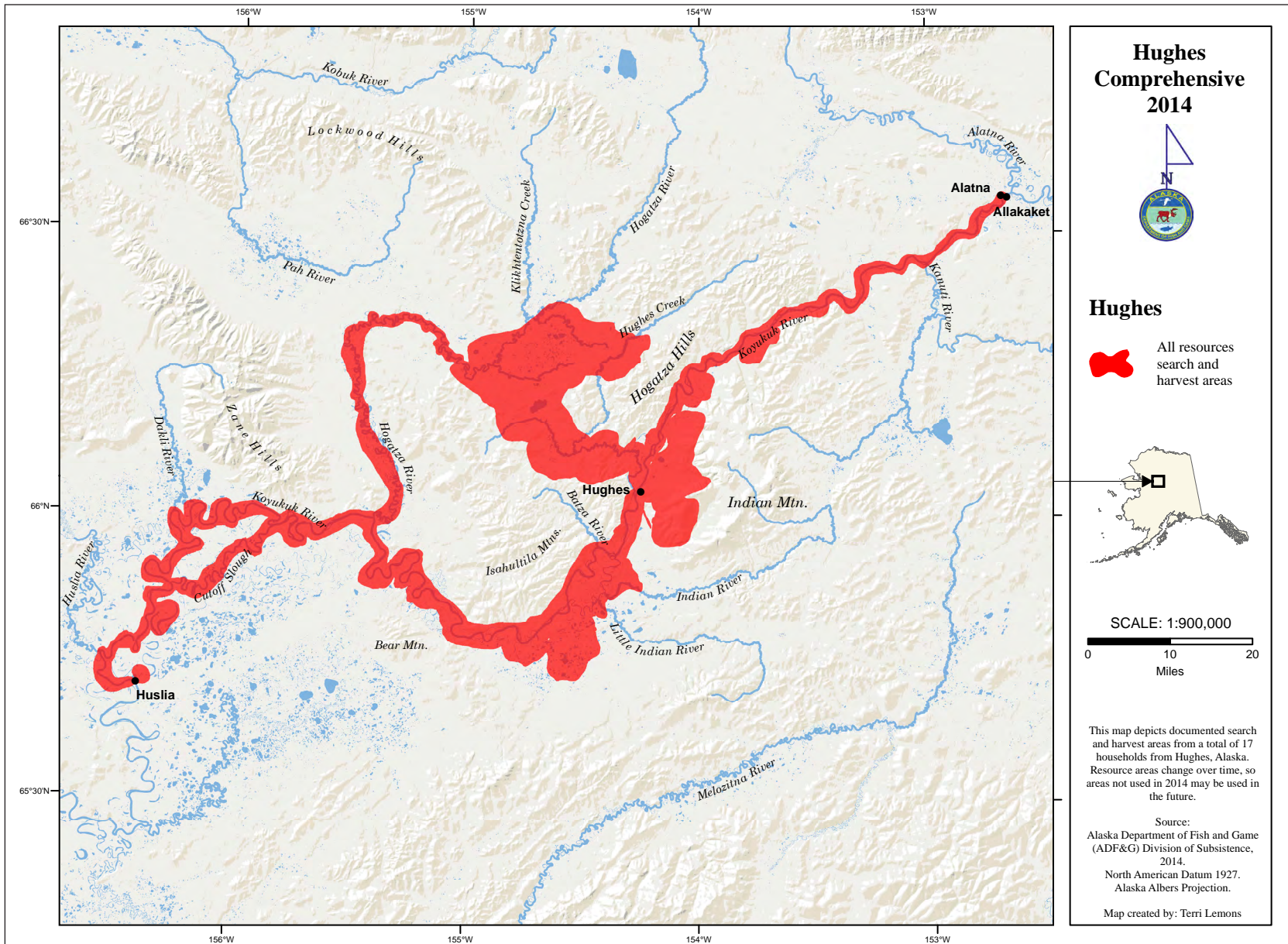


Figure 3-17.—Wild resources search and harvest areas, Hughes, 2014.

Table 3-12.—Top 10 resources most used by households, Hughes, 2014.

Rank ^a	Resource	Percentage of households using
1.	Moose	96.2%
2.	Black bear	53.8%
2.	Unknown Canada/cackling geese	53.8%
4.	Broad whitefish	50.0%
5.	Sheefish	46.2%
5.	Humpback whitefish	46.2%
7.	Summer chum salmon	42.3%
7.	Spruce grouse	42.3%
9.	Blueberry	34.6%
10.	Caribou	30.8%
10.	Beaver	30.8%

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

a. Resources used by the same percentage of households share the lowest rank value instead of having sequential rank values.

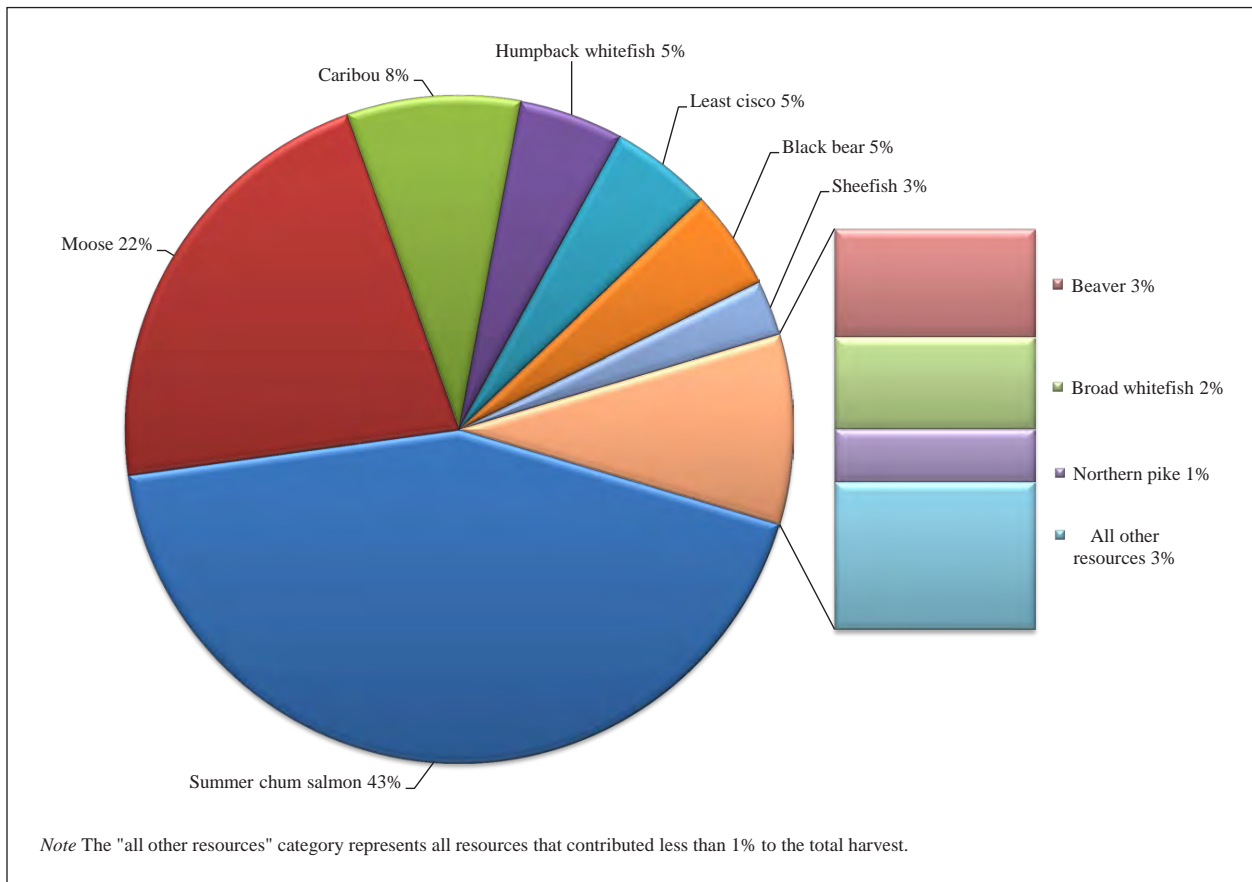


Figure 3-18.—Top resources harvested by per capita harvest in pounds usable weight, Hughes, 2014.

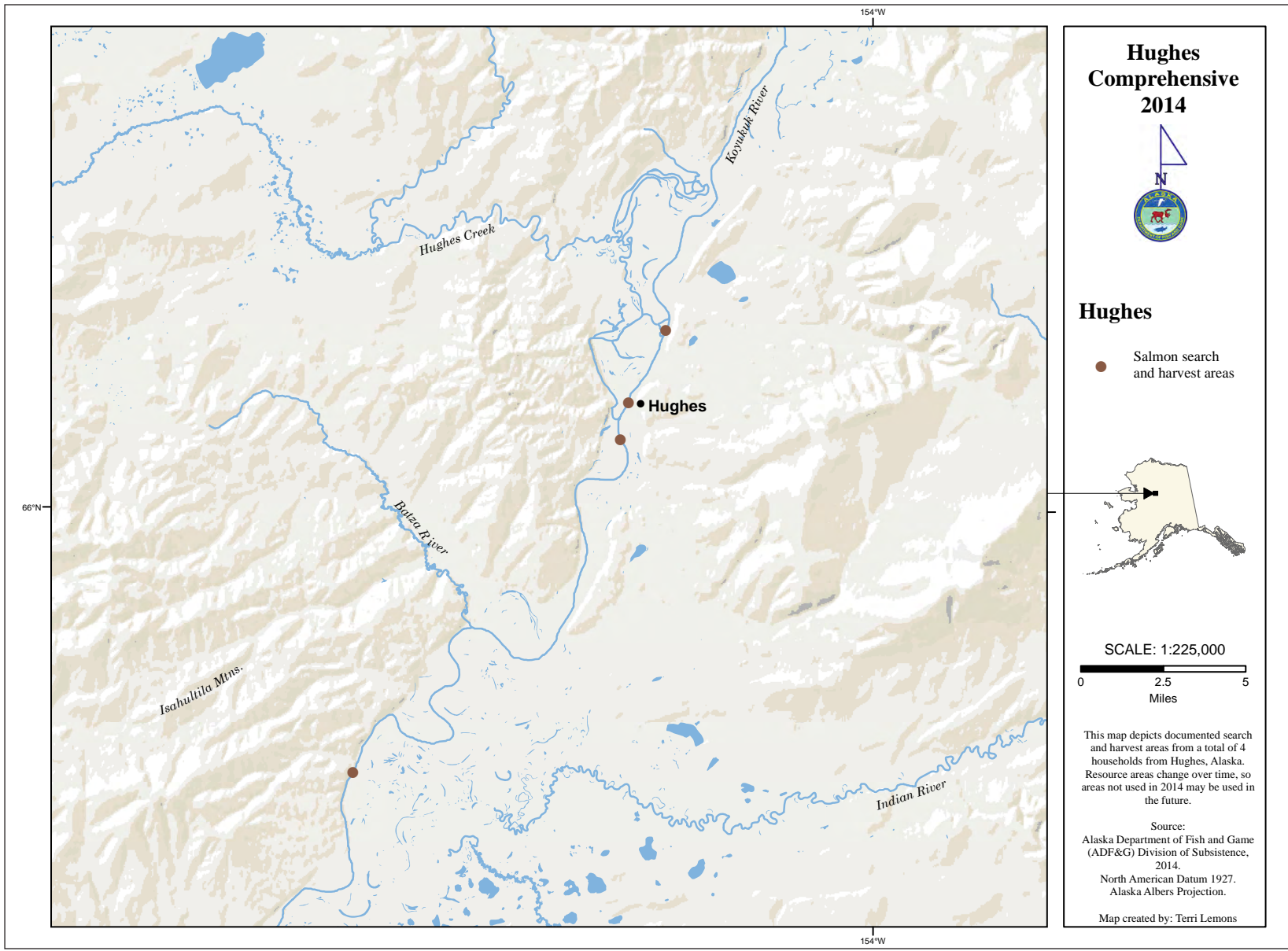


Figure 3-19.—Salmon fishing and harvest areas, Hughes, 2014.

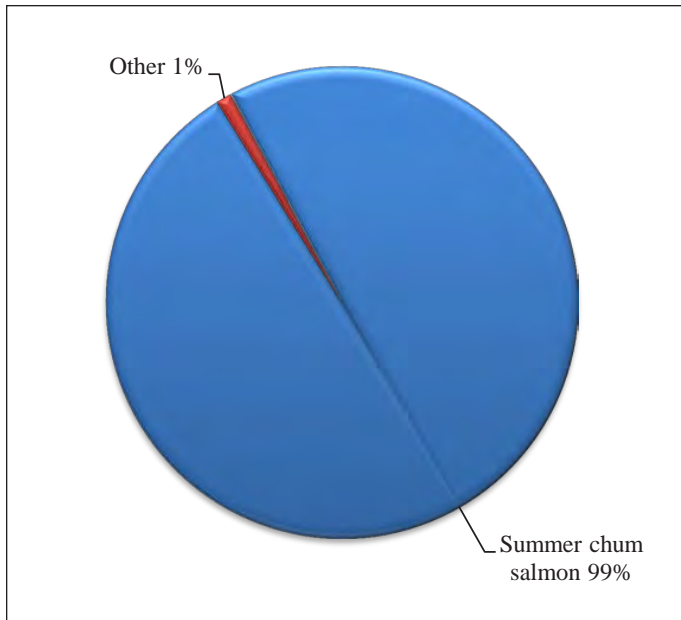


Figure 3-20.—Composition of salmon harvest in pounds usable weight, Hughes, 2014.

salmon return to tributaries upriver of Hughes in droves, but residents notice that their condition rapidly deteriorates throughout the summer.

Yeah. Lot of salmon goes through here when they, they done the first runs though. Early runs. Yeah. They're in good shape, but they get all old, old and rotten after that—just start getting old or whatever they do...They used to try to get some king salmon, they'd get a few, that's about all. (KR3)

Key respondents did not focus on salmon fishing in the ethnographic interviews except in relation to dog teams, and discussions of dog teams were generally held in past tense. Dogs and dog mushing are important in Interior Alaska. Historically, almost every household kept a number of dogs for winter transportation. One respondent described the historical importance of dogs. “Out end of

April, we used to use the dog sled, that's only our transportation. Us kids used to have to walk sometimes, but we ride on the sled” (KR2). A household would generally keep only a small number of dogs, so that family members could reasonably harvest enough to feed them throughout the year. Currently, most houses keep dogs, but in limited numbers. “Now only a couple dog lots exist in Hughes. After I got married, we got about 5 dogs the first time. Then after that we got about 13, every summer. We used to have lots dogs” (KR1).



Tishu V. Ulen collection UAF-1989-88-47n

Plate 3-3.—People at a summer fish camp located near Hughes, dated between 1913 and 1939.

Table 3-13.—Estimated salmon harvests by gear type and resource, Hughes, 2014.

Resource	Subsistence methods																	
	Removed from commercial catch		Dip net				Gillnet or seine		Fish wheel		Other method		Subsistence gear, any method		Rod and reel		Any method	
	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Salmon	0.0	0.0	0.0	0.0	2,805.7	14,177.8	0.0	0.0	0.0	0.0	2,805.7	14,177.8	0.0	0.0	2,805.7	14,177.8	0.0	0.0
Summer chum salmon	0.0	0.0	0.0	0.0	2,788.0	14,029.2	0.0	0.0	0.0	0.0	2,788.0	14,029.2	0.0	0.0	2,788.0	14,029.2	0.0	0.0
Fall chum salmon	0.0	0.0	0.0	0.0	1.4	6.8	0.0	0.0	0.0	0.0	1.4	6.8	0.0	0.0	1.4	6.8	0.0	0.0
Unknown chum salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Coho salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chinook salmon	0.0	0.0	0.0	0.0	16.3	141.7	0.0	0.0	0.0	0.0	16.3	141.7	0.0	0.0	16.3	141.7	0.0	0.0
Pink salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sockeye salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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

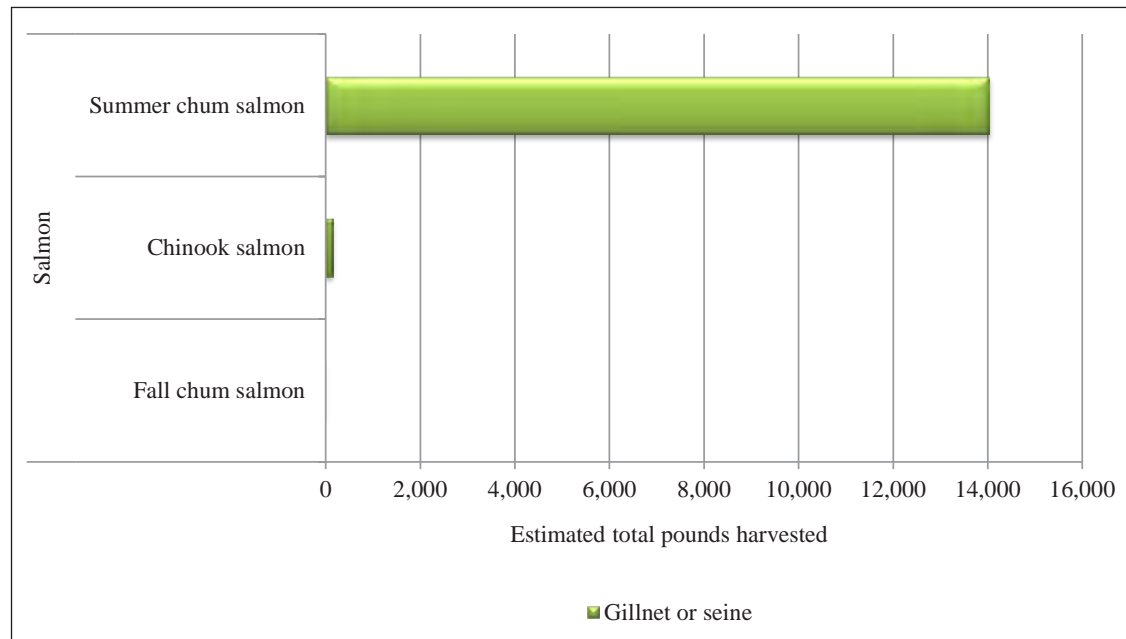


Figure 3-21.—Salmon harvests by gear type, Hughes, 2014.

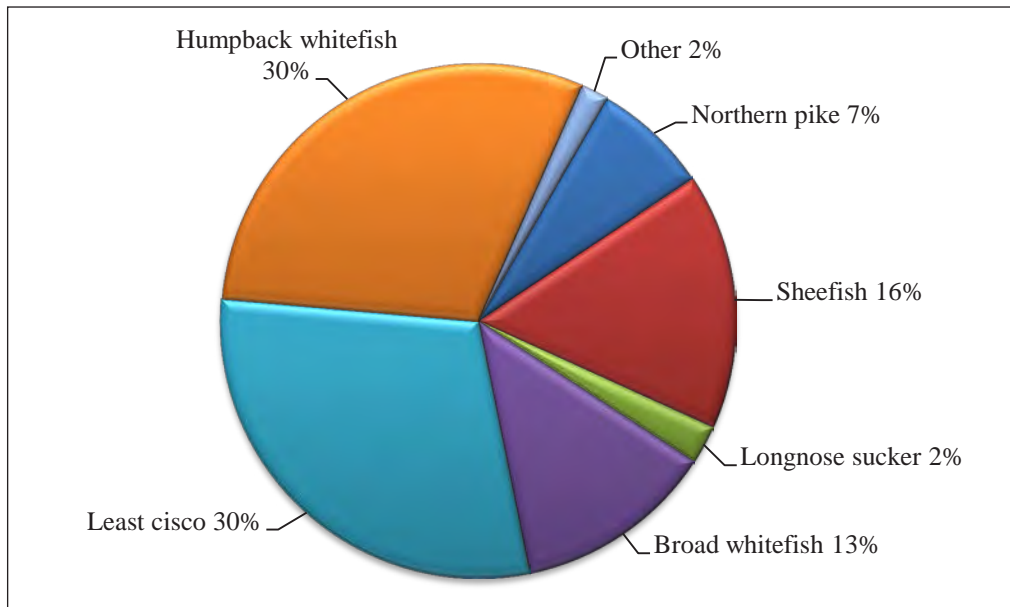


Figure 3-22.—Composition of nonsalmon fish harvest in pounds usable weight, Hughes, 2014.

Although salmon were not necessarily the only component of a dog team’s diet, the annual salmon run represented an opportunity for households to harvest the bulk of their team’s food for a winter. Subsequently, the individuals who do own teams harvest a large amount of salmon. Most individuals in Hughes support mushing and contemporary mushers as a mainstay of cultural identity, so it is not uncommon for individuals in the community to harvest and donate fish for the dog teams.

Four households mapped salmon harvest locations, which all occurred on the mainstem of the Koyukuk River (Figure 3-19). Three were near the community, at the mouth of Hughes Creek. The fourth was downstream of Batza River.

If they have too many dogs, they have to work on too many fish to keep for the winter to feed them. Because you know you have to have supply all winter to feed them. And that slough we grew up was really, really deep slough, we used to get lots of what you call pike. We used to just stack them up in fall time, just like wood. We’d feed that to the dogs. (KR2)

Nonsalmon Fish

Though smaller in quantity than salmon, the nonsalmon harvest was far more varied in species and more widely used throughout the community (Table 3-11). Whitefish species were the primary harvests in this category. Resident fishers harvested near equal portions by weight of least cisco and humpback whitefish (30% each; Figure 3-22). The third largest harvest was sheefish (16%), the largest species of whitefish, which are abundant in the large riverine system of the Koyukuk River. Broad whitefish were harvested in nearly the same quantity as humpback whitefish, in terms of numbers of fish. Both can be targeted with the same gear type and are found in similar habitats. The preponderance of these 4 whitefish species in the community harvest is likely because the upper Koyukuk River and its tributaries between Hughes and Bettles hold the only known spawning populations in the Koyukuk River (Brown et al. 2012).

Almost all ciscoes and broad and humpback whitefishes were taken by seine net in the late fall, when large congregations of fish are found near gravel bars⁸. At least 3 individuals are required to deploy and retrieve the net. The catch, which is often sizable, is generally distributed between participatory households (KR3). This communal effort often makes it difficult to precisely estimate the total household take, because

8. Researcher field notes.

residents report their catch in bulk units such as tubs or gunnysacks. In 2015, almost every household that harvested whitefishes reported seining. The only whitefish species not harvested with a seine net was humpback whitefish: 47 lb were taken with rod and reel from open waters (Table 3-14). Additionally, sheefish are commonly taken in large mesh gillnets and by rod and reel from open water, as in 2014, but rarely by seine. “We try to just fish for, with a pole, rod and reel, for sheefish, in fall time when they are doing their runs upriver—or coming back down river. Just before ice go out, I think. Just before ice get on the river in fall” (KR 3).

Respondents regularly discussed the importance of whitefish species. Whitefishes are analogous to salmon in their predictable migration. However, they also seem to be available nearly all year; respondents reported targeting them during all seasons for dog food. “When dogs get fat from the small whitefish. So kind early we set small whitefish too” (KR2). Unlike salmon, which are typically lean when they arrive, respondents say that whitefish are fat and flavorful in the fall months. Broad whitefish, for example, are often given to elders because they are so good. “Like eating, good eating-fish, they pass it around...That’s what they call it, the biggest broad whitefish, they pass those around, for, for the, to the elders” (KR3).

Figure 3-23 is a visual representation of the number of nonsalmon fish harvested by gear type. Other notable nonsalmon fish harvests were northern pike (395 lb) and longnose suckers (131 lb), which are both primarily taken by gillnet. Neither are a highly sought-after species.

Nonsalmon search and harvest areas mirrored those of salmon in 2014. Fishers were highly concentrated near the community for all species except burbot (Figure 3-24). Whitefish species, the largest harvest, were seined near the community. This allowed fishers to take advantage of the local labor and shallow gravel bars required for this method of fishing. Setnet locations for northern pike and sheefish were the same as for salmon in 2014. Harvest areas for Arctic grayling and longnose suckers were not mapped.

Large Land Mammals

Large land mammals occupy a central role in the diets of Hughes residents. Almost every household (96%) reported using at least 1 resource from the category. About 69% of the households hunted for large game, and most (46%) were successful (Table 3-11). In all, community members harvested 11,351 lb of meat.

Chief among the harvest was moose (*dineega*; Table 3-11). Moose accounted for 62% of the large land mammal harvest (Figure 3-25). Hughes hunters took an estimated 13 moose, which provided 7,062 lb of meat, about 78 lb per person in 2014. About 60% of the households hunted moose, and about one-half of those were successful. Many (69%) reported receiving moose from other households. The estimated weights for both moose and caribou, as well as other species in this chapter, comprise edible meat, and not any other materials derived from the animal.

As Nelson (1983) states, “Few animals, if any, are as thoroughly usable as this one.” Aside from providing a substantial amount of daily table fare, such as hamburger and soup, parts of the animal provide socially significant delicacies that were a significant topic of discussion among key respondents.

I was going to Huslia for Carnival dog race, you know, and I called my sister-in-law up and I asked her what she needs, in the village, you know. So we were talking, she says I’m cooking for you for tomorrow...Here she cooked moose hooves. They’re delicious.
(KR2)

Additionally respondents spoke of processing heads for moose head soup for potlatches, drying the organs, and processing the bones into bone grease (KR1, KR2, KR3). However, the greatest topic of discussion was tanning the hide for potlaches and sewing. One respondent reported currently tanning a hide, and all had done so in the past.

All moose were taken during the September hunting season (Table 3-15). They were hunted along the river corridor between the downriver community of Huslia and the upriver community of Allakaket (Figure 3-26). For example, “You usually don’t like to go past Hog[atza] River, but they have been going to, uh, going to Cut-off, they call it, or Long Channel. So that’s long ways down” (KR3).

Table 3-14.—Estimated nonsalmon fish harvests by gear type and resource, Hughes, 2014.

Resource	Subsistence methods															
	Removed from commercial catch		Subsistence methods						Subsistence gear, any method				Rod and reel		Any method	
	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Nonsalmon fish	0.0	0.0	0.0	0.0	3,097.2	5,056.4	0.0	0.0	0.0	0.0	3,097.2	5,056.4	77.2	343.7	3,174.3	5,400.0
Pacific herring	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pacific herring roe/unspecified	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pacific halibut	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0	20.4	49.0	0.0	0.0	0.0	0.0	20.4	49.0	0.0	0.0	20.4	49.0
Dolly Varden—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	0.0	0.0	0.0
Lake trout	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Arctic grayling	0.0	0.0	0.0	0.0	3.9	3.5	0.0	0.0	0.0	0.0	3.9	3.5	0.0	0.0	3.9	3.5
Northern pike	0.0	0.0	0.0	0.0	267.9	375.1	0.0	0.0	0.0	0.0	267.9	375.1	14.4	20.1	282.3	395.2
Sheefish	0.0	0.0	0.0	0.0	99.3	595.7	0.0	0.0	0.0	0.0	99.3	595.7	45.8	274.6	145.0	870.3
Longnose sucker	0.0	0.0	0.0	0.0	65.4	130.8	0.0	0.0	0.0	0.0	65.4	130.8	0.0	0.0	65.4	130.8
Unknown trout	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Broad whitefish	0.0	0.0	0.0	0.0	485.3	679.4	0.0	0.0	0.0	0.0	485.3	679.4	1.3	1.8	486.6	681.2
Bering cisco	0.0	0.0	0.0	0.0	28.8	40.3	0.0	0.0	0.0	0.0	28.8	40.3	0.0	0.0	28.8	40.3
Least cisco	0.0	0.0	0.0	0.0	1,598.0	1,598.0	0.0	0.0	0.0	0.0	1,598.0	1,598.0	0.0	0.0	1,598.0	1,598.0
Humpback whitefish	0.0	0.0	0.0	0.0	528.2	1,584.7	0.0	0.0	0.0	0.0	528.2	1,584.7	15.7	47.1	543.9	1,631.8
Round whitefish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown whitefishes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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

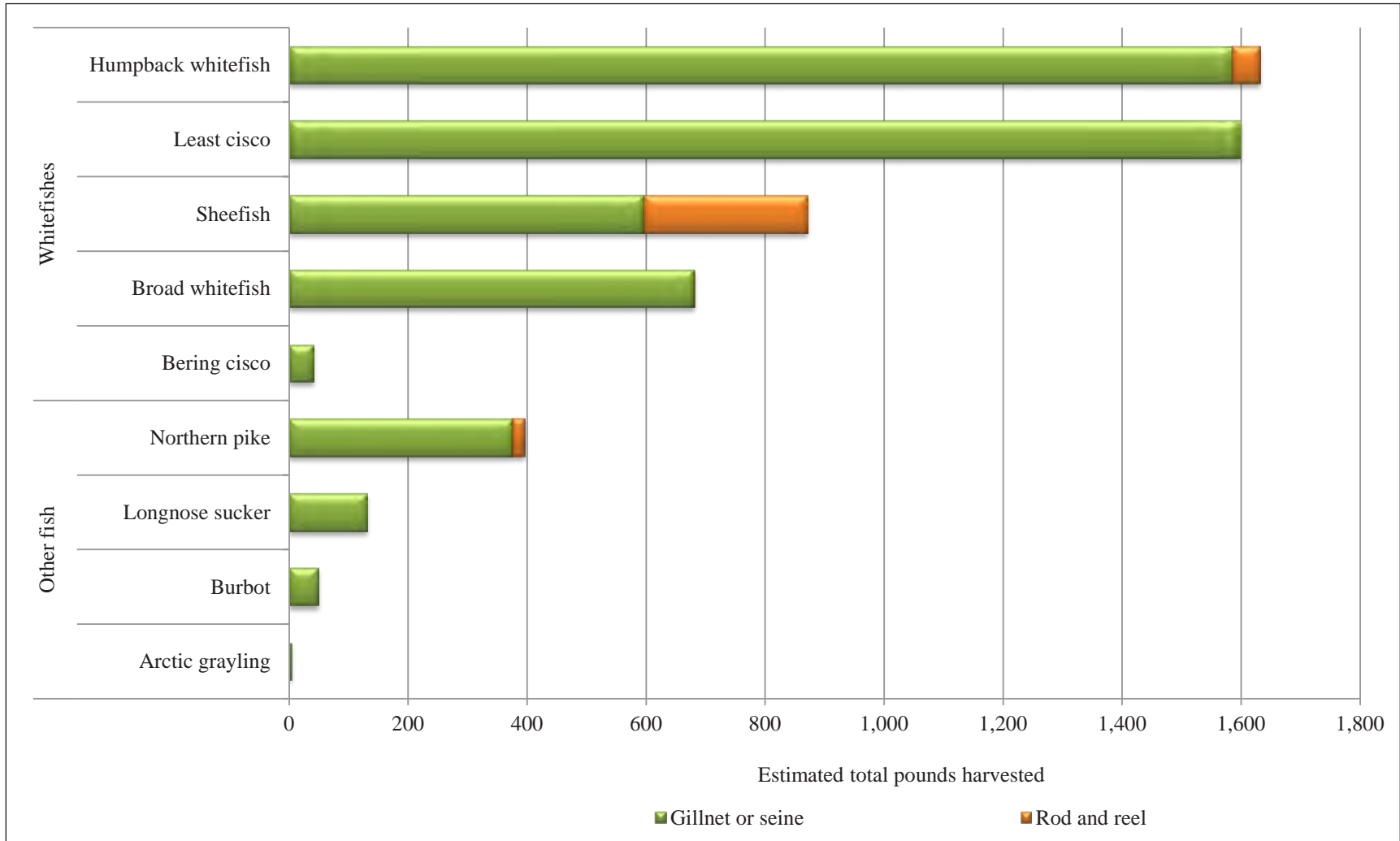


Figure 3-23.—Nonsalmon fish harvests by gear type, Hughes, 2014.

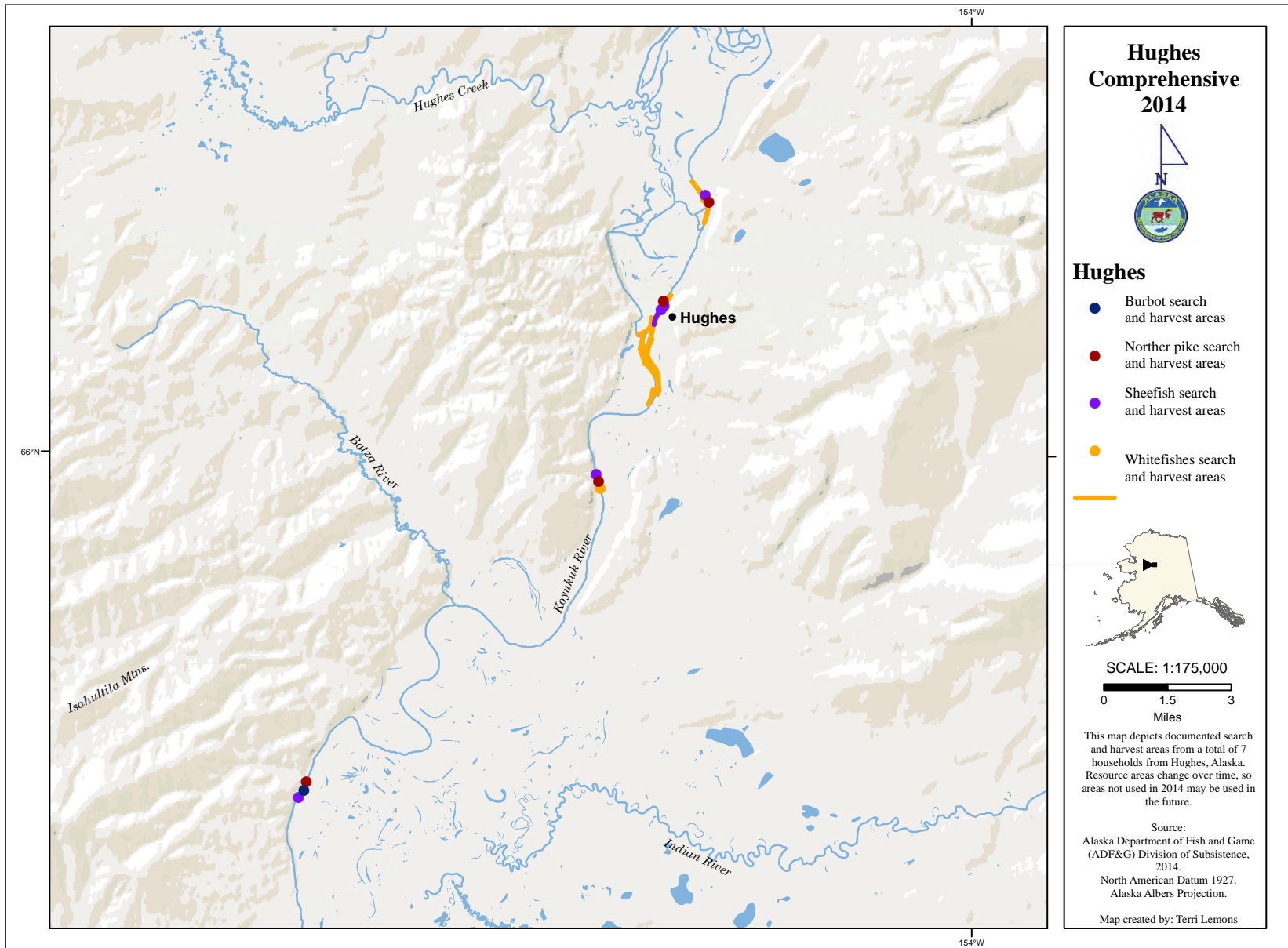


Figure 3-24.—Nonsalmon fish search and harvest areas, Hughes, 2014.

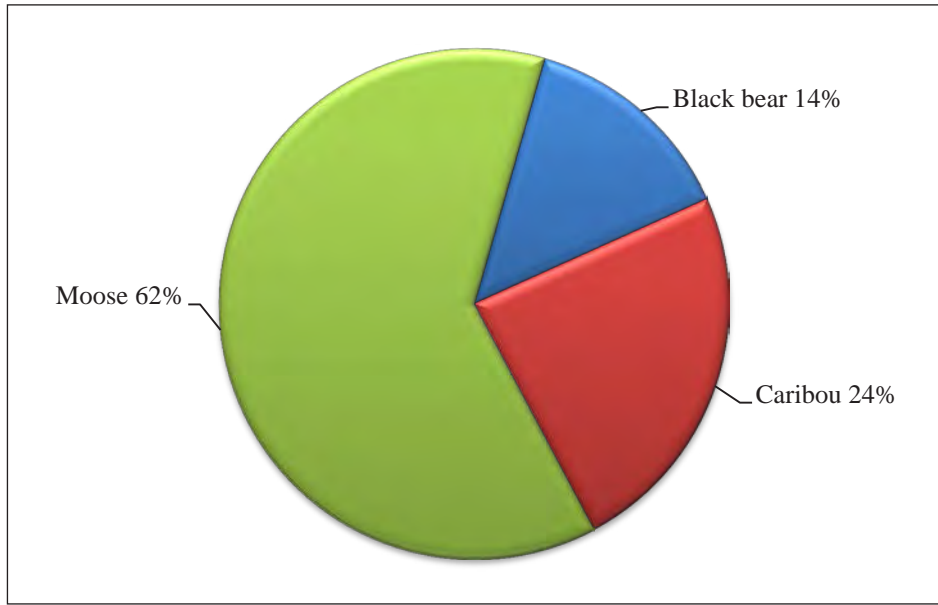


Figure 3-25.—Composition of large land mammal harvest in pounds usable weight, Hughes, 2014.

Table 3-15.—Estimated large land mammal harvests by month and sex, Hughes, 2014.

Resource	Estimated harvest by month													Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk	
All large land mammals	0.0	5.2	0.0	13.1	0.0	0.0	0.0	0.0	23.5	0.0	5.2	0.0	2.6	49.7
Black bear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.5	0.0	2.6	0.0	2.6	15.7
Brown bear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Caribou	0.0	5.2	0.0	13.1	0.0	0.0	0.0	0.0	0.0	0.0	2.6	0.0	0.0	20.9
Caribou, male	0.0	5.2	0.0	6.5	0.0	0.0	0.0	0.0	0.0	0.0	2.6	0.0	0.0	14.4
Caribou, female	0.0	0.0	0.0	6.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.5
Caribou, unknown sex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Moose	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.1	0.0	0.0	0.0	0.0	13.1
Moose, bull	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.1	0.0	0.0	0.0	0.0	13.1
Moose, cow	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Moose, unknown sex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dall sheep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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

Contrary to the solitary moose, caribou winter in social groups in the Koyukuk River basin. Caribou cannot reliably be found every year, so their role in the subsistence economy is irregular in comparison to moose, at least in recent years. Respondents noted that the meat is good, even when lean, and that the hide is favored more for its insulation, rather than its durability (KR3).

Hughes hunters harvested 21 individual caribou, amounting to 2,720 lb of food in 2014 (Table 3-11). Only 27% of the households participated in caribou hunting, and fewer than one-half of those were successful (12%). In all, 31% of households reported using caribou. Survey respondents noted that caribou were not particularly abundant in 2014⁹. Caribou were taken primarily in the winter months, when ground travel permits access to wintering groups near the community (Table 3-15). Caribou search areas were in the hills near town, primarily between Hughes Creek and the Hogatza River drainage (Figure 3-26).

Black bears ranked third in terms of harvest weight (1,569 lb; Table 3-11). However, in terms of use and participation, they can be considered far more central to the subsistence economy than caribou. Approximately one-half (54%) of Hughes households used black bear meat (Table 3-11). The harvest was conducted by 34% of the households. In all, Hughes hunters took approximately 16 black bears in 2014. Black bears also retain a ceremonial mystique, occupying a powerful position in the Koyukon spiritual world that Koyukon individuals are typically not comfortable discussing with nonlocals (Nelson 1983). Black bears were primarily taken in September while many hunters were actively searching for moose (Table 3-15). Thus, bear search areas depicted on Figure 3-26 are largely congruent with moose search areas along the Koyukuk River corridor. An estimated 3 black bears were taken in the denning month of November in the hills east of Hughes (Table 3-15; Figure 3-26). Hunting black bears in their den was discussed by one respondent as a communal activity that takes place as soon as winter travel conditions allow, such as early November (KR3). More detailed information about black bear harvest and uses in this area, including customary and traditional denning practices, can be found elsewhere (Simon 2008).

Small Land Mammals/Furbearers

Hughes residents take small land mammals as much for fur as for food. Residents of the Koyukuk River have a long tradition of trapping furbearers for income and cultural uses (McFayden Clark 1974). Indeed, many Hughes residents reported skin sewing as a popular craft (Table 3-10). Small mammals also provide an important supplement to the local diet. As with other resources, researchers asked respondents if their households used or harvested specific species of small mammals. If they answered affirmatively, they were asked if the harvest was used for food, fur, or both. If the animal was not used for food, it was not included in the weight calculations.

In Hughes, 31% of households reported hunting for small land mammals or furbearers. Beaver was the only small mammal harvest that was reportedly consumed (Table 3-11). Of all households, 39% reported using the resource either as a source of food or for its fur. Beaver trapping is perhaps the most popular spring activity for Hughes residents. “Oh yeah, I used to like beaver trapping. My aunt’s husband, uh, he taught me how to skin it when I was young. And ever since then” (KR3). Hughes residents trapped or shot approximately 68 beavers in 2014. An estimated 54 were used for food, accounting for an edible weight of 804 lb (Table 3-11; Figure 3-27). The beaver harvest primarily occurs in the spring months, February through April (Table 3-16).

Other small mammals are fairly important in the subsistence diet of the Koyukuk River, though they were not documented in this survey for 2014. Snowshoe hares, whose population swings are well known to those that live in the “willow country,” provide an important source of meat throughout the year. However, only 4% of the households reported attempting to take them in 2014, and none were successful (Table 3-11). One respondent spoke of the importance of hares as they relate to the trapping ecology in the boreal forest (KR3). Another respondent, a skin sewer, noted that hare was preferable to other furs for socks and liner material because it dries fast. It was also readily available and easily attainable.

9. Researcher field notes.

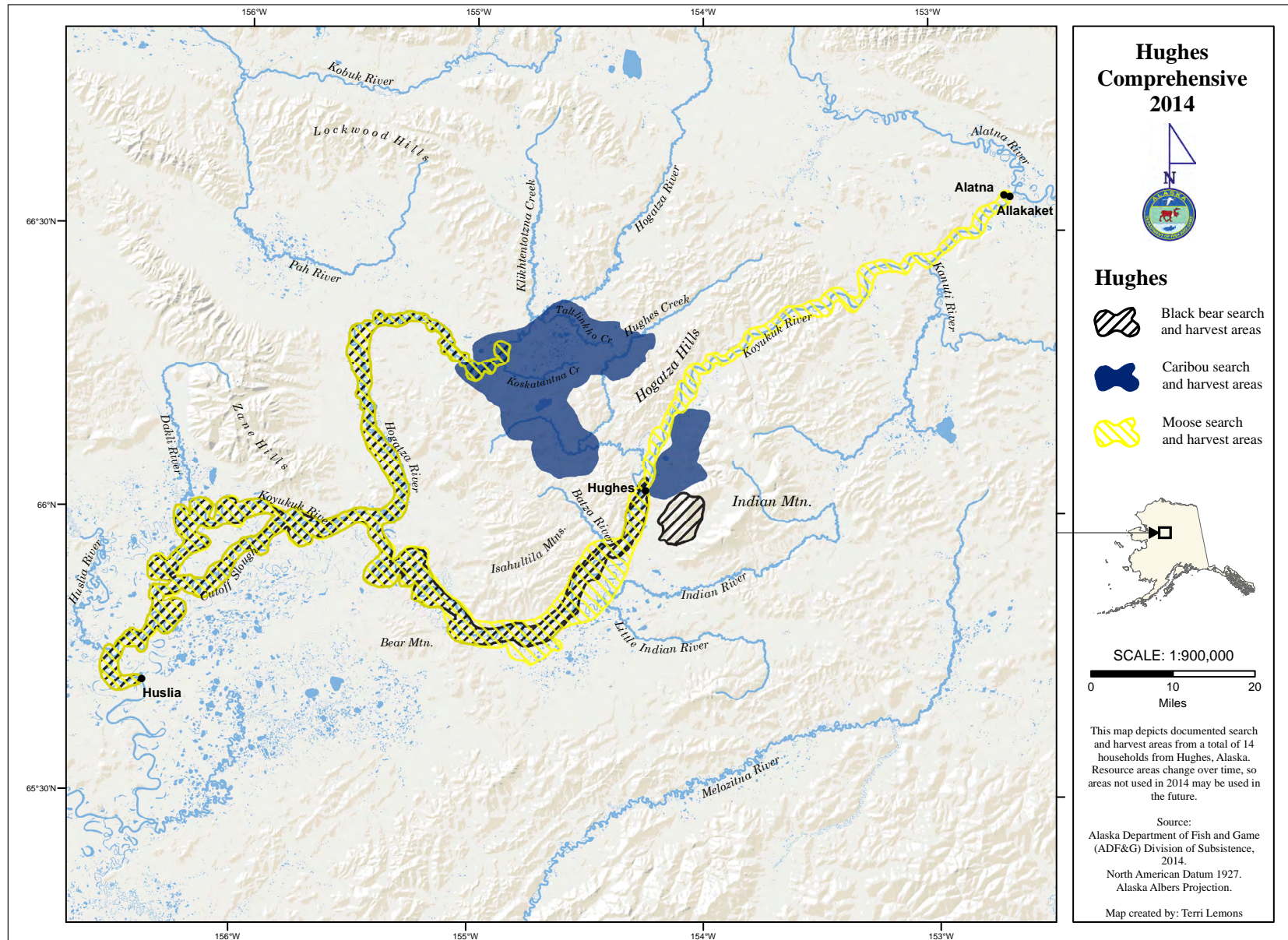


Figure 3-26.—Large land mammals hunting areas, Hughes, 2014.

Table 3-16.—Estimated small land mammal/furbearer harvests by month, Hughes, 2014.

Resource	Estimated harvest by month													Total	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk		
All small land mammals	23.5	10.5	47.1	39.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.8	0.0	128.2
Beaver	0.0	1.3	40.5	26.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	68.0
Coyote	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown foxes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Snowshoe hare	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.0	0.0
Lynx	5.2	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	5.2
Marten	14.4	6.5	6.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.2	0.0	32.7
Mink	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Muskrat	0.0	0.0	0.0	13.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.1
Porcupine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Weasel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gray wolf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wolverine	3.9	2.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	0.0	9.2

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

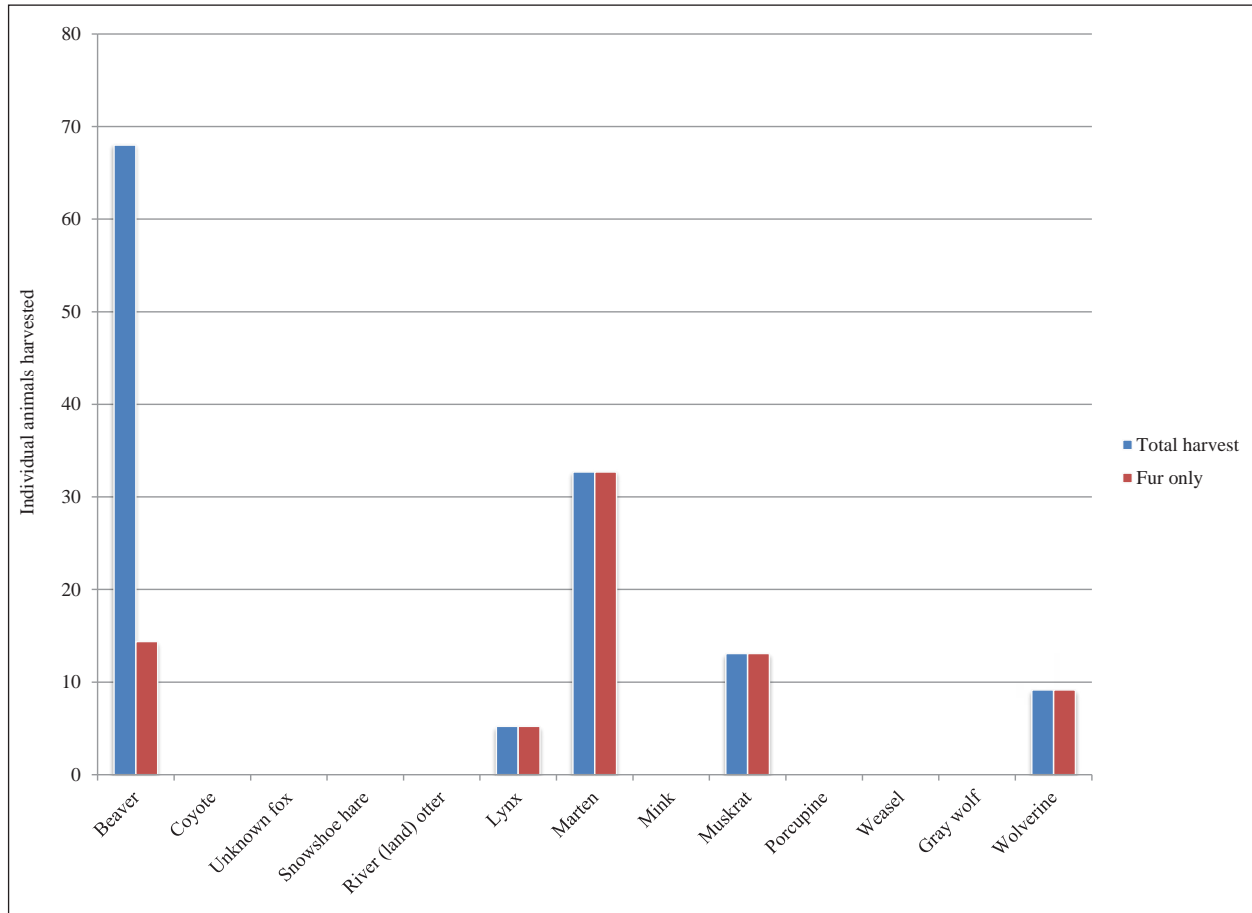


Figure 3-27.—Estimated small land mammal/furbearer harvests for fur and food only, Hughes, 2014.

Muskrats, a close kin to beavers in the Koyukon taxonomy (Nelson 1983), are often eaten, but the 13 animals taken in 2014 were used only for their pelts (Table 3-11). In former times, muskrat trapping was a central activity of spring camping. Muskrats were a source of meat, and their pelts would be sold alongside those of martens and wolverines. Respondents to this project only mentioned them in the past tense, when they would hunt them with their families as children (KR1). Their meat would be dried, as most meat was before the advent of freezers. No participants commented on the current abundance of muskrats around Hughes.

Martens are another staple in the trapping economy of Hughes. Twelve percent of households reported trapping 33 individual martens (Table 3-11). Wolverines (9) and lynxes (5) were also successfully taken by trappers from Hughes in 2014.

Areas used to harvest small land mammals are combined on Figure 3-28. Small land mammals were taken in the flats between Little Indian River and the Koyukuk River. Furbearers were trapped close to the community along Hughes Creek and in the Indian Mountains to the east.

Marine Mammals

Though not locally available, marine mammal resources are acquired from coastal areas through social trade networks. Nearly one-third of the community used marine mammals (Table 3-11). All households that used the resource category reported that they received it from elsewhere. Commonly-used resources were unknown whale (19% of households) and unknown seal (15%), likely in the form of whale blubber and seal oil.

Birds and Eggs

The Koyukon collective name for migratory birds is *saanh ggaagga*, or summer animals, and it is their vociferous arrival that punctuates the end of the long, quiet winter months. “For bird hunting. Geese used to sound so beautiful when they were coming in! Hear them landing on the lakes out there, just singing away. Even birds used sing really good” (KR 2).

Hughes households used both resident and migratory birds in 2014. Though migratory birds are a culturally important resource due to the spring arrival, no residents reported using bird eggs. Approximately 62% of households reported harvesting or receiving birds. Migratory waterfowl are typically harvested in the spring. They are notably a large source of fresh meat in a historically very lean time of the year. In 2014, approximately 93% of the migratory waterfowl were harvested in the spring (Table 3-17). “And then by that time the geese and ducks is coming in. That was our spring supply. And only way we used to prepare it is dry it” (KR2).

Geese were the largest harvest, if only for their sheer body size. For example, 29 white-fronted geese provided 122 lb of food, or 24% of the bird harvest (Table 3-11; Figure 3-29). Canada goose was the most widely used bird species (54%). Seventy-three individual Canada geese were harvested by 39% of households. Lastly, a number of species of ducks occupy the lakes and rivers in the middle Koyukuk River region. Hughes residents harvested a number of duck species, in particular black scoters (39 individual birds, or 39 lb), long-tailed ducks (28 or 41 lb), and mallards (21 or 41 lb).

Grouses are ever-present in the forests around Hughes and are actively taken by residents of all ages (Nelson 1983). In 2014, Hughes hunters took 122 spruce grouse (Table 3-11). Ptarmigans, also a resident bird, were harvested in fewer numbers (9 individuals). Grouses are primarily taken in the fall, when residents are out moose hunting and the meat is most palatable (Table 3-17).

Hunters searched for migratory waterfowl and grouses in their respective habitats. Ducks and geese were hunted along the Koyukuk River (Figure 3-30). Particular emphasis was given to Huggins Island, at the mouth of the Indian and Little Indian rivers. Ptarmigans and grouses were reportedly harvested only around the communities of Hughes and Huslia.

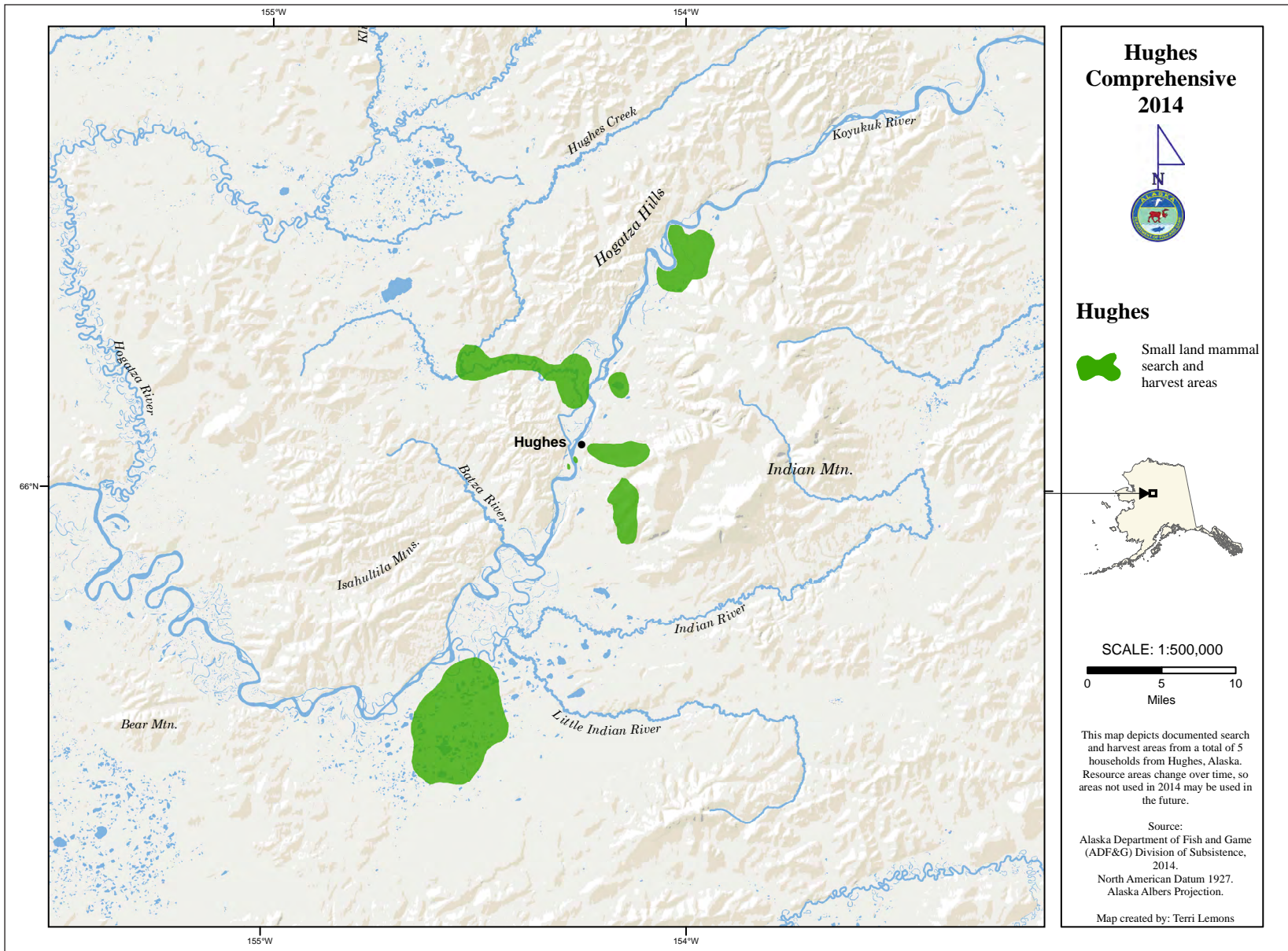


Figure 3-28.—Small land mammals hunting areas, Hughes, 2014.

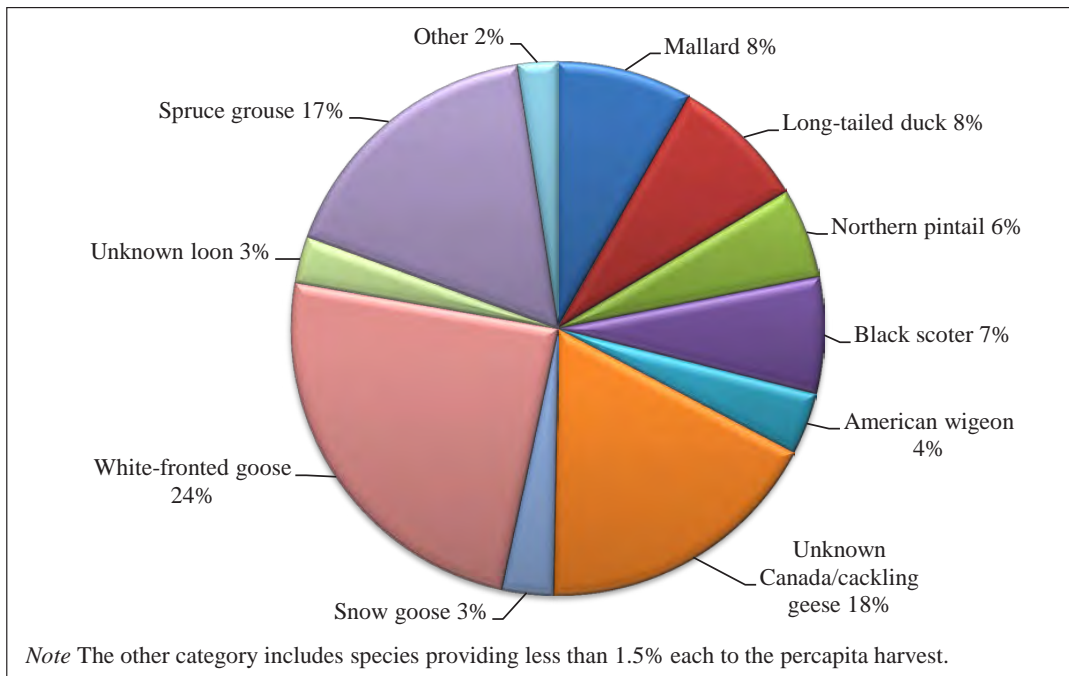


Figure 3-29.—Composition of bird and bird egg harvest by pounds usable weight, Hughes, 2014.

Table 3-17.—Estimated bird harvests by season, Hughes, 2014.

Resource	Estimated harvest by season					Total
	Spring	Summer	Fall	Winter	Season unknown	
All birds	222.3	0.0	140.3	6.5	0.0	369.1
Bufflehead	0.0	0.0	0.0	0.0	0.0	0.0
Unknown eiders	0.0	0.0	0.0	0.0	0.0	0.0
Unknown goldeneyes	0.0	0.0	0.0	0.0	0.0	0.0
Mallard	17.0	0.0	4.1	0.0	0.0	21.1
Long-tailed duck	27.5	0.0	0.0	0.0	0.0	27.5
Northern pintail	17.0	0.0	1.3	0.0	0.0	18.3
Black scoter	36.6	0.0	2.6	0.0	0.0	39.2
White-winged scoter	0.0	0.0	0.0	0.0	0.0	0.0
Unknown scoters	0.0	0.0	0.0	0.0	0.0	0.0
Northern shoveler	0.0	0.0	0.0	0.0	0.0	0.0
Unknown teals	7.8	0.0	0.0	0.0	0.0	7.8
American wigeon	13.1	0.0	1.3	0.0	0.0	14.4
Unknown ducks	1.3	0.0	0.0	0.0	0.0	1.3
Unknown Canada/cackling geese	68.0	0.0	5.4	0.0	0.0	73.4
Snow goose	3.9	0.0	0.0	0.0	0.0	3.9
White-fronted goose	27.5	0.0	1.3	0.0	0.0	28.8
Unknown swans	0.0	0.0	0.0	0.0	0.0	0.0
Unknown loons	2.6	0.0	0.0	0.0	0.0	2.6
Spruce grouse	0.0	0.0	116.4	5.2	0.0	121.6
Sharp-tailed grouse	0.0	0.0	0.0	0.0	0.0	0.0
Ruffed grouse	0.0	0.0	0.0	0.0	0.0	0.0
Unknown ptarmigans	0.0	0.0	7.8	1.3	0.0	9.2

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

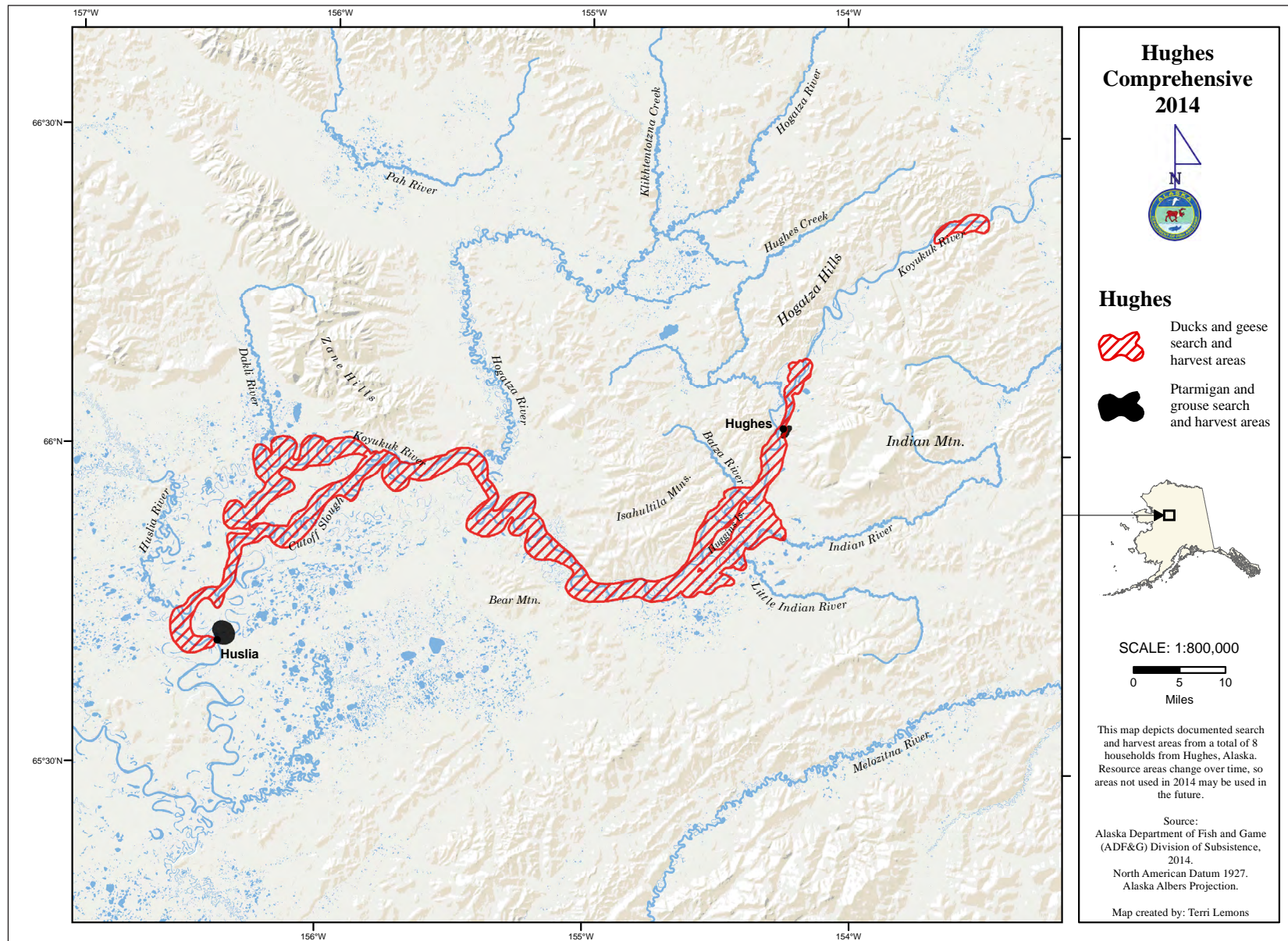


Figure 3-30.—Bird hunting and harvest areas, Hughes, 2014.

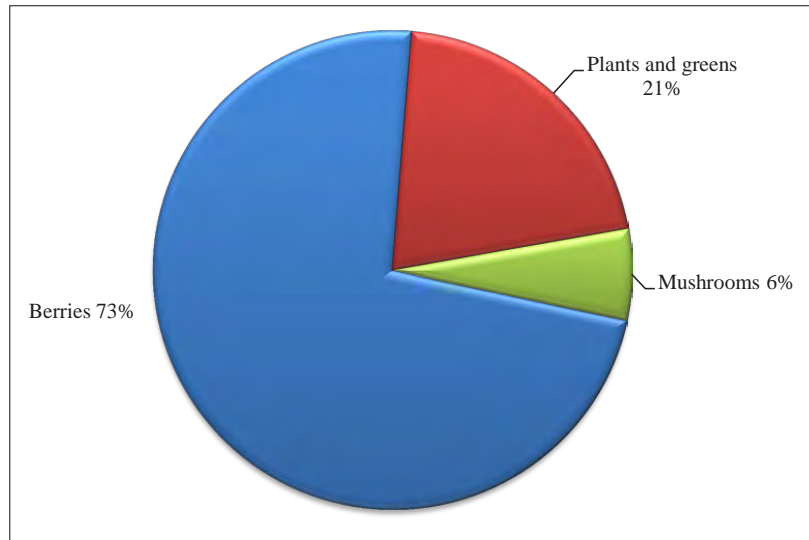


Figure 3-31.—Composition of vegetation harvest by type in pounds usable weight, Hughes, 2014.

Vegetation

Berries (*geega*) are a seasonal treat of the boreal forest, and are often harvested to be stored and used through the winter months. Berries accounted for nearly three-quarters of the vegetation harvest by weight (Figure 3-31). Almost one-half of the community (47% of households) reported using berries or other vegetation (Table 3-11).

In typical years, berries grow in enough density for families to harvest a large store. “A lot of blueberries, highbush berries, or cranberries. Fall time, we used to pick cranberries. We used to make big baskets in between birch trees, about that high off the ground. And about that high baskets. We stored ‘em in there” (KR2). However, in 2014 many households reported that they went looking for berries, but were unable to find them.

Only 15% of households reported harvesting blueberries, which amounted to approximately 18 gallons (Table 3-11). Many more households (54%) reported looking for blueberries. In all, only 35% of households used blueberries in 2014.

The largest vegetation harvest was chaga, the parasitic fungus that grows on the bark of birch trees (Ross [n.d.]). Approximately 4% of the respondents reported harvesting an estimated 26 gallons. (Table 3-11).

Berries and plants are harvested near transportation corridors, where residents can gain reasonably easy access during the summer (Figure 3-32). For residents of Hughes, harvest areas are located near the mainstem of the Koyukuk River and in the road-accessible hills to the southeast of the community.

Wood is commonly used for a number of activities and crafts, such as building sleds, construction, and processing fish. Trees also provide bark, roots, and sap, which all have a number of uses. Residents collect wood most often to heat their homes. This survey did not attempt to quantify the amount of wood taken, however it did ask about residents’ household heating practices. One-third of the households reported that they meet over half their heating needs with wood. (Table 3-18). Many (9%) said that they use only wood to heat their home.

Table 3-18.—Use of firewood for home heating, Hughes, 2014.

Average annual cost of home heating	Household use of wood for home heating as a percentage of total fuel for heating											
	0%		1%-25%		26%-50%		51%-75%		76%-99%		100%	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
\$2,048.17	0	0.0%	3	5.5%	6	10.9%	8	14.5%	4	7.3%	5	9.1%

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

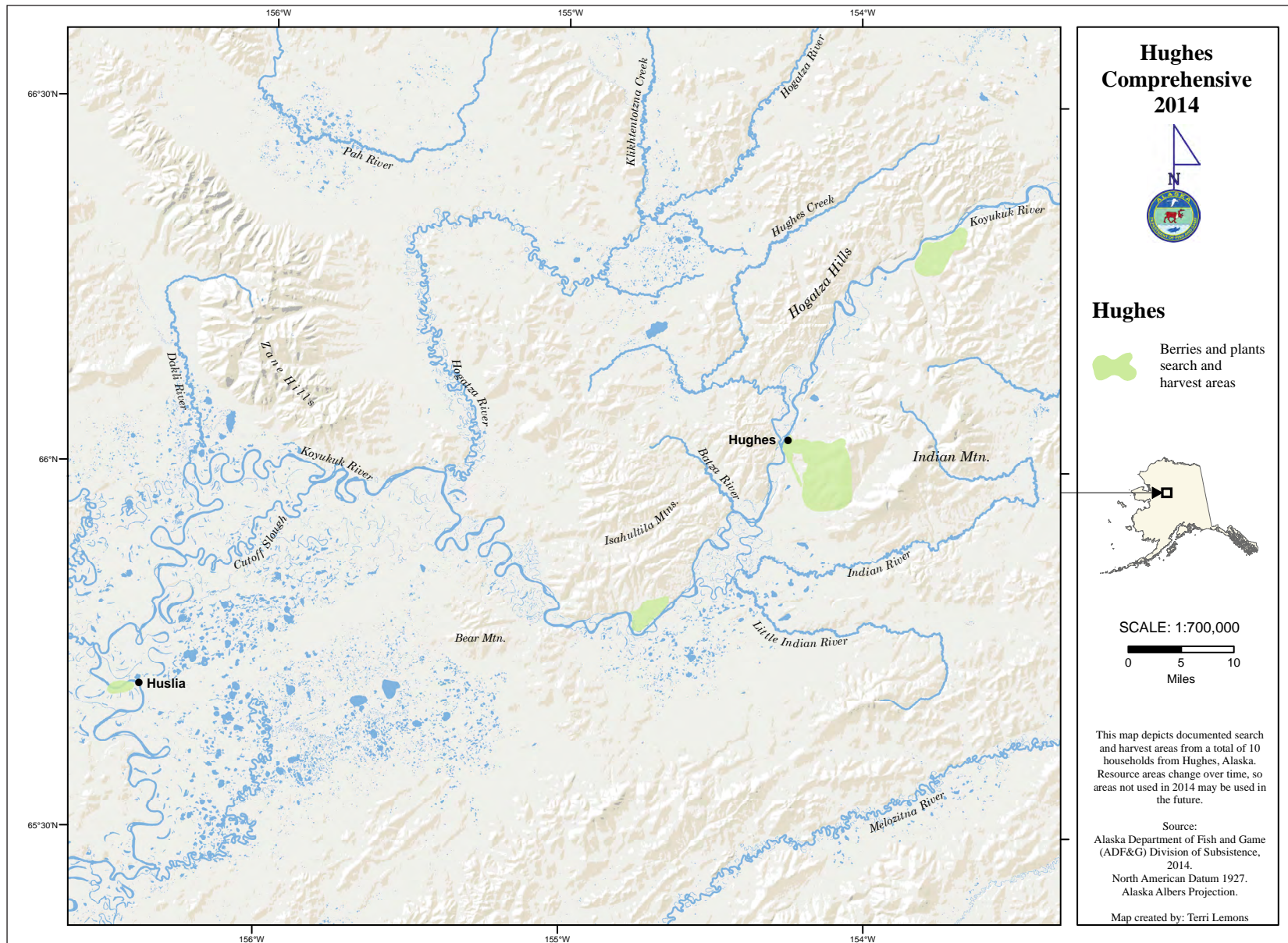


Figure 3-32.—Gathering and harvest areas of berries and greens, Hughes, 2014.

COMPARING HARVESTS AND USES IN 2014 WITH PREVIOUS YEARS

Harvest Assessments

Researchers asked respondents to assess their own harvests in 2 ways: whether they used more, less, or about the same amount of 8 resource categories in 2014 as in the past 5 years, and whether they got “enough” of each of the 8 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, Table 3-19, Figure 3-33, and Figure 3-34 provide a broad overview of households’ assessments of their harvests in 2014. Because not everyone uses all resource categories, some households did not respond to the assessment questions. Additionally, some households that do typically use a resource category simply did not answer questions.

Salmon was the most harvested of all subsistence resource categories in terms of harvest weight, though harvested by few Hughes households (Figure 3-13). Forty-six percent of households reported that they used less salmon than in recent years (Table 3-19; Figure 3-33). Hardly any households (4%) said that they used more, and 17% said that they used about the same amount of salmon as in recent years. The most common reason for using less was that the resource was generally less available in 2014 than in recent years (Table 3-20). Other households also said that they did not put in the effort to harvest salmon in 2014 because they were working. In all, 38% of Hughes households said that they did not get enough salmon (Figure 3-34). However, 27% of the households replied that they got enough. A fairly large percentage of households (38%) replied that they do not use the resource. When asked to evaluate the impact of not getting enough salmon, no households described it as not noticeable, 22% described the impact as minor, 33% explained that not getting enough salmon had a major effect on their household, and 1% stated that the impact was severe (Table 3-21). Very few households reported using more salmon in 2014 or gave reasons for using more salmon than previous years (Table 3-22).

More households used and harvested nonsalmon fish species (Figure 3-12), and they presented an overall more positive assessment of their 2014 harvest when compared to salmon. The most households (36%) said that they used the same amount of nonsalmon fish species as they had in other years (Figure 3-33). Of the 28% of households that reported using less, some reported that it was due to lack of effort, or that they were unsuccessful (Table 3-20). One-half of households said that they got enough of the resource to meet their needs in 2014, and only 19% said that they did not (Figure 3-34). Of those that did not, only 1 said that the lack of nonsalmon fish posed a severe impact to their households.

Every household provided an assessment of their use of large land mammals in 2014, indicating the widespread use of the category. One-half of the households reported using the same amount of large game, and 46% reported using less. The most common response for using less was unsuccessful hunting (Table 3-33). Reflecting the change in respondents’ use, respondents were equally divided on whether they got enough or not: 58% said that they got enough large land mammals in 2014 as compared to other years, whereas 42% said that they did not (Figure 3-34). Of those that did not get enough, approximately one-half (55%) said that it posed a major impact to their household (Table 3-21).

Households provided similar information for small game, marine mammals, birds, and vegetation. Detailed information is presented in the aforementioned tables. Perhaps the largest failure of 2014 was the berry crop: most households (62%) reported using less vegetation than in recent years, and 46% reported not getting enough (figures 3-33 and 3-34). Almost all explanations of the low harvest were related to factors such as not enough rain and the lack of availability (Table 3-20). On assessing the impact to their household, 42% said that the lack of vegetation posed a major impact, and 25% said that it was indeed severe (Table 3-21).

Table 3-19.—Changes in household uses of resources compared to recent years, Hughes, 2014.

Resource category	Sampled households	Valid responses ^a	Households reporting use									Households not using	
			Total households		Less		Same		More		Number	Percentage	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage			
All resources	26	26	26	100.0%	14	53.8%	9	34.6%	3	11.5%	0	0.0%	
Salmon	26	24	16	66.7%	11	45.8%	4	16.7%	1	4.2%	8	33.3%	
Nonsalmon fish	26	25	18	72.0%	7	28.0%	9	36.0%	2	8.0%	7	28.0%	
Large land mammals	26	26	26	100.0%	12	46.2%	13	50.0%	1	3.8%	0	0.0%	
Small land mammals	26	26	14	53.8%	6	23.1%	7	26.9%	1	3.8%	12	46.2%	
Marine mammals	26	25	7	28.0%	0	0.0%	3	12.0%	4	16.0%	18	72.0%	
Birds	26	25	19	76.0%	12	48.0%	6	24.0%	1	4.0%	6	24.0%	
Marine invertebrates	26	26	0	0.0%	0	0.0%	0	0.0%	0	0.0%	26	100.0%	
Vegetation	26	26	26	100.0%	16	61.5%	9	34.6%	1	3.8%	0	0.0%	

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

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

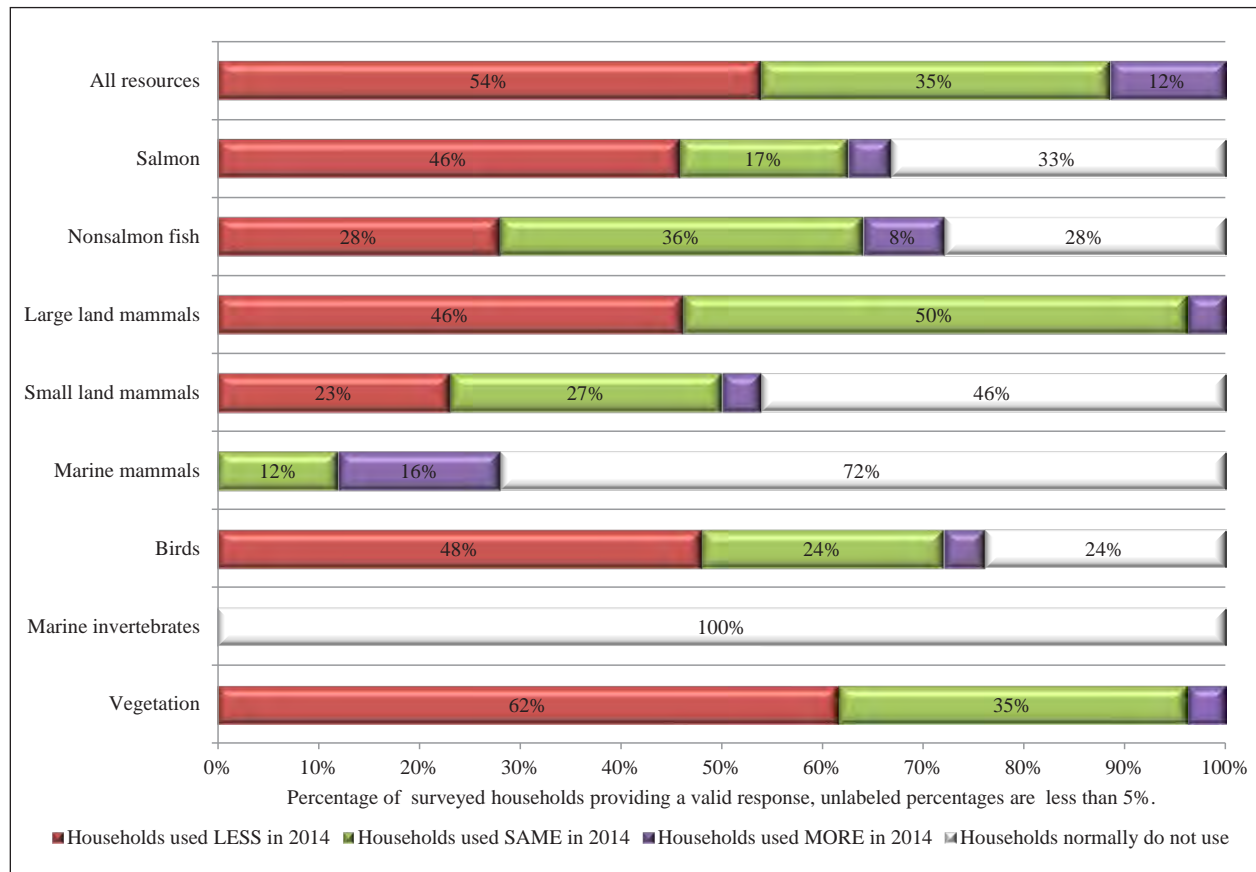


Figure 3-33.—Changes household uses of resources compared to recent years, Hughes, 2014.

Household assessments of all resources are shown on the top of figures 3-33 and 3-34. More than one-half (54%) reported using overall less subsistence resources in 2014 than in prior years (Figure 3-33). When asked why households used less, they provided many responses. For the most part, resources were less available (Table 3-20). The resources of which households said they needed more were chiefly moose (39%), berries (30%), and geese (23%; Table 3-23). This sentiment was likely driven by the poor harvests of berries and salmon, 2 key resources for Interior communities. Despite 54% of households indicating that they used less resources in 2014, the same proportion of households stated that they got enough to meet their needs (Figure 3-34).

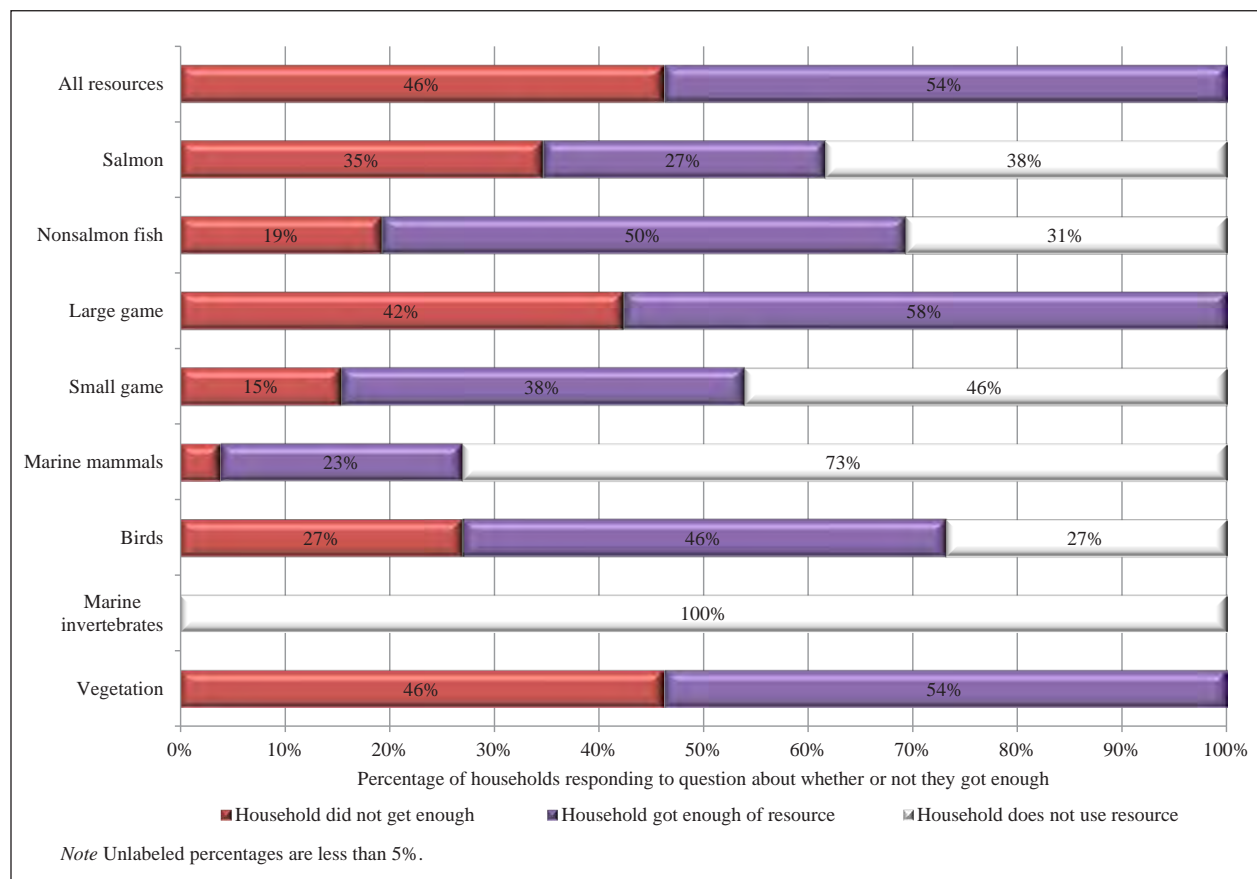


Figure 3-34.—Percentage of households reporting whether they got enough resources, Hughes, 2014.

Table 3-20.—Reasons for less household uses of resources compared to recent years, Hughes, 2014.

Resource category	Valid responses ^a	Households reporting reasons for less use	Family/ personal		Resources less available		Too far to travel		Lack of equipment		Less sharing		Lack of effort		Unsuccessful		Weather/ environment	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
All resources	26	13	1	7.7%	7	54%	0	0.0%	2	15%	0	0%	2	15%	0	0.0%	4	30.8%
Salmon	24	10	0	0.0%	5	50%	0	0.0%	0	0%	0	0%	2	20%	0	0.0%	0	0.0%
Nonsalmon fish	25	3	0	0.0%	0	0%	0	0.0%	0	0%	0	0%	2	67%	2	66.7%	0	0.0%
Large land mammals	26	12	1	8.3%	1	8%	0	0.0%	2	17%	0	0%	1	8%	4	33.3%	0	0.0%
Small land mammals	26	6	0	0.0%	1	17%	0	0.0%	3	50%	0	0%	0	0%	0	0.0%	1	16.7%
Marine mammals	25	0	0	0.0%	0	0%	0	0.0%	0	0%	0	0%	0	0%	0	0.0%	0	0.0%
Birds	25	10	0	0.0%	6	60%	0	0.0%	1	10%	0	0%	0	0%	1	10.0%	4	40.0%
Marine invertebrates	26	0	0	0.0%	0	0%	0	0.0%	0	0%	0	0%	0	0%	0	0.0%	0	0.0%
Vegetation	26	16	0	0.0%	12	75%	0	0.0%	1	6%	0	0%	0	0%	0	0.0%	4	25.0%

-continued-

Table 3-20.—Continued.

Resource category	Valid responses ^a	Households reporting reasons for less use	Other reasons		Working/ no time		Regulations		Small/ diseased animals		Did not get enough		Did not need		Equipment/ fuel expense		Used other resources	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
All resources	26	13	0	0%	1	7.7%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	2	15.4%	0	0.0%
Salmon	24	10	0	0%	2	20.0%	1	10.0%	0	0.0%	2	20.0%	0	0.0%	0	0.0%	0	0.0%
Nonsalmon fish	25	3	0	0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Large land mammals	26	12	1	8%	0	0.0%	0	0.0%	1	8.3%	0	0.0%	0	0.0%	1	8.3%	0	0.0%
Small land mammals	26	6	0	0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	16.7%	0	0.0%
Marine mammals	25	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	25	10	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	26	0	0	0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	26	16	0	0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	6.3%	0	0.0%	0	0.0%

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

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

Table 3-21.—Reported impact to households reporting that they did not get enough of a type of resource, Hughes, 2014.

Resource category	Sample households	Households not getting enough _____.				Impact to those not getting enough _____.									
		Valid responses ^a		Did not get enough		No response		Not noticeable		Minor		Major		Severe	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
All resources	26	26	100.0%	11	42.3%	4	36.4%	0	0.0%	0	0.0%	3	27.3%	4	36.4%
Salmon	26	16	61.5%	9	56.3%	3	33.3%	0	0.0%	2	22.2%	3	33.3%	1	11.1%
Nonsalmon fish	26	18	69.2%	5	27.8%	1	20.0%	0	0.0%	2	40.0%	1	20.0%	1	20.0%
Large game	26	26	100.0%	11	42.3%	1	9.1%	0	0.0%	4	36.4%	6	54.5%	0	0.0%
Small game	26	14	53.8%	4	28.6%	0	0.0%	1	25.0%	2	50.0%	1	25.0%	0	0.0%
Marine mammals	26	7	26.9%	1	14.3%	0	0.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%
Birds	26	19	73.1%	7	36.8%	1	14.3%	0	0.0%	3	42.9%	2	28.6%	1	14.3%
Marine invertebrates	26	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	26	26	100.0%	12	46.2%	0	0.0%	1	8.3%	3	25.0%	5	41.7%	3	25.0%

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

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

Table 3-22.—Reasons for more household uses of resources compared to recent years, Hughes, 2014.

Resource category	Valid responses ^a	Households reporting reasons for more use	Increased availability		Used other resources		Favorable weather		Received more		Needed more		Increased effort		Had more help	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
All resources	26	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	50.0%	1	50.0%
Salmon	24	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Nonsalmon fish	25	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	50.0%
Large land mammals	26	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%	0	0.0%
Small land mammals	26	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	25	4	0	0.0%	0	0.0%	0	0.0%	0	0.0%	4	100.0%	0	0.0%	0	0.0%
Birds	25	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	26	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	26	1	0	0.0%	1	100.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%	0	0.0%

-continued-

Table 3-22.—Continued.

Resource category	Valid responses ^a	Households reporting reasons for more use	Other		Regulations		Traveled farther		More success		Needed less		Store-bought expense		Got/ fixed equipment	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
All resources	26	2	0	0.0%	0	0.0%	0	0.0%	1	50.0%	0	0.0%	0	0.0%	0	0.0%
Salmon	24	1	1	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Nonsalmon fish	25	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Large land mammals	26	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	26	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	25	4	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Birds	25	1	0	0.0%	1	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	26	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	26	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

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

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

Table 3-23.—Resources of which households reported needing more, Hughes, 2014.

Resource	Number of households	Percentage of households
All resources	2	7.7%
Fish	3	11.5%
Salmon	3	11.5%
Chum salmon	1	3.8%
Coho salmon	1	3.8%
Chinook salmon	1	3.8%
Nonsalmon fish	2	7.7%
Arctic grayling	1	3.8%
Sheefish	1	3.8%
Caribou	4	15.4%
Moose	10	38.5%
Beaver	4	15.4%
Marten	1	3.8%
Muskrat	1	3.8%
Gray wolf	1	3.8%
Unknown seal oil	1	3.8%
Whale	1	3.8%
Birds and eggs	1	3.8%
Ducks	1	3.8%
Geese	6	23.1%
Grouse	1	3.8%
Ptarmigan	1	3.8%
Berries	8	30.8%
Blueberry	5	19.2%
Cloudberry	1	3.8%
Wood	1	3.8%
Unknown	8	30.8%

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

4. DISCUSSION AND CONCLUSIONS

COMPARISON OF CURRENT AND HISTORICAL HARVEST DATA

Prior harvest studies conducted in Hughes are outlined in the Introduction chapter. This section will take a closer look at the results from prior studies and compare them to this study. For most categories, only 2 data points are available, which is not enough to establish a trend in harvests over time.

Marcotte and Haynes (1985) surveyed 86% (19 of 22 households) of the population of Hughes for study year 1982 in a study sponsored by the National Park Service. The current study used largely the same methods as Marcotte and Haynes (1985). The 1985 report documented that the community harvested 141,689 lb of wild food, or about 1,492 lb per person. This study found that the community harvested 32,448 lb of wild food, or about 360 lb per person (Table 1-1). Aside from the dramatic decrease in harvest levels, perhaps the most striking change is in the composition of the total subsistence harvest, Figure 4-1 shows a comparison of the composition of per capita harvest by category. The greatest contribution in 1982 was from salmon. In 2014, residents harvested a greater proportion of large land mammals and nonsalmon fish species, a change that will be described in more detail below.

Fish

Marcotte and Haynes (1985) documented the regional harvest and use of salmon in 1982. That study shows a far larger salmon harvest in 1982 than in 2014. Among the 5 upper Koyukuk River communities included in the study, Hughes had the highest per capita harvest of all salmon species. Furthermore, Marcotte and Haynes (1985) showed that approximately 70% of households harvested salmon in 1982. This study found that 19% of the surveyed households harvested salmon.

The reduced harvest and participation in the salmon fishery is partially explained by the changing role of dog teams in communities in the Yukon River drainage. Snowmachines replaced the family dog team by 1970s, though as discussed above, mushing remains a strong component of rural identity. Most households

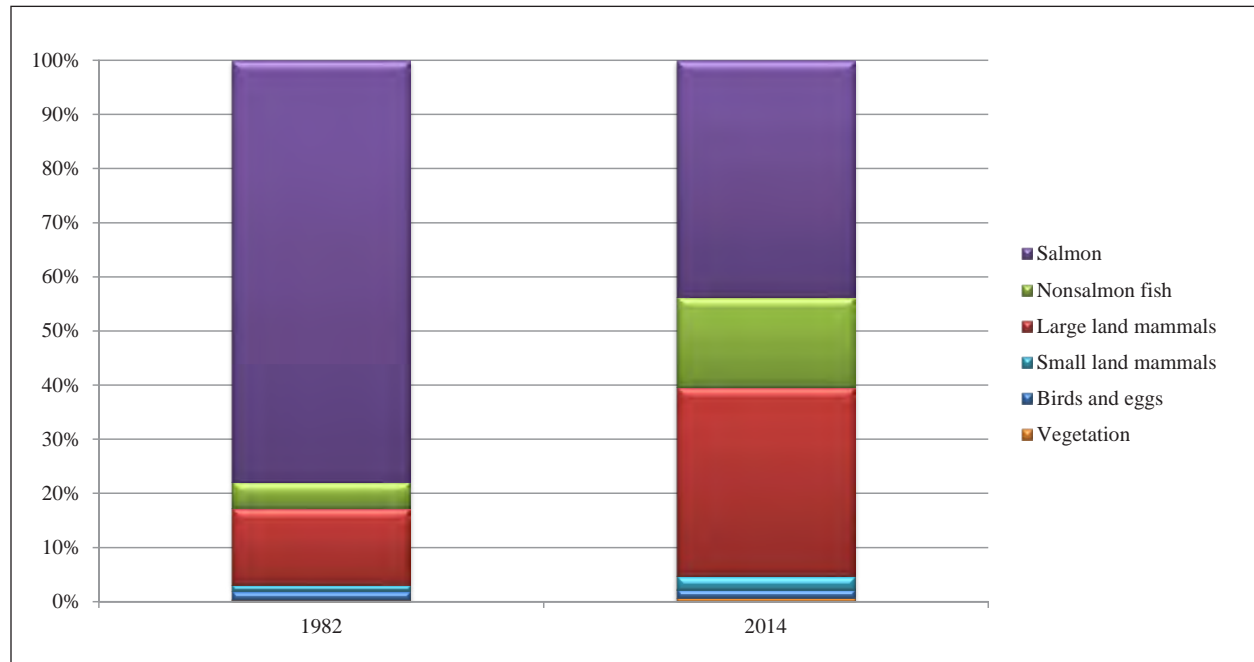


Figure 4-1.—Composition of harvest by pounds per capita, Hughes, 1982 and 2014.

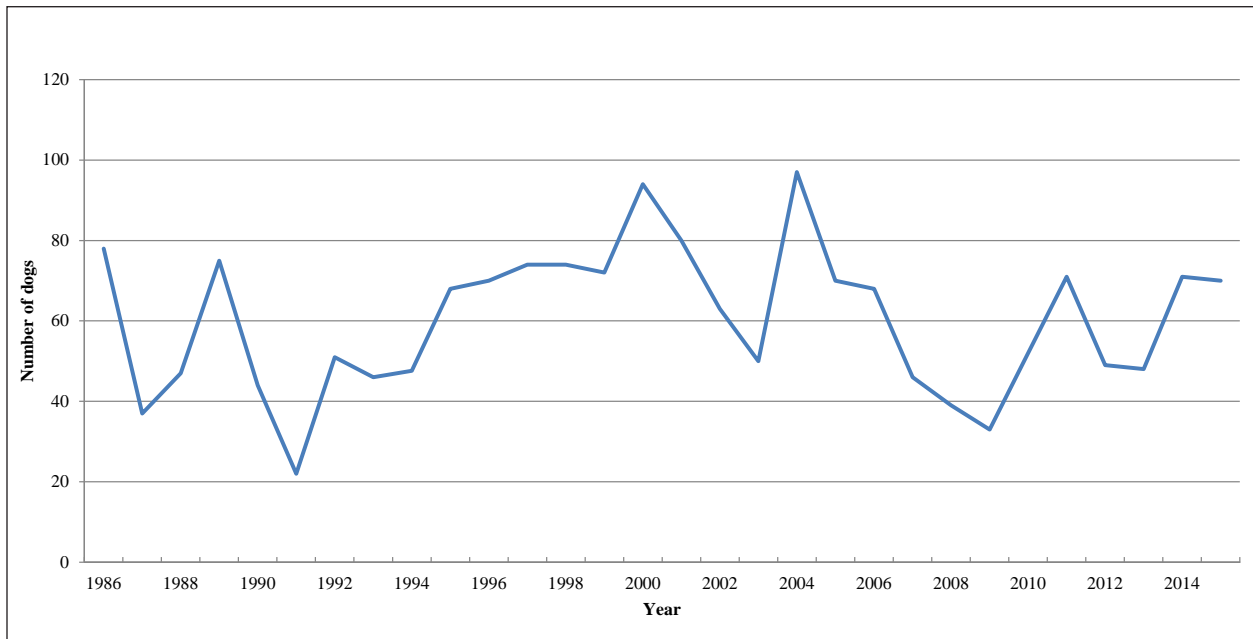


Figure 4-2.—Number of dogs owned by households in Hughes, 1986–2015.

in Hughes keep pet dogs, and there is 1 moderately-sized dog lot. Neither this study or Marcotte and Haynes (1985), documented the amount of salmon caught exclusively for dogs. Though the ADF&G Division of Commercial Fisheries postseason survey found that the number of dogs in the Yukon River drainage has increased by 40% since 1970, Andersen and Scott (2010) found that the number of dogs in active mushing teams has decreased by 50%. Additionally, they found that large sprint teams eat less salmon as a portion of their diet than do small teams. Figure 4-2 shows the number of dogs reported by Hughes households to the annual postseason subsistence salmon harvest survey. During this study, researchers noted that all species of fish, both salmon and nonsalmon species, were used for dog food. In general terms, most of the salmon harvest reported was used likely used for dog food, and only some of the nonsalmon fish harvested were used for dog food.

ADF&G Division of Commercial Fisheries has conducted salmon harvest surveys along the Yukon River after the summer fishing season in most years since 1960. Figure 4-3 shows the annual harvest of summer chum and Chinook salmon documented by this effort since 1990. Summer chum salmon harvests averaged 1,422 fish and range from 334 to as many as 3,823 during the period from 1990 to 2014. This project’s estimate of 2,788 summer chum salmon harvested in 2014 is 108% greater than the 10-year average and exceeds the postseason harvest survey estimate (Table 3-11)¹. The reason for such a high estimate is likely due to species misidentification compounded by the difficulty of determining run timing of different pulses of salmon near spawning grounds. Chum salmon enter the Yukon River in discrete pulses. As they move up the river, the pulses become less distinct. In an upstream community like Hughes, fishers can not rely on run timing alone to distinguish between the summer and fall runs of chum salmon. A closer, household-level analysis of the 2 datasets, which had very similar samples, indicated that households reported different harvest values to the surveyors, which indicates recall bias. Respondents to this study generally reported fall chum salmon harvests as summer chum salmon, resulting in a much higher estimate of summer chum salmon and a very small fall chum salmon harvest.

Chinook salmon are harvested in small quantities because they are less abundant than chum salmon. Hughes fishers averaged 76 Chinook salmon each year since 1989 (Figure 4-3). This project’s estimate of 16 Chinook salmon is 46% below the 10-year average. The 2014 Chinook salmon run was the poorest on record, and the low return is mirrored in the low 2014 drainagewide harvest. Furthermore, the Board

1. D. Jallen, Fisheries Biologist, ADF&G Division of Commerical Fisheries, personal communication, October 3, 2016.

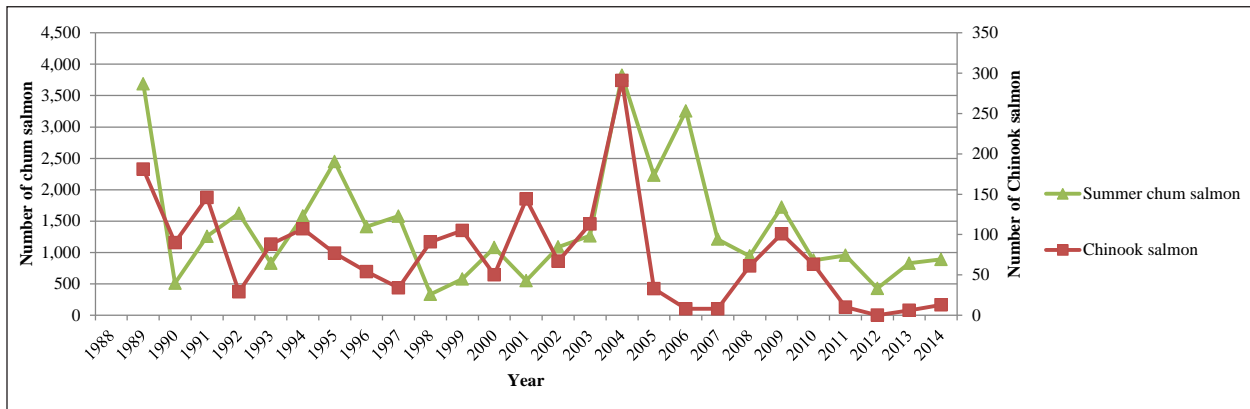


Figure 4-3.—Total harvests of summer chum and Chinook salmon, Hughes, 1989–2014.

of Fisheries has implemented regulatory changes during the most recent period of declined runs. These changes include reducing the maximum gillnet mesh size to 7.5 inches, requiring protection of the first pulse of Chinook salmon, and prohibiting the sale of incidentally-caught Chinook salmon during directed summer chum salmon commercial openers.

Restrictions on subsistence salmon fisheries in 1993, 1998, 2000–2002, and 2009 established because of low runs are evident in the lowered harvests seen in those years. 2014 was similarly restricted. The Koyukuk River was closed to subsistence salmon fishing from June 18 until July 2 in order to protect Alaska-bound Chinook salmon stocks and was restricted to 6-inch mesh gear thereafter (Estensen et al. 2015).

Marcotte and Haynes (1985) documented 2,226 lb of whitefishes taken in 1982 compared to 2,657 lb in this study (excluding sheefish; Table 3-11). In 2002, Andersen et al. documented a harvest of 23,802 lb of whitefishes (excluding sheefish). A comparison between 1982 and 2002 shows a significant increase in the harvest of all species of whitefish but smaller harvests of other species of fish, including salmon. Andersen’s explanation for this is that the declined salmon runs and associated restrictions that began in 2000 forced residents to substitute other species of fish for human consumption and dog food. Also, postseason harvest surveys indicate that there were 63 dogs in the community in 2002, though in the previous 2 years, there were between 80 and 90 dogs (Figure 4-2).

Although the 2002 whitefishes harvest was much larger than the current study, the composition of the harvests in 2002 and 2014 is similar (Figure 4-4). In 2002, over one-half of the harvest by number was least cisco (51% in 2002, 60% in 2014). The second largest harvest in both years was humpback whitefish (30% in 2002, 20% in 2014). In both years, broad whitefish composed 18% of the whitefishes harvest. Fishers do not necessarily count the number of whitefishes they catch by seining. Rather, they collect the fish in a holding container, such as a drum or tote, then estimate the number of totes and the ratio of species that they contain when queried by a researcher. The number of estimations leads to a greater likelihood of error.

Sheefish are members of the whitefish family, but are addressed separately by local residents. Figure 4-5 shows that per capita harvest of the species has declined from 27 lb per person to 9 lb per person. However, this appears to be the trend with Arctic grayling and northern pike as well; these are all species commonly caught on rod and reel from open water.

Nonsalmon fish harvests vary annually due to abundance, fishing effort, weather conditions, and the availability of other resources. Figure 4-5 shows the per capita harvests of sheefish and other nonsalmon fish species from the 3 different studies. As stated above, harvests of sheefish, Arctic grayling, and northern pike have consistently declined over the time periods represented by the 3 studies. Burbot were harvested in small quantities in 1982 and 2014. In 2002, Andersen et al. (2004) documented a harvest of 17 lb per person, because the community built a winter fish trap.

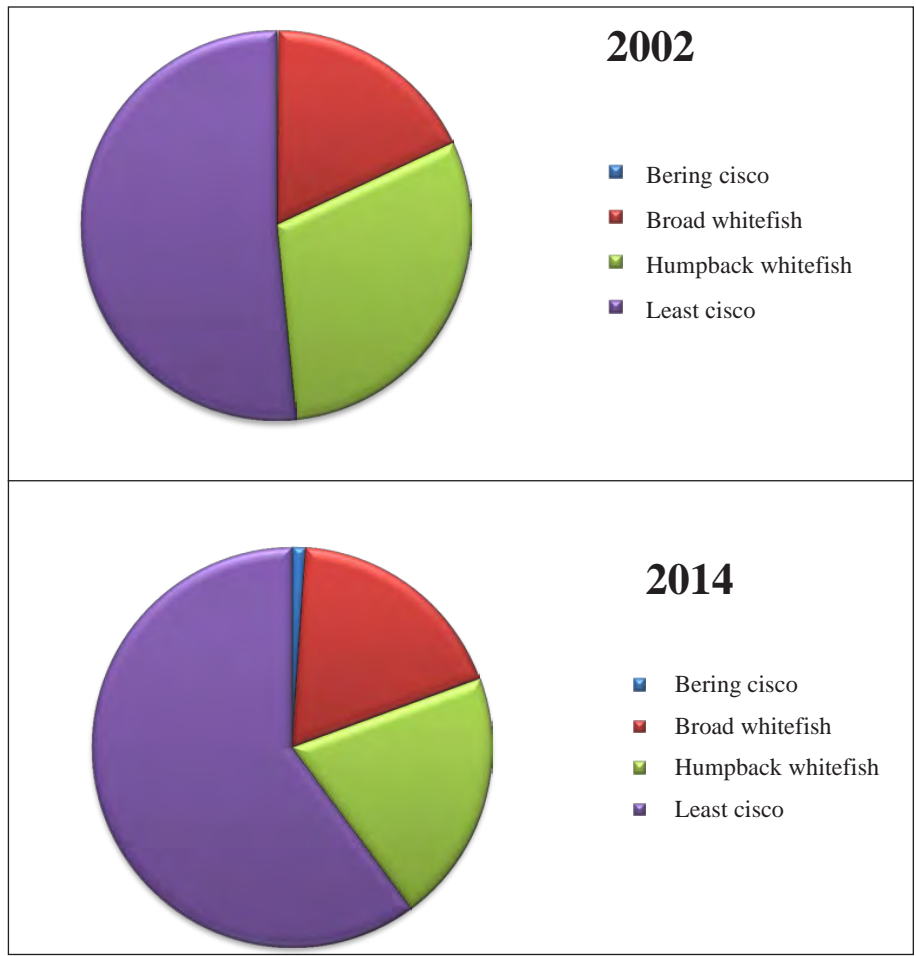


Figure 4-4.—Composition of whitefishes harvest by edible pounds, Hughes, 2002 and 2014.

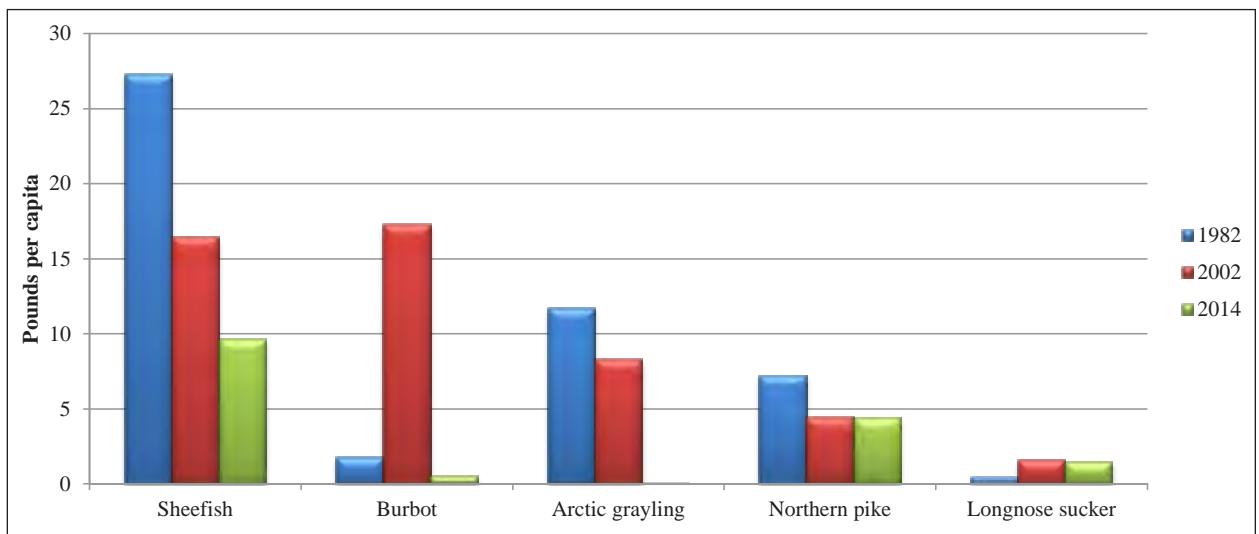


Figure 4-5.—Per capita harvests of nonsalmon fish, Hughes, 1982, 2002, and 2014.

Land Mammals

Past harvest surveys show that Hughes hunters harvest black bears and moose in consistent quantities on the community level, although there has been a decline in per capita harvests because of an increase in the human population of the community. As described above, harvest levels of these 2 species likely reflect animal availability and density, hunter effort, and cultural practice and preference. Hunters took a reported 22 moose in 1973 (Patterson 1974) and an estimated 38 moose in 1982². During 2014, the community harvested an estimated 13 moose (Table 3-11). Adjusting for human population increases, per capita estimates are 129 lb (1973), 202 lb (1982), and 78 lb per capita (this study). The moose population density in GMU 24C is notably less than the upriver area of GMU 24B (Stout 2014).

Hunters reported 17 black bears harvested in 1973 (Patterson 1974). Approximately one-half of the households (53%) harvested an estimated 17 black bears in 1982.³ Only 27% of community households harvested 16 black bears during 2014 (Table 3-11). This represents between 11 and 17 lb per capita.

Caribou are inconsistently available in the Koyukuk River basin, and harvest amounts are contingent on their availability and accessibility during winter months. Hence, caribou harvest numbers can vary greatly between years. For example, in 1973 hunters reported harvesting 218 caribou (Patterson 1974). In 1982 no respondents from Hughes reported hunting for caribou, noting that they were too scarce that year (Marcotte and Haynes 1985). In 2014, they harvested 21 caribou (Table 3-11).

Birds and Eggs

Past harvest surveys documented the harvest of birds and eggs. However, both Marcotte and Haynes (1985) and Patterson (1974) report the resource at the categorical level, so a direct comparison between species is not possible. However, comparisons can be made for the larger categories of ducks and geese. Hughes residents reported harvesting 360 individual ducks in 1973 (Patterson 1974), and they harvested an estimated 585 ducks in 1982⁴. In 2014, they harvested an estimated 130 ducks (Table 3-11). As for geese, Hughes residents reported a harvest of 200 geese in 1973; they harvested an estimated 264 geese in 1982 (Patterson 1974), but only 80 geese in 2014 (Table 3-11). Both harvest levels in the earlier studies were very consistent, ranging between 20 and 25 lb per capita. This study documented a harvest of 6 lb per capita. Marcotte and Haynes (1985) reported that 79% of the households reported harvesting ducks and 74% of the households harvested geese. This study documents that 50% of the households harvest migratory waterfowl (Table 3-11).

Additional bird harvest information is collected by the Alaska Migratory Bird Co-Management Council (AMBCC) harvest monitoring program, which is administered by ADF&G Division of Subsistence. The annual survey contacts a random selection of Alaska communities to document migratory bird harvests within specific areas of Alaska. The harvests are reported on a regional level only, and the methodology of the harvest monitoring program does not allow reporting by individual communities. Thus, AMBCC harvest figures are not directly comparable to this study. The most recent selection of Koyukuk River communities was in 2010 (Naves 2012). The Yukon-Koyukuk Subregion, which contained 12 communities, including Hughes, harvested an estimated 1,796 ducks, 1,982 geese, and 721 ptarmigans and grouses. The highest harvested species by number were Canada geese, greater white-fronted geese, mallards, and American wigeons, which is similar to the harvest by Hughes hunters in 2014.

Vegetation

Vegetation is not a management responsibility of ADF&G, but is documented in this and past studies because of its importance to local people and the overall subsistence way of life. In 1982, 84% of Hughes households reported harvesting berries, and 79% reported harvesting firewood (Marcotte and Haynes 1985).

2. Alaska Department of Fish and Game (ADF&G) Division of Subsistence, Juneau. "Community Subsistence Information System: CSIS." <https://www.adfg.alaska.gov/sb/CSIS>. Hereafter ADF&G CSIS.

3. ADF&G CSIS

4. ADF&G CSIS

The estimated community harvest was 133 gallons of berries and 124 cords of wood. The 2014 harvest was substantially less, totaling an estimated total of 13 gallons of berries (Table 3-11). This study did not attempt to quantify wood harvests because of methodological difficulties. As stated in the Harvest Assessments section, too much rain produced a poor berry crop in 2014.

COMPARISON OF CURRENT AND HISTORICAL HARVEST AREAS

Past studies have collected spatial harvest data for a number of purposes. Nelson et al. (1982), in his comprehensive study of Koyukon and Nunamiut subsistence lifeways, collected a substantial amount of spatial information, such as travel corridors, camps, and harvest locations. Nelson et al. (1982) and Yukon River Drainage Fisheries Association (YRDFA; 2008) also contain a large dataset of traditional Koyukon placenames. Descriptive in nature, traditional placenames often indirectly identify harvest sites as well as important habitat locations and travel corridors. Andersen et al. (2004) published detailed nonsalmon harvest sites that were collected to augment a traditional ecological knowledge study. The most comparable spatial dataset to this study is Marcotte and Haynes (1985), because it documents search areas for all resources collected in a 2-year calendar interval, January 1981 to December 1982.

Fish

As described above, the 4 documented salmon harvest sites in 2014 were along the mainstem Koyukuk River near Hughes (Figure 3-21). Marcotte documents salmon fishing sites taking place along the mainstem of the Koyukuk River no farther than 10 miles upstream or downstream of the community (Figure 4-6). YRDFA (2008) documented 2 local placenames significant to salmon spawning and fishing within the scope of Hughes' use area. A small tributary upriver of Hughes, labeled "Fish Creek" on USGS topographical maps (U.S. Geological Survey 2002), is called *Donok'ededeleh denh*, signifying "Place where fish customarily pile into annually." The next tributary upriver is *Neek'elehno*, or "Something [salmon] Stops [to spawn] River." Notes in brackets are added to clarify the name, which is presented as a riddle, a literary method used to convey the Koyukon world in speech (Nelson 1983).

Nonsalmon fishing harvest locations and associated placenames show a larger scope of land use than for salmon. Marcotte and Haynes (1985) and this study largely portray the same extent of nonsalmon fishing areas (figures 3-24 and 4-6). Whitefishes, northern pike, Arctic grayling, and burbot are taken along the mainstem river, a major migration route for all of these species, within 10 miles of the community. Andersen et al. (2004) records harvest locations in the tributaries and lakes near Hughes for Alaska blackfish, northern pike, and whitefish species.

In regards to nonsalmon fish, *Tleghelbaay Benkk'et* (Klaibaumunket Lake on USGS topographical maps [U.S. Geological Survey 2002]) upriver of Hughes signifies "Grayling Lake" (YRDA 2008). Near the mouth of the Hogatza River are *Taasiz Ghu Kkokk'a* ("Lake of big whitefish"), and *Dotson'Da'oyh Dinh* ("Place where Raven customarily sets his net;" Nelson et al. 1982). Lastly, the nearby Kanuti Flats has a plethora of nonsalmon-related placenames stemming from a long history of human occupation (YRDFA 2008). Although the documentation of placenames does not directly identify harvest locations during any given time period, it does suggest that those sites are known to residents of Hughes and associated with a specific resource.

Land Mammals

The broad and extensive search areas for large animals are a pointed contrast to the focused harvest locations of fish species. Hunters use river corridors to access hunting areas, and to chance an encounter with moose feeding along the riparian corridor. Marcotte and Haynes (1985) documented moose hunting areas that are generally more confined than those identified in this study (figures 3-26 and 4-7). In 1981–1982, hunters primarily used the mainstem of the Koyukuk River between the mouths of the Hogatza River and the Kanuti River. Similarly, Nelson et al. (1982) documented moose harvest locations adjacent to the Koyukuk River. Respondents did not specifically say why they extended their search areas to neighboring communities, but it was likely because they combined moose hunting with social trips to Huslia and Allakaket.

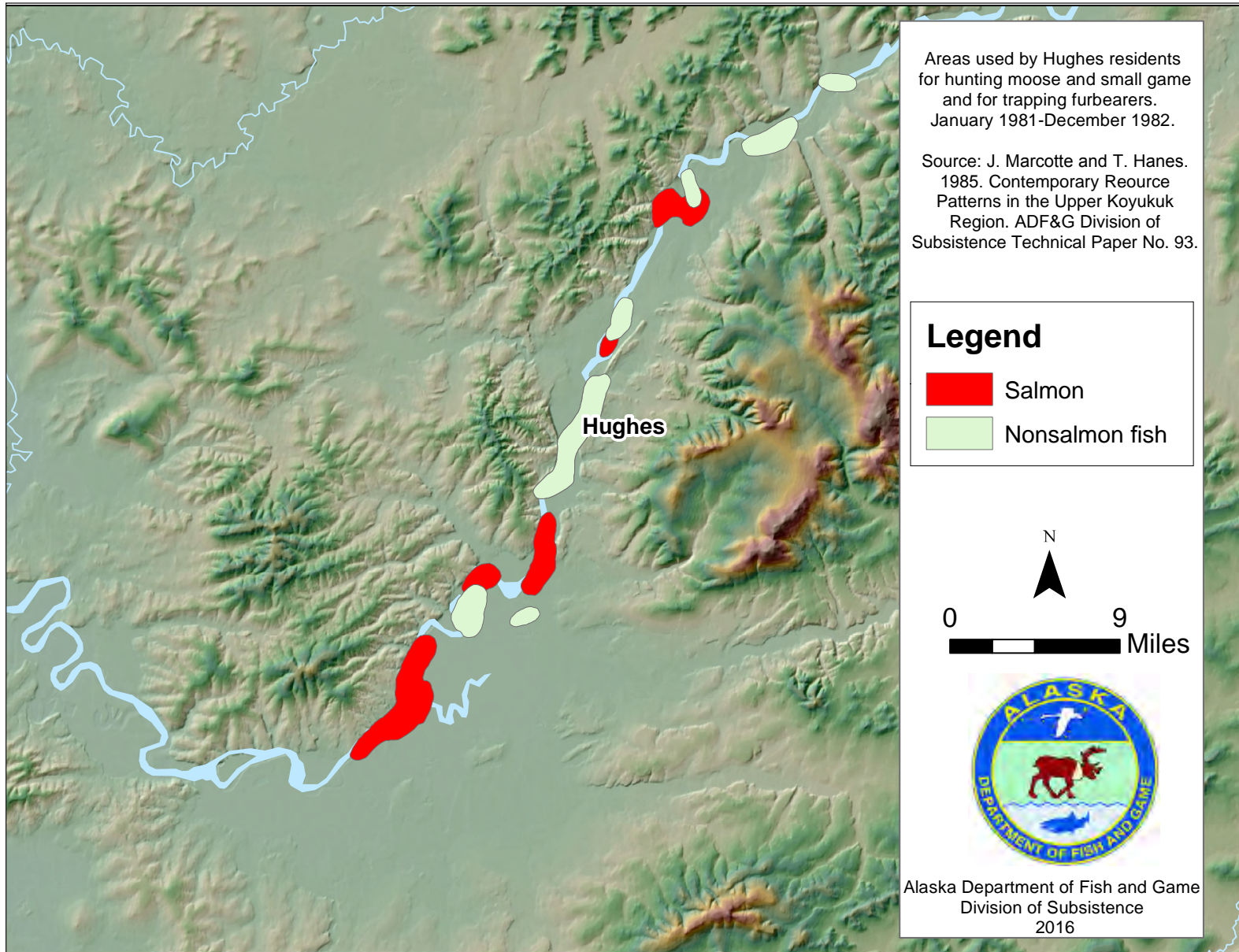


Figure 4-6.—Salmon and nonsalmon fish harvest areas, Hughes, 1981–1982.

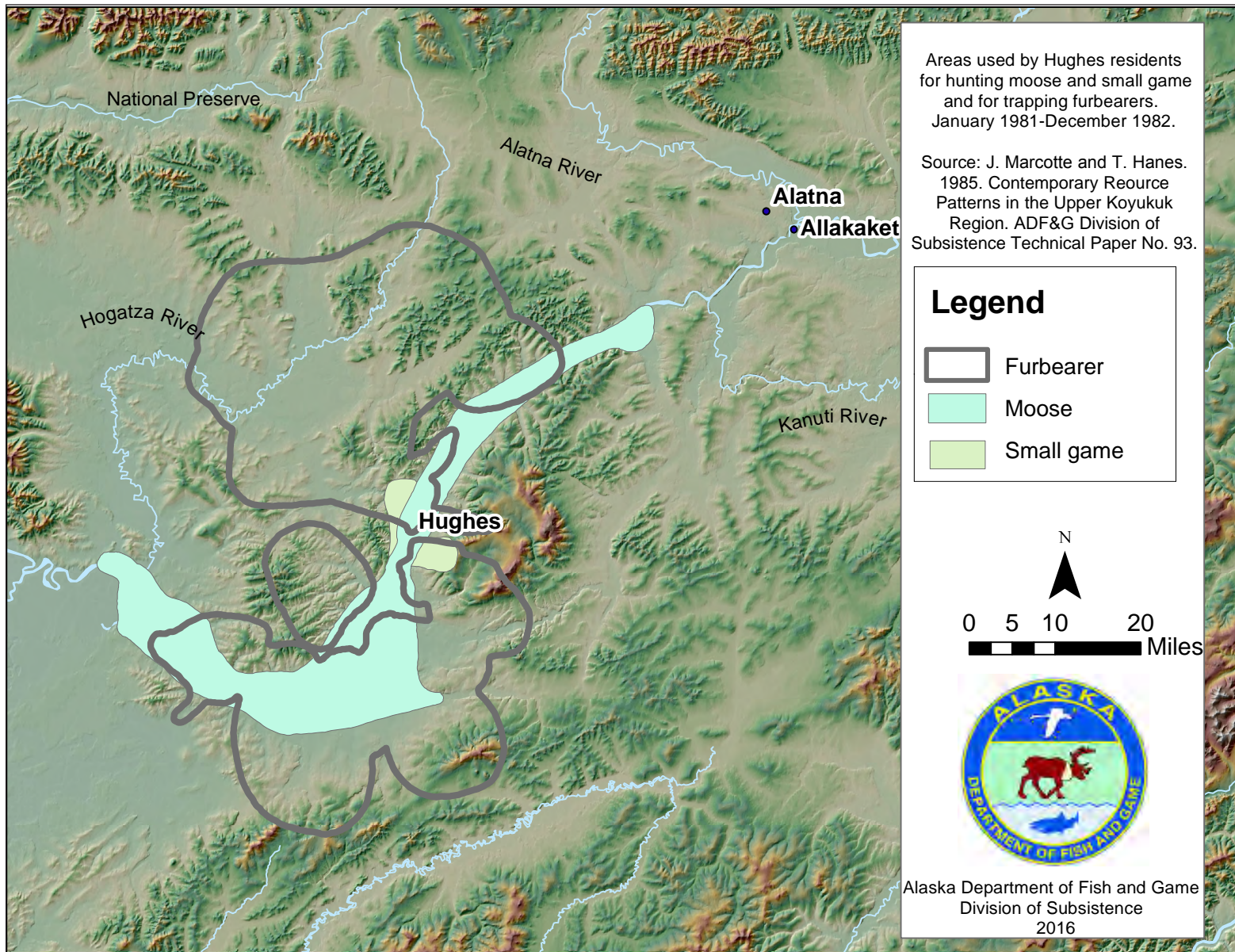


Figure 4-7.—Land mammals harvest areas, Hughes, 1981–1982.

The only historical documentation of harvest locations for large mammals other than moose is in Nelson et al. (1982). The report documents harvest areas for black bears along the river corridor, congruent with moose harvest areas, and in the Indian Mountain hills east and north of the community.

Caribou harvest locations are also very similar to those documented in this study (Nelson et al. 1982). Caribou were taken in the Indian Mountain hills and in the hills west of the community.

Placenames documented in YRDFA (2008) and Nelson et al. (1982) are more specific to fish populations than to mammals. However, many names are descriptive of habitat features that a typical Koyukon hunter knowledgeable of large mammal behavior could identify as favorable to hunting. For example, *KK'eeyh yeet* denotes "Birch Lake," a place where moose would feed (Nelson et al. 1982). *Bekk'e Nohok'eldeaaghee* signifies "[The hill] on which something [caribou] shed its antlers" (YRDFA 2008).

Birds and Eggs

No prior study has documented bird harvest areas.

Vegetation

Nelson (et al. 1982), Marcotte and Haynes (1985), and this study all document berry and plant harvests in the same locations (figures 3-29 and 4-8; Marcotte and Haynes 1985; Nelson et al. 1982). Nelson et al. (1982) depicts berry harvest areas primarily near habitation sites, such as fish camps or the community itself. The only berry-related place name is *Diniyh T'oh*, or Denikto Ridge, which signifies "Bearberry Place." Marcotte and Haynes (1985) documents berry picking and wood gathering along the mainstem of the river. Berry harvest polygons are near the community, and wood gathering locations range further. This study documented fewer berries and greens polygons, but each had a larger extent than the previous study, perhaps because 2014 was a poor berry year.

LOCAL COMMENTS AND CONCERNS

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

Salmon

Some Hughes residents commented on the availability of salmon in 2014 and the low fishing opportunity. Chum salmon migrate past Hughes beginning in mid-June, but some respondents stressed that the very first to pass are most suitable for human consumption. Fishing was closed early to conserve Alaska stocks of Chinook salmon on the Koyukuk River, inhibiting respondents from fishing for early chum salmon as well. During the community review, residents were anxious to know whether this report would take into account the effect that restrictions have had on their harvest of Chinook salmon. Respondents also noted that Chinook salmon have noticeably declined in run strength over the past decade. Furthermore, some respondents noted that the high costs of fishing generally limit their fishing to nearby locations.

Nonsalmon Fish

Very few concerns were raised regarding nonsalmon fish species. Most respondents emphasized the historical and contemporary importance of whitefish species to Hughes. Two respondents spoke at length about the communal aspect of fall seining. One respondent said that residents do not typically set nets under the ice, so fall seining is an important time to harvest a winter's supply of fish. One elderly respondent commented that sheefish do not seem as abundant as they were in the 1960s.

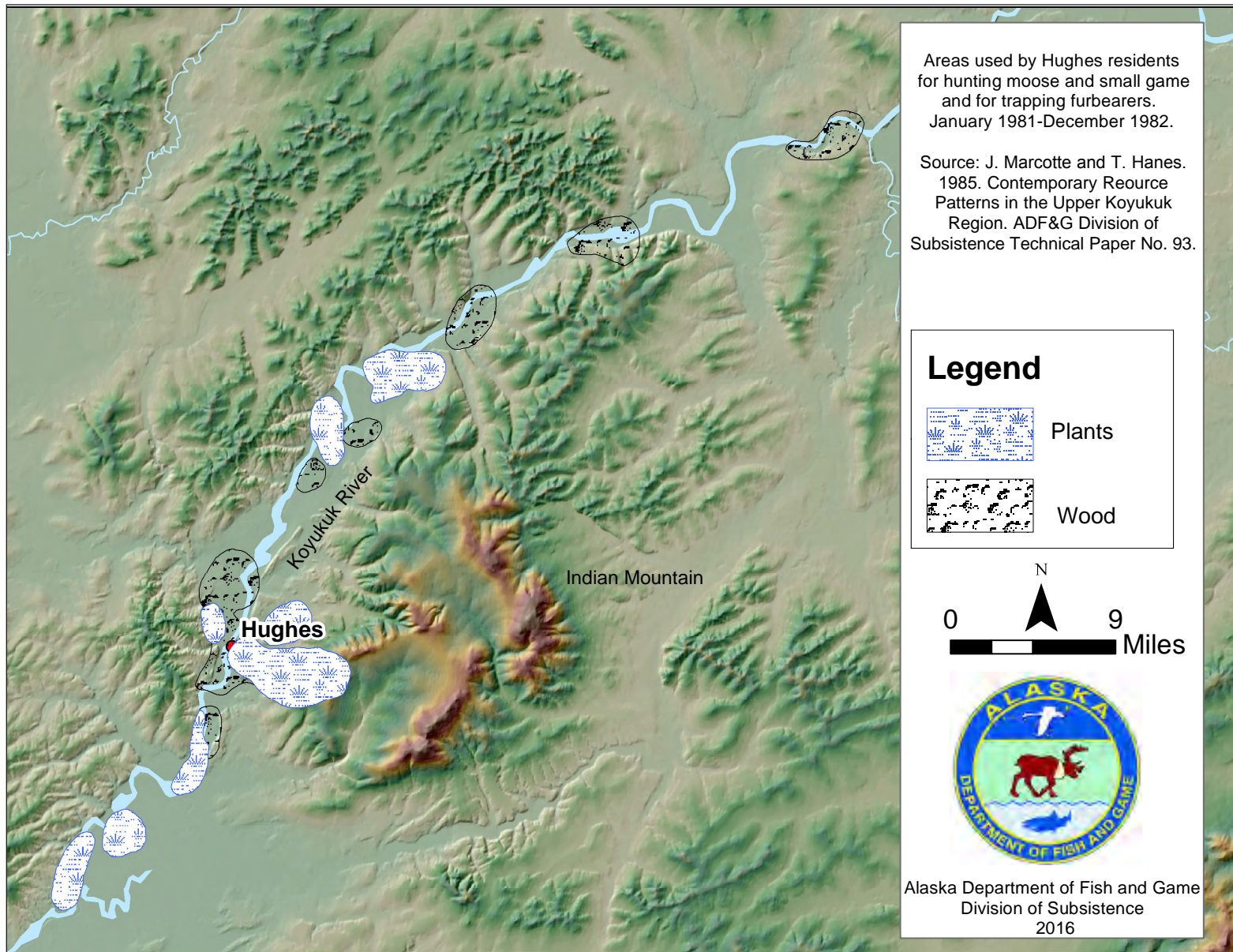


Figure 4-8.—Plants and wood harvest areas, Hughes, 1981–1982.

Land Mammals

Concerns regarding large land mammals mostly centered around moose, and they all followed 2 themes: moose abundance and hunter competition. Hunters commented that they have to travel farther than they used to to harvest moose. Now they travel as far as neighboring communities. The long travel comes at an associated increase in cost, about which many respondents commented, especially concerning the rise in fuel prices. Some households said that they spend well into the thousands of dollars on gas and oil for hunting. One hunter also commented that the moose population is rebounding upriver of the community, near Allakaket, due to predator control (i.e., intensive management). Hunters also noted that they are experiencing more competition for moose during hunting season in popular areas, such as the Hogatza River, but they did not specify with whom. A number of community members inquired about the effects of a warming climate and increased fire activity on moose, and asked if ADF&G is researching the topic.

Regarding ADF&G research, community members asked during the community review if the department still collars and tags animals for research studies. They pointed out that invasive research techniques likely change the habits of the animals being studied. They also wanted the department to know that collaring animals, viewed as assaulting them, is generally seen as *hutlanee*, or bad luck, in Koyukon culture. This principle applies to all living creatures in the boreal forest.

Respondents also talked about other large land mammals. One respondent said that caribou were generally more scarce during the winter than usual.

A number of survey respondents said that they refrained from harvesting black bears in 2014, even though they saw more than in previous years, because the bears were all too skinny. They explained that this was due to the wet summer producing a poor berry crop.

Small land mammals were an important topic of discussion. Several respondents said that they had not participated in trapping as much as in previous years, primarily due to the low price of fur and depressed numbers of prey species. A number of people commented that rabbits (hares) were noticeably absent around their community that year, but attributed it to their natural fluctuation. Other animals, they noted, have been absent for decades, and this could not be explained by natural cycles in the boreal forest. A number of middle-aged and elderly respondents noted that they have not seen a porcupine in decades. Porcupines are a valued resource for their meat and quills. Muskrat populations have also noticeably declined from what respondents recall in their youth.

Birds and Eggs

There were fewer comments regarding birds and eggs. One respondent noted that migratory waterfowl arrived late in 2014 due to the late arrival of spring. When they did arrive, he thought they were fewer in number. He attributed this to the drying up of ponds and lakes around Hughes. Lastly, many hunters noted that they had not seen ptarmigans in recent years.

Vegetation

By all measures, the berry crop was a failure in 2014. The lack of berries was evident in the harvest and use and assessments data above. Respondents attributed the poor crop to a late spring and a wet summer. Respondents added more context for the meaning of that failure in a subsistence economy. Many residents reported buying berries from other parts of Alaska. The lack of berries also had a noticeable effect on other resources. Hunters observed bears foraging along rivers during the fall rather than in berry patches. Bears were also noticeably skinnier. Additionally, one respondent linked the lack of grouse around the community to the poor berry crop.

CONCLUSIONS

This study documented the subsistence economy in Hughes, Alaska in all its complexity. Similar to prior studies, Hughes residents reaffirmed their reliance on nonsalmon fish species and land mammals in particular. However, as compared to previous studies, this study documented lower harvests of salmon and vegetation. Hughes residents stressed that numerous constraints on their community have led to changing harvests.

Hughes residents were both patient and conversant during the research, and they raised a number of concerns through all parts of this study. Key among them were western management regimes restricting harvest effort; invasive research methods that influence the behavior of key subsistence resources; the high cost of participating in subsistence activities, which limits harvesting effort or forces hunters to create cooperative harvest units; increasing competition during the fall hunting season; and the symptoms of a warming Arctic and the ill-understood effects on key subsistence species (Plate 4-1). These concerns illustrate the greater challenge of residents continuing to use the land to meet their needs in a manner compatible with Koyukon traditions in the face of a changing environment.

ACKNOWLEDGEMENTS

The author would like to thank the Hughes Village Council for approving this project as well as staff members who facilitated our stay in Hughes. Special consideration goes to Alfred Attla Jr. and Monica Williams for guiding us around the community. Anaa baase' to all the community members that took time to invite us into their houses and participate in the survey.



S. Wilson

Plate 4-1.—A southerly view of Hughes taken from the Koyukuk River in October, 2015. Note the large open lead of water adjacent to the community.

REFERENCES

- Aho, K.
1994. *Half of Allakaket found downriver*, Vol. XCII, No. 242 edition. Fairbanks Daily Newsminer.
- Alaska Department of Commerce, Community, and Economic Development (DCCED) Division of Community and Regional Affairs
2009. *Rural population report: the trends are changing*. Alaska Department of Commerce, Community, and Economic Development (DCCED): Anchorage.
- Alaska Department of Labor and Workforce Development, Research and Analysis Section
2016. *Methods for the Alaska Population Estimates (Vintage 2015)*. Alaska Department of Labor and Workforce Development, Research and Analysis Section: Juneau.
- Alaska Department of Transportation and Public Facilities
2014. *State of Alaska Capital Project Summary: Manley Hot Springs to Tanana Road Reference No. 50843*.
- Andersen, D.B. and C.L. Alexander
1992. *Subsistence hunting patterns and compliance with moose harvest reporting requirements in rural Interior Alaska*. Alaska Department of Fish and Game, Division of Subsistence Technical Paper No. 215: Juneau.
- Andersen, D.B., C.L. Brown, R.J. Walker, and K. Elkin
2004. *Traditional ecological knowledge and contemporary subsistence harvest of non-salmon fish in the Koyukuk River drainage, Alaska*. Alaska Department of Fish and Game, Division of Subsistence Technical Paper No. 282.
- Andersen, D.B. and C.L. Scott
2010. *An update on the use of subsistence-caught fish to feed sled dogs in the Yukon River drainage, Alaska*. U.S. Fish and Wildlife Service, Office of Subsistence Management, Fisheries Resource Monitoring Program.
- Andrews, E.F.
1977. *Report on the cultural resources of the Doyon region, Central Alaska*. Cooperative Park Studies Unit, University of Alaska: Fairbanks.
- Arundale, W.H. and E. Jones
1989. *Historic land use processes in Alaska's Koyukuk River area*. ARCTIC 42(2), pages 148–162.
- Beck, P.S.A., S.J. Goetz, M.C. Mack, H.D. Alexander, Y. Jin, J.T. Randerson, and M.M. Loranty
2011. *The impacts and implications of an intensifying fire regime on Alaskan boreal forest composition and albedo*. Global Change Biology 17(9), pages 2853–2866.
- Bickel, G., M. Nord, C. Price, W. Hamilton, and J. Cook
2000. *Guide to Measuring Household Food Security, Revised 2000*. U.S. Department of Agriculture, Food and Nutrition Service: Alexandria, VA.
- Braem, N.M., E.H. Mikow, S.J. Wilson, and M.L. Kostick
2015. *Wild food harvests in 3 upper Kobuk River communities: Ambler, Shungnak, and Kobuk, 2012–2013*. Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 402: Fairbanks.
- Brown, R.J., C. Brown, N.M. Braem, W.K. Carter III, N. Legere, and L. Slayton
2012. *Whitefish biology, distribution, and fisheries in the Yukon and Kuskokwim River drainages in Alaska: a synthesis of available information*. U.S. Fish and Wildlife Service: Fairbanks.
- Brown, W.E.
2007. *History of the central Brooks Range: gaunt beauty, tenuous life*. University of Alaska Press: Fairbanks.
- Charnley, S.
1984. *Human ecology of two central Kuskokwim communities: Chuathbaluk and Sleetmute*. Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 81: Juneau.

- Clark, D.W.
1981. "Prehistory of the Western Subarctic" [in] *Handbook of North American Indians*, 5: Subarctic. Smithsonian Institution Press: Washington D.C.
- Coleman-Jensen, A., M. Nord, M. Andrews, and S. Carlson
2012
Household food security in the United States, 2011. U.S. Department of Agriculture, Economic Research Service, Economic Research Report No. 141: Washington, DC.
- Dixon, E.J.
1985. *Cultural chronology of central Interior Alaska*. Arctic Anthropology 22(1), pages 47–66.
- Estensen, J.L., S.N. Schmidt, S. Garcia, C.M. Gleason, B.M. Borba, D.M. Jallen, A.J. Padilla, and K.M. Hilton
2015. *Annual management report Yukon area, 2014*. Alaska Department of Fish and Game Fishery Management Report No. 15-50: Anchorage.
- Hamilton, L.C., C.L. Seyfrit, and C. Bellinger
1997. *Environment and sex ratios among Alaska Natives: an historical perspective*. Population and Environment 18(3), pages 283–299.
- Holen, D., S.M. Hazell, and D.S. Koster
2012. *Subsistence harvests and uses of wild resources by communities in the eastern Interior of Alaska, 2011*. Alaska Department of Fish and Game, Division of Subsistence Technical Paper No. 372: Anchorage.
- Kari, P.R.
1983. *Land use and economy of Lime Village*. Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 80: n.p.
- Jallen, D.M., S.K.S. Decker, and T. Hamazaki
2015. *Subsistence and personal use salmon harvests in the Alaska portion of the Yukon River drainage, 2012*. Alaska Department of Fish and Game, Fishery Data Series No. 15-28: Anchorage.
- Kofinas, G.P., F.S. Chapin III, S. BurnSilver, J.I. Schmidt, N.L. Fresco, K. Kielland, S. Martin, A. Springsteen, and T.S. Rupp
2010. *Resilience of Athabaskan subsistence systems to interior Alaska's changing climate*. Canadian Journal of Forest Research 40, pages 1347–1359.
- Lonner, T.D.
1980. *Subsistence as an economic system in Alaska: theoretical and policy implications*. Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 67: Anchorage.
- Madison, C. and Y. Yarber
1980a. *Henry Beatus, Sr.: a biography, Alaska No. 3, Hughes*. Hancock House: Blaine, WA.

1980b. *Joe Beetus: a biography, Alaska No. 5, Hughes*. Hancock House: Blaine, WA.
- Magdanz, J.S.
1988. *Harvest and exchange of eulachon from the Chilkat and Chilkoot rivers, Alaska*. Alaska Department of Fish and Game Division of Subsistence, Special Publication No. SP1988-03: Juneau.
- Magdanz, J.S., S. Tahbone, A. Ahmasuk, D.S. Koster, and B.L. Davis
2007. *Customary trade and barter in fish in the Seward Peninsula Area, Alaska*. Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 328: Juneau.
- Magdanz, J.S., E. Trigg, A. Ahmasuk, P. Nanouk, D.S. Koster, and K. Kamletz
2009. *Patterns and trends in subsistence salmon harvests, Norton Sound-Port Clarence Area, Alaska, 1994–2003*. American Fisheries Society Symposium 70, pages 395–431.

- Magdanz, J.S. and R.J. Wolfe
1988. *The production and exchange of seal oil in Alaska*. Alaska Department of Fish and Game Division of Subsistence, Special Publication No. SP1988-001: Juneau.
- Marcotte, J.R. and T.L. Haynes
1985. *Contemporary resource use patterns in the upper Koyukuk region, Alaska*. Alaska Department of Fish and Game, Division of Subsistence.
- Martin, S., M. Killorin, and S. Colt
2008. *Fuel costs, migration, and community viability: final report*. University of Alaska Anchorage Institute of Social and Economic Research: Anchorage.
- McCloskey, S., E. Jones, S. Paskvan, C. Moncrieff, K. Bodony, R. Toohey, and B.M. Jones
2014. *Mapping traditional place names along the Koyukuk River—Koyukuk, Huslia, and Hughes, western Interior Alaska*.
- McFayden-Clark, A.
1974. *Koyukuk River culture*, 18th book in the Canadian Ethnology Service Mercury series. National Museums of Canada.
1981. "Koyukon" [in] W.C. Sturtevant and J. Helm, editors *Handbook of North American Indians*, 6: Subarctic. Smithsonian Institution Press: Washington, D.C.
- McFayden-Clark, A. and D.W. Clark
1976. "Koyukuk Indian-Kobuk Eskimo Interaction" [in] E.S. Hall, editor *Contributions to Anthropology: The Interior Peoples of Northern Alaska*. National Museums of Canada: Ottawa.
- Meyer, D.F.
1995. *Flooding in the middle Koyukuk River basin, Alaska, August 1994*. U.S. Geological Survey Water-Resources Investigations Report 95-4118: Anchorage.
- Moncrieff, C.F.
2007. *Traditional ecological knowledge of customary trade of subsistence harvested salmon on the Yukon River*, Final report to the Office of Subsistence Management, Fisheries Information Services, study 04-265. Yukon River Drainage Fisheries Association: Anchorage.
- Naves, L.C.
2012. *Alaska migratory bird subsistence harvest estimates, 2010, Alaska Migratory Bird Co-Management Council*. Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 376: Anchorage.
- Nelson, R.K.
1983. *Make Prayers to the Raven: A Koyukon View of the Northern Forest*. University of Chicago Press: Chicago.
- Nelson, R.K., K.H. Mautner, and G.R. Bane
1978. *Tracks in the wildland: a portrayal of Koyukon and Nunamiut Subsistence*. Anthropology and Historic Preservation, Cooperative Park Studies Unit, University of Alaska, Fairbanks: Fairbanks.
1982. *Tracks in the wildland: a portrayal of Koyukon and Nunamiut subsistence*. University of Alaska Fairbanks, Cooperative Park Studies Unit, Anthropology and Historic Preservation: Fairbanks.
- Orth, D.J.
1971 rep. [1967] *Dictionary of Alaska Place Names*. United States Government Printing Office.
- Patterson, A.
1974. *Subsistence harvests in five native regions: for the Joint Federal-State Land Use Planning Commission for Alaska*. Resource Planning Team: Anchorage.

- Pete, M.C.
1991. *Contemporary patterns of wild resource use by residents of Russian Mission, Alaska*. Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 127: Juneau.
- Potter, B.A.
2008. *Radiocarbon chronology of central Alaska: technological continuity and economic change*. Radiocarbon 50(2), pages 181–204.
- Ross, D.R.
[n.d.]. *Alaska plant profiles: conks/ shelf fungi*. Alaska Department of Natural Resources, Division of Agriculture: Palmer.
- Schmidt, J.I. and F.S. Chapin
2014. *Relationship of community characteristics to harvest reporting: comparative study of household surveys and harvest tickets in Alaska*. Human Dimensions of Wildlife 19(4), pages 334–346.
- Schroeder, R.F., D.B. Andersen, R. Bosworth, J.M. Morris, and J.M. Wright
1987. *Subsistence in Alaska: Arctic, Interior, Southcentral, Southwest, and Western regional summaries*. Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 150: Juneau.
- Simon, J.J.
2008. *Customary and traditional use worksheet, black bears, game management units 12, 19, 20, 21, and 24 (Interior Alaska)*. Alaska Department of Fish and Game Division of Subsistence, Special Publication No. BOG 2008-007: Fairbanks.
- Stickney, A.
1984. *Coastal ecology and wild resource use in the central Bering Sea area: Hooper Bay and Kwigillingok*. Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 85: n.p.
- Stout, G.W.
2014. “Unit 24 moose” [in] P. Harper and L.A. McCarthy, editors *Moose management report of survey and inventory activities 1 July 2011–30 June 2013*. Alaska Department of Fish and Game, Species Management Report ADF&G/DWC/SMR-2014-6: Juneau.
- U.S. Geological Survey
2002. *Surficial geologic map of the Hughes Quadrangle, Alaska, MF-2408*.
- U.S. Census Bureau
2014. *American Community Survey design and methodology (January 2014)*. U.S. Census Bureau: Washington D.C.
- Wolfe, R.J.
1987. *The super-household: specialization in subsistence economies*. Paper presented at the 14th annual meeting of the Alaska Anthropological Association, March 1987, Anchorage, Alaska. Alaska Department of Fish and Game Division of Subsistence: Juneau.
- Wolfe, R.J., C.L. Scott, W.E. Simeone, C.J. Utermohle, and M.C. Pete
2010. *The “super-household” in Alaska Native subsistence economies*. Final Report to the National Science Foundation, Project ARC 0352611.
- Wolfe, R.J., W.E. Simeone, C.J. Utermohle, M.C. Pete, and National Science Foundation
1993. *The sharing, distribution, and exchange of wild resources in Alaska: a compendium of materials presented to the Alaska Board of Fisheries*. Alaska Department of Fish and Game Division of Subsistence: Juneau.
- Wolken, J.M., T.N. Hollingsworth, T.S. Rupp, F.S. Chapin III, S.F. Trainor, T.M. Barrett, P.F. Sullivan, A.D. McGuire, E.S. Euskirchen, P.E. Hennon, et al.
2011. *Evidence and implications of recent and projected climate change in Alaska’s forest ecosystems*. Ecosphere 2(11), pages 1–35.
- Yukon River Drainage Fisheries Association
2008. *Middle Koyukuk River of Alaska: an atlas of fishing places and traditional place names*. : Anchorage.

APPENDIX A.—SURVEY INSTRUMENT

COMPREHENSIVE WILD FOOD HARVEST SURVEY

HUGHES, ALASKA

HUGHES
COMPREHENSIVE

From January 1, 2014 to December 31, 2014

OMB# 1024-0262
Expiration date: 04/30/2015

This survey is used to estimate wild food harvests and to describe rural community 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 wild food resources.

We will NOT identify your household. We will NOT use this information for enforcement. Participation in this survey is voluntary. Even if you agree to be surveyed, you may skip questions or stop at any time.

HOUSEHOLD ID:	_____	
COMMUNITY ID:	_____	
INTERVIEWER 1:	_____	
INTERVIEWER 2:	_____	
INTERVIEW DATE:	_____	
START TIME:	_____	
STOP TIME:	_____	
	DATA CODED BY:	_____
	DATA ENTERED BY:	_____
	SUPERVISOR:	_____



PAPERWORK REDUCTION ACT STATEMENT:

A federal agency may not conduct or sponsor, and a person is not required to respond to, a collection of information, unless a currently valid OMB control number is displayed. 16 U.S.C.1a-7 authorizes collection of this information. This information will be used by the National Park Service, the Federal Subsistence Management Program, and the Alaska Department of Fish and Game, Division of Subsistence to understand more about the communities eligible to engage in subsistence in Wrangell-St. Elias National Park and Preserve. Response to this request is voluntary. Your name will not appear anywhere on the completed survey and your responses will be completely anonymous. The public reporting burden for completing individual interviews is estimated to take 60 minutes. Please direct comments regarding any aspect of this collection to:

Marcy Okada, Gates of the Arctic National Park and Preserve. 4175 Geist Rd. Fairbanks, AK 99709. Marcy_Okada@NPS.gov

COOPERATING ORGANIZATIONS

**GATES OF THE ARCTIC
NATIONAL PARK AND PRESERVE**
4175 GEIST RD.
FAIRBANKS, AK 99709
907-822-5234

**ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF SUBSISTNCE**
1300 COLLEGE RD.
FAIRBANKS, AK 99701
907-328-6116

HUGHES VILLAGE
P.O. BOX 45029
HUGHES, AK 99745
907-778-2311

HOUSEHOLD MEMBERS	HOUSEHOLD ID XXXXXXXXXX
--------------------------	-------------------------------------------------------------------------------------

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, 2014 and December 31, 2014 WHO were the head or heads of your household?

Is this person answering questions on this survey?	How is this person related to HEAD 1?	Is this person MALE or FEMALE?	Is this person an ALASKA NATIVE?	In what YEAR was this person born?	Where were parents living when this person was born?	How many years has this person lived in Northway?	Highest level of education attained by this person?
ID #	(circle)	(relation)	(circle)	(circle)	(year)	(AK city or state)	(number) (number in years)
HEAD 1	Y N		M F	Y N			
1							
NEXT enter spouse or partner. If a household has a SINGLE HEAD, leave HEAD 2 row BLANK and move to PERSON 3.							
HEAD 2	Y N		M F	Y N			
2							
BELOW, enter children (oldest to youngest), grandchildren, grandparents, or anyone else living full-time in this household.							
PERSON 03	Y N		M F	Y N			
3							
PERSON 04	Y N		M F	Y N			
4							
PERSON 05	Y N		M F	Y N			
5							
PERSON 06	Y N		M F	Y N			
6							
PERSON 07	Y N		M F	Y N			
7							
PERSON 08	Y N		M F	Y N			
8							
PERSON 09	Y N		M F	Y N			
9							
PERSON 10	Y N		M F	Y N			
10							
PERSON 11	Y N		M F	Y N			
11							
PERSON 12	Y N		M F	Y N			
12							
PERSON 13	Y N		M F	Y N			
13							

HOUSEHOLD PARTICIPATION

To continue our questions about people in your household, I would like to ask a few questions about participation in harvesting wild foods...

Between January 1, 2014 and December 31, 2014

Did this person

PERSON ID# FROM PAGE 2 ID #	FISH		LARGE LAND MAMMALS		SMALL LAND MAMMALS/ FURBEARERS		BIRDS AND EGGS		PLANTS / BERRIES / WOOD	
	FISH FOR	PROCESS	HUNT / TRAP	PROCESS	HUNT / TRAP	PROCESS	HUNT / GATHER	PROCESS	GATHER	PROCESS
	(circle)	(circle)	(circle)	(circle)	(circle)	(circle)	(circle)	(circle)	(circle)	(circle)
HEAD 1	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
1										
HEAD 2	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
2										
PERSON 03	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
3										
PERSON 04	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
4										
PERSON 05	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
5										
PERSON 06	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
6										
PERSON 07	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
7										
PERSON 08	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
8										
PERSON 09	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
9										
PERSON 10	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
10										
PERSON 11	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
11										
PERSON 12	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
12										
PERSON 13	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
13										

PERMANENT HH MEMBERS: 01

HUGHES: 164

HOUSEHOLD PARTICIPATION

HOUSEHOLD ID

... Continued from previous page

Between January 1, 2014 and December 31, 2014

Did this person

PERSON ID# FROM PAGE 2	BUILD FISH WHEELS	BUILD FISH TRAPS	BUILD DOG SLEDS	SEW SKINS/CLOTH	COOK WILD FOODS
ID #	(circle)	(circle)	(circle)	(circle)	(circle)
HEAD 1	Y N	Y N	Y N	Y N	Y N
1					
HEAD 2	Y N	Y N	Y N	Y N	Y N
2					
PERSON 03	Y N	Y N	Y N	Y N	Y N
3					
PERSON 04	Y N	Y N	Y N	Y N	Y N
4					
PERSON 05	Y N	Y N	Y N	Y N	Y N
5					
PERSON 06	Y N	Y N	Y N	Y N	Y N
6					
PERSON 07	Y N	Y N	Y N	Y N	Y N
7					
PERSON 08	Y N	Y N	Y N	Y N	Y N
8					
PERSON 09	Y N	Y N	Y N	Y N	Y N
9					
PERSON 10	Y N	Y N	Y N	Y N	Y N
10					
PERSON 11	Y N	Y N	Y N	Y N	Y N
11					
PERSON 12	Y N	Y N	Y N	Y N	Y N
12					
PERSON 13	Y N	Y N	Y N	Y N	Y N
13					

PERMANENT HH MEMBERS: 01

HUGHES: 164

RETAINED COMMERCIAL HARVESTS

HOUSEHOLD ID

1. Do you or members of your household USUALLY participate in any commercial fishery?..... Y N
2. During the last year (between January 1, 2014 and December 31, 2014),
did you, or members of your household PARTICIPATE in any commercial fishery?..... Y N

IF the answer to QUESTION 2 is NO, to the *NEXT PAGE*.

IF the answer is YES, continue on this page ...

During the last year,¹

did you or members of your household...

A ... FISH commercially for ____?

B ... KEEP any ____ from your commercial catch for your own use² or to share?

C Was the ____ that you kept INCIDENTAL⁴ 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 COMMERCIALY 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		B		C		How many were removed for your OWN USE? ⁵	How many were removed for your CREW? ⁵	How many were removed to give to OTHERS?	Units ³	comments
	COMM FISH?		KEEP?		INCI?						
CHINOOK (KING) SALMON	Y N		Y N		Y N					IND.	
113000001											
SOCKEYE (RED) SALMON	Y N		Y N		Y N					IND.	
115000001											
COHO (SILVER) SALMON	Y N		Y N		Y N					IND.	
112000001											
CHUM (DOG) SALMON	Y N		Y N		Y N					IND.	
111000001											
PINK (HUMPIES) SALMON	Y N		Y N		Y N					IND.	
114000001											
HALIBUT	Y N		Y N		Y N					LB.	
121800001											
HERRING	Y N		Y N		Y N					GAL.	
120200001											
HERRING ROE	Y N		Y N		Y N					GAL.	
120300001											
CRAB	Y N		Y N		Y N					IND.	
501099001											
	Y N		Y N		Y N						

1 "LAST YEAR" means between January 1, 2014 and December 31, 2014.
 2 "USE" includes eating, feeding to dogs, sharing or trading with others, etc.
 3 UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.
 4 "INCIDENTAL CATCH" means the fish kept was not being commercially fished. For example, a king salmon kept from a chum commercial fishery.
 5 Double counting (captains' removals for crew members and crew members' removal for own uses) is fixed in analysis. Collect both.

HARVESTS: SALMON

HOUSEHOLD ID

1. Do you or members of your household USUALLY fish for salmon for subsistence, personal use, or sport?..... Y N
2. During the last year (between January 1, 2014 and December 31, 2014),
did you, or members of your household USE or TRY TO HARVEST salmon?..... Y N

IF the answer to QUESTION 2 is NO, to the *NEXT PAGE*.

IF the answer is YES, continue on this page ...

During the last year,¹

did you or members of your household...

- A ... use² _____?
- B ...receive _____ from another HH or community
- C ...give _____ to another HH or community?
- D ...try² to harvest _____?
- E ...actually harvest any _____?

if harvest is "yes"

Please estimate how many salmon ALL MEMBERS OF YOUR HOUSEHOLD got during the last year. How many were harvested with

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. DO NOT INCLUDE catch and release fish or retained commercial harvests.

Read names below in blanks above	A	B	C	D	E	DIP NET	GILL NET OR SEINE	FISH WHEEL	ROD & REEL ³	OTHER GEAR (specify type)	Units ⁴
	USE	REC	GIVE	TRY	HAR	(number harvested by each gear type)				amount / type	specify
SUMMER CHUM	Y N	Y N	Y N	Y N	Y N					/	IND.
111010000											
FALL CHUM	Y N	Y N	Y N	Y N	Y N					/	IND.
111020000											
CHINOOK (KING) SALMON	Y N	Y N	Y N	Y N	Y N					/	IND.
113000000											
COHO	Y N	Y N	Y N	Y N	Y N					/	IND.
112000000											
PINK SALMON	Y N	Y N	Y N	Y N	Y N					/	IND.
114000000											
SOCKEYE SALMON	Y N	Y N	Y N	Y N	Y N					/	IND.
115000000											
UNKNOWN SALMON	Y N	Y N	Y N	Y N	Y N					/	IND.
119000000											
	Y N	Y N	Y N	Y N	Y N					/	IND.
	Y N	Y N	Y N	Y N	Y N					/	IND.
	Y N	Y N	Y N	Y N	Y N					/	IND.
	Y N	Y N	Y N	Y N	Y N					/	IND.

IF YES, enter the name in a blank row above, and answer the questions in that row.

1 "LAST YEAR" means between January 1, 2014 and December 31, 2014.
 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 a line attached to a rod or a pole. Jigging through the ice is "ice fishing."
 4 UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.

HARVEST 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, and assessment sections...

MAPPING

Refer to data collection maps and mapping instructions to map salmon...

ASSESSMENTS: SALMON

110000000

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

IF LESS or MORE ...

X = do not use

WHY was your use different?

_____ 1

_____ 2

During the last year,¹

...did your household GET ENOUGH salmon?..... Y N

If NO...

What KIND of salmon did you need?

How would you describe the impact to your household of not getting enough salmon last year?

... not noticeable? ... minor ? ... major? ... Severe?

(0) (1) (2) (3)

¹ "LAST YEAR" means between January 1, 2014 and December 31, 2014.

HARVESTS: OTHER FISH HOUSEHOLD ID

1. Do you or members of your household USUALLY fish for other fish for subsistence, personal use, or sport?..... Y N
2. During the last year (between January 1, 2014 and December 31, 2014), did you, or members of your household USE or TRY TO HARVEST other fish?..... Y N

IF the answer to QUESTION 2 is NO, to to the NEXT PAGE.

IF the answer is YES, continue on this page ...

During the last year,¹

did you or members of your household...

- A ... use² _____?
- B ...receive _____ from another HH or community
- C ...give _____ to another HH or community?
- D ...try² to harvest _____?
- E ...actually harvest any _____?

if harvest is "yes"

Please estimate how many other fish ALL MEMBERS OF YOUR HOUSEHOLD got during the last year. How many were harvested with

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. DO NOT INCLUDE catch and release fish or retained commercial harvests.

Read names below in blanks above	A	B	C	D	E	FISH WHEEL	GILL NET OR SEINE	ICE FISHING	ROD & REEL ³	OTHER GEAR (specify type)	Units ⁴
	USE	REC	GIVE	TRY	HAR						
HUMPBACK WHITEFISH	Y N	Y N	Y N	Y N	Y N					/	IND.
126408000											
LEAST CISCO	Y N	Y N	Y N	Y N	Y N					/	IND.
126406060											
BROAD WHITEFISH	Y N	Y N	Y N	Y N	Y N					/	IND.
126404000											
BERING CISCO	Y N	Y N	Y N	Y N	Y N					/	IND.
126406040											
ROUND WHITEFISH	Y N	Y N	Y N	Y N	Y N					/	IND.
126412000											
SHEEFISH	Y N	Y N	Y N	Y N	Y N					/	IND.
125600000											
UNKNOWN WHITEFISH	Y N	Y N	Y N	Y N	Y N					/	IND.
126499000											
PIKE	Y N	Y N	Y N	Y N	Y N					/	IND.
125500000											
BURBOT (LINGCOD)	Y N	Y N	Y N	Y N	Y N					/	IND.
124800000											
ARCTIC GRAYLING	Y N	Y N	Y N	Y N	Y N					/	IND.
125200000											

...Continue on next page

1 "LAST YEAR" means between January 1, 2014 and December 31, 2014.
 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 a line attached to a rod or a pole. Jigging through the ice is "ice fishing."
 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

...continued from previous page

IF the answer is YES, continue on this page ...

During the last year,¹
did you or members of your household...

- A ... use² _____?
- B ...receive _____ from another HH or community
- C ...give _____ to another HH or community?
- D ...try² to harvest _____?
- E ...actually harvest any _____?

if harvest is "yes"

Please estimate how many other fish ALL MEMBERS OF YOUR HOUSEHOLD got during the last year. How many were harvested with

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. DO NOT INCLUDE catch and release fish or retained commercial harvests.

Read names below in blanks above	A	B	C	D	E	FISH WHEEL	GILL NET OR SEINE	ICE FISHING	ROD & REEL ³	OTHER GEAR	Units ⁴		
	USE	REC	GIVE	TRY	HAR					(specify type)			
						(number harvested by each gear type)						amount / type	specify
DOLLY VARDEN	Y N	Y N	Y N	Y N	Y N					/	IND.		
125006000													
LAKE TROUT	Y N	Y N	Y N	Y N	Y N					/	IND.		
125010000													
UNKNOWN TROUT	Y N	Y N	Y N	Y N	Y N					/	IND.		
126299000													
LONGNOSE SUCKER	Y N	Y N	Y N	Y N	Y N					/	IND.		
126000000													
	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					/			

Did anyone in the household harvest or receive any other nonsalmon fish, such as halibut, hooligan, or char?..... 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, 2014 and December 31, 2014.
 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 a line attached to a rod or a pole. Jigging through the ice is "ice fishing."
 4 UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.

HARVEST SUMMARY: OTHER FISH

HOUSEHOLD ID

If this household did NOT USE or HARVEST other fish last year, go to the ASSESSMENT section below.

Otherwise, continue with mapping, and assessment sections...

MAPPING

Refer to data collection maps and mapping instructions to map other fish...

ASSESSMENTS: OTHER FISH

120000000

To conclude our other fish section, I am going to ask a few general questions about other fish.

During the last year,¹

... did your household use LESS, SAME, or MORE other fish than in recent years? X L S M

IF LESS or MORE ...

X = do not use

WHY was your use different?

_____ 1

_____ 2

During the last year,¹

...did your household GET ENOUGH other fish?..... Y N

If NO...

What KIND of other fish did you need?

How would you describe the impact to your household of not getting enough other fish last year?

... not noticeable? ... minor? ... major? ... Severe?
(0) (1) (2) (3)

¹ "LAST YEAR" means between January 1, 2014 and December 31, 2014.

HARVESTS: MARINE INVERTEBRATES

HOUSEHOLD ID

1. Do you or members of your household USUALLY harvest marine invertebrates for subsistence, personal use, or sport? Y N
2. During the last year (between January 1, 2014 and December 31, 2014),
did you, or members of your household USE or TRY TO HARVEST marine invertebrates?..... Y N

IF the answer to QUESTION 2 is NO, to the *NEXT PAGE*.

IF the answer is YES, continue on this page ...

During the last year,¹

did you or members of your household...

- A ... use² _____?
- B ...receive _____ from another HH or community
- C ...give _____ to another HH or community?
- D ...try² to harvest _____?
- E ...actually harvest any _____?

if harvest is "yes"

Please estimate how many marine invertebrates ALL MEMBERS OF YOUR HOUSEHOLD got during the last year. How many were harvested with
INCLUDE marine invertebrates that members of this household gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If harvesting with or helping others, report ONLY THIS HOUSEHOLD'S share of the harvest. DO NOT INCLUDE marine invertebrates caught commercially, or were not retained.

Read names below in blanks above	A	B	C	D	E	AMOUNT <i>(amt)</i>	Units ⁴ <i>specify</i>	COMMENTS <i>(text)</i>
	USE	REC	GIVE	TRY	HAR			
DUNGENESS CRAB	Y N	Y N	Y N	Y N	Y N		IND.	
501004000								
KING CRAB	Y N	Y N	Y N	Y N	Y N		IND.	
501008000								
TANNER CRAB	Y N	Y N	Y N	Y N	Y N		IND.	
501012000								
RAZOR CLAMS	Y N	Y N	Y N	Y N	Y N		GAL.	
500612000								
FRESHWATER CLAMS	Y N	Y N	Y N	Y N	Y N		GAL.	
500604000								
BUTTER CLAMS	Y N	Y N	Y N	Y N	Y N		GAL.	
500602000								
CLAMS	Y N	Y N	Y N	Y N	Y N		GAL.	
500699000								
	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 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, 2014 and December 31, 2014.
 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 a line attached to a rod or a pole. Jigging through the ice is "ice fishing."
 4 UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.

HARVEST 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, and assessment sections...

MAPPING *Refer to data collection maps and mapping instructions to map marine invertebrates...*

ASSESSMENTS: MARINE INVERTEBRATES 50000000

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

IF LESS or MORE ... X = do not use

WHY was your use different? _____ 1

_____ 2

During the last year,¹

...did your household GET ENOUGH marine invertebrates?..... Y N

If NO...

What KIND of marine invertebrates did you need? _____

How would you describe the impact to your household of not getting enough marine invertebrates last year? ... not noticeable? (0) ... minor? (1) ... major? (2) ... Severe? (3)

¹ "LAST YEAR" means between January 1, 2014 and December 31, 2014.

HARVESTS: LARGE LAND MAMMALS HOUSEHOLD ID

1. Do you or members of your household USUALLY hunt for large land mammals? Y N
2. During the last year (between January 1, 2014 and December 31, 2014), did you, or members of your household USE or TRY TO HARVEST large land mammals?..... Y N

IF the answer to QUESTION 2 is NO, to the NEXT PAGE.

IF the answer is YES, continue on this page ...

During the last year,¹

did you or members of your household...

- A ... use² _____?
- B ...receive _____ from another HH or community
- C ...give _____ to another HH or community?
- D ...try² to harvest _____?
- E ...actually harvest any _____?

if harvest is "yes"

Please estimate how many large land mammals ALL MEMBERS OF YOUR HOUSEHOLD got during the last year. How many were harvested in
 INCLUDE large land 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	B	C	D	E	SEX	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	UNKNOWN	UNITS ³	
	USE	REC	GIVE	TRY	HAR	M/F	(specify amount harvested per month)													(specify)	
MOOSE	Y N	Y N	Y N	Y N	Y N	M															IND
211800000						F															IND
211800001						UNK															IND
211800002						1															
211800009						2															
						-9															
CARIBOU	Y N	Y N	Y N	Y N	Y N	M														IND	
211000000						F														IND	
211000001						UNK														IND	
211000002						1															
211000009						2															
						-9															
BLACK BEAR	Y N	Y N	Y N	Y N	Y N															IND.	
210600000																					
BROWN BEAR	Y N	Y N	Y N	Y N	Y N															IND.	
210800000																					
DALL SHEEP	Y N	Y N	Y N	Y N	Y N															IND.	
212200000																					
	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 large land 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, 2014 and December 31, 2014.
 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.

HARVEST SUMMARY: LARGE LAND MAMMALS

HOUSEHOLD ID

If this household did NOT USE or HARVEST large land mammals last year, go to the ASSESSMENT section below.

Otherwise, continue with mapping, and assessment sections...

MAPPING

Refer to data collection maps and mapping instructions to map large land mammals...

ASSESSMENTS: LARGE LAND MAMMALS

210000000

To conclude our large land mammals section, I am going to ask a few general questions about large land mammals.

During the last year,¹

... did your household use LESS, SAME, or MORE large land mammals than in recent years? X L S M

IF LESS or MORE ...

X = do not use

WHY was your use different?

_____ 1

_____ 2

During the last year,¹

...did your household GET ENOUGH large land mammals?..... Y N

If NO...

What KIND of large land mammals did you need?

How would you describe the impact to your household of not getting enough large land mammals last year?

... not noticeable? ... minor ? ... major? ... Severe?
(0) (1) (2) (3)

¹ "LAST YEAR" means between January 1, 2014 and December 31, 2014.

HARVESTS: SMALL LAND MAMMALS OR FURBEARERS HOUSEHOLD ID

1. Do you or members of your household USUALLY hunt or trap for small land mammals or furbearers?..... Y N
2. During the last year (between January 1, 2014 and December 31, 2014),
did you, or members of your household USE or TRY TO HARVEST small land mammals or furbearers?..... Y N

IF the answer to QUESTION 2 is NO, to the *NEXT PAGE*.

IF the answer is YES, continue on this page ...

During the last year,¹

did you or members of your household...

- A ... use² _____?
- B ...receive _____ from another HH or community
- C ...give _____ to another HH or community?
- D ...try² to harvest _____?
- E ...actually harvest any _____?

Please estimate how many small land mammals or furbearers ALL MEMBERS OF YOUR HOUSEHOLD got during the last year. How many were harvested in
INCLUDE small land mammals or furbearers 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 harvest.

Read names below in blanks above	A	B	C	D	E	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	UNKNOWN	NUMBER USED FOR FOOD OR FOR FOOD & FUR	UNITS ³
	USE	REC	GIVE	TRY	HAR	(specify amount harvested per month)														(amount)
BEAVER	Y N	Y N	Y N	Y N	Y N															IND.
220200000 MUSKRAT	Y N	Y N	Y N	Y N	Y N															IND.
222400000 PORCUPINE	Y N	Y N	Y N	Y N	Y N															IND.
222600000 WOLF	Y N	Y N	Y N	Y N	Y N															IND.
223200000 WOLVERINE	Y N	Y N	Y N	Y N	Y N															IND.
223400000 COYOTE	Y N	Y N	Y N	Y N	Y N															IND.
220400000 FOX (SPECIFY)	Y N	Y N	Y N	Y N	Y N															IND.
220800000 SNOWSHOE HARE	Y N	Y N	Y N	Y N	Y N															IND.
221004000 LYNX	Y N	Y N	Y N	Y N	Y N															IND.
221600000 MARTEN	Y N	Y N	Y N	Y N	Y N															IND.
222000000																				

...Continue on next page

1 "LAST YEAR" means between January 1, 2014 and December 31, 2014.
 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.

HARVESTS: SMALL LAND MAMMALS OR FURBEARERS HOUSEHOLD ID

...continued from previous page

During the last year,¹

did you or members of your household...

- A ... use² _____?
- B ...receive _____ from another HH or community
- C ...give _____ to another HH or community?
- D ...try² to harvest _____?
- E ...actually harvest any _____?

if
harvest
is "yes"

Please estimate how many small land mammals or furbearers ALL MEMBERS OF YOUR HOUSEHOLD got during the last year. How many were harvested in

INCLUDE small land mammals or furbearers 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 harvest.

JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	UNKNOWN	NUMBER USED FOR FOOD OR FOR FOOD & FUR	UNITS ³
(specify amount harvested per month)													(amount)	specify

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	NUMBER USED FOR FOOD OR FOR FOOD & FUR	UNITS ³
LAND OTTER	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N		IND.
221200000																				
ERMINE (WEASEL)	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N		IND.
223000000																				
MINK	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N		IND.
222200000																				
	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N		IND.
	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N		IND.
	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N		IND.
	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N		IND.
	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N		IND.
	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 small land mammals or furbearers?..... 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, 2014 and December 31, 2014.
 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.

HARVEST SUMMARY: SMALL LAND ANIMALS

HOUSEHOLD ID

If this household did NOT USE or HARVEST small land animals last year, go to the ASSESSMENT section below.

Otherwise, continue with mapping, and assessment sections...

MAPPING

Refer to data collection maps and mapping instructions to map small land mammals...

ASSESSMENTS: SMALL LAND MAMMALS/FURBEARERS

220000000

To conclude our small land mammals/furbearers section, I am going to ask a few general questions about small land mammals/furbearers.

During the last year,¹

... did your household use LESS, SAME, or MORE small land mammals/furbearers than in recent years? X L S M

IF LESS or MORE ...

X = do not use

WHY was your use different?

_____ 1

_____ 2

During the last year,¹

...did your household GET ENOUGH small land mammals/furbearers?..... Y N

If NO...

What KIND of small land mammals/furbearers did you need? _____

How would you describe the impact to your household of not getting enough small land mammals/furbearers last year? ... not noticeable? ... minor ? ... major? ... Severe?

(0) (1) (2) (3)

¹ "LAST YEAR" means between January 1, 2014 and December 31, 2014.

HARVESTS: MARINE MAMMALS HOUSEHOLD ID

1. Do you or members of your household USUALLY hunt for marine mammals?..... Y N
2. During the last year (between January 1, 2014 and December 31, 2014),
did you, or members of your household USE or TRY TO HARVEST marine mammals?..... Y N

IF the answer to QUESTION 2 is NO, to the *NEXT PAGE*.

IF the answer is YES, continue on this page ...

During the last year,¹

did you or members of your household...

- A ... use² _____?
- B ...receive _____ from another HH or community
- C ...give _____ to another HH or community?
- D ...try² to harvest _____?
- E ...actually harvest any _____?

if harvest is "yes"

Please estimate how many marine mammals ALL MEMBERS OF YOUR HOUSEHOLD got during the last year. How many were harvested in ...

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	B	C	D	E	SEX	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	UNKNOWN	UNITS ³
	USE	REC	GIVE	TRY	HAR	M/F	(specify amount harvested per month)												(specify)	
BEARDED SEAL	Y N	Y N	Y N	Y N	Y N															IND.
300802000																				
SPOTTED SEAL	Y N	Y N	Y N	Y N	Y N															IND.
300812000																				
STELLER SEA LION	Y N	Y N	Y N	Y N	Y N															IND.
301200000																				
FUR SEAL	Y N	Y N	Y N	Y N	Y N															IND.
300804000																				
WHALE (SPECIFY)	Y N	Y N	Y N	Y N	Y N															IND.
301699000																				
UNKNOWN SEAL (OR SEAL OIL)	Y N	Y N	Y N	Y N	Y N															IND.
300899000																				
	Y N	Y N	Y N	Y N	Y N															IND.
	Y N	Y N	Y N	Y N	Y N															IND.
	Y N	Y N	Y N	Y N	Y N															IND.

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, 2014 and December 31, 2014.
 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.

HARVEST 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, and assessment sections...

MAPPING

Refer to data collection maps and mapping instructions to map marine mammals...

ASSESSMENTS: MARINE MAMMALS

30000000

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

IF LESS or MORE ...

X = do not use

WHY was your use different?

_____ 1

_____ 2

During the last year,¹

... did your household GET ENOUGH marine mammals?..... Y N

If NO...

What KIND of marine mammals did you need?

How would you describe the impact to your household of not getting enough marine mammals last year?

... not noticeable? ... minor? ... major? ... Severe?
(0) (1) (2) (3)

¹ "LAST YEAR" means between January 1, 2014 and December 31, 2014.

HARVESTS: MIGRATORY WATERFOWL HOUSEHOLD ID

1. Do you or members of your household USUALLY hunt for migratory waterfowl?..... Y N

2. During the last year (between January 1, 2014 and December 31, 2014),
did you, or members of your household USE or TRY TO HARVEST migratory waterfowl?..... Y N

IF the answer to QUESTION 2 is NO, to to the *NEXT PAGE*.

IF the answer is YES, continue on this page ...

During the last year,¹

did you or members of your household...

- A ... use² _____?
- B ...receive _____ from another HH or community
- C ...give _____ to another HH or community?
- D ...try² to harvest _____?
- E ...actually harvest any _____?

if
harvest
is "yes"

Please estimate how many migratory waterfowl ALL MEMBERS OF YOUR HOUSEHOLD got during the last year. How many were harvested in

INCLUDE migratory waterfowl 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	B	C	D	E	January	February	July	October	Season of harvest unknown	UNITS ³ (specify)
	USE	REC	GIVE	TRY	HAR	March	May	August	November		
						April	June	September	December		
						WINTER	SPRING	SUMMER	FALL		
	(number killed in each season)									(number)	
CANADA GEESE	Y N	Y N	Y N	Y N	Y N						IND.
410404990											
WHITE-FRONTED GEESE	Y N	Y N	Y N	Y N	Y N						IND.
410410000											
SNOW GEESE	Y N	Y N	Y N	Y N	Y N						IND.
410408000											
SWAN (SPECIFY)	Y N	Y N	Y N	Y N	Y N						IND.
410699000											
LOON (SPECIFY)	Y N	Y N	Y N	Y N	Y N						IND.
411216990											
AMERICAN WIGEON	Y N	Y N	Y N	Y N	Y N						IND.
410236020											
TEAL	Y N	Y N	Y N	Y N	Y N						IND.
410232990											
MALLARD	Y N	Y N	Y N	Y N	Y N						IND.
410214000											
NORTHERN PINTAIL	Y N	Y N	Y N	Y N	Y N						IND.
410220000											
NORTHERN SHOVELER	Y N	Y N	Y N	Y N	Y N						IND.
410230000											

...Continue on the next page

1 "LAST YEAR" means between January 1, 2014 and December 31, 2014.
 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.

MIGRATORY WATERFOWL: 15

HARVESTS: MIGRATORY WATERFOWL

HOUSEHOLD ID

...continued from previous page

During the last year,¹
did you or members of your household...

- A ... use² _____?
- B ...receive _____ from another HH or community
- C ...give _____ to another HH or community?
- D ...try² to harvest _____?
- E ...actually harvest any _____?

if harvest is "yes"

Please estimate how many migratory waterfowl ALL MEMBERS OF YOUR HOUSEHOLD got during the last year. How many were harvested in
INCLUDE migratory waterfowl 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	B	C	D	E	January	February	March	April	May	June	July	August	September	October	November	December	Season of harvest unknown	UNITS ³
	USE	REC	GIVE	TRY	HAR	WINTER	WINTER	WINTER	WINTER	SPRING	SPRING	SUMMER	SUMMER	SUMMER	FALL	FALL	FALL	(number)	(specify)
BLACK SCOTER (BLACK DUCKS)	Y N	Y N	Y N	Y N	Y N														IND.
410228020																			
WHITE-WINGED SCOTER	Y N	Y N	Y N	Y N	Y N														IND.
410228060																			
OTHER SCOTER	Y N	Y N	Y N	Y N	Y N														IND.
410228990																			
BUFFLEHEAD	Y N	Y N	Y N	Y N	Y N														IND.
410202000																			
UNKNOWN GOLDENEYE (SPECIFY)	Y N	Y N	Y N	Y N	Y N														IND.
410210990																			
UNKNOWN EIDER (SPECIFY)	Y N	Y N	Y N	Y N	Y N														IND.
410206990																			
LONG-TAILED DUCK (OLDSQUAW)	Y N	Y N	Y N	Y N	Y N														IND.
410218000																			
	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 migratory waterfowl?..... 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, 2014 and December 31, 2014.
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.

MIGRATORY WATERFOWL: 15

HARVESTS: OTHER BIRDS HOUSEHOLD ID

1. Do you or members of your household USUALLY hunt for other birds?..... Y N
2. During the last year (between January 1, 2014 and December 31, 2014),
did you, or members of your household USE or TRY TO HARVEST other birds?..... Y N

IF the answer to QUESTION 2 is NO, to the *NEXT PAGE*.

IF the answer is YES, continue on this page ...

During the last year,¹

did you or members of your household...

- A ... use² _____?
- B ...receive _____ from another HH or community
- C ...give _____ to another HH or community?
- D ...try² to harvest _____?
- E ...actually harvest any _____?

if
harvest
is "yes"

Please estimate how many other birds ALL MEMBERS OF YOUR HOUSEHOLD got during the last year. How many were harvested in

INCLUDE other birds 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	B	C	D	E	January	February	March	April	May	June	July	August	September	October	Season of harvest unknown	UNITS ³
	USE	REC	GIVE	TRY	HAR	WINTER	SPRING	SUMMER	FALL	(number killed in each season)		(number)	(specify)				

PTARMIGAN	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N			IND.
421804000 SPRUCE GROUSE																	IND.
421802020 RUFFED GROUSE																	IND.
421802060 SHARP-TAILED GROUSE																	IND.
421802040																	
	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N			
	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N			
	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N			
	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N			
	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N			

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, 2014 and December 31, 2014.
 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.

OTHER BIRDS: 15

HARVESTS: BIRD EGGS HOUSEHOLD ID

1. Do you or members of your household USUALLY harvest bird eggs?..... Y N
2. During the last year (between January 1, 2014 and December 31, 2014),
did you, or members of your household USE or TRY TO HARVEST bird eggs?..... Y N

IF the answer to QUESTION 2 is NO, to the *NEXT PAGE*.

IF the answer is YES, continue on this page ...

During the last year,¹

did you or members of your household...

- A ... use² _____?
- B ...receive _____ from another HH or community
- C ...give _____ to another HH or community?
- D ...try² to harvest _____?
- E ...actually harvest any _____?

if
harvest
is "yes"

Please estimate how many bird eggs ALL MEMBERS OF YOUR HOUSEHOLD got during the last year. How many were harvested with
INCLUDE bird eggs that members of this household gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If harvesting with or helping others, report ONLY THIS HOUSEHOLD'S share of the harvest.

Read names below in blanks above	A	B	C	D	E	AMOUNT <i>(amt)</i>	Units ⁴ <i>specify</i>	COMMENTS <i>(text)</i>
GULL EGGS <i>(SPECIFY)</i>	Y N	Y N	Y N	Y N	Y N		IND.	
431212000								
GEESE EGGS <i>(SPECIFY)</i>	Y N	Y N	Y N	Y N	Y N		IND.	
430400000								
DUCK EGGS <i>(SPECIFY)</i>	Y N	Y N	Y N	Y N	Y N		IND.	
430200000								
	Y N	Y N	Y N	Y N	Y N		IND.	
	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 bird 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, 2014 and December 31, 2014.
 2 "USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.
 4 UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.

HARVEST SUMMARY: BIRDS AND EGGS

HOUSEHOLD ID

If this household did NOT USE or HARVEST birds and eggs last year, go to the ASSESSMENT section below.

Otherwise, continue with mapping, and assessment sections...

MAPPING

Refer to data collection maps and mapping instructions to map birds and eggs...

ASSESSMENTS: BIRDS AND EGGS

40000000

To conclude our birds and eggs section, I am going to ask a few general questions about birds and eggs.

During the last year,¹

... did your household use LESS, SAME, or MORE birds and eggs than in recent years? X L S M

IF LESS or MORE ... X = do not use

WHY was your use different? _____ 1

2

During the last year,¹

...did your household GET ENOUGH birds and eggs?..... Y N

If NO...

What KIND of birds and eggs did you need? _____

How would you describe the impact to your household of not getting enough birds and eggs last year? ... not noticeable? ... minor? ... major? ... Severe?

(0) (1) (2) (3)

¹ "LAST YEAR" means between January 1, 2014 and December 31, 2014.

HARVESTS: PLANTS AND BERRIES (INCLUDING WOOD)

HOUSEHOLD ID

1. Do you or members of your household USUALLY harvest plants and berries (including wood)?..... Y N
2. During the last year (between January 1, 2014 and December 31, 2014),
did you, or members of your household USE or TRY TO HARVEST plants and berries (including wood)?..... Y N

IF the answer to QUESTION 2 is NO, to the *NEXT PAGE*.

IF the answer is YES, continue on this page ...

During the last year,¹

did you or members of your household...

- A ... use² _____?
- B ...receive _____ from another HH or community
- C ...give _____ to another HH or community?
- D ...try² to harvest _____?
- E ...actually harvest any _____?

if
harvest
is "yes"

Please estimate how many plants and berries (including wood) ALL MEMBERS OF YOUR HOUSEHOLD got during the last year.

INCLUDE plants and berries (including wood) that members of this household gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If harvesting with or helping others, report ONLY THIS HOUSEHOLD'S share of the harvest.

Read names below in blanks above	A	B	C	D	E	AMOUNT <i>(amt)</i>	Units ⁴ <i>specify</i>	COMMENTS <i>(text)</i>
	USE	REC	GIVE	TRY	HAR			
BLUEBERRY	Y N	Y N	Y N	Y N	Y N		GAL.	
601002000 LOW BUSH CRANBERRY	Y N	Y N	Y N	Y N	Y N		GAL.	
601004000 RASPBERRY	Y N	Y N	Y N	Y N	Y N		GAL.	
601020000 HIGH BUSH CRANBERRY	Y N	Y N	Y N	Y N	Y N		GAL.	
601006000 CROWBERRY (BLACKBERRY)	Y N	Y N	Y N	Y N	Y N		GAL.	
601007000 CLOUD BERRY (SALMONBERRY)	Y N	Y N	Y N	Y N	Y N		GAL.	
601016000 LABRADOR TEA	Y N	Y N	Y N	Y N	Y N		GAL.	
602018000 ROOTS (FOR FOOD)	Y N	Y N	Y N	Y N	Y N		GAL.	
602009000 ROSE HIPS NCHOO	Y N	Y N	Y N	Y N	Y N		GAL.	
602036000 MUSHROOMS (SPECIFY)	Y N	Y N	Y N	Y N	Y N		GAL.	
602040000								

...Continue on the next page

1 "LAST YEAR" means between January 1, 2014 and December 31, 2014.
 2 "USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.
 4 UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.

PLANTS AND BERRIES (INCLUDING WOOD): 17 **HUGHES: 164**

HARVESTS: PLANTS AND BERRIES (INCLUDING WOOD)

HOUSEHOLD ID

...continued from previous page

During the last year,¹

did you or members of your household...

- A ... use² _____?
- B ... receive _____ from another HH or community
- C ... give _____ to another HH or community?
- D ... try² to harvest _____?
- E ... actually harvest any _____?

if harve
is "yes"

Please estimate how many plants and berries (including wood) ALL MEMBERS OF YOUR HOUSEHOLD got for subsistence uses during the last year. How many were harvested with

INCLUDE plants and berries (including wood) that members of this household gave away, are fresh, fed to dogs, lost to spoilage, or got by helping others. If harvesting with or helping others, report ONLY THIS HOUSEHOLD'S share of the harvest.

Read names below in blanks above	A	B	C	D	E	AMOUNT <i>(amt)</i>	Units ⁴ <i>specify</i>	COMMENTS <i>(text)</i>
	USE	REC	GIVE	TRY	HAR			
MOUSEFOODS	Y N	Y N	Y N	Y N	Y N		GAL.	
602060000 SPRUCE TIPS	Y N	Y N	Y N	Y N	Y N		GAL.	
602030000 OTHER WILD GREENS	Y N	Y N	Y N	Y N	Y N		GAL.	
602038000 WILD RHUBARB	Y N	Y N	Y N	Y N	Y N		GAL.	
602006000 CHAGA (SALMONBERRY)	Y N	Y N	Y N	Y N	Y N		GAL.	
602046040 PUNK	Y N	Y N	Y N	Y N	Y N		GAL.	
602046010 WOOD (OTHER) (SPECIFY USE)	Y N	Y N	Y N	Y N	Y N		CORD.	
604000000 FIREWOOD	Y N	Y N	Y N	Y N	Y N		CORD.	
604000002	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 PLANTS AND BERRIES (INCLUDING WOOD)?..... 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, 2014 and December 31, 2014.
 2 "USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.
 4 UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.

HARVEST SUMMARY: PLANTS AND BERRIES

HOUSEHOLD ID

If this household did NOT USE or HARVEST plants and berries last year, go to the ASSESSMENT section below.

Otherwise, continue with mapping, and assessment sections...

MAPPING

Refer to data collection maps and mapping instructions to map plants, berries, and wood...

ASSESSMENTS: PLANTS AND BERRIES (INCLUDING WOOD)

600000000

To conclude our plants and berries (including wood) section, I am going to ask a few general questions about plants and berries (including wood).

During the last year,¹

... did your household use LESS, SAME, or MORE plants and berries (including wood) than in recent years? X L S M

IF LESS or MORE ...

X = do not use

WHY was your use different?

_____ 1

_____ 2

During the last year,¹

...did your household GET ENOUGH plants and berries (including wood)?..... Y N

If NO...

What KIND of plants and berries (including wood) did you need?

How would you describe the impact to your household of not getting enough plants and berries (including wood) last year?

... not noticeable? ... minor ? ... major? ... Severe?
(0) (1) (2) (3)

¹ "LAST YEAR" means between January 1, 2014 and December 31, 2014.

HARVEST SUMMARY: ALL RESOURCES

HOUSEHOLD ID

ASSESSMENTS: ALL RESOURCES

0

To conclude our harvests section, I am going to ask a few general questions about wild resources.

During the last year,¹

... did your household use LESS, SAME, or MORE wild resources than in recent years? X L S M

IF LESS or MORE ... X = do not use

WHY was your use different? _____ 1
 _____ 2

During the last year,¹

...did your household GET ENOUGH wild resources?..... Y N

If NO...

What KIND of wild resources did you need? _____

How would you describe the impact to your household of not getting enough wild resources last year?
 ... not noticeable? ... minor ? ... major? ... Severe?
 (0) (1) (2) (3)

HEALTH IMPACT ASSESSMENTS

In a normal week, how often are wild foods such as salmon, non-salmon fish, moose, caribou, birds, etc. served in your household? (circle ONE response)

None, don't use (0)	Less than once per week (1)	1 - 3 times per week (2)	4 - 6 times per week (3)	Once per day (4)	2 times per day (5)	3 Times per day (6)	<input type="checkbox"/>
---------------------	-----------------------------	--------------------------	--------------------------	------------------	---------------------	---------------------	--------------------------

If this household does NOT USE wild foods, go to the next page

Otherwise, continue below...

Please list the TOP FIVE MOST IMPORTANT WILD FOODS that are used in your household. Include wild foods that may not be available now, but are important at other times of the year. Please list most important foods first.

(Not necessary to fill out every line)

	Wild Food 1	Wild Food 2	Wild Food 3	Wild Food 4	Wild Food 5
TOP FIVE WILD FOODS					

If your household CANNOT GET WILD FOODS, what foods do members of your household eat instead? These can be general categories or more specific items you purchase or grow. Please list most important alternative foods first. These can be general categories or more specific items you purchase, grow, or are grown locally.

(Not necessary to fill out every line)

	Other Food	Other Food	Other Food	Other Food	Other Food
OTHER FOODS² (1 TO 5)					
OTHER FOODS² (6 TO 10)					

¹ "LAST YEAR" means between January 1, 2014 and December 31, 2014.
² For "OTHER FOODS", we are not interested in condiments or staples, such as sugar, flour, coffee, or butter etc... We are interested in foods used in place of traditional foods for meals or snacks. This includes foods substituted by personal preference or out of necessity (traditional food not available).

ADDITIONAL ASSESSMENTS

HOUSEHOLD ID

Resource Health

Between January 1, 2014 and December 31, 2014... were there any resources that your household avoided harvesting due to poor resource health?

If YES, which resources did you avoid and why?

Transportation and Motorized Equipment

Between January 1, 2014 and December 31, 2014... did members of your household use the following when harvesting or attempting to harvest wild foods?

	<i>circle</i>	
boat	Y	N
snowmachine	Y	N
4-wheeler/ORV	Y	N
airplane	Y	N
dogsled	Y	N

Does your household own, borrow, lease, or charter this equipment?

	Own	Borrow	Lease	Charter
<i>Circle only responses that the respondent answered yes to above.</i>				
boat	Y N	Y N	Y N	Y N
snowmachine	Y N	Y N	Y N	Y N
4-wheeler/ORV	Y N	Y N	Y N	Y N
airplane	Y N	Y N	Y N	Y N
dogsled	Y N	Y N	Y N	Y N

Comments: _____

Between January 1, 2014 and December 31, 2014... did members of your household use the following or motorized equipment when harvesting or attempting to harvest wild foods?

	<i>circle</i>	
chainsaw	Y	N
ice auger	Y	N
winch	Y	N
generator	Y	N
Other (specify)	Y	N

Heating

What proportion of your household's heating comes from firewood?

<i>circle</i>	
0%	<input type="text"/>
1-25%	<input type="text"/>
26-50%	<input type="text"/>
51-75%	<input type="text"/>
76-99%	<input type="text"/>
100%	<input type="text"/>

In the past 5 years has your harvest area for firewood changed?

<i>circle</i>	
Y	N

If yes, please explain why? _____

How much do you spend annually to heat your home? \$

Handicrafts

Between January 1, 2014 and December 31, 2014... did members of your household participate in the making of handicrafts using the following materials?

	<i>circle</i>	
birchbark	Y	N
horns	Y	N
antlers	Y	N
other natural material (specify)	Y	N

FOOD SECURITY HOUSEHOLD ID

The questions on this page have been asked all over the United States to find out if Americans have enough to eat. We would like to know if people in your community have enough to eat. I'd like you to think about all your household's food, both wild food and store-bought...

Which of these three statements best describes the food eaten in your household in the last 12 months...

(Circle one)

STATEMENT 1. We had enough of the kinds of food we wanted to eat.....

2 STATEMENT 2. We had enough food, but not always the KIND of food we wanted to eat.....

3 STATEMENT 3. Sometimes, or often, we did **NOT HAVE ENOUGH** food to eat.....

1 2 3 HH1 C
If 2 or 3

If STATEMENT 2 or STATEMENT 3 was TRUE, continue with food security questions on this page. Otherwise, go to next section...

Now I am going to read you several statements about different food situations.
Please tell me whether EACH statement was true for your household (HH) in the last 12 months.

4 STATEMENT 4. We WORRIED that our household would run out of food before we could get more. HH2

In the last 12 months, was this ever true for your household?..... N 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 household couldn't get WILD FOOD,
your HH couldn't get STORE-BOUGHT food, or your HH couldn't get BOTH KINDS of food?..... WILD STOR BOTH

5 STATEMENT 5. We could not get the kinds of foods we wanted to eat because of a LACK OF RESOURCES. HH4

By "lack of resources," we mean your household did NOT have what you needed to hunt, fish, gather, OR did not have enough money to buy food.

In the last 12 months, was this ever true for your household?..... N 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 household couldn't get WILD FOOD,
your HH couldn't get STORE-BOUGHT food, or your HH couldn't get BOTH KINDS of food?..... WILD STOR BOTH

6 STATEMENT 6. The food we had JUST DID NOT LAST, and we could not get more. HH3

In the last 12 months, was this ever true for your household?..... 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 WILD FOOD...

STATEMENT 7. The WILD 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 8. The STORE-BOUGHT food we had JUST DID NOT LAST, and we could not get more.

In the last 12 months, was this ever true for your household?..... N Y ?

If YES...

...in which months did this happen?..... J F M A M J J A S O N D

If any ONE of the STATEMENTS 4, 5, OR 6 was "YES," continue with food security questions on next page. Otherwise, go to next section...

FOOD SECURITY

HOUSEHOLD ID

If any ONE of the STATEMENTS 4, 5, or 6 on previous page was "YES," continue with food security questions below. Otherwise, go to next section...

In the past 12 months, did you or other adults in your household ever CUT THE SIZE OF YOUR MEALS OR SKIP MEALS because the HH could not get the food that was needed? N Y ? AD1

If YES...

...in which months did this happen?..... J F M A M J J A S O N D

In the last 12 months, did you or other adults in your household ever EAT LESS THAN YOU FELT YOU SHOULD because the HH could not get the food that was needed?..... N Y ? AD2

In the last 12 months, were adults in the HH ever HUNGRY BUT DID NOT EAT because there was not enough food?..... N Y ? AD3

In the last 12 months, did adults in the HH LOSE WEIGHT because there was not enough food?..... N Y ? AD4

In the last 12 months, were adults in the HH ever NOT EAT FOR A WHOLE DAY because there was not enough food?..... N Y ? AD5

If YES...

...in which months did this happen?..... J F M A M J J A S O N D

EMPLOYMENT

HOUSEHOLD ID

The next few pages ask about jobs and income. We ask about these things because we are trying to understand all parts of the community economy. Many people use wages from jobs to support hunting, fishing, and gathering activities.

Between January 1, 2014 and December 31, 2014 ...

...Did any members of your household earn money from a JOB or from SELF EMPLOYMENT?..... Y N

Starting with the first head of your household, what job or jobs did he or she have last year?

For each member of this household born before 1999, list EACH JOB held last year. For household members who did not have a job, write: RETIRED, UNEMPLOYED, STUDENT, HOMEMAKER, DISABLED, etc..

INCLUDE EACH PERSON 16 YEARS AND OLDER EVEN IF THEY DID NOT HAVE A JOB				WORK SCHEDULE ²					In the past year how much did hee or she earn in this job? gross income ³	
Person code from page 2 (ID #)	What kind of work did he or she do in this job? (job title ')	For whom did he or she work in this job? (employer)	In the past year, what months did he or she work in this job? (circle each month worked)	FULL TIME (circle one)	PART TIME (circle one)	SHIFT - FULL TIME (circle one)	ON-CALL, VARIES (circle one)	SHIFT - PART TIME (circle one)		
1ST JOB				J F M A M J J A S O N D	FT	PT	SF	OC	SP	\$ / YR
1	6 910100000	SOC: SIC:								schedule: / YR
2ND JOB				J F M A M J J A S O N D	FT	PT	SF	OC	SP	\$ / YR
2	6 910100000	SOC: SIC:								schedule: / YR
3RD JOB				J F M A M J J A S O N D	FT	PT	SF	OC	SP	\$ / YR
3	6 910100000	SOC: SIC:								schedule: / YR
4TH JOB				J F M A M J J A S O N D	FT	PT	SF	OC	SP	\$ / YR
4	6 910100000	SOC: SIC:								schedule: / YR
5TH JOB				J F M A M J J A S O N D	FT	PT	SF	OC	SP	\$ / YR
5	6 910100000	SOC: SIC:								schedule: / YR
6TH JOB				J F M A M J J A S O N D	FT	PT	SF	OC	SP	\$ / YR
6	6 910100000	SOC: SIC:								schedule: / YR
7TH JOB				J F M A M J J A S O N D	FT	PT	SF	OC	SP	\$ / YR
7	6 910100000	SOC: SIC:								schedule: / YR
8TH JOB				J F M A M J J A S O N D	FT	PT	SF	OC	SP	\$ / YR
8	6 910100000	SOC: SIC:								schedule: / YR
9TH JOB				J F M A M J J A S O N D	FT	PT	SF	OC	SP	\$ / YR
9	6 910100000	SOC: SIC:								schedule: / YR
10TH JOB				J F M A M J J A S O N D	FT	PT	SF	OC	SP	\$ / YR
10	6 910100000	SOC: SIC:								schedule: / YR

If a person FISHES COMMERCIALY or is otherwise SELF-EMPLOYED, list that as a separate job. For job title, enter COMMERCIAL FISHER, CARVER, SEWER, BAKER, etc. Work schedule usually will be ON CALL. For gross income from self-employment, enter revenue MINUS expenses.

If a person does not earn money from any kind of work, enter RETIRED, UNEMPLOYED, DISABLED, STUDENT, or HOMEMAKER or other appropriate description as the job title.

Leave employer, months worked, schedule, and gross income blank.

WORK SCHEDULE
FT - Fulltime (35+ hr/wk)
PT - Parttime (<35 hr/wk)
SF - Shift (2wks on/2wks off, etc.)
SP - Shift - part time
OC - Irregular, on call
-- - Unemployed

GROSS INCOME is the same as **TAXABLE INCOME** on a W-2 form. Self-employment, enter revenue - expense

OTHER INCOME

HOUSEHOLD ID

Between January 1, 2014 and December 31, 2014 ...

...Did any members of your household receive a dividend from the Permanent Fund or a native corporation?..... Y N

IF NO, go to the next section on this page

IF YES, continue below...

	Did anyone in your household receive income from	TOTAL amount all members of your household received from	
		in 2014 (circle one)	2014 (dollars)
DIVIDENDS	ALASKA PERMANENT FUND DIVIDEND	Y N	\$ / YR
	32		
	NATIVE CORPORATION DIVIDENDS	Y N	\$ / YR
	13		

Alaska PFD IN 2014	Regional corporations	Dividend
1 PFD = \$1,884	Doyon	\$4.95
2 PFDs = \$3,768		
3 PFDs = \$5,652		
4 PFDs = \$7,536		
5 PFDs = \$9,420		
6 PFDs = \$11,304	Village Corporation(s)	Dividend
7 PFDs = \$13,188		
8 PFDs = \$15,072		
9 PFDs = \$16,956		
10 PFDs = \$18,840		
11 PFDs = \$20,724		

Between January 1, 2014 and December 31, 2014 ...

...Did any members of your household receive OTHER income such as SENIOR BENEFITS or UNEMPLOYMENT?..... Y N

IF NO, go to the next section on this page

IF YES, continue below...

	Received?	Total amount?	
		(circle one)	(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		
ENTITLEMENTS	DISABILITY	Y N	\$ / YR
	31		
	VETERANS ASSISTANCE	Y N	\$ / YR
	35		
STATE BENEFITS	FOOD STAMPS (QUEST CARD)	Y N	\$ / YR
	11		
	ADULT PUBLIC ASSISTANCE	Y N	\$ / YR
3			
	SUPPLEMENTAL SECURITY INCOME (SSI)	Y N	\$ / YR
	10		
	ENERGY ASSISTANCE	Y N	\$ / YR
	9		
	ALASKA SENIOR BENEFITS (LONGEVITY)	Y N	\$ / YR
6			

	Received?	Total amount?	
		(circle one)	(dollars)
FAMILY & CHILD	TANF (say "tanif", used to be AFDC)	Y N	\$ / YR
	2		
	CHILD SUPPORT	Y N	\$ / YR
	15		
OTHER	FOSTER CARE	Y N	\$ / YR
	41		
	FUEL VOUCHERS	Y N	\$ / YR
	49		
	MEETING HONORARIA (not per diem*)	Y N	\$ / YR
	50		
	OTHER (describe)	Y N	\$ / YR
	OTHER (describe)	Y N	\$ / YR

* per diem covers travel expenses, and is not counted as income.
Scratch paper for calculations

for _____ weeks =
for _____ weeks =

for _____ weeks =
for _____ weeks =

Senior Benefits of \$125 per month for 12 months = \$1,500 per elder
Senior Benefits of \$175 per month for 12 months = \$2,100 per elder
Senior Benefits of \$250 per month for 12 months = \$3,000 per elder

**APPENDIX B.—ETHNOGRAPHIC INTERVIEW
PROTOCOL**

KEY INFORMANT INTERVIEW
NPS HUGHES HARVEST UPDATE 2014

Date:

Name of interviewer:

Name of respondent:

If households has been surveyed and given informed consent to the interview, we can verify but shouldn't have to ask:

Age of respondent:

How many members in your household?

How long have you lived in this community?

Would you like to have your name included in the report? Yes No

Notes:

Project Overview

We (ADF&G, NPS, HTC) are conducting comprehensive subsistence surveys about last year, 2014. We are asking about the use of subsistence resources for the entire year of 2014. In the survey, we asked specific questions about your harvest of fish, game, and plants, and your general areas of harvest for the 2014 year only – but that is just a snapshot of life in Hughes

Now we are asking for your help to understand resource uses in your area and how last year compares to other years and other decades. Your experience of subsistence activities, recently and over your lifetime, will make the information that we are collecting about 2014 more meaningful.

INTERVIEW TOPICS (USE CONVERSATIONALLY, AS A GUIDELINE)

Maybe you would start by telling us a little about yourself and where you grew up...

Would you talk a little about how you learned your subsistence skills? [Where, when, how, from who, did you learn?]

Fish (Non-salmon/Salmon) – What kinds of fish are important to your household and community? How has fishing changed over your lifetime?

- Has harvest timing changed?
- What kind of gear/transportation did you use in the past? What about now?
- Have there been changes to how different fish are processed and stored? [When and why?]
- How did you learn to fish. Are kids learning now?
- Did you have any family rules about the treatment of salmon/nonsalmon resources?
- Do people go get or receive much fish or marine resources from other places, such as halibut or seal oil? Has this changed over the years?
- What other kinds of changes have affected fishing in Hughes during your life?
- How have your harvests compared with recent years?
- What factors prevent you from getting the amount you needed?

Large Land Mammals – What large animals are most important to your household and community? Has what you harvest and how you harvest changed over your lifetime?

- Has harvest timing changed?
- Are the places you go to find game different now than in the past? [ask about changes to caribou patterns]
- What kind of gear/transportation did you use in the past? What about now?
- Have there been changes to how meat and fat are processed and stored? [When and why?]
- Are there certain organs–different parts–that you like to eat?
- Are hides tanned locally? Are they used for slippers and gloves or other handicrafts?
- How have your harvests compared with recent years?
- What factors prevent you from getting the amount you needed?

Small Land Mammals/Furbearers – What small game and furbearers are most important to your household and community? Has what you harvest and how you harvest changed over your lifetime?

- What small game do you harvest to eat and which game do you harvest for fur?
- Has harvest timing changed?
- Does your family have any rules about the treatment of small land mammals or furbearers?
- Are the places you go to find game different now than in the past?
- What kind of gear/transportation did you use in the past? What about now?
- Have there been changes to how furs are processed or marketed? [When and why?]
- How have your harvests compared with recent years?
- What factors prevent you from getting the amount you needed?
- How have your harvests compared with recent years?
- What factors prevent you from getting the amount you needed?

Birds and Eggs – What kinds of birds are most important to your household and community?

- How has bird hunting changed since you were young?
- Are eggs important to your household or community?
- Has harvest timing changed?
- Are the places you go to find birds and eggs different now than in the past?
- What kind of gear/transportation did you use in the past? What about now?
- What kinds of changes have there been to processing and storing birds? [When and why?]
- How have your harvests compared with recent years?
- What factors prevent you from getting the amount you needed?

Plants/Berries/Wood – What plants, berries, and wood are most important to your household and community? Has what you harvest and how you harvest changed over your lifetime?

- Has harvest timing changed?
- Are the places you go to find plants, berries, or wood different now than in the past?
- What kind of gear/transportation did you use in the past? What about now?
- How have your harvests compared with recent years?
- What factors prevent you from getting the amount you needed?

Natural Products / handicrafts

- Do you use any natural materials for handicrafts or other products, like soap or medicine?
- Do you mostly make handicrafts for gifts (at Potlatch?) or for sale? [Ask about advantages or disadvantages of natural vs store materials in terms of use, social value, sale value, etc.]

Sharing and exchange

- What kinds of resources are shared most often in your community?
- What kinds of resources do people exchange? Has this changed over the course of your life?
- Do you share your harvest with other communities? Are there resources that you receive from other communities, resources that are difficult to get here? Has sharing between villages changed over the course of your life? How do you think the road affected barter and trade between communities?

Other

- Are there resources that you feel are unique to your community, or hold a special value to your community? Maybe resources other communities don't rely on as much as Hughes?
- What pattern of resource use do you feel most defines your community?
- Do you remember hunting and fishing without regulations? When and how did regulations change hunting and fishing?
- What other things have changed subsistence in Hughes over your lifetime? [When was that? How did things change?]
- Do you have concerns about subsistence in the future?
- Is there anything else you would like to share?

APPENDIX C.—ADDITIONAL TABLES

Table C-1.—Conversion factors, Hughes, 2014.

The following table presents the conversion factors used in determining how many pounds were harvested of each resource surveyed. For instance, if respondents reported harvesting 3 qt of smelt, the quantity would be multiplied by the appropriate conversion factor (in this case 1.5) to show a harvest of 4.5 lb of smelt.

Resource name	Reported units	Conversion factor
Chum salmon [CF retention]	individual	5.0320
Summer chum salmon	individual	5.0320
Fall chum salmon	individual	5.0320
Coho salmon	individual	5.1680
Coho salmon [CF retention]	individual	5.1680
Chinook salmon	individual	8.6830
Chinook salmon [CF retention]	individual	8.6830
Pink salmon	individual	2.5770
Pink salmon [CF retention]	individual	2.5770
Sockeye salmon	individual	4.0320
Sockeye salmon [CF retention]	individual	4.0320
Unknown salmon	individual	5.0532
Pacific herring [CF retention]	gallons	6.0000
Pacific herring roe/unspecified [CF retention]	gallons	5.5000
Pacific halibut [CF retention]	pounds	1.0000
Burbot	individual	2.4000
Dolly Varden	individual	0.9000
Lake trout	individual	2.0000
Arctic grayling	individual	0.9000
Northern pike	individual	1.4000
Sheefish	individual	6.0000
Longnose sucker	individual	2.0000
Unknown trout	individual	2.1000
Broad whitefish	individual	1.4000
Broad whitefish	pounds	1.0000
Bering cisco	individual	1.4000
Least cisco	individual	1.0000
Least cisco	pounds	1.0000
Humpback whitefish	individual	3.0000
Humpback whitefish	pounds	1.0000
Round whitefish	individual	0.5000
Unknown whitefishes	individual	1.5065
Black bear	individual	100.0000
Brown bear	individual	141.0000
Caribou	individual	130.0000
Moose	individual	540.0000
Dall sheep	individual	65.0000
Beaver	individual	15.0000
Coyote	individual	0.0000
Unknown foxes	individual	0.0000
Snowshoe hare	individual	2.0000
River (land) otter	individual	3.0000
Lynx	individual	4.0000

-continued-

Table C-1.–Page 2 of 3.

Resource name	Reported units	Conversion factor
Marten	individual	0.0000
Mink	individual	2.0000
Muskrat	individual	0.7500
Porcupine	individual	5.0000
Weasel	individual	0.5000
Gray wolf	individual	0.0000
Wolverine	individual	0.0000
Bearded seal	individual	286.0000
Northern fur seal	individual	15.0000
Spotted seal	individual	98.0000
Unknown seals	individual	56.0000
Steller sea lion	individual	200.0000
Beluga whale	individual	995.0000
Bowhead whale	individual	28677.0000
Unknown whale	individual	0.0000
Bufflehead	individual	0.4000
Unknown eiders	individual	3.0000
Unknown goldeneyes	individual	1.5400
Mallard	individual	1.9500
Long-tailed duck	individual	1.5000
Northern pintail	individual	1.5000
Black scoter	individual	0.9000
White-winged scoter	individual	2.2900
Unknown scoter	individual	0.9000
Northern shoveler	individual	1.0900
Unknown teal	individual	0.5200
American wigeon	individual	1.3100
Unknown ducks	individual	1.3000
Unknown Canada/cackling geese	individual	1.2000
Snow goose	individual	4.0000
White-fronted goose	individual	4.2400
Unknown swans	individual	11.2100
Unknown loons	individual	5.4400
Spruce grouse	individual	0.7000
Sharp-tailed grouse	individual	0.7000
Ruffed grouse	individual	0.7000
Ptarmigans	individual	0.7000
Unknown duck eggs	individual	0.1500
Unknown goose eggs	individual	0.3000
Unknown gull eggs	individual	0.3000
Butter clams	gallons	3.0000
Freshwater clams	gallons	3.0000
Razor clams	gallons	3.0000
Unknown clams	gallons	3.0000
Dungeness crab	individual	0.7000
Unknown king crab	individual	2.1000
Unknown tanner crab	individual	1.6000
Unknown crab [CF retention]	individual	2.1000

-continued-

Table C-1.–Page 3 of 3.

Resource name	Reported units	Conversion factor
Blueberry	gallons	4.0000
Blueberry	quarts	1.0000
Blueberry	pints	0.5000
Lowbush cranberry	gallons	4.0000
Highbush cranberry	gallons	4.0000
Crowberry	gallons	4.0000
Crowberry	quarts	1.0000
Cloudberry	gallons	4.0000
Raspberry	gallons	4.0000
Raspberry	quarts	1.0000
Wild rhubarb	gallons	4.0000
Hudson's Bay (Labrador) tea	gallons	1.0000
Hudson's Bay (Labrador) tea	quarts	0.2500
Spruce tips	gallons	1.0000
Wild rose hips	gallons	4.0000
Wild rose hips	quarts	1.0000
Other wild greens	gallons	1.0000
Unknown mushrooms	gallons	1.0000
Stinkweed	gallons	1.0000
Punk	pounds	1.0000
Punk	gallons	1.0000
Punk	plastic bag	1.0000
Chaga	pounds	1.0000
Chaga	gallons	1.0000
Mousefoods	gallons	1.0000
Roots	gallons	0.0000
Birch	plastic bag	0.0000
Other wood	cords	0.0000
Wood	cords	0.0000

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

Table C-2.—Individual participation in subsistence harvesting and processing activities, Hughes, 2014.

Total number of people	90.2
Fish	
Fish	
Number	34.0
Percentage	37.7%
Process	
Number	38.7
Percentage	42.9%
Large land mammals	
Hunt	
Number	43.0
Percentage	47.6%
Process	
Number	48.7
Percentage	54.0%
Small land mammals	
Hunt or trap	
Number	15.7
Percentage	17.4%
Process	
Number	18.3
Percentage	20.3%
Marine mammals	
Hunt	
Number	0.0
Percentage	0.0%
Process	
Number	0.0
Percentage	0.0%
Birds and eggs	
Hunt/gather	
Number	18.3
Percentage	20.3%
Process	
Number	21.5
Percentage	23.8%
Vegetation	
Gather	
Number	47.3
Percentage	52.4%
Process	
Number	41.5
Percentage	46.0%
Any resource	
Attempt harvest	
Number	56.2
Percentage	62.3%
Process	
Number	62.8
Percentage	69.6%

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

Table C-3.—Resources used, Hughes, 2014.

Resource	Scientific name
Summer chum salmon	<i>Oncorhynchus keta</i>
Fall chum salmon	<i>Oncorhynchus keta</i>
Unknown chum salmon	<i>Oncorhynchus keta</i>
Coho salmon	<i>Oncorhynchus kisutch</i>
Chinook salmon	<i>Oncorhynchus tshawytscha</i>
Pink salmon	<i>Oncorhynchus gorbuscha</i>
Sockeye salmon	<i>Oncorhynchus nerka</i>
Unknown salmon	<i>Oncorhynchus spp.</i>
Pacific herring	<i>Clupea pallasii</i>
Pacific herring roe/unspecified	<i>Clupea pallasii</i>
Pacific halibut	<i>Hippoglossus stenolepis</i>
Burbot	<i>Lota lota</i>
Dolly Varden—unknown	<i>Salvelinus malma</i>
Lake trout	<i>Salvelinus namaycush</i>
Arctic grayling	<i>Thymallus arcticus</i>
Northern pike	<i>Esox lucius</i>
Sheefish	<i>Stenodus leucichthys</i>
Longnose sucker	<i>Catostomus catostomus</i>
Unknown trout	
Broad whitefish	<i>Coregonus nasus</i>
Bering cisco	<i>Coregonus laurettae</i>
Least cisco	<i>Coregonus sardinella</i>
Humpback whitefish	<i>Coregonus pidschian</i>
Round whitefish	<i>Prosopium cylindraceum</i>
Unknown whitefishes	
Black bear	<i>Ursus americanus</i>
Brown bear	<i>Ursus arctos</i>
Caribou	<i>Rangifer tarandus</i>
Moose	<i>Alces alces</i>
Dall sheep	<i>Ovis dalli</i>
Beaver	<i>Castor canadensis</i>
Coyote	<i>Canis latrans</i>
Unknown foxes	<i>Vulpes spp.</i>
Snowshoe hare	<i>Lepus americanus</i>
River (land) otter	<i>Lontra canadensis</i>
Lynx	<i>Lynx canadensis</i>
Marten	<i>Martes spp.</i>
Mink	<i>Neovison vison</i>
Muskrat	<i>Ondatra zibethicus</i>
Porcupine	<i>Erethizon dorsatum</i>
Weasel	<i>Mustela</i>
Gray wolf	<i>Canis lupus</i>
Wolverine	<i>Gulo gulo</i>
Unknown bearded seal	<i>Erignathus barbatus</i>
Northern fur seal	<i>Callorhinus ursinus</i>
Spotted seal	<i>Phoca largha</i>
Unknown seals	
Steller sea lion	<i>Eumetopias jubatus</i>

-continued-

Table C-3.–Page 2 of 3.

Resource	Scientific name
Beluga whale	<i>Delphinapterus leucas</i>
Bowhead whale	<i>Balaena mysticetus</i>
Unknown whale	
Bufflehead	<i>Bucephala albeola</i>
Unknown eiders	
Unknown goldeneyes	<i>Bucephala spp.</i>
Mallard	<i>Anas platyrhynchos</i>
Long-tailed duck	<i>Clangula hyemalis</i>
Northern pintail	<i>Anas acuta</i>
Black scoter	<i>Melanitta nigra</i>
White-winged scoter	<i>Melanitta fusca</i>
Unknown scoters	<i>Melanitta spp.</i>
Northern shoveler	<i>Anas clypeata</i>
Unknown teals	<i>Anas spp.</i>
American wigeon	<i>Anas americana</i>
Unknown ducks	
Unknown Canada/cackling geese	<i>Branta spp.</i>
Snow goose	<i>Chen caerulescens</i>
White-fronted goose	<i>Anser albifrons</i>
Unknown swans	<i>Cygnus spp.</i>
Unknown loons	<i>Gavia spp.</i>
Spruce grouse	<i>Falcipennis canadensis</i>
Sharp-tailed grouse	<i>Tympanuchus phasianellus</i>
Ruffed grouse	<i>Bonasa umbellus</i>
Unknown ptarmigans	<i>Lagopus spp.</i>
Unknown duck eggs	
Unknown goose eggs	
Unknown gull eggs	
Butter clams	<i>Saxidomus gigantea</i>
Freshwater clams	
Razor clams	<i>Siliqua spp.</i>
Unknown clams	
Dungeness crab	<i>Cancer magister</i>
Unknown king crabs	
Unknown tanner crabs	<i>Chionoecetes spp.</i>
Unknown crabs	
Blueberry	<i>Vaccinium uliginosum alpinum</i>
Lowbush cranberry	<i>Vaccinium vitis-idaea minus</i>
Highbush cranberry	<i>Viburnum edule</i>
Crowberry	<i>Empetrum nigrum</i>
Cloudberry	<i>Rubus chamaemorus</i>
Raspberry	<i>Rubus idaeus</i>
Wild rhubarb	<i>Polygonum alaskanum</i>
Eskimo potato	<i>Hedysarum alpinum</i>
Hudson's Bay (Labrador) tea	<i>Ledum palustre</i>
Spruce tips	<i>Picea spp.</i>
Wild rose hips	<i>Rosa acicularis</i>
Other wild greens	
Unknown mushrooms	

-continued-

Table C-3.–Page 3 of 3.

Resource	Scientific name
Stinkweed	<i>Artemisia tilesii</i>
Punk	
Chaga	<i>Inonotus I. obliquus</i>
Mousefoods	
Birch	<i>Betula spp.</i>
Other wood	

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