Technical Paper No. 419

Exploring the Subsistence Fisheries of Point Lay and Wainwright, Alaska

by

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August 2016

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

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Weights and measures (metric)

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

Weights and measures (English)

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

Time and temperature

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

Physics and chemistry

all atomic symbols

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

General

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

Measures (fisheries)

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

Mathematics, statistics

all standard mathematical signs, symbols and abbreviations

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

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ABSTRACT

This report summarizes a three year project in which households in Wainwright and Point Lay were asked questions about their harvest and use of fish species. The subsistence survey asked respondents about their use, harvest, and sharing of fish resources in 2012–2014. Sample size ranged from 51% to 53% in Wainwright and 63% to 66% in Point Lay over the 3 years of the project. Questions included how much of each resource was harvested and the timing of fishing activities. Other questions included asking respondents about perceived changes to key subsistence fisheries. In addition, key respondent interviews were conducted with knowledgeable fishers about the impacts of climate change on their fishing practices, changes to fisheries over time, and observations of resource health and abundance. A key topic during interviews was perceptions of changing salmon abundance in the Arctic due to warmer waters as a result of a changing climate.

Key fisheries in Wainwright include smelt and Arctic grayling, while Point Lay residents primarily rely on salmon and Arctic grayling. Wainwright residents harvested varying amounts of fish across the 3 study years, ranging from 22,982 lb in 2013 to 34,808 lb in 2012. Per capita harvests ranged from 49 lb per person in 2014 to 71 lb per capita in 2012. A majority of the harvests in 2012–2014 were nonsalmon species. Point Lay residents harvested between 4,600 lb and 13,812 lb of fish, with per capita harvests ranging between 18 lb in 2013 to 53 lb in 2012. Salmon composed the majority of Point Lay's total fish harvest in 2012 (63%) and 2014 (54%); nonsalmon fish composed a majority of the harvest (71%) in 2013, which had a reportedly poor summer fishing season due to weather. Residents in both communities described environmental conditions impacting key fisheries. Ice-fishing is often delayed now due to later freezeups, and travel to fall camps is sometimes hampered by open water on the rivers. Key respondents and other residents had varying opinions as to whether salmon had increased in their region. A majority of interviewed fishers in Wainwright felt that there is greater salmon abundance now than in past, while Point Lay residents had mixed opinions. Residents in both communities relayed that rare species are showing up in greater abundance, although salmon identification is a challenge on the North Slope.

Key words: subsistence fishing, Wainwright, Point Lay, salmon, nonsalmon fishes, climate change, the North Slope

1. INTRODUCTION

This report summarizes the results of a 3 year community-based research project to document subsistence fishing practices and traditional ecological knowledge of both salmon and nonsalmon fishes. Topics covered in both surveys and key respondent interviews include life history, ecology, environmental and climate-related observations, changes in preservation methods, trends in abundance and run timing, and socio-economic factors. Taken together, this study seeks to provide a comprehensive picture of historical and contemporary harvest and use practices of fish species in Point Lay and Wainwright.

PROJECT BACKGROUND

This project documents existing subsistence salmon and nonsalmon fish harvest practices as well as local residents' observations of changes to fish abundance through time and to subsistence fisheries in Point Lay and Wainwright. The Arctic marine environment faces potential and current stresses from the impacts of climate change, possible expansion of marine shipping routes, new or expanded Arctic fisheries, and resource development activities. These current and potential changes necessitate baseline data regarding subsistence fisheries to help inform future management actions by state and federal authorities.

According to mounting scientific evidence, the world is currently undergoing a period of rapid shift in climate (ACIA 2005). Polar regions face current and visible impacts such as glacier melt and diminished sea ice, which make them sentinels of global climate change (Barber 2006). The effects of the warming climate on Alaskan ecosystems are beginning to be studied and understood. While the main goal of this project was to document current and potentially emerging North Slope fisheries, it also includes perspectives on how the northern ecosystem, particularly fisheries, is impacted by a changing environment. Subsistence users are uniquely positioned to observe and offer insight into how climate change impacts their regional environment.

Fish species, although less visible and widely used than other subsistence resources such as whales and caribou in North Slope communities, have historically been, and continue to be, an important part of the seasonal round for the residents of Point Lay and Wainwright (Bacon et al. 2011rev.; Braund, Loring, et al. 1993). Salmon and whitefish are primarily harvested using set gillnets in July and August, while some are caught using rod and reel. Grayling are largely caught jigging through the ice in the autumn months (Bacon et al. 2011rev.), while smelt are targeted in the winter months (Braund, Loring, et al. 1993). Fishers in Point Lay and Wainwright largely harvest pink salmon, locally known as "humpback" salmon, and "silver salmon;" the latter is believed to be chum salmon. Fishers in the area have also reported harvest of Chinook salmon (Bacon et al. 2011rev.; Retherford field notes, 2009 and 2010). Variations and similarities in harvest practices between the two study communities have been noted in a study by the North Slope Borough Department of Wildlife Management; Arctic grayling and salmon species are especially important fish resources for Point Lay, while rainbow smelt and Arctic grayling are of great importance to Wainwright (Bacon et al. 2011rev.). For a full list of fish species used by residents of the study communities in 2012–2014, see Table 1-1.

Salmon in particular have been reported to be an increasingly used and harvested resource in North Slope villages, but baseline ethnographic and harvest information has been lacking as to the degree to which they are becoming targeted in fisheries in Point Lay and Wainwright. In 2009 and 2010, ADF&G staff conducted interviews with local fishers in the two study communities and found that salmon species have long been harvested, but that these harvests have largely been opportunistic in nature, often occurring in conjunction with other subsistence activities such as caribou hunting. Residents explained that fishing and hunting camps, as well as cabins, are located in areas where caribou have historically migrated. Likewise, salmon were often an incidental catch in other targeted nonsalmon fisheries. Changes to northern habitats, including warming oceans and diminishing sea ice, are believed to influence salmon population

distributions, and fisheries researchers have cited a need for further comprehensive studies (Booth, Shawn and Zeller, Dirk 2008). It is possible that rapid climactic changes may have an impact on fish abundance, which, as a result, may provide greater opportunity for fishers to harvest both salmon and nonsalmon species. Detrimental impacts of climate change, such as later freeze-ups and changing ice conditions may also alter subsistence fishing patterns in the Arctic. Local observations of these themes will be summarized in the individual community chapters.

LITERATURE REVIEW

Representations of Inupiaq subsistence practices often revolve around the harvest of marine mammal resources, particularly bowhead whales, and terrestrial animals such as caribou. Despite the heavy reliance on such resources, fishing has historically been an important part of the seasonal round for Arctic communities and continues to be to the present day. Although often overshadowed by other resources in subsistence research, there is evidence that fishing has been a vital activity and that fish have been critical during times which other resources have limited availability (Schneider et al. 1980). In the past, when Inupiat were nomadic people, camps or settlements were frequently established near productive fishing locations (Burch Jr. 1998). One study that sought to document subsistence fisheries in Barrow, Point Lay, Wainwright, and Nuiqsut via a literature review estimated that the combined annual harvest of these villages was 210,000 lb, which rivaled the annual harvest of edible pounds provided by bowhead whales (Craig 1987). The importance of fishing has not diminished in the present day, and fishing provides valuable sustenance while encouraging cooperation and sharing (Brewster et al. 2010). Fishers on the North Slope are intimately connected to their environment and have fishing patterns that are adapted to harvesting the species that they choose to target (Brewster et al. 2010). There are approximately 22 species of fish harvested, with differing availability in the region depending on each species' habitat and movements within life cycles (George et al. 2009). Despite the importance of fish resources to residents of the North Slope, little research is focused primarily on subsistence fishing in the region. While harvest information for fish is available, it is primarily presented within research focused on comprehensive subsistence documentation (Alaska Consultants, Inc. et al. 1984; CSIS; Bacon et al. 2011rev.; Braund, Brewster, et al. 1993; Braund, Loring, et al. 1993; Brower Jr., Harry K. et al. 2000; Brower and Opie 1996, 1997, 1998; Fall and Utermohle 1995; Fuller and George 1997; Hepa et al. 1997; Kofinas et al. In prep; Pedersen and Hugo 2005)[1].

Documentation of subsistence fisheries in the Arctic region of Alaska is timely given the potential climate change impacts to key fisheries. Air temperatures since the 1950s have risen by 2° to 3°C during the summer and 4° in the winter months. With projections that temperature will only increase, myriad impacts are expected in the Arctic including reduced sea ice, less snow cover, increased precipitation, permafrost thaw, and increased river runoff (ACIA 2005). Arctic seas are warming with the climate, with sea surface temperatures increasing in the Beaufort and Chukchi seas (Steele et al. 2008, 2010). Three outcomes are possible for fish in response to a warming climate and waters: local extinction due to thermal stress, shifts of habitat, and genetic change through rapid natural selection (Reist et al. 2006).The impacts to specific species are uncertain due to the complexity of Arctic freshwater environments, especially for anadromous fish. Estuarine and nearshore habitats will also be impacted, which could alter feeding opportunities for sea-run fish. A combination of factors may alter timing and location of migration for different species. Fish are ectotherms, meaning that their body temperatures are governed

1. See also Brown, Caroline L. and Nicole M. Braem, editors. In prep. "Harvest and Use of Wild Resources in 7 Communities in Interior and Arctic Alaska, 2014." Fairbanks: Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. NNN. Hereinafter cited as (Brown and Braem *In prep*); and
Braem, Nicole M., Andrew Brenner, Anna R. Godduhn, Elizabeth Mikow, Brittany Retherford, David Koster, and Marylynne L. Kostick. In prep. "Chukchi Sea and Norton Sound Observation Network: Golovin, Noorvik, and Point Lay, 2012–2014." Fairbanks: Alaska Department of Fish and Game Division of Subsistence Technical Paper No. 403. Hereinafter cited as (Braem et al. *In prep*).

by the surrounding water in which they reside; species and individuals have different thermal preferences and can behaviorally choose optimal conditions. Possible impacts of warming waters include range retractions for Arctic species (ex. Arctic cisco and Arctic char) and range extensions for cold-water species that have a greater range of tolerance to temperature increase (ex. lake whitefish). Overwintering mortality might decrease for species like Dolly Varden and Arctic grayling since increased groundwater flows into rivers may increase winter habitat (Reist et al. 2006). It is possible that some anadromous fishes, such as Arctic char and Dolly Varden, may exhibit less anadromous behavior if freshwater habitats become more productive (Reist et al. 2006). Competition from colonizing southern organisms may present further challenges to resident species. There are many possible outcomes, which are difficult at this point to predict (Reist et al. 2006). One possible impact of climate change in the Arctic Ocean, although there is inconclusive evidence, is an increase in abundance of Pacific salmon due to northward expansion and more favorable environmental conditions (Babaluk et al. 2000; Grebmeier et al. 2006; Irvine et al. 2009; Moss et al. 2009; Reist et al. 2006; Sigler et al. 2011; Stephenson 2006).

All 5 species of Pacific salmon found in Alaska have been caught in Arctic waters, but only pink and chum salmon occur with regularity. Pink salmon are the most numerous in Arctic waters, while chum are widely distributed but less abundant. The presence of these two species is most likely due to their tolerance of cold water temperatures (Craig and Halverson 1986) and unique life cycle in which fry swim to marine or estuarine environments immediately after hatching (Babaluk et al. 2000; Irvine et al. 2009). Despite the fact that these species spawn in rivers on the Arctic coast, winter ocean temperatures are generally lethal for salmon. The most likely possibility for the survival of pink and chum salmon in the Arctic is that they migrate hundreds of miles to feed in the Bering Sea and return to their natal streams to spawn (Irvine et al. 2009). While rare in Arctic waters, catches of sockeye, Chinook, and coho salmon have been recorded. Sockeye salmon have been recorded at Sachs Harbor, Northwest Terriories, and as far east as Bathhurst Inlet, Nunavut (Babaluk et al. 2000; Stephenson 2006); captures of single coho salmon have been recorded in Great Bear Lake and the Mackenzie River Delta in Canada; and several Chinook salmon have also been recorded in the Canadian Arctic (Stephenson 2006). These species are also rare in Arctic Alaskan waters, but catches of Chinook salmon regularly occur in Barrow, and local fishers report a spawning population in the Kugura River in Peard Bay (George et al. 2009). Sockeye salmon have also been harvested in the region (Brown and Braem *In prep*; George et al. 2009).

There is no clear consensus as to whether abundance of local chum and pink salmon has increased, or that less common species are increasing in presence in Arctic waters. In the case of the Canadian Arctic, it is possible that increased interest and effort in documentation account for the perception that abundance has increased; Stephenson (2006) suggests that there is little evidence that Pacific salmon are more abundant in the region, although some years have been exceptional. In 2008, a record catch of pink salmon was recorded at the Endicott oil field near Prudhoe Bay (248 salmon) in a sampling net as a part of a long term monitoring program aimed at understanding the impacts of oil. However, the catch in 2009 (6 salmon) was average compared to the 27 years of the project, indicating that 2008 was an anomaly (Fechhelm et al. 2009). Moss et al. (2009), in contrast, observed an increase in both pink and chum salmon abundance and size in the Chukchi Sea in connection with warmer waters creating more favorable environmental conditions. Despite the inconclusive nature of scientific evidence, increasing salmon abundance has been reported by subsistence fishers in both Alaska and the Canadian Arctic. Residents of Sachs Harbor, Northwest Territories, who tracked local climate change impacts throughout the 1990s, noted that salmon appeared within their region in that decade; they also have reported other species of fish moving into their region (Berkes and Jolly 2001). Barrow fishers have reported a greater abundance of salmon in recent years, although opinions were mixed (Brewster et al. 2010; Brown and Braem *In prep*; Carothers et al. 2013). A majority of Nuiqsut residents also held this opinion (Carothers et al. 2013). Wainwright residents have also reported observing increased numbers of salmon in their local rivers, as well as different species in greater numbers (Kassam and Wainwright Traditional Council 2001).

Indigenous populations have been keen observers of their local environment for millennia. There is a clear understanding among residents of the Arctic that the climate has changed and that these changes have been observed within individual lifetimes (Ashford and Castleden 2001; Berkes and Jolly 2001; Huntington and Fox 2005; Jacobs and Bell 1998; Krupnik and Jolly 2002). Impacts of a warming climate are difficult to observe until they are viewed at local scales where they are more acutely experienced, and thus traditional knowledge is increasingly recognized as an important avenue to better understand the Arctic environment (Krupnik and Jolly 2002; Riedlinger and Berkes 2001). Indigenous communities and scientists have begun to form partnerships in the investigation and documentation of climate impacts, which allows for a collaborative approach that can help guide research (Berkes and Jolly 2001; Hinzman et al. 2005; Kofinas 2002; Krupnik and Jolly 2002; Riedlinger and Berkes 2001). Although the main aim of this project is to document subsistence harvests and uses of fish resources in Point Lay and Wainwright, this documentation is taking place during a time of rapid climate change. With the current and potential future impacts to subsistence fisheries in the region, the importance of local observations cannot be overstated.

REGIONAL BACKGROUND

Point Lay and Wainwright are the only two communities on the more than 300 mile stretch of Chukchi Sea coast between Point Hope and Barrow (Figure 1-1). Prior to the 20th century, residents occupied many smaller seasonal villages, many of them inland, and joined one another at particular times of the year for cooperative efforts and trade. Icy Cape, for example, a prominent point between the two contemporary communities, was a major seasonal settlement and is still used as a hunting area by residents of both communities.

The pace of social change across Alaska's Arctic increased during the 18th and early 19th centuries, as Russian, European, and American explorers, including whalers and others drawn by the rich and diverse resources of the region, expanded maps of North America's northwest coast. After finding the Americas between Europe and Asia, European nations searched for a navigable route through the Arctic for trade with Asia—the "Northwest Passage." Great Britain redoubled efforts to find a Northwest Passage in the early 1800s, and in 1826, the *HMS Blossom* was the first ship to explore the north coast of Alaska in the search for passage across the Arctic from the North Pacific. The coast was particularly packed with ice that summer, but the crew used the ship's long boat to navigate the shore leads from Point Lay to Point Barrow (Milan 1964). In 1845 Sir John Franklin was sent to explore a route, but he failed to return (Brandt 2010). His disappearance initiated exhaustive search efforts, prompting a significant increase in Arctic activity during the mid-19th century (Bockstoce 2009; Foote 1965).

Whaling in the North Pacific expanded to the Arctic, and by the late 1880s, ships overwintered on the ice to avoid the long voyage south and back again (Milan 1964:19). Intensive whaling decimated whale populations, brought waves of epidemic disease that likewise devastated Alaska Native populations, and increased the demand for wild food resources, especially caribou (Milan 1964:20). Many North Slope Inupiat were involved with commercial whaling, and the activity brought residents from many small settlements into the growing villages of Point Hope, Wainwright, and Barrow (Foote 1965).

The 20th century brought increasingly rapid change to the western Arctic. The repercussions of contact, the fluidity of populations, and some details on fish and fishing in the region are described in the personal story of Waldo Bodfish, Sr. (Bodfish et al. 1991), among others. Reindeer herds were introduced and adopted into the seasonal round in the early 1900s but began to disperse from North Slope herders with migrating caribou in the 1930s, and the reindeer industry collapsed in the early 1940s (Bodfish et al. 1991:72–73; Yarber et al. 1989:10–11). The growing caribou herds, however, enabled Inupiat "who formerly lived in the Interior to return from coastal communities to their more traditional homelands along the foothills and northern flank of the central Brooks Range" (ICAS 1979:16). Construction of Distant Early Warning (DEW) Line stations across the North American Arctic in the 1950s—with stations constructed in Barrow, Wainwright, and Point Lay—brought limited opportunities for

employment, increased the availability of goods and services, and ultimately (in the 1970s) facilitated the rebuilding of remote communities, including Point Lay, with the abandoned airfields (Fritz 2010). During this time, caribou herds again declined such that by the end of the 1970s, "[t]he people had to expand their fishing efforts and intensify their harvest of marine mammals to compensate for the decreased caribou harvest…" (ICAS 1979:17).

The Alaska Native Claims Settlement Act (ANCSA) was signed in 1971, followed by the formation of the Arctic Slope Regional Corporation (ASRC) and the North Slope Borough (NSB) in 1972. Currently, the North Slope Borough provides for such needs as police and fire protection, waste removal, water and sewer services, and many other governmental services such as environmental research. Both Point Lay and Wainwright are within the North Slope Borough School District, with schools that serve students from pre-kindergarten through high school and offer occasional adult and intergenerational programs. Students may also attend online courses through Ilisagvik College, which is located in Barrow.

The two study communities share many demographic and economic traits with each other and with other North Slope communities[2]. Residents are primarily Inupiaq and are descendants of people who have lived in the area for generations. Employment opportunities for residents are limited, and store bought foods are shipped in from hundreds or thousands of miles away. Each community has modern facilities, including homes and offices with water, sewer, and electricity—with very high maintenance costs. Most significantly, residents of each community use wild food resources, especially whales, caribou, birds, berries, and fish.

Weather conditions along this coast are generally characterized by long cold winters and cool summers. Weather and environmental conditions can be severe, with extreme lows of about -55°F in winter and highs near 80°F in summer, often including high winds, flooding, and storms. On average, Point Lay gets slightly more precipitation than Wainwright and has similarly high energy demands in terms of heating degree days each year (WHPacific, Inc. 2015). The permafrost in the region is estimated to be over 1,000 feet deep but is warming and beginning to thaw (Jorgenson et al. 2006). Comments received in both communities reflect concerns about the changing climate and possible impacts on fisheries, topics that will be discussed in detail in each community chapter. A recent, detailed review of climate and climate change in Wainwright is available and includes the following observations:

> The rivers are rich with fish including Arctic char, Dolly Varden, Arctic grayling and a variety of white fish. Climate related challenges for fish include, early snowmelt, lower late season water levels and higher temperatures. Turbidity and habitat change are also concerns as thaw-related bank erosion increases sediment deposits, and beveling as cut banks collapse and fill river beds. Sediments deposited from the banks are transferred downstream, shallowing the river and limiting travel by boat.
>
> The sea ice becomes a virtual extension of the coastal plain in winter providing access for polar bears and men, to travel and hunt from the ice. Ice seals inhabit the coastal zone along with walrus. Bowhead, beluga and grey whale migrate along the coast in the spring and return south in the fall. Under the water, [pink and chum] salmon, sheefish, crab and cod are present and fished at different times of the year. King [Chinook] salmon and silver [coho] salmon are emerging as new species in the region, and gradually becoming appreciated as subsistence resources (Craig George). Wainwright residents report sightings of new species including porpoises, sea lions, and birds such as puffins (Donna Nashoalook). (Brubaker et al. 2014:8)

2. North Slope Borough Snapshot: http://www.north-slope.org/assets/images/uploads/North_Slope_Borough.pdf

The barrier islands of Kasegaluk Lagoon compose the northeastern portion of the Alaska Maritime National Wildlife Refuge, and Wainwright is surrounded by the National Petroleum Reserve in Alaska (NPR-A). Subsistence hunters and fishers from both communities use both of these federal land areas. Each community has a seat on the BLM-coordinated Subsistence Advisory Panel for the NPR-A[3], and connections between them are strong:

> Many Point Lay people have lived in Wainwright in the past and still retain close family ties there. Therefore, it is not surprising there are several overlapping areas of subsistence usage with Wainwright hunters, such as in the Beaufort and Raven basins up the Kukpowruk River where each group goes for furbearers. Icy Cape is another area that each village uses for hunting waterfowl [as well as fish and land and marine mammals[4]]. Wainwright hunters occasionally come for caribou to the western Brooks Range in the southeast corner of the NPR-A, which is also used by Point Lay people. In March and April both villages may hunt for wolf and wolverine in the Amatusuk Hills. (North Slope Borough Department of Planning & Community Services 2014:C-3–C-4)

REGULATORY CONTEXT

Fishing in the Kotzebue-Arctic Area on the North Slope is typically constrained only by the general statewide provisions (e.g., 5 AAC 01.010) and specifications regarding lawful subsistence gear (5 AAC 01.120). Salmon may be taken in the Arctic-Kotzebue Area on the North Slope at any time with no harvest limits and no required permits. Salmon harvested for subsistence may be taken by gillnets and beach seines (5 AAC 01.120(f)). Fish other than salmon may be taken by set gillnet, drift gillnet, beach seine, fish wheel, pot, longline, fyke net, dip net, jigging gear, spear, and lead. With the exception of fishing through the ice, under state regulations all fish taken by hook and line attached to a rod or pole fall under sport fishing regulations with attendant bag limits (5 AAC 70.011). Federal regulations allow for the same gear types for subsistence harvest of fishes, with the exception that a hook and line attached to a rod and pole is considered legal subsistence gear both through the ice and in open water. Like state regulations, fish can be taken on the North Slope for subsistence under federal regulations at any time with no bag limits.

Standard conditions under both state and federal regulations include prohibition of fishing within 300 ft of a dam, fish ladder, weir, culvert, or other artificial obstruction. Other regulatory restrictions associated with subsistence fishing in the Arctic-Kotzebue Area include the provision that gillnets and any stationary fishing devices may not obstruct more than one-half the width of any fish stream and any channel or side channel of a fish stream (5 AAC 01.120(c)).

STUDY OBJECTIVES

The project had the following objectives:

1. For each community, document and catalogue traditional ecological knowledge of subsistence salmon and nonsalmon fishing, including historical abundance and trends, gear types used, seasonality, and harvest location information for each species.

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3. U. S. Department of the Interior Bureau of Land Management. 2016. "NPR-A Subsistence Advisory Panel." Accessed June 2, 2016. www.blm.gov/ak/st/en/res/npra_sap.html
4. During the Environmental Impact Assessment process for the NPR-A in the 1990s, subsistence use areas were mapped for each of the communities with traditional uses therein. Maps 3.4.3-7 (Wainwright) and 3.4.3-8 (Point Lay) show their respective use areas, and considerable overlap, especially around Icy Cape https://eplanning.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=dispatchToPatternPage&currentPageId=14702

2. Synthesize existing data related to subsistence fisheries in Point Lay and Wainwright, including existing reports, Federal Subsistence management program Regional Advisory Council minutes, and other archival sources.
3. Develop an annotated bibliography that explores studies and themes related to change and resilience in culture, including topics such as emergence in nature, access issues as a result of environmental change, and human resilience and adaptation to changing surrounding environment.
4. Develop and implement an exploratory harvest monitoring program for salmon and nonsalmon fisheries. Collect data on species harvest quantities, seasonality of harvest, and gear types for three study years: 2012, 2013, and 2014.
5. Map general areas where subsistence salmon and nonsalmon fisheries take place for each community, including local place names and historical harvest locations to help establish patterns and trends.
6. Create a set of species identification educational materials to distribute to community members during organized outreach events and harvest calendar collection trips.

Another objective of this project was to develop a baseline of subsistence fishing harvests by species and harvest location information with which to inform ADF&G Division of Commercial Fisheries research investigations and management, as well as to monitor future subsistence fisheries in the area and the possible effects related to climate change. The Alaska Department of Fish and Game is also responsible for maintaining anadromous waters data and this research can help to inform those collecting the data. This information also will contribute to ongoing discussions and planning for potential future commercial fisheries in Arctic waters as well as industrial development planning activities.

RESEARCH METHODS

Ethical Principles for the Conduct of Research

The project was guided by the research principles outlined in the *Alaska Federation of Natives Guidelines for Research*[5] and by the National Science Foundation, Office of Polar Programs in its *Principles for the Conduct of Research in the Arctic*[6], 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

Brittany Retherford was the initial principal investigator for the project. After Retherford resigned from the Division of Subsistence, Beth Mikow officially took over the project as Principal Investigator on February 4, 2014. A number of Division staff were instrumental across the 3 study years in survey implementation, administrative support, data entry and review, analysis of the survey results, producing maps, and editing this final report. Local research assistants were vital in fieldwork, and this project could

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

not have been successful without their expertise and knowledge of their communities. For a full list of staff who contributed to this study, see Table 1-2.

At the beginning of this project, Brittany Retherford collaborated with University of Alaska Fairbanks staff on the study design. Dr. Courtney Carothers and graduate student researchers Shelly Cotton and Katie Moerlein conducted an ethnographic research project on subsistence use and knowledge of salmon in Barrow and Nuiqsut. The final report of their project contributed greatly to this study. Taken together, both reports offer insight into salmon harvest and use across the Arctic.

Primary investigator Brittany Retherford had an ongoing relationship with the communities of Point Lay and Wainwright prior to the commencement of this project, and ADF&G researchers had conducted initial interviews on the topic of fisheries with community residents in 2009 and 2010. This project coincided with two current ADF&G (Division of Commercial Fisheries and Division of Habitat) research projects endeavoring to provide significant new biological data for salmon and nonsalmon species in several river drainages that empty into the Chukchi Sea. Brittany Retherford was involved in both projects in the capacity of collecting baseline traditional ecological knowledge (TEK) information to aid the Division of Commercial Fisheries in their exploration of subsistence fisheries in the Arctic, and also to aid in building contacts within the study communities and the North Slope Borough. Formal approval for this study was given by the Native Village of Point Lay and both the Native Village and City of Wainwright in fall 2011. Well-attended community meetings were held in both Point Lay and Wainwright in August 2012 to solicit feedback on survey implementation and project plans prior to the start of fieldwork.

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, ADF&G finalized the survey instrument in December 2013. An updated survey instrument to include seasonality of harvest and smelt-specific harvest assessments was implemented during the second year of the project, and finalized January 2014. A key goal was to structure the survey instrument to collect demographic, resource harvest and use, and other data that are comparable with information collected in other household surveys in the study communities and with data in the Community Subsistence Information System (CSIS[7]). Appendix A is an example of the 2 different survey instruments used in this project.

The surveys asked about the same nonsalmon and salmon fish species across the 3 study years in each community. In 2012, assessment questions asking respondents to compare their use of different species to the last 5 years was limited to the general categories of salmon, whitefish, and other nonsalmon fish (whitefish assessments for Point Lay are not used in analysis because very few households use or harvest these species). In the second year of the project, harvest assessment questions were added for smelt, and harvest questions were altered to also include more detail on the seasonality of harvest. Additional questions were added in each resource category asking respondents if they had noticed any changes to fishing for different resource categories.

Sample achievement varied over the course of the 3 years of data collection in each community. In Wainwright, the goal was a 60% random sample for 2012 and 2013; sample achievement during these study years was 51% (2012) and 53% (2013). Because both year 1 and 2 of the project required that all households be contacted due to the high rate of refusal, a census was attempted in 2014 and produced a 52% sample. In Point Lay, a 90% random sample was attempted during the first year of the project, largely due to the fact that this effort was combined with a more extensive comprehensive survey project. The resulting sample size for both projects was 63% in 2012. In the last 2 years of this study, a census

7. ADF&G Community Subsistence Information System: http://www.adfg.alaska.gov/sb/CSIS/. Hereinafter cited as CSIS.

was attempted in Point Lay; sample achievement was 66% in 2013 and 64% in 2014. In all 3 years of the study there was a high rate of refusal in both Wainwright (between 34% and 40% of households) and Point Lay (between 25% and 33%). Possible factors that led to the high levels of households choosing not to participate in the project are discussed in detail below. For more information on sampling see Table 1-3.

Table 1-4 displays the minimum, maximum, and average amount of survey length for both Wainwright and Point Lay in each study year. Average survey times ranged from 11 to 18 minutes in Wainwright in 2012–2014. In Point Lay the average length of the survey ranged from 14 to 64 minutes; it is important to note that 2012 was the year of the comprehensive survey, which is much greater in length than the surveys used for this project.

Key Respondent Interviews

While researchers were in the study communities they consulted with tribal governments, community councils, and local research assistants (LRAs) to identify key respondents to interview. The purpose of the key respondent interviews was to provide additional context for the quantitative data and also to provide information for the community background section at the beginning of each chapter, harvest-over-time analysis, and the community comments and concerns section at the end of each chapter. The number of key respondent interviews varied among communities, and respondents were compensated for their time. Seventeen key respondents were interviewed in Point Lay and 18 were interviewed in Wainwright. Interviewed residents included a mixture of active fishers and elders who could speak to changes in fisheries over time. Key respondent interviews were semi-structured and directed by a key respondent interview protocol designed by ADF&G researcher Robbin La Vine that has proven successful on other baseline study projects. This protocol was made specific to fish harvests in each community and observations of change over time (see Appendix B). In addition to gathering qualitative data through the key respondent interview protocol, ADF&G staff took notes during interviews to provide additional context for this report. Researchers analyzed key respondent interviews and interview notes in preparation for this report. Key respondents were informed that, to maintain anonymity, their names would not be included in this report.

Mapping of general areas of harvest for subsistence salmon and nonsalmon fisheries, local place names, and historical harvest locations was designed to take place with key respondents in each community. While some mapping information was recorded prior to the start of this project and in year 1, the new PI of the project had difficulty arranging for the number of ethnographic interviews necessary to accurately document spatial fishing patterns in either Wainwright or Point Lay. As was mentioned in the regional background, historical mapping information is available for both communities which was gathered during the EIS process for the NPR-A.[8] It can be noted that many of the harvest areas mentioned in ethnographic interviews are reflected in these historical maps.

Household Survey Implementation

Wainwright

Year 1

Principal Investigator Brittany Retherford had already established a relationship with the community of Wainwright prior to the commencement of this project, and ethnographic interviews on the subject of

8. U.S. Department of the Interior Bureau of Land Management. "Northwest National Petroleum Reserve-Alaska Final Integrated Activity Plan and Environmental Impact Statement." Anchorage: U.S. Department of the Interior Bureau of Land Management, 2012. Accessed July 2016. https://eplanning.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=dispatchToPatternPage&currentPageId=14702.

fisheries had been conducted by ADF&G staff in 2009 and 2010. Formal approval for this study occurred in fall 2011, and was received from both the Native Village of Wainwright and the City of Wainwright. As part of harvest monitoring, harvest calendars were distributed in July 2012 to Wainwright fishers who were identified as actively involved in summer subsistence fishing to record their in-season subsistence fish harvests by species, location, and date. Key respondents would then have been asked to continue to document household harvest information for three years: 2012, 2013, and 2014. These harvest calendars were distributed as a pilot to test the feasibility of this method. Approximately 5 fishers were asked to keep a log of their activities; however, no harvest calendars were completed and returned. Since the pilot of this method did not meet with success, it was not attempted in 2013 in either study community. A well-attended community meeting was held in Wainwright in August 2012 to solicit feedback on survey implementation and project plans prior to the start of fieldwork. In the same month, Retherford conducted ethnographic interviews with key respondents.

Fieldwork for survey implementation was conducted by Brittany Retherford from February 6–12, 2013. Five LRAs were hired and trained on February 6 and 7, and a household list was compiled with the assistance of the North Slope Borough Department of Wildlife Management and the City of Wainwright. Surveys were completed by LRAs. A total of 152 households were identified, of which 51% were surveyed. The high refusal rate (34% of households) may be due to a number of factors. These include fatigue from participating in surveys in general, as well as the fact that several households were preparing to leave to celebrate Kivgik[9] in Barrow the week following survey administration. Additionally, previous survey efforts by other agencies in Wainwright have included monetary compensation for household participation, and some respondents expressed appreciation for this precedent. Surveys were reviewed with LRAs in the field by Brittany Retherford, then transmitted to Information Management (IM) for data entry.

Year 2

Fieldwork was conducted in Wainwright in two separate trips in January and February 2014. Brittany Retherford and Beth Mikow visited Wainwright together from January 27–30 to allow for the new PI to be introduced to village contacts prior to beginning the second year of fieldwork. This trip allowed for setting up fieldwork logistics and also allowed for participant observation of the smelt fishery in the community. Beth Mikow formally took over as the PI of the project on February 4, 2014, and returned to Wainwright on February 18, 2014 to conduct data collection with the assistance of ADF&G Subsistence Resource Specialist (SRS) Anna Godduhn. Four LRAs were hired and training was conducted on February 19 and 20. With assistance from staff from the North Slope Borough Wildlife Management Department and the City of Wainwright, a household list was compiled. Surveys were conducted by LRAs and ADF&G staff. A total of 152 households were identified, of which 53% were surveyed. As with the first year of data collection, the refusal rate was high: 40% of households refused to participate in the survey. This was likely due to a combination of factors, including fatigue from participating in surveys in general, as well as the fact that several households were busy preparing for spring whaling. As was the case in the first year of data collection, some residents felt they should be compensated for their time since other survey efforts often include payment on the household level. Surveys were reviewed with LRAs in the field by Beth Mikow and Anna Godduhn, and sent to IM for data entry once staff returned to the office.

9. Kivgik, or the Messenger Feast, is a mid-winter festival held in Barrow every two years to celebrate successful traditional whaling harvests and activities.

Year 3

Fieldwork was conducted by Beth Mikow with the assistance of ADF&G Fish and Wildlife Technician (FWT) III Jason Esler from February 24 to March 5, 2015. Four LRAs were hired, and training took place on February 25 and 26, 2015. A household list for the 2014 study year was compiled, with assistance from staff from the North Slope Borough (NSB) teleconference center and the City of Wainwright. Surveys were conducted by LRAs and ADF&G staff. A total of 145 households were identified, of which 52% were surveyed. The refusal rate for the survey effort was high, with 39% of households refusing to participate in the survey. This was likely due to a combination of factors, including research fatigue from participating in surveys in general, competing survey projects (the NSB census took place the week prior to the ADF&G survey and overlapped for 2 days), travel by some residents to a basketball tournament in Atqasuk, and preparation for spring whaling. As in the other 2 study years, residents also expressed appreciation for other surveys that included a per household monetary compensation. Surveys were reviewed in the field with LRAs by both Beth Mikow and Jason Esler. Upon return to the office, surveys were transmitted to IM for data entry.

Point Lay

Year 1

The first year of data collection of fish harvests in Point Lay was combined with a comprehensive survey project, which asked about the harvest and use of all wild resources by community households. Brittany Retherford led the survey effort with the assistance of 4 ADF&G staff: FWT Loraine Navarro, FWT Erin Shew, FWT Jason Esler, and SRS Anna Godduhn. Survey implementation occurred from February 18 to February 26, 2013. Four LRAs were hired and trained on February 18 and 19, including two 18-year-old high school students who were granted permission to work with us outside school hours by the principal of the Kali School. Surveys were conducted by LRAs who were paired with ADF&G staff in teams. With assistance from the Native Village of Point Lay tribal administrator, a total of 67 households were identified in Point Lay, of which 63% were surveyed. Thirty-two percent of households refused to participate in the survey, which may have been partially a result of the length of this particular survey. To reduce survey fatigue, the fish survey was combined with a comprehensive harvest survey funded by the Coastal Impact Assistance Program. The comprehensive harvest survey includes all species available for harvest by North Slope residents. A benefit to conducting this expanded survey during the first year of the project is that it allowed for a better understanding of fish harvest and use patterns in relation to the community's entire annual subsistence harvests. Surveys were reviewed by ADF&G staff in the field, and transmitted to IM by staff upon their return to the office.

Year 2

Both Brittany Retherford and Beth Mikow conducted the second round of fieldwork in Point Lay, which occurred from January 19–26, 2014. Five LRAs were hired, and training occurred on January 19 and 20. With the help of LRAs and the tribal administrator, 64 households were identified. Surveys were conducted by LRAs. Sixty-six percent of the households were surveyed, while 25% of the households refused to participate. A number of factors could have contributed to the high refusal rate. The weather was particularly poor during the survey effort, limiting the time that LRAs could work. Additionally, a polar bear was sighted near town, so walking around the village during times of blowing snow was not advised. Some households expressed survey fatigue, and others, like Wainwright, expressed a sentiment that they wished to be compensated for their time. Surveys were reviewed for accuracy with LRAs in the field and transmitted to IM for data entry when staff returned to the office.

Year 3

Beth Mikow led the final year of data collection with the assistance of FWT Odin Miller, and fieldwork occurred from April 26 to May 2, 2015. Two LRAs were hired and trained on April 26. With the help of LRAs and the tribal administrator, 63 households were identified. Surveys were conducted by LRAs and ADF&G staff. Sixty-three percent of households were surveyed, while 33% of households refused to participate. As in other years, a number of factors could have contributed to the high rate of refusals. Due to scheduling conflicts, ADF&G staff arrived in the community after the start of spring whaling. Some households expressed survey fatigue; and, as in other study years, households expressed that they would prefer monetary compensation for their time.

DATA ANALYSIS AND REVIEW

Survey Data Entry and Analysis

All data were coded for data entry by Division of Subsistence staff in Fairbanks. Surveys were reviewed and coded by the project leads in each community 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 Microsoft SQL Server[10] at ADF&G in Anchorage to hold the survey data. The database structures included rules, constraints, and referential integrity to ensure that data were entered completely and accurately. Data entry screens were available on a secured internet site. Daily incremental backups of the database occurred, and transaction logs were backed up hourly. Full backups of the database occurred twice weekly. This ensured that no more than 1 hour of data entry would be lost in the unlikely event of a catastrophic failure. All survey data were entered twice and each set compared in order to minimize data entry errors.

Once data were entered and confirmed, information was processed with the use of Statistical Package for the Social Sciences (SPSS) software, version 20. 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 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 “non-response” and not included in community estimates. ADF&G researchers documented all adjustments.

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

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

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

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

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:

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

where:

s = sample standard deviation,

n = sample size,

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

N = population size, and

$t_{a/2}$ = student's *t* statistic for alpha level (α=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 year-round households in each study community. For this study, "year-round" was defined as being domiciled in the community when the surveys took place and for at least 6 months during the study years 2012–2014. Because not all households were interviewed, population estimates for each community were calculated by multiplying the average household size of interviewed households by the total number of year-round

households, as identified by Division 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. Population estimates for this project were based on 6 months or more of residence in the study community. Possible reasons for differences between this study's estimates of the population in both Point Lay and Wainwright may be due to this eligibility criterion, the timing of the survey in the late winter and the spring, and the high refusal rate in both communities.

Community Review Meetings

ADF&G staff presented preliminary survey findings at a meeting in each community. Community review meetings occurred in Point Lay on two separate occasions. Brittany Retherford brought back the results of the comprehensive survey conducted in the community to a well-attended public meeting held January 24, 2014; this allowed for interested residents to see and comment on the results of the larger survey, and also an opportunity to review fish harvest information. The final review meeting of all 3 years of fish harvest information was conducted by Beth Mikow on April 21, 2016 at the Native Village of Point Lay Council meeting; this meeting was well attended and valuable comments were received from both the council and interested residents. In Wainwright, the review of all 3 years of data was conducted by Beth Mikow at the Native Village of Wainwright Council meeting on April 14, 2016; comments were received from the council, and they also assisted in answering questions about the data.

FINAL REPORT ORGANIZATION

This report summarizes the results of systematic household surveys conducted by staff from ADF&G as well as LRAs, and the report also summarizes resident feedback provided at community review meetings. The findings are organized by study community. Each chapter includes tables and figures that report findings on demographic characteristics, household participation in harvesting and processing of fish, and characteristics of resource harvests and uses, and also harvest and use trends over time.

With regard to the 2012–2014 harvest and use data in each chapter, the content is consistent in each chapter because the data are based on the survey instrument; however, there are differences among the chapters in terms of documenting historical trends because each community has a different history of subsistence harvesting practices, and not all communities have had past comprehensive harvest surveys upon which to base comparisons.

As mentioned above, harvest practices differ between Point Lay and Wainwright, especially in respect to targeted fish species. Analysis of assessment sections are written to focus on the most used and harvested species in each community. Key respondents in the two study communities also offered specific insight into the harvests and uses of fish resources in their community, which leads to different themes for discussion in each chapter. Likewise, Wainwright and Point Lay differ in the amount of prior data available for comparison to current results; Wainwright has 4 comparable studies, while Point Lay has 3.

Table 1-1.–Salmon and nonsalmon fish resources used by study communities, 2012–2014.

Resource name	*Scientific name*	*Inupiaq name*
Chum salmon	*Oncorhynchus keta*	*Iqalugruaq*
Coho salmon	*Oncorhynchus kisutch*	
Chinook salmon	*Oncorhynchus tshawytscha*	*Iqalukpak*
Pink salmon	*Oncorhynchus gorbuscha*	*Amaqtuuq*
Sockeye salmon	*Oncorhynchus nerka*	
Unknown salmon	*Oncorhynchus spp.*	
Pacific herring	*Clupea pallasi*	*Uqsruqtuuq*
Smelt		*Iłhuaġniq*
Arctic cod	*Boreogadus saida*	*Iqalugaq*
Saffron cod	*Eleginus gracilis*	*Uugaq*
Flounder		*Nataaġnaq*
Pacific halibut	*Hippoglossus stenolepis*	
Burbot	*Lota lota*	*Tittaaliq*
Arctic char	*Salvelinus alpinus*	*Paikłuk*
Dolly Varden	*Salvelinus malma*	*Iqalukpik*
Lake trout	*Salvelinus namaycush*	*Iqalugruaq*
Arctic grayling	*Thymallus arcticus*	*Sulukpaugaq*
Northern pike	*Esox lucius*	*Siulik*
Sheefish	*Stenodus leucichthys*	*Siiġruaq*
Unknown trout		
Broad whitefish	*Coregonus nasus*	*Aanaakłiq*
Arctic cisco	*Coregonus autumnalis*	*Qaaktaq*
Bering cisco	*Coregonus laurettae*	*Tiipuq*
Least cisco	*Coregonus sardinella*	*Iqalusaaq*
Humpback whitefish	*Coregonus pidschian*	*Pikuktuuq*
Round whitefish	*Prosopium cylindraceum*	*Savigunnaq*
Unknown whitefish		
Unknown nonsalmon fish		

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

Table 1-2.–Project staff

Task	Name	Organization
Project design and management	Brittany Retherford/Beth Mikow	ADF&G Division of Subsistence
Project lead	Brittany Retherford/Beth Mikow	ADF&G Division of Subsistence
Data management lead	Marylynne Kostick	ADF&G Division of Subsistence
Point Lay research lead	Brittany Retherford/Beth Mikow	ADF&G Division of Subsistence
Wainwright research lead	Brittany Retherford/Beth Mikow	ADF&G Division of Subsistence
Administrative support	Pam Amundson	ADF&G Division of Subsistence
	Tamsen Coursey	ADF&G Division of Subsistence
	Deanne Lincoln	ADF&G Division of Subsistence
Programmer	Marylynne Kostick	ADF&G Division of Subsistence
Data entry	Margaret Cunningham	ADF&G Division of Subsistence
	Barbara Dodson	ADF&G Division of Subsistence
	Nicholas Jackson	ADF&G Division of Subsistence
	Zayleen Kalalo	ADF&G Division of Subsistence
Data cleaning/validation	Marylynne Kostick	ADF&G Division of Subsistence
	Margaret Cunningham	ADF&G Division of Subsistence
Data analysis	Marylynne Kostick	ADF&G Division of Subsistence
Cartography	Terri Lemons	ADF&G Division of Subsistence
Editorial review lead	Adam Knight	ADF&G Division of Subsistence
Field research staff	Jason Esler	ADF&G Division of Subsistence
	Anna Godduhn	ADF&G Division of Subsistence
	Odin Miller	ADF&G Division of Subsistence
	Loraine Naaktgeborgen	ADF&G Division of Subsistence
	Erin Shew	ADF&G Division of Subsistence
Local research assistants	Eugene Neakok, Jr	Point Lay- Year 1
	Cyrus Nukapigak	Point Lay- Year 1
	Misty Plymale	Point Lay- Year 1
	Leefisher Tukrook	Point Lay- Year 1
	Cilia Attungowruk	Point Lay- Year 2
	Leo Ferreira IV	Point Lay- Year 2
	Nathan Henry, Sr	Point Lay- Year 2
	Lloyd Pikok	Point Lay- Year 2
	Misty Plymale	Point Lay- Year 2
	Dorothy Henry	Point Lay- Year 3
	Leslie Stalker	Point Lay- Year 3
	Mark Ahvakana	Wainwright- Year 1
	Joyce Captain	Wainwright- Year 1
	Hazel Phillips	Wainwright- Year 1
	Bonnie Spencer	Wainwright- Year 1
	Harry Tazruk	Wainwright- Year 1
	Joyce Captain	Wainwright- Year 2
	Roy Ekak	Wainwright- Year 2
	Diana Oktollik	Wainwright- Year 2
	Bonnie Spencer	Wainwright- Year 2
	Roy Ekak	Wainwright- Year 3
	Fritzgerald Nayakik	Wainwright- Year 3
	Joy Nayakik	Wainwright- Year 3
	Oliver Swan	Wainwright- Year 3

Table 1-3.–Sample achievement, study communities, 2012–2014.

	Point Lay			Wainwright		
Sample information	2012	2013	2014	2012	2013	2014
Number of dwelling units	71	67	64	154	152	144
Survey goal	90%	100%	100%	60%	60%	100%
Households surveyed	42	42	40	78	80	75
Households failed to be contacted	9	4	4	29	19	23
Households declined to be surveyed	20	14	20	40	51	47
Households moved or occupied by nonresident	4	3	5	2	7	15
Total households attempted to be surveyed	62	56	60	118	131	122
Refusal rate	32.3%	25.0%	33.3%	33.9%	38.9%	38.5%
Final estimate of permanent households	67	64	63	152	150	145
Percentage of total households surveyed	62.7%	65.6%	63.5%	51.3%	53.3%	51.7%
Survey weighting factor	1.6	1.5	1.6	1.9	1.9	1.9
Sampled population	163	167	177	252	283	292
Estimated population	260.0	254.5	278.8	491.1	530.6	564.5

Source ADF&G Division of Subsistence household surveys, 2013–2015.

Table 1-4.–Survey length, study communities, 2012–2014.

	Point Lay			Wainwright		
	Interview length (in minutes)			Interview length (in minutes)		
Year	Average	Minimum	Maximum	Average	Minimum	Maximum
2012	64	15	140	18	5	75
2013	20	2	80	13	1	46
2014	14	3	33	11	4	31

Source ADF&G Division of Subsistence household surveys, 2013–2015.

Note In 2012, researchers conducted a comprehensive survey in Point Lay that asked about all resource harvests, not just fish.

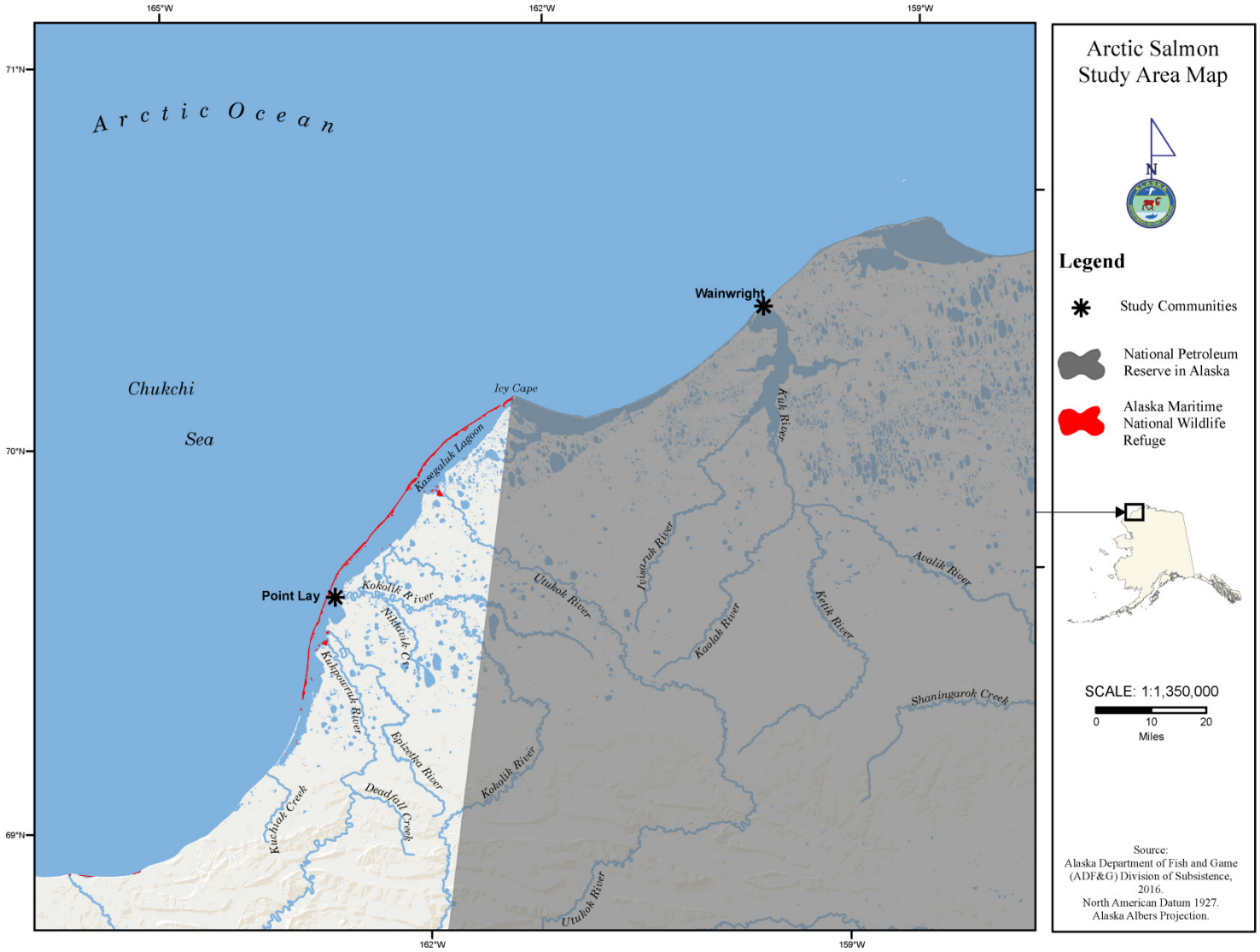

Figure 1-1.–Map of study communities, 2012–2014.

2. WAINWRIGHT

COMMUNITY BACKGROUND

Wainwright

Wainwright (*Ulġuniq*[1]) lies on the neck of a barrier spit that spans the mouth of Wainwright Inlet, so named for the First Lieutenant of the *HMS Blossom* (Milan 1964:17) and sometimes locally referred to as "the lagoon (Plate 2-1)." Although the area had long been inhabited and utilized, there was no village at the site of Wainwright prior to the construction of a school there in 1904; with ice conditions and accessibility among primary considerations, "[t]he vessel's captain unloaded at a favorable looking site" (Milan 1964:21). Education has been provided continuously since, in early decades by the Alaska Native Service/Bureau of Indian Affairs and later by the Board of Education; now the "Alak School" is administered by the North Slope Borough School District (NSBSD). (Barnhardt 1985).

The bluff at Wainwright is about 20 feet above sea level and experiences periodic erosion, especially in the fall prior to the formation of shorefast ice[2]; erosion events (1970s–1990s) prompted protective measures, including the relocation of multiple homes. Most recently, the North Slope Borough (NSB) constructed a new seawall with an expected 50 year life span in the early 2010s (Brubaker et al. 2014:17–18).

The people of Wainwright are mostly descendants of the Utukamiut (of the Utukok River) or the Kukmiut (people of the Kuuk River) (UMIAK and Olgoonik Development LLC 2014). Although registered at 0 for 1900 and 1910, the Census population history of Wainwright shows a population of 72 in 1890, and a steady increase from 1920 (99) to 2010 (556).[3] The Village of Wainwright is a federally recognized tribe, and the Olgoonik Corporation is the local Alaska Native Claims Settlement Act (ANCSA) village corporation. Wainwright incorporated as a second class city in 1962. Infrastructure in Wainwright includes the airfield, a landfill, a health clinic, a fire station, a police station, a search and rescue station, a community hall, and the Olgoonik Hotel—owned and operated by the Olgoonik Corporation[4].

POPULATION ESTIMATES AND DEMOGRAPHIC INFORMATION

Figure 2-1 illustrates the population history of Wainwright from 1980 to 2014, drawing upon decennial estimates from the U.S. Census Bureau (portrayed as blue dots) and the yearly estimates provided by the Alaska Department of Labor (portrayed as white dots). This study's estimates of population in each of the 3 study years are portrayed by red squares. According to these data, the population of the community has increased gradually over the past 34 years. Table 2-1 compares population estimates from the U.S. Census of 2010, 5-year averages of the American Community Survey (ACS), and the estimates from the 3 years of this study. The average population of Wainwright across all 3 study years is 529 people, compared with the ACS 2010–2014 average of 482 people in the community; there is approximately 10% difference between these two figures. Reasons for differences between population estimates can be explained by a

1. Arctic Slope Regional Corporation, Barrow. 2013. "Wainright." Accessed May 20, 2016. https://www.asrc.com/Communities/Pages/Wainwright.aspx
2. U. S. Army Corps of Enginieers, Alaska District. 2008. "Erosion Information Paper—Wainwright, Alaska.: Accessed May 5, 2016. http://www.poa.usace.army.mil/Portals/34/docs/civilworks/BEA/Wainwright_Final%20Report.pdf
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 May 20, 2016. https://www.commerce.alaska.gov/dcra/DCRAExternal/community
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 May 20, 2016. https://www.commerce.alaska.gov/dcra/DCRAExternal/community

number of factors, including differences in survey timing, definitions of residency, and sampling strategies.

Across the 3 study years, sample achievement in the community was between 51% and 53%; the number of surveyed households ranged between 75 and 80, with sample populations ranging between 252 in 2012 to 292 in 2014 (Table 1-4). Household sizes between the 3 years ranged from 1 to a maximum of 14, the average size across all years was 3.5. The average age across all study years was 31; the oldest person included in any sample was 86 years old. On average, Wainwright residents had lived in the community 21 years (Table 2-2), and 78% of the population was born in Wainwright. Other reported birthplaces included Barrow (10% across 3 study years) and several other communities on the North Slope (Table D1-7). A full list of birthplaces of the population and of household heads in Wainwright can be found in tables D1-4 through D1-6. On average over the 3 study years, 95% of the community was Alaska Native (Table 2-1).

SUMMARY OF HARVEST AND USE PATTERNS

Harvest and Use of Wild Fish at the Household Level

Figures 2-5 through 2-7 show, by resource category, the percentages of Wainwright households that used wild fish resources, attempted to harvest, and harvested fish in each of the 3 study years. For salmon, similar percentages of households used the resource in 2012 (38%) and 2013 (39%), while a greater number of households (55%) used salmon in the 2014 study year. While similar percentages of households attempted to harvest salmon across all study years (18%–21%), a greater number of households were successful in 2013 (20%) and 2014 (17%) than in 2012 (12%).

Nonsalmon fish were harvested and used at greater rates than salmon from 2012–2014. A similar percentage of households across all 3 study years reported using the resource category (ranging from 88% to 93%). A smaller percentage of households attempted to harvest (50%) and harvested (45%) nonsalmon fish in 2012 in comparison with 2013 (64%, 61%) and 2014 (67%, 59%).

Harvest Quantities and Composition

Tables 2-3 through 2-5 report estimated fish harvests and uses by Wainwright residents during the 3 study years and are organized first by general category and then by species. All resources are reported in pounds edible weight (see Appendix C for conversion factors). The harvest category includes resources harvested by any member of the surveyed household during the study year. The use category includes all wild fish resources taken, given away, or used by a household, and resources acquired from other harvesters, either as gifts, by barter or trade, or through fishing partnerships. Purchased foods are not included. Differences between harvest and use percentages reflect sharing among households, which results in a wider distribution of wild foods.

Wainwright residents harvested varying amounts of fish across the 3 study years, ranging from the largest harvest of 34,808 edible pounds in 2012 to the smallest harvest of 22,982 edible pounds in 2013 (tables 2-3, 2-4, 2-5). Controlling for population, per capita harvests also varied: Wainwright fishers harvested 71 lb per capita in 2012, 43 lb in 2013, and 49 lb in 2014. In all study years, nonsalmon fish species contributed the majority of Wainwright's total estimated harvest of fish. Figures 2-8 through 2-10 illustrate the composition of the total fish harvest in terms of resource categories; nonsalmon fish contributed 85% of the harvest or more in each of the 3 study years.

Tables 2-6 through 2-8 list the most widely used fish resources used by households during each of the study years Smelt was by far the most commonly used fish resource by Wainwright residents during the 3 study years; an overwhelming majority of households (82% to 88%) reported using smelt in 2012–2014. Two other species were also present in the 3 most heavily used resources in 2012–2014: Arctic grayling were used by 45% to 57% of households over the 3 study years, and broad whitefish were used by 44% to 67% in 2012–2014. Salmon species did appear in the 10 most commonly used fish resources every year,

but pink salmon was the only species to be present in all 3 years (between 15% and 31% of households reported use in the 2012–2014 study years). Chum, Chinook, coho, and sockeye salmon were all reported as being widely used by Wainwright households in various study years. Chum salmon are locally available, but Chinook salmon are rare, and coho salmon are not available in the region (George et al. 2009)[5]. Issues with salmon identification may have resulted in the wide variety of heavily used salmon species reported by Wainwright households; this topic will be discussed in greater detail below. It is also possible that households that reported using non-locally available species received them through trade and sharing with households in other communities. Fishers reported taking the majority of sockeye salmon outside of the region, most commonly on the Kenai Peninsula in Southcentral Alaska.

Figures 2-11 through 2-13 portray the ten most harvested fish resources in terms of edible weight by Wainwright households during the 2012–2014 study years. The top 3 most heavily used resources—smelt, broad whitefish, and Arctic grayling—are all among the top harvested resources across the 3 study years. With the exception of 2014, smelt contributed the greatest amount of edible weight to Wainwright's total estimated harvest of fish; this resource composed 56% of the 2012 harvest (19,420 lb, 40 lb per capita) and 39% of the 2013 harvest (8,878 lb, 17 lb per capita). Smelt was the second most heavily harvested resource in 2014, composing 34% of the total estimated harvest (9,375 lb, 16 lb per capita). Broad whitefish was the most heavily harvested resource in 2014, composing 37% of the harvest and contributing 10,177 lb (18 lb per capita). In comparison, this resource accounted for 14% of the harvest in 2012 (4,998 lb, 10 lb per capita) and 7% of the harvest in 2013 (1,626 lb, 3 lb per capita). This discrepancy may be due to a communication issue, which will be discussed in detail in a later section. Arctic grayling composed a similar percentage of the total estimated harvest in the 2012–2014 study years, contributing between 9% and 12% of the harvest in each of the 3 years; total harvests ranged from a high harvest of 4,097 lb (8 lb per capita) in 2012 to a low harvest of 2,443 lb (4 lb per capita) in 2014. Other whitefish species, including humpback whitefish, Bering ciscoes, least ciscoes, and Arctic ciscoes, collectively account for a significant portion of the total estimated harvest in all 3 study years; whitefishes (excluding broad whitefish) accounted for 12% of the total harvest in 2012, 20% in 2013, and 6% in 2014. Salmon species also feature in the top ten most heavily harvested fish resources by Wainwright residents; salmon composed 4% of the fish harvest in 2012, 13% in 2013, and 7% in 2014.

Salmon

As mentioned previously, salmon identification can be difficult at times on the North Slope. While all 5 species of Pacific salmon found in Alaska have been recorded along the Arctic coast, only chum salmon and pink salmon are found in any abundance. Chinook salmon are rare, but present, and are regularly caught in Barrow (George et al. 2009). There are also records of stray Chinook salmon in the Kuk River and off of the coast of Wainwright (Mecklenburg et al. 2002). Ocean bright chum salmon are often referred to as "silvers," which can lead to harvests being recorded as coho salmon. In some interviews, respondents identified chum, or "dog" salmon, only in terms of their appearance during the spawning phase (10WW, 04WW). Other misidentification can occur with large chum salmon, which can be mistaken for Chinook salmon. Coho salmon have been recorded on the North Slope, but are very rare. The northernmost coho salmon population can be found near Point Hope, in the Kukpuk River. There are a few records of single coho salmon found in salt water in Prudhoe Bay (Mecklenburg et al. 2002). Sockeye salmon are likewise very rare, and there have been records of stray sockeye salmon north of Point Hope, including the Colville and Canning rivers (Mecklenburg et al. 2002). Despite the uncommon occurrence of coho and sockeye salmon in the region, reports are increasing (George et al. 2009) Several key respondents noted the difficulty of salmon identification, and a few explained that they are mostly thought of simply as salmon (02WW, 04WW, 13WW). One fisher explained that the quality of the fish

5. Alaska Department of Fish and Game. Anadromous Waters Catalog, Fish Resource Monitor. http://extra.sf.adfg.state.ak.us/FishResourceMonitor/?mode=awc. Accessed 5/12/2016

was the more important than targeting specific species: “I just fish for what I need, just as long as it is nice and healthy. I don’t care what it is, just as long as it tastes good” (01WW). During interviews, a few respondents expressed an interest in learning more about how to recognize differences between the species (01WW, 04WW) (Plate 2-2).

Figures 2-14 to 2-16 portray the composition of the salmon harvest in Wainwright for the 2012–2014 study years. “Coho salmon” composed a large portion of the total salmon harvest in each study year, ranging from 21% to 44% of the estimated harvest over the 3 years. As mentioned above, however, it is very likely that a majority of these salmon are in fact chum salmon. Chum salmon also composed a large component of the harvest over the 3 years, contributing between 19% and 33% of the total estimated harvest. Taken together, combined coho and chum salmon harvests would account for over one half of the total salmon harvest in Wainwright in each of the study years (composing between 53% and 66% of the harvest); while it is impossible to determine what portion of the coho harvest is in fact coho salmon (if any), it is a safe assumption to consider coho and chum salmon together as one resource for the sake of analysis. Taken together, chum and coho salmon contributed 799 edible pounds (1.6 lb per capita) to the total estimated harvest in 2012, 1,813 lb (3.4 lb per capita) in 2013, and 1,609 lb (2.8 lb per capita) in 2014. Locally available pink salmon composed between 10% and 25% of the total salmon harvest in the 3 study years, while Chinook salmon composed between 10% and 18% in 2012–2014.With the exception of 2013, pink salmon were the most widely used salmon species (by 15% to 31% of Wainwright households) despite lower harvest levels; in 2013, Chinook salmon were the most widely used salmon (by 20% of households). Sockeye salmon composed between 10% and 16% of the total salmon harvest in 2012-2014. [6]Overall, Wainwright fishers harvested between 1,504 lb (3 lb per capita) and 3,357 lb (6 lb per capita) of salmon over the 3 years of the study, and between 38% and 54% of households used the resource in 2012–2014 (tables 2-3 through 2-5).

The majority of Wainwright key respondents felt that salmon had become more abundant along the coast and nearby rivers over the years (03WW, 04WW, 07WW, 08WW, 10WW, 11WW, 12WW, 14WW). Some residents felt that this abundance is due to higher water temperatures, and hypothesized that the salmon are migrating north to cooler waters (07WW, 09WW). One fisher explained that weather plays a role, noting that they had greater success during El Niño years (02WW). A majority of salmon were harvested using set gillnets, and a number of respondents stated that changing to a larger mesh size (between 5” and 6”) had increased their harvests (07WW, 09WW, 11WW, 03WW). In discussions of increased abundance, several key respondents also noted that they were harvesting different species of salmon in greater numbers, particularly Chinook salmon. These fishers largely discussed Chinook salmon in terms of the sheer size of the fish (01WW, 03WW, 04WW, 11WW). One key respondent stated that he had harvested a few sockeye salmon several years ago, and was aided in identifying them by someone who was visiting from another region of Alaska and who was more familiar with the species (03WW). Other key respondents felt the numbers of salmon had remained similar over the years, and that salmon abundance is more cyclical in nature (09WW, 01WW0, 05WW). One resident did note that Wainwright fishers seem to have begun targeting salmon in greater numbers over the course of the last decade (09WW). Despite discussions of greater abundance, salmon fishing is not a new pursuit by Wainwright residents. All elder respondents remembered their families harvesting salmon during their childhoods, although most described more incidental catches or harvests in smaller numbers (02WW, 04WW, 07WW, 08WW, 10WW).

Figures 2-17 through 2-19 portray the gear type used by Wainwright fishers to harvest salmon in the 2012–2014 study years. The same information is presented in tabular format in appendix tables D1-10 through D1-12. Residents used primarily used set gillnet (portrayed by the red bar) and rod and reel

6. Researchers are confident that the samples in years 2 and 3 of this project contains all the households who fished for sockeye salmon during the study year. The majority of these harvests were taken outside the region.

(portrayed by the light blue bar) to harvest a majority of salmon species across the 3 study years. In 2012, rod and reel harvests were more common than the other 2 study years: Wainwright fishers harvested an estimated 633 lb using this method, or 42% of the total salmon harvest in 2012. Rod and reel was the only method used in Chinook salmon harvests and the primary method for sockeye harvests during the first study year. Set gillnets accounted for 41% of all salmon harvests in 2012, while 17% of salmon were taken with an unknown method; sometimes respondents are unable to recall what type of gear was used or were not present when other household members harvested the fish. In 2013 and 2014, Wainwright fishers harvested all salmon by either set gillnet or rod and reel. The majority of salmon species in both years were taken by set gillnet: this method accounted for 94% of salmon in 2013 (3,172 lb) and 84% in 2014 (2,036 lb). In 2013, Wainwright fishers reported limited harvests of sockeye and pink salmon by rod and reel. In comparison, fishers reported using rod and reel in 2014 for every species with the exception of Chinook salmon.

As mentioned above, and echoed in the data, set gillnet was the primary method to harvest salmon in Wainwright. One key respondent explained that he harvested a majority of his pink salmon upriver using 2½ inch mesh, while others used larger mesh in the mouths of rivers, in the lagoon, and in the ocean in order to target larger fish (07WW, 09WW, 11WW, 03WW). One fisher described weighing down and sinking his set gillnet to the bottom of the river in order to catch more fish, a technique he learned from his father (09WW). A few key respondents explained that rod and reel is a less common gear used to harvest salmon (02WW, 09WW), and that salmon are sometimes incidentally caught in the river when people are targeting Arctic grayling during the summer months (04WW).

In years 2 and 3 of this project, researchers added questions to the survey to record timing of fish harvests. Salmon harvests were recorded by month and gear type and are portrayed in tables 2-9 and 2-10. July was the month of highest harvests in both study years, accounting for 63% of all salmon in 2013 and 50% in 2014. The majority of harvests during July were taken by set gillnet in 2013 (90%) and 2014 (60%); rod and reel harvests during this month were largely sockeye salmon, many of which were taken outside the region. In both study years, rod and reel was used more often in July than any other month. Key respondents explained that salmon begin running in larger numbers in July, and that each year the timing varies somewhat depending upon weather and the timing of breakup (01WW, 09WW, 08WW, 07WW). In 2013, June was a month of low harvest (12% of the total estimated harvest). In contrast, Wainwright fishers harvested 29% of their salmon in this month in 2014. Residents caught similar percentages of salmon in August in 2013 (20%) and 2014 (21%). One key respondent explained that, while he targets salmon every year, the focus of his subsistence pursuits changes as soon as caribou become available (09WW). Likewise, residents did note that conflicting subsistence pursuits may have an impact on the salmon harvest in general in Wainwright because marine mammal hunting is a major focus during the summer months.[7]

Preservation methods for salmon vary, although most key respondents explained that they generally freeze a majority of their catch (01WW, 03WW, 04WW, 07WW, 09WW). Several fishers stated that they do dry some salmon as well (03WW, 06WW, 07WW), although this method is less common in Wainwright according to one respondent (01WW). One fisher explained that pink salmon are good for drying because they are smaller and dry more quickly (14WW). Another respondent recalled trying to smoke salmon on one occasion but said that driftwood did not make the fish taste very good. Several respondents mentioned that some people in town have started to smoke salmon with store-bought wood chips and have even built a smokehouse (10WW). One elder remembered that it was common to simply eat the catch fresh and to share with family and friends in town (02WW).

7. Community Review Meeting, Wainwright Tribal Council, April 14, 2016.

All key respondents talked about the importance of sharing fish resources, including salmon. One key respondent explained that she saves salmon to serve at Thanksgiving and Christmas feasts, as well as distributing her catch to others in the community after clearing her net:

> Salmon, one night I pulled the nets and would keep just a bit over half of what I catch and give to other people who want fish. We would announce to anybody who want fish to come by. (07WW)

Wainwright households reported limited use of whole salmon for dog food during the 2012–2014 study years. Residents fed 2 pink salmon (5 lb) to dogs in 2013, and 236 unknown salmon (166 lb) in 2014. No whole salmon were fed to dogs during the 2014 study year (tables D1-13, D1-14, D1-15).

Nonsalmon Fish

Figures 2-20 through 2-22 portray the composition of Wainwright's harvest of nonsalmon fish species in the 2012–2014 study years. Smelt composed a large portion of the nonsalmon fish harvest across the 3 study years, ranging from 37% to 59% (8,878 lb to 19,420 lb) of the total nonsalmon harvest; this resource also was the most highly harvested nonsalmon fish by edible weight in the 2012 and 2013 study years, and the second most harvested in 2014 (tables 2-3, 2-4, 2-5). Smelt fishing is a common activity in Wainwright, and a popular area is the nearby lagoon when it is frozen. In 2012–2014 smelt were harvested by more households than any other species of fish, with between 44% and 54% of households catching this resource (tables 2-3 through 2-5). One fisher explained that after Thanksgiving, people will begin checking to see if smelt have arrived and then spread the news once the fish begin biting (08WW). Smelt fishing was described by one respondent as a social activity and that people enjoy spending time with others as they fish (09WW). Some key respondents in the early year of the project discussed the impact of gravel dredging in the vicinity of the lagoon in recent years, explaining that it had made it more difficult to find where the smelt were congregating because they were not in the usual places. However, one fisher explained that it had returned to normal conditions by year 3 of the project (02WW, 09WW). Smelt can be harvested at other times of the year, although jigging through the ice during the winter and spring is the time of greatest harvest. As one key respondent explained, "smelt are never not here" (02WW). A few key respondents explained that smelt have a powerful odor in the summer months and are not desirable during this time (08WW, 02WW). Smelt are shared widely within the community, especially with elders (09WW). During the 3 study years between 56% and 64% of households reported receiving this resource. The quality of Wainwright smelt is renowned across the North Slope, and residents share and trade with other communities (07WW, 09WW, 14WW, 02WW). One respondent explained that smelts in the Wainwright area have a unique sweet flavor and are sometimes referred to as "sugarfish" due to their taste (14WW). One fisher said that smelt is the single most important fish resource to Wainwright residents (09WW). Depending on conditions, one fisher can easily catch between 400 and 600 smelt in a single day. The catch is then piled on the ice and frozen for preservation (07WW, 09WW) (Plate 2-3).[8]

Broad whitefish was reported as being the most harvested nonsalmon fish in 2014, composing 40% of the estimated harvest. While this resource is common in many river drainages of the North Slope, especially those that drain into the Beaufort Sea (George et al. 2009), they are not locally available in the vicinity of Wainwright[9]. Some survey respondents and one key respondent stated that they traveled to Barrow and Atqasuk to harvest broad whitefish (09WW), but it is possible that a significant portion of the reported harvest in 2014 is in fact what households received in trade[10]. Several key respondents explained that

8. Participant observation, smelt fishing in Wainwright. January 28, 2014.
9. Community Review Meeting, Wainwright Tribal Council. April 14, 2016.
10. While some Wainwright residents do travel to harvest broad whitefish, the variation in annual harvests suggests that in 2014 some households misinterpreted the question and what they received in trade was mistakenly recorded as harvests.

smelt are commonly traded for broad whitefish with Barrow, Atqasuk, and other communities with good access to this resource. Broad whitefish also contributed a significant portion of the total estimated nonsalmon harvest in 2012 (15%) and 2013 (8%), but it is more likely based on survey comments that a greater amount of these recorded harvests were taken by Wainwright residents in other areas of the North Slope and not received in trade.

Arctic grayling were represented as among the most heavily harvested nonsalmon fish in 2012–2014, composing between 10% and 14% of the harvest across the 3 study years. Grayling are most commonly harvested in the late summer and fall months, and are taken before and after freeze-up on local rivers (01WW, 02WW, 03WW, 14WW). One key respondent explained that Arctic grayling are easier to harvest further upriver where the water is fresher (07WW), and another related that an excellent spot for catching grayling is where tundra ponds drain directly into the river (06WW). Some fishers explained that Arctic grayling taste different depending upon which river they were harvested in, and that those caught in the Utukok River taste better than those harvested in the Kuk (09WW, 10WW). Fishing for Arctic grayling and whitefishes upriver often coincides with other subsistence pursuits, including caribou hunting and berry picking (04WW, 03WW, 01WW). A few elder key respondents remembered grayling being the biggest contributor of all fish species to their diets as they were growing up (02WW, 04WW). This resource, along with other fish species and a variety of wild game, are often eaten raw and frozen; this preparation is referred to as *quaq*.

Whitefish species, excluding broad whitefish, contributed between 6% and 27% to the nonsalmon fish harvest in 2012-2014; species included humpback whitefish, Bering ciscoes, Arctic ciscoes, least ciscoes, and unknown whitefishes that respondents could not identify. Whitefish are caught in local rivers, and are often harvested with grayling in set gillnets both before and after freeze-up (09WW, 10WW, 04WW). One fisher spoke of Bering ciscoes, referred to as *tiipuq* in Inupiaq, as one of her favorite fish. She described them as being fat and very oily, and felt the population was healthy (14WW). Like Arctic grayling, whitefishes are often prepared as *quaq*, baked, boiled, or fried. One elder couple explained a method of preservation that involves mildly fermenting whitefish—willow boughs are placed above and beneath whole whitefish until they are ready to consume (02WW).

Overall nonsalmon fish species in Wainwright contributed 33,304 lb (68 lb per capita) in 2012, 19,626 lb (37 lb per capita) in 2013, and 25,312 lb (45 lb per capita) in 2014.

Figures 2-23 through 2-25 portray the different gear types used by Wainwright fishers to harvest a wide variety of nonsalmon fish across the 3 study years. The same information can be found in tabular format in appendix tables D1-16 through D1-18. The vast majority of smelt were harvested by jigging through the ice during the 3 study years: 98% were harvested by this method in 2012, 93% in 2013, and 99% in 2014. One couple explained that they still use homemade fish hooks to harvest a variety of nonsalmon fish, including smelt, and the hooks are crafted out of a number of different materials including ivory, walrus teeth, copper, brass, and beluga whale teeth. They also explained that willow is the best choice for the stick portion of the jig, because it is springy (Plate 2-4). They also relayed a traditional prohibition against harvesting smelt with setnets under the ice, stating that the smelts will stay away for at least a year if you do so (02WW). Set gillnet was the most common gear used to harvest whitefish species during the 3 study years, accounting for 94% of harvests in 2012, 63% in 2013, and 80% in 2014. Wainwright fishers caught whitefish with other methods in 2012–2014 in smaller quantities, most commonly with set gillnets under the ice and jigging. Residents employed a variety of methods to harvest Arctic grayling during the 3 study years, including jigging through the ice, set gillnet, and rod and reel. The most common method of harvest for Arctic grayling was jigging in 2012, which accounted for 100% of harvests. In 2013, fishers caught 36% of the Arctic grayling by jigging, 46% with rod and reel, and the remaining 18% with set gillnets. Rod and reel was the most common method used in 2014, accounting for 75% of harvests.

Timing data for harvests of nonsalmon fish species was also added to the survey in years 2 and 3. Unlike salmon harvests, which were recorded by month, nonsalmon harvests were instead split by season of harvest and gear type (Table 2-11 and 2-12). Wainwright fishers harvested the vast majority of smelt by jigging in the winter months in 2013 (95%) and 2014 (99%). One key respondent explained that time of day has an impact of smelt fishing, noting that dawn and dusk are the times when the fish are more actively biting (02WW)(Plate 2-5). For all whitefish species, with the exception of broad whitefish, summer was the time of greatest harvest in 2013 (52%) and 2014 (50%). In both cases, set gillnet was the most used gear during the summer, accounting for 76% of the harvest in 2013 and 85% in 2014. Other whitefish harvests occurred in the fall in 2013 (22% of the harvest) and 2014 (48%), and Wainwright fishers used a number of methods in each year. In 2013, 51% of fall whitefish harvests were taken by set gillnet, 42% were taken by jigging, and the rest by other gear. Fishers harvested 26% of the whitefish catch in 2013 in the winter months, while very limited winter harvest was reported in 2014. Wainwright residents harvested a majority of their Arctic grayling in the summer months in both study years: 50% of the Arctic grayling harvest was taken in this season in 2013 and 80% in 2014. Rod and reel was the most common method of harvest, and the rest were taken by setnet. In 2013, 42% of all Arctic grayling were harvested in the fall time and over 50% were taken by jigging.

Wainwright residents reported limited use of nonsalmon fish to feed dogs in 2012–2014. No whole nonsalmon fish were used for this purpose in 2012, while residents fed small amounts of flounders (2 lb), Bering ciscoes (131 lb), and least ciscoes (33 lb) to dogs in 2013. In 2014, residents reported feeding 497 lb of smelt to dogs.

COMPARING HARVESTS AND USES IN 2012-2014 WITH PREVIOUS YEARS

Harvest Assessments

Researchers asked respondents to assess their own harvests in 2 ways: whether they got more, less, or about the same amount of 4 resource categories in 2012–2014 as in the past 5 years, and whether they got "enough" of each of the 4 resource categories[11]. Households also were asked to provide reasons if their use was different or if they were unable to get enough of a resource.

Together, tables 2-13 through 2-15, figures 2-24 through 2-26, and figures 2-27 through 2-29 provide a broad overview of Wainwright households' assessments of their harvests in each of the 3 study years. 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. Households reporting that they do not use a resource are portrayed in each figure as a white bar.

Smelt was the most used (between 82% and 88% of households) and harvested of all fish resources by Wainwright households (between 17 lb and 40 lb per capita) over the 3 years of the study (tables 2-3, 2-4, 2-5). This resource was combined with other nonsalmon fish during the 2012 study year, so this discussion will focus on the 2013 and 2014 study years. Forty-nine percent of responding households in 2013 said that they used the same amount of smelt during the study year as they did in previous years, and 46% of households had the same response in 2014 (tables 2-14 and 2-15; figures 2-25 and 2-26). In 2013, 23% of households said they used less smelt, and 33% of households said they used less in 2014. When asked why they used less, responding households most commonly cited 3 reasons in 2013 and 2014. These reasons included lack of effort (29% of households in 2013, 40% in 2014), less sharing (14% in 2013, 45% in 2014), and working/no time (21% in 2013, 5% in 2014) (tables D1-20, D1-21). Some

11. The survey was changed in the 2013 study year to include assessments for smelt, due to the importance of this resource to Wainwright fishers. In 2012, the survey asked households to assess their use of 3 resource categories: salmon, whitefish, and other nonsalmon fish.

households reported using more smelt than in recent years during the last 2 study years; 15% used more smelt in 2013 and 19% used more in 2014. Of those households that used more smelt in the two study years and explained why, the most common response was that they received more of the resource from other households (33% in 2013, 50% in 2014) (tables D1-23, D1-24). When asked if their household got enough smelt during the 2013 and 2014 study years, a majority of respondents in Wainwright said that they did have enough: 73% of households said they got enough in 2013 and 83% said the same in 2014 (figures 2-28, 2-29)

Salmon were used by between 38% and 54% of Wainwright households in 2012–2014, and salmon species were among the most used resources across all 3 study years (tables 2-6, 2-7, 2-8). With the exception of 2014, more than half of all responding households reported using less salmon during the study years; it is important to note that varying numbers of households reported that they do not usually use salmon across the 3 study years (38% in 2012, 58% in 2013, 22% in 2014). Forty-three percent of households reported using less salmon in 2012, 17% in 2013, and 30% in 2014 (figures 2-24, 2-25, 2-26). While 32% of households reported using the same amount of salmon in 2014, only 14% said the same in 2012 and 13% in 2013. A small percentage of households reported using more salmon across the 3 study years; 5% of households used more salmon in 2012, 13% in 2013, and 16% in 2014. Reasons for using less salmon varied across the 2012–2014 study years. In 2012 and 2014, the most commonly cited reasons for using less salmon were a lack of effort (31% in 2012, 15% in 2014) and less sharing (31% in 2012, 85% in 2014). In contrast, households in 2013 cited difficulties fishing; 40% of households said that salmon resources were less available, 20% stated that they did not have the equipment they needed, and 20% said that weather conditions impacted their fishing (tables D1-19, D1-20, D1-21). Of those households that reported using more salmon during the 3 study years, most stated it was because they received more of the resource (100% in 2012, 50% in 2013, and 88% in 2014)(tables D1-22, D1-23, D1-24). Of households that used salmon, more respondents said they did not get enough of the resource in 2012 (29%) and 2013 (21%). In contrast, a majority of households that used salmon reported having enough in 2014 (44%).

Wainwright households reported using a number of whitefish species in 2012–2014, and broad whitefish were in the top 3 most used resources in all 3 study years (by between 44% and 69% of households) (tables 2-6, 2-7, 2-8). In all study years, more than one-half of households reporting use of whitefish said they used the same amount or more of the resource in comparison with recent years. Thirty-one percent of households reported using the same amount in 2012, 27% in 2013, and 48% in 2014. Between 11% and 18% of households reported using more whitefish across the 3 study years (figures 2-24, 2-25, 2-26). A larger percentage of households reported using less whitefish in 2012 (35%) than in 2013 (15%) and 2014 (20%). More households reported not using whitefish in 2013 compared to the other 2 study years; this may have to do with the low sample achievement in Wainwright in 2012–2014, and the characteristics of the households agreeing to answer the survey in each study year. For households that used less, the most common reason was that they were given fewer whitefish in 2012–2014; 27% cited this reason in 2012, 25% in 2013, and 78% in 2014 (tables D1-19, D1-20, D1-21). Similarly, households that reported more use largely stated that they received more whitefish (tables D1-22, D1-23, D1-24). Of households that use whitefish, more than one-half reported getting enough of this resource in 2012–2014. Thirty-one percent of households reported getting enough whitefish in 2012, 33% in 2013, and 55% in 2014 (figures 2-28, 2-29).

Harvest Data

Changes in the harvest of resources by Wainwright residents can also be discerned through comparisons with findings from other study years. In addition to the 3 years of data presented in this report, there are 4 other studies which allow for comparison of salmon and nonsalmon harvests over time. Braund and Associates collected comprehensive harvest information for 1988 and 1989 (Braund, Loring, et al. 1993); harvest information for these reports can also be found in the ADF&G CSIS. The NSB Department of Wildlife Management conducted a comprehensive harvest survey in Wainwright in 1992 (Fuller and

George 1997), and has collected harvest data in the community for the 2002–2003 study year (Bacon et al. 2011rev.). Conversion factors for edible weight of different fish species have varied across these different studies; in order to allow for a full comparison, conversion factors from this study have been applied to other study years.[12]

As mentioned previously, smelt composed a large component of the total estimated harvests for the 2012–2014 study years (between 34% and 56%).The importance of this resource is also demonstrated in previous studies: smelt composed 31% of the fish harvest in 1988, 46% in 1989, 41% in 1992, and 50% in 2002–2003. While total harvest amounts have varied over time, per capita harvests are useful in illustrating harvest levels over time while controlling for population. In this study, per capita harvests of smelt ranged from 40 lb per person in 2012 to 17 lb per person in 2013 and 2014. Similar harvest levels can be observed in prior studies: Wainwright residents harvested an estimated 6 lb per capita of smelt in 1988, 16 lb in 1989, 17 lb in 1992, and 15 lb in 2002–2003 (Figure 2-29). The 7-year average for all smelt harvests was 18 lb per capita, and harvests in 5 out of the 7 study years fall within 2 lb of that figure. Overall, harvests have remained fairly consistent over time, with the exception of an exceptionally high harvest in 2012 and lower harvest levels in 1988, and smelt have continued to contribute a significant amount to Wainwright's harvest of fish resources.

Salmon as a resource category contributed between 4% and 15% to the total estimated fish harvest in Wainwright during the 2012–2014 study years. These resources also composed a similar percentage of the fish harvest in previous studies, with the exception of the 1988 study year: salmon species accounted for 6% of the total harvest in 1989, 6% in 1992, and 9% in 2002–2003. In 1988, salmon species only contributed a total harvest of 42 lb (>1%). Per capita salmon harvests in 2012–2013 were slightly higher than previous studies; Wainwright fishers harvested 3 lb per capita in 2012, 6 lb in 2013, and 4 lb in 2014. In comparison, residents harvested less than 1 lb per capita in 1988, 2 lb in 1989, and 3 lb in 1992 and 2002–2003, respectively (Figure 2-30). The average harvest of salmon across all study years was 3 lb per capita. Despite the slight difference in per capita harvests between this study and previous years, salmon harvests also appear to have remained fairly consistent over time.

Arctic grayling contributed between 12% of the fish harvest in 2012 and 2013 to 8% of the harvest in 2014. In previous studies, this resource contributed a larger portion of the total harvest in most study years; Arctic grayling accounted for 29% of the fish harvest in 1988, 16% in 1989, 11% in 1992, and 24% in 2003–2003. Despite the difference in harvest composition over time, per capita harvests have remained fairly consistent across all study years. For the 2012–2014 study years, per capita harvests ranged from 4 lb in 2014 to 8 lb per capita in 2012; for historical studies, per capita harvests ranged from 5 lb per capita in 1988 and 1992 to 7 lb per capita in 2002–2003 (Figure 2-31). The average harvest across all study years is 6 lb per capita. As was the case for smelt and salmon, Arctic grayling harvests have also remained fairly consistent over the 7 study years.

Comparing overall fish harvests in Wainwright over the 7 study years also illustrates the consistency of harvest from the earliest 1988 study year to the 3 years of this study. While total estimated harvests have varied in each discrete study year, per capita harvests have remained fairly similar over time. Per capita harvests in 2012–2014 are among the highest harvests; Wainwright residents harvested an estimated 71 lb per capita in 2012, 43 lb in 2013, and 49 lb in 2012. Per capita harvests in 2013 and 2014 of this study are slightly higher than the average across all 7 study years of 41 lb per capita; 2012 appears to be an outlier among all 7 study years. In contrast, per capita harvests in earlier studies are slightly lower than the 2012–2014 study years, but generally similar to the 7 year average; the one exception is 1988 (18 lb per capita),

12. Round weights for salmon provided by ADF&G Division of Commercial fisheries vary from year to year, which results in different conversion factors for each Division of Subsistence study year. Conversion factors for salmon species in the 2014 study year have been applied to historical harvest information.

which is 77% lower than the 7-year average. Wainwright residents harvested 35 lb of fish in 1989, 43 lb in 1992, and 31 lb in 2002–2003 (Figure 2-32).

LOCAL COMMENTS AND CONCERNS

Following is a summary of local observations about wild resource populations and trends, environmental observation and concerns, and different factors that affect subsistence in Wainwright. These comments were recorded during the surveys and in ethnographic interviews. 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.

Changes to Fishing

Beginning in the second year of the project, households were also asked if they had observed any changes in fishing conditions or the fish themselves for 3 resource categories—salmon, nonsalmon fishes, and smelt. Households who did report changes were asked what changes they observed in more detail. Figures 2-33 and 2-34 portray the percentage of responding households who have observed changes in fishing during the 2013 and 2014 study years; as with assessments, not all households responded to the question. For both study years, a majority of households that responded to the question reported that they had not observed any changes to any resource category.

For salmon, 10% of households in both 2013 and 2014 reported that they had observed changes. Some respondents in 2013 reported that bad weather had taken a toll on salmon fishing during the study year, and a few noted that salmon runs came to the Wainwright area later than usual. In both 2013 and 2014, several responding households noted that they felt that numbers of salmon were increasing in the region. Of these respondents, a few noted that this increase was noticeable upriver from the community. One respondent stated that they had observed Chinook and sockeye salmon in the Kuk River. A full list of comments can be found in Appendix E.

For smelt, 19% of households observed changes to fishing for this resource in 2013 and 15% noted changes in 2014. Several respondents stated that fishing areas for smelt had changed during the 2013 study year, and tied these changes to gravel dredging activities near the lagoon where they are commonly harvested. A few respondents observed that the size of the smelt seems to be increasing. In 2014, several respondents stated that smelt were very abundant near the community, and some said that more residents were engaged in fishing for this resource. One resident felt the smelt came later than usual during the 2014 study year, but that they were able to harvest the resource once they arrived.

For all other nonsalmon fish, 10% of Wainwright households reported observing changes in fishing for these resources in 2013 and 9% reported changes in 2014. In 2013, a few respondents stated that the weather had impacted fishing for nonsalmon species; one pointed out that fishing was affected because freeze-up is occurring later in the season. In 2014, a few residents felt that they were catching more nonsalmon fish than usual, and one felt that more people in Wainwright were fishing for nonsalmon species. One respondent felt that the weather had a negative impact on fishing during the 2014 study year, explaining that the river was very low.

Environmental Observations

Several Wainwright households shared observations of a changing environment and climate during the 2012–2014 study years. Most of these comments revolved around a warming climate, and included observations of seasonal changes, ice conditions, and water temperature. Several surveyed households and key respondents noted that the ice is thinner than it used to be, and that the timing of freeze-up of local waterways has been delayed in recent years. Some explained impacts on fishing, noting that the timing of ice fishing activities has been delayed almost a month in some cases. One key respondent explained the change they have witnessed in his lifetime:

> It usually freezes in September. When I was growing up, I'd be going to school and checking out the lakes and go skating, ice-skating, during school. Early September. Now it's freezing later…in October, starting to. (9WW)

Others noted that the water has warmed over the years and expressed concern over possible impacts to fishing. As noted above, many key respondents reported seeing more salmon in the region, often connecting this change to warmer waters. Some households also echoed this observation in their surveys. While this is seen as more of a positive development, some surveyed residents explained that they felt water levels were higher in local rivers as a result of the warming climate; they expressed concern over possible impacts to fishing in these waterways.

Development

Some residents of Wainwright discussed the possibility of development in their region, particularly offshore drilling. Everyone who brought up this topic viewed offshore drilling in a negative light, and expressed their concerns about the potential impacts of this activity on the fish and other subsistence resources that they depend upon. One key respondent explained his view on the matter:

> I do not like it: that is the way I feel…They're coming into my backyard, and this is a very fragile ecosystem, and we hope we get a lot of migration, animals migrating from pretty much all over the world. They come up to go eat and reproduce in this ecosystem, and once oil starts coming in, it certainly would pretty much kill off all the krill. And that is probably one of the best areas to eat before they go back out. I think they eat a lot of krill to get fat and make their way back. We get all kinds of animals, birds, mammals, fish. (01WW)

Economic Impacts to Subsistence

Several surveyed households and key respondents described the high price of fuel in Wainwright to be a burden on residents who engage in subsistence activities. Some comments also pointed out the cost of equipment and the high cost of living in general.

Very few residents discussed their opinion on commercial fishing in general, and opinions that were expressed were mixed during the study years. The North Pacific Fishery Management Council approved a new management plan in the Arctic Area in 2009. The recommendation of the council was to prohibit all commercial fish harvests until enough information is available to allow for sustainable management of a commercial fishery[13]. The council will consider opening commercial fishing on targeted species if a petition from the public is received or a recommendation from the National Marine Fisheries Service or the State of Alaska (NPFMC 2009). One surveyed household expressed the desire to have commercial opportunities for residents, although they did not state which species they felt should be targeted. One key respondent was curious as to whether commercial fishing would be introduced in the region, but did not express a positive or negative reaction to the possibility (10WW). Two fishers stated that they felt there should not be commercial fishing in the Arctic. One explained that the resources are not abundant enough to consider opportunities, and that it would prove to be a waste of money (09WW). Another expressed his concern over potential negative consequences:

> I am, yeah, I am very concerned, like you see in Bristol Bay, Norton Sound, I mean in the early '80's they say we got fish that will never be depleted. Now they say it is getting tough for them to catch a lot of fish, like any other animal that you hunt if you overstress them and they become overstressed… due to traffic and overfishing and stuff like that. (1WW)

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13. All Arctic fish resources are included in the current management plan, with the exception of Pacific salmon.

During the community review meeting of this project, 2 Wainwright residents spoke out against commercial fishing opportunities in the region.[14]

14. Community Review Meeting, Wainwright Tribal Council. April 14, 2016.

Table 2-1.–Population estimates, Wainwright, Alaska, 2010–2014.

	Census (2010)	5-year American Community Survey (2010–2014) (2008–2012)	(2009–2013)	(2010–2014)	This study 2012	2013	2014
Total population							
Households	147	197	171	170	152.0	150.0	145.0
Population	556	645	540	482	491.1	530.6	564.5
Alaska Native							
Population	510	604	490	476	461.8	495.0	547.1
Percentage	91.7%	93.6%	90.7%	98.8%	94.0%	93.3%	96.9%

Sources U.S. Census Bureau (2011) for 2010 estimate; U.S. Census Bureau for American Community Survey 5-year survey estimate; and ADF&G Division of Subsistence household surveys, 2013–2015, for 2012–2014 estimates.

Table 2-2.–Demographic characteristics, Wainwright, Alaska, 2012–2014.

	Wainwright		
Characteristics	2012	2013	2014
Household size			
Mean	3.2	3.5	3.9
Minimum	1	1	1
Maximum	11	13	14
Age			
Mean	31.2	31.8	28.7
Minimum[a]	0	1	1
Maximum	84	84	86
Median	27.0	29.5	24.0
Length of residency[c]			
Total population			
Mean	-	26.3	23.9
Minimum[a]	-	1	0
Maximum	-	84	86
Heads of household			
Mean	-	39.9	37.2
Minimum[a]	-	1	0
Maximum	-	84	86
Alaska Native households[b]			
Number	134.5	129.4	145.0
Percentage	88.5%	86.3%	100.0%

Source ADF&G Division of Subsistence household surveys, 2013–2015.

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.

c. Length of residency data for 2012 was largely unknown or missing and therefore omitted from the results.

Table 2-3.–Estimated harvests and uses of salmon and nonsalmon fish, Wainwright, Alaska, 2012.

	Percentage of households					Harvest weight (lb)			Harvest amount[a]			
Resource	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total	Mean per household	Per capita	Total	Unit	Mean per household	95% confidence limit (±) harvest
All fish	**91.0**	**55.1**	**48.7**	**79.5**	**51.3**	**34,808.1**	**227.0**	**70.9**				**54.7**
Salmon	**38.5**	**17.9**	**11.5**	**34.6**	**10.3**	**1,504.1**	**10.7**	**3.1**				**56.7**
Chum salmon	15.4	7.7	5.1	10.3	1.3	287.9	1.9	0.6	50.7	ind	0.3	72.5
Coho salmon	10.3	3.8	3.8	7.7	2.6	510.6	3.3	1.0	105.2	ind	0.7	79.9
Chinook salmon	10.3	2.6	1.3	10.3	3.8	186.6	1.2	0.4	19.5	ind	0.1	139.8
Pink salmon	19.2	9.0	7.7	14.1	3.8	368.4	2.4	0.8	136.4	ind	0.9	87.3
Sockeye salmon	10.3	2.6	2.6	7.7	2.6	150.5	1.9	0.3	34.0	ind	0.4	131.8
Unknown salmon	2.6	1.3	0.0	2.6	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Nonsalmon fish	**88.5**	**50.0**	**44.9**	**78.2**	**50.0**	**33,304.0**	**216.3**	**67.8**				**57.1**
Smelt	82.1	44.9	43.6	56.4	39.7	19,420.2	126.1	39.5	3,236.7	gal	21.0	75.8
Arctic cod	2.6	0.0	0.0	2.6	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Flounder	2.6	2.6	1.3	1.3	0.0	21.4	0.1	0.0	19.5	ind	0.1	139.8
Burbot	14.1	7.7	5.1	11.5	9.0	425.6	2.8	0.9	101.3	ind	0.7	73.6
Arctic char	3.8	0.0	0.0	3.8	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Dolly Varden	6.4	2.6	0.0	6.4	2.6	0.0	0.0	0.0	0.0	ind	0.0	0.0
Lake trout	5.1	1.3	1.3	3.8	2.6	77.9	0.5	0.2	19.5	ind	0.1	139.8
Arctic grayling	44.9	19.2	16.7	37.2	24.4	4,097.0	26.6	8.3	4,519.8	ind	29.4	48.1
Northern pike	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Sheefish	11.5	0.0	0.0	11.5	5.1	0.0	0.0	0.0	0.0	ind	0.0	0.0
Broad whitefish	62.8	5.1	3.8	60.3	24.4	4,998.3	32.5	10.2	1,562.0	ind	10.1	136.3
Bering cisco	30.8	11.5	10.3	29.5	14.1	453.7	2.9	0.9	648.1	ind	4.2	89.1
Least cisco	25.6	6.4	3.8	23.1	9.0	436.6	2.8	0.9	623.7	ind	4.1	131.2
Humpback whitefish	21.8	7.7	6.4	19.2	10.3	3,373.2	21.9	6.9	1,606.3	ind	10.4	121.4
Round whitefish	9.0	1.3	0.0	9.0	3.8	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown whitefish	2.6	0.0	0.0	2.6	1.3	0.0	0.0	0.0	0.0	ind	0.0	0.0

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

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

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

b. Sockeye salmon presented as reported values.

Table 2-4.–Estimated harvests and uses of salmon and nonsalmon fish, Wainwright, Alaska, 2013.

	Percentage of households					Harvest weight (lb)			Harvest amount[a]			
Resource	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total	Mean per household	Per capita	Total	Unit	Mean per household	95% confidence limit (±) harvest
All fish	**90.1**	**65.4**	**61.7**	**80.2**	**64.2**	**22,982.0**	**154.4**	**43.3**				**27.8**
Salmon	**38.3**	**21.0**	**19.8**	**28.4**	**16.0**	**3,356.5**	**25.2**	**6.3**				**46.3**
Chum salmon	9.9	8.6	7.4	7.4	4.9	1,112.4	7.3	2.1	180.0	ind	1.2	65.9
Coho salmon	6.2	6.2	4.9	3.7	3.7	700.2	4.6	1.3	144.4	ind	1.0	92.5
Chinook salmon	19.8	9.9	8.6	14.8	7.4	592.8	3.9	1.1	61.9	ind	0.4	60.1
Pink salmon	14.8	9.9	8.6	11.1	7.4	415.1	2.7	0.8	153.8	ind	1.0	87.5
Sockeye salmon[b]	12.3	7.4	6.2	7.4	4.9	536.0	6.6	1.0	121.0	ind	1.5	68.1
Unknown salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Nonsalmon fish	**88.9**	**63.0**	**60.5**	**79.0**	**63.0**	**19,625.5**	**129.2**	**37.0**				**28.1**
Pacific herring	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Smelt	87.7	55.6	54.3	61.7	55.6	8,877.7	58.5	16.7	1,479.6	gal	9.7	23.2
Arctic cod	3.7	1.2	1.2	3.7	1.2	28.9	0.2	0.1	262.5	ind	1.7	136.8
Saffron cod	2.5	1.2	1.2	1.2	2.5	29.5	0.2	0.1	140.6	ind	0.9	136.8
Flounder	2.5	2.5	2.5	0.0	0.0	33.0	0.2	0.1	30.0	ind	0.2	128.4
Pacific halibut	2.5	1.2	1.2	1.2	1.2	79.5	0.5	0.1	79.5	lbs	0.5	136.8
Burbot	11.1	9.9	8.6	4.9	7.4	480.4	3.2	0.9	114.4	ind	0.8	55.8
Arctic char	6.2	1.2	1.2	6.2	1.2	24.8	0.2	0.0	7.5	ind	0.0	136.8
Dolly Varden	4.9	3.7	3.7	2.5	1.2	179.4	1.2	0.3	54.4	ind	0.4	86.3
Lake trout	3.7	1.2	1.2	2.5	2.5	150.0	1.0	0.3	37.5	ind	0.2	136.8
Arctic grayling	48.1	28.4	25.9	35.8	30.9	2,750.6	18.1	5.2	3,056.3	ind	20.1	37.6
Sheefish	11.1	2.5	1.2	9.9	7.4	206.3	1.4	0.4	37.5	ind	0.2	136.8
Broad whitefish	44.4	6.2	6.2	42.0	22.2	1,626.0	10.7	3.1	508.1	ind	3.3	106.9
Arctic cisco	17.3	8.6	8.6	14.8	13.6	653.6	4.3	1.2	933.8	ind	6.1	76.8
Bering cisco	22.2	16.0	16.0	14.8	13.6	2,873.1	18.9	5.4	4,104.4	ind	27.0	86.4
Least cisco	16.0	8.6	8.6	13.6	12.3	1,088.1	7.2	2.1	1,554.4	ind	10.2	68.0
Humpback whitefish	16.0	4.9	4.9	12.3	7.4	531.6	3.5	1.0	253.1	ind	1.7	78.3
Round whitefish	4.9	1.2	1.2	4.9	3.7	13.1	0.1	0.0	18.8	ind	0.1	136.8
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

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

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

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

b. Sockeye salmon presented as reported values.

Table 2-5.–Estimated harvests and uses of salmon and nonsalmon fish, Wainwright, Alaska, 2014.

	Percentage of households					Harvest weight (lb)			Harvest amount[a]			
Resource	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total	Mean per household	Per capita	Total	Unit	Mean per household	95% confidence limit (±) harvest
All fish	**94.7**	**66.7**	**60.0**	**90.7**	**61.3**	**27,742.5**	**193.6**	**49.1**				**37.7**
Salmon	**54.7**	**20.0**	**17.3**	**44.0**	**16.0**	**2,430.6**	**19.0**	**4.3**				**54.0**
Chum salmon	24.0	8.0	5.3	18.7	8.0	535.3	3.7	0.9	88.9	ind	0.6	95.4
Coho salmon	9.3	8.0	6.7	4.0	4.0	1,073.4	7.4	1.9	208.8	ind	1.4	73.9
Chinook salmon	8.0	6.7	4.0	5.3	2.7	235.0	1.6	0.4	27.1	ind	0.2	102.2
Pink salmon	30.7	9.3	8.0	22.7	6.7	240.1	1.7	0.4	96.7	ind	0.7	88.0
Sockeye salmon[b]	10.7	6.7	5.3	5.3	1.3	346.8	4.6	0.6	86.0	ind	1.1	93.4
Unknown salmon	2.7	0.0	0.0	2.7	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Nonsalmon fish	**93.3**	**66.7**	**58.7**	**85.3**	**58.7**	**25,311.9**	**174.6**	**44.8**				**40.3**
Pacific herring	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Smelt	88.0	55.4	49.3	63.9	52.1	9,375.4	64.7	16.6	1,562.6	gal	10.8	40.4
Arctic cod	2.7	0.0	0.0	2.7	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Saffron cod	2.7	1.3	1.3	1.3	0.0	40.6	0.3	0.1	193.3	ind	1.3	138.4
Flounder	1.3	1.3	1.3	0.0	0.0	212.7	1.5	0.4	193.3	ind	1.3	138.4
Burbot	18.7	12.0	9.3	9.5	6.7	341.0	2.4	0.6	81.2	ind	0.6	68.2
Arctic char	6.7	4.0	2.7	2.7	1.4	663.5	4.6	1.2	201.1	ind	1.4	133.2
Dolly Varden	2.7	2.7	2.7	0.0	0.0	38.3	0.3	0.1	11.6	ind	0.1	117.3
Lake trout	4.0	4.0	4.0	1.3	2.7	247.5	1.7	0.4	61.9	ind	0.4	82.7
Arctic grayling	57.3	26.7	22.7	45.2	20.3	2,443.0	16.8	4.3	2,714.4	ind	18.7	50.6
Northern pike	1.3	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Sheefish	6.7	4.0	1.3	5.3	1.3	53.2	0.4	0.1	9.7	ind	0.1	138.4
Broad whitefish	66.7	13.3	9.3	65.3	13.3	10,177.1	70.2	18.0	3,180.3	ind	21.9	88.5
Arctic cisco	10.7	5.3	4.0	8.0	4.0	487.2	3.4	0.9	696.0	ind	4.8	116.7
Bering cisco	16.0	4.0	1.3	12.0	2.7	40.6	0.3	0.1	58.0	ind	0.4	138.4
Least cisco	8.0	4.0	1.3	4.0	2.7	67.7	0.5	0.1	96.7	ind	0.7	138.4
Humpback whitefish	9.3	4.0	2.7	8.0	4.0	93.4	0.6	0.2	44.5	ind	0.3	121.5
Round whitefish	2.7	1.3	0.0	1.3	2.7	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown whitefishes	1.3	1.3	1.3	0.0	0.0	1,030.9	7.1	1.8	386.7	ind	2.7	138.4

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

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

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

b. Sockeye salmon presented as reported values.

Table 2-6.–Top ranked salmon and nonsalmon fish used by households, Wainwright, Alaska, 2012.

Rank[a]	Resource	Percentage of households using
1.	Smelt	82.1%
2.	Broad whitefish	62.8%
3.	Arctic grayling	44.9%
4.	Bering cisco	30.8%
5.	Least cisco	25.6%
6.	Humpback whitefish	21.8%
7.	Pink salmon	19.2%
8.	Chum salmon	15.4%
9.	Burbot	14.1%
10.	Sheefish	11.5%

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

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

Table 2-7.–Top ranked salmon and nonsalmon fish used by households, Wainwright, Alaska, 2013.

Rank[a]	Resource	Percentage of households using
1.	Smelt	87.7%
2.	Arctic grayling	48.1%
3.	Broad whitefish	44.4%
4.	Bering cisco	22.2%
5.	Chinook salmon	19.8%
6.	Arctic cisco	17.3%
7.	Least cisco	16.0%
7.	Humpback whitefish	16.0%
9.	Pink salmon	14.8%
10.	Sockeye salmon	12.3%

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

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

Table 2-8.–Top ranked salmon and nonsalmon fish used by households, Wainwright, Alaska, 2014.

Rank[a]	Resource	Percentage of households using
1.	Smelt	88.0%
2.	Broad whitefish	66.7%
3.	Arctic grayling	57.3%
4.	Pink salmon	30.7%
5.	Chum salmon	24.0%
6.	Burbot	18.7%
7.	Bering cisco	16.0%
8.	Sockeye salmon	10.7%
8.	Arctic cisco	10.7%
10.	Coho salmon	9.3%
10.	Humpback whitefish	9.3%

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.

Table 2-9.–Estimated salmon harvest by season and gear type, Wainwright, Alaska, 2013.

	June			July			August			September			Unknown			Total			
Resource	Gillnet	Rod and reel	Other	Gillnet	Rod and reel	Other	Gillnet	Rod and reel	Other	Gillnet	Rod and reel	Other	Gillnet	Rod and reel	Other	Gillnet	Rod and reel	Other	Any gear
Salmon	**74.4**	**0.0**	**0.0**	**388.1**	**41.6**	**0.0**	**121.3**	**3.8**	**0.0**	**28.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**611.9**	**45.4**	**0.0**	**661.0**
Chum salmon	28.1	0.0	0.0	99.4	0.0	0.0	46.9	0.0	0.0	1.9	0.0	0.0	0.0	0.0	0.0	176.3	0.0	0.0	180.0
Coho salmon	5.6	0.0	0.0	120.0	0.0	0.0	0.0	0.0	0.0	18.8	0.0	0.0	0.0	0.0	0.0	144.4	0.0	0.0	144.4
Chinook salmon	5.6	0.0	0.0	13.1	0.0	0.0	35.6	0.0	0.0	7.5	0.0	0.0	0.0	0.0	0.0	61.9	0.0	0.0	61.9
Pink salmon	0.0	0.0	0.0	110.6	5.6	0.0	33.8	3.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	144.4	9.4	0.0	153.8
Sockeye salmon	35.0	0.0	0.0	45.0	36.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	85.0	36.0	0.0	121.0

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

Table 2-10.–Estimated salmon harvest by season and gear type, Wainwright, Alaska, 2014.

	June			July			August			September			Unknown			Total			
Resource	Gillnet	Rod and reel	Other	Gillnet	Rod and reel	Other	Gillnet	Rod and reel	Other	Gillnet	Rod and reel	Other	Gillnet	Rod and reel	Other	Gillnet	Rod and reel	Other	Any gear
Salmon	**121.3**	**5.8**	**0.0**	**207.5**	**82.9**	**0.0**	**90.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**418.8**	**88.7**	**0.0**	**507.5**
Chum salmon	58.0	0.0	0.0	0.0	23.2	0.0	7.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	65.7	23.2	0.0	88.9
Coho salmon	29.0	0.0	0.0	164.3	5.8	0.0	9.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	203.0	5.8	0.0	208.8
Chinook salmon	9.7	0.0	0.0	13.5	0.0	0.0	3.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	27.1	0.0	0.0	27.1
Pink salmon	9.7	5.8	0.0	11.6	3.9	0.0	65.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	87.0	9.7	0.0	96.7
Sockeye salmon	15.0	0.0	0.0	18.0	50.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	36.0	50.0	0.0	86.0
Unknown salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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

Table 2-11.–Estimated nonsalmon fish harvest by season and gear type, Wainwright, Alaska, 2013.

	Spring				Summer				Fall				Winter				Total				
Resource	Gillnet	Rod and reel	Jig	Other	Gillnet	Rod and reel	Jig	Other	Gillnet	Rod and reel	Jig	Other	Gillnet	Rod and reel	Jig	Other	Gillnet	Rod and reel	Jig	Other	Any gear
Nonsalmon fish	**0.0**	**13.1**	**9.4**	**0.0**	**3298.1**	**1354.5**	**800.0**	**0.0**	**1237.5**	**431.3**	**1580.3**	**101.3**	**431.3**	**52.5**	**2727.5**	**635.6**	**4966.9**	**1851.4**	**5117.1**	**736.9**	**12672.3**
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	0.0	0.0	0.0	0.0	0.0
Smelt	0.0	13.1	9.4	0.0	0.0	39.4	21.9	0.0	0.0	0.0	33.4	0.0	0.0	52.5	1310.0	0.0	0.0	105.0	1374.6	0.0	1479.6
Arctic cod	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	262.5	0.0	0.0	0.0	262.5	0.0	262.5
Saffron cod	0.0	0.0	0.0	0.0	0.0	46.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	93.8	0.0	0.0	46.9	93.8	0.0	140.6
Flounder	0.0	0.0	0.0	0.0	30.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.0	0.0	0.0	0.0	30.0
Pacific halibut	0.0	0.0	0.0	0.0	0.0	79.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	79.5	0.0	0.0	79.5
Burbot	0.0	0.0	0.0	0.0	18.8	0.0	0.0	0.0	0.0	28.1	46.9	0.0	0.0	0.0	20.6	0.0	18.8	28.1	67.5	0.0	114.4
Arctic char	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.5	0.0	0.0	0.0	7.5	0.0	7.5
Dolly Varden	0.0	0.0	0.0	0.0	28.1	16.9	0.0	0.0	0.0	9.4	0.0	0.0	0.0	0.0	0.0	0.0	28.1	26.3	0.0	0.0	54.4
Lake trout	0.0	0.0	0.0	0.0	0.0	18.8	0.0	0.0	0.0	18.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	37.5	0.0	0.0	37.5
Arctic grayling	0.0	0.0	0.0	0.0	506.3	1029.4	0.0	0.0	56.3	375.0	843.8	0.0	0.0	0.0	245.6	0.0	562.5	1404.4	1089.4	0.0	3056.3
Sheefish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	37.5	0.0	0.0	0.0	37.5	0.0	37.5
Broad whitefish	0.0	0.0	0.0	0.0	28.1	37.5	0.0	0.0	393.8	0.0	0.0	7.5	0.0	0.0	0.0	41.3	421.9	37.5	0.0	48.8	508.1
Arctic cisco	0.0	0.0	0.0	0.0	646.9	39.4	0.0	0.0	0.0	0.0	37.5	0.0	0.0	0.0	0.0	210.0	646.9	39.4	37.5	210.0	933.8
Bering cisco	0.0	0.0	0.0	0.0	973.1	46.9	750.0	0.0	243.8	0.0	618.8	37.5	375.0	0.0	750.0	309.4	1591.9	46.9	2118.8	346.9	4104.4
Least cisco	0.0	0.0	0.0	0.0	1057.5	0.0	28.1	0.0	468.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1526.3	0.0	28.1	0.0	1554.4
Humpback whitefish	0.0	0.0	0.0	0.0	9.4	0.0	0.0	0.0	56.3	0.0	0.0	56.3	56.3	0.0	0.0	75.0	121.9	0.0	0.0	131.3	253.1
Round whitefish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.8	0.0	0.0	0.0	18.8
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	0.0	0.0	0.0	0.0	0.0

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

Table 2-12.–Estimated nonsalmon fish harvest by season and gear type, Wainwright, Alaska, 2014.

	Spring				Summer				Fall				Winter				Total				
Resource	Gillnet	Rod and reel	Jig	Other	Gillnet	Rod and reel	Jig	Other	Gillnet	Rod and reel	Jig	Other	Gillnet	Rod and reel	Jig	Other	Gillnet	Rod and reel	Jig	Other	Any gear
Nonsalmon fish	**0.0**	**483.3**	**0.0**	**0.0**	**1997.6**	**1746.4**	**36.7**	**0.0**	**628.3**	**272.6**	**32.9**	**0.0**	**2146.0**	**0.0**	**1567.3**	**580.0**	**4771.9**	**2502.3**	**1636.9**	**580.0**	**9491.2**
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	0.0	0.0	0.0	0.0	0.0
Smelt	0.0	0.0	0.0	0.0	0.5	14.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1548.0	0.0	0.5	14.1	1548.0	0.0	1562.6
Arctic cod	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saffron cod	0.0	0.0	0.0	0.0	96.7	0.0	0.0	0.0	0.0	96.7	0.0	0.0	0.0	0.0	0.0	0.0	96.7	96.7	0.0	0.0	193.3
Unknown flounder	0.0	0.0	0.0	0.0	193.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	193.3	0.0	0.0	0.0	193.3
Burbot	0.0	0.0	0.0	0.0	0.0	21.3	36.7	0.0	0.0	19.3	3.9	0.0	0.0	0.0	0.0	0.0	0.0	40.6	40.6	0.0	81.2
Arctic char	0.0	0.0	0.0	0.0	201.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	201.1	0.0	0.0	0.0	201.1
Dolly Varden	0.0	0.0	0.0	0.0	11.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.6	0.0	0.0	0.0	11.6
Lake trout	0.0	0.0	0.0	0.0	19.3	42.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.3	42.5	0.0	0.0	61.9
Arctic grayling	0.0	483.3	0.0	0.0	638.0	1552.5	0.0	0.0	0.0	11.6	29.0	0.0	0.0	0.0	0.0	0.0	638.0	2047.4	29.0	0.0	2714.4
Northern pike	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sheefish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.7	0.0	0.0	9.7
Broad whitefish	0.0	0.0	0.0	0.0	290.0	19.3	0.0	0.0	48.3	96.7	0.0	0.0	2146.0	0.0	0.0	580.0	2484.3	116.0	0.0	580.0	3180.3
Arctic cisco	0.0	0.0	0.0	0.0	96.7	0.0	0.0	0.0	580.0	0.0	0.0	0.0	0.0	0.0	19.3	0.0	676.7	0.0	19.3	0.0	696.0
Bering cisco	0.0	0.0	0.0	0.0	58.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	58.0	0.0	0.0	0.0	58.0
Least cisco	0.0	0.0	0.0	0.0	0.0	96.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	96.7	0.0	0.0	96.7
Humpback whitefish	0.0	0.0	0.0	0.0	5.8	0.0	0.0	0.0	0.0	38.7	0.0	0.0	0.0	0.0	0.0	0.0	5.8	38.7	0.0	0.0	44.5
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	0.0	0.0	0.0	0.0	0.0
Unknown whitefishes	0.0	0.0	0.0	0.0	386.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	386.7	0.0	0.0	0.0	386.7

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

Table 2-13.–Changes in household uses of resources compared to recent years, Wainwright, Alaska, 2012.

			Households reporting use								Households not using	
	Sampled	Valid	Total households		Less		Same		More			
Resource category	households	responses[a]	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any fish	78	129	97	75.2%	48	37.2%	36	27.9%	13	10.1%	32	24.8%
Salmon	78	74	46	62.2%	32	43.2%	10	13.5%	4	5.4%	28	37.8%
Whitefishes	78	75	57	76.0%	26	34.7%	23	30.7%	8	10.7%	18	24.0%
Other nonsalmon fish	78	67	58	86.6%	25	37.3%	27	40.3%	6	9.0%	9	13.4%

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

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

Table 2-14.–Changes in household uses of resources compared to recent years, Wainwright, Alaska, 2013.

			Households reporting use								Households not using	
	Sampled	Valid	Total households		Less		Same		More			
Resource category	households	responses[a]	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	80	149	98	65.8%	31	20.8%	48	32.2%	19	12.8%	51	34.2%
Salmon	80	78	33	42.3%	13	16.7%	10	12.8%	10	12.8%	45	57.7%
Smelt	80	80	69	86.3%	18	22.5%	39	48.8%	12	15.0%	11	13.8%
Nonsalmon fish	80	74	40	54.1%	13	17.6%	21	28.4%	6	8.1%	34	45.9%

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

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

Table 2-15.–Changes in household uses of resources compared to recent years, Wainwright, Alaska, 2014.

			Households reporting use								Households not using	
	Sampled	Valid	Total households		Less		Same		More			
Resource category	households	responses[a]	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	75	142	115	81.0%	40	28.2%	51	35.9%	24	16.9%	27	19.0%
Salmon	75	63	49	77.8%	19	30.2%	20	31.7%	10	15.9%	14	22.2%
Smelt	75	70	68	97.1%	23	32.9%	32	45.7%	13	18.6%	2	2.9%
Whitefish	75	60	52	86.7%	12	20.0%	29	48.3%	11	18.3%	8	13.3%
Other nonsalmon fish	75	67	49	73.1%	15	22.4%	27	40.3%	7	10.4%	18	26.9%

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

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

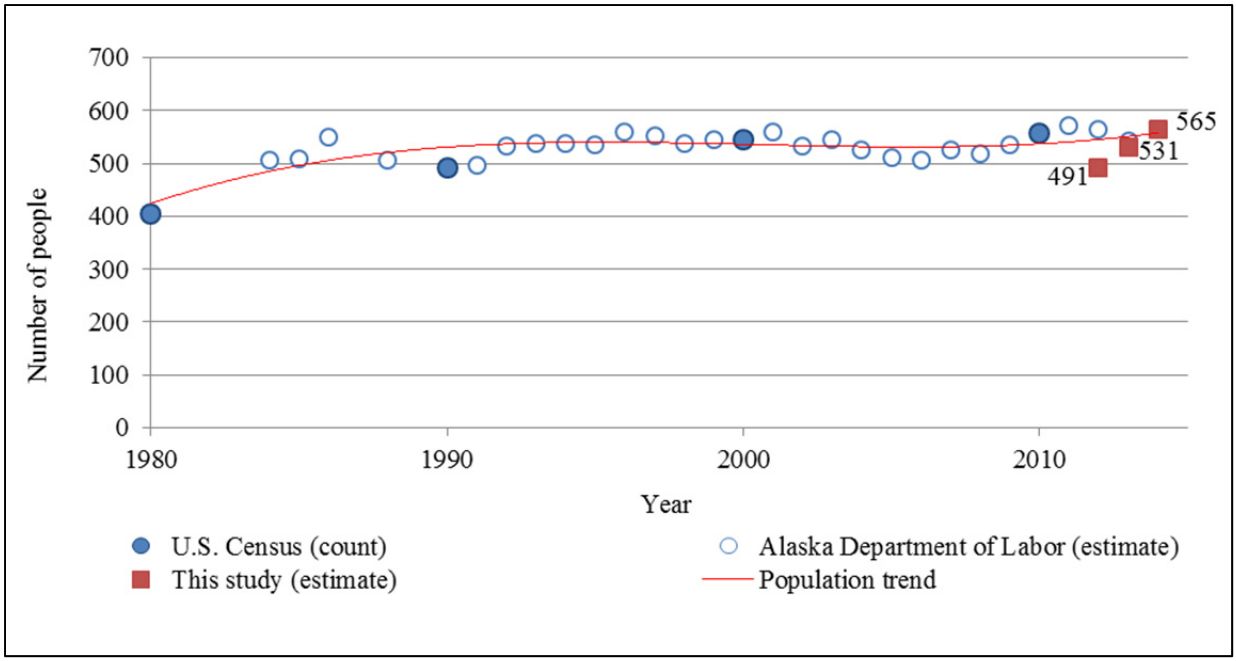


Figure 2-1.–Historical population estimates, Wainwright, Alaska, 1980–2014.

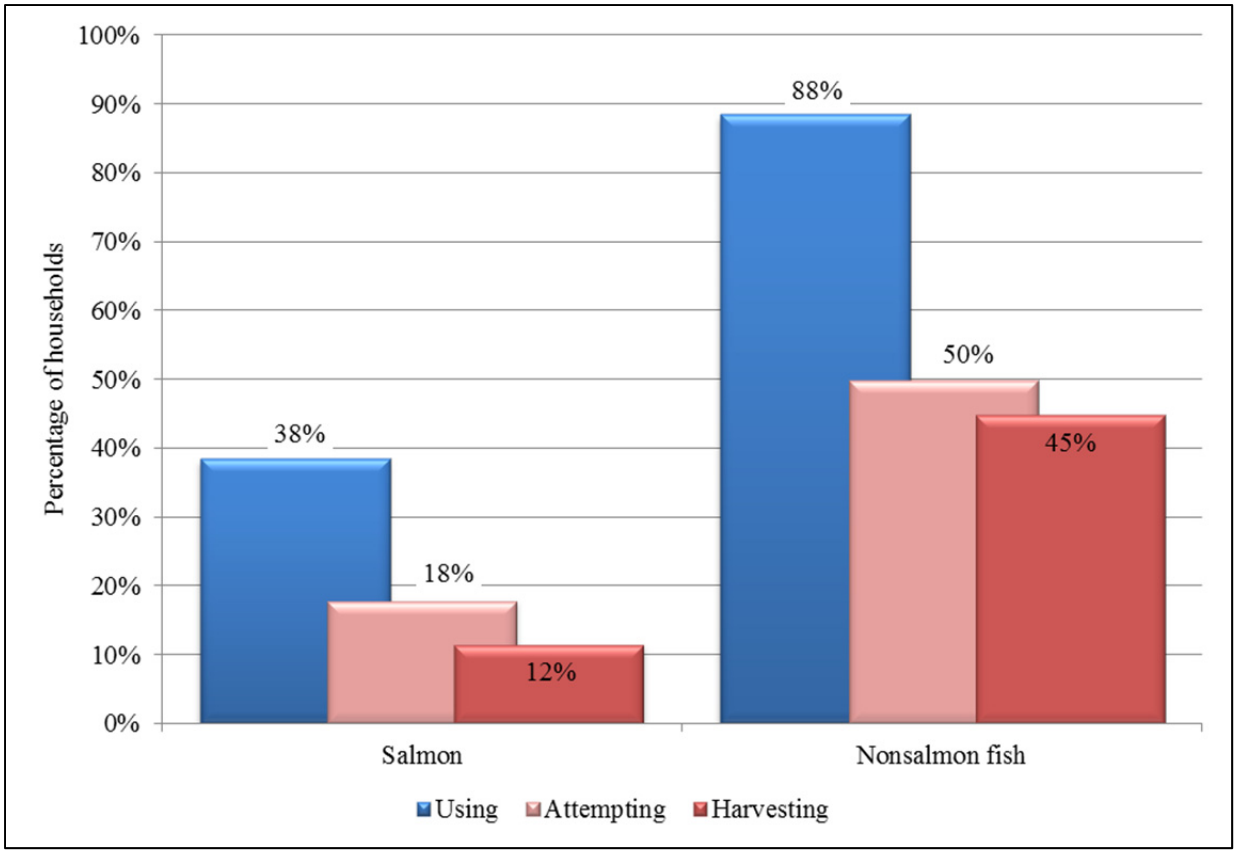


Figure 2-2.–Percentage of households using, attempting to harvest, or harvesting salmon and nonsalmon fish, Wainwright, Alaska, 2012.

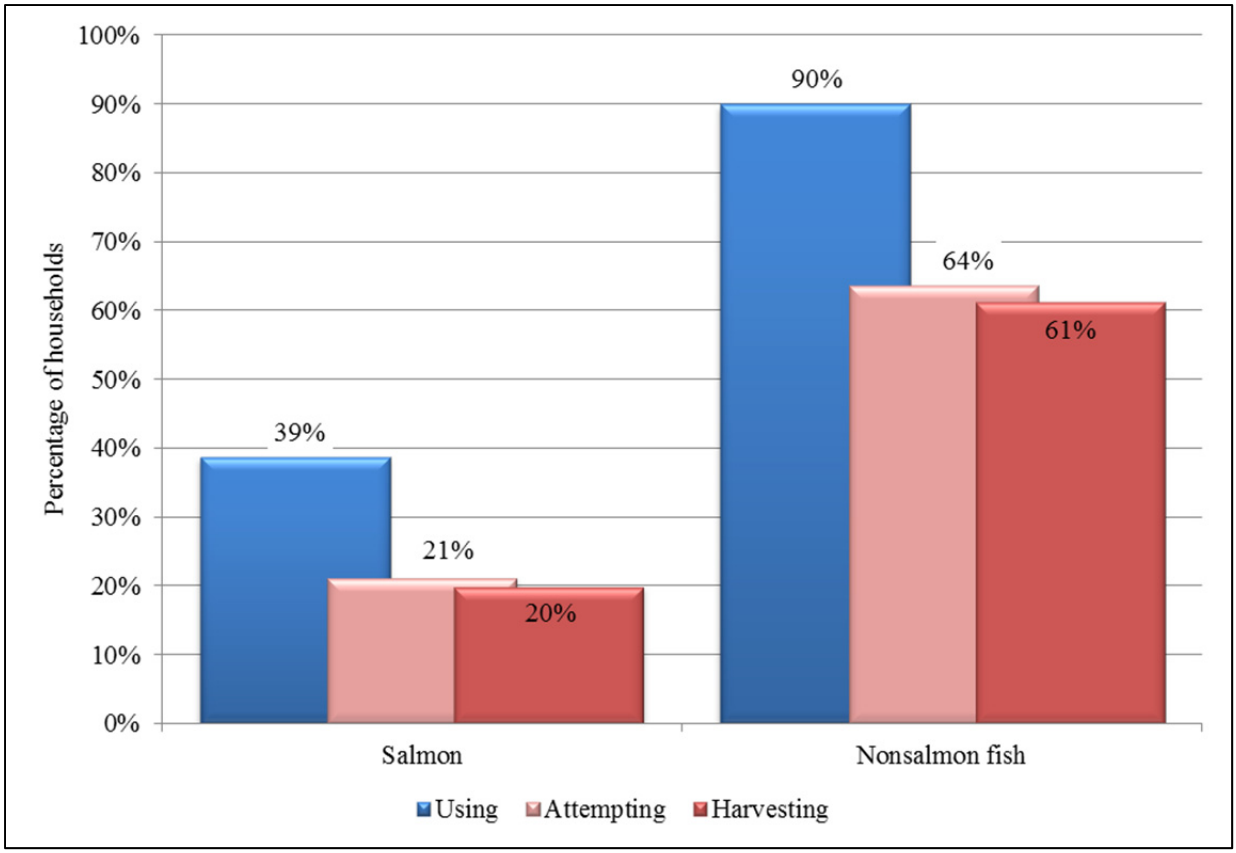


Figure 2-3.–Percentage of households using, attempting to harvest, or harvesting salmon and nonsalmon fish, Wainwright, Alaska, 2013.

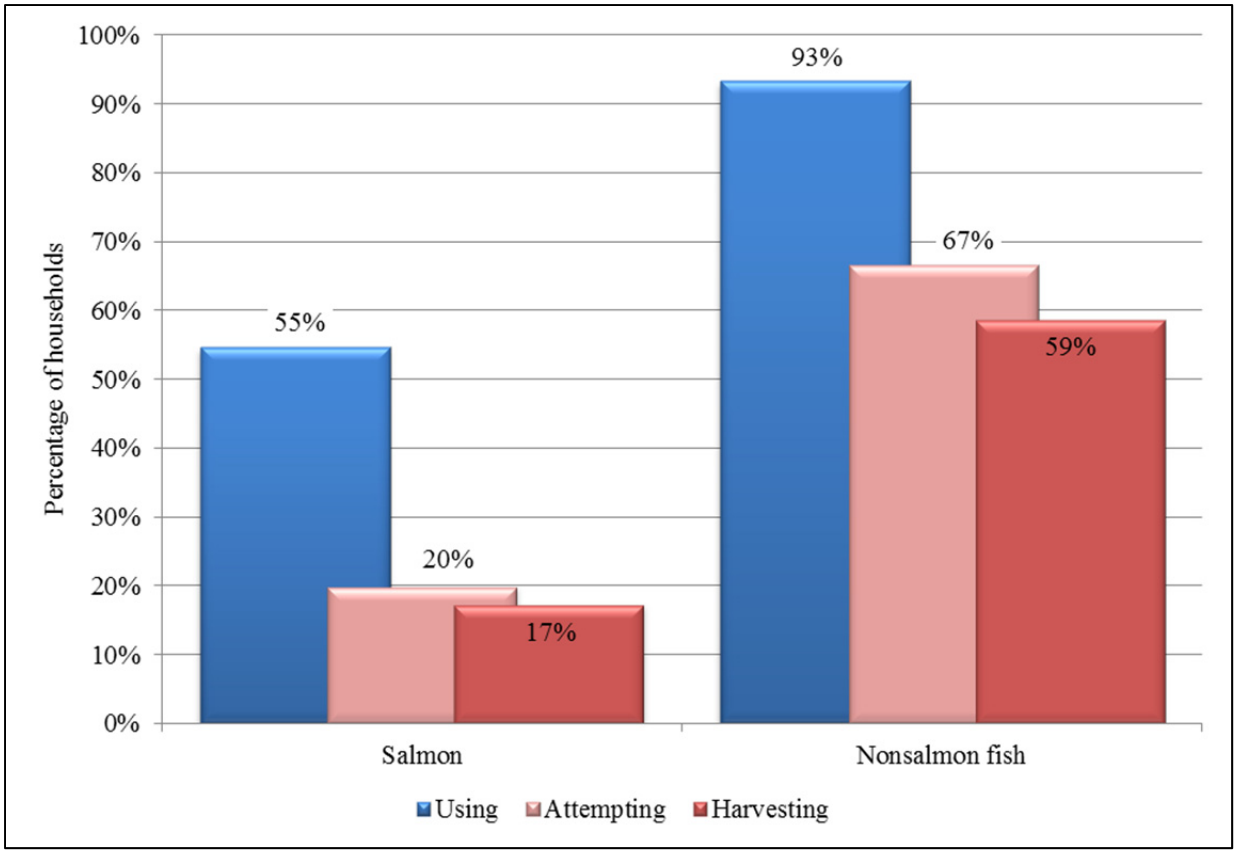


Figure 2-4.–Percentage of households using, attempting to harvest, or harvesting salmon and nonsalmon fish, Wainwright, Alaska, 2014.

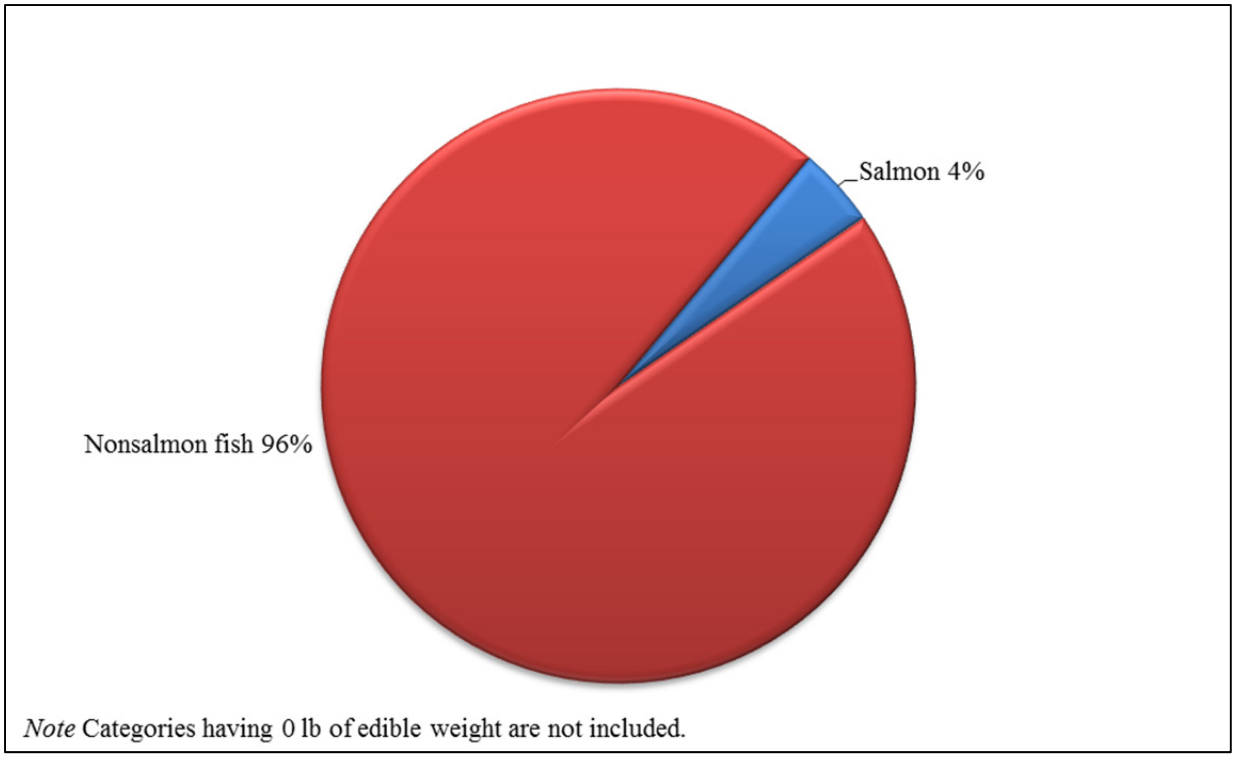
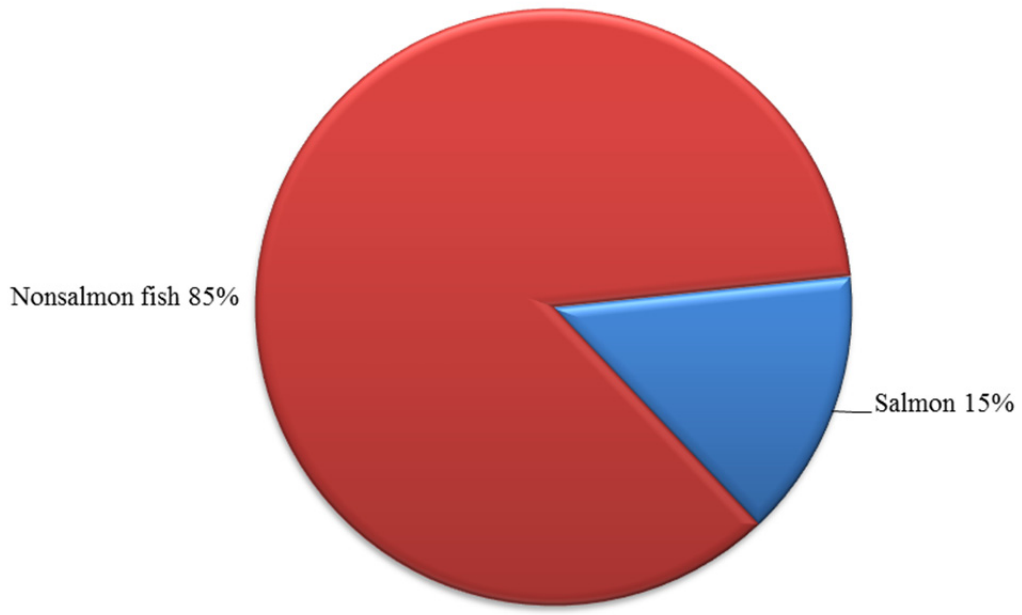


Figure 2-5.–Composition of harvest by resource category in pounds usable weight, Wainwright, Alaska, 2012.



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

Figure 2-6.–Composition of harvest by resource category in pounds usable weight, Wainwright, Alaska, 2013.

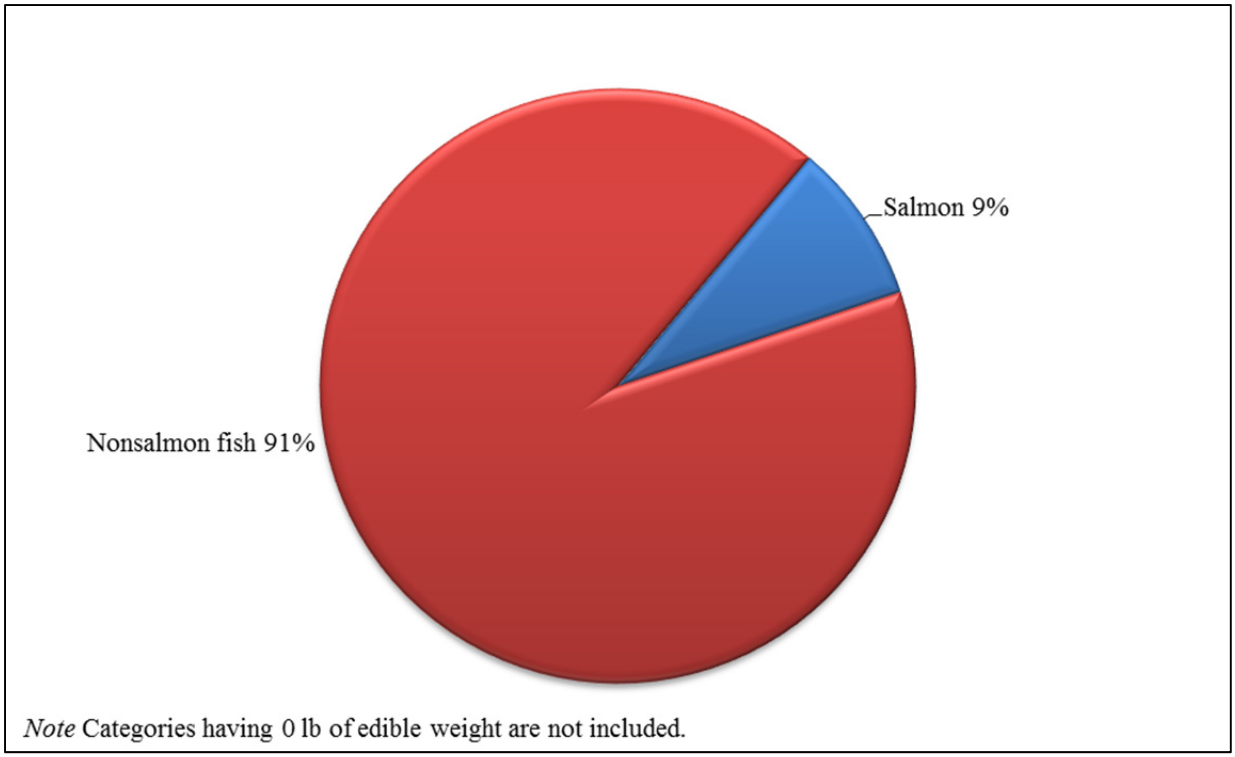
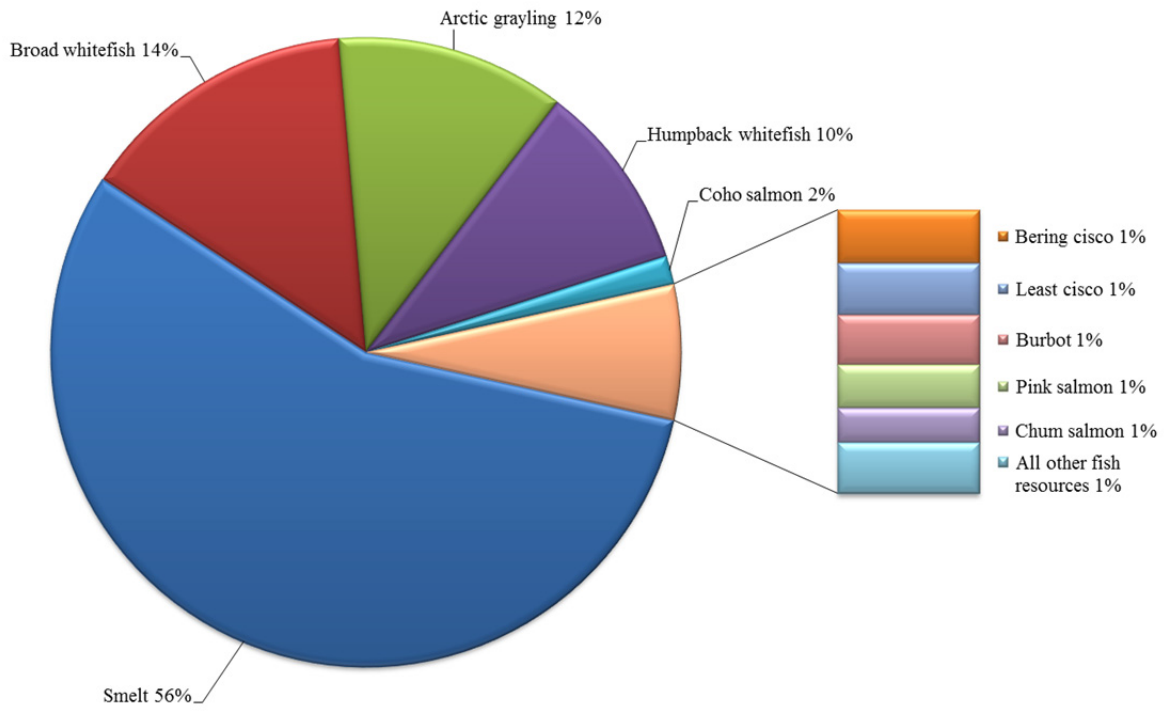
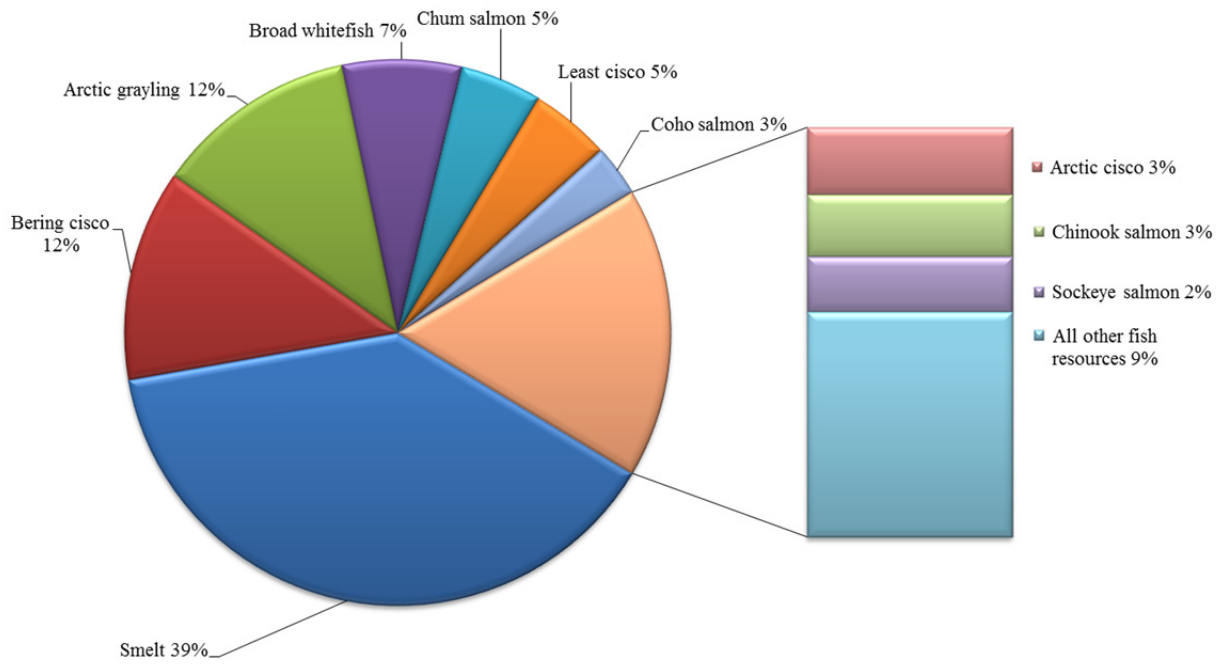


Figure 2-7.–Composition of harvest by resource category in pounds usable weight, Wainwright, Alaska, 2014.



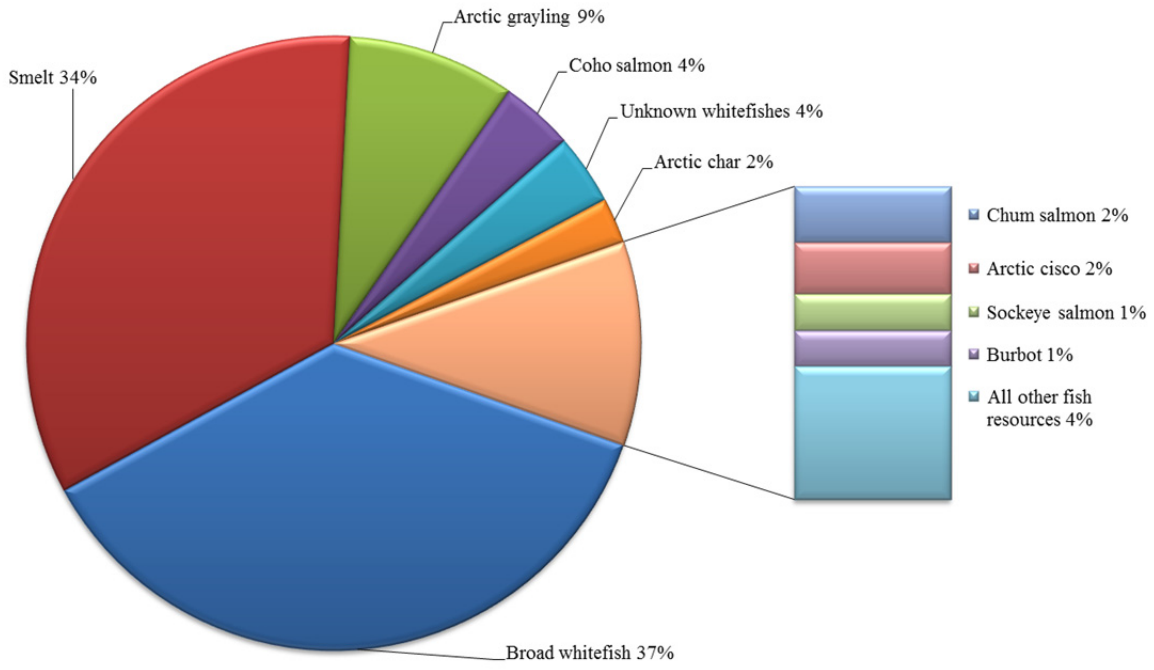
Note The "all other fish resources" category represents all species that contributed less than 1% to the total harvest, not included in the top ten.

Figure 2-8.–Top salmon and nonsalmon fish harvested in pounds usable weight per capita, Wainwright, Alaska, 2012.



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

Figure 2-9.–Top salmon and nonsalmon fish harvested in pounds usable weight per capita, Wainwright, Alaska, 2013.



Note The "all other fish resources" category represents all species that contributed less than 1% to the total harvest, not included in the top ten harvested.

Figure 2-10.–Top salmon and nonsalmon fish harvested in pounds usable weight per capita, Wainwright, Alaska, 2014.

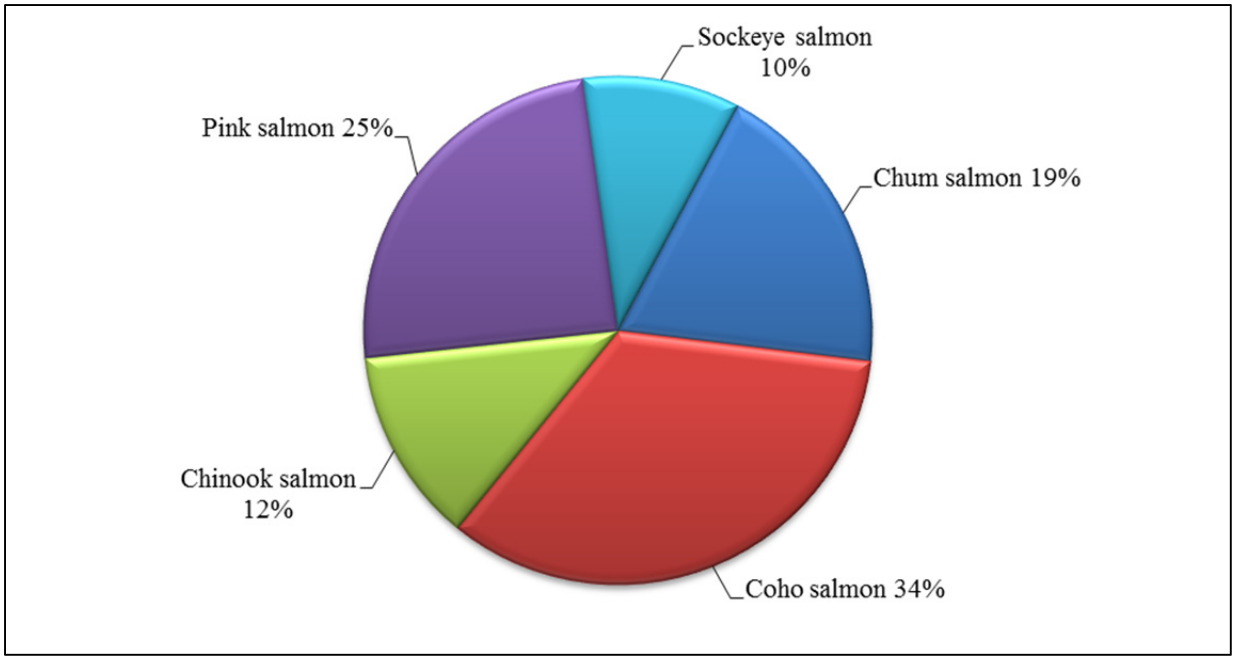


Figure 2-11.–Composition of salmon harvest in pounds usable weight, Wainwright, Alaska, 2012.

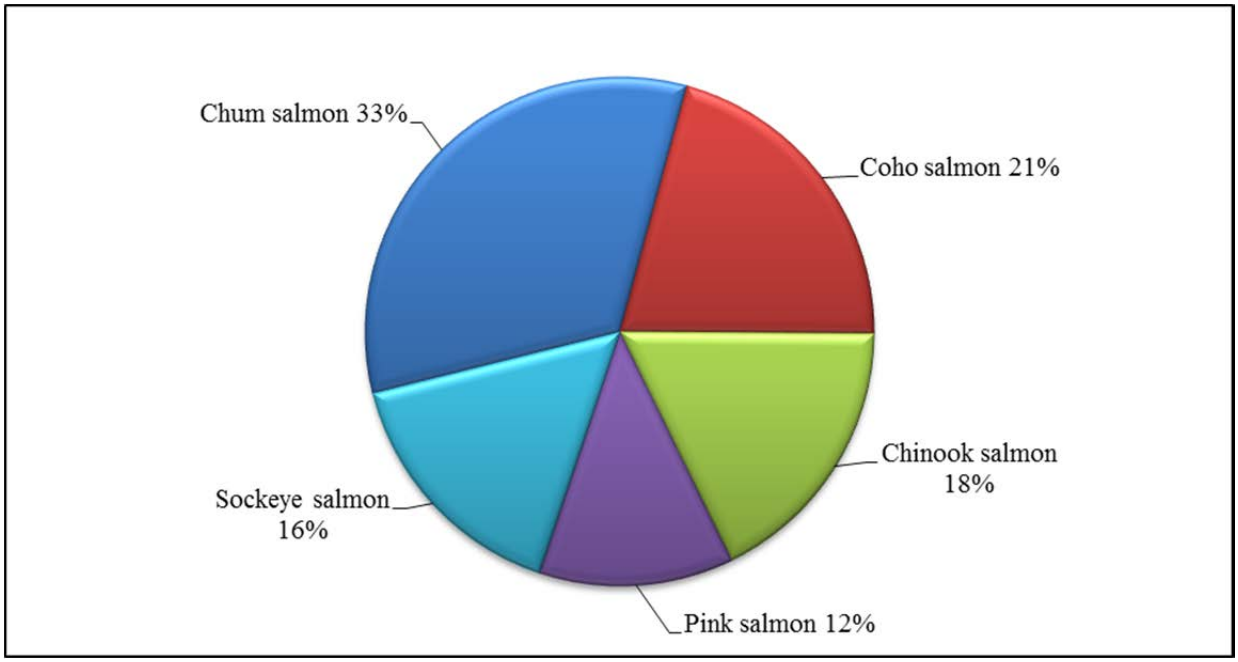


Figure 2-12.–Composition of salmon harvest in pounds usable weight, Wainwright, Alaska, 2013.

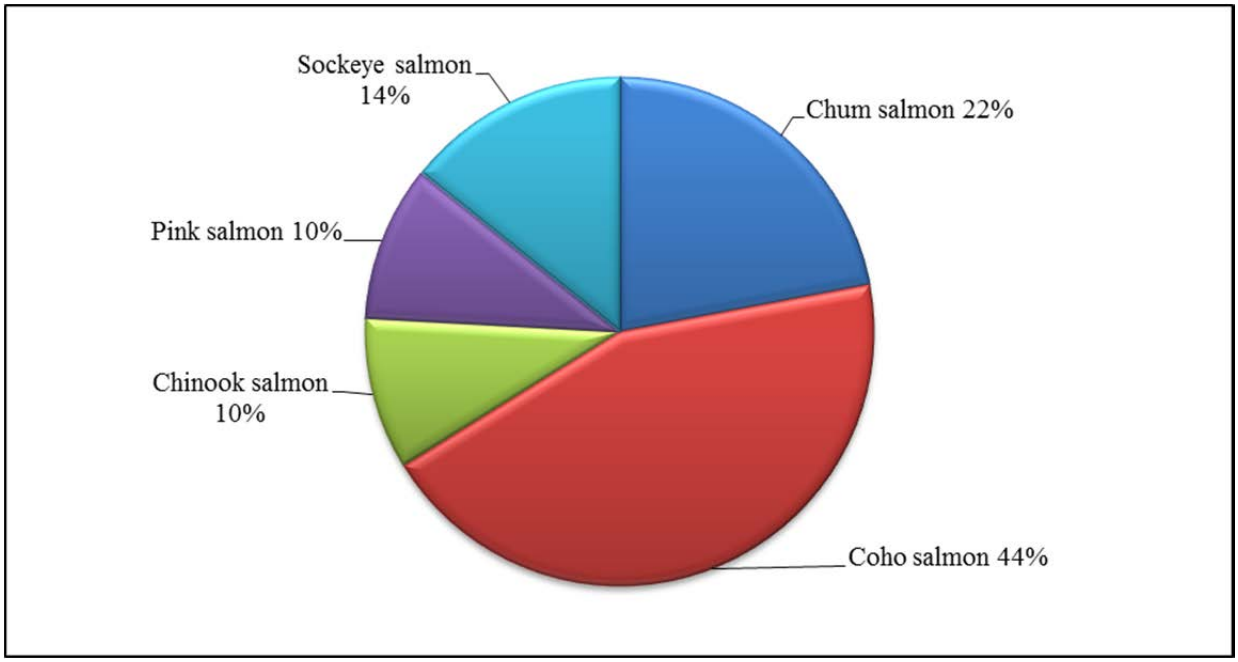


Figure 2-13.–Composition of salmon harvest in pounds usable weight, Wainwright, Alaska, 2014.

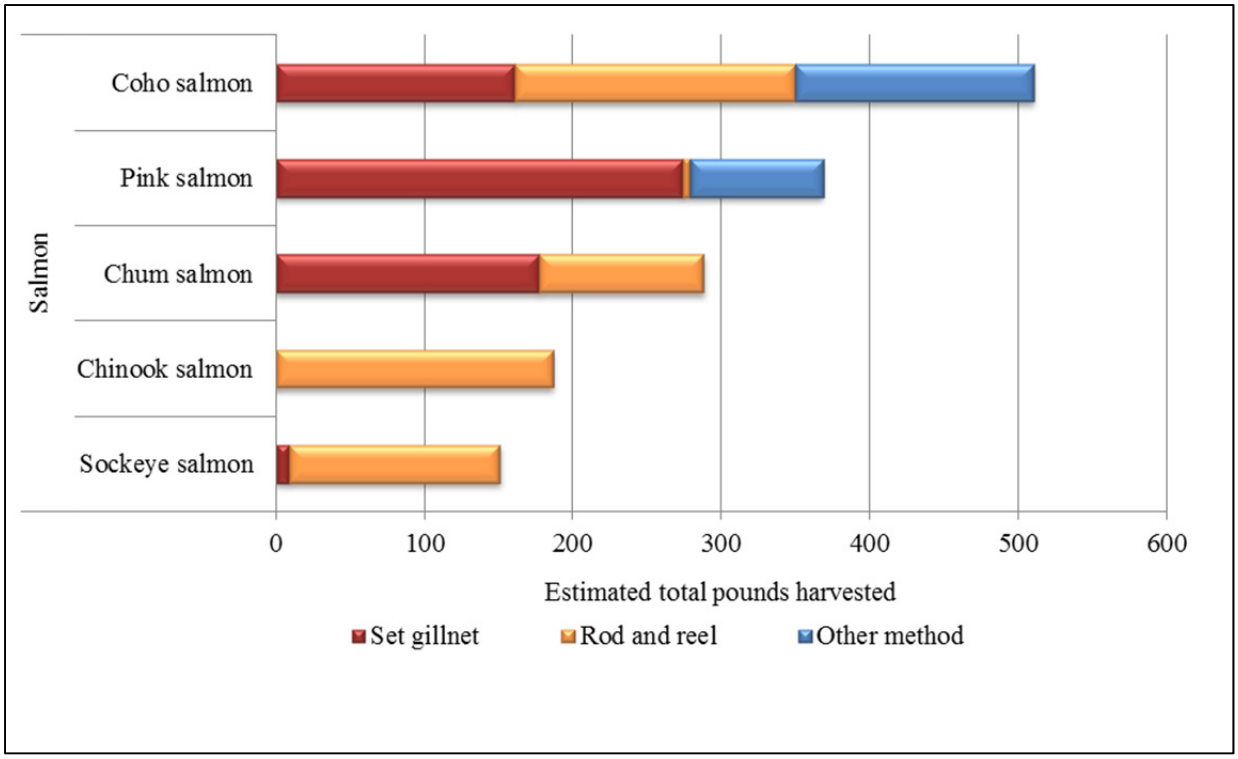


Figure 2-14.–Salmon harvests by gear type, Wainwright, Alaska, 2012.

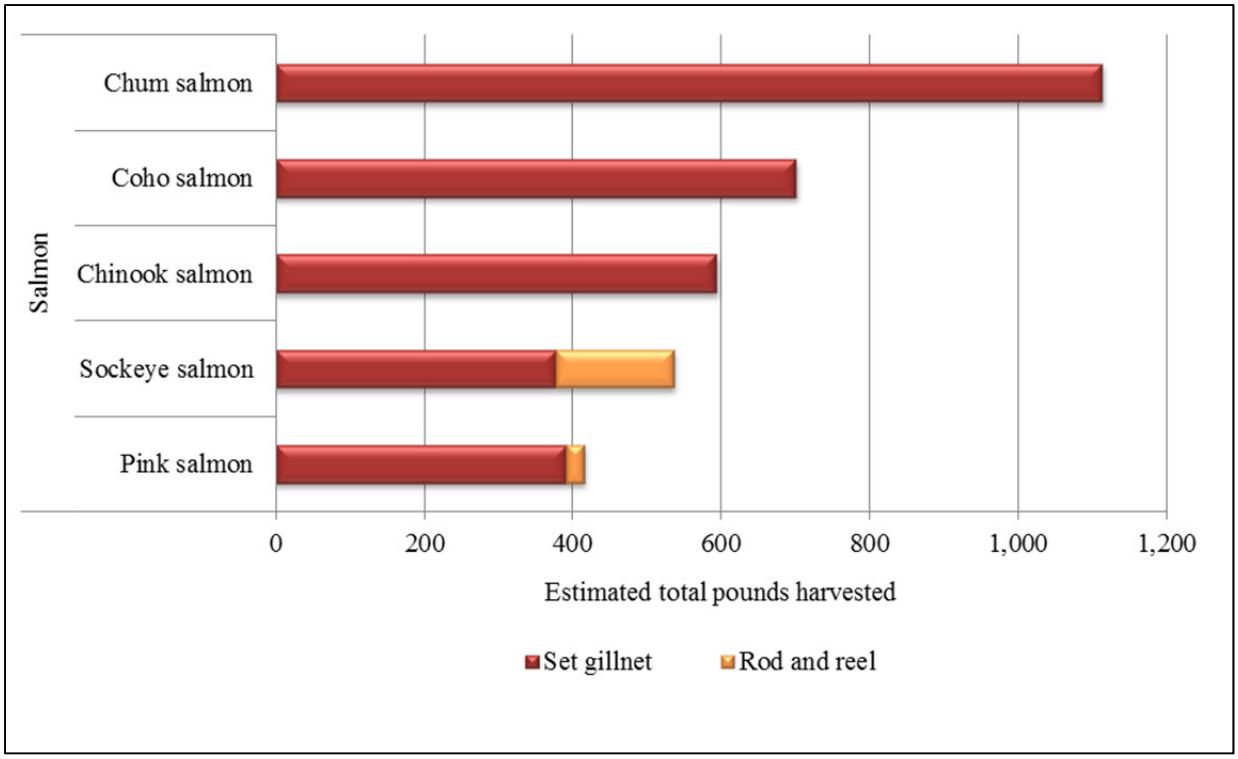


Figure 2-15.–Salmon harvests by gear type, Wainwright, Alaska, 2013.

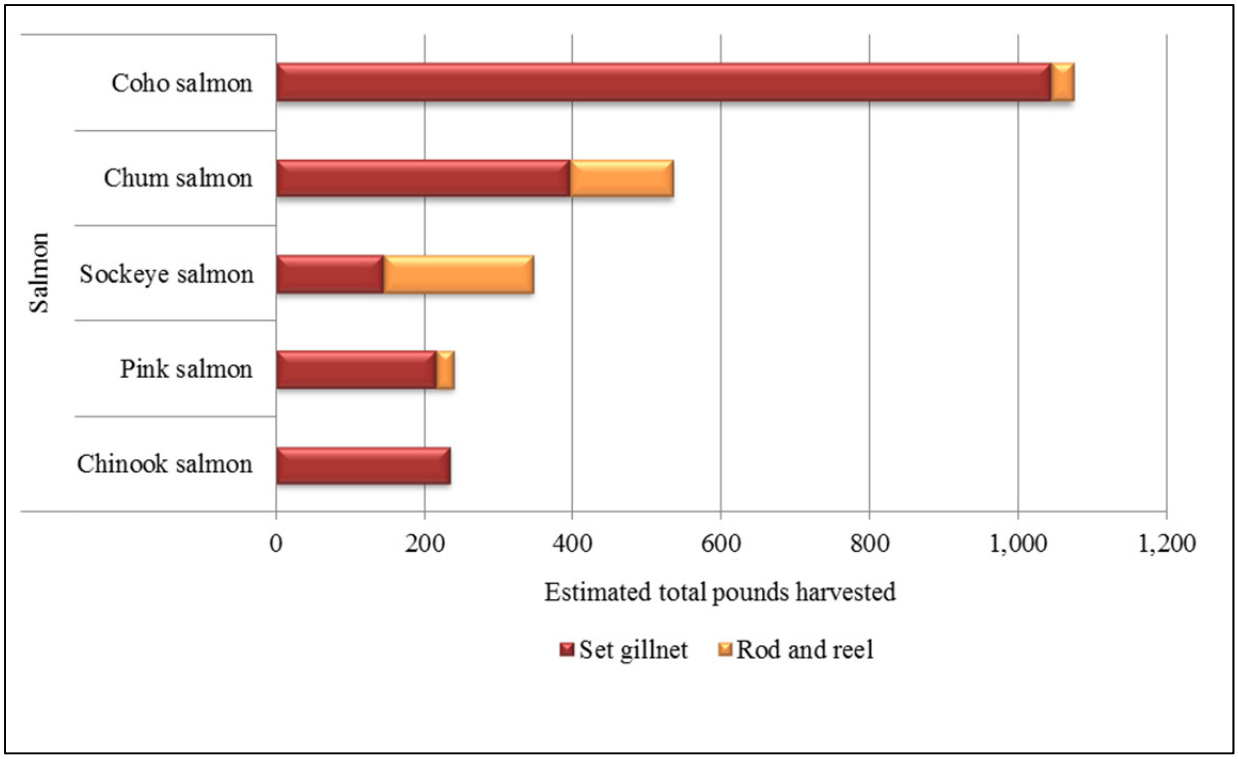


Figure 2-16.–Salmon harvests by gear type, Wainwright, Alaska, 2014.

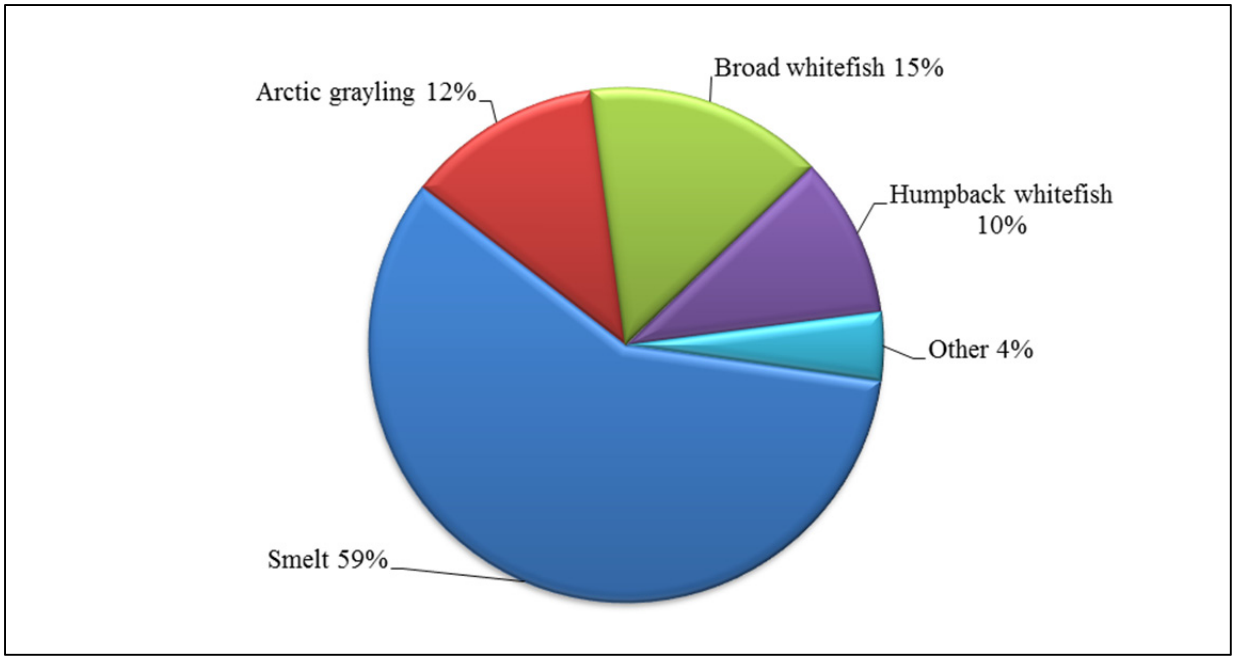


Figure 2-17.–Composition of nonsalmon fish harvest in pounds usable weight, Wainwright, Alaska, 2012.

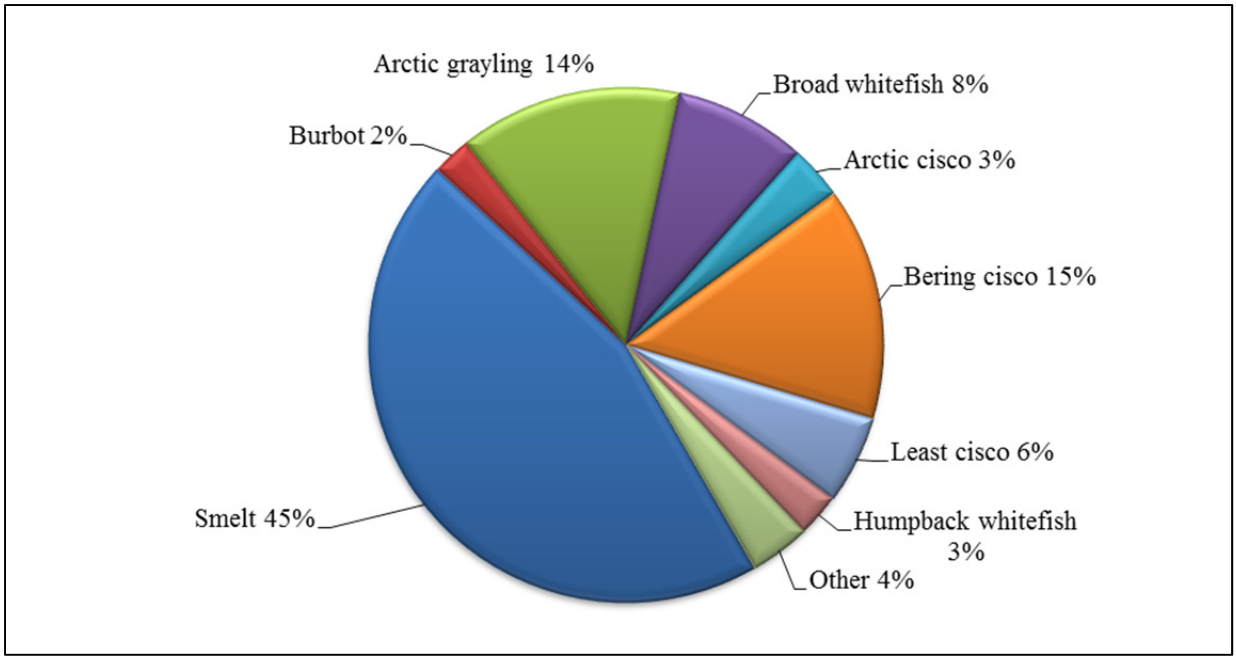


Figure 2-18.–Composition of nonsalmon fish harvest in pounds usable weight, Wainwright, Alaska, 2013.

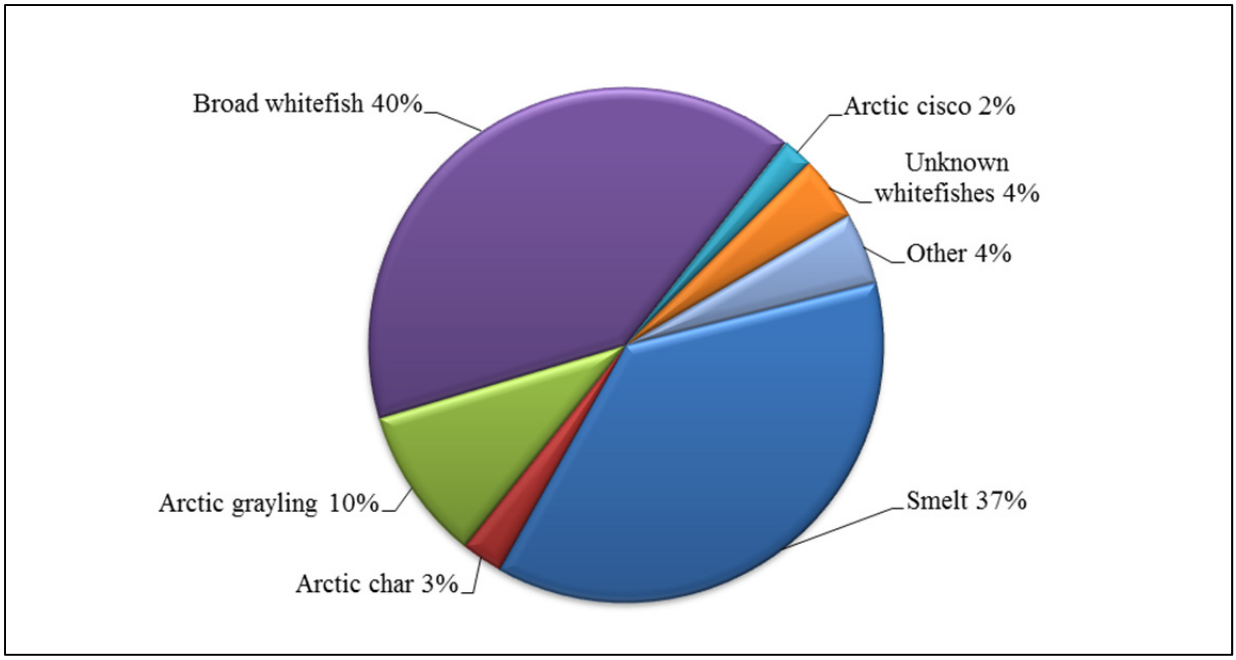


Figure 2-19.–Composition of nonsalmon fish harvest in pounds usable weight, Wainwright, Alaska, 2014.

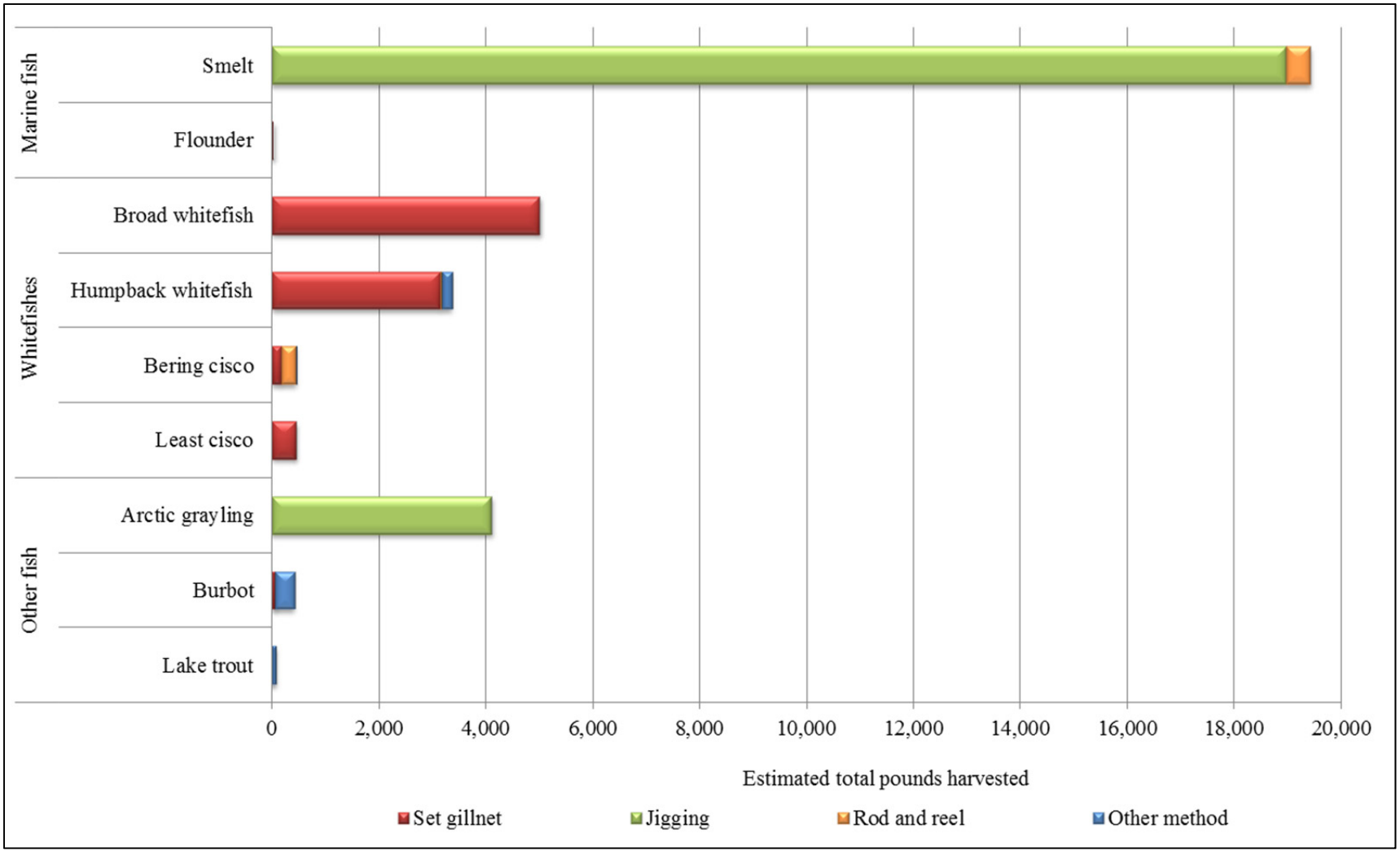


Figure 2-20.–Nonsalmon fish harvests by gear type, Wainwright, Alaska, 2012

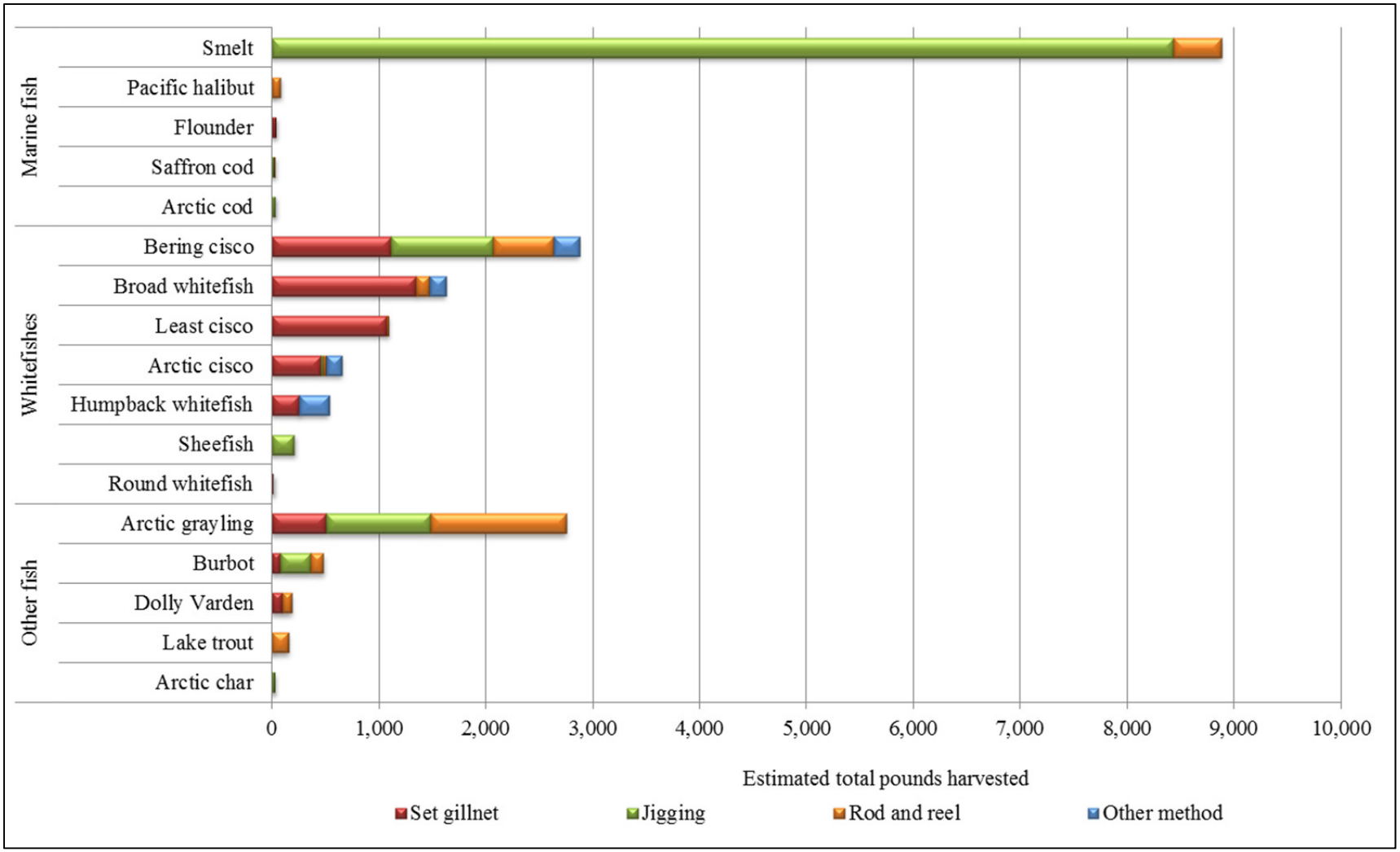


Figure 2-21.–Nonsalmon fish harvests by gear type, Wainwright, Alaska, 2013.

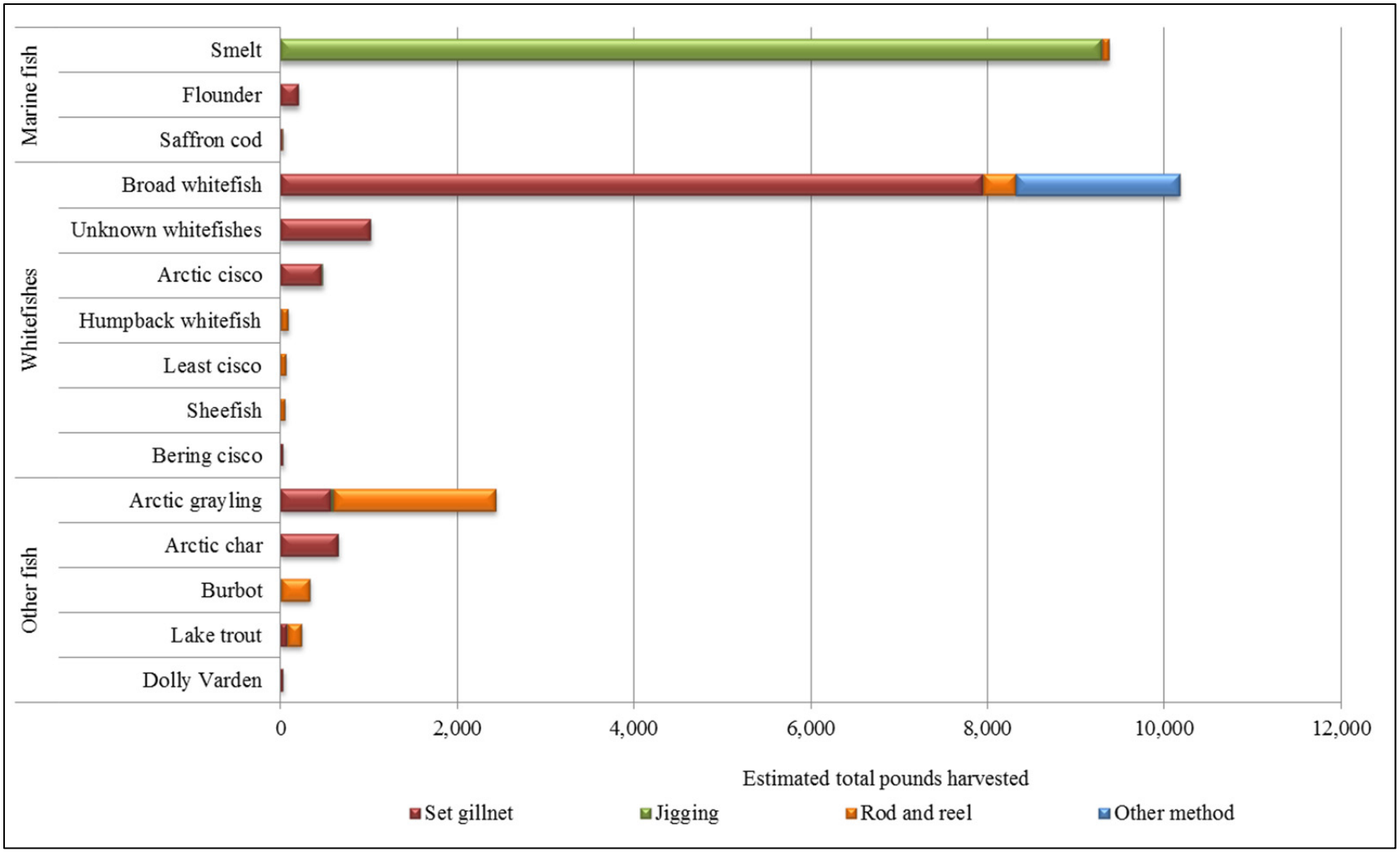


Figure 2-22.–Nonsalmon fish harvests by gear type, Wainwright, Alaska, 2014.

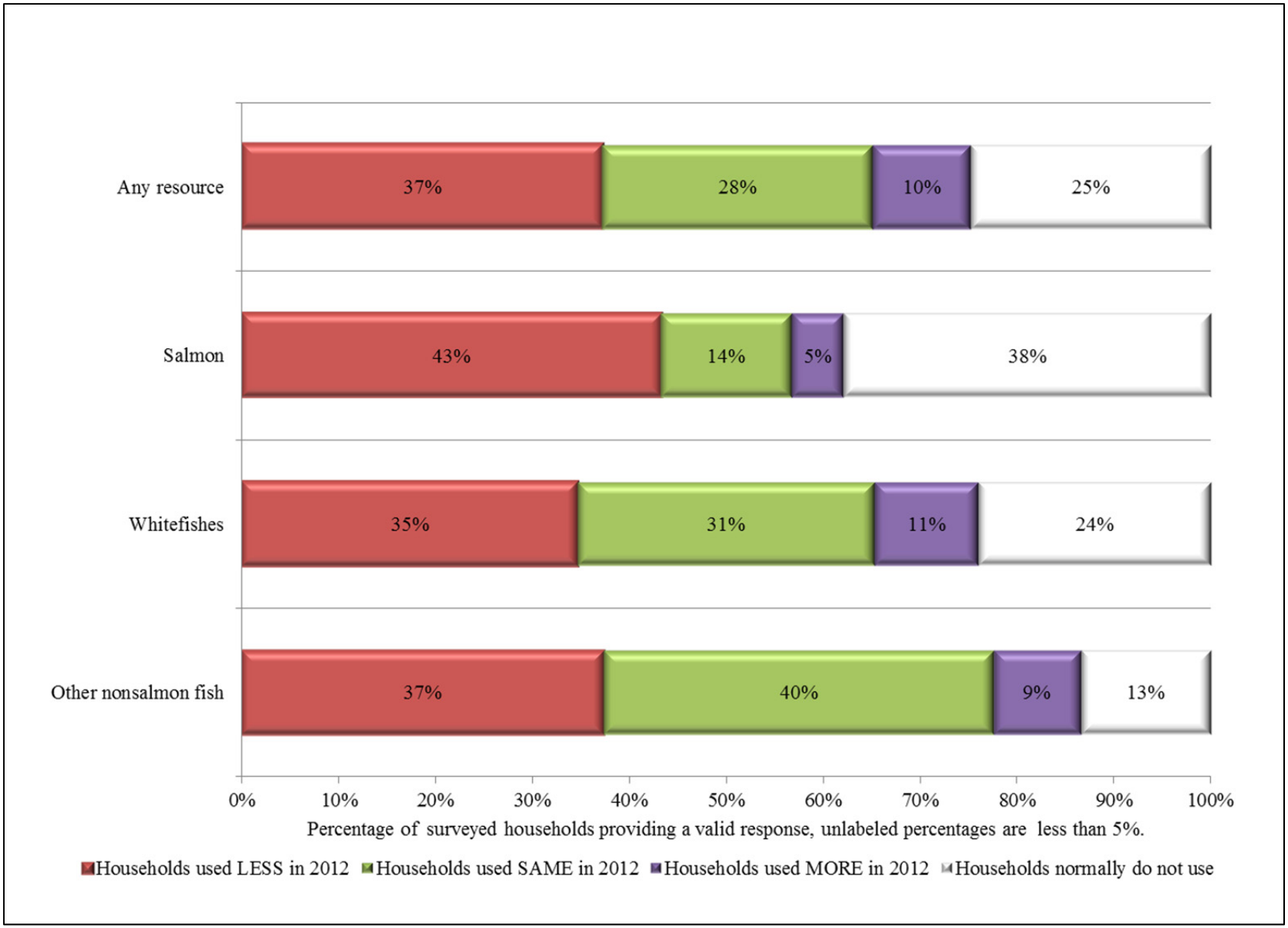


Figure 2-23.–Changes in household uses of resources compared to recent years, Wainwright, Alaska, 2012.

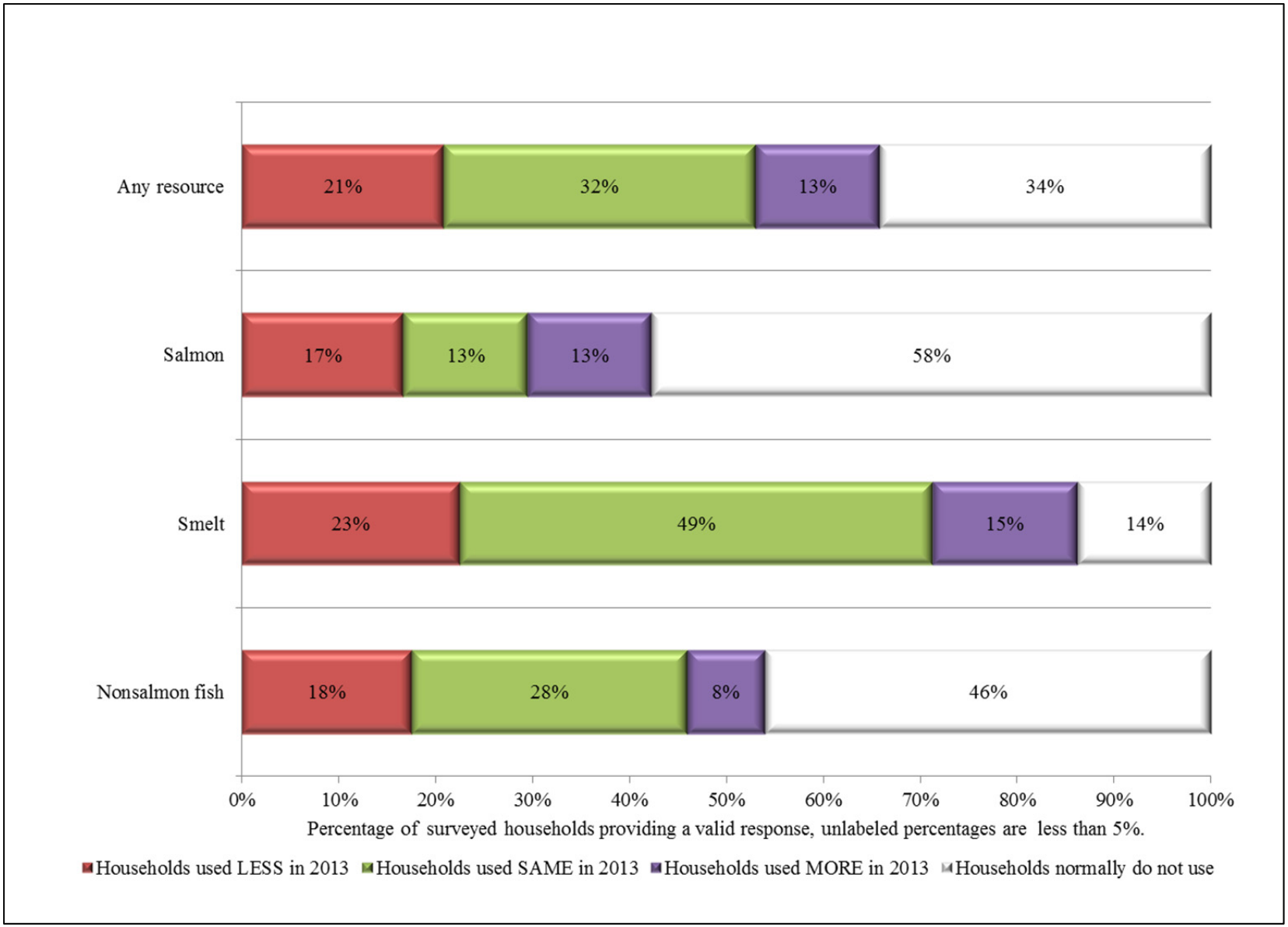


Figure 2-24.–Changes in household uses of resources compared to recent years, Wainwright, Alaska, 2013.

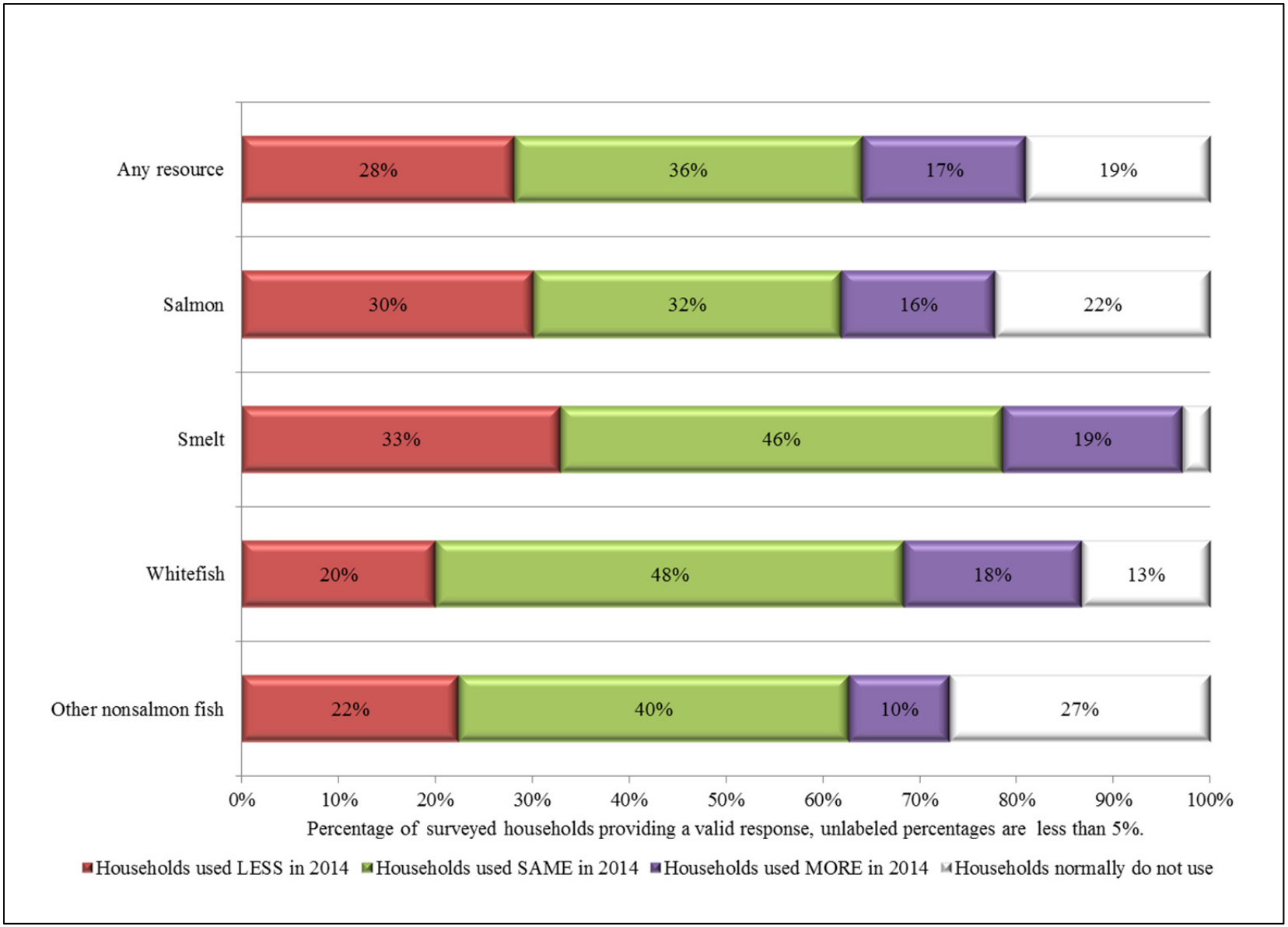


Figure 2-25.–Changes in household uses of resources compared to recent years, Wainwright, Alaska, 2014.

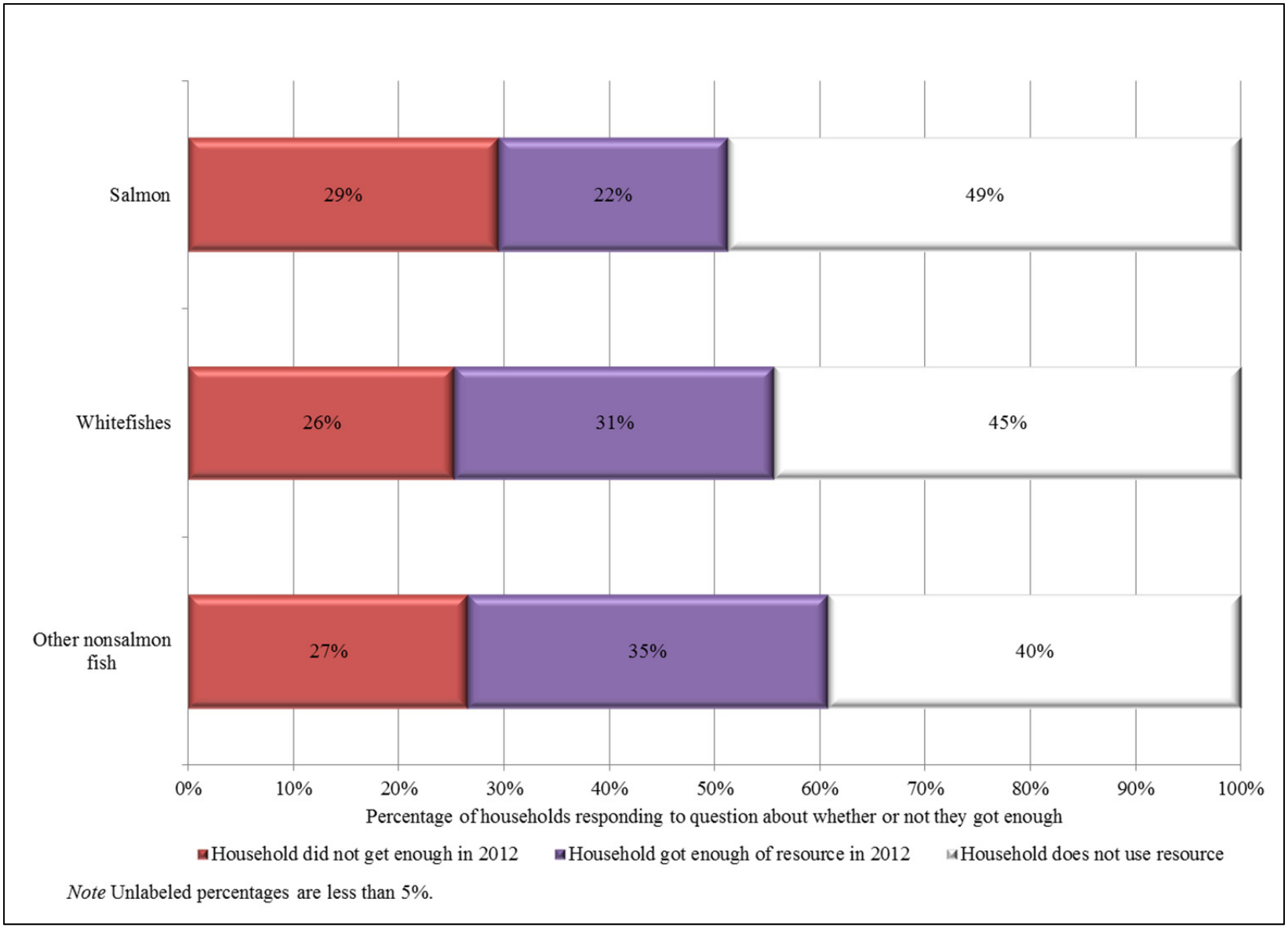


Figure 2-26.–Percentage of households reporting whether they had enough resources, Wainwright, Alaska, 2012.

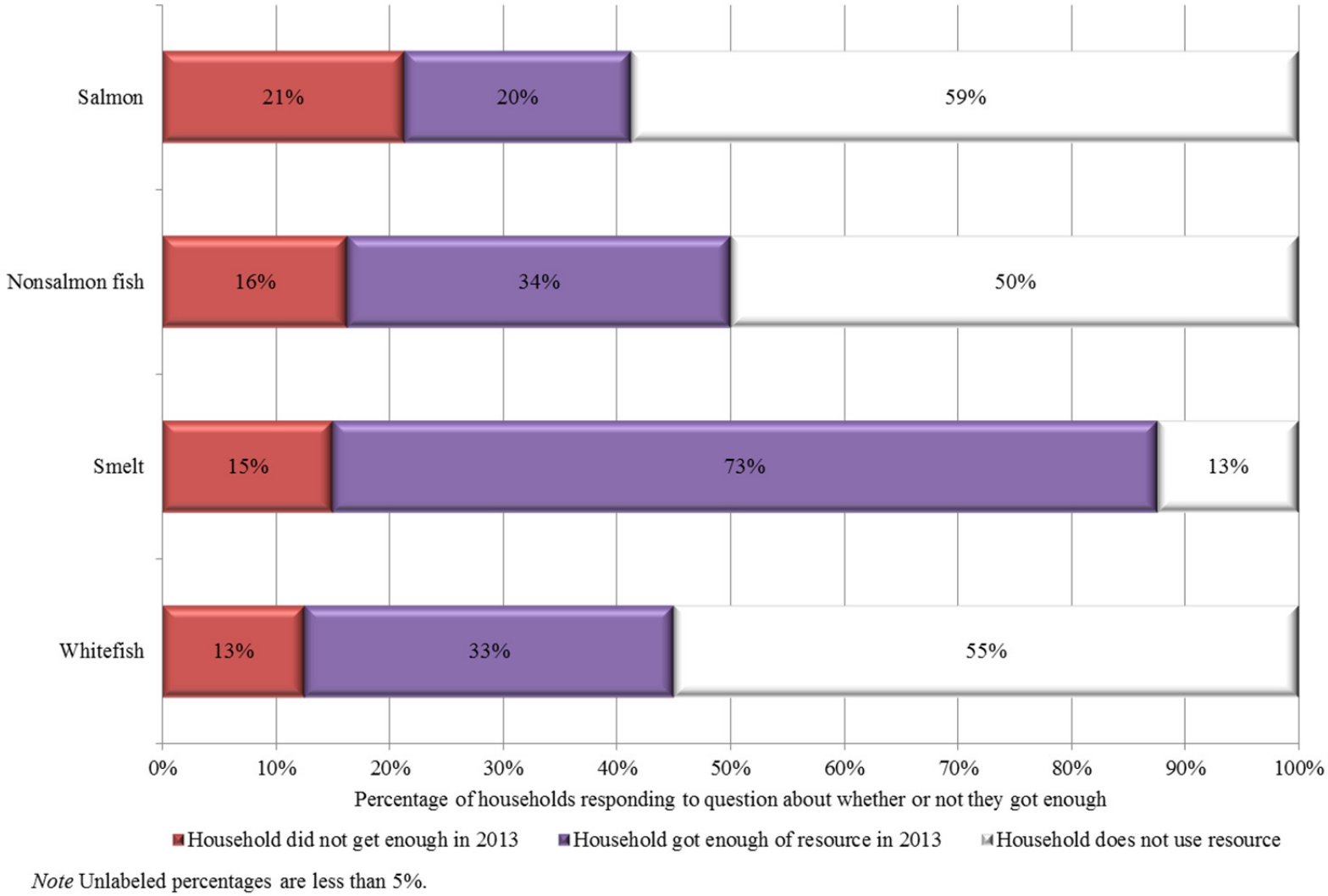


Figure 2-27.–Percentage of households reporting whether they had enough resources, Wainwright, Alaska, 2013.

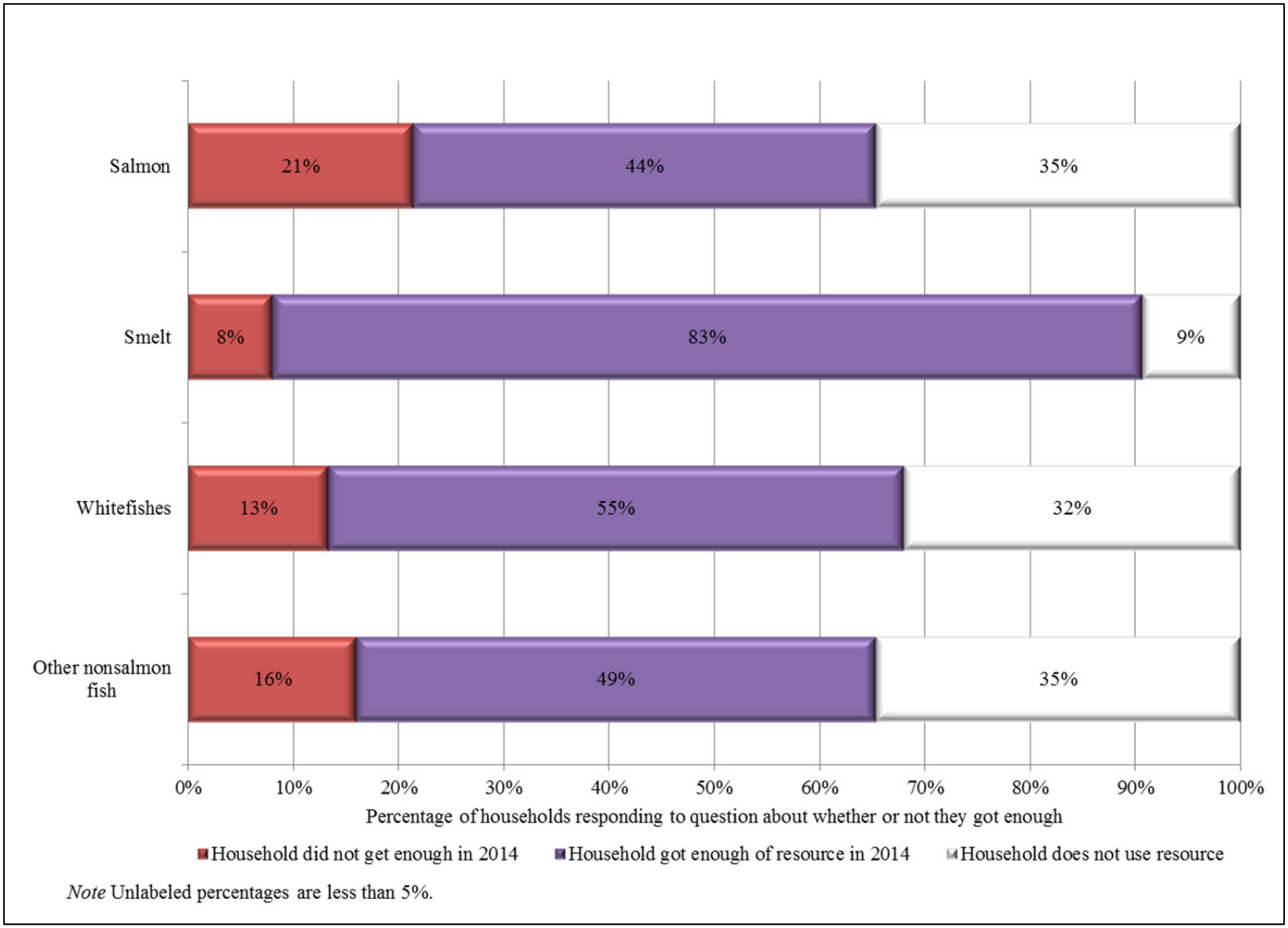


Figure 2-28.–Percentage of households reporting whether they had enough resources, Wainwright, Alaska, 2014.

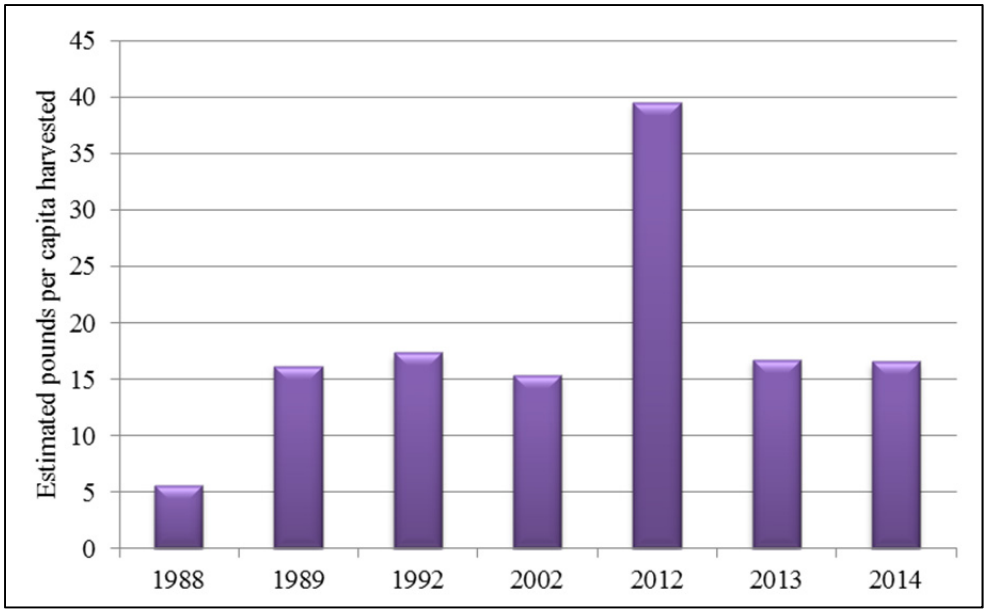


Figure 2-29.–Estimated per capita harvest of smelt, Wainwright, Alaska, 1988–1989, 1992, 2002, and 2012–2014.

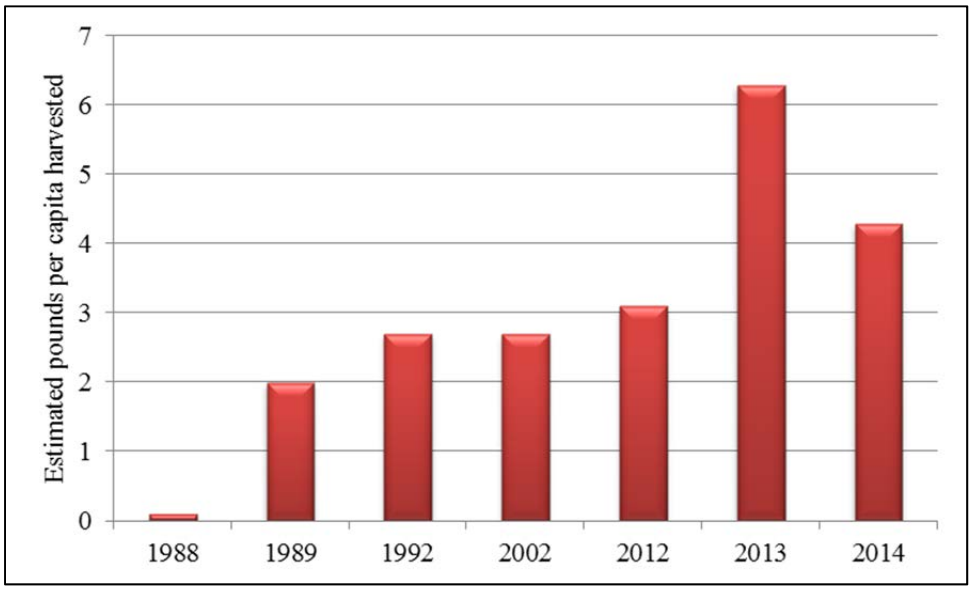


Figure 2-30.–Estimated per capita harvest of salmon, Wainwright, Alaska, 1988–1989, 1992, 2002, and 2012–2014.

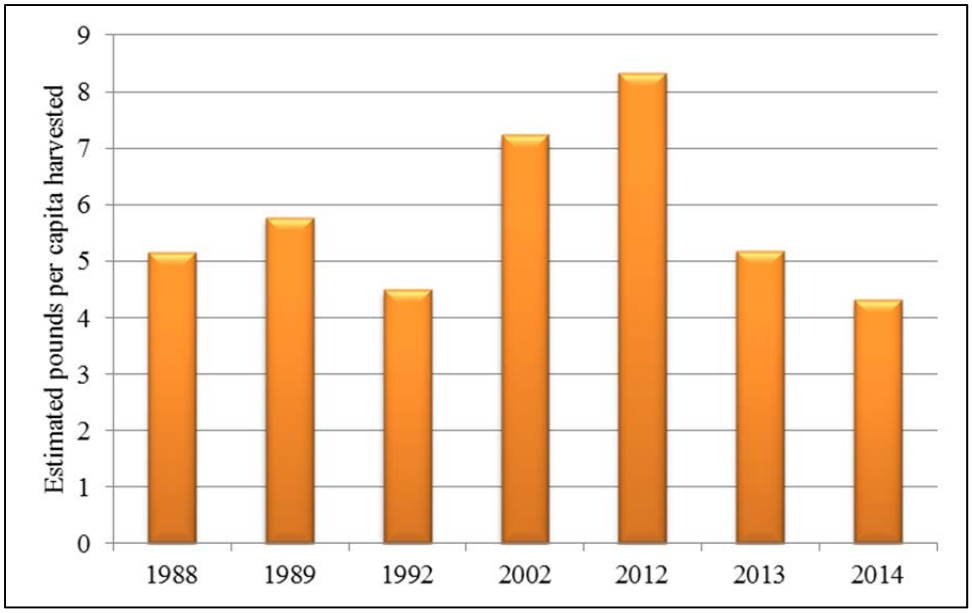


Figure 2-31.–Estimated per capita harvest of Arctic grayling, Wainwright, Alaska, 1988–1989, 1992, 2002, and 2012–2014.

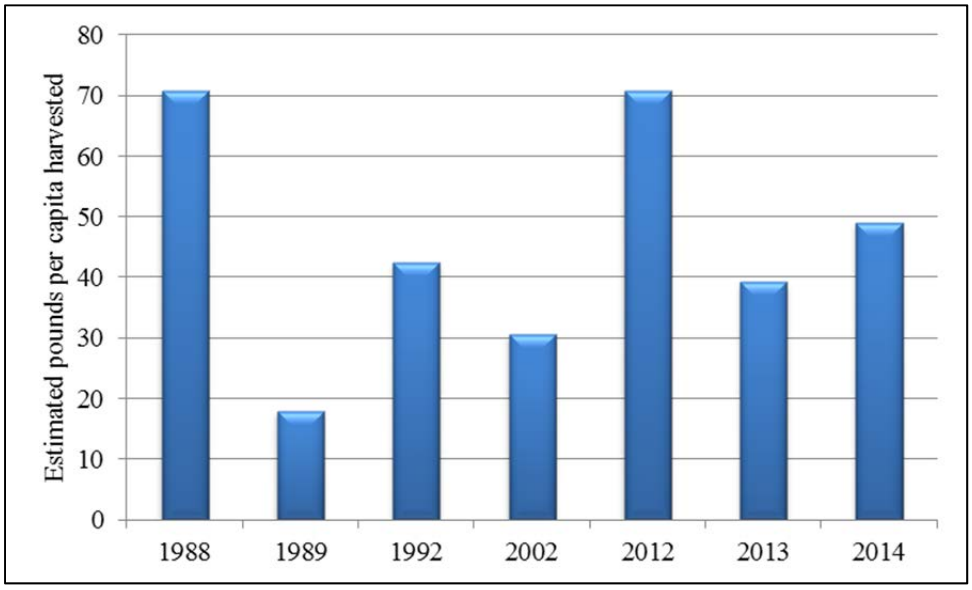


Figure 2-32.–Estimated per capita harvest of fish, all species, Wainwright, Alaska, 1988–1989, 1992, 2002, and 2012–2014

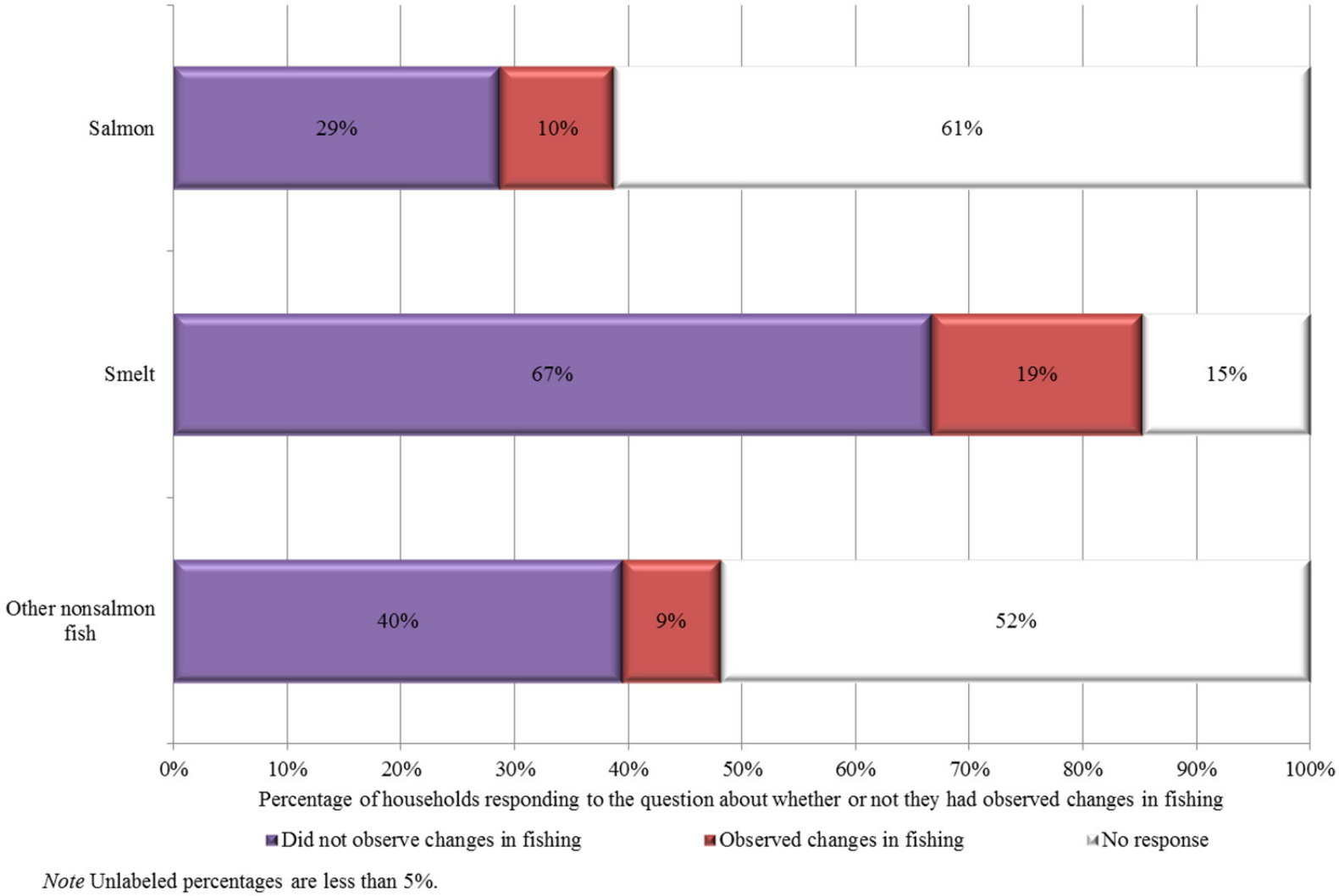
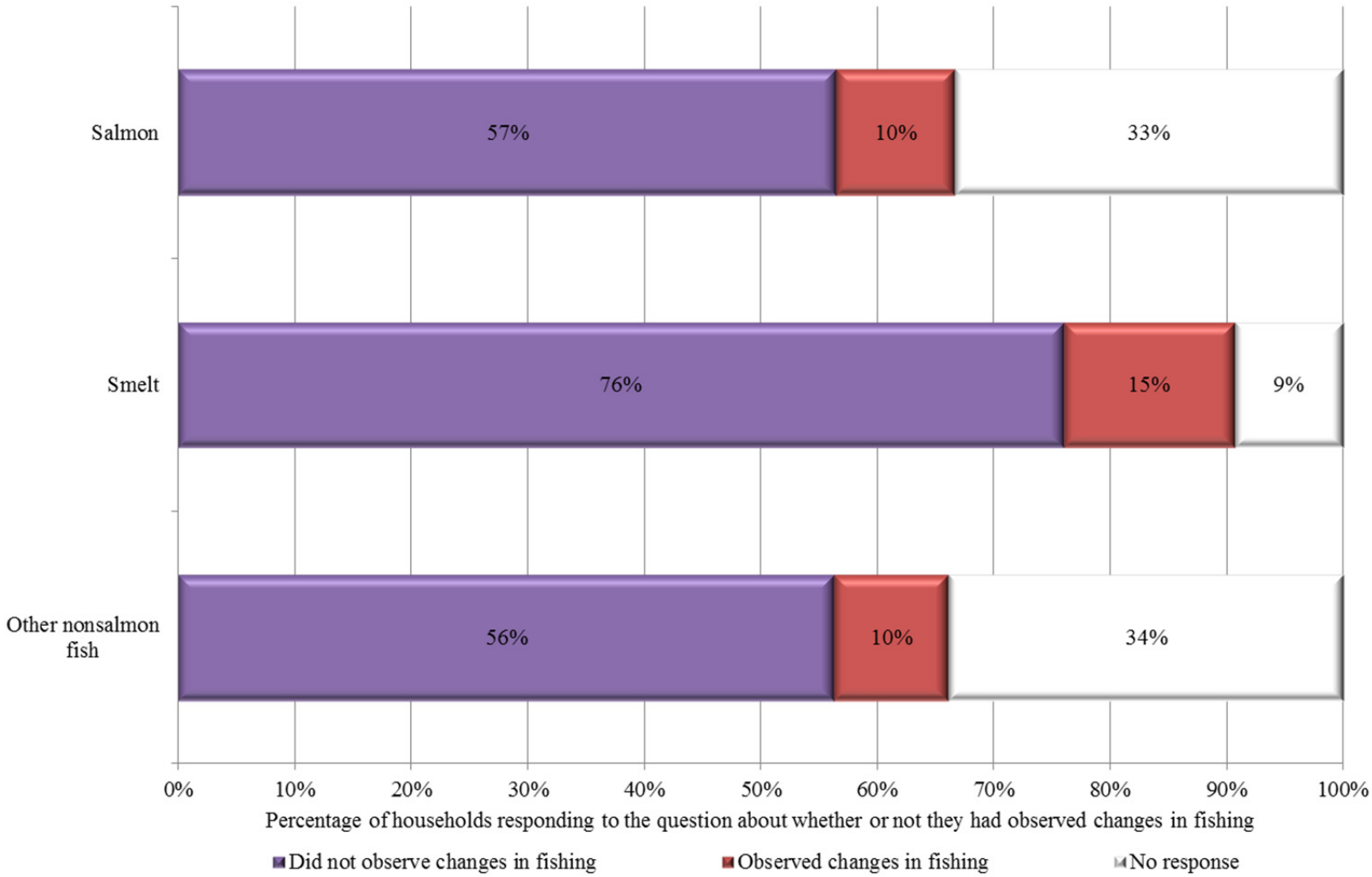


Figure 2-33.–Households observing changes in fishing, Wainwright, Alaska, 2013.



Note Unlabeled percentages are less than 5%.

Figure 2-34.–Households observing changes in fishing, Wainwright, Alaska, 2014.

Plate 2-1.–Aerial view of Wainwright, Alaska. Photo courtesy of the Olgoonik Corporation.

Plate 2-2.–Salmon caught in Wainwright, Alaska, summer 2010. Photo by Brittany Retherford, ADF&G.

Plate 2-3.–Pile of smelt freezing on the ice. Photo by Elizabeth Mikow, ADF&G.

Plate 2-4.–A variety of homemade fishing gear made by Wainwright, Alaska residents. Photo by Brittany Retherford, ADF&G.

Plate 2-5.–Fishing on the lagoon for smelt, Wainwright, Alaska, 2014. Photo by Elizabeth Mikow, ADF&G.

3. POINT LAY

COMMUNITY BACKGROUND

Point Lay

Point Lay (*Kali*)[1] is near the mouth of the Kokolik River on a low coastal bluff that is protected from the Arctic Ocean by a series of barrier islands and the approximately 100-mile long Kasegaluk Lagoon (Plate 3-1). At the turn of the 19th century, there was a small settlement of a few families located on the barrier island across from the mouth of the Kokolik River. The first school within 50 miles, in Icy Cape, was open intermittently beginning in 1906 (officially 1910–1913), and a school was built in Point Lay (1930–1932) as the community began to grow (Barnhardt 1985; Yarber et al. 1989). The population dwindled again after WWII, and the Point Lay school closed in 1957: "This in essence marked the end of Point Lay as a community and by 1964 there was only one couple living in the area" (Yarber et al. 1989:ix). Following passage of the Alaska Native Claims Settlement Act (ANCSA) in 1971, and bolstered by economic capacity brought by formation of the Arctic Slope Regional Corporation (ASRC) and the North Slope Borough (NSB) in 1972, people began to return to Point Lay—but this time they built on the mainland. Relocated again in 1981 to avoid flooding and erosion, Point Lay has grown since but is still the smallest of the eight communities in the NSB.[2] The school, now called "Kali School," has been open continuously since 1973, with administration by the North Slope Borough School District (NSBSD). Although the bluff that Point Lay sits upon eroded back some 20–25 feet between 1972 and 1982, and some erosion has reportedly continued periodically since then, no damages have been reported or are expected in the near future.[3]

Point Lay has no city government and is the only unincorporated community in the NSB. The Native Village of Point Lay is a federally recognized tribe and Cully Corporation is the local ANCSA village corporation. Infrastructure in Point Lay includes the airfield, a landfill, a health clinic, a fire station, a police station, a search and rescue station, a community hall, and the "Beluga Camp," owned and operated by Cully Corporation, which provides food and lodging for transient workers.[4] Additional details and discussion of Point Lay's recent history, especially with respect to subsistence, will be available in another ADF&G report (Braem et al. *In prep*).

POPULATION ESTIMATES AND DEMOGRAPHIC INFORMATION

Figure 3-1 illustrates the population history of Point Lay from 1980 to 2014, drawing upon decennial estimates from the U.S. Census Bureau (portrayed as blue dots) and the yearly estimates provided by the Alaska Department of Labor (portrayed as white dots). This study's estimates of population in each of the 3 study years are portrayed by red squares. According to these data, the population of the community has increased gradually over the past 34 years. Table 3-1 compares population estimates from the U.S. Census of 2010, 5-year averages of the American Community Survey (ACS), and the estimates from the 3 years of this study. The average population of Point Lay across all 3 study years is 264 people, compared with

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1. Arctic Slope Regional Corporation, Barrow. 2013. "Point Lay." Accessed May 20, 2016. https://www.asrc.com/Communities/Pages/Pointlay.aspx
2. Alaska Department of Commerce, Community, and Economic Development (ADCCED) Division of Community and Regional Affairs, Juneau. n.d. "Alaska Community Database Online: Community Information." Accessed May 20, 2016. https://www.commerce.alaska.gov/dcra/DCRAExternal/community
3. U. S. Army Corps of Enginieers, Alaska District. 2009. "Erosion Information Paper – Point Lay, Alaska.: Accessed May 5, 2016. http://www.poa.usace.army.mil/Portals/34/docs/civilworks/BEA/Point%20Lay_Final%20Report.pdf
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 May 20, 2016. https://www.commerce.alaska.gov/dcra/DCRAExternal/community

the ACS 2010–2014 average of 246 people in the community; there is approximately 7% difference between these two figures. Reasons for differences between population estimates can be explained by a number of factors, including differences in survey timing, definitions of residency, and sampling strategies.

Across the 3 study years, sample achievement in the community was between 63% and 66%; the number of surveyed households ranged between 40 and 42, with a sample population ranging between 163 in 2012 to 177 in 2014 (Table 1-4). Household sizes between the 3 years ranged from 1 to a maximum of 11, the average size across all years was 4. The average age across all study years was 22; the oldest person included in any sample was 73 years old. On average across the 3 years, Point Lay residents had lived in the community 15 years (Table 3-2), and between 63% and 73% of the population reported Point Lay as their birthplace in the 3 samples. Other reported birthplaces included Barrow (6% across 3 study years) and several other communities on the North Slope (Table D2-7). A full list of birthplaces of the population and of household heads in Point Lay can be found in tables D2-1 and D2-2. On average over the 3 study years, 90% of the community was Alaska Native (Table 3-1).

SUMMARY OF HARVEST AND USE PATTERNS

Harvest and Use of Wild Resources at the Household Level

Figures 3-2 through 3-4 show, by resource category, the percentages of households that used wild fish resources, attempted to harvest, and harvested salmon and other fish in each of the 3 study years. For salmon, similar percentages of households used the resource in 2013 (52%) and 2014 (53%), while a greater number of households (62%) used salmon in the 2012 study year. Fewer households attempted to harvest salmon in 2013 (21%) in comparison to the 2012 (43%) and 2014 (40%) study years; it follows that fewer households were successful in harvesting salmon in 2013 (14%) than in 2012 (29%) and 2014 (28%).

Nonsalmon fish were harvested and used by a greater number of households than salmon from 2012–2014. A similar percentage of households across all 3 study years reported using the resource category (ranging from 76% to 81%). More households (57%) reported attempting to harvest and harvesting (52%) nonsalmon fish in 2012, compared to 2013 (45%, 29%) and 2014 (50%, 45%).

HARVEST QUANTITIES AND COMPOSITION

Tables 3-3 through 3-5 report estimated fish harvests and uses by Point Lay residents during the 3 study years and are organized first by general category and then by species. All fish resources are reported in pounds edible weight (see Appendix C for conversion factors). The harvest category includes resources harvested by any member of the surveyed household during the study year. The use category includes all fish resources taken, given away, or used by a household, and resources acquired from other harvesters, either as gifts, by barter or trade, or through fishing partnerships. Purchased foods are not included. Differences between harvest and use percentages reflect sharing among households, which results in a wider distribution of wild foods.

Point Lay residents harvested varying amounts of fish across the 3 study years, ranging from the largest harvest of 13,812 edible pounds in 2012 to the smallest harvest of 4,600 edible pounds in 2013 (tables 3-3, 3-4, 3-5). Controlling for population, per capita harvests also varied: Point Lay fishers harvested 53 lb per capita in 2012, 18 lb in 2013, and 37 lb in 2014. In 2012 and 2014, salmon species contributed the majority of Point Lay's total estimated harvest of fish (63% and 54%, respectively). In contrast, nonsalmon fish species provided the majority of the fish harvest (71%) in 2013; 2013 was cited by residents as a poor summer for fishing due to weather and high water. These factors will be discussed in greater detail below. Figures 3-8 through 3-10 illustrate the composition of the total fish harvest in terms of resource categories (Plate 3-7).

Tables 3-6 through 3-8 list the most commonly used resources used by Point Lay households during each of the study years. Smelt and Arctic grayling occupy the top 2 spots in 2012–2014; smelt was the most widely used resource in 2012 (by 60% of households) and 2014 (65% of households), and the second most widely used resource in 2013 (45%). Arctic grayling was the most widely used resource in 2013 (68% of households), and the second most widely used resource in 2012 (50%) and 2014 (53%). Although not locally available, sheefish were among the top 4 resources used during the 3 study years (by between 31% and 45% of Point Lay households). This resource is not heavily harvested by Point Lay residents; however, all households that reported use reported receiving sheefish in the 3 study years. It is likely that households are receiving sheefish from other communities through trade and sharing networks. One key respondent explained that a few Point Lay residents have connections to the Kotzebue region where sheefish are plentiful and they trade with their relatives for this resource (03PL). Chum, pink, and Chinook salmon were among the most widely used resources across the 3 study years. Between 18% and 31% of Point Lay households reported using chum salmon in 2012–2014, pink salmon were used by 19% to 35%, and 21% to 25% of households reported using Chinook salmon. All 5 species of Pacific salmon found in Alaska appeared in at least one study year. Sockeye salmon were cited as being widely used in 2012 (17% of households), and coho salmon appeared in 2012 (26%) and 2014 (10%). As mentioned earlier in this report, chum and pink salmon are locally available, while the other species are rare or not present (George et al. 2009)[5]. As in other locations in Alaska, pink salmon are more abundant in even-numbered years than odd-numbered years (Craig and Haldorson 1986). Identification issues are similar to those found in Wainwright, and some of the use of nonlocal species may come from trade and sharing networks with other communities. Like Wainwright, fishers reported taking the majority of sockeye salmon outside of the region.

Figures 3-8 through 3-10 portray the ten most harvested fish resources by Point Lay households during the 2012–2014 study years. Arctic grayling, also among the most widely used resources, contributed the greatest amount of edible pounds in 2 out of the 3 study years; this resource composed 54% of the fish harvest (2,485 lb, 10 lb per capita) in 2013 and 35% of the harvest (3,670 lb, 13lb per capita) in 2014. Although harvested in smaller quantities compared to the other study years, Arctic grayling composed 13% of the harvest in 2012 (1,750 lb, 7 lb per capita). All 5 species of Pacific salmon found in Alaska appeared in the top 10 most harvested resources in at least one study year. Chum salmon were the most harvested species in 2012, accounting for 27% of the total harvest (3,774 lb, 14 lb per capita); this species was the second most heavily harvested resource in the 2013 study year, composing 21% of the harvest (970 lb, 4 lb per capita). Chum salmon also appeared in the top 10 harvested resources in 2014, composing 15% of the harvest (1,555 lb, 6 lb per capita). Pink salmon was among the most harvested resources in every study year, and was the second most highly harvested resource in 2012 and 2014. In 2012, pink salmon composed 22% of the total estimated harvest (3,025 lb, 12 lb per capita) and composed 28% of the harvest in 2014 (2,860 lb, 10 lb per capita). This resource composed 5% of the harvest in 2013, contributing 226 lb (1 lb per capita). Residents named coho salmon as one of the most harvested resources in 2012 (13% of the harvest) and in 2014 (7%); as mentioned previously, this species is very rare in Arctic waters and may in fact be misidentified chum salmon. Chinook salmon were among the most harvested resources in 2014 (3% of the estimated harvest). Sockeye salmon composed 3% of the harvest in 2013 and 2% in 2014.

Salmon

As mentioned previously, salmon as a resource category composed the majority of the Point Lay harvest in 2012 (63% of the estimated harvest) and 2014 (54%). In contrast, salmon species only accounted for 29% of the harvest in 2013. Survey respondents and residents who attended the data review meeting

5. Alaska Department of Fish and Game. Anadromous Waters Catalog, Fish Resource Monitor. http://extra.sf.adfg.state.ak.us/FishResourceMonitor/?mode=awc. Accessed 5/12/2016

noted that this was a particularly rainy summer and that the water level was very high, which made fishing difficult[6]. This factor, combined with less pink salmon availability during odd-numbered years, bears out in the total estimated harvest of salmon across the 3 study years. Salmon contributed 8,767 edible pounds (34 lb per capita) in 2012 and 5,588.3 lb (20 lb per capita) in 2014; in contrast, salmon species only contributed 1,346 lb (5 lb per capita) to the total estimated harvest in 2013 (tables 3-3,3-4,3-5).

Figures 3-11 to 3-13 portray the composition of the salmon harvest in Point Lay in the 2012–2014 study years. Chum salmon contributed the most weight of any salmon species to the 2012 and 2014 harvest; this resource accounted for 43% (3,774 lb, 14 lb per capita) of the 2012 salmon harvest and 72% (970 lb, 4 lb per capita) of the 2013 harvest. Chum salmon composed less of the total estimated harvest in 2014 (28%), but a greater amount of edible weight than in 2013 (1,555 lb, 6 lb per capita). As was the case in Wainwright, however, a large component the coho salmon harvest (and quite possibly the entire harvest) are likely chum. As in Wainwright, ocean bright chum salmon appear to be referred to as “silvers”, and are referred to as chum, or “dog” salmon in their spawning phase (04PL, 08PL, 09PL,11PL). If considered together, chum and coho salmon would account for 64% of the total salmon harvest in 2012, 73% in 2013, and 42% of the harvest in 2014. Pink salmon contributed the second most edible weight to the 2012 and 2013 harvests, and were the highest harvested salmon species in 2014; this resource accounted for 34% of the salmon harvest in 2012 (3,025 lb, 12 lb per capita), 17% of the harvest in 2013 (226 lb, 1lb per capita), and 51% of the harvest in 2014 (2,860 lb, 10 lb per capita). Chinook salmon composed a small component of the 2012 and 2014 salmon harvests, contributing 136 lb (1% of the harvest in 2012) and 274lb (5% of the harvest) in 2014; no harvests of Chinook salmon were recorded in 2013. Chinook salmon are identified by residents mostly in terms of size (05PL, 09PL, 10PL080310, 13PL), although some also point to the difference in the appearance of the flesh (08PL). Sockeye salmon provided similar amounts of edible weight to the total estimated harvest over the 3 study years (ranging from 57 lb to 172 lb), but accounted for a greater percentage of the salmon harvest in 2013 due to the poor fishing season; this resource composed 1% of the harvest in 2012, 10% in 2013, and 3% in 2014[7]. One resident explained that he is less concerned with targeting specific species of salmon, stating that he fishes for “whatever’s out there, whatever is available” (07PL) (Plate 3-8).

Unlike Wainwright, there is less of a consensus among Point Lay key respondents as to whether salmon have become more abundant over the years. Some fishers reported that they are catching more salmon in general (04PL, 05PL), and some stated that they are catching different species in greater numbers, particularly Chinook salmon (04PL, 05PL, 09PL, 13PL). Although some felt Chinook salmon populations were growing, all interviewed salmon fishers noted that they have always been harvested in the region. Other fishers discussed salmon fishing as remaining consistent over the decades (03PL, 07PL, 08PL, 10PL, 12PL, 15PL). It is clear throughout all the key respondent interviews, including those with several elders, that targeted salmon fishing has always been a summertime subsistence pursuit for Point Lay residents. While not described as a new phenomenon, several key respondents explained that salmon are abundant in the region (05PL, 07PL, 08PL,10PL, 12PL, 14PL). One fisher explained that his largest catch of salmon actually occurred in the mid-1970s:

> Nice, healthy fish. And we started drying them and the drying rack we built had to get bigger and bigger and bigger. Before long, we started making trips back home and giving fish away. (12PL)

All key respondents explained that a majority of salmon fishing takes place in the lagoon, although people travel varying distances to set their nets. While salmon are seen in the local rivers, they are taken more

6. Community Review Meeting, Point Lay Tribal Council meeting, April 21, 2016

7. We are confident that our sample in year 2 and 3 of this project contains all the households who fished for sockeye salmon during the study year. The majority of these harvests were taken outside the region.

rarely and with rod and reel (08PL, 13PL). Some salmon are also taken by rod and reel in the lagoon (07PL).

Various preservation methods are used to store salmon by Point Lay residents. Residents commonly dry some of their catch, while some is frozen (08PL, 09PL, 11PL, 12PL). Respondents stated that some people are smoking their fish (11PL, 09PL); one fisher explained that he has been smoking his salmon for years using whatever they had to make the fire (driftwood, tall green grass), but he now buys wood chips from the store (14PL). One resident described a unique preservation method involving putting salmon in a box and storing them in a warm place to allow them to age, after which they are frozen for later use (09PL). Respondents also reported eating their salmon fresh, either boiling, baking, or frying them. One elder explained that she makes fish head soup, boiling the salmon until "the eyeballs pop out" which indicates it is done (08PL).

All key respondents discussed the importance of sharing all resources, including salmon. One explained that those without transportation and a net rely on fishers to give them a portion of their catch (09PL). One respondent explained how sharing salmon allows him to be more successful in his harvest:

> I give out to the people first. Yeah I used to do that. And then my cousin said, when are we going to keep it? And I said, after we give everybody a fish here. After that. You know something? That really works. I caught more fish than anybody around here ever caught in one season. (13PL)

Figures 3-14 to 3-16 portray the gear types used by Point Lay residents to harvest salmon in the 2012–2014 study years. For all 3 study years, fishers caught the overwhelming majority of all salmon species using set gillnets; this method accounted for 98% of all salmon harvests in 2012, 97% in 2013, and 96% in 2014. Point Lay residents used rod and reel for harvesting limited numbers of salmon in all 3 study years. In 2014, small amounts of Chinook and sockeye salmon were harvested using "other gear"; this method refers to dipnetting for salmon, which was done in other areas of the state.

Tables 3-9 and 3-10 portray the timing of salmon harvests in Point Lay by month and gear type in 2013 and 2014. In 2013, fishers took the majority of their salmon in the month of July (87%). The remaining 13% were taken in August. In 2014, July was also the month of highest harvest (62%). In contrast to 2013, fishers reported limited June harvests (11%) and a higher level of harvest in August (27%). Key respondents echoed these data by explaining that July is generally the month of highest harvests (07PL, 08PL, 09PL, 10PL, 15PL), and went on to explain that residents generally wait until after the beluga whale hunt in late June and early July before they set their nets; those who begin fishing before this hunt generally remove their nets before the beluga are driven into the lagoon (10PL, 13PL, 14PL).[8] Other elements of timing were mentioned by respondents. One explained that salmon are prone to run when the wind is blowing from the north (08PL), and some noted that salmon are more abundant on days when the weather is cooler (01PL, 08PL). Surprisingly, some key respondents reported that they catch salmon (both pink and chum salmon) through the ice after freeze-up, although this is very rare (10PL, 02PL). As mentioned above, the bulk of the salmon harvest in all years was taken with set gillnets or with limited rod and reel fishing.

Point Lay residents used a substantial amount of the salmon harvest to feed dogs in the 2012–2014 study years. In 2012, 689 lb of whole pink salmon were used for this purpose, or 23% of the pink salmon harvest in that year. In 2013, 123 lb of pink salmon were used as dog food, representing 54% of the pink salmon harvest during the study year. In 2014, both chum and pink salmon were fed to dogs: residents fed 95 lb of chum salmon (6% of the total chum harvest) and 626 lb of pink salmon (22% of the pink harvest) to their dogs (tables D2-6, D2-7, D2-8).

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8. A yearly community hunt takes place in Point Lay: residents work together to herd the beluga whales into the lagoon where they can be more easily harvested.

Nonsalmon Fish

As mentioned previously, nonsalmon fish harvests composed less than half of Point Lay's total estimated harvest in 2012 and 2014. Due to poor salmon harvests in 2013, nonsalmon fishes represented 71% of the total harvest during that study year. Point Lay fishers caught an estimated 5,045 lb (19 lb per capita) of nonsalmon fish in 2012, 3,254 lb (13 lb per capita) in 2013, and 4,775 lb (17 lb per capita) in 2014 (tables 3-3, 3-4, 3-5).

Figures 3-17 to 3-19 portray the composition of the nonsalmon fish harvest during the 3 study years. Arctic grayling contributed the most edible weight to Point Lay's estimated harvest of nonsalmon fish across all study years. Arctic grayling accounted for the majority of the total nonsalmon harvest in 2013 and 2014; this resource accounted for 76% of the harvest in 2013 (2,485 lb, 10 lb per capita) and 77% of the harvest in 2014. Although composing less of the total 2012 harvest (35%), Arctic grayling were still the most harvested nonsalmon fish and contributed 1,750 lb (7 lb per capita). This resource was mentioned by a number of key respondents as vital to the diet of Point Lay residents (01PL, 03PL, 07PL, 09PL,10PL, 11PL). One fisher described the importance of Arctic grayling: "Main fish is grayling, we get them by the sackful" (12PL). All key respondents noted that jigging through the ice in October and November is the most common time to harvest this resource, although one respondent explained that they are occasionally taken incidentally when targeting salmon (09PL). Some residents also discussed the difference in the taste of Arctic grayling depending upon the river they are harvested in. One felt that Point Lay grayling taste better than those harvested in Wainwright since local rivers have rocky bottoms instead of muddy ones (01PL), and another explained that Arctic grayling harvested in the Kukpowruk River taste better than those harvested in other rivers in the region (13PL). Some fishers felt that this resource is less available locally than in the past, and described having to travel further distances (25 miles or more) in pursuit of Arctic grayling (02PL, 10PL). In contrast, one fisher explained that gravel dredging activities on the nearby Kokolik River had opened up a deeper fishing hole, which has become a prime spot to catch this resource. Several residents said that Arctic grayling are often frozen and eaten raw as (*quaq*) (08PL, 09PL,13PL).

Smelt were the second most highly harvested nonsalmon resource in 2013 and 2014, composing 13% of the harvest (440 lb, 2 lb per capita) and 12% of the harvest (583 lb, 2 lb per capita), respectively; this resource was harvested in similar amounts (332 lb, 1 lb per capita) in 2012, but only accounted for 6% of the total nonsalmon harvest in that study year. Several key and survey respondents reported that smelt fishing has been difficult in the Point Lay area in recent years, and that residents are catching much less than in past (01PL,08PL, 09PL). One fisher theorized that spotted seals in the area might be decimating the population (01PL), while another thought it might because of warmer waters and increased west winds (08PL). One resident explained how the smelt move with the winds and the tides, noting that smelt go into the river channel when the wind is blowing from the north and the tide is going out and then are near the mouth of the river when the wind is blowing from the south and the tide is going in (13PL). Like Wainwright, Point Lay residents describe smelt as "sugar fish" due to their sweet taste (13PL, 01PL). One key respondent felt that the taste of the smelt is similar between the two communities, but that Wainwright smelt are slightly sweeter (01PL). A few interviewed fishers reported occasionally traveling to Wainwright to fish for smelt (01PL, 05PL) (Plate 3-9).

Dolly Varden contributed the second most edible weight to the 2012 nonsalmon fish harvest, accounting for 32% of the harvest (1,627 lb, 6 lb per capita); this resource accounted for 2% of the 2013 harvest (50 lb) and 5% of the 2014 harvest (229 lb).Whitefish composed a significant portion of the harvest in 2012 (18%), but did not feature highly into the 2013 harvest (>1%) or the 2014 harvest (2%). A few key respondents reported sporadic fishing for whitefish, particularly Arctic ciscoes (*qaaktaq*). One reported finding a good current in the lagoon on only one occasion and catching whitefish in a net with smaller mesh (14PL), and another respondent explained that he seined for whitefish one summer with his brother, in his youth (13PL). Some residents stated that they get their whitefish through trade with other

communities, specifically Barrow and Atqasuk (13PL, 05PL). Pacific halibut, which were caught outside of the region, accounted for 6% of the harvest in 2013 and 3% in 2014.

Figures 3-20 to 3-22 portray the gear types used by Point Lay fishers to harvest nonsalmon species during the 2012–2014 study years. Residents harvested a majority of Arctic grayling by jigging through the ice; this method accounted for 98% of the harvest in 2012, 49% of the harvest in 2013, and 90% of the harvest in 2014. Fishers took the rest of the Arctic grayling harvest using set gillnets in all 3 study years. Dolly Varden were harvested by both set gillnet and jigging through the ice in 2012–2014; this resource was primarily harvested by set gillnet in 2012 (87%), and by jigging in 2013 (60%) and 2014 (80%). Point Lay residents took the bulk of the smelt harvest by jigging through the ice; this method accounted for 91% of the harvest in 2012, 100% in 2013, and 72% in 2014. Information on harvest by gear type can be found in tabular format in tables D2-9 through D2-11.

Table 3-11 and 3-12 portray harvests of nonsalmon fish in 2013 and 2014 by season and gear type. In 2013, Arctic grayling were largely harvested in the fall months (91%) and the remainder in the winter. Fishers took over one-half (56%) of the fall catch by set gillnet (either in open water or under the ice), and the remaining 44% and all winter harvests of smelt were taken by jigging through the ice. In 2014, fishers also harvested a majority of Arctic grayling in fall (60%) and winter (37%); most were harvested by jigging (90%) and the rest by set gillnet under the ice. Fishers also reported catching limited amounts of Arctic grayling in the summer months in set gillnets. In 2013, fishers exclusively jigged through the ice for smelt, primarily in the winter months (97% of the harvest). In contrast, smelt harvests occurred in 3 seasons in 2014: fishers took 33% of their harvest in fall, 31% in winter, and 28% in summer. Fishers jigged for smelt in fall and winter, and primarily harvested this resource by rod and reel in the summer. Limited harvests of whitefish in 2013 and 2014 were taken by set gillnet in the summer months.

Point Lay residents reported limited use of nonsalmon fish for dog food during the 2012–2014 study years. In 2012, 395 lb of whole nonsalmon fish were used for this purpose, the majority of which were unknown whitefishes (346 lb); other species included smelt, Arctic grayling, and unknown nonsalmon fish. Arctic grayling were the only nonsalmon fish fed to dogs in 2013, with residents using 67 lb of the resource for this purpose. In 2014, 696 lb of nonsalmon fish were used as dog food, most of which was Arctic grayling (654 lb) (tables D2-6, D2-7, D2-8).

COMPARING HARVESTS AND USES IN 2012–2014 WITH PREVIOUS YEARS

Harvest Assessments

Researchers asked respondents to assess their own harvests in 2 ways: whether they got more, less, or about the same amount of 3 resource categories[9] in 2012–2014 as in the past 5 years, and whether they got "enough" of each of the 3 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.

Together, tables 3-13 through 3-15, figures 3-23 through 3-25, and figures 3-26 through 3-28 provide a broad overview of Point Lay households' assessments of their harvests in during the 3 study years. 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 one of the most used and heavily harvested of all resource categories by Point Lay households (between 5 lb and 34 lb per capita) over the 3 years of the study (tables 3-3, 3-4, 3-5). Twenty six percent of households reported using the same amount of salmon compared to recent years in 2012, and 30% in 2013, and 43% in 2014. In 2012, 38% of households said they used less salmon, and 43% of

9. Like Wainwright, smelt assessments were also added to the Point Lay survey in 2013 and 2014.

households said the same in 2013, and 24% used less salmon in 2014. In every study year, some households reported using more salmon than in recent years: 10% used more salmon in 2012, 5% used more in 2013, and 5% used more in 2014. When asked why they used less, responding households' answers varied across the 3 study years. In 2012, the most common answers were weather and environmental factors (40%) and a lack of equipment (27%). In 2013, a majority of responding households (63%) cited a lack of sharing as their reason for using less salmon during the study year; other common answers included a lack of effort (25%) and poor availability of the resource (19%). In 2014, equal numbers of households cited 3 reasons for less use of salmon: poor availability of the resource (22%), less sharing (22%), and weather and environmental factors (22%) (tables D2-12, D2-13 ,D2-14). For those few households that reported using more salmon across the 3 study years, the most common answers were increased availability of the resource (50% of responding households in 2012), that they received more (25% in 2012, 100% in 2013), and increased effort (25% in 2012, 100% in 2014) (tables D2-22, D2-23, D2-24). With the exception of 2014, more than one-half of responding households said they got enough salmon during the study year. In 2014, only 35% said they got enough salmon, while 35% said they did not get enough of the resource (figures 3-26, 3-27, 3-28).

Smelt was in the top 2 most used resources by Point Lay residents across the three years of this study: between 65% and 45% of households reported using this resource in the 2012–2014 study years (tables 3-6, 3-7, 3-8). This resource was combined with other nonsalmon fish during the 2012 study year, so this discussion will focus on the 2013 and 2014 study years. Eighteen percent of households said they used the same amount of smelt in 2013 as in recent years, and 21% said the same in 2014. In both study years, a greater number of households said they used less smelt: in 2013, 39% said they used less of the resource and 38% said the same in 2014. A small percentage of households in 2013 (8%) and 2014 (8%) said they used more smelt in comparison with recent years (figures 3-24, 3-25). For households that reported using less smelt, the most common reason given in 2013 was less sharing of the resource (60% of households), and lack of effort (46% of households) was the most cited reason in 2014 (tables D2-13 and D2-14). For those households that said they used more smelt, the most common reason was that they received more (67% in 2013, 100% in 2014) (tables D2-16 and D2-17). More households said they got enough smelt in 2013 (38%) than in 2014 (25%) (figures 3-27 and 3-28).

Nonsalmon fish (excluding smelt in 2013 and 2014) collectively contributed a large portion of the total estimated harvest across the 3 study years, accounting for between 37% and 61% of the harvest in the 2012–2014 study years; Point Lay fishers harvested 19 lb per capita in 2012, 15 lb in 2013, and 15 lb in 2014 (tables 3-6, 3-7, 3-8)[10]. In the 2012 year, more households that use these resources said they used the same amount of nonsalmon fish than those that used less; 38% said they used the same amount of these resources in 2012, while 26% said they used less nonsalmon fish. In 2013, equal percentages of households (31%) reported using the same amount or less during the study year. In 2014, 24% of households said they used the same amount, while 29% said that they used less during the study year. Small percentages of households reported using more nonsalmon fish in comparison with recent years (between 8% and 13% of responding households) (figures 3-23, 3-24, 3-25). Reasons for using less varied across the 3 study years. In 2012, the most common reasons were weather and environmental factors (30% of households), less sharing (20%), unsuccessful in attempt to harvest (20%), and working/no time to fish (20%). In 2013, two main reasons were given by households for using less nonsalmon fish: less sharing (33%) and lack of effort (42%). In 2014, equal percentages of households (22%) cited 3 reasons for less use: less availability of resources, lack of effort, and not harvesting enough for their household's needs (tables D2-12, D2-13, D2-14). For those few households that used more nonsalmon fish in 2012, the most common reasons were that they had more help for harvesting activities (40%) and were more

10. Smelt were included in the nonsalmon harvest assessments during the 2012 study year. For the purposes of this discussion, they were removed from the total harvest of nonsalmon fish in 2013 and 2014. This is because they were assessed separately from other nonsalmon fish during years 2 and 3 of the study.

successful in fishing for nonsalmon fish (40%). The most common reason for using more nonsalmon fish in 2013 and 2014 was that households received more (60% in 2013, 50% in 2014) (tables D2-15, D2-16, D2-17). More households said they got enough nonsalmon fish in 2012 (50%) and 2013 (36%), while only 33% got enough in 2014 (figures 3-26, 3-27, 3-28)

Harvest Data

Changes in the harvest of resources by Point Lay residents can also be discerned through comparisons with findings from other study years. In addition to the 3 years of data presented in this report, there are 3 other studies which allow for comparison of salmon and nonsalmon harvests over time. ADF&G collected comprehensive harvest data for 1987 that can also be found in the ADF&G CSIS. The NSB Department of Wildlife Management collected harvest data in the community for the 1994–1995 and 2002–2003 study years (Bacon et al. 2011rev.). Conversion factors for edible weight of different fish species have varied across these different studies; in order to allow for a full comparison, conversion factors from this study have been applied to other study years.[11]

Salmon species collectively accounted for a majority of Point Lay's total estimated harvest of fish during 2 out of the 3 study years for this project, composing 63% of the harvest in 2012 and 54% in 2014. This resource category only accounted for 29% in 2013, although residents pointed out that fishing conditions were poor during this study year. In contrast, salmon species collectively composed less than one-half of the total harvest of fish in the 3 previous study years; this resource category composed 16% of the harvest in 1988, 46% in 1994–1995, and 28% in 2002–2003. Per capita harvest numbers illustrate a difference in harvest levels between the 2012 and 2014 study years and previous studies: 2013 was considered to be a poor year, making it an outlier. In 2012, Point Lay fishers harvested 34 lb per capita of salmon and 25 lb in 2014. In contrast, residents harvested 2 lb per capita in 1987, 11 lb per capita in 1994–1995, and 3 lb per capita in 2002–2003 (Figure 3-29). The average harvest over the 6 study years was 13 lb per capita. Although it is difficult to interpret harvest patterns with only 6 data points, it appears that salmon harvests have increased over time in Point Lay.

Arctic grayling composed a large component of the harvest in the 2012–2014 study years; this resource composed 13% of the total estimated fish harvest in 2012, 59% in 2013, and 35% in 2014. In previous studies, this resource also contributed a significant amount to Point Lay's fish harvest; Arctic grayling composed 56% of the harvest in 1987, 11% in 1994–1995, and 48% in 2002–2003. Per capita harvests have varied in discrete study years, and there seems to be no discernable trend in harvest over time. The average per capita harvest over the 6 study years was 8 lb per person. The 2013 and 2014 study years have per capita harvests that were above the average; Point Lay fishers harvested 10 lb per person in 2013 and 13 lb in 2014. The lowest harvests occurred in 1994–1995 (3 lb per capita) and 2002–2003 (6 lb per capita); however, Point Lay fishers harvested the most Arctic grayling per capita in 1987, catching an estimated 15 lb per person (Figure 3-30). Although these 6 data points do not allow for a conclusive analysis of harvest patterns over time, it is clear that Arctic grayling was and have remained an important resource for Point Lay residents.

Figure 3-31 portrays Point Lay's per capita harvest of all fish species over the 6 years for which we have data. While it is difficult to definitively identify trends in harvest with so few data points, it does appear that fish harvests in general have increased over time. The average of total estimated per capita harvests over all study years is 29 lb per person. Point Lay fishers harvested 53 lb per capita in 2012 and 42 lb in 2014; residents harvested only 18 lb per capita in 2013, but there was a particularly poor summer fishing season in that study year. In contrast, fishers harvested an estimated 26 lb per person in 1987, 24 lb in

11. Round weights for salmon provided by ADF&G Division of Commercial fisheries vary from year to year, which results in different conversion factors for each Division of Subsistence study year. Conversion factors for salmon species in the 2014 study year have been applied to historical harvest information.

1994–1995, and 12 lb in 2002–2003. Again, there are not enough data to ultimately conclude that harvests have in fact increased, but it is possible that greater harvests of salmon species in recent years compared to previous studies may account for this change.

LOCAL COMMENTS AND CONCERNS

Following is a summary of local observations about wild resource populations and trends, environmental observation and concerns, and different factors that affect subsistence in Point Lay. These comments were recorded during the surveys and in ethnographic interviews. 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.

Changes to Fishing

Beginning in the second year of the project, Point Lay households were also asked if they had observed any changes in fishing conditions or the fish themselves for 3 resource categories—salmon, nonsalmon fishes, and smelt. Households who did report changes were asked what changes they observed in more detail. Figures 3-32 and 3-33 portray the percentage of responding households who have observed changes in fishing during the 2013 and 2014 study years; as with assessments, not all households responded to the question. For both study years, a majority of households that responded to the question reported that they had not observed any changes to any resource category.

For salmon, 29% of Point Lay households reported observing changes to fishing for this resource, and 18% noted changes in 2014. Similar themes are found in the comments made by responding households in both study years, many of which revolve around environmental concerns. Several respondents in 2013 and 2014 reported observing changing weather patterns and warmer waters in the vicinity of Point Lay. A few tied these conditions to the health and abundance of salmon in the region. Some felt that the numbers of salmon had decreased, and some respondents noted that they had observed more dying fish in the area. Others observed that the weather had altered the timing of salmon migration, and that fishing locations were changing. Some observations were specific to the individual study years. In 2013, several respondents stated that they felt fewer families were harvesting. In 2014, some respondents reported environmental factors that made salmon fishing more difficult during the study year: these included higher tides in the lagoon and more west wind than was usual, both of which made it difficult to check and keep set gillnets clear of debris. For a full list of comments, see Appendix E.

For nonsalmon species, 25% of Point lay households in 2013 and 20% in 2014 reported observing changes in fishing for these resources. Many of the comments were focused on Arctic grayling, which is one of the most harvested nonsalmon fish. In 2013, some respondents felt that Arctic grayling were less abundant, and one felt the ones that were harvested were smaller than usual. A few respondents noted that harvests vary year to year, and one explained that river conditions and how the ice freezes play a role. In contrast, some respondents in 2014 felt that conditions were improved for nonsalmon fish: one respondent noted that they had caught larger Arctic grayling and Dolly Varden compared to recent years. Another reported that they were observing more herring in the region. Environmental concerns were also observed during the 2014 study year. A few responding households noted that later freeze-ups and ice conditions were taking a toll on fishing; one noted that fishing areas had changed as a result, leading fishers to target species in certain areas of the river.

For smelt, responding households in 2013 and 2014 observed that this resource is less abundant near the community and that they are having a harder time locating fishing areas. A few respondents in both years observed environmental changes that were making fishing for smelt more challenging: one noted that in 2013 the weather was warm and the lagoon did not fully freeze, and another in 2014 explained that ice piles up in the inlet and makes fishing more difficult as a result. In 2013, respondents felt residents were

less active in fishing for smelt, and one stated that Point Lay households were receiving the resource from other communities.

Environmental Observations

Several Point Lay households shared observations of a changing environment and climate during the 2012–2014 study years. Most of these comments revolved around a warming climate and included observations of seasonal changes, ice conditions, and water temperature. Several comments revolved around a warming environment causing a later freeze-up and earlier breakup in the region. A few households felt that warmer waters were impacting fish resources in a negative way, explaining that they felt fish were less abundant and had migrated elsewhere. As mentioned earlier, a few key respondents felt that higher water temperatures were having a positive impact on salmon populations. Several Point Lay residents pointed to changes in ice conditions. One key respondent noted the changes that he had seen over the course of his life:

> Currents will change. Weather's such a factor nowadays. We know that it's staying warm longer; the ice is taking longer to freeze, or the water is taking longer to freeze, and the ice is not as thick anymore as it normally would be in any winter. Like back about 40–50 years ago it would be 15–20 feet thick of ice. Now it's barely 4 feet, maybe not even 2 feet in some places. There's a lot of change in the ice. (04PL)

Erosion was also mentioned as an environmental concern. One key respondent explained how melting permafrost had caused erosion that cut a channel from a large pond to the river. As a result, the pond drained completely (03PL). One resident shared his observations:

> Well, there's been a lot of erosion going on. Our coastline is diminishing every several years, it gets smaller and smaller the, ah, you see these barrier islands here in front of Point Lay here—they're all getting smaller due to erosion from the sea, from the ocean eroding. Even our lagoon area by the village, or all the way up and down, up and down the coast is eroding 'cause more water is coming in and eroding a lot of our coastline. (5PL)

Development

Much like Wainwright, all Point Lay residents who brought up the possibility of offshore drilling had a negative opinion of this kind of development. Some surveyed households expressed concerns about the impact of an oil spill to the local ecosystem, and others felt industrial activity in general has negative impacts to subsistence activities. One key respondent expressed his opinion:

> It's just something we don't want to risk chancing losing. It's the lifestyle, the circle of life, you know. It's the stuff that they can spill in our water that will affect one animal and it's going to affect the other animal. And that's going to die off. Look, we are our own people. Without those animals, who are we going to be? (03PL)

Another resident discussed historical development that has lasting implications for the residents of Point Lay and their environment:

> But these Air Force sites that were put up all along the coast of Northern Alaska shorelines have put in a lot of trash dumps, machinery that were left behind with contaminations from oils and other fluids that were in them. Also from a lot of the iron and other metals that themselves from corrosion produce a lot of contaminations into the ground and waters—on the coast wherever the landfills were put. Most of them were either on the Air Force sites or a couple miles away. And even the lakes behind our village present today have rotten oil drums in the lakes that are on the bottom and they're constantly corroding every summer when the water and the ice melt, and the water's that the corrosion all over and keep going never stop and that puts a lot of strain on our

> animals and fish—particularly the birds that we live on. They do their nesting in a lot of these flats and a lot of these lakes and ponds are the home where the birds and other animals that depend on them for survival. And we in turn live off these animals for sustenance, for our food, also for our clothing to keep warm, and also did a lot of hunting for animals that we used for transportation—but this was of course 30 years back but it still was a major concerns back then this contamination that had been put all over wherever we have settlements alongside with DEW Line. (04PL)

Economic Impacts to Subsistence

Several surveyed households commented on the interaction of subsistence activities with the cash economy and the high cost of living in Point Lay. Some residents explained that they were not able to go out and do subsistence activities to the extent they want to because they are too busy working. Others pointed out the difficulty of paying for gas and equipment to hunt and fish, and one resident explained that it is particularly challenging when one is unemployed. One key respondent explained that he felt subsistence was easier in his youth, because there was no need to "worry about bills." He went on to point out that it was a lot of work to feed his dogs, but he did not have to pay for gas (05PL)

Some households stated the cost of living is extremely high in Point Lay, and that it is difficult to depend upon store-bought foods because the local store often does not have enough on the shelves due to weather delays.

The possibility of future commercial fishing was rarely discussed by key respondents or surveyed households. One resident expressed curiosity as to whether future increases in salmon abundance due to warming waters would impact decisions regarding commercial opportunities. As in Wainwright, one key respondent noted that Point Lay and the surrounding region is a poor choice for commercial fishing. He felt there are not enough fish to justify an opening of any kind, and that there would be little interest in the community (09PL).

Table 3-1.–Population estimates, Point Lay, Alaska, 2010–2014.

	Census (2010)	5-year American Community Survey (2010–2014) (2008–2012)	(2009–2013)	(2010–2014)	This study 2012	2013	2014
Total population							
Households	60	72	72	76	67.0	64.0	63.0
Population	189	301	274	246	260.0	254.5	278.8
Alaska Native							
Population	168	220	228	213	229.7	225.5	256.7
Percentage	88.9%	73.1%	83.2%	86.6%	88.3%	88.6%	92.1%

Sources U.S. Census Bureau (2011) for 2010 estimate; U.S. Census Bureau for American Community Survey 5-year survey estimate; and ADF&G Division of Subsistence household surveys, 2013, for 2012 estimate.

Table 3-2.–Demographic characteristics, Point Lay, Alaska, 2012–2014.

	Point Lay		
Characteristics	2012	2013	2014
Household size			
Mean	3.8	4.0	4.4
Minimum	1	1	1
Maximum	9	10	11
Age			
Mean	22.9	21.4	22.6
Minimum[a]	0	0	0
Maximum	72	73	73
Median	20.5	17.5	19.0
Length of residency			
Total population			
Mean	15.1	13.9	15.5
Minimum[a]	0	0	0
Maximum	69	64	71
Heads of household			
Mean	22.6	20.9	23.6
Minimum[a]	0	1	2
Maximum	69	64	71
Alaska Native households[b]			
Number	55.8	53.3	63.0
Percentage	83.3%	83.3%	100.0%

Source ADF&G Division of Subsistence household surveys, 2013-2015.

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.–Estimated harvests and uses of salmon and nonsalmon fish, Point Lay, Alaska, 2012.

	Percentage of households					Harvest weight (lb)			Harvest amount[a]			
Resource	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total	Mean per household	Per capita	Total	Unit	Mean per household	95% confidence limit (±) harvest
All fish	**81.0**	**61.9**	**54.8**	**71.4**	**54.8**	**13,811.8**	**201.4**	**53.1**				**45.4**
Salmon	**61.9**	**42.9**	**28.6**	**54.8**	**33.3**	**8,766.6**	**127.8**	**33.7**				**63.8**
Chum salmon	31.0	26.2	14.3	28.6	21.4	3,744.3	54.6	14.4	658.8	ind	9.6	92.1
Coho salmon	26.2	28.6	19.0	16.7	16.7	1,803.6	26.3	6.9	371.7	ind	5.4	69.5
Chinook salmon	21.4	19.0	9.5	16.7	9.5	137.5	2.0	0.5	14.4	ind	0.2	70.3
Pink salmon	26.2	28.6	16.7	19.0	9.5	3,024.7	44.1	11.6	1,119.9	ind	16.3	74.3
Sockeye salmon	16.7	7.1	4.8	14.3	2.4	56.5	0.8	0.2	12.8	ind	0.2	98.0
Unknown salmon	4.8	0.0	0.0	4.8	2.4	0.0	0.0	0.0	0.0	ind	0.0	0.0
Nonsalmon fish	**76.2**	**57.1**	**52.4**	**59.5**	**50.0**	**5,045.2**	**73.5**	**19.4**				**50.4**
Pacific herring	9.5	2.4	2.4	7.1	0.0	165.4	2.4	0.6	27.6	gal	0.4	124.8
Smelt	59.5	38.1	33.3	38.1	16.7	331.9	4.8	1.3	55.3	gal	0.8	51.3
Pacific tomcod	7.1	0.0	0.0	7.1	2.4	0.0	0.0	0.0	0.0	ind	0.0	0.0
Flounder	2.4	2.4	2.4	0.0	2.4	35.1	0.5	0.1	31.9	ind	0.5	124.8
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	2.4	0.0	0.0	2.4	2.4	0.0	0.0	0.0	0.0	ind	0.0	0.0
Arctic char	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Dolly Varden	19.0	14.3	9.5	11.9	7.1	1,626.7	23.7	6.3	492.9	ind	7.2	97.7
Lake trout	2.4	0.0	0.0	2.4	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Arctic grayling	50.0	40.5	38.1	28.6	26.2	1,750.1	25.5	6.7	1,944.6	ind	28.3	46.2
Northern pike	4.8	0.0	0.0	4.8	2.4	0.0	0.0	0.0	0.0	ind	0.0	0.0
Sheefish	31.0	4.8	4.8	31.0	19.0	201.8	2.9	0.8	36.7	ind	0.5	109.4
Broad whitefish	9.5	2.4	0.0	9.5	4.8	0.0	0.0	0.0	0.0	ind	0.0	0.0
Arctic cisco	9.5	4.8	2.4	7.1	4.8	195.4	2.8	0.8	279.2	ind	4.1	124.8
Bering cisco	0.0	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Least cisco	2.4	0.0	0.0	2.4	2.4	0.0	0.0	0.0	0.0	ind	0.0	0.0
Humpback whitefish	7.1	4.8	2.4	4.8	4.8	10.1	0.1	0.0	4.8	ind	0.1	124.8
Unknown whitefishes	2.4	2.4	2.4	0.0	2.4	692.6	10.1	2.7	957.1	ind	14.0	124.8
Unknown nonsalmon	2.4	2.4	2.4	0.0	2.4	36.2	0.5	0.1	47.9	ind	0.7	124.8

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

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

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

Table 3-4.–Estimated harvests and uses of salmon and nonsalmon fish, Point Lay, Alaska, 2013.

	Percentage of households					Harvest weight (lb)			Harvest amount[a]			95%
Resource	Use %	Attempt %	Harvest %	Receive %	Give %	Total	Mean per household	Per capita	Total	Unit	Mean per household	confidence limit (±)
All fish	**90.5**	**52.4**	**31.0**	**90.5**	**33.3**	**4,600.4**	**71.9**	**18.1**				**61.5**
Salmon	**52.4**	**21.4**	**14.3**	**50.0**	**14.3**	**1,346.0**	**21.0**	**5.3**				**67.8**
Chum salmon	19.0	9.5	9.5	16.7	7.1	970.0	15.2	3.8	157.0	ind	2.5	79.5
Coho salmon	9.5	2.4	2.4	9.5	2.4	14.8	0.2	0.1	3.0	ind	0.0	118.4
Chinook salmon	21.4	4.8	0.0	21.4	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Pink salmon	19.0	11.9	9.5	16.7	7.1	226.3	3.5	0.9	83.8	ind	1.3	76.8
Sockeye salmon	9.5	2.4	2.4	9.5	2.4	135.0	2.1	0.5	30.5	ind	0.5	118.4
Unknown salmon	14.3	4.8	0.0	14.3	2.4	0.0	0.0	0.0	0.0	ind	0.0	0.0
Nonsalmon fish	**81.0**	**45.2**	**28.6**	**78.6**	**26.2**	**3,254.3**	**50.8**	**12.8**				**68.9**
Pacific herring	7.1	4.8	2.4	4.8	0.0	2.7	0.0	0.0	0.5	gal	0.0	118.4
Smelt	45.2	16.7	4.8	42.9	7.1	439.5	6.9	1.7	73.2	gal	1.1	114.9
Arctic cod	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Saffron cod	16.7	2.4	2.4	14.3	2.4	1.6	0.0	0.0	7.6	ind	0.1	118.4
Flounder	4.8	2.4	2.4	4.8	2.4	50.3	0.8	0.2	45.7	ind	0.7	118.4
Pacific halibut	4.8	2.4	2.4	2.4	0.0	193.8	3.0	0.8	193.8	lbs	3.0	118.4
Burbot	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Arctic char	4.8	2.4	2.4	4.8	0.0	15.1	0.2	0.1	4.6	ind	0.1	118.4
Dolly Varden	9.5	4.8	4.8	4.8	0.0	50.3	0.8	0.2	15.2	ind	0.2	84.4
Lake trout	11.9	4.8	0.0	9.5	4.8	0.0	0.0	0.0	0.0	ind	0.0	0.0
Arctic grayling	66.7	31.0	19.0	52.4	23.8	2,485.0	38.8	9.8	2,669.7	ind	41.7	70.1
Sheefish	45.2	2.4	0.0	45.2	2.4	0.0	0.0	0.0	0.0	ind	0.0	0.0
Broad whitefish	14.3	2.4	0.0	14.3	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Arctic cisco	9.5	0.0	0.0	9.5	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Bering cisco	4.8	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Least cisco	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Humpback whitefish	9.5	2.4	2.4	7.1	0.0	16.0	0.3	0.1	7.6	ind	0.1	118.4
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	2.4	0.0	0.0	2.4	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0

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

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

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

Table 3-5.–Estimated harvests and uses of salmon and nonsalmon fish, Point Lay, Alaska, 2014.

	Percentage of households					Harvest weight (lb)			Harvest amount[a]			
Resource	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total	Mean per household	Per capita	Total	Unit	Mean per household	95% confidence limit (±) harvest
All fish	**85.0**	**57.5**	**50.0**	**75.0**	**47.5**	**10,343.4**	**164.2**	**37.1**				**45.6**
Salmon	**52.5**	**40.0**	**27.5**	**40.0**	**22.5**	**5,588.3**	**88.7**	**20.0**				**51.1**
Chum salmon	17.5	15.0	15.0	5.0	7.5	1,554.7	24.7	5.6	258.3	ind	4.1	54.1
Coho salmon	10.0	10.0	10.0	2.5	7.5	728.7	11.6	2.6	141.8	ind	2.3	63.0
Chinook salmon	25.0	17.5	12.5	17.5	10.0	273.5	4.3	1.0	31.5	ind	0.5	58.1
Pink salmon	35.0	27.5	17.5	22.5	20.0	2,859.9	45.4	10.3	1,151.3	ind	18.3	84.2
Sockeye salmon	5.0	5.0	5.0	2.5	0.0	171.5	2.7	0.6	42.5	ind	0.7	85.9
Unknown salmon	7.5	5.0	0.0	7.5	2.5	0.0	0.0	0.0	0.0	ind	0.0	0.0
Nonsalmon fish	**80.0**	**50.0**	**45.0**	**70.0**	**42.5**	**4,755.1**	**75.5**	**17.1**				**48.8**
Pacific herring	7.5	5.0	2.5	2.5	0.0	1.1	0.0	0.0	0.2	gal	0.0	122.2
Smelt	65.0	27.5	20.0	57.5	30.0	582.9	9.3	2.1	97.1	gal	1.5	65.9
Arctic cod	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Saffron cod	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Flounder	2.5	2.5	2.5	2.5	2.5	13.9	0.2	0.0	12.6	ind	0.2	122.2
Pacific halibut	2.5	2.5	2.5	0.0	0.0	132.9	2.1	0.5	6.3	lbs	0.1	122.2
Burbot	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Arctic char	0.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Dolly Varden	12.5	10.0	10.0	5.0	5.0	228.7	3.6	0.8	69.3	ind	1.1	97.9
Lake trout	25.0	7.5	5.0	17.5	7.5	12.6	0.2	0.0	3.2	ind	0.1	85.3
Arctic grayling	52.5	40.0	32.5	35.0	25.0	3,669.9	58.3	13.2	4,077.7	ind	64.7	56.1
Sheefish	32.5	0.0	0.0	32.5	10.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown trout	2.5	2.5	2.5	0.0	0.0	10.4	0.2	0.0	3.2	ind	0.1	122.2
Broad whitefish	17.5	10.0	7.5	12.5	2.5	80.6	1.3	0.3	25.2	ind	0.4	82.4
Arctic cisco	5.0	5.0	5.0	2.5	0.0	6.6	0.1	0.0	9.5	ind	0.2	90.2
Bering cisco	5.0	5.0	5.0	0.0	2.5	7.7	0.1	0.0	11.0	ind	0.2	93.2
Least cisco	5.0	2.5	2.5	2.5	0.0	1.1	0.0	0.0	1.6	ind	0.0	122.2
Humpback whitefish	7.5	2.5	2.5	5.0	2.5	6.6	0.1	0.0	3.2	ind	0.1	122.2
Round whitefish	2.5	0.0	0.0	2.5	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown whitefishes	2.5	0.0	0.0	2.5	0.0	0.0	0.0	0.0	0.0	ind	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.

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

Table 3-6.–Top ranked salmon and nonsalmon fish used by households, Point Lay, Alaska, 2012.

Rank[a]	Resource	Percentage of households using
1.	Smelt	59.5%
2.	Arctic grayling	50.0%
3.	Chum salmon	31.0%
3.	Sheefish	31.0%
5.	Coho salmon	26.2%
5.	Pink salmon	26.2%
7.	Chinook salmon	21.4%
8.	Dolly Varden	19.0%
9.	Sockeye salmon	16.7%
10.	Pacific herring	9.5%
10.	Broad whitefish	9.5%
10.	Arctic cisco	9.5%

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

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

Table 3-7.–Top ranked salmon and nonsalmon fish used by households, Point Lay, Alaska, 2013.

Rank[a]	Resource	Percentage of households using
1.	Smelt	87.7%
2.	Arctic grayling	48.1%
3.	Broad whitefish	44.4%
4.	Bering cisco	22.2%
5.	Chinook salmon	19.8%
6.	Arctic cisco	17.3%
7.	Least cisco	16.0%
7.	Humpback whitefish	16.0%
9.	Pink salmon	14.8%
10.	Sockeye salmon	12.3%

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

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

Table 3-8.–Top ranked salmon and nonsalmon fish used by households, Point Lay, Alaska, 2014.

Rank[a]	Resource	Percentage of households using
1.	Smelt	65.0%
2.	Arctic grayling	52.5%
3.	Pink salmon	35.0%
4.	Sheefish	32.5%
5.	Chinook salmon	25.0%
5.	Lake trout	25.0%
7.	Chum salmon	17.5%
7.	Broad whitefish	17.5%
9.	Dolly Varden	12.5%
10.	Coho salmon	10.0%

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.

Table 3-9.–Estimated salmon harvest by season and gear type, Point Lay, Alaska, 2013.

	June			July			August			September			Unknown			Total			
Resource	Gillnet	Rod and reel	Other	Gillnet	Rod and reel	Other	Gillnet	Rod and reel	Other	Gillnet	Rod and reel	Other	Gillnet	Rod and reel	Other	Gillnet	Rod and reel	Other	Any gear
Salmon	**0.00**	**0.00**	**0.00**	**199.62**	**39.62**	**0.00**	**35.05**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**234.7**	**39.6**	**0.0**	**274.3**
Chum salmon	0.00	0.00	0.00	117.33	4.57	0.00	35.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	152.4	4.6	0.0	157.0
Coho salmon	0.00	0.00	0.00	3.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.0	0.0	0.0	3.0
Chinook salmon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
Pink salmon	0.00	0.00	0.00	79.24	4.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	79.2	4.6	0.0	83.8
Sockeye salmon	0.00	0.00	0.00	0.00	30.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	30.5	0.0	30.5

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

Table 3-10.–Estimated salmon harvest by season and gear type, Point Lay, Alaska, 2014.

	June			July			August			September			Unknown			Total			
Resource	Gillnet	Rod and reel	Other	Gillnet	Rod and reel	Other	Gillnet	Rod and reel	Other	Gillnet	Rod and reel	Other	Gillnet	Rod and reel	Other	Gillnet	Rod and reel	Other	Any gear
Salmon	**157.50**	**22.05**	**0.00**	**995.40**	**4.73**	**15.75**	**426.83**	**0.00**	**3.15**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1579.7**	**26.8**	**18.9**	**1625.4**
Chum salmon	0.00	0.00	0.00	118.13	0.00	0.00	140.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	258.3	0.0	0.0	258.3
Coho salmon	0.00	0.00	0.00	47.25	0.00	0.00	94.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	141.8	0.0	0.0	141.8
Chinook salmon	0.00	0.00	0.00	6.30	0.00	0.00	22.05	0.00	3.15	0.00	0.00	0.00	0.00	0.00	0.00	28.4	0.0	3.2	31.5
Pink salmon	157.50	0.00	0.00	823.73	0.00	0.00	170.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1151.3	0.0	0.0	1151.3
Sockeye salmon	0.00	22.05	0.00	0.00	4.73	15.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	26.8	15.8	42.5
Unknown salmon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0

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

Table 3-11.–Estimated nonsalmon harvest by season and gear type, Point Lay, Alaska, 2013.

	Spring				Summer				Fall				Winter				Total				
Resource	Gillnet	Rod and reel	Jig	Other	Gillnet	Rod and reel	Jig	Other	Gillnet	Rod and reel	Jig	Other	Gillnet	Rod and reel	Jig	Other	Gillnet	Rod and reel	Jig	Other	Any gear
Nonsalmon fish	**0.46**	**96.91**	**6.70**	**0.00**	**59.43**	**96.91**	**0.00**	**0.00**	**1,371.43**	**0.00**	**1,066.67**	**0.00**	**0.00**	**0.00**	**319.49**	**0.00**	**1,431.31**	**193.83**	**1,392.86**	**0.00**	**3018.0**
Pacific herring	0.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.46	0.00	0.00	0.00	0.5
Smelt	0.00	0.00	2.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	71.11	0.00	0.00	0.00	73.25	0.00	73.2
Arctic cod	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Saffron cod	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.62	0.00	0.00	0.00	7.62	0.00	7.6
Flounder	0.00	0.00	0.00	0.00	45.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.71	0.00	0.00	0.00	45.7
Pacific halibut	0.00	96.91	0.00	0.00	0.00	96.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	193.83	0.00	0.00	193.8
Burbot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Arctic char	0.00	0.00	4.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.57	0.00	4.6
Dolly Varden	0.00	0.00	0.00	0.00	6.10	0.00	0.00	0.00	0.00	0.00	9.14	0.00	0.00	0.00	0.00	0.00	6.10	0.00	9.14	0.00	15.2
Lake trout	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Arctic grayling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1,371.43	0.00	1,057.52	0.00	0.00	0.00	240.76	0.00	1,371.43	0.00	1,298.29	0.00	2669.7
Sheefish	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Broad whitefish	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Arctic cisco	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Bering cisco	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Least cisco	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Humpback whitefish	0.00	0.00	0.00	0.00	7.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.62	0.00	0.00	0.00	7.6
Round whitefish	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Unknown whitefishes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0

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

Table 3-12.–Estimated nonsalmon harvest by season and gear type, Point Lay, Alaska, 201.

	Spring				Summer				Fall				Winter				Total				
Resource	Gillnet	Rod and reel	Jig	Other	Gillnet	Rod and reel	Jig	Other	Gillnet	Rod and reel	Jig	Other	Gillnet	Rod and reel	Jig	Other	Gillnet	Rod and reel	Jig	Other	Any gear
Nonsalmon fish	**0.00**	**0.00**	**7.61**	**0.00**	**145.27**	**34.70**	**0.00**	**0.00**	**179.55**	**0.00**	**2,390.19**	**0.00**	**157.50**	**0.00**	**1,405.08**	**0.00**	**482.32**	**34.70**	**3,802.88**	**0.00**	**4319.9**
Pacific herring	0.00	0.00	0.00	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.00	0.00	0.00	0.2
Smelt	0.00	0.00	7.61	0.00	0.18	26.83	0.00	0.00	0.00	0.00	32.42	0.00	0.00	0.00	30.10	0.00	0.18	26.83	70.13	0.00	97.1
Arctic cod	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Saffron cod	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Unknown flounder	0.00	0.00	0.00	0.00	12.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.60	0.00	0.00	0.00	12.6
Pacific halibut	0.00	0.00	0.00	0.00	0.00	6.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.30	0.00	0.00	6.3
Burbot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Arctic char	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Dolly Varden	0.00	0.00	0.00	0.00	9.45	0.00	0.00	0.00	4.73	0.00	55.13	0.00	0.00	0.00	0.00	0.00	14.18	0.00	55.13	0.00	69.3
Lake trout	0.00	0.00	0.00	0.00	0.00	1.58	0.00	0.00	1.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.58	1.58	0.00	0.00	3.2
Arctic grayling	0.00	0.00	0.00	0.00	78.75	0.00	0.00	0.00	170.10	0.00	2,302.65	0.00	157.50	0.00	1,368.68	0.00	406.35	0.00	3,671.33	0.00	4077.7
Sheefish	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Unknown trout	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.15	0.00	0.00	0.00	3.2
Broad whitefish	0.00	0.00	0.00	0.00	18.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.30	0.00	18.90	0.00	6.30	0.00	25.2
Arctic cisco	0.00	0.00	0.00	0.00	9.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.45	0.00	0.00	0.00	9.5
Bering cisco	0.00	0.00	0.00	0.00	11.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.03	0.00	0.00	0.00	11.0
Least cisco	0.00	0.00	0.00	0.00	1.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.58	0.00	0.00	0.00	1.6
Humpback whitefish	0.00	0.00	0.00	0.00	3.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.15	0.00	0.00	0.00	3.2
Round whitefish	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Unknown whitefishes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0

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

Table 3-13.–Changes in household uses of resources compared to recent years, Point Lay, Alaska, 2012.

			Households reporting use								Households	
	Sampled	Valid	Total households		Less		Same		More		not using	
Resource category	households	responses[a]	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any fish	42	135	96	71.1%	37	27.4%	36	26.7%	23	17.0%	39	28.9%
Salmon	42	42	31	73.8%	16	38.1%	11	26.2%	4	9.5%	12	28.6%
Nonsalmon fish	42	42	32	76.2%	11	26.2%	16	38.1%	5	11.9%	10	23.8%

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

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

Table 3-14.–Changes in household uses of resources compared to recent years, Point Lay, Alaska, 2013.

			Households reporting use								Households not using	
	Sampled	Valid	Total households		Less		Same		More			
Resource category	households	responses[a]	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any fish	42	75	57	76.0%	27	36.0%	22	29.3%	8	10.7%	18	24.0%
Salmon	42	40	31	77.5%	17	42.5%	12	30.0%	2	5.0%	9	22.5%
Nonsalmon fish	42	39	29	74.4%	12	30.8%	12	30.8%	5	12.8%	10	25.6%
Smelt	42	38	25	65.8%	15	39.5%	7	18.4%	3	7.9%	13	34.2%
Whitefish	42	39	22	56.4%	9	23.1%	12	30.8%	1	2.6%	17	43.6%

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

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

Table 3-15.–Changes in household uses of resources compared to recent years, Point Lay, Alaska, 2014.

			Households reporting use								Households not using	
	Sampled	Valid	Total households		Less		Same		More			
Resource category	households	responses[a]	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any fish	40	79	54	68.4%	24	30.4%	23	29.1%	7	8.9%	25	31.6%
Salmon	40	37	27	73.0%	9	24.3%	16	43.2%	2	5.4%	10	27.0%
Smelt	40	39	26	66.7%	15	38.5%	8	20.5%	3	7.7%	13	33.3%
Whitefish	40	38	18	47.4%	6	15.8%	10	26.3%	2	5.3%	20	52.6%
Other nonsalmon fish	40	38	25	65.8%	11	28.9%	9	23.7%	5	13.2%	13	34.2%

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

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

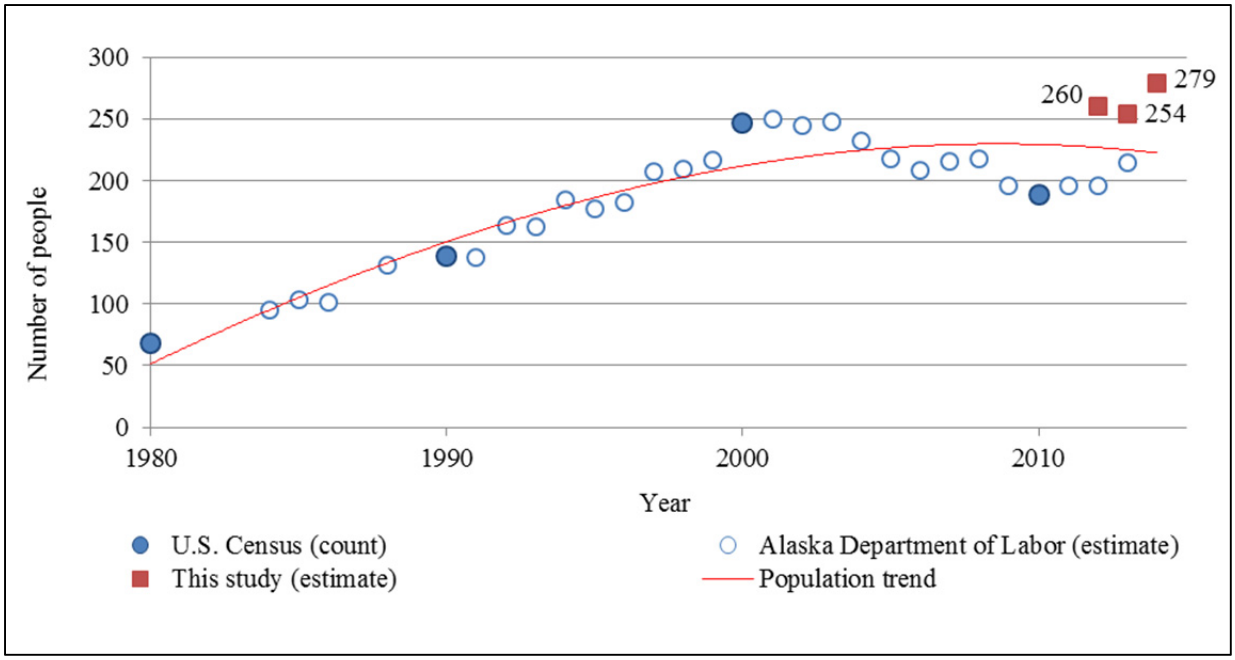


Figure 3-1.–Historical population estimates, Point Lay, Alaska, 1980–2014.

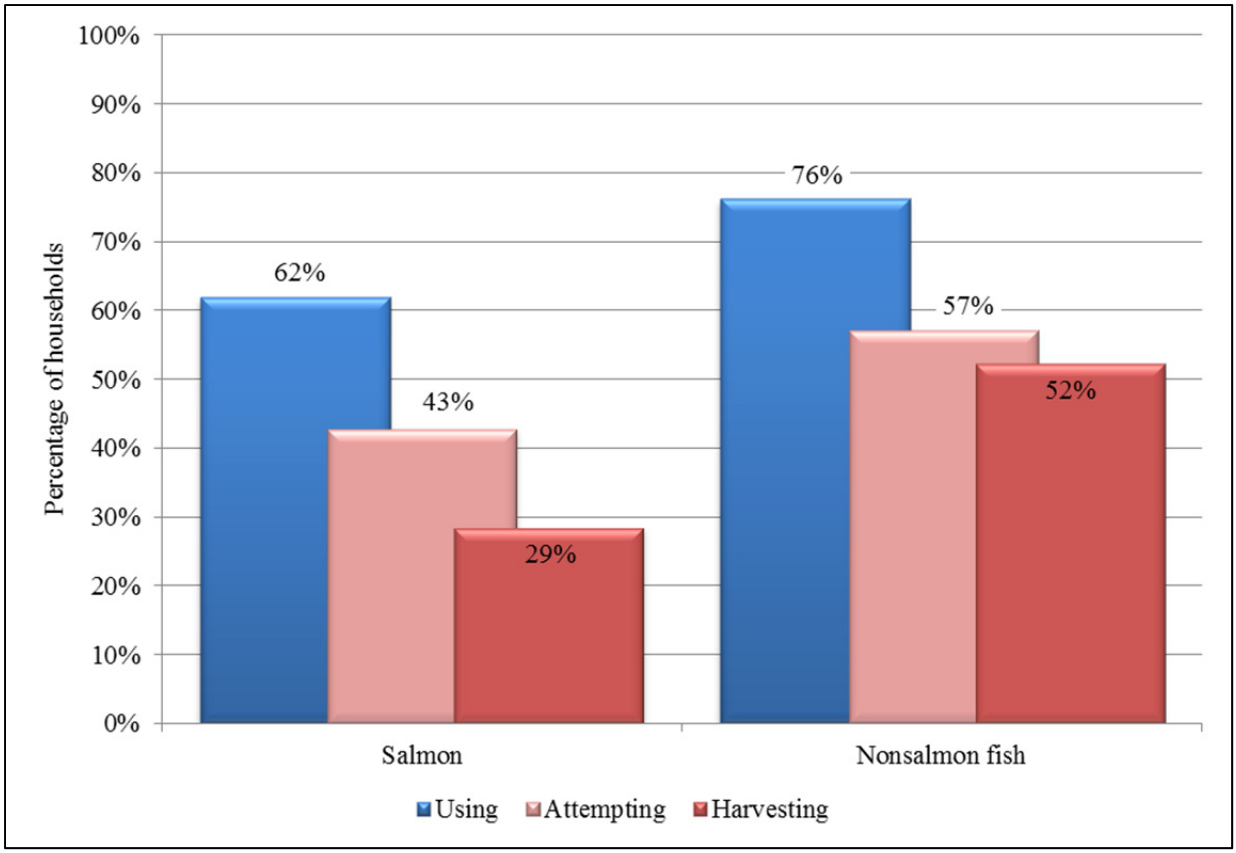


Figure 3-2.–Percentage of households using, attempting to harvest, or harvesting salmon and nonsalmon fish, Point Lay, Alaska, 2012.

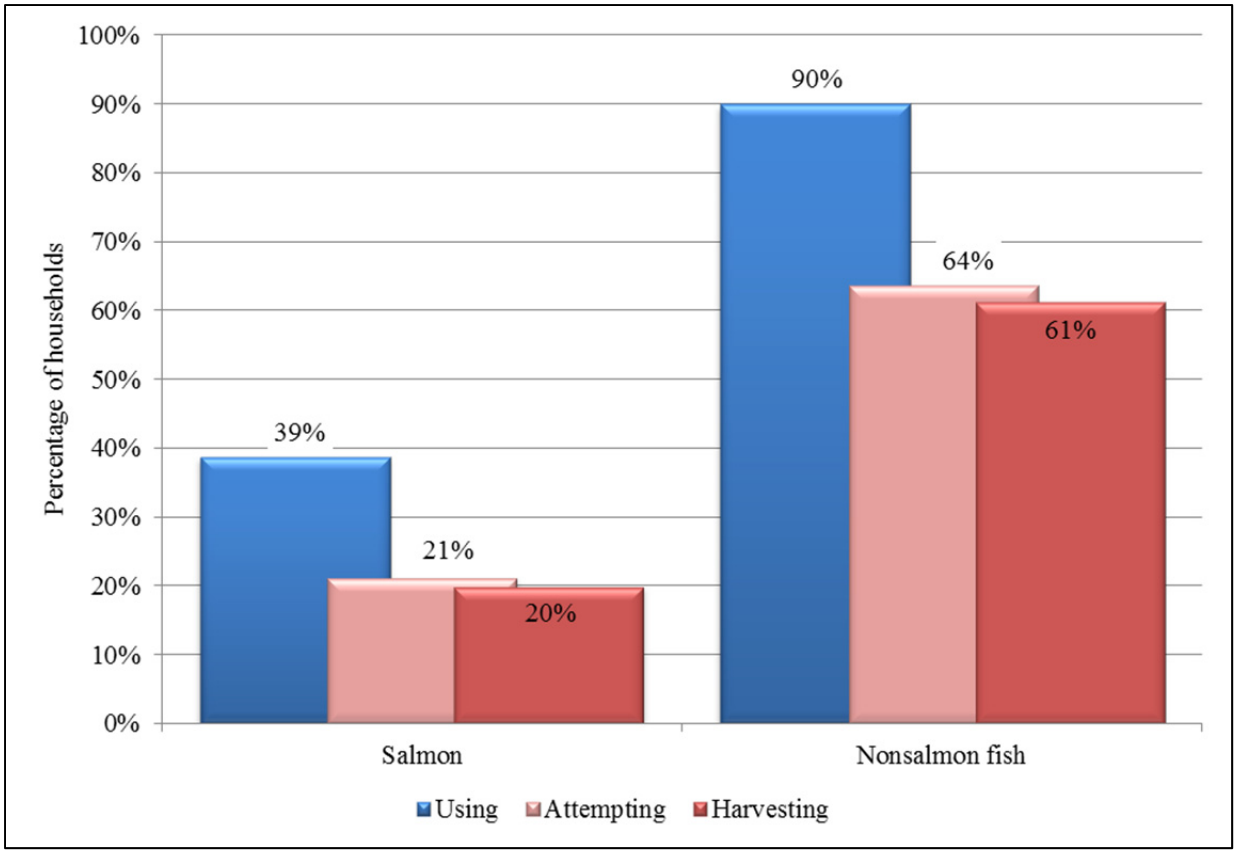


Figure 3-3.–Percentage of households using, attempting to harvest, or harvesting salmon and nonsalmon fish, Point Lay, Alaska, 2013.

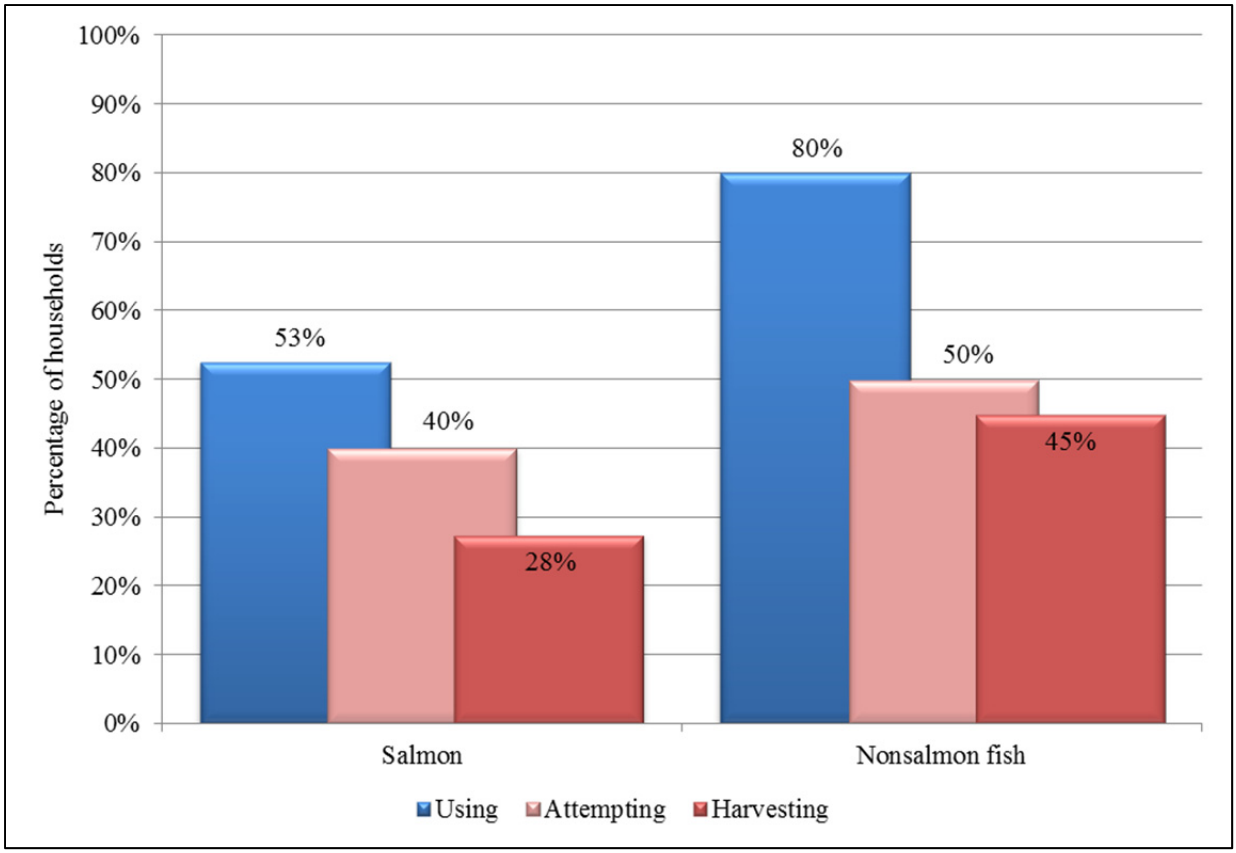
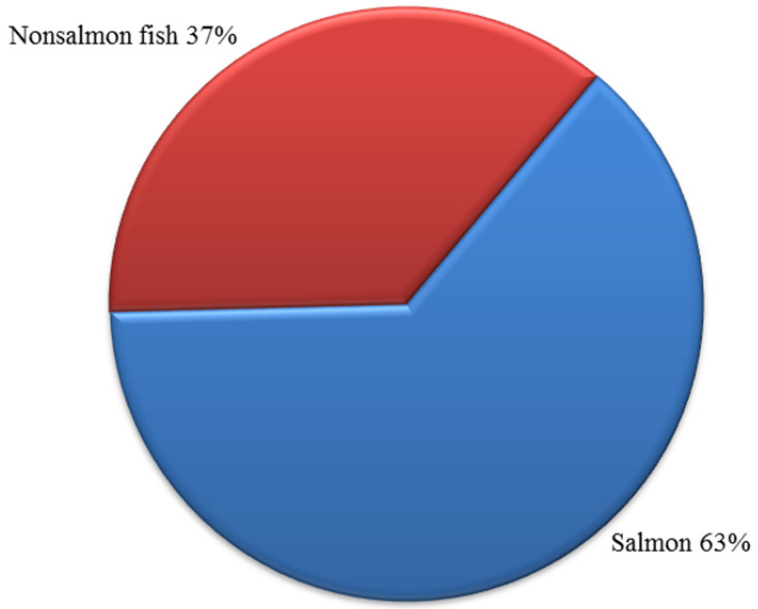


Figure 3-4.–Percentage of households using, attempting to harvest, or harvesting salmon and nonsalmon fish, Point Lay, Alaska, 2014.



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

Figure 3-5.–Composition of harvest by resource category in pounds usable weight, Point Lay, Alaska, 2012.

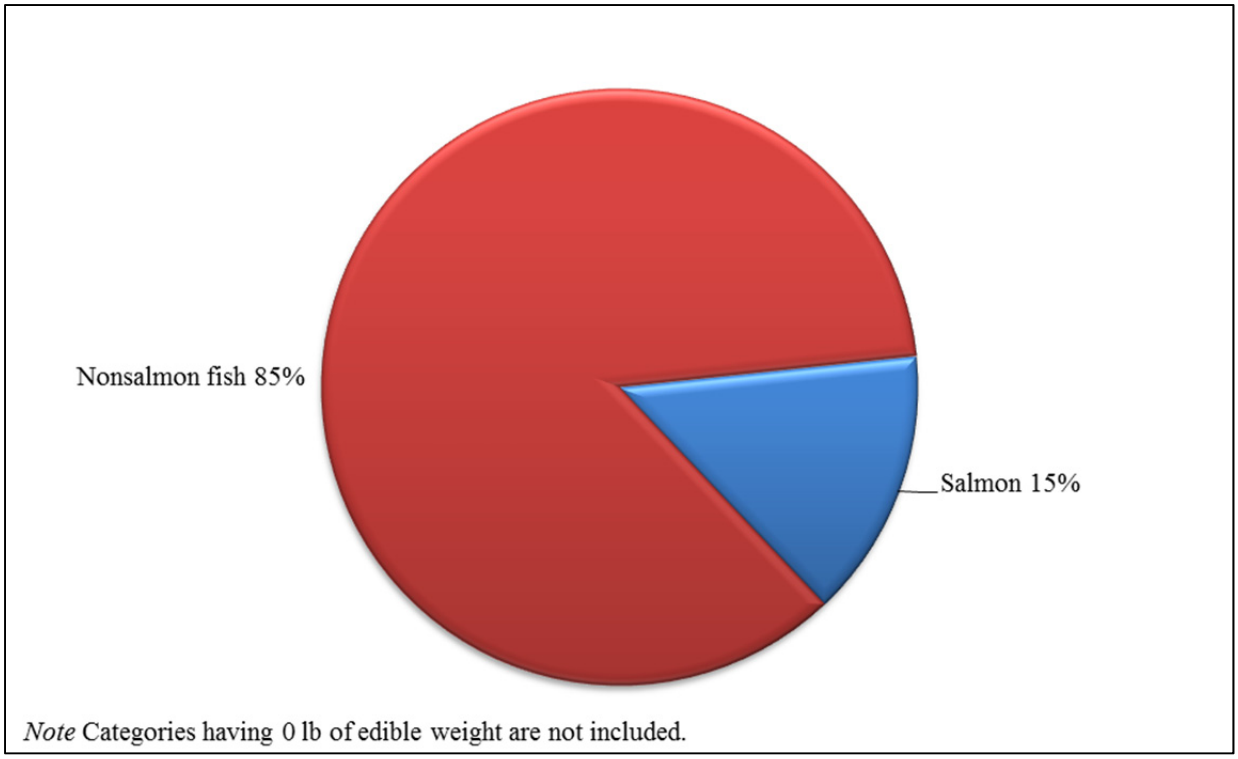
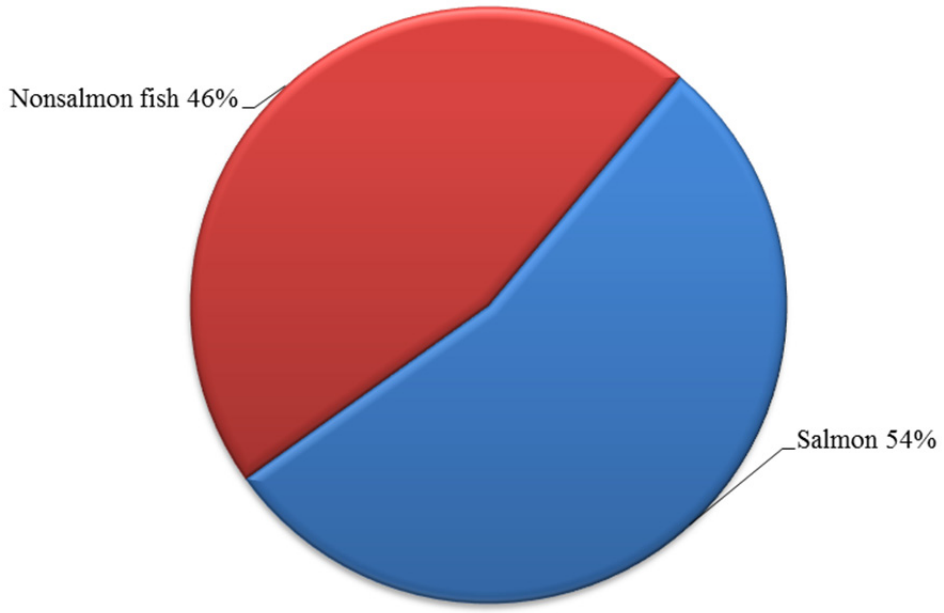


Figure 3-6.–Composition of harvest by resource category in pounds usable weight, Point Lay, Alaska, 2013.



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

Figure 3-7.–Composition of harvest by resource category in pounds usable weight, Point Lay, Alaska, 2014.

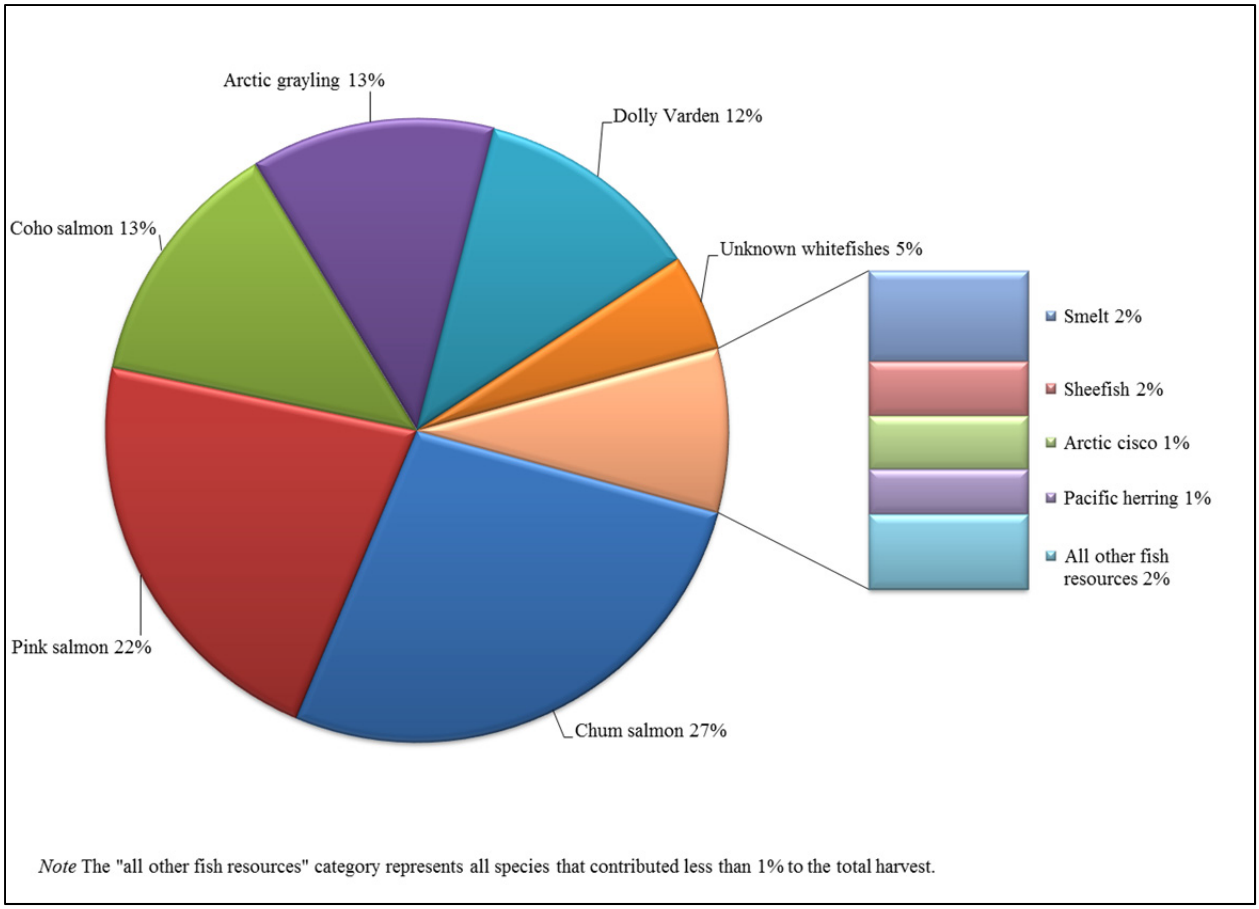
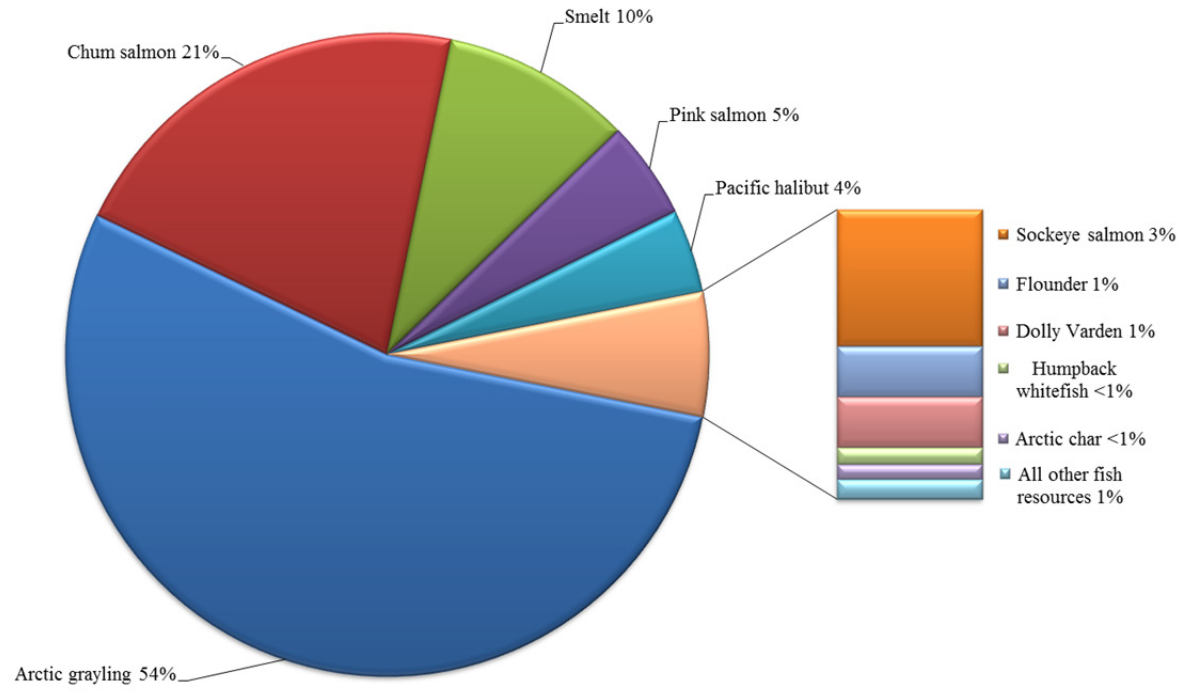
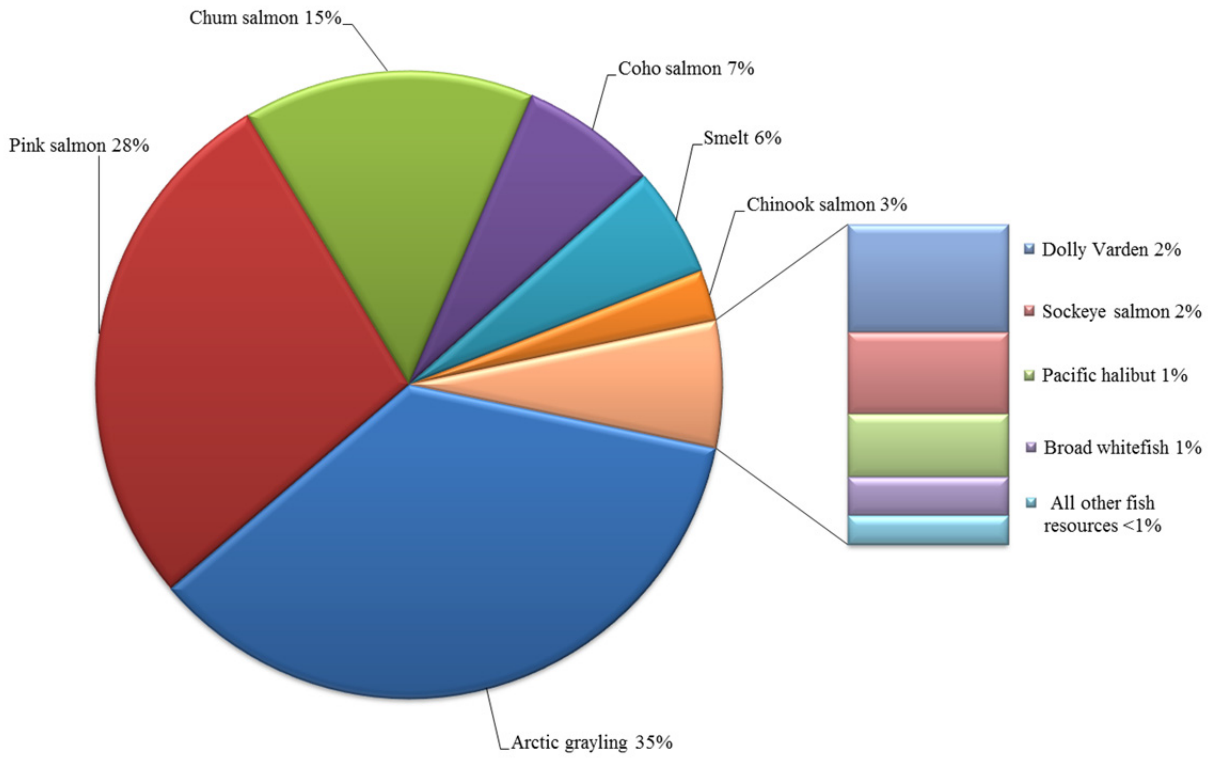


Figure 3-8.–Top salmon and nonsalmon fish harvested in pounds usable weight per capita, Point Lay, Alaska, 2012.



Note The "all other fish resources" category represents all species that contributed less than 1% to the total harvest not included in the top ten harvested.

Figure 3-9.–Top salmon and nonsalmon fish harvested in pounds usable weight per capita, Point Lay, Alaska, 2013.



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

Figure 3-10.–Top salmon and nonsalmon fish harvested in pounds usable weight per capita, Point Lay, Alaska, 2014.

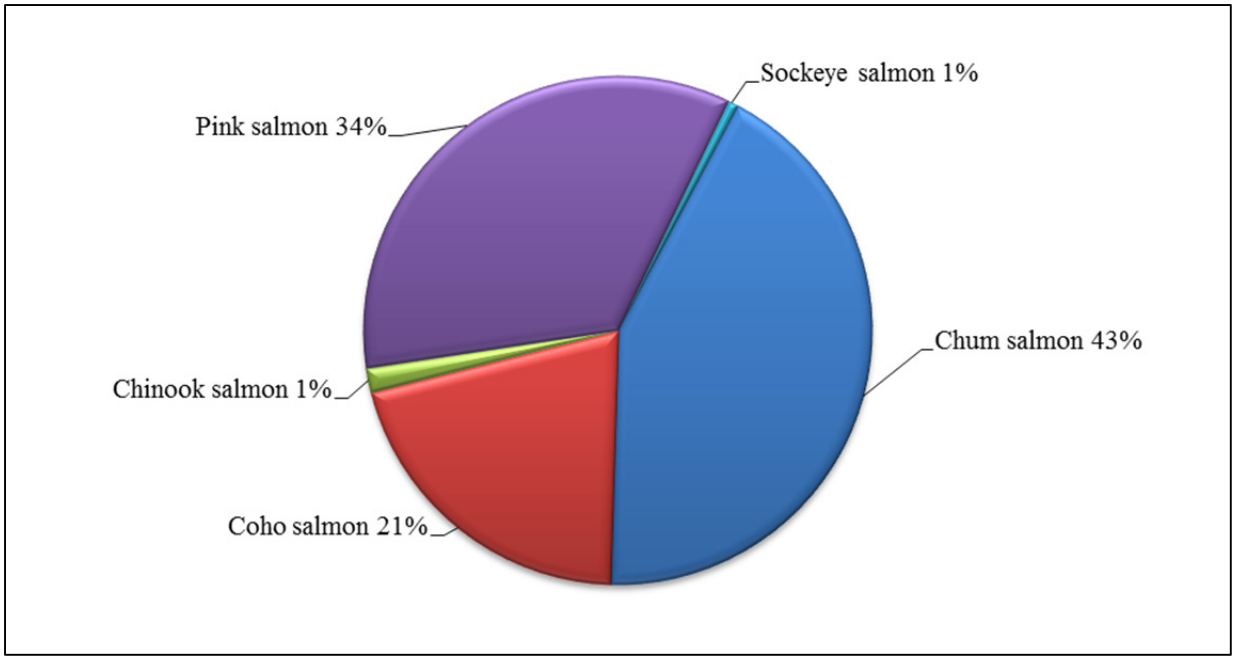


Figure 3-11.–Composition of salmon harvest in pounds usable weight, Point Lay, Alaska, 2012.

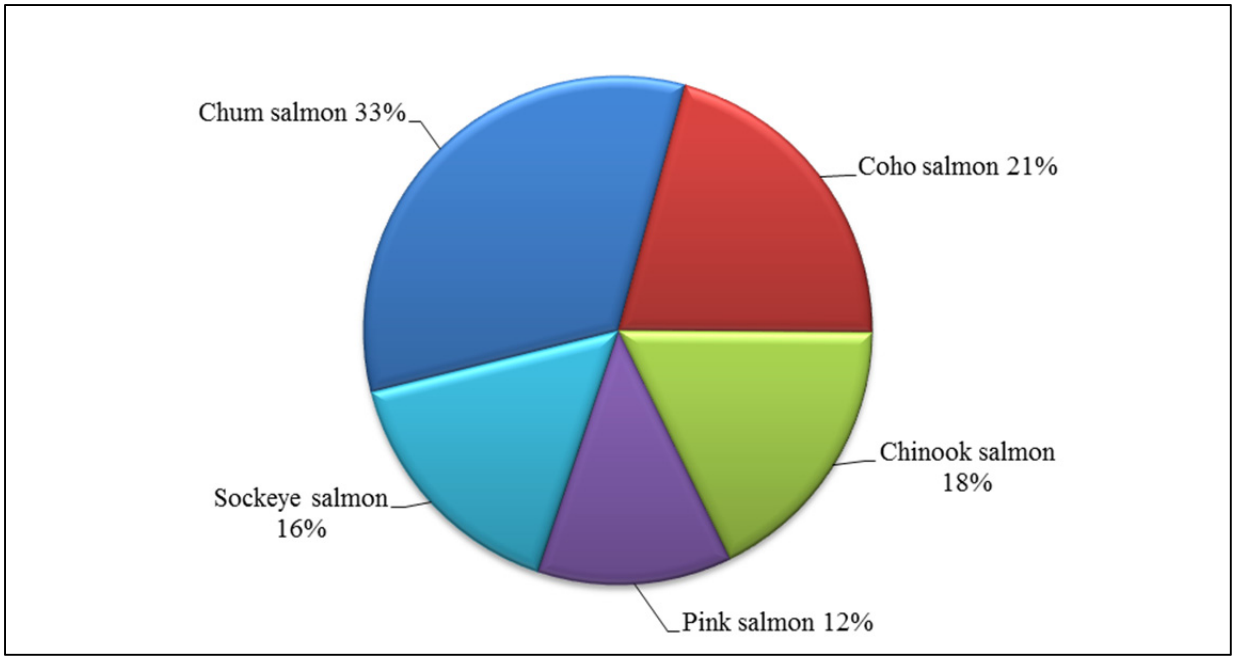


Figure 3-12.–Composition of salmon harvest in pounds usable weight, Point Lay, Alaska, 2013.

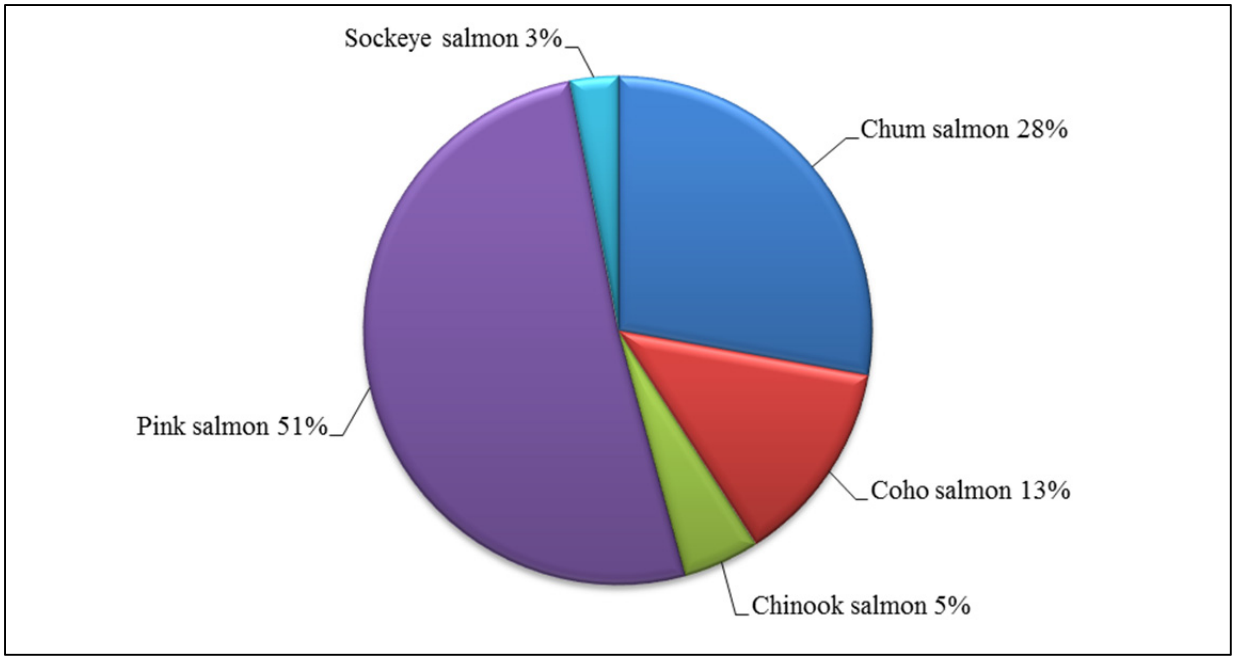


Figure 3-13.–Composition of salmon harvest in pounds usable weight, Point Lay, Alaska, 2014.

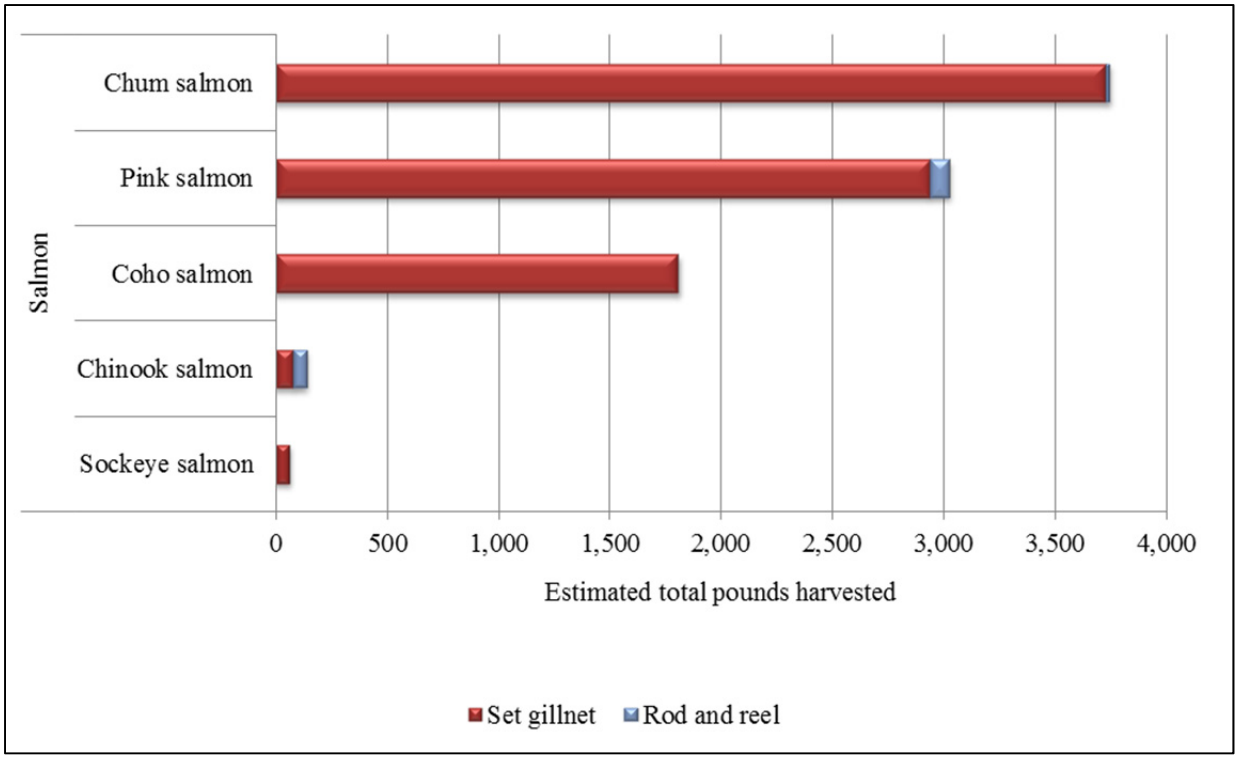


Figure 3-14.–Salmon harvests by gear type, Point Lay, Alaska, 2012.

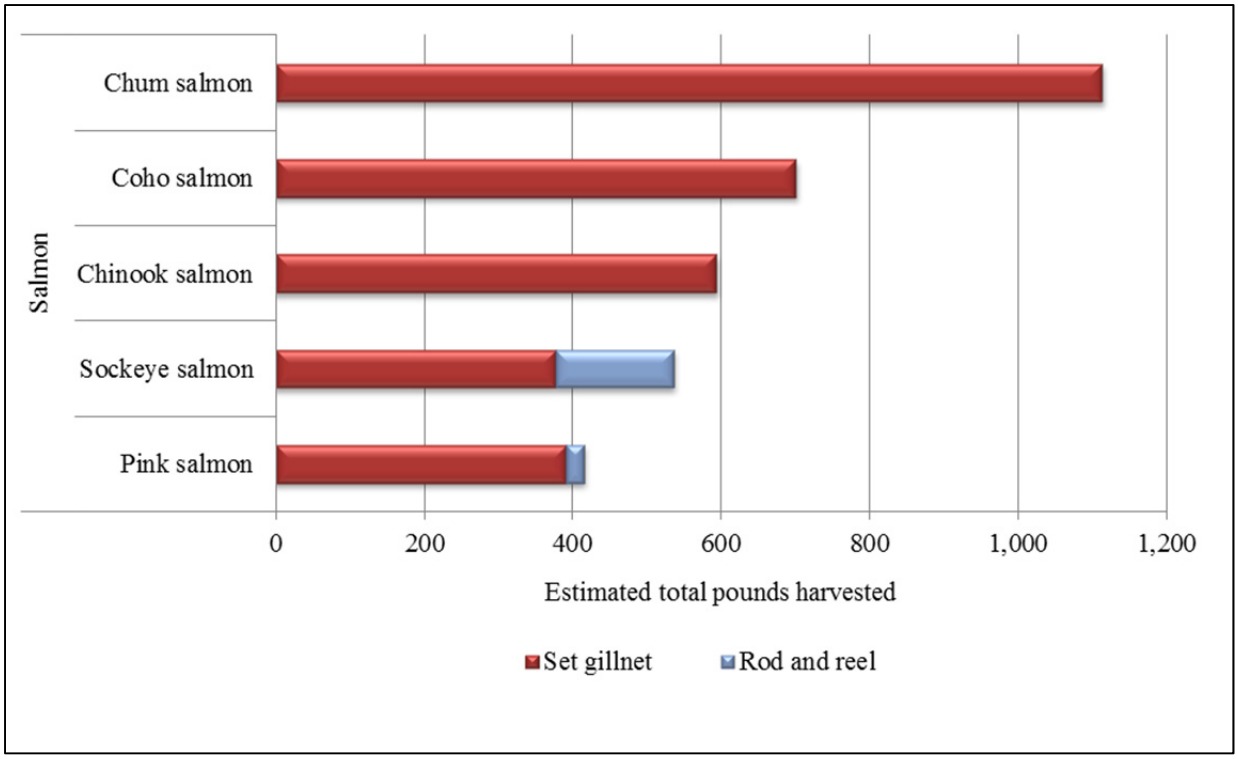


Figure 3-15.–Salmon harvests by gear type, Point Lay, Alaska, 2013.

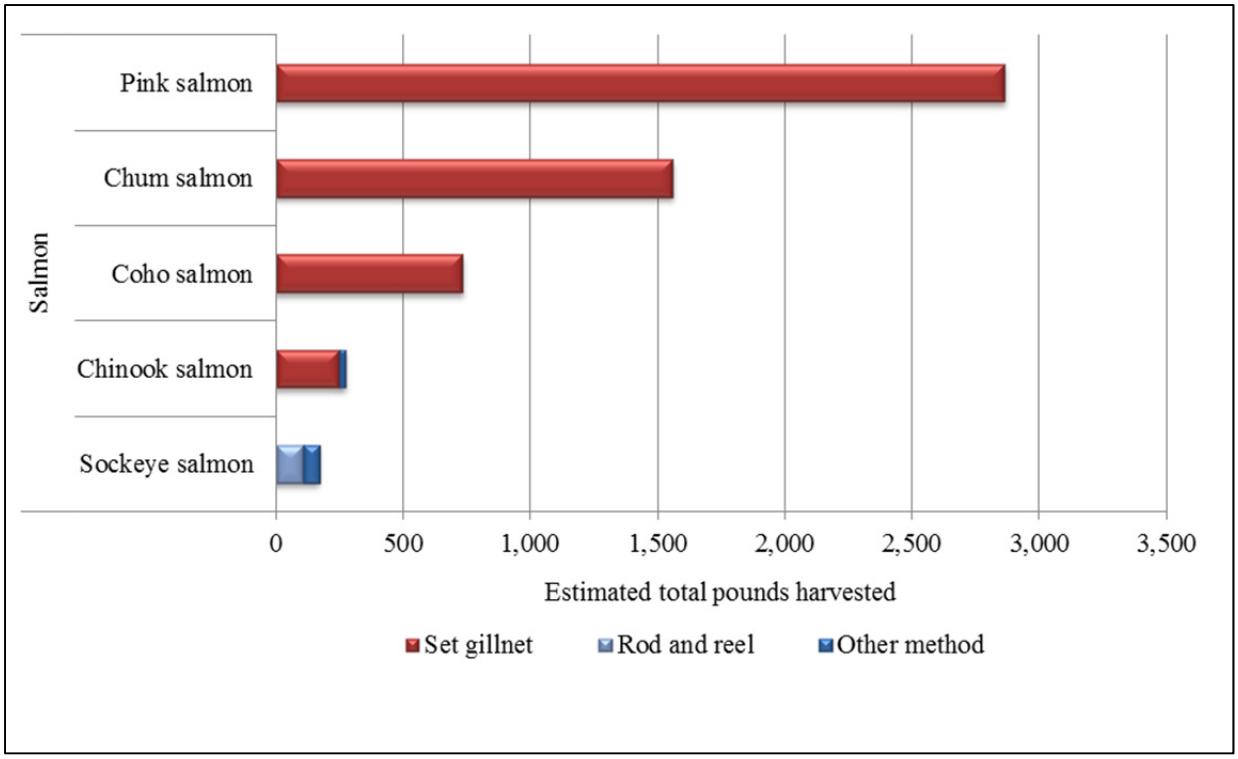


Figure 3-16.–Salmon harvests by gear type, Point Lay, Alaska, 2014.

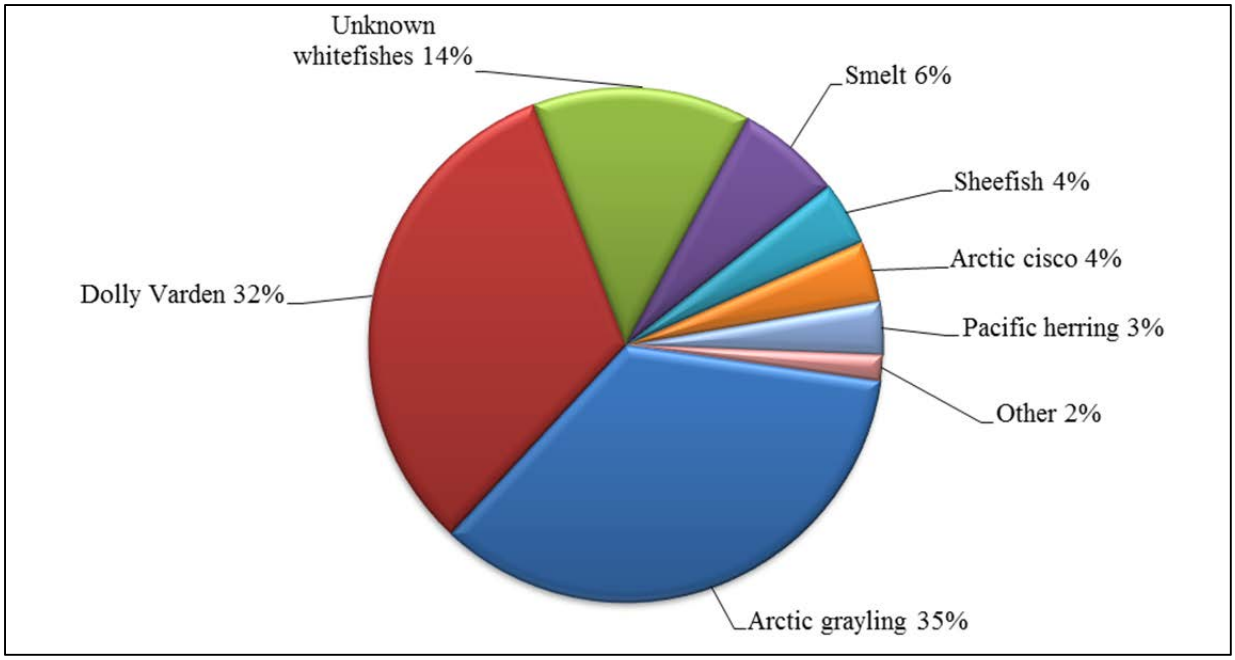


Figure 3-17.–Composition of nonsalmon fish harvest in pounds usable weight, Point Lay, Alaska, 2012.

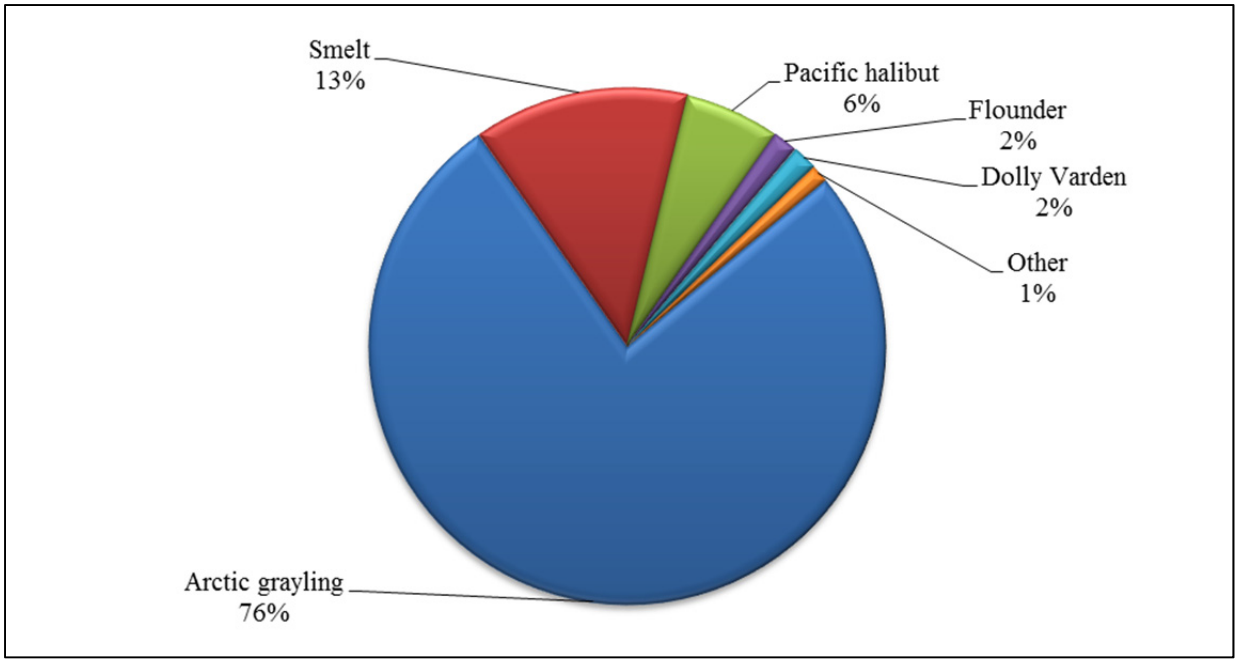


Figure 3-18.–Composition of nonsalmon fish harvest in pounds usable weight, Point Lay, Alaska, 2013.

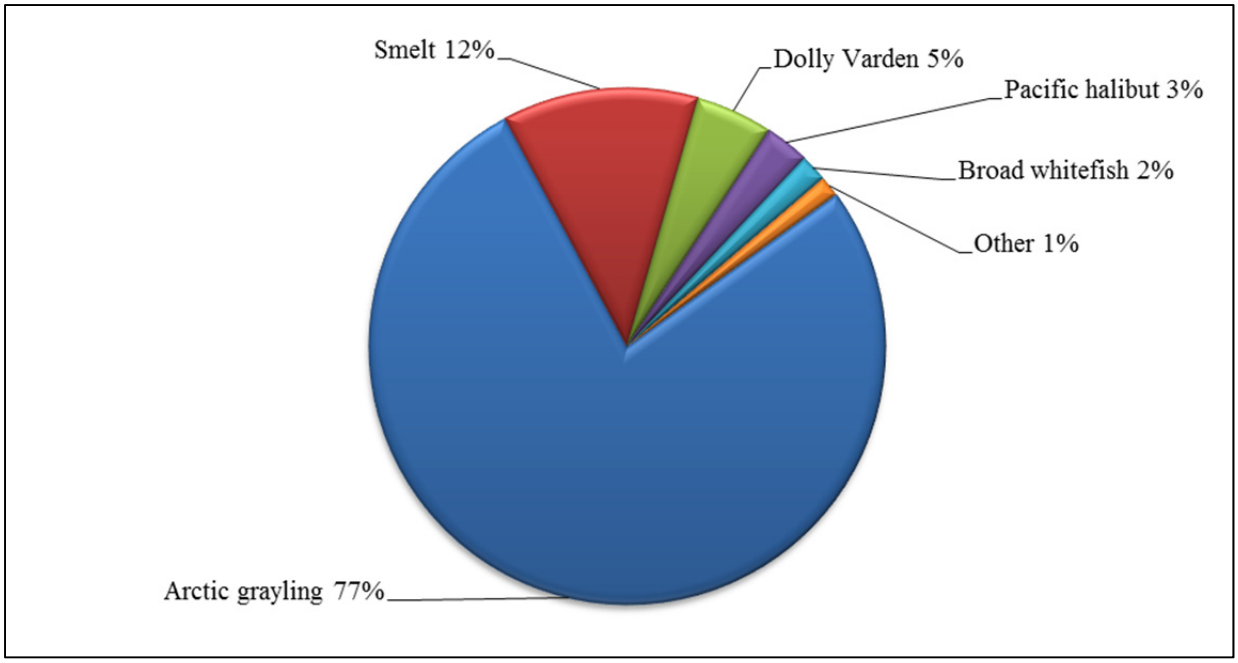


Figure 3-19.–Composition of nonsalmon fish harvest in pounds usable weight, Point Lay, Alaska, 2014.

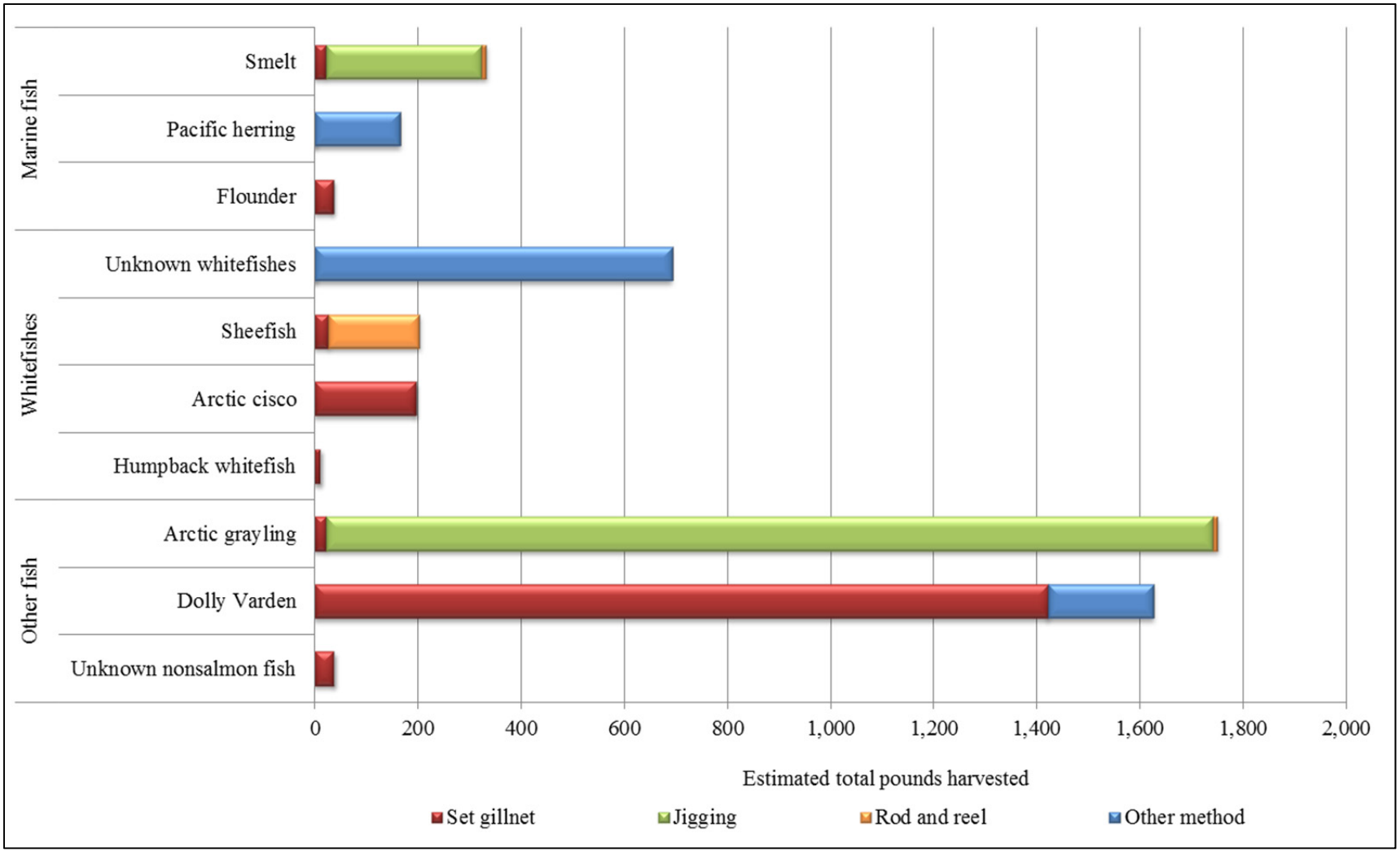


Figure 3-20.–Nonsalmon fish harvests by gear type, Point Lay, Alaska, 2012

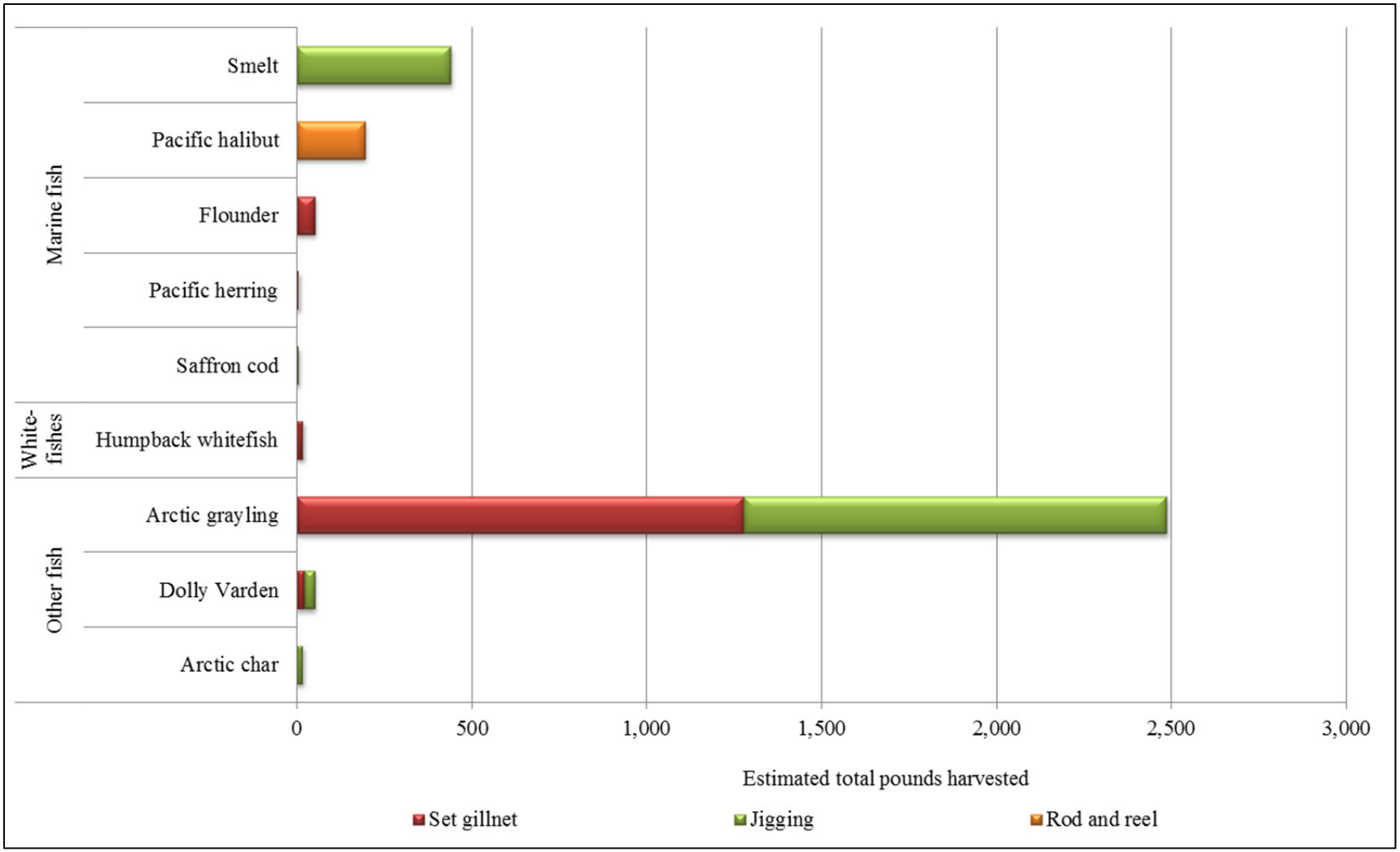


Figure 3-21.–Nonsalmon fish harvests by gear type, Point Lay, Alaska, 2013.

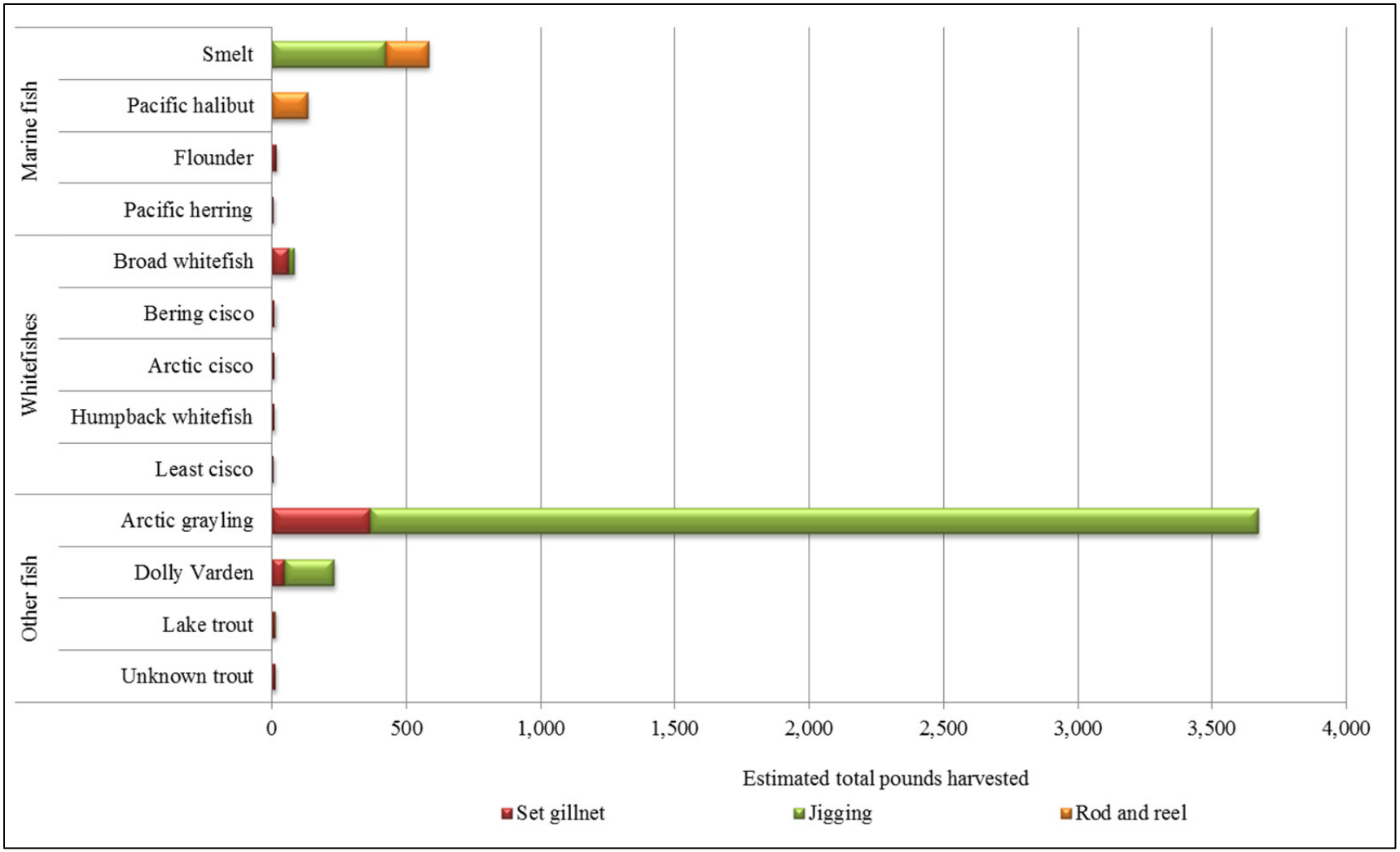


Figure 3-22.–Nonsalmon fish harvests by gear type, Point Lay, Alaska, 2014.

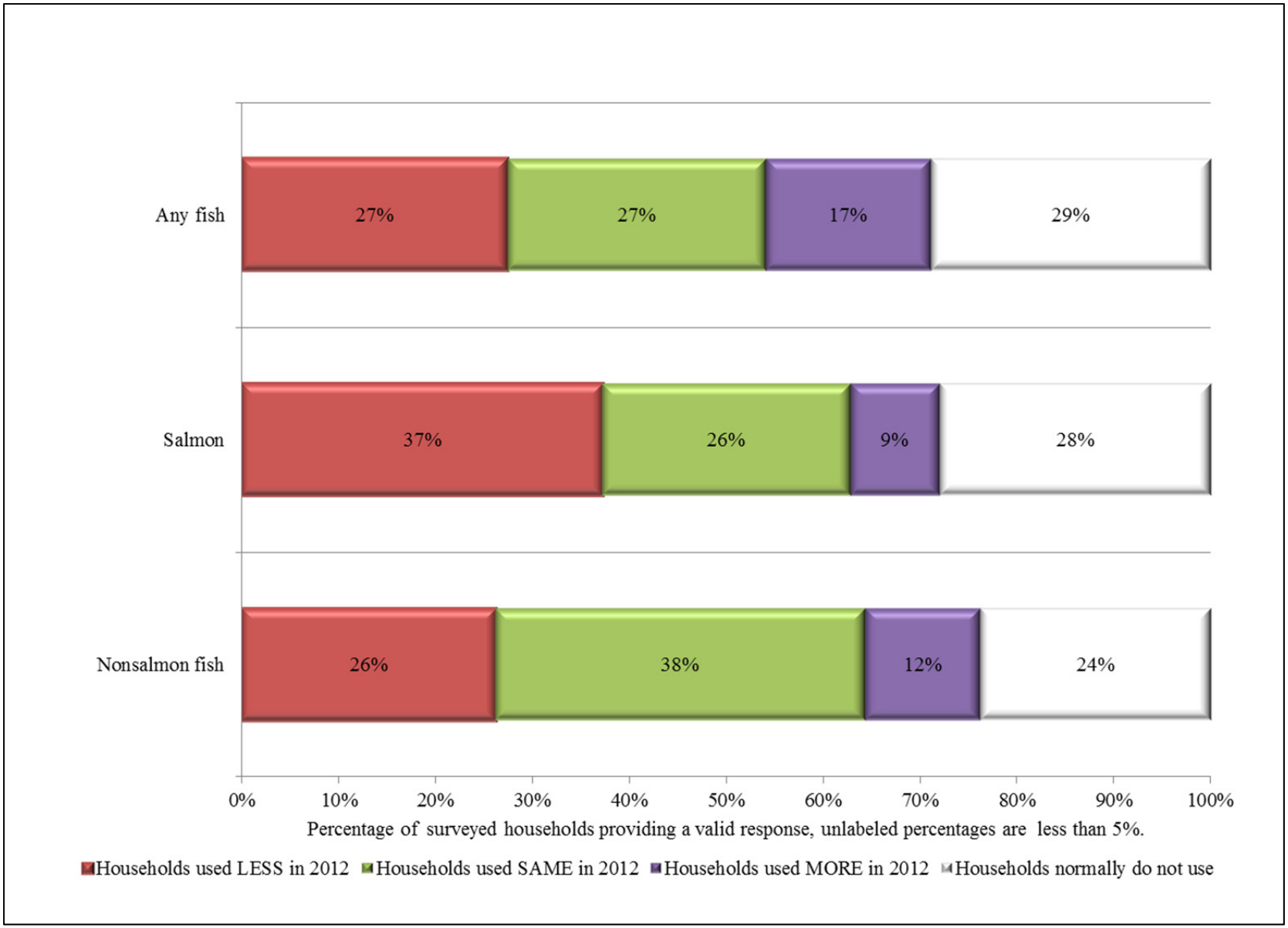


Figure 3-23.–Changes in household uses of resources compared to recent years, Point Lay, Alaska, 2012.

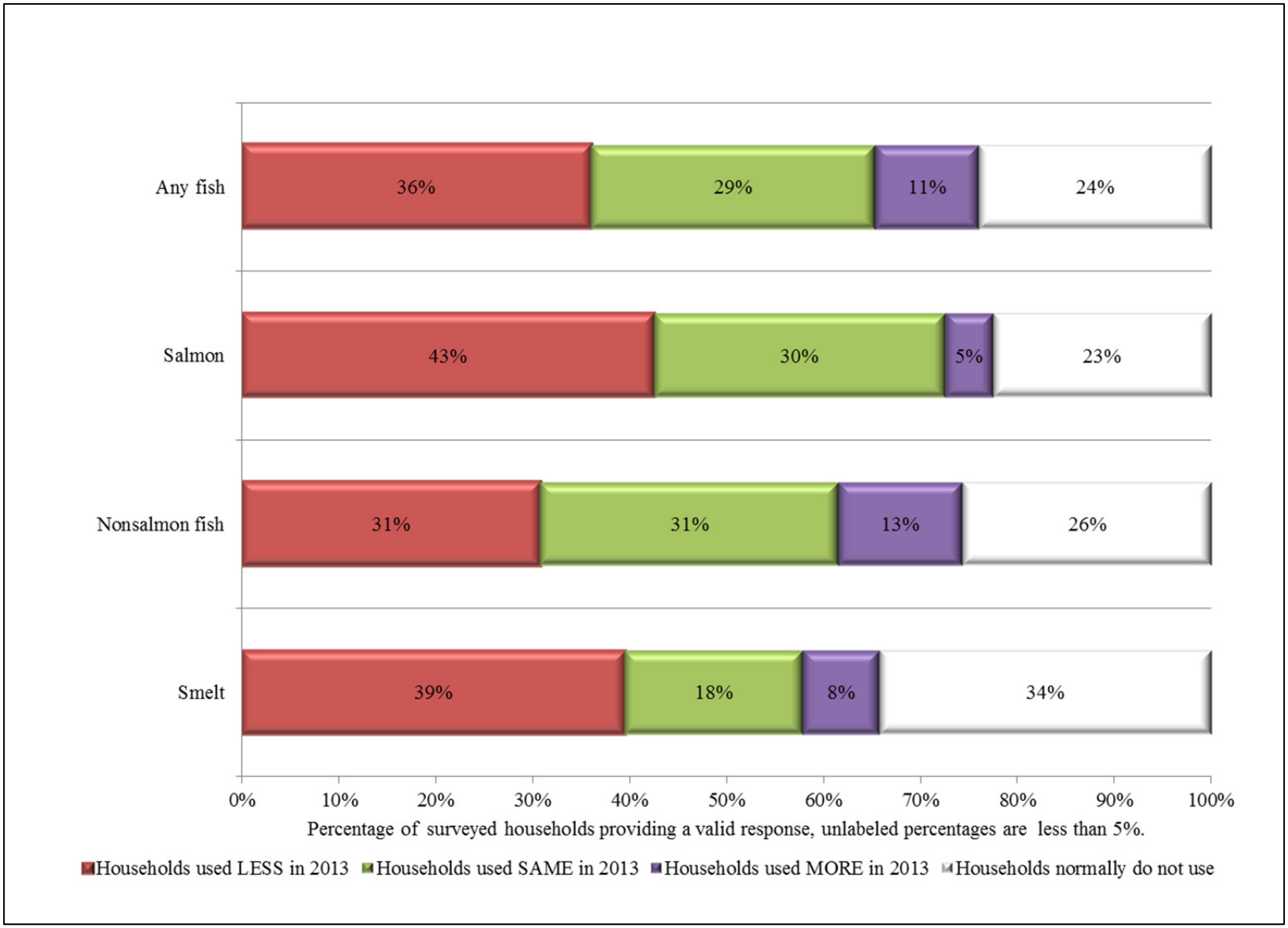


Figure 3-24.–Changes in household uses of resources compared to recent years, Point Lay, Alaska, 2013.

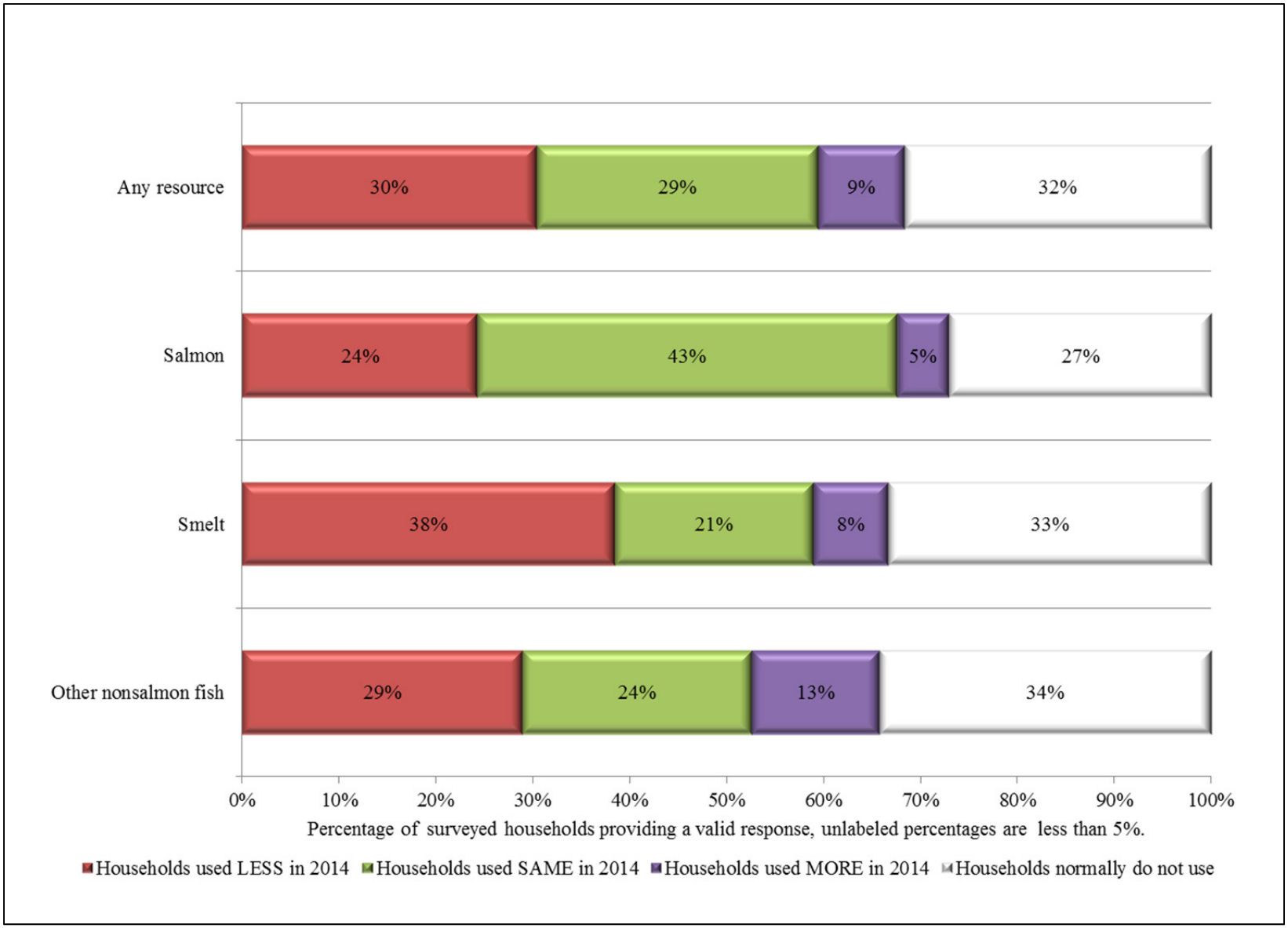


Figure 3-25.–Changes in household uses of resources compared to recent years, Point Lay, Alaska, 2014.

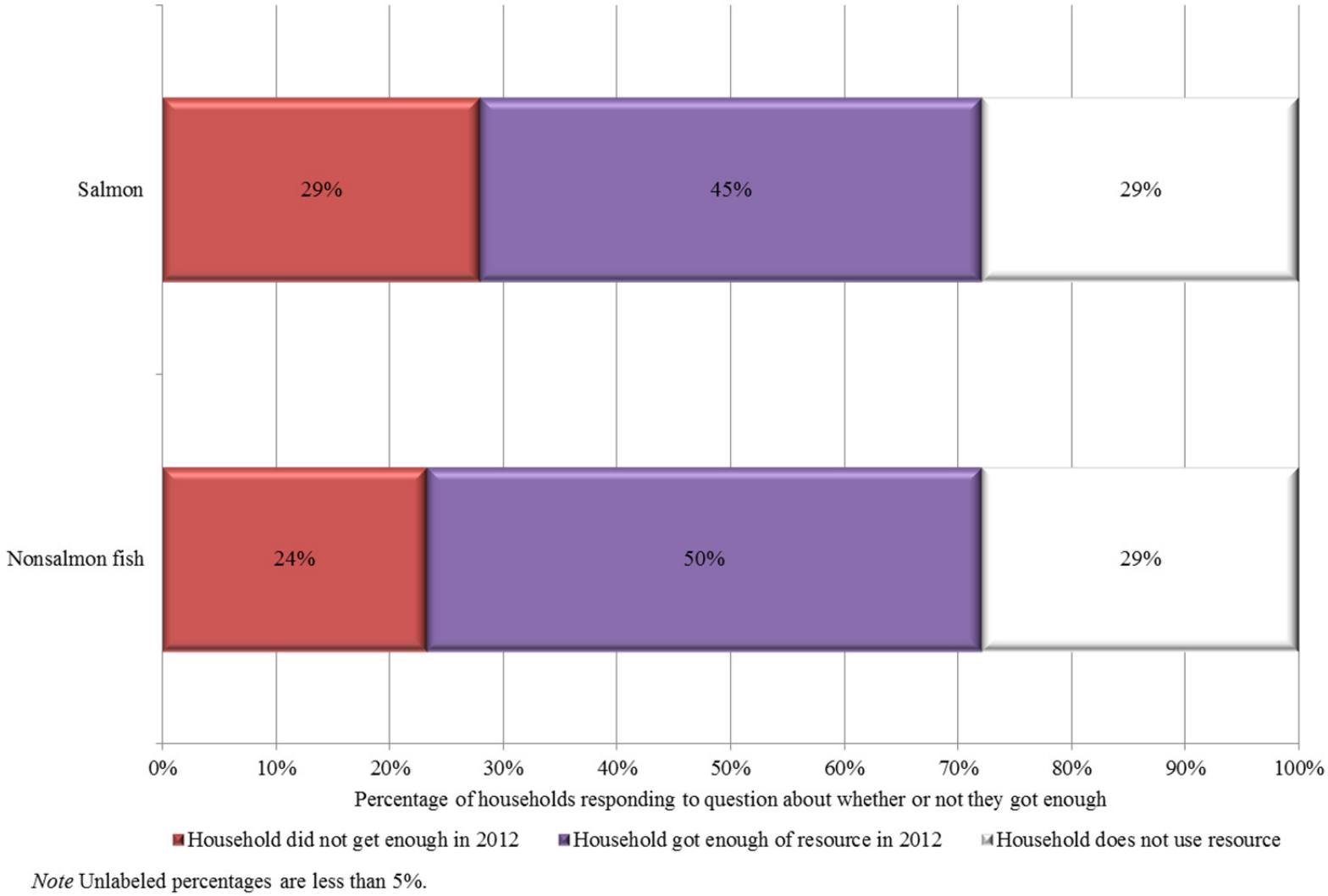


Figure 3-26.–Percentage of households reporting whether they had enough resources, Point Lay, Alaska, 2012.

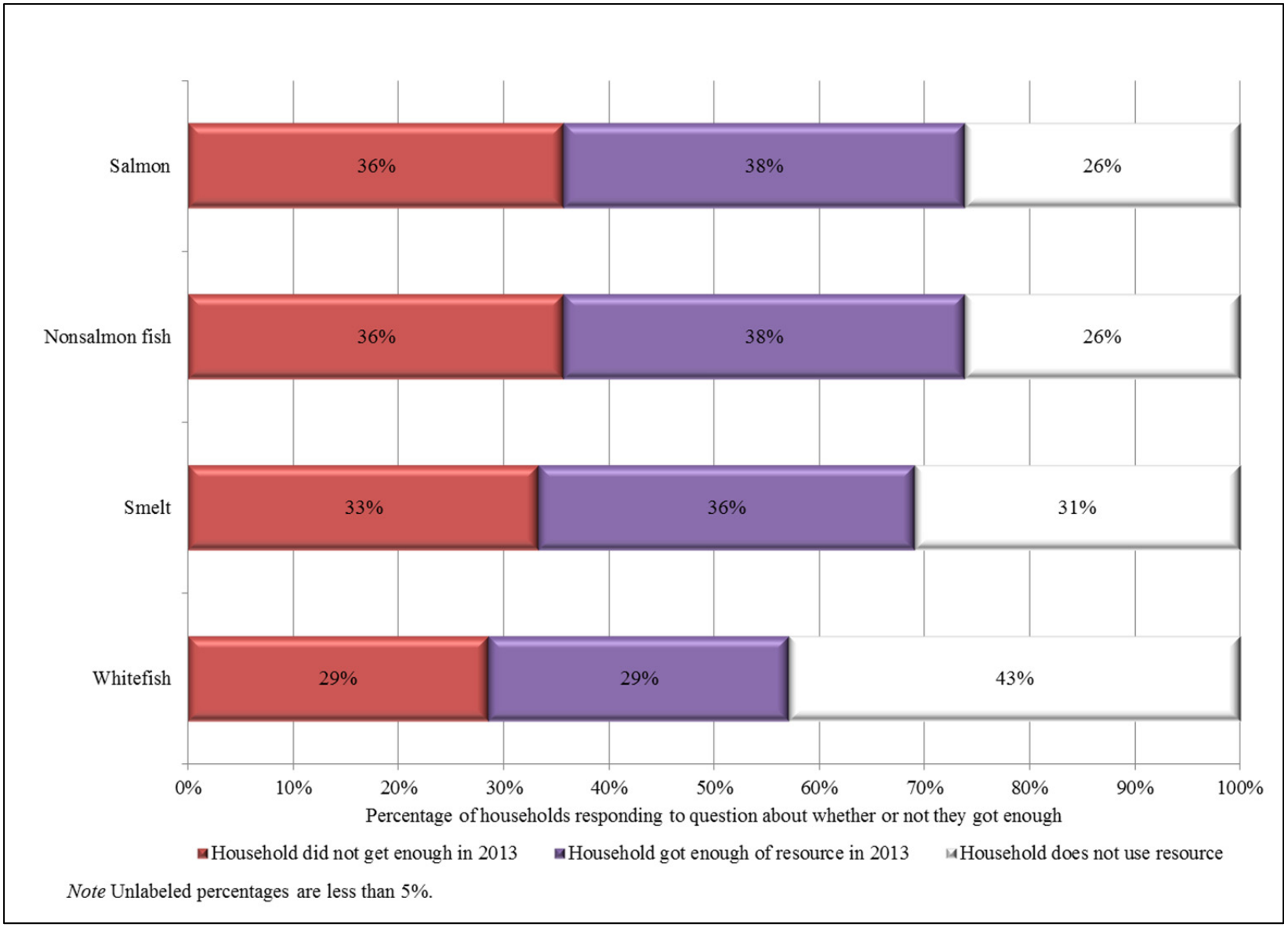


Figure 3-27.–Percentage of households reporting whether they had enough resources, Point Lay, Alaska, 2013.

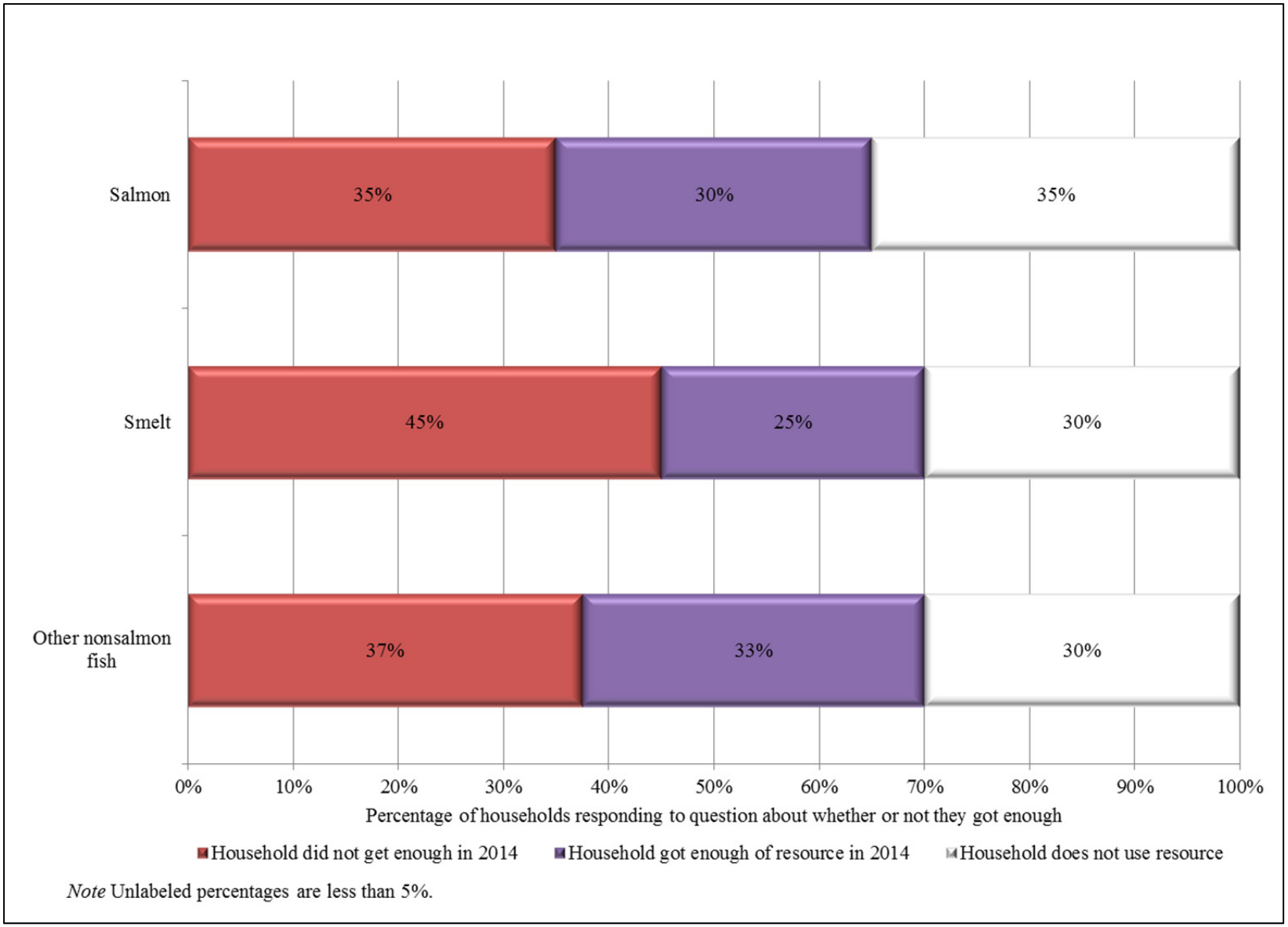


Figure 3-28.–Percentage of households reporting whether they had enough resources, Point Lay, Alaska, 2014.

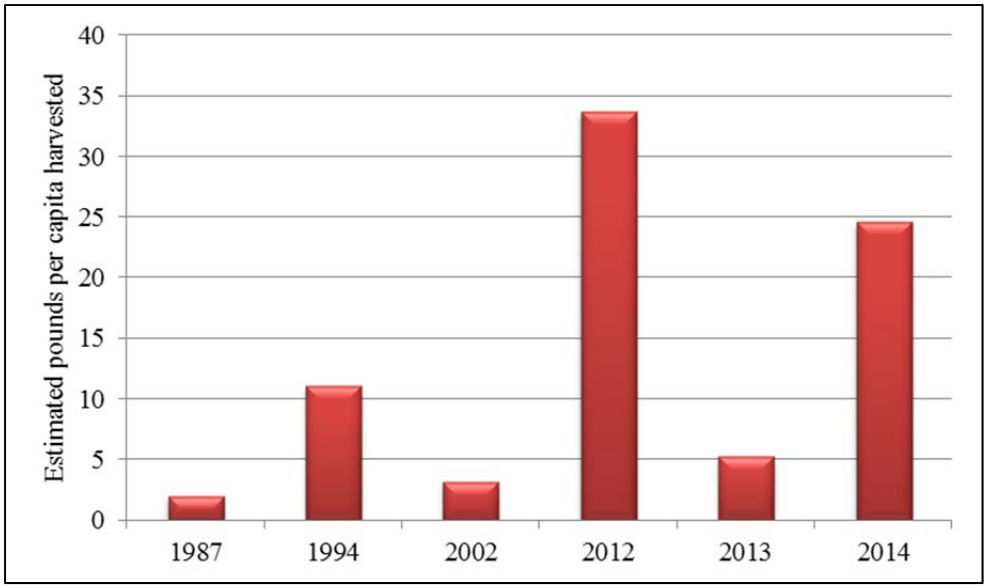


Figure 3-29.–Estimated per capita harvest of salmon, Point Lay, Alaska, 1987, 1994, 2002, and 2012–2014.

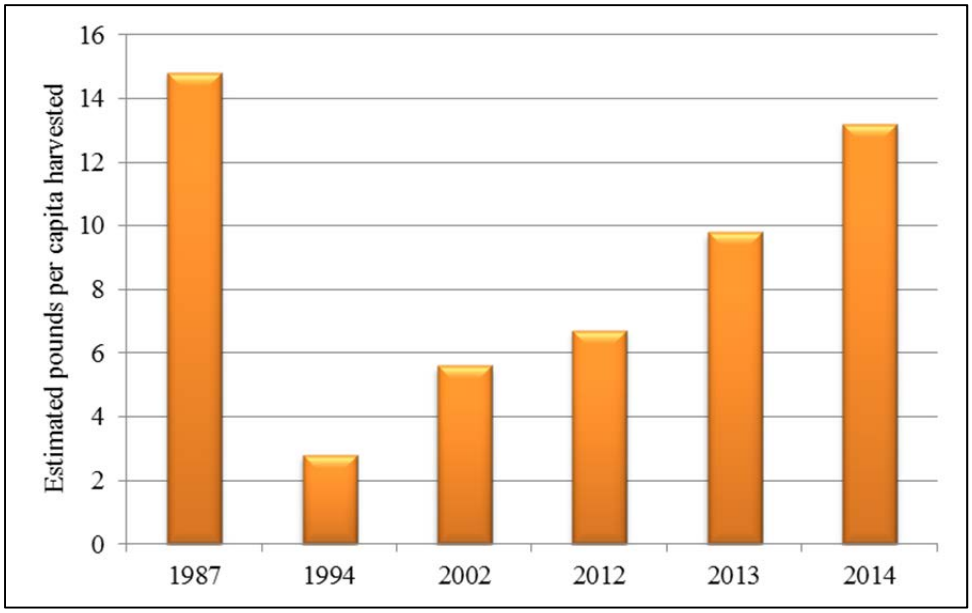


Figure 3-30.–Estimated per capita harvest of Arctic grayling, Point Lay, Alaska, 1987, 1994, 2002, and 2012–2014.

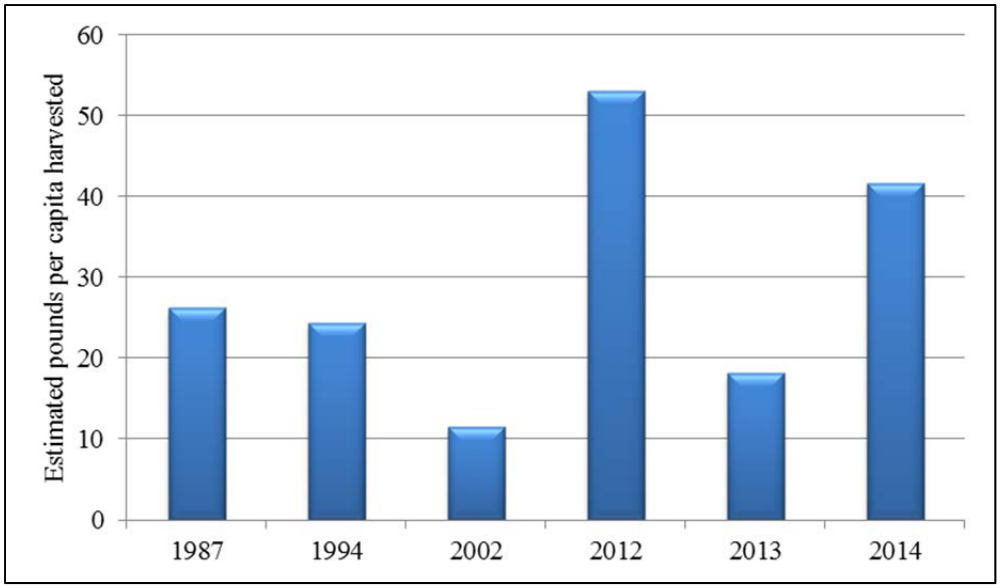


Figure 3-31.–Estimated per capita harvest of fish, all species, Point Lay, Alaska, 1987, 1994, 2002, and 2012–2014.

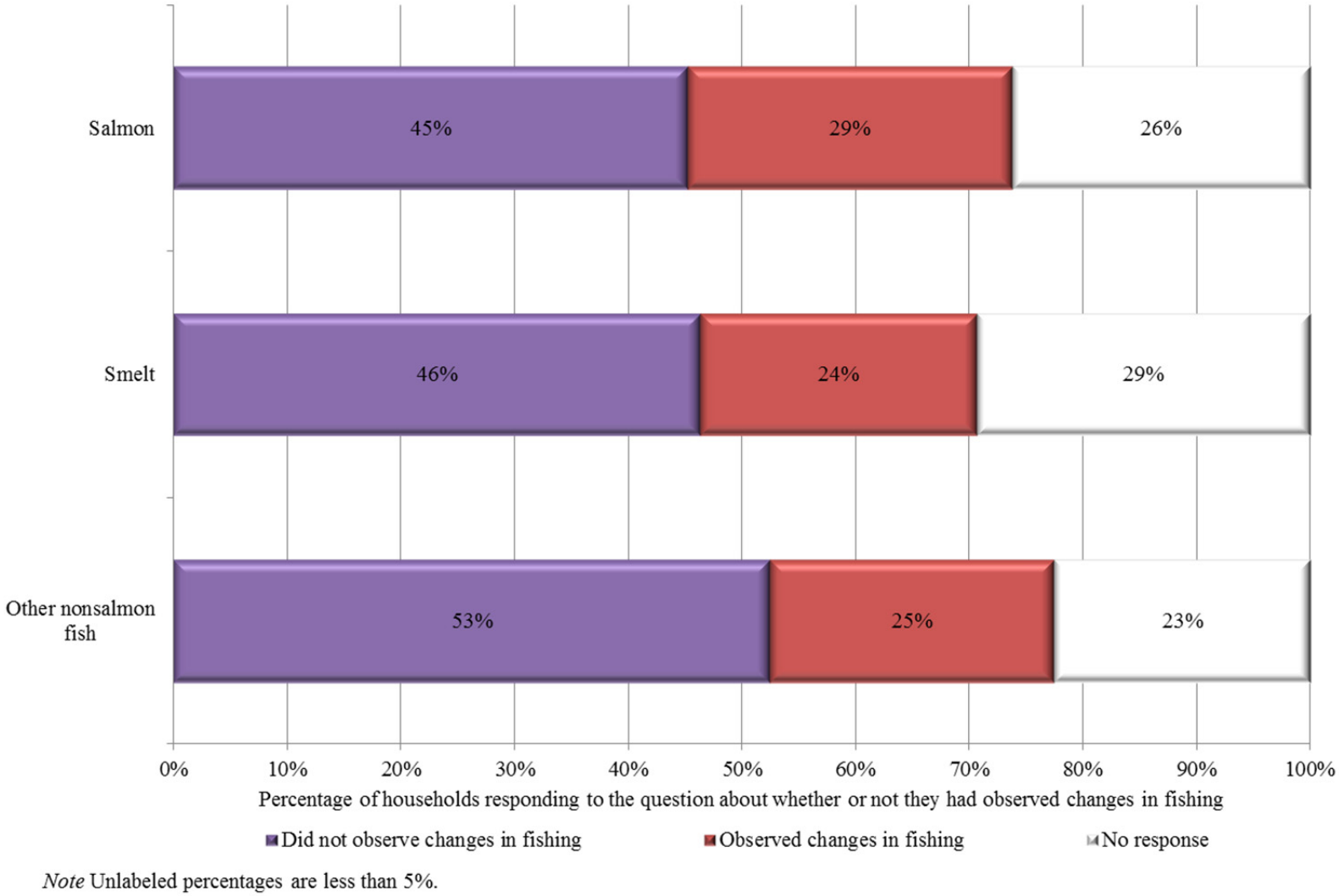


Figure 3-32.–Households observing changes in fishing, Point Lay, Alaska, 2013.

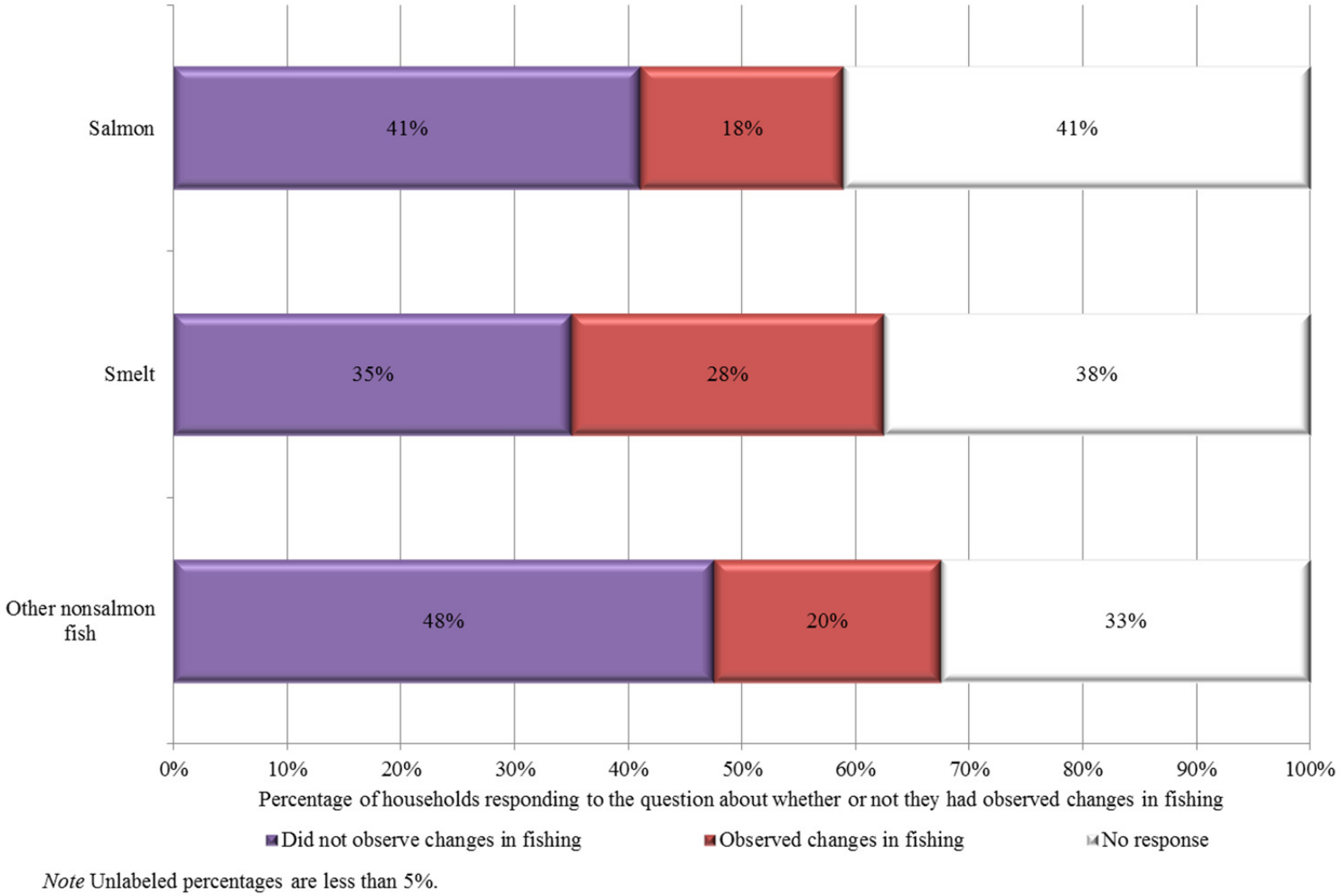


Figure 3-33.–Households observing changes in fishing, Point Lay, Alaska, 2014.

Plate 3-1.–Aerial view of Point Lay, Alaska. Photo by Brittany Retherford, ADF&G.

Plate 3-2.–Pink salmon caught in Point Lay, Alaska, summer 2010. Photo by Brittany Retherford, ADF&G.

Plate 3-3.–Fleet of boats in Point Lay, Alaska. Photo by Brittany Retherford, ADF&G.

Plate 3-4.–Smelt is often eaten frozen (*quaq*) with seal oil. Photo by Anna Godduhn, ADF&G.

4. DISCUSSION AND CONCLUSIONS

Although receiving less focus in the literature than other important subsistence pursuits, such as hunting for marine and land mammals, fishing has always been a part of the seasonal round of subsistence for communities on the North Slope. Little research has been done on subsistence fisheries in Arctic communities in Alaska, but there are some studies that point to unique fishing patterns and relative importance of fish harvests in individual communities and regions of the North Slope. A brief discussion of these patterns will contextualize a deeper analysis of subsistence fisheries in Wainwright and Point Lay.

Numerous studies have documented subsistence harvests of salmon and nonsalmon fish species by North Slope residents, most as a part of a larger comprehensive survey effort. Data exist for all communities on the North Slope (CSIS; Alaska Consultants, Inc. et al. 1984; Bacon et al. 2011rev.; Braund, Brewster, et al. 1993; Braund, Loring, et al. 1993; Brower and Opie 1997; Fall and Utermohle 1995; Fuller and George 1997; Kofinas et al. In prep; Pedersen and Hugo 2005; Braem et al. *In prep*; Brown and Braem *In prep*).

Residents of the 6 North Slope communities not included in this study show a wide variety of harvest patterns. Salmon species have been of relatively little importance in terms of harvest levels for a majority of communities, with the exception of Point Hope. Nonsalmon fish harvests vary widely between communities in terms of the primary species that compose the harvest. Point Hope residents primarily harvest Arctic cod and Dolly Varden. Atqasuk and Nuiqsut fishers target burbot and whitefish species, while Barrow residents focus primarily on broad whitefish. Anaktuvuk Pass relies heavily on Dolly Varden and lake trout. Arctic grayling are the most ubiquitous species for North Slope fishers and these fish factor highly into harvests for all communities, with the exception of Kaktovik. Arctic char almost exclusively composes the total fish harvest by Kaktovik households.

The relative importance of fish species within the overall subsistence harvest for North Slope communities also varies. For example, the inland communities of Atqasuk and Anaktuvuk Pass show significant reliance on fish species. Nonsalmon fish are the second most highly harvested resource, in pounds of edible weight, by Anaktuvuk Pass residents behind caribou (Bacon et al. 2011rev.; Brown and Braem *In prep*), and fish species accounted for 37% of the total estimated harvest by Atqasuk residents in 1994–1995 (Hepa et al. 1997). Fish species have also been important to Nuiqsut residents over the years, composing between 24% and 44% of the total subsistence harvest for this community across 5 study years (CSIS; Bacon et al. 2011rev.; Fuller and George 1997; Brown and Braem *In prep*). In contrast, salmon and nonsalmon fish composed 11% of Barrow's total estimated harvest of subsistence resources in 1987–1989, and 13% in 2014 (Braund, Brewster, et al. 1993; Brown and Braem *In prep*). In Point Hope, fish accounted for only 9% of the harvest in 1992 (Fuller and George 1997).

WAINWRIGHT AND POINT LAY

Much like the other communities on the North Slope, Wainwright and Point Lay each have their own unique fishing patterns and rely heavily on different species. While both communities harvest Arctic grayling in significant quantities, smelt are the primary species harvested in Wainwright and salmon generally contribute the most edible weight to Point Lay. Although comparable data are not abundant, comparing the 2012–2014 study years to previous studies in each community has shown potential trends in each community's harvest. Harvests in Wainwright have remained very similar over time for smelt, salmon, and Arctic grayling. Per capita harvests for salmon were slightly larger during the 3 years of this study compared to previous years, but were all very near the average of all study years. Total harvests of all fish species have also been very similar for per capita harvests since 1988. Point Lay, in contrast, appears to have increased salmon harvests in 2012–2014 compared to previous years; this increase in salmon harvest also seems to have increased per capita harvest values for total estimated harvests of all

fish. No discernable trend is visible for Arctic grayling harvests, which have been variable over time, in Point Lay. The limited number of previous studies for both communities, however, does not allow for a definitive identification of harvest trends through time. More research is needed to investigate if these potential trends are indicative of the stability of Wainwright fish harvests and increasing salmon harvests in Point Lay.

Environmental Concerns and Impact to Fisheries

One commonality between residents of Point Lay and Wainwright are concerns over the impact of climate change for subsistence pursuits more generally, and specific observations of impacts to subsistence fisheries. Residents of both communities stated that the timing of harvest was later for species targeted after freezeup, especially those harvested in the fall. Survey and key respondents in both Wainwright and Point Lay noted that ice fishing is now delayed about a month due to the ice conditions, and one explained that she is still figuring out the best timing for Arctic grayling now that the weather is more unpredictable and the water temperature is warmer (07WW). Others mentioned less snow as an issue because it has hampered fall and winter ice fishing, especially regarding access to camps far distant from their respective communities; travel to these camps has also been impacted by rivers freezing later in the season (07WW, 10PL). In Point Lay, respondents pointed to unpredictable ice conditions on the lagoon as hampering their harvests of smelt. Several respondents also felt that smelt were less available in Point Lay than in past. One respondent felt that warming waters and changes to currents may have impacted the population near the community (09PL). One key respondent expressed one positive impact to changes in ice conditions in that it is easier to set a net under the ice when the ice is thinner (07WW). Respondents in both communities also pointed to the impacts of gravel dredging activities on ice fishing. In Wainwright, survey and key respondents indicated that these activities have an impact on smelt fishing for a number of years after dredging because fishing locations and numbers of fish are impacted. In contrast, a key respondent in Point Lay felt that dredging for gravel in the Kokolik River had had a positive impact on ice fishing: he explained that it had created a deep fishing hole closer to town that is an excellent location for harvesting Arctic grayling.

Respondents in Point Lay and Wainwright also pointed to changes in summer fishing. Residents in both communities said that breakup in the spring is much quicker than it used to be, with ice melting faster in local waterways. One key respondent in Point Lay pointed to the unpredictability of weather patterns, observing that wind directions had shifted and that there is no longer much south wind during the summer months (05PL). A few respondents in each community felt that river levels are rising. Some residents pointed to melting permafrost as a point of concern, especially in Point Lay. One key respondent noted that the erosion caused by melting permafrost had drained a formerly productive tundra pond into the river (03PL). Most key respondents and some responding households agreed that water temperatures are definitely warmer than in past, and in some cases this idea was tied to observed changes in the timing of salmon runs. Some respondents felt the fish were arriving earlier than was usual in the past, and one key respondent explained that “everything in the summer is one month early now” (13PL).

Salmon Abundance and Species Identification Issues

As mentioned in the introduction, changes in the Arctic climate that bring warmer waters and increased food availability have the potential to extend the range of suitable habitats for a number of species, including Pacific salmon. Key respondents in both Point Lay and Wainwright were asked about perceived changes to subsistence salmon fisheries over time, and several surveyed households also commented on changes to fishing for salmon. In Wainwright, a majority of key respondents and some surveyed households largely felt that salmon abundance had increased in their local waters (03WW, 04WW, 07WW, 08WW, 10WW, 11WW, 12WW, 14WW), and several noted that they were catching historically rare species, particularly Chinook salmon, in greater numbers in recent years (01WW, 03WW, 04WW, 11WW). Some key respondents in Wainwright explained that their households and others in town had more recently invested in nets with larger mesh to target salmon (07WW, 09WW, 11WW, 03WW). In

contrast, a majority of key respondents in Point Lay felt that salmon harvests in general had remained fairly consistent, albeit generally abundant, over time (03PL, 07PL, 08PL, 10PL, 12PL, 15PL); a few respondents did feel like salmon were more abundant in recent years (04PL, 05PL). Like Wainwright, several fishers did note that they felt they were harvesting more Chinook salmon than they had in past (04PL, 05PL, 09PL, 13PL), while others felt that Chinook salmon have always been available for harvest. Numbers of salmon harvested over time vary between the 2 study communities, and there is not enough comparable harvest data to definitively identify trends in either community. Wainwright's salmon harvest appears to have remained consistent over time, despite a greater feeling that salmon abundance has increased in the area. In contrast, Point Lay harvests have appeared to have increased slightly over time.

As is the case in a number of studies (Carothers et al. 2013, George et al. 2009, Bacon et al. 2011rev), species identification issues were prevalent over the 3 years of this project. As discussed earlier, chum salmon are often referred to as "silvers" and often misidentified as coho salmon. Chinook salmon, although rare, can be found on the North Slope. However, there are cases of misidentification when large chum salmon are perceived as being Chinook salmon (Carothers et al. 2013) or small Chinook salmon are perceived to be chum salmon (George et al. 2009). In this study, many key respondents in both communities referred to salmon in general terms and did not differentiate between the various species. This was also a theme identified in another study aimed at investigating subsistence knowledge of salmon in Barrow and Nuiqsut (Carothers et al. 2013). Another potential issue is that several respondents in both communities described an overlap in salmon runs, which does not allow for a temporal component to species identification. The PIs of this study did create in-depth species identification guides for distribution in both Point Lay and Wainwright and to aid local research assistants in data collection. These efforts were not fully successful for the timeframe of the project; however several key respondents did express interest in learning how to differentiate between salmon species. As was noted in Carothers et al. (2013), some key respondents expressed more concern about catching fish to feed their households rather than differentiating among the species they harvest for this purpose.

Overall, this project perhaps raises more questions than answers on the potential of increasing salmon abundance and changes to species composition of harvests in both Wainwright and Point Lay. Historical harvest data show the potential that Point Lay households are harvesting more salmon than in past years; however, there are not enough data points to determine that this is indeed a trend. While more Wainwright residents perceive that salmon are more abundant in their region, harvests appear to have remained consistent over time. It is also possible that fishers in Wainwright are in fact targeting salmon at a greater level than in the past since some respondents explained that they have changed to nets with a larger mesh size.

CONCLUSIONS

The Importance of Fish

As with other coastal Arctic Alaskan communities, fish harvests in Wainwright and Point Lay compose a smaller component of the total subsistence harvest in comparison to a heavy reliance on marine mammals and caribou. Comprehensive surveys in Wainwright in 1988, 1989, and 1992 provide information on the composition of the total harvest (Braund, Loring, et al. 1993; Fuller and George 1997). In 1988 fish accounted for 4% of the total estimated harvest, 5% in 1989, and 9% in 1992. The same data points exist for 1987 and 2012 for Point Lay, with fish composing 3% of the estimated harvest in 1987 and 10% in 1992 (CSIS, Braem et al. *In prep*). Despite contributing less in terms of edible weight, residents of both communities discussed the importance of fish. In both Point Lay and Wainwright, respondents explained that they provide valuable variety to local diets (01PL, 09PL, 08PL, 02WW, 05WW, 09WW). Others explained that they are vital in feeding local residents during the hard winter months, and in the summer before caribou become available (11WW). In general, fish resources were described as an important part of residents' harvests of wild foods and a staple for local diets. Despite observations of changes to

subsistence fisheries in Wainwright and Point Lay, historical harvest information and perspectives shared by elders indicate a past and current reliance on fish resources in both study communities.

Suggestions for Future Research

Very little TEK research focused on subsistence fisheries has occurred in Arctic Alaska communities, especially those along the coast of the Chukchi Sea. While this project documents fish harvests and local knowledge in Wainwright and Point Lay, more research is needed to fully understand the impact of a changing climate on these subsistence fisheries. While some prior data are available for comparison to the 2012–2014 study years, continued harvest monitoring could help clarify potential trends in fish harvests and observations on the impact of a changing climate. Some of the initial aims of this project could not be achieved, including participant observation of salmon fisheries in Point Lay and comprehensive mapping of current and past harvest areas in both communities. Mapping efforts were designed to be conducted with key respondents during interview sessions, but an understanding of current harvest areas could perhaps be better obtained by having each surveyed household map the area of their individual harvests. These maps could be combined to show total community harvest areas for each study year, and brought to knowledgeable fishers during interview sessions as a point of comparison to harvest locations used in the past. Both issues with mapping and participant observation underline the need for long term consultation with communities and the building of social capital in order to allow for the level of engagement necessary to conduct comprehensive research. The original PI of this project had an ongoing relationship with residents in both Point Lay and Wainwright that was challenging to transfer, leading to difficulties in the later years of the project.

Salmon identification issues were a challenge to understanding observations of greater abundance and variety of salmon species along the coast and in the local rivers of both Wainwright and Point Lay. Continued outreach in local communities with species identification guides may allow for greater accuracy of harvest reporting; however, this does not diminish the need to understand local names for salmon, which may vary not only in species, but also in terms of life stage. A joint study between social scientists and biologists may offer insight into answering these questions. Biological observations of local salmon runs over time could aid in determining general abundance, and expertise in species identification could help determine whether new species are establishing a presence in local waterways. At the same time, collaboration with local fishers and social scientists could allow for a better understanding of local names and descriptions of salmon species. Most importantly, local knowledge and observations of change could inform biological inquiries into these topics.

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APPENDIX A.–SURVEY INSTRUMENT

COMPREHENSIVE SUBSISTENCE SURVEY

WAINWRIGHT, ALASKA

From January 1, 2012 to December 31, 2012

KEY ARCTIC FISHERIES OSM

PRINTED 2013-02-06

This survey is used to estimate subsistence harvests and to describe community subsistence economies. We will publish a summary report, and send it to all households in your community. We share this information with the Alaska Department of Fish and Game, the U.S. Fish and Wildlife Service and the National Park Service. We work with the Federal Regional Advisory Councils and with local Fish and Game Advisory Committees to better manage subsistence, and to implement federal and state subsistence priorities.

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

HOUSEHOLD ID:		
COMMUNITY ID:	WAINWRIGHT	364
INTERVIEWER:		
INTERVIEW DATE:		
START TIME:		
STOP TIME:		
DATA CODED BY:		
DATA ENTERED BY:		
SUPERVISOR:		

COOPERATING ORGANIZATIONS

NORTH SLOPE BOROUGH DEPT. OF WILDLIFE
BOX 69
BARROW, AK 99723

DIVISION OF SUBSISTENCE
ALASKA DEPARTMENT OF FISH & GAME
1300 COLLEGE RD
FAIRBANKS, AK 99701
907-459-7320

WAINWRIGHT TRADITIONAL COUNCIL
BOX 184
WAINWRIGHT, AK 99782

CITY OF WAINWRIGHT
1271 AIRPORT ROAD
BOX 09

Page 1

HOUSEHOLD MEMBERS

HOUSEHOLD ID

First, I would like to ask about the people in your household, permanent members of your household who sleep at your house. This includes students who return home every summer. I am NOT interested in people who lived with you temporarily, even if they stayed several months.

Last year, that is, between January 1, 2012, and December 31, 2012, WHO were the members of this household?

	Is this person answering questions on this survey?	How is this person related to HEAD 1?	Is this person MALE or FEMALE?	Is this person an ALASKA NATIVE?	How OLD is this person?	Except for school or military service, has this person always lived in Wainwright?	*If person has NOT always lived in Wainwright...* WHEN did they LAST move here?	From WHERE did this person move?	Where is this person's birth home?*	TOTAL years lived here?
ID#	*circle*	*relation*	*circle*	*circle*	*age*	*circle*	*year*	*community in Alaska, OR state in the US, OR country*		*years*
HEAD	Y N		M F	Y N		Y N				
1										
NEXT enter spouse or partner. If household has a SINGLE HEAD, leave HEAD 2 row BLANK, and move to PERSON 3.										
HEAD	Y N		M F	Y N		Y N				
2										
BELOW, enter children (oldest to youngest), grandchildren, grandparents, or anyone else living full-time in this household.										
PERSON 3			M F	Y N		Y N				
3	0									
PERSON 4			M F	Y N		Y N				
4	0									
PERSON 5			M F	Y N		Y N				
5	0									
PERSON 6			M F	Y N		Y N				
6	0									
PERSON 7			M F	Y N		Y N				
7	0									
PERSON 8			M F	Y N		Y N				
8	0									
PERSON 9			M F	Y N		Y N				
9	0									
PERSON 10			M F	Y N		Y N				
10	0									
PERSON 11			M F	Y N		Y N				
11	0									
PERSON 12			M F	Y N		Y N				
12	0									
PERSON 13			M F	Y N		Y N				
13	0									
PERSON 14			M F	Y N		Y N				
14	0									

** "BIRTH HOME" means the place this person's PARENTS WERE LIVING when this person was born.*

PERMANENT HH MEMBERS: 01 **WAINWRIGHT: 364**

RETAINED COMMERCIAL HARVESTS

HOUSEHOLD ID

1. Do you or members of your household USUALLY participate in commercial fisheries?..... Y N

2. During the last year (between JANUARY 1, 2012, AND DECEMBER 31, 2012), did you or members of your household PARTICIPATE in a commercial fishery?..... Y N

IF the answer to QUESTION 2 is NO, go to the subsistence harvests section.

IF the answer is YES, continue on this page…

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

A …FISH commercially for _____?

B …KEEP any _____ from your commercial catch for your own use[2] or to share?

C Was the _____ that you kept INCIDENTAL[4] catch?

If KEEP is "yes"

Please estimate how many fish ALL MEMBERS OF YOUR HOUSEHOLD removed from commercial harvests for personal use during the last year.

Include COMMERCIALLY HARVESTED fish that members of this household gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If helping others, report ONLY THIS HOUSEHOLD'S share.

Read names below in blanks above	A COM FISH?	B KEEP?	C INCI?	How many were removed for your OWN USE?[5]	How many were removed for your CREW?[5]	How many were removed to give to OTHERS?	Units[3]	
				number	*number*	*number*	*specify*	*comments*
CHUM (DOG) SALMON *Qalugruaq, Aqalugruaq*	Y N	Y N	Y N					
111,000,001								
PINK (HUMPY) SALMON *Amaqtuq*	Y N	Y N	Y N					
114,000,001								
COHO (SILVER) SALMON	Y N	Y N	Y N					
112,000,001								
SOCKEYE (RED) SALMON	Y N	Y N	Y N					
115,000,001								
CHINOOK (KING) SALMON *Iqalsugruuk*	Y N	Y N	Y N					
113,000,001								
SHEEFISH *Sii*	Y N	Y N	Y N					
125,600,001								
DOLLY VARDEN (TROUT) *Qalukpik*	Y N	Y N	Y N					
125,006,001								
BROAD WHITEFISH *Qausriluk*	Y N	Y N	Y N					
126,404,001								
KING CRAB	Y N	Y N	Y N					
501,008,000								
	Y N	Y N	Y N					

1 *"LAST YEAR" means between JANUARY 1, 2012, and DECEMBER 31, 2012.*
2 *"USE" includes eating, feeding to dogs, sharing or trading with others, etc.*
3 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.*
4 *"INCIDENTAL CATCH" means the fish kept was not being commercially fished. For example, a king salmon kept from a chum commerical fisher*
5 *Double counting (captains' removals for crew members and crew members' removal for own uses) is fixed in analysis. Collect both.*

COMMERCIALLY HARVESTED RESOURCES: 03 **WAINWRIGHT: 364**

SUBSISTENCE HARVESTS: SALMON

HOUSEHOLD ID

1. Do you or members of your household USUALLY fish for salmon for subsistence?..... Y N

2. During the last year (between JANUARY 1, 2012, AND DECEMBER 31, 2012), did you or members of your household USE or TRY TO FISH FOR salmon?..... Y N

IF the answer to QUESTION 2 is NO, go to the SALMON summary page.

IF the answer is YES, continue on this page…

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

A …use[2] _____?
B …receive _____ from another HH or community?
C …give _____ to another HH or community?
D …try[2] to harvest _____?
E …actually harvest any _____?

IF harvest is YES

Please estimate how many salmon ALL MEMBERS OF YOUR HOUSEHOLD got for subsistence uses during the last year. How many were caught 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.

Read names below in blanks above	A USE?	B REC?	C GIVE?	D TRY?	E HAR?	SET GILL NET	DRIFT GILL NET	ROD & REEL	OTHER GEAR (specify type)	Units ***	# OF THOSE used just for dog food?
						number harvested by each gear type			amount / type	specify	dogfood
CHUM (DOG) SALMON *Qalugruaq, Aqalugruaq*	Y N	Y N	Y N	Y N	Y N				/	IND	
111,000,000											
PINK SALMON (HUMPIES) *Amaqtuq*	Y N	Y N	Y N	Y N	Y N				/	IND	
114,000,000											
COHO SALMON	Y N	Y N	Y N	Y N	Y N				/	IND	
112,000,000											
SOCKEYE (RED) SALMON	Y N	Y N	Y N	Y N	Y N				/	IND	
115,000,000											
CHINOOK (KING) SALMON *Iqalsugruuk*	Y N	Y N	Y N	Y N	Y N				/	IND	
113,000,000											
SALMON - UNKNOWN	Y N	Y N	Y N	Y N	Y N				/	IND	
119,000,000											
	Y N	Y N	Y N	Y N	Y N				/		
	Y N	Y N	Y N	Y N	Y N				/		
	Y N	Y N	Y N	Y N	Y N				/		

During the last year, did your household use any other kind of salmon?..... Y N

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

1 *"LAST YEAR" means between JANUARY 1, 2012, and DECEMBER 31, 2012.*
2 *"USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.*
3 *"ROD AND REEL" includes fish caught in open water with a hook and and a line attached to a rod or a pole. Jigging through the ice is "other ge*
4 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.*

NON-COMMERCIAL SALMON: 04 **WAINWRIGHT: 364**

SUBSISTENCE SUMMARY: SALMON

HOUSEHOLD ID

If this household did NOT USE or HARVEST salmon last year, go to the ASSESSMENT section below.
Otherwise, continue with mapping, network, and assessment sections...

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

ASSESSMENTS: SALMON 110,000,000

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

During the last year…did your household use LESS, SAME, or MORE salmon than in recent years?..... X L S M

X = do not use

If LESS or MORE…

WHY was your use different?..... _____ 1

_____ 2

► *(IF HOUSEHOLD "DOES NOT USE" fish salmon, go to NEXT SECTION, otherwise continue below:)*

During the last year…did your household GET ENOUGH salmon?..... Y N

If NO…

What KIND of salmon did you need?..... _____

WHY did your household NOT get enough salmon?..... _____ 1

_____ 2

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

Did your household do anything DIFFERENTLY because you did NOT get enough salmon?..... Y N

IF YES…

What did your household do differently?..... _____ 1

_____ 2

Do you have any additional comments about salmon?

_____

_____

_____

_____

_____

_____

_____

_____

NETWORKS & ASSESSMENTS OF SALMON: 66, 67 **WAINWRIGHT: 364**

FACTORS: SALMON

HOUSEHOLD ID

I would like you to think back on your household's salmon fishing between January and December 2012. I am going to ask you about things that affected your fishing. Let's start with the MOST IMPORTANT thing.

What was the SINGLE MOST IMPORTANT THING that affected your household's salmon fishing between January and December 2012?

► *Briefly describe that factor below.*

How did that affect your household?

Did anything else affect your salmon fishing? (Circle one) N Y ?

If **YES**, what was the NEXT MOST IMPORTANT THING that affected your household's salmon fishing between January and December 2012?

► *Briefly describe the factor below.*

How did that affect your household?

Did anything else affect your salmon fishing? (Circle one) N Y ?

If **YES**, what was the NEXT MOST IMPORTANT THING that affected your household's salmon fishing between January and December 2012?

► *Briefly describe that factor below.*

How did that affect your household?

SUBSISTENCE HARVESTS: WHITEFISH

HOUSEHOLD ID

1. Do you or members of your household USUALLY fish for whitefish for subsistence?..... Y N

2. During the last year (between JANUARY 1, 2012, AND DECEMBER 31, 2012), did you or members of your household USE or TRY TO FISH FOR whitefish?..... Y N

IF the answer to QUESTION 2 is NO, go to the next harvest page.

IF the answer is YES, continue on this page…

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

A …use[2] _____?
B …receive _____ from another HH or community?
C …give _____ to another HH or community?
D …try[2] to harvest _____?
E …actually harvest any _____?

IF harvest is YES

Please estimate how many whitefish ALL MEMBERS OF YOUR HOUSEHOLD got for subsistence uses during the last year. How many were

INCLUDE whitefish that members of this household gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If fishing with or helping others, report ONLY THIS HOUSEHOLD'S share of the harvest.

Read names below in blanks above	A USE?	B REC?	C GIVE?	D TRY?	E HAR?	SET GILL NET	DRIFT GILL NET	ROD & REEL	OTHER GEAR (specify type)	Units[4]	How many of THOSE were used for dog food?
						number harvested by each gear type			amount / type	specify	dogfood
BROAD WHITEFISH *Anaakliq*	Y N	Y N	Y N	Y N	Y N				/	IND	
126,404,000											
HUMPBACK WHITEFISH *Pikuktuuq*	Y N	Y N	Y N	Y N	Y N				/	IND	
126,408,000											
ROUND WHITEFISH	Y N	Y N	Y N	Y N	Y N				/	IND	
126,412,000											
BERING CISCO *Tiipuk*	Y N	Y N	Y N	Y N	Y N				/	IND	
126,406,040											
LEAST CISCO *Iqalusaaq*	Y N	Y N	Y N	Y N	Y N				/	IND	
126,406,060											
SHEEFISH *Sii*	Y N	Y N	Y N	Y N	Y N				/	IND	
125,600,000											
UNKNOWN WHITEFISH	Y N	Y N	Y N	Y N	Y N				/	IND	
126,499,000											
	Y N	Y N	Y N	Y N	Y N				/		
	Y N	Y N	Y N	Y N	Y N				/		

During the last year, did your household use any other kind of whitefish?..... Y N

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

1 *"LAST YEAR" means between JANUARY 1, 2012, and DECEMBER 31, 2012.*
2 *"USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.*
3 *"ROD AND REEL" includes fish caught in open water with a hook and and a line attached to a rod or a pole. Jigging through the ice is "other ge*
4 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.*

NON-SALMON FINFISH: 06 **WAINWRIGHT: 364**

HARVESTS: OTHER FISH

HOUSEHOLD ID

1. Do you or members of your household USUALLY fish for other fish for subsistence, such as DOLLY VARDEN (TROUT) , NORTHERN PIKE), or any other other fish?..... Y N
2. During the last year (between JANUARY 1, 2012, AND DECEMBER 31, 2012), did you or members of your household USE or TRY TO FISH FOR other fish?..... Y N

IF the answer to QUESTION 2 is NO, go to the next harvest page.

IF the answer is YES, continue on this page…

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

- A …use[2] _____?
- B …receive _____ from another HH or community?
- C …give _____ to another HH or community?
- D …try[2] to harvest _____?
- E …actually harvest any _____?

IF harvest is YES

Please estimate how many other fish ALL MEMBERS OF YOUR HOUSEHOLD got for subsistence uses during the last year. How many were

INCLUDE other fish that members of this household gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If fishing with or helping others, report ONLY THIS HOUSEHOLD'S share of the harvest.

Read names below in blanks above	A USE?	B REC?	C GIVE?	D TRY?	E HAR?	SET GILL NET	DRIGT GILL NET	ROD & REEL	OTHER GEAR (specify type)	Units[4]	How many of THOSE were used for dog food?
						number harvested by each gear type			amount / type	specify	dogfood
DOLLY VARDEN (Trout) *Paikłuk*	Y N	Y N	Y N	Y N	Y N				/	IND	
125,006,000											
ARCTIC CHAR *Paikłuk*	Y N	Y N	Y N	Y N	Y N				/	IND	
125,002,000											
NORTHERN PIKE *Siulik*	Y N	Y N	Y N	Y N	Y N				/	IND	
125,500,000											
BURBOT *tiktaaliq*	Y N	Y N	Y N	Y N	Y N				/	IND	
124,800,000											
GRYALING *Sulukpaugaq*	Y N	Y N	Y N	Y N	Y N				/	IND	
125,200,000											
LAKE TROUT *Iqaluaqpak*	Y N	Y N	Y N	Y N	Y N				/	IND	
125,010,000											
ARCTIC COD *Iqalugaq*	Y N	Y N	Y N	Y N	Y N				/	IND	
121,002,000											
FLOUNDER *Nataagnaq*	Y N	Y N	Y N	Y N	Y N				/	IND	
121,400,000											
HERRING *Uqsruqtuuq*	Y N	Y N	Y N	Y N	Y N				/	IND	
120,200,000											
	Y N	Y N	Y N	Y N	Y N				/	IND	

During the last year, did your household use any other kind of other fish?..... Y N

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

1 *"LAST YEAR" means between JANUARY 1, 2012, and DECEMBER 31, 2012.*
2 *"USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.*
3 *"ROD AND REEL" includes fish caught in open water with a hook and and a line attached to a rod or a pole. Jigging through the ice is "other ge*
4 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.*

NON-SALMON FINFISH: 06 **WAINWRIGHT: 364**

SUBSISTENCE SUMMARY: FISH OTHER THAN SALMON

HOUSEHOLD ID

If this household did NOT USE or HARVEST fish other than salmon last year, go to the ASSESSMENT section below.
Otherwise, continue with mapping, network, and assessment sections...

MAPPING ***Refer to data collection maps and mapping instructions to map fish other than salmon...***

ASSESSMENTS: FISH OTHER THAN SALMON 100,000,002

To conclude our fish other than salmon section, I am going to ask a few general questions about fish other than salmon (Whitefish and other fishes).

During the last year…did your household use LESS, SAME, or MORE fish other than salmon than in recent years?..... X L S M

X = do not use

If LESS or MORE…

WHY was your use different?..... _____ 1

_____ 2

► *(IF HOUSEHOLD "DOES NOT USE" fish other than salmon, go to NEXT SECTION, otherwise continue below;)*

During the last year…did your household GET ENOUGH fish other than salmon?..... Y N

If NO…

What KIND of fish other than salmon did you need?..... _____

WHY did your household NOT get enough fish other than salmon?..... _____ 1

_____ 2

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

Did your household do anything DIFFERENTLY because you did NOT get enough fish other than salmon?..... Y N

IF YES…

What did your household do differently?..... _____ 1

_____ 2

Do you have any additional comments about fish other than salmon?

_____

_____

_____

_____

_____

_____

_____

_____

NETWORKS & ASSESSMENTS OF FISH OTHER THAN SALMON: 66, 67 **WAINWRIGHT: 364**

FACTORS: FISH OTHER THAN SALMON

HOUSEHOLD ID

I would like you to think back on your household's fishing for FISH OTHER THAN SALMON between January and December 2012. I am going to ask you about things that affected your fishing. Let's start with the MOST IMPORTANT thing.

What was the SINGLE MOST IMPORTANT THING that affected your household's fishing for FISH OTHER THAN SALMON between January and December 2012?

► *Briefly describe that factor below.*

How did that affect your household?

Did anything else affect your fishing for FISH OTHER THAN SALMON? (Circle one) N Y ?

If **YES**, what was the NEXT MOST IMPORTANT THING that affected your household's fishing for FISH OTHER THAN SALMON between January and December 2012?

► *Briefly describe the factor below.*

How did that affect your household?

Did anything else affect your fishing for FISH OTHER THAN SALMON? (Circle one) N Y ?

If **YES**, what was the NEXT MOST IMPORTANT THING that affected your household's fishing for FISH OTHER THAN SALMON between January and December 2012?

► *Briefly describe that factor below.*

How did that affect your household?

FACTORS FISH OTHER THAN SALMON **WAINWRIGHT: 364**

COMMENTS & SUMMARY

HOUSEHOLD ID

QUESTIONS, COMMENTS, CONCERNS

Do you have any questions, comments, or concerns?

INTERVIEW SUMMARY

Use this space for interviewer's comments about survey, especially factors that might have affected the household's responses.

BE SURE TO FILL IN THE STOP TIME ON THE FIRST PAGE!!!!

INTERVIEW SUMMARY: 30 WAINWRIGHT: 364

SUBSISTENCE FISHING SURVEY

WAINWRIGHT, ALASKA

From January 1, 2014 to December 31, 2014

ARCTIC SALMON
PROJECT YEAR 2

PRINTED
2015-02-23

This survey is used to estimate subsistence harvests and to describe community subsistence economies. We will publish a summary report, and send it to all households in your community. We share this information with the Alaska Department of Fish and Game, the U.S. Fish and Wildlife Service and the National Park Service. We work with the Federal Regional Advisory Councils and with local Fish and Game Advisory Committees to better manage subsistence, and to implement federal and state subsistence priorities.

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

HOUSEHOLD ID:		
COMMUNITY ID:	WAINWRIGHT	364
INTERVIEWER:		
INTERVIEW DATE:		
START TIME:		
STOP TIME:		
DATA CODED BY:		
DATA ENTERED BY:		
SUPERVISOR:		

COOPERATING ORGANIZATIONS

CITY OF WAINWRIGHT

WAINWRIGHT TRADITIONAL COUNCIL

NORTH SLOPE BOROUGH

DIVISION OF SUBSISTENCE
ALASKA DEPARTMENT OF FISH & GAME
1300 COLLEGE RD
FAIRBANKS, AK 99701
907-459-7320

Page 1

HOUSEHOLD MEMBERS

HOUSEHOLD ID

First, I would like to ask about the people in your household, permanent members of your household who sleep at your house. This includes students who return home every summer. I am NOT interested in people who lived with you temporarily, even if they stayed several months.

Last year, between January 1, 2014, and December 31, 2014, WHO were the members of this household?

ID#	Is this person answering questions on this survey? circle	How is this person related to HEAD 1? relation	Is this person MALE or FEMALE? circle	Is this person an ALASKA NATIVE? circle	How OLD is this person? age	Where were parents living when this person was born? community	How many Years has this person lived in Wainwright? # of years
HEAD 1	Y N		M F	Y N			
NEXT enter spouse or partner. If household has a SINGLE HEAD, leave HEAD 2 row BLANK, and move to PERSON 3.							
HEAD 2	Y N		M F	Y N			
BELOW, enter children (oldest to youngest), grandchildren, grandparents, or anyone else living full-time in this household.							
PERSON 3			M F	Y N			
3	0						
PERSON 4			M F	Y N			
4	0						
PERSON 5			M F	Y N			
5	0						
PERSON 6			M F	Y N			
6	0						
PERSON 7			M F	Y N			
7	0						
PERSON 8			M F	Y N			
8	0						
PERSON 9			M F	Y N			
9	0						
PERSON 10			M F	Y N			
10	0						
PERSON 11			M F	Y N			
11	0						
PERSON 12			M F	Y N			
12	0						
PERSON 13			M F	Y N			
13	0						

PERMANENT HH MEMBERS: 01 **WAINWRIGHT: 364**

RETAINED COMMERCIAL HARVESTS

HOUSEHOLD ID

During the last year (between JANUARY 1, 2014, AND DECEMBER 31, 2014),
did you or members of your household PARTICIPATE in a commercial fishery?..... Y N

IF the answer is NO, go to the subsistence harvests section.

IF the answer is YES, continue on this page…

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

A …FISH commercially for _____?

B …KEEP any _____ from your commercial catch for your own use[2] or to share?

C Was the _____ that you kept INCIDENTAL[4] catch?

If KEEP is "yes"

Please estimate how many fish ALL MEMBERS OF YOUR HOUSEHOLD removed from commercial harvests for personal use during the last year.

Include COMMERCIALLY HARVESTED fish that members of this household gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If helping others, report ONLY THIS HOUSEHOLD'S share.

Read names below in blanks above	*A COM FISH?*	*B KEEP?*	*C INCI?*	How many were removed for your OWN USE?[5] *number*	How many were removed for your CREW?[5] *number*	How many were removed to give to OTHERS? *number*	Units[3] *specify*	*comments*
CHUM (DOG) SALMON *Qalugruaq, Aqalugruaq*	Y N	Y N	Y N				IND	
111,000,001								
PINK (HUMPY) SALMON *Amaqtuq*	Y N	Y N	Y N				IND	
114,000,001								
COHO (SILVER) SALMON	Y N	Y N	Y N				IND	
112,000,001								
SOCKEYE SALMON	Y N	Y N	Y N				IND	
115,000,001								
KING SALMON *Iqalsugruuk*	Y N	Y N	Y N				IND	
113,000,001								
SHEEFISH *Sii*	Y N	Y N	Y N				IND	
125,600,001								
DOLLY VARDEN *Qalukpik*	Y N	Y N	Y N				IND	
125,006,001								
BROAD WHITEFISH *Qausrixuk*	Y N	Y N	Y N				IND	
126,404,001								
KING CRAB	Y N	Y N	Y N				IND	
501,008,000								
	Y N	Y N	Y N				IND	

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

SUBSISTENCE HARVESTS

HOUSEHOLD ID

We would like to ask you some questions about your household's access to transportation. Does your household own or borrow any of the following equipment?

TRANSPORTATION

	OWN	BORROW
Boat	Y / N	Y / N
Boat Motor	Y / N	Y / N
Net	Y / N	Y / N

	OWN	BORROW
Snow machine	Y / N	Y / N
ATV	Y / N	Y / N
Car/Truck	Y / N	Y / N

Harvests of Smelt

During the last year (between JANUARY 1, 2014, AND DECEMBER 31, 2014),
did you or members of your household USE or TRY TO FISH FOR smelt?..... Y N

IF the answer is NO, go to the ASSESSMENTS SECTION below.

IF the answer is YES, continue on this page…

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

- A …use[2] ?
- B …receive _____ from another HH or community?
- C …give _____ to another HH or community?
- D …try[3] to harvest _____?
- E …actually harvest any _____?

IF harvest is YES

Read names below in blanks above	A USE?	B REC?	C GIVE?	D TRY?	E HAR?
	Y / N	Y / N	Y / N	Y / N	Y / N

Please estimate how many smelt ALL MEMBERS OF YOUR HOUSEHOLD got for subsistence uses during the last year. How many were caught with...

INCLUDE smelt 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.

GEAR TYPE USED	WINTER (Nov - Mar)	SPRING (Apr - May)	SUMMER (Jun - Aug)	FALL (Sept - Oct)	Units[4]	How many of THOSE were used for dog food?
Gear type	*number harvested for each season*				*specify*	*dogfood*
Set gillnet					GAL	
Rod & Reel					GAL	
Jig					GAL	
Other					GAL	

ASSESSMENTS: SMELT

120,400,000.

Do members of your household USUALLY USE smelt? Y / N

During the last year…did your household use LESS, SAME, or MORE smelt than in recent years?..... X L S M

X = NEVER use

If LESS or MORE…

WHY was your use different?..... _____ 1

_____ 2

During the last year…did your household GET ENOUGH ?..... Y / N

Has your household noticed any changes in fishing for SMELT in recent years?..... Y / N

If Yes, please explain (this may include weather, access, fishing partners, etc):

_____

_____

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 and a line attached to a rod or a pole.*
4 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.*

LAND MAMMALS: 10 **WAINWRIGHT: 364**

SUBSISTENCE HARVESTS: WHITEFISH

HOUSEHOLD ID

During the last year (between JANUARY 1, 2014, AND DECEMBER 31, 2014),
did you or members of your household USE or TRY TO FISH FOR whitefish?..... Y N

IF the answer is NO, go to the ASSESSMENTS section.

IF the answer is YES, continue on this page…

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

A ...use[2] _____?
B ...receive _____ from another HH or community?
C ...give _____ to another HH or community?
D ...try[2] to harvest ?
E ...actually harvest any _____?

IF harvest is YES

Please estimate how many whitefish ALL MEMBERS OF YOUR HOUSEHOLD got for subsistence uses during the last year. How many were caught with...

INCLUDE whitefish that members of this household gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If fishing with or helping others, report ONLY THIS HOUSEHOLD'S share of the harvest.

Read names below in blanks above	A USE?	B REC?	C GIVE?	D TRY?	E HAR?	GEAR TYPE USED	WINTER (Nov - Mar)	SPRING (Apr - May)	SUMMER (Jun - Aug)	FALL (Sept - Oct)	Units[4]	How many of THOSE were used for dog food?
						Gear type	*number harvested for each season*				*specify*	*dogfood*
BROAD WHITEFISH *Anaakliq* 126,404,000	Y / N	Y / N	Y / N	Y / N	Y / N	Set gillnet					IND	
						Rod & Reel					IND	
						Jig					IND	
						Other					IND	
HUMPBACK WHITEFISH *Pikuktuuq* 126,408,000	Y / N	Y / N	Y / N	Y / N	Y / N	Set gillnet					IND	
						Rod & Reel					IND	
						Jig					IND	
						Other					IND	
ARCTIC CISCO 126,406,020	Y / N	Y / N	Y / N	Y / N	Y / N	Set gillnet					IND	
						Rod & Reel					IND	
						Jig					IND	
						Other					IND	
BERING CISCO *Tiipuk* 126,406,040	Y / N	Y / N	Y / N	Y / N	Y / N	Set gillnet					IND	
						Rod & Reel					IND	
						Jig					IND	
						Other					IND	
LEAST CISCO *Iqalusaaq* 126,406,060	Y / N	Y / N	Y / N	Y / N	Y / N	Set gillnet					IND	
						Rod & Reel					IND	
						Jig					IND	
						Other					IND	

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 and a line attached to a rod or a pole.*
4 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.*

NON-SALMON FINFISH: 06 **WAINWRIGHT: 364**

SUBSISTENCE HARVESTS: WHITEFISH

HOUSEHOLD ID

…Continued from previous page

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

- A …use[2] ?
- B …receive _____ from another HH or community?
- C …give _____ to another HH or community?
- D …try[2] to harvest ?
- E …actually harvest any _____?

IF harvest is YES

Please estimate how many whitefish ALL MEMBERS OF YOUR HOUSEHOLD got for subsistence uses during the last year. How many were caught with…

INCLUDE whitefish that members of this household gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If fishing with or helping others, report ONLY THIS HOUSEHOLD'S share of the harvest.

Read names below in blanks above	A USE?	B REC?	C GIVE?	D TRY?	E HAR?	GEAR TYPE USED (Gear type)	WINTER (Nov - Mar)	SPRING (Apr - May)	SUMMER (Jun - Aug)	FALL (Sept - Oct)	Units[4] (specify)	How many of THOSE were used for dog food? (dogfood)
							number harvested for each season					
ROUND WHITEFISH	Y / N	Y / N	Y / N	Y / N	Y / N	Set gillnet					IND	
126,412,000						Drift gillnet					IND	
						Rod & Reel					IND	
						Jig					IND	
						Other					IND	
SHEEFISH *Sii*	Y / N	Y / N	Y / N	Y / N	Y / N	Set gillnet					IND	
125,600,000						Drift gillnet					IND	
						Rod & Reel					IND	
						Jig					IND	
						Other					IND	
UNKNOWN WHITEFISH	Y / N	Y / N	Y / N	Y / N	Y / N	Set gillnet					IND	
126,499,000						Drift gillnet					IND	
						Rod & Reel					IND	
						Jig					IND	
						Other					IND	

ASSESSMENTS: WHITEFISH

126,400,000

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

Do members of your household USUALLY USE whitefish? Y / N

During the last year…did your household use LESS, SAME, or MORE whitefish than in recent years?..... X L S M

X = NEVER use

If LESS or MORE…

WHY was your use different?..... _____ 1

_____ 2

During the last year…did your household GET ENOUGH ?..... Y / N

Has your household noticed any changes in fishing for other fish in recent years?..... Y / N

If Yes, please explain (this may include weather, access, fishing partners, etc):

_____

_____

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 and a line attached to a rod or a pole.*
4 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.*

NON-SALMON FINFISH: 06 **WAINWRIGHT: 364**

SUBSISTENCE HARVESTS: SALMON

HOUSEHOLD ID

During the last year (between JANUARY 1, 2014, AND DECEMBER 31, 2014),
did you or members of your household USE or TRY TO FISH FOR salmon?..... Y N

IF the answer is NO, go to the ASSESSMENTS section.

IF the answer is YES, continue on this page…

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

- A …use[2] ?
- B …receive _____ from another HH or community?
- C …give _____ to another HH or community?
- D …try[2] to harvest ?
- E …actually harvest any _____?

IF harvest is YES

Please estimate how many salmon ALL MEMBERS OF YOUR HOUSEHOLD got for subsistence uses during the last year. How many were caught 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.

Read names below in blanks above	A USE?	B REC?	C GIVE?	D TRY?	E HAR?	GEAR TYPE USED (Gear type)	JUNE	JULY	AUGUST	SEPTEMBER	OTHER	Units[4] (specify)	How many of THOSE were used for dog food? (dogfood)
							number harvested for each month						
PINK SALMON (HUMPIES) *Amaqtuq* 114,000,000	Y / N	Y / N	Y / N	Y / N	Y / N	Set gillnet						IND	
						Rod & Reel						IND	
						Other						IND	
CHUM (DOG) SALMON *Qalugruaq, Aqalugruaq* 111,000,000	Y / N	Y / N	Y / N	Y / N	Y / N	Set gillnet						IND	
						Rod & Reel						IND	
						Other						IND	
COHO SALMON 112,000,000	Y / N	Y / N	Y / N	Y / N	Y / N	Set gillnet						IND	
						Rod & Reel						IND	
						Other						IND	
KING SALMON *Iqalsugruuk* 113,000,000	Y / N	Y / N	Y / N	Y / N	Y / N	Set gillnet						IND	
						Rod & Reel						IND	
						Other						IND	
SOCKEYE SALMON 115,000,000	Y / N	Y / N	Y / N	Y / N	Y / N	Set gillnet						IND	
						Rod & Reel						IND	
						Other						IND	
SALMON - UNKNOWN 119,000,000	Y / N	Y / N	Y / N	Y / N	Y / N	Set gillnet						IND	
						Rod & Reel						IND	
						Other						IND	

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2 "USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.
3 "ROD AND REEL" includes fish caught in open water with a hook and and a line attached to a rod or a pole.
4 UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.

HARVESTS: OTHER FISH

HOUSEHOLD ID

1. Do you or members of your household USUALLY fish for other fish for subsistence, such as DOLLY VARDEN (TROUT) , NORTHERN PIKE), or any other other fish?..... Y N
2. During the last year (between JANUARY 1, 2012, AND DECEMBER 31, 2012), did you or members of your household USE or TRY TO FISH FOR other fish?..... Y N

IF the answer to QUESTION 2 is NO, go to the next harvest page.

IF the answer is YES, continue on this page…

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

- A …use[2] _____?
- B …receive _____ from another HH or community?
- C …give _____ to another HH or community?
- D …try[2] to harvest _____?
- E …actually harvest any _____?

IF harvest is YES

Please estimate how many other fish ALL MEMBERS OF YOUR HOUSEHOLD got for subsistence uses during the last year. How many were

INCLUDE other fish that members of this household gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If fishing with or helping others, report ONLY THIS HOUSEHOLD'S share of the harvest.

Read names below in blanks above	A USE?	B REC?	C GIVE?	D TRY?	E HAR?	SET GILL NET	DRIGT GILL NET	ROD & REEL	OTHER GEAR (specify type)	Units[4]	How many of THOSE were used for dog food?
						number harvested by each gear type			amount / type	specify	dogfood
DOLLY VARDEN (Trout) *Paikłuk*	Y N	Y N	Y N	Y N	Y N				/	IND	
125,006,000											
ARCTIC CHAR *Paikłuk*	Y N	Y N	Y N	Y N	Y N				/	IND	
125,002,000											
NORTHERN PIKE *Siulik*	Y N	Y N	Y N	Y N	Y N				/	IND	
125,500,000											
BURBOT *tiktaaliq*	Y N	Y N	Y N	Y N	Y N				/	IND	
124,800,000											
GRYALING *Sulukpaugaq*	Y N	Y N	Y N	Y N	Y N				/	IND	
125,200,000											
LAKE TROUT *Iqaluaqpak*	Y N	Y N	Y N	Y N	Y N				/	IND	
125,010,000											
ARCTIC COD *Iqalugaq*	Y N	Y N	Y N	Y N	Y N				/	IND	
121,002,000											
FLOUNDER *Nataagnaq*	Y N	Y N	Y N	Y N	Y N				/	IND	
121,400,000											
HERRING *Uqsruqtuuq*	Y N	Y N	Y N	Y N	Y N				/	IND	
120,200,000											
	Y N	Y N	Y N	Y N	Y N				/	IND	

During the last year, did your household use any other kind of other fish?..... Y N

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

1 *"LAST YEAR" means between JANUARY 1, 2012, and DECEMBER 31, 2012.*
2 *"USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.*
3 *"ROD AND REEL" includes fish caught in open water with a hook and and a line attached to a rod or a pole. Jigging through the ice is "other ge*
4 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.*

NON-SALMON FINFISH: 06 **WAINWRIGHT: 364**

SUBSISTENCE SUMMARY: FISH OTHER THAN SALMON

HOUSEHOLD ID

If this household did NOT USE or HARVEST fish other than salmon last year, go to the ASSESSMENT section below.
Otherwise, continue with mapping, network, and assessment sections...

MAPPING ***Refer to data collection maps and mapping instructions to map fish other than salmon...***

ASSESSMENTS: FISH OTHER THAN SALMON 100,000,002

To conclude our fish other than salmon section, I am going to ask a few general questions about fish other than salmon (Whitefish and other fishes).

During the last year…did your household use LESS, SAME, or MORE fish other than salmon than in recent years?..... X L S M

X = do not use

If LESS or MORE…

WHY was your use different?..... 1 2

► *(IF HOUSEHOLD "DOES NOT USE" fish other than salmon, go to NEXT SECTION, otherwise continue below;)*

During the last year…did your household GET ENOUGH fish other than salmon?..... Y N

If NO…

What KIND of fish other than salmon did you need?.....

WHY did your household NOT get enough fish other than salmon?..... 1 2

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

Did your household do anything DIFFERENTLY because you did NOT get enough fish other than salmon?..... Y N

IF YES…

What did your household do differently?..... 1 2

Do you have any additional comments about fish other than salmon?

NETWORKS & ASSESSMENTS OF FISH OTHER THAN SALMON: 66, 67 **WAINWRIGHT: 364**

SUBSISTENCE HARVESTS: OTHER FISH

HOUSEHOLD ID

...Continued from previous page

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

- A ...use[2] _____?
- B ...receive _____ from another HH or community?
- C ...give _____ to another HH or community?
- D ...try[2] to harvest ?
- E ...actually harvest any _____?

IF harvest is YES

Please estimate how many other fish ALL MEMBERS OF YOUR HOUSEHOLD got for subsistence uses during the last year. How many were caught 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.

Read names below in blanks above	A USE?	B REC?	C GIVE?	D TRY?	E HAR?	GEAR TYPE USED (*Gear type*)	WINTER (Nov - Mar)	SPRING (Apr - May)	SUMMER (Jun - Aug)	FALL (Sept - Oct)	Units[4] (*specify*)	How many of THOSE were used for dog food? (*dogfood*)
							number harvested for each season					
DOLLY VARDEN *Paikłuk* 125;006;000	Y / N	Y / N	Y / N	Y / N	Y / N	Set gillnet					IND	
						Rod & Reel					IND	
						Jig					IND	
						Other					IND	
ARCTIC COD *Iqalugaq* 121;002;000	Y / N	Y / N	Y / N	Y / N	Y / N	Set gillnet					IND	
						Rod & Reel					IND	
						Jig					IND	
						Other					IND	
LAKE TROUT *Iqaluaqpak* 125;010;000	Y / N	Y / N	Y / N	Y / N	Y / N	Set gillnet					IND	
						Rod & Reel					IND	
						Jig					IND	
						Other					IND	
HERRING *Uqsruqtuuq* 120;200;000	Y / N	Y / N	Y / N	Y / N	Y / N	Set gillnet					IND	
						Rod & Reel					IND	
						Jig					IND	
						Other					IND	
	Y / N	Y / N	Y / N	Y / N	Y / N	Set gillnet					IND	
						Rod & Reel					IND	
						Jig					IND	
						Other					IND	

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 and a line attached to a rod or a pole.
4 UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.

NON-SALMON FINFISH: 06 WAINWRIGHT: 364

SUBSISTENCE SUMMARY: OTHER FISH

HOUSEHOLD ID

ASSESSMENTS: OTHER FISH

960;300;500

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

Do members of your household USUALLY USE other fish? Y / N

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

X = NEVER use

If LESS or MORE…

WHY was your use different?..... _____ 1.

_____ 2.

During the last year…did your household GET ENOUGH other fish?..... Y / N

Has your household noticed any changes in fishing for other fish in recent years?..... Y / N

If Yes, please explain (this may include weather, access, fishing partners, etc):

_____

_____

NETWORKS & ASSESSMENTS OF OTHER FISH: 66, 67 **WAINWRIGHT: 364**

COMMENTS & SUMMARY

HOUSEHOLD ID

QUESTIONS, COMMENTS, CONCERNS

Do you have any questions, comments, or concerns?

INTERVIEW SUMMARY

Use this space for interviewer's comments about survey, especially factors that might have affected the household's responses.

BE SURE TO FILL IN THE STOP TIME ON THE FIRST PAGE!!!!

INTERVIEW SUMMARY: 30 WAINWRIGHT: 364

APPENDIX B.–KEY RESPONDENT INTERVIEW PROTOCOL

ADF&G/City of PHO/PL/WAI

Salmon TEK Project 09/10
Interview Guide

Because so little is known about subsistence salmon fishing in the NS villages along the Chukchi Sea coast, we (staff and cooperators of the Division of Subsistence, Alaska Department of Fish and Game) are conducting interviews with knowledgeable fishers like you in Point Hope, Point Lay, and Wainwright. By talking with you and other area subsistence fishing experts, we will learn more about salmon and subsistence salmon fishing in your communities. We understand that you and other members of your household have fished here for a long time and have a lot of experience.

Your information is important. The knowledge and observations that you and others share with us will provide documentation of subsistence use where there now is little information available. This new information will help state and federal fisheries scientists and managers, the North Slope Borough Planning and Wildlife Management Departments, and your City and NV governments in their work. Results of our work are designed to provide new information for use in efforts such as preparing for local as well as regional changes resulting from climate change, renewable and non-renewable resource development, and marine transportation in the Chukchi Sea.

We would appreciate it if you would spend some time sharing your knowledge on this important subsistence activity with us. We will compensate you for the time you spend.

To make sure we have the best record possible from our visit with you, we would like to tape this conversation with you. By not having to try to accurately write down everything you tell us while we talk, we do a better job of catching all of what you have said. Later we are then able to replay the interview and carefully take notes on what you have told us.

Before completing a report on local knowledge about salmon and subsistence salmon fishing in the three communities, we will arrange to review the draft report in each community. We will let you know when we plan for that review.

We would like to credit you as the source of the information you share with us in this interview. Should you not want us to use your name in our report we will respect that. Your name will then only be used in the acknowledgement and index of contributors to the report.

Is it OK for us to record this conversation?
(If there is a concern about this, inquire if we could make the recording, and after we have taken our notes from the interview, we “return” the recording for the respondent to keep?)

Can we use your name as a source of specific information in our report, or would you prefer that we only list you as one of many contributors?

*Recording starts at this point, with the following stated for the record:

community name
today's date and time
name of person being recorded, and
permission, or not, to use respondents name as specific source in our report

First we'll ask a little bit about you, then about fishing in general and then some questions about salmon.

1/ Where and when were you born?

a/ If born here (PHO/PL/Wain) – have you lived here all your life?

If not, where else and for how long have you lived elsewhere, and when did you settle down here (PHO/PL/Wain)?

b/ If not born here – where were you born and how long did you live there? Have you live anywhere else? When did you settle down here?

2/ When you were growing up, do you remember eating fish that your family caught?

3/ What kinds of fish do you remember eating (get Inupiaq/local names)?

a/ What kind of fish do you remember eating the most?

b/ Are those fish still the ones you eat the most of now?

4/ When you were growing up how did you learn to fish?

a/ What early memories do you have of fishing?

5/ Has fishing changed in any way since you first started fishing?

6/ If you grew up when dog teams were used, do you remember using fish for dog food?

No, go on to 7/; Yes ask:

a/ do you remember what kinds of fish were fed to dogs?

b/ did dogs eat fish all the time?

c/ What else were dogs fed?

d/ How many dogs did you usually keep?

e/ When did you stop using dogs and why?

f/ How much less fishing did you do after not having dogs to feed – half as much, or?

7/ Are fish important to your household? (Yes/No - explain)

a/ does your household share fish with other community households?

b/ do other households share with fish with your household?

c/ What kind of fish would you say is the most commonly shared between households these days?

d/ Of the meat, fish, and birds you eat in this household over a year – what percentage do you think fish is in a year? (More than half, half, less that half, or very little)

8) Have you noticed any changes in the fish you catch that seems unusual to you? If so, explain what is unusual and when he/she first began noticing the condition.

Now let's talk about salmon - we are very interested in what you know about these fish: where and when they are found, ways to catch them, and how they were/are stored and used.

Have you caught salmon as part of subsistence fishing in the Point Hope area? Yes go to 1 ; if "No" is the answer ask if the household/person has received salmon from another household and if it is regular?

1/ Are there different kinds of salmon that can be caught in your community area.

a/ what are their local names?

b/ how does one tell the difference between them?

c/ what time of the year do you start catching each kind?

d/ which direction do these salmon come from?

c/ have you caught all the different kinds of salmon? If so, please

i/ describe where you have caught each (location and when; mark location on map);

ii/ month in which harvest usually took place

iii/ describe fishing gear/method used

iv/ has fishing gear used for catching the different kinds of salmon changed in any way since you first started fishing? If so, what have the changes been?

2/ Can you remember any years when salmon fishing was especially poor/late/or early in your fishing area?

a/ Tell us about those years; was there anything unusual about the weather, water levels, etc.?

3) Can you remember any years when salmon numbers in rivers were really high? Tell us about those years;

a/ Where and when did you observe this and what kind(s) of salmon were they,

b/ Was there anything unusual about the weather, water levels, or something else that explains when there are lots of salmon in the rivers?

4/ Have you ever caught salmon that were not healthy looking?

a/ What was wrong with them – describe?

b/ When was the last time this happened?

c/ Do you eat fish like that?

5) Salmon that you have always caught – have there been any changes in

a/ Timing when they arrive

b/ Average size of the fish caught

c/ Condition of the fish (fatness, sores; parasites, etc.)?

6) Do you know of any places in the PHO/PL/Wain area where

a/ Salmon spawn (lay their eggs)?

b/ There are dead salmon in the river during summer/fall?

a/ If so, please name and locate each place on our map and tell us when, and what kind(s) of salmon are usually seen there.

7) In your mind, is there anything special about the places where salmon spawn? Are these places near river icefields; shallow/fast running water, or where water is open nearly year 'round (springs) - or something else?

9) Have you ever seen what looked like small/young salmon in any of the rivers or in the lagoons?
If so,

a/ Where have you seen "young" salmon(get location on map)

b/ When (month) have you seen them, and

c/ What did they look like, and what kind of salmon do you think they were?

10) What do you do with the salmon you catch? Is this different from what you do with other fish you catch?

11) How do you store salmon; does it vary by when/where they are caught and the kind of salmon you catch?

12) Has the way you fish for salmon changed in any way since you first started fishing? If so, in what way has there been change?

13) Do you usually catch a lot of salmon each summer/fall? Estimate catches by species/type in number of fish caught.

14) Are you catching as many salmon now as you did 10 years ago, 20 years ago, 30 years ago? If there is a difference now from the past, let's talk about why it might be so, and if there is any difference is the salmon types why that might be happening.

15) In addition to where you now fish for salmon, are there any other places where if health, time or transportation was no problem, you would go (for each type; get place name), why there, when would you go, and what equipment would you use to catch the fish there?

16) Would you say that salmon is part of the regular seasonal diet of your household or something you eat seldom?

16) Are there any stories about salmon you know of? If so, could you tell us the story (stories) and let us record it (and of course credit you)? If not, is there anyone in PHO who would know such stories? Who would that be?

17) Is there anything else about salmon that you consider important but we did not talk about it yet?

Thank you for taking time to talk us about your experiences as a fishing household in this community. We will take good care of what you told us and, unless you do not want to, we will give you credit when we use this information.

If you should remember any additional information about salmon that you think we would be interested in, please let us know and we'll be happy to record that information as well (leave contact information).

Quyanakpak!

(Remember! Complete and have the person interviewed sign the Key Respondent compensation form.)

APPENDIX C.–CONVERSION FACTORS

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

Study year	Study community	Resource name	Reported units	Conversion factor
2012	All communities	Chum salmon	Individual	5.683
2013	All communities	Chum salmon	Individual	5.920
2014	All communities	Chum salmon	Individual	6.019
2012	All communities	Chum salmon [CF retention]	Individual	5.683
2013	All communities	Chum salmon [CF retention]	Individual	5.920
2014	All communities	Chum salmon [CF retention]	Individual	6.019
2012	All communities	Coho salmon	Individual	4.853
2013	All communities	Coho salmon	Individual	4.628
2014	All communities	Coho salmon	Individual	5.141
2012	All communities	Coho salmon [CF retention]	Individual	4.853
2013	All communities	Coho salmon [CF retention]	Individual	4.628
2014	All communities	Coho salmon [CF retention]	Individual	5.141
2012	All communities	Chinook salmon	Individual	9.576
2013	All communities	Chinook salmon	Individual	9.274
2014	All communities	Chinook salmon	Individual	8.683
2013	All communities	Chinook salmon [CF retention]	Individual	9.274
2014	All communities	Chinook salmon [CF retention]	Individual	8.683
2012	All communities	Pink salmon	Individual	2.701
2013	All communities	Pink salmon	Individual	2.307
2014	All communities	Pink salmon	Individual	2.484
2012	All communities	Pink salmon [CF retention]	Individual	2.701
2013	All communities	Pink salmon [CF retention]	Individual	2.307
2014	All communities	Pink salmon [CF retention]	Individual	2.484
2012	All communities	Sockeye salmon	Individual	4.425
2013	All communities	Sockeye salmon	Individual	4.492
2014	All communities	Sockeye salmon	Individual	4.032
2012	All communities	Sockeye salmon [CF retention]	Individual	4.425
2013	All communities	Sockeye salmon [CF retention]	Individual	4.492
2014	All communities	Sockeye salmon [CF retention]	Individual	4.032
2012	Point Lay	Unknown salmon	Individual	4.026
2012	Wainwright	Unknown salmon	Individual	5.078
2013	Point Lay	Unknown salmon	Individual	4.907
2013	Wainwright	Unknown salmon	Individual	5.078
2014	Point Lay	Unknown salmon	Individual	3.535
2014	Wainwright	Unknown salmon	Individual	4.686
All years	All communities	Pacific herring	Individual	0.180
All years	All communities	Smelt	Individual	0.140
All years	All communities	Smelt	Pounds	1.000
All years	All communities	Smelt	Gallons	6.000
All years	All communities	Unknown smelt	Individual	0.140
All years	All communities	Arctic cod	Individual	0.110

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All years	All communities	Saffron cod	Individual	0.210
All years	All communities	Flounder	Individual	1.100
All years	All communities	Pacific halibut	Individual	21.100
All years	All communities	Pacific halibut [CF retention]	Pounds	1.000
All years	All communities	Burbot	Individual	4.200
All years	All communities	Arctic char	Individual	3.300
All years	All communities	Dolly Varden	Individual	3.300
All years	All communities	Dolly Varden [CF retention]	Individual	3.300
All years	All communities	Lake trout	Individual	4.000
All years	All communities	Arctic grayling	Individual	0.900
All years	All communities	Northern pike	Individual	3.300
All years	All communities	Sheefish	Individual	5.500
All years	All communities	Sheefish [CF retention]	Individual	5.500
All years	All communities	Unknown trout	Individual	3.300
All years	All communities	Broad whitefish	Individual	3.200
All years	All communities	Broad whitefish [CF retention]	Individual	3.200
All years	All communities	Arctic cisco	Individual	0.700
All years	All communities	Bering cisco	Individual	0.700
All years	All communities	Bering cisco [CF retention]	Individual	0.700
All years	All communities	Least cisco	Individual	0.700
All years	All communities	Least cisco [CF retention]	Individual	0.700
All years	All communities	Humpback whitefish	Individual	2.100
All years	All communities	Humpback whitefish [CF retention]	Individual	2.100
All years	All communities	Round whitefish	Individual	0.700
2012	Point Lay	Unknown whitefish	Individual	0.724
2012	Wainwright	Unknown whitefish	Individual	0.920
2013	Point Lay	Unknown whitefish	Individual	2.100
2013	Wainwright	Unknown whitefish	Individual	0.920
2014	Point Lay	Unknown whitefishes	Individual	2.038
2014	Wainwright	Unknown whitefishes	Individual	2.666
2012	Point Lay	Unknown non-salmon fish	Individual	0.755
All years	All communities	Unknown clams	Individual	0.100
All years	All communities	Unknown clams [CF retention]	Gallons	6.000
All years	All communities	King crab	Individual	2.100
All years	All communities	King crab [CF retention]	Individual	2.100
All years	All communities	Unknown crab [CF retention]	Individual	2.100
All years	All communities	Unknown Mussels	Gallons	1.500
All years	All communities	Shrimp	Gallons	3.900
All years	All communities	Unknown marine invertebrates	Individual	2.000

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

APPENDIX D.–ADDITIONAL TABLES

Table D1-1.–Birthplaces of household heads, Wainwright, 2012–2014.

	Percentage		
Birthplace	2012	2013	2014
Atqasuk	0.8%	2.4%	0.8%
Barrow	5.8%	14.4%	19.0%
Bethel	-	0.8%	-
Fairbanks	0.8%	-	-
Homer	0.8%	0.8%	-
Iliamna	-	0.8%	-
Kaktovik	-	0.8%	1.7%
Kivalina	-	0.8%	-
Koyuk	1.7%	0.8%	0.8%
Nuiqsut	-	-	0.8%
Point Hope	1.7%	1.6%	4.1%
Shishmaref	0.8%	-	-
Sitka	-	0.8%	-
Tyonek	0.8%	-	-
Wainwright	75.8%	58.4%	65.3%
Other Alaska	-	-	0.8%
Missing	-	4.0%	0.8%
Other U.S.	10.0%	12.0%	5.0%
Outside Alaska	-	1.6%	-
Foreign	0.8%	-	1.7%

Source ADF&G Division of Subsistence household surveys, 2013–2015.
Note "Birthplace" means the place of residence of the parents of the individual when the individual was born.

Table D1-2.–Birthplaces of population, Wainwright, 2012.

	Percentage		
Birthplace	2012	2013	2014
Anchorage	0.4%	3.2%	3.1%
Atqasuk	0.4%	1.1%	0.3%
Barrow	3.2%	11.7%	13.7%
Bethel	-	0.4%	-
Fairbanks	0.4%	-	-
Homer	0.4%	0.4%	-
Iliamna	-	0.4%	-
Kaktovik	-	0.4%	0.7%
Kivalina	-	0.4%	-
Koyuk	0.8%	0.4%	0.3%
Nuiqsut	-	-	0.3%
Point Hope	0.8%	1.4%	1.7%
Shishmaref	0.4%	-	-
Sitka	-	0.4%	-
Tyonek	0.4%	-	-
Wainwright	87.7%	68.9%	76.7%
Other Alaska	-	-	0.3%
Missing	-	4.9%	-
Other U.S.	4.8%	5.7%	2.1%
Outside Alaska	-	0.7%	-
Foreign	0.4%	-	0.7%

Source ADF&G Division of Subsistence household surveys, 2013-2015.
Note "Birthplace" means the place of residence of the parents of the individual when the individual was born.

Table D1-3.–Estimated harvests of salmon by gear type and resource, Wainwright, 2012.

				Subsistence methods											
		Removed from commercial catch		Set gillnet		Drift gillnet		Unknown method		Subsistence gear, any method		Rod and reel		Any method	
Resource	Units	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Salmon	**ind**	**0.0**	**0.0**	**167.6**	**620.5**	**0.0**	**0.0**	**66.3**	**250.2**	**233.9**	**870.7**	**111.9**	**633.4**	**345.8**	**1,504.1**
Chum salmon	ind	0.0	0.0	31.2	177.2	0.0	0.0	0.0	0.0	31.2	177.2	19.5	110.7	50.7	287.9
Coho salmon	ind	0.0	0.0	33.1	160.8	0.0	0.0	33.1	160.8	66.3	321.5	39.0	189.1	105.2	510.6
Chinook salmon	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.5	186.6	19.5	186.6
Pink salmon	ind	0.0	0.0	101.3	273.7	0.0	0.0	33.1	89.5	134.5	363.2	1.9	5.3	136.4	368.4
Sockeye salmon	ind	0.0	0.0	2.0	8.9	0.0	0.0	0.0	0.0	2.0	8.9	32.0	141.6	34.0	150.5
Unknown salmon	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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

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Table D1-4.–Estimated harvests of salmon by gear type and resource, Wainwright, 2013.

				Subsistence methods									
		Removed from commercial catch		Set gillnet		Other method		Subsistence gear, any method		Rod and reel		Any method	
Resource	Units	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Salmon	**lbs**	**0.0**	**0.0**	**615.6**	**3,171.7**	**0.0**	**0.0**	**615.6**	**1,867.3**	**45.4**	**184.8**	**661.0**	**3,356.5**
Chum salmon	lbs	0.0	0.0	180.0	1,112.4	0.0	0.0	180.0	593.3	0.0	0.0	180.0	1,112.4
Coho salmon	lbs	0.0	0.0	144.4	700.2	0.0	0.0	144.4	373.5	0.0	0.0	144.4	700.2
Chinook salmon	lbs	0.0	0.0	61.9	592.8	0.0	0.0	61.9	316.1	0.0	0.0	61.9	592.8
Pink salmon	lbs	0.0	0.0	144.4	389.8	0.0	0.0	144.4	207.9	9.4	25.3	153.8	415.1
Sockeye salmon[a]	lbs	0.0	0.0	85.0	376.6	0.0	0.0	85.0	376.6	36.0	159.5	121.0	536.0
Unknown salmon	lbs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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

a. Sockeye salmon presented as reported values.

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Table D1-5.–Estimated harvests of salmon by gear type and resource, Wainwright, 2014.

				Subsistence methods									
		Removed from commercial catch		Set gill net		Other method		Subsistence gear, any method		Rod and reel		Any method	
Resource	Units	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Salmon	**ind**	**0.0**	**0.0**	**418.8**	**2,035.6**	**0.0**	**0.0**	**418.8**	**1,122.9**	**88.7**	**395.1**	**507.5**	**2,430.6**
Chum salmon	ind	0.0	0.0	65.7	395.6	0.0	0.0	65.7	204.6	23.2	139.6	88.9	535.3
Coho salmon	ind	0.0	0.0	203.0	1,043.6	0.0	0.0	203.0	539.8	5.8	29.8	208.8	1,073.4
Chinook salmon	ind	0.0	0.0	27.1	235.0	0.0	0.0	27.1	121.6	0.0	0.0	27.1	235.0
Pink salmon	ind	0.0	0.0	87.0	216.1	0.0	0.0	87.0	111.8	9.7	24.0	96.7	240.1
Sockeye salmon[a]	ind	0.0	0.0	36.0	145.2	0.0	0.0	36.0	145.2	50.0	201.6	86.0	346.8
Unknown salmon	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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

a. Sockeye salmon presented as reported values.

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Table D1-6.–Estimated harvests of salmon and nonsalmon fish for consumption by dogs, Wainwright, 2012.

Resource	Amount		Pounds	
Salmon				
Pink salmon	2.0	ind	5.3	lb
Total	**2.0**	**ind**	**5.3**	**lb**

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

Table D1-7.–Estimated harvests of salmon and nonsalmon fish for consumption by dogs, Wainwright, 2013.

Resource	Amount		Pounds	
Salmon				
Unknown salmon	236.3	ind	166.1	lb
Nonsalmon fish				
Flounder	1.9	ind	2.1	lb
Bering cisco	187.5	ind	131.3	lb
Least cisco	46.9	ind	32.8	lb
Total	**472.5**	**ind**	**332.3**	**lb**

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

Table D1-8.–Estimated harvests of salmon and nonsalmon fish for consumption by dogs, Wainwright, 2014.

Resource	Amount		Pounds	
Nonsalmon fish				
Smelt	82.9	Gal	497.3	Lbs
Total	**82.9**	**Gal**	**497.3**	**Lbs**

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

Table D1-9.–Estimated harvests of nonsalmon fish by gear type and resource, Wainwright, 2012.

		Removed from commercial catch		Subsistence methods													
				Set gillnet		Drift gillnet		Jigging		Other method		Subsistence gear, any method		Rod and reel		Any method	
Resource	Units	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds
Nonsalmon fish			**0.0**		**8,830.4**		**0.0**		**23,066.1**		**650.9**		**32,547.4**		**756.7**		**33,304.0**
Unknown smelt	gal	0.0	0.0	0.0	0.0	0.0	0.0	3,161.5	18,969.1	0.0	0.0	3,161.5	18,969.1	75.2	451.1	3,236.7	19,420.2
Arctic cod	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flounder	ind	0.0	0.0	19.5	21.4	0.0	0.0	0.0	0.0	0.0	0.0	19.5	21.4	0.0	0.0	19.5	21.4
Burbot	ind	0.0	0.0	13.6	57.3	0.0	0.0	0.0	0.0	87.7	368.3	101.3	425.6	0.0	0.0	101.3	425.6
Arctic char	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dolly Varden	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lake trout	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.5	77.9	19.5	77.9	0.0	0.0	19.5	77.9
Arctic grayling	ind	0.0	0.0	0.0	0.0	0.0	0.0	4,519.8	4,097.0	0.0	0.0	4,519.8	4,097.0	0.0	0.0	4,519.8	4,097.0
Northern pike	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sheefish	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Broad whitefish	ind	0.0	0.0	1,562.0	4,998.3	0.0	0.0	0.0	0.0	0.0	0.0	1,562.0	4,998.3	0.0	0.0	1,562.0	4,998.3
Bering cisco	ind	0.0	0.0	240.8	168.6	0.0	0.0	0.0	0.0	17.5	12.3	258.3	180.8	389.7	272.8	648.1	453.7
Least cisco	ind	0.0	0.0	623.7	436.6	0.0	0.0	0.0	0.0	0.0	0.0	623.7	436.6	0.0	0.0	623.7	436.6
Humpback whitefish	ind	0.0	0.0	1,499.1	3,148.2	0.0	0.0	0.0	0.0	91.6	192.3	1,590.7	3,340.5	15.6	32.7	1,606.3	3,373.2
Round whitefish	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown whitefish	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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

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

Table D1-10.–Estimated harvests of nonsalmon fish by gear type and resource, Wainwright, 2013.

				Subsistence methods											
		Removed from commercial catch		Set gillnet		Jigging		Other method		Subsistence gear, any method		Rod and reel		Any method	
Resource	Units	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds
Nonsalmon fish			**0.0**		**4,965.4**		**11,320.2**		**821.4**		**17,107.0**		**2,518.4**		**19,625.5**
Pacific herring	gal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Smelt	gal	0.0	0.0	0.0	0.0	1,374.6	8,247.7	0.0	0.0	1,374.6	8,247.7	105.0	630.0	1,479.6	8,877.7
Arctic cod	ind	0.0	0.0	0.0	0.0	262.5	28.9	0.0	0.0	262.5	28.9	0.0	0.0	262.5	28.9
Saffron cod	ind	0.0	0.0	0.0	0.0	93.8	19.7	0.0	0.0	93.8	19.7	46.9	9.8	140.6	29.5
Flounder	ind	0.0	0.0	30.0	33.0	0.0	0.0	0.0	0.0	30.0	33.0	0.0	0.0	30.0	33.0
Pacific halibut	lbs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	79.5	79.5	79.5	79.5
Burbot	ind	0.0	0.0	18.8	78.8	67.5	283.5	0.0	0.0	86.3	362.3	28.1	118.1	114.4	480.4
Arctic char	ind	0.0	0.0	0.0	0.0	7.5	24.8	0.0	0.0	7.5	24.8	0.0	0.0	7.5	24.8
Dolly Varden	ind	0.0	0.0	28.1	92.8	0.0	0.0	0.0	0.0	28.1	92.8	26.3	86.6	54.4	179.4
Lake trout	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	37.5	150.0	37.5	150.0
Arctic grayling	ind	0.0	0.0	562.5	506.3	1,089.4	980.4	0.0	0.0	1,651.9	1,486.7	1,404.4	1,263.9	3,056.3	2,750.6
Sheefish	ind	0.0	0.0	0.0	0.0	37.5	206.3	0.0	0.0	37.5	206.3	0.0	0.0	37.5	206.3
Broad whitefish	ind	0.0	0.0	421.9	1,350.0	0.0	0.0	48.8	156.0	470.6	1,506.0	37.5	120.0	508.1	1,626.0
Arctic cisco	ind	0.0	0.0	646.9	452.8	37.5	26.3	210.0	147.0	894.4	626.1	39.4	27.6	933.8	653.6
Bering cisco	ind	0.0	0.0	1,591.9	1,114.3	2,118.8	1,483.1	346.9	242.8	4,057.5	2,840.3	46.9	32.8	4,104.4	2,873.1
Least cisco	ind	0.0	0.0	1,526.3	1,068.4	28.1	19.7	0.0	0.0	1,554.4	1,088.1	0.0	0.0	1,554.4	1,088.1
Humpback whitefish	ind	0.0	0.0	121.9	255.9	0.0	0.0	131.3	275.6	253.1	531.6	0.0	0.0	253.1	531.6
Round whitefish	ind	0.0	0.0	18.8	13.1	0.0	0.0	0.0	0.0	18.8	13.1	0.0	0.0	18.8	13.1
Unknown whitefishes	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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

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

Table D1-11.–Estimated harvests of nonsalmon fish by gear type and resource, Wainwright, 2014.

				Subsistence methods											
		Removed from commercial catch		Set gillnet		Jigging		Other method		Subsistence gear, any method		Rod and reel		Any method	
Resource	Units	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds
Nonsalmon fish			**0.0**		**11,096.2**		**9,498.1**				**6,699.4**		**2,861.6**		**25,311.9**
Pacific herring	gal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Smelt	gal	0.0	0.0	0.5	2.7	1,548.0	9,287.9	0.0	0.0	0.5	1.4	14.1	84.7	1,562.6	9,375.4
Arctic cod	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saffron cod	ind	0.0	0.0	96.7	20.3	0.0	0.0	0.0	0.0	96.7	10.5	96.7	20.3	193.3	40.6
Unknown flounder	ind	0.0	0.0	193.3	212.7	0.0	0.0	0.0	0.0	193.3	110.0	0.0	0.0	193.3	212.7
Burbot	ind	0.0	0.0	0.0	0.0	40.6	170.5	0.0	0.0	0.0	0.0	40.6	170.5	81.2	341.0
Arctic char	ind	0.0	0.0	201.1	663.5	0.0	0.0	0.0	0.0	201.1	343.2	0.0	0.0	201.1	663.5
Dolly Varden	ind	0.0	0.0	11.6	38.3	0.0	0.0	0.0	0.0	11.6	19.8	0.0	0.0	11.6	38.3
Lake trout	ind	0.0	0.0	19.3	77.3	0.0	0.0	0.0	0.0	19.3	40.0	42.5	170.1	61.9	247.5
Arctic grayling	ind	0.0	0.0	638.0	574.2	29.0	26.1	0.0	0.0	638.0	297.0	2,047.4	1,842.7	2,714.4	2,443.0
Northern pike	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sheefish	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.7	53.2	9.7	53.2
Broad whitefish	ind	0.0	0.0	2,484.3	7,949.9	0.0	0.0	580.0	1,856.0	3,064.3	5,072.0	116.0	371.2	3,180.3	10,177.1
Arctic cisco	ind	0.0	0.0	676.7	473.7	19.3	13.5	0.0	0.0	676.7	245.0	0.0	0.0	696.0	487.2
Bering cisco	ind	0.0	0.0	58.0	40.6	0.0	0.0	0.0	0.0	58.0	21.0	0.0	0.0	58.0	40.6
Least cisco	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	96.7	67.7	96.7	67.7
Humpback whitefish	ind	0.0	0.0	5.8	12.2	0.0	0.0	0.0	0.0	5.8	6.3	38.7	81.2	44.5	93.4
Round whitefish	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown whitefishes	ind	0.0	0.0	386.7	1,030.9	0.0	0.0	0.0	0.0	386.7	533.2	0.0	0.0	386.7	1,030.9

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

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

Table D1-12.–Reasons for less household uses of resources compared to recent years, Wainwright, 2012.

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
Any resource	129	48	2	4.2%	5	10%	0	0.0%	7	15%	15	31%	17	35%	0	0.0%	3	6.3%
Salmon	74	32	1	3.1%	1	3%	0	0.0%	4	13%	10	31%	10	31%	0	0.0%	3	9.4%
Whitefishes	75	26	2	7.7%	3	12%	0	0.0%	1	4%	7	27%	6	23%	0	0.0%	1	3.8%
Other nonsalmon fish	67	22	1	4.5%	1	5%	0	0.0%	4	18%	6	27%	7	32%	0	0.0%	2	9.1%

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Table D1-12.–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		Competition	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	129	48	0	0%	5	10.4%	0	0.0%	1	2.1%	0	0.0%	4	8.3%	1	2.1%	0	0.0%	0	0.0%
Salmon	74	32	0	0%	5	15.6%	0	0.0%	1	3.1%	0	0.0%	0	0.0%	1	3.1%	0	0.0%	0	0.0%
Whitefishes	75	26	0	0%	2	7.7%	0	0.0%	1	3.8%	0	0.0%	3	11.5%	0	0.0%	0	0.0%	0	0.0%
Other nonsalmon fish	67	22	0	0%	1	4.5%	0	0.0%	0	0.0%	0	0.0%	1	4.5%	0	0.0%	0	0.0%	0	0.0%

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

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

Table D1-13–Reasons for less household uses of resources compared to recent years, Wainwright, 2013.

Resource category	Valid responses[a]	Households reporting reasons for less use	Family/ personal		Resources less available		Too far to travel		Lack of equipment		Less sharing		Lack of effort		Unsuccessful		Weather/ environment	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	149	23	2	8.7%	5	22%	0	0.0%	3	13%	2	9%	7	30%	0	0.0%	4	17.4%
Salmon	78	10	0	0.0%	4	40%	0	0.0%	2	20%	0	0%	1	10%	0	0.0%	2	20.0%
Smelt	80	14	2	14.3%	0	0%	0	0.0%	2	14%	2	14%	4	29%	0	0.0%	2	14.3%
Nonsalmon fish	74	11	0	0.0%	1	9%	0	0.0%	0	0%	0	0%	3	27%	0	0.0%	2	18.2%

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Table D1-13.–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		Competition	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	149	23	0	0%	3	13.0%	1	4.3%	1	4.3%	2	8.7%	1	4.3%	0	0.0%	0	0.0%	1	4.3%
Salmon	78	10	0	0%	0	0.0%	1	10.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	10.0%
Smelt	80	14	0	0%	3	21.4%	0	0.0%	1	7.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Nonsalmon fish	74	11	0	0%	1	9.1%	0	0.0%	0	0.0%	2	18.2%	1	9.1%	0	0.0%	0	0.0%	1	9.1%

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

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

Table D1- 14.–Reasons for less household uses of resources compared to recent years, Wainwright, 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
Any resource	142	36	1	2.8%	2	6%	0	0.0%	0	0%	23	64%	10	28%	4	11.1%	0	0.0%
Salmon	63	13	0	0.0%	0	0%	0	0.0%	0	0%	11	85%	2	15%	0	0.0%	0	0.0%
Smelt	70	20	1	5.0%	2	10%	0	0.0%	0	0%	9	45%	8	40%	0	0.0%	0	0.0%
Whitefish	60	9	0	0.0%	0	0%	0	0.0%	0	0%	7	78%	1	11%	0	0.0%	0	0.0%
Other nonsalmon fish	67	12	0	0.0%	0	0%	0	0.0%	0	0%	6	50%	2	17%	4	33.3%	0	0.0%

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Table D1-14.–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		Competition	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	142	36	3	8%	1	2.8%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Salmon	63	13	0	0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Smelt	70	20	1	5%	1	5.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Whitefish	60	9	1	11%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other nonsalmon fish	67	12	1	8%	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.

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

Table D1-15.–Reasons for more household uses of resources compared to recent years, Wainwright, 2012.

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
Any resource	129	48	2	4.2%	5	10%	0	0.0%	7	15%	15	31%	17	35%	0	0.0%	3	6.3%
Salmon	74	32	1	3.1%	1	3%	0	0.0%	4	13%	10	31%	10	31%	0	0.0%	3	9.4%
Whitefishes	75	26	2	7.7%	3	12%	0	0.0%	1	4%	7	27%	6	23%	0	0.0%	1	3.8%
Other nonsalmon fish	67	22	1	4.5%	1	5%	0	0.0%	4	18%	6	27%	7	32%	0	0.0%	2	9.1%

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Table D1-12.–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		Competition	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	129	48	0	0%	5	10.4%	0	0.0%	1	2.1%	0	0.0%	4	8.3%	1	2.1%	0	0.0%	0	0.0%
Salmon	74	32	0	0%	5	15.6%	0	0.0%	1	3.1%	0	0.0%	0	0.0%	1	3.1%	0	0.0%	0	0.0%
Whitefishes	75	26	0	0%	2	7.7%	0	0.0%	1	3.8%	0	0.0%	3	11.5%	0	0.0%	0	0.0%	0	0.0%
Other nonsalmon fish	67	22	0	0%	1	4.5%	0	0.0%	0	0.0%	0	0.0%	1	4.5%	0	0.0%	0	0.0%	0	0.0%

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

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

Table D1-16–Reasons for more household uses of resources compared to recent years, Wainwright, 2013.

Resource category	Valid responses[a]	Households reporting reasons for more use	Increased availability		Used other resources		Favorable weather		Received more		Needed more		Increased effort		Had more help	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	149	16	2	12.5%	0	0.0%	1	6.3%	7	43.8%	1	6.3%	0	0.0%	0	0.0%
Salmon	78	10	1	10.0%	0	0.0%	0	0.0%	5	50.0%	1	10.0%	1	10.0%	0	0.0%
Smelt	80	9	2	22.2%	0	0.0%	1	11.1%	3	33.3%	0	0.0%	1	11.1%	0	0.0%
Nonsalmon fish	74	5	1	20.0%	0	0.0%	0	0.0%	2	40.0%	0	0.0%	1	20.0%	0	0.0%

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Table D1-16.–Continued.

Resource category	Valid responses[a]	Households reporting reasons for more use	Other		Regulations		Traveled farther		More success		Needed less		Store-bought expense		Got/ fixed equipment	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	149	16	0	0.0%	0	0.0%	0	0.0%	3	18.8%	0	0.0%	1	6.3%	0	0.0%
Salmon	78	10	0	0.0%	0	0.0%	0	0.0%	1	10.0%	0	0.0%	1	10.0%	0	0.0%
Smelt	80	9	0	0.0%	0	0.0%	0	0.0%	2	22.2%	0	0.0%	0	0.0%	0	0.0%
Nonsalmon fish	74	5	0	0.0%	0	0.0%	0	0.0%	1	20.0%	0	0.0%	0	0.0%	0	0.0%

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

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

Table D1-17.–Reasons for more household uses of resources compared to recent years, Wainwright, 2014.

Resource category	Valid responses[a]	Households reporting reasons for more use	Increased availability		Used other resources		Favorable weather		Received more		Needed more		Increased effort		Had more help	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	142	23	1	4.3%	0	0.0%	2	8.7%	13	56.5%	0	0.0%	0	0.0%	1	4.3%
Salmon	63	8	0	0.0%	0	0.0%	1	12.5%	7	87.5%	0	0.0%	1	12.5%	0	0.0%
Smelt	70	10	0	0.0%	0	0.0%	0	0.0%	5	50.0%	0	0.0%	2	20.0%	0	0.0%
Whitefish	60	11	0	0.0%	0	0.0%	1	9.1%	5	45.5%	0	0.0%	1	9.1%	1	9.1%
Other nonsalmon fish	67	6	1	16.7%	0	0.0%	0	0.0%	2	33.3%	0	0.0%	1	16.7%	0	0.0%

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Table D1-17.–Continued.

Resource category	Valid responses[a]	Households reporting reasons for more use	Other		Regulations		Traveled farther		More success		Needed less		Store-bought expense		Got/ fixed equipment	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	142	23	1	4.3%	0	0.0%	0	0.0%	8	34.8%	0	0.0%	0	0.0%	0	0.0%
Salmon	63	8	0	0.0%	0	0.0%	0	0.0%	1	12.5%	0	0.0%	0	0.0%	0	0.0%
Smelt	70	10	0	0.0%	0	0.0%	0	0.0%	3	30.0%	0	0.0%	0	0.0%	0	0.0%
Whitefish	60	11	1	9.1%	0	0.0%	0	0.0%	3	27.3%	0	0.0%	0	0.0%	0	0.0%
Other nonsalmon fish	67	6	0	0.0%	0	0.0%	0	0.0%	3	50.0%	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 D2-1.–Birthplaces of household heads, Point Lay, 2012–2014.

Birthplace	Percentage		
	2012	2013	2014
Anchorage	4.3%	1.6%	-
Barrow	8.7%	10.9%	13.4%
Bethel	1.4%	-	-
Chena Hot Springs	-	-	1.5%
Diomede	1.4%	1.6%	1.5%
Fairbanks	1.4%	1.6%	-
Kobuk	-	-	1.5%
Kotzebue	8.7%	14.1%	13.4%
Noatak	1.4%	-	-
Noorvik	-	3.1%	-
Nuiqsut	1.4%	1.6%	1.5%
Point Hope	5.8%	6.3%	4.5%
Point Lay	37.7%	29.7%	35.8%
Tanana	-	3.1%	-
Wainwright	2.9%	4.7%	1.5%
Other Alaska	1.4%	-	-
Missing	1.4%	3.1%	6.0%
Other U.S.	21.7%	18.8%	19.4%

Source ADF&G Division of Subsistence household surveys, 2013-2015.
Note "Birthplace" means the place of residence of the parents of the individual when the individual was born.

Table D2- 2.–Birthplaces of population, Point Lay, 2012–2014.

Birthplace	Percentage		
	2012	2013	2014
Anchorage	1.8%	1.2%	-
Barrow	4.3%	6.6%	6.2%
Bethel	0.6%	-	-
Chena Hot Springs	-	-	0.6%
Diomede	0.6%	0.6%	0.6%
Fairbanks	0.6%	0.6%	-
Kobuk	-	-	0.6%
Kotzebue	3.7%	6.0%	5.1%
Noatak	0.6%	-	-
Noorvik	-	1.8%	-
Nuiqsut	0.6%	0.6%	0.6%
Point Hope	3.1%	3.6%	2.3%
Point Lay	68.7%	62.9%	72.9%
Tanana	-	1.2%	-
Wainwright	2.5%	2.4%	0.6%
Other Alaska	0.6%	-	-
Missing	1.2%	2.4%	2.3%
Other U.S.	11.0%	10.2%	8.5%

Source ADF&G Division of Subsistence household surveys, 2013-2015.
Note "Birthplace" means the place of residence of the parents of the individual when the individual was born.

Table D2-3.–Estimated harvests of salmon by gear type and resource, Point Lay, 2012.

				Subsistence methods											
		Removed from commercial catch		Set gillnet		Drift gillnet		Other method		Subsistence gear, any method		Rod and reel		Any method	
Resource	Units	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Salmon	**ind**	**0.0**	**0.0**	**2,134.4**	**8,596.9**	**0.0**	**0.0**	**0.0**	**0.0**	**2,134.4**	**8,596.9**	**43.1**	**169.7**	**2,177.5**	**8,766.6**
Chum salmon	ind	0.0	0.0	655.6	3,726.1	0.0	0.0	0.0	0.0	655.6	3,726.1	3.2	18.1	658.8	3,744.3
Coho salmon	ind	0.0	0.0	371.7	1,803.6	0.0	0.0	0.0	0.0	371.7	1,803.6	0.0	0.0	371.7	1,803.6
Chinook salmon	ind	0.0	0.0	8.0	76.4	0.0	0.0	0.0	0.0	8.0	76.4	6.4	61.1	14.4	137.5
Pink salmon	ind	0.0	0.0	1,086.4	2,934.3	0.0	0.0	0.0	0.0	1,086.4	2,934.3	33.5	90.5	1,119.9	3,024.7
Sockeye salmon	ind	0.0	0.0	12.8	56.5	0.0	0.0	0.0	0.0	12.8	56.5	0.0	0.0	12.8	56.5
Unknown salmon	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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

Table D2-4.–Estimated harvests of salmon by gear type and resource, Point Lay, 2013.

				Subsistence methods									
		Removed from commercial catch		Set gillnet		Other method		Subsistence gear, any method		Rod and reel		Any method	
Resource	Units	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Salmon	**ind**	**0.0**	**0.0**	**265.1**	**1,305.4**	**0.0**	**0.0**	**265.1**	**856.7**	**9.1**	**40.6**	**274.3**	**1,346.0**
Chum salmon	ind	0.0	0.0	152.4	941.7	0.0	0.0	152.4	618.0	4.6	28.3	157.0	970.0
Coho salmon	ind	0.0	0.0	3.0	14.8	0.0	0.0	3.0	9.7	0.0	0.0	3.0	14.8
Chinook salmon	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pink salmon	ind	0.0	0.0	79.2	213.9	0.0	0.0	79.2	140.4	4.6	12.3	83.8	226.3
Sockeye salmon	ind	0.0	0.0	30.5	135.0	0.0	0.0	30.5	88.6	0.0	0.0	30.5	135.0
Unknown salmon	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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

Table D2-5.–Estimated harvests of salmon by gear type and resource, Point Lay, 2014.

				Subsistence methods									
		Removed from commercial catch		Set gillnet		Other method		Subsistence gear, any method		Rod and reel		Any method	
Resource	Units	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Salmon	**ind**	**0.0**	**0.0**	**1,579.7**	**5,389.5**	**18.9**	**90.9**	**1,598.6**	**3,479.6**	**26.8**	**108.0**	**1,625.4**	**5,588.3**
Chum salmon	ind	0.0	0.0	258.3	1,554.7	0.0	0.0	258.3	987.1	0.0	0.0	258.3	1,554.7
Coho salmon	ind	0.0	0.0	141.8	728.7	0.0	0.0	141.8	462.7	0.0	0.0	141.8	728.7
Chinook salmon	ind	0.0	0.0	28.4	246.2	3.2	27.4	31.5	173.7	0.0	0.0	31.5	273.5
Pink salmon	ind	0.0	0.0	1,151.3	2,859.9	0.0	0.0	1,151.3	1,815.8	0.0	0.0	1,151.3	2,859.9
Sockeye salmon	ind	0.0	0.0	0.0	0.0	15.8	63.5	15.8	40.3	26.8	108.0	42.5	171.5
Unknown salmon	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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

Table D2-6.–Estimated harvests of salmon and nonsalmon fish for consumption by dogs, Point Lay, 2012.

Resource	Amount		Pounds	
Salmon				
Pink salmon	255.2	ind	689.4	lb
Nonsalmon fish				
Smelt	0.3	gal	1.8	lb
Arctic grayling	31.9	ind	28.7	lb
Unknown whitefishes	478.6	ind	346.3	lb
Unknown nonsalmon fish	23.9	ind	18.1	lb
Total	**789.9**	**ind**	**1084.3**	**lb**

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

Table D2-7.–Estimated harvests of salmon and nonsalmon fish for consumption by dogs, Point Lay, 2013.

Resource	Amount		Pounds	
Salmon				
Pink salmon	45.7	ind	123.4	lb
Nonsalmon fish				
Arctic grayling	71.6	ind	66.7	lb
Total	**117.3**	**ind**	**190.1**	**lb**

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

Table D2-8.–Estimated harvests of salmon and nonsalmon fish for consumption by dogs, Point Lay, 2014.

Resource	Amount		Pounds	
Salmon				
Chum salmon	15.8	ind	94.8	lb
Pink salmon	252.0	ind	626.0	lb
Nonsalmon fish				
Smelt	5.9	gal	35.3	lb
Unknown flounder	6.3	ind	6.9	lb
Arctic grayling	726.9	ind	654.2	lb
Total			**1,417.2**	**lb**

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

Table D2- 9.–Estimated harvests of nonsalmon fish by gear type and resource, Point Lay, 2012.

		Removed from commercial catch		Subsistence methods													
				Set gillnet		Drift gillnet		Jigging		Other method		Subsistence gear, any method		Rod and reel		Any method	
Resource	Units	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds
Nonsalmon fish			**0.0**		**1,766.7**	**0.0**	**0.0**		**2,022.2**		**1,063.3**		**4,852.1**		**193.0**		**5,045.2**
Pacific herring	gal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	27.6	165.4	27.6	165.4	0.0	0.0	27.6	165.4
Smelt	gal	0.0	0.0	3.5	20.8	0.0	0.0	50.4	302.2	0.0	0.0	53.8	322.9	1.5	8.9	55.3	331.9
Pacific tomcod	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flounder	ind	0.0	0.0	31.9	35.1	0.0	0.0	0.0	0.0	0.0	0.0	31.9	35.1	0.0	0.0	31.9	35.1
Pacific halibut	lb	0.0	0.0	0.0	0.0	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	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Arctic char	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dolly Varden	ind	0.0	0.0	430.7	1,421.4	0.0	0.0	0.0	0.0	62.2	205.3	492.9	1,626.7	0.0	0.0	492.9	1,626.7
Lake trout	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Arctic grayling	ind	0.0	0.0	23.9	21.5	0.0	0.0	1,911.1	1,720.0	0.0	0.0	1,935.0	1,741.5	9.6	8.6	1,944.6	1,750.1
Northern pike	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sheefish	ind	0.0	0.0	4.8	26.3	0.0	0.0	0.0	0.0	0.0	0.0	4.8	26.3	31.9	175.5	36.7	201.8
Broad whitefish	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Arctic cisco	ind	0.0	0.0	279.2	195.4	0.0	0.0	0.0	0.0	0.0	0.0	279.2	195.4	0.0	0.0	279.2	195.4
Bering cisco	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Least cisco	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Humpback whitefish	ind	0.0	0.0	4.8	10.1	0.0	0.0	0.0	0.0	0.0	0.0	4.8	10.1	0.0	0.0	4.8	10.1
Unknown whitefishes	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	957.1	692.6	957.1	692.6	0.0	0.0	957.1	692.6
Unknown nonsalmon fish	ind	0.0	0.0	47.9	36.2	0.0	0.0	0.0	0.0	0.0	0.0	47.9	36.2	0.0	0.0	47.9	36.2

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

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

Table D2-10.–Estimated harvests of nonsalmon fish by gear type and resource, Point Lay, 2013.

		Removed from commercial catch		Subsistence methods											
				Set gillnet		Jigging		Other method		Subsistence gear, any method		Rod and reel		Any method	
Resource	Units	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds
Nonsalmon fish			**0.0**		**1,365.7**		**1,694.8**		**0.0**		**3,060.5**		**193.8**		**3,254.3**
Pacific herring	gal	0.0	0.0	0.5	2.7	0.0	0.0	0.0	0.0	0.5	2.7	0.0	0.0	0.5	2.7
Smelt	gal	0.0	0.0	0.0	0.0	73.2	439.5	0.0	0.0	73.2	439.5	0.0	0.0	73.2	439.5
Arctic cod	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saffron cod	ind	0.0	0.0	0.0	0.0	7.6	1.6	0.0	0.0	7.6	1.6	0.0	0.0	7.6	1.6
Flounder	ind	0.0	0.0	45.7	50.3	0.0	0.0	0.0	0.0	45.7	50.3	0.0	0.0	45.7	50.3
Pacific halibut	lbs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	193.8	193.8	193.8	193.8
Burbot	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Arctic char	ind	0.0	0.0	0.0	0.0	4.6	15.1	0.0	0.0	4.6	15.1	0.0	0.0	4.6	15.1
Dolly Varden	ind	0.0	0.0	6.1	20.1	9.1	30.2	0.0	0.0	15.2	50.3	0.0	0.0	15.2	50.3
Lake trout	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Arctic grayling	ind	0.0	0.0	1,371.4	1,276.6	1,298.3	1,208.5	0.0	0.0	2,669.7	2,485.0	0.0	0.0	2,669.7	2,485.0
Sheefish	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Broad whitefish	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Arctic cisco	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bering cisco	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Least cisco	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Humpback whitefish	ind	0.0	0.0	7.6	16.0	0.0	0.0	0.0	0.0	7.6	16.0	0.0	0.0	7.6	16.0
Round whitefish	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown whitefishes	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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

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

Table D2-11.–Estimated harvests of nonsalmon fish by gear type and resource, Point Lay, 2014.

		Removed from commercial catch		Subsistence methods											
				Set gillnet		Jigging		Other method		Subsistence gear, any method		Rod and reel		Any method	
Resource	Units	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds
Nonsalmon fish			**0.0**		**527.8**		**3,927.1**		**0.0**		**335.1**		**300.2**		**4,755.1**
Pacific herring	gal	0.0	0.0	0.2	1.1	0.0	0.0	0.0	0.0	0.2	0.7	0.0	0.0	0.2	1.1
Smelt	gal	0.0	0.0	0.2	1.1	70.1	420.8	0.0	0.0	0.2	0.7	26.8	161.0	97.1	582.9
Arctic cod	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saffron cod	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown flounder	ind	0.0	0.0	12.6	13.9	0.0	0.0	0.0	0.0	12.6	8.8	0.0	0.0	12.6	13.9
Pacific halibut	lbs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.3	132.9	6.3	132.9
Burbot	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Arctic char	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dolly Varden	ind	0.0	0.0	14.2	46.8	55.1	181.9	0.0	0.0	14.2	29.7	0.0	0.0	69.3	228.7
Lake trout	ind	0.0	0.0	1.6	6.3	0.0	0.0	0.0	0.0	1.6	4.0	1.6	6.3	3.2	12.6
Arctic grayling	ind	0.0	0.0	406.4	365.7	3,671.3	3,304.2	0.0	0.0	406.4	232.2	0.0	0.0	4,077.7	3,669.9
Sheefish	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown trout	ind	0.0	0.0	3.2	10.4	0.0	0.0	0.0	0.0	3.2	6.6	0.0	0.0	3.2	10.4
Broad whitefish	ind	0.0	0.0	18.9	60.5	6.3	20.2	0.0	0.0	18.9	38.4	0.0	0.0	25.2	80.6
Arctic cisco	ind	0.0	0.0	9.5	6.6	0.0	0.0	0.0	0.0	9.5	4.2	0.0	0.0	9.5	6.6
Bering cisco	ind	0.0	0.0	11.0	7.7	0.0	0.0	0.0	0.0	11.0	4.9	0.0	0.0	11.0	7.7
Least cisco	ind	0.0	0.0	1.6	1.1	0.0	0.0	0.0	0.0	1.6	0.7	0.0	0.0	1.6	1.1
Humpback whitefish	ind	0.0	0.0	3.2	6.6	0.0	0.0	0.0	0.0	3.2	4.2	0.0	0.0	3.2	6.6
Round whitefish	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown whitefishes	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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

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

Table D2-12.–Reasons for less household uses of resources compared to recent years, Point Lay, 2012.

Resource category	Valid responses[a]	Households reporting reasons for more use	Increased availability		Used other resources		Favorable weather		Received more		Needed more		Increased effort		Had more help	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	135	23	7	30.4%	0	0.0%	0	0.0%	6	26.1%	1	4.3%	0	0.0%	2	8.7%
Salmon	42	4	2	50.0%	0	0.0%	0	0.0%	1	25.0%	0	0.0%	1	25.0%	0	0.0%
Nonsalmon fish	42	5	1	20.0%	0	0.0%	0	0.0%	0	0.0%	1	20.0%	1	20.0%	2	40.0%

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Table D2-15.–Continued.

Resource category	Valid responses[a]	Households reporting reasons for more use	Other		Regulations		Traveled farther		More success		Needed less		Store-bought expense		Got/ fixed equipment	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	135	23	1	4.3%	0	0.0%	1	4.3%	4	17.4%	0	0.0%	0	0.0%	0	0.0%
Salmon	42	4	0	0.0%	0	0.0%	0	0.0%	1	25.0%	0	0.0%	0	0.0%	0	0.0%
Nonsalmon fish	42	5	0	0.0%	0	0.0%	0	0.0%	2	40.0%	0	0.0%	0	0.0%	0	0.0%

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

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

Table D2-13.–Reasons for less household uses of resources compared to recent years, Point Lay, 2013.

Resource category	Valid responses[a]	Households reporting reasons for less use	Family/ personal		Resources less available		Too far to travel		Lack of equipment		Less sharing		Lack of effort		Unsuccessful		Weather/ environment	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	75	26	1	3.8%	6	23%	0	0.0%	5	19%	16	62%	11	42%	1	3.8%	1	3.8%
Salmon	40	16	1	6.3%	3	19%	0	0.0%	2	13%	10	63%	4	25%	0	0.0%	0	0.0%
Nonsalmon fish	39	12	1	8.3%	2	17%	0	0.0%	2	17%	4	33%	5	42%	1	8.3%	0	0.0%
Smelt	38	15	0	0.0%	2	13%	0	0.0%	1	7%	9	60%	3	20%	0	0.0%	1	6.7%
Whitefish	39	8	1	12.5%	1	13%	0	0.0%	0	0%	7	88%	1	13%	0	0.0%	0	0.0%

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Table D2-13.–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		Competition	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	75	26	0	0%	1	3.8%	0	0.0%	0	0.0%	0	0.0%	1	3.8%	0	0.0%	0	0.0%	0	0.0%
Salmon	40	16	0	0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	6.3%	0	0.0%	0	0.0%	0	0.0%
Nonsalmon fish	39	12	0	0%	1	8.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Smelt	38	15	0	0%	1	6.7%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Whitefish	39	8	0	0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

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

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

Table D2- 14.–Reasons for less household uses of resources compared to recent years, Point Lay, 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
Any resource	79	23	0	0.0%	5	22%	0	0.0%	1	4%	6	26%	9	39%	6	26.1%	2	8.7%
Salmon	37	9	0	0.0%	2	22%	0	0.0%	0	0%	2	22%	1	11%	1	11.1%	2	22.2%
Smelt	39	13	0	0.0%	2	15%	0	0.0%	1	8%	0	0%	6	46%	3	23.1%	1	7.7%
Other nonsalmon fish	38	9	0	0.0%	2	22%	0	0.0%	0	0%	1	11%	2	22%	1	11.1%	1	11.1%

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Table D2-14.–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		Competition	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	79	23	2	9%	2	8.7%	0	0.0%	0	0.0%	5	21.7%	1	4.3%	1	4.3%	0	0.0%	1	4.3%
Salmon	37	9	0	0%	0	0.0%	0	0.0%	0	0.0%	1	11.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Smelt	39	13	0	0%	2	15.4%	0	0.0%	0	0.0%	2	15.4%	1	7.7%	0	0.0%	0	0.0%	0	0.0%
Other nonsalmon fish	38	9	1	11%	0	0.0%	0	0.0%	0	0.0%	2	22.2%	0	0.0%	1	11.1%	0	0.0%	1	11.1%

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 D2-15.–Reasons for more household uses of resources compared to recent years, Point Lay, 2012.

Resource category	Valid responses[a]	Households reporting reasons for more use	Increased availability		Used other resources		Favorable weather		Received more		Needed more		Increased effort		Had more help	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	135	23	7	30.4%	0	0.0%	0	0.0%	6	26.1%	1	4.3%	0	0.0%	2	8.7%
Salmon	42	4	2	50.0%	0	0.0%	0	0.0%	1	25.0%	0	0.0%	1	25.0%	0	0.0%
Nonsalmon fish	42	5	1	20.0%	0	0.0%	0	0.0%	0	0.0%	1	20.0%	1	20.0%	2	40.0%

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Table D2-15.–Continued.

Resource category	Valid responses[a]	Households reporting reasons for more use	Other		Regulations		Traveled farther		More success		Needed less		Store-bought expense		Got/ fixed equipment	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	135	23	1	4.3%	0	0.0%	1	4.3%	4	17.4%	0	0.0%	0	0.0%	0	0.0%
Salmon	42	4	0	0.0%	0	0.0%	0	0.0%	1	25.0%	0	0.0%	0	0.0%	0	0.0%
Nonsalmon fish	42	5	0	0.0%	0	0.0%	0	0.0%	2	40.0%	0	0.0%	0	0.0%	0	0.0%

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

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

Table D2-16.–Reasons for more household uses of resources compared to recent years, Point Lay, 2013.

Resource category	Valid responses[a]	Households reporting reasons for more use	Increased availability		Used other resources		Favorable weather		Received more		Needed more		Increased effort		Had more help	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	75	8	1	12.5%	0	0.0%	0	0.0%	5	62.5%	0	0.0%	0	0.0%	0	0.0%
Salmon	40	2	0	0.0%	0	0.0%	0	0.0%	2	100.0%	0	0.0%	0	0.0%	0	0.0%
Nonsalmon fish	39	5	1	20.0%	0	0.0%	0	0.0%	3	60.0%	0	0.0%	1	20.0%	0	0.0%
Smelt	38	3	0	0.0%	0	0.0%	0	0.0%	2	66.7%	0	0.0%	0	0.0%	0	0.0%
Whitefish	39	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

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Table D2-16.–Continued.

Resource category	Valid responses[a]	Households reporting reasons for more use	Other		Regulations		Traveled farther		More success		Needed less		Store-bought expense		Got/ fixed equipment	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	75	8	0	0.0%	0	0.0%	1	12.5%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Salmon	40	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Nonsalmon fish	39	5	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Smelt	38	3	0	0.0%	0	0.0%	1	33.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Whitefish	39	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

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

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

Table D2-17.–Reasons for more household uses of resources compared to recent years, Point Lay, 2014.

Resource category	Valid responses[a]	Households reporting reasons for more use	Increased availability		Used other resources		Favorable weather		Received more		Needed more		Increased effort		Had more help	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	79	4	0	0.0%	0	0.0%	0	0.0%	3	75.0%	1	25.0%	0	0.0%	0	0.0%
Salmon	37	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%
Smelt	39	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other nonsalmon fish	38	4	0	0.0%	0	0.0%	0	0.0%	2	50.0%	1	25.0%	1	25.0%	0	0.0%

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Table D2-17.–Continued.

Resource category	Valid responses[a]	Households reporting reasons for more use	Other		Regulations		Traveled farther		More success		Needed less		Store-bought expense		Got/ fixed equipment	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	79	4	1	25.0%	0	0.0%	0	0.0%	1	25.0%	0	0.0%	1	25.0%	0	0.0%
Salmon	37	1	1	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Smelt	39	1	0	0.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%	0	0.0%	0	0.0%
Other nonsalmon fish	38	4	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	25.0%	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.

APPENDIX E–OBSERVATIONS OF CHANGE

REPORTED CHANGES TO FISHING

WAINWRIGHT

2013

Salmon

Seem to be aging earlier, lots of spawners, oceans getting warmer.

Less salmon, happens every few years. we also can get salmon on the gravel pit.

It died down last year and came late, was expected in June not in July.

Starting to see more salmon upriver.

More salmon being August. Last year weather was bad

Not that much, kinda rare to catch.

Due to weather, less fish caught.

More salmon by far, wonders if water temp impacts. Remembers when people first started catching a lot.

Good year—always can get enough.

Not sure changes every year but nothing constantly noticed.

Nonsalmon

Less for us due to weather

In the past there used to be hot spots, people could get 100 in a afternoon, big schools.

Always bring us some fish (friends do).

Just the taste, not as tasty before when I was a kid.

Freezing up later.

Cods seem a lot bigger than usual—last couple years.

Smelt

Move them enough and give away.

Taste different after one year (maybe freezer burn).

Fishing areas have changed a lot—place where gravel was dredged may have created an eddy.

Sometimes fish are hard to find. Move from place to another fishing holes.

Same.

Dredging sand bar increased, last year was low numbers. Numbers have increased again this year though.

I saw a biggest fish, biggest ever before.

Would give away or cook it at relatives.

Received from relatives.

When they dredge holes (for gravel near lagoon), we had to look for them.

Too cold to go fishing.

Gotten bigger.

Don’t fish by camp, radiation.

Taste is stale, from years ago.

They’re bigger fish.

Good season this year.

Didn’t gone fishing much.

2014

Salmon

Weird scales and spots maybe contaminated.

Their family only needs a taste, a couple of salmon a year but other families are catching a lot.

Improvements.

Chinook and sockeye salmon in the river.

A couple years ago we would go out up tundra and lots of dead fish up there. I could see the dead fish on the beach for no reason.

No hunting or less hunting, no netting, less time upriver!

Given from friends.

Nonsalmon Fish

Radio tags.

More people out fishing.

More.

Less because of low tide last summer, you could walk across the river.

Different taste, less fat.

Radio trackers.

Burbot deformed.

Smelt

Took long time and then when they started we could harvest.

They taste more fresh.

Tastes different.

Started to get eggs earlier in the year. Eggs squirted out of smelt.

Seems like people are catching more.

More smelts.

Competition more people fishing.

Better weather.

Send different fish.

No changes.

POINT LAY

2013

Salmon

Not as many salmon harvesters.

Come in smaller groups, harder to harvest, seem smaller.

Providers have lack of salmon to distribute.

Big fish seem to move to diff. areas, salmon seem smaller, salmon seem more abundant than grayling.

Not as much active harvest.

Not as many people fish it seems like.

Not as abundant.

There seems to be less and not as available.

Maybe other people have bigger mesh but mostly caught trout on 2" mesh net.

Decreased local fishing activity.

Climate change affect seasons of harvest, ability.

Not as much fishing, not sent as much.

No - people have been fishing for salmon with nets since I was a little kid.

Nonsalmon Fish

Some years catch more grayling than smelts, goes back and forth.

Appear to be smaller.

Smaller grayling.

Late seasons.

Halibut seems to be much smaller.

Harvests aren’t as abundant as past years.

Not as many people seem to go out.

Not as much active fishing.

Varies year to year depends on the river and the shape it’s in this year it was smoother.

Too warm no fish biting. Too cold no transportation to go fishing.

Smelt

Not as many people seem to go out as often and those who do don't seem to harvest as much as before

They kind of slowed down. People hardly go out. He remembers going out a lot more of (?).

Seems like no one really fishes for them anymore.

Not as much local harvest, but receive from other communities.

Fishing for harvest doesn't seem to be as active.

Not as many harvests

Smelts seem smaller.

Haven't been able to harvest.

It's hard because there is a litle more snow and the ice is thicker.

Weather and lagoon never freeze.

2014

Salmon

Weather change.

We had a lot of west wind and had to clean the net more times than most years.

Warm water fish dying or move on different migration.

Shallow lagoon.

Said numbers decreasing, not sure why when salmon coming maybe belugas eat them.

Noticed red humpy salmon, a lot of dead salmon.

Global warming.

Not enough, no gave.

Lagoon tide/ weather is an issue. tide is higher than it used to be. weather hampering checking the net. schedule seems off.

Nonsalmon Fish

We haven't been able to catch as much as we normally do. There's been salmon in the area that have been eating them.

Warm weather, waters.

The grayling, I know in the past couple years they've been getting bigger and bigger and the trout I caught was huge- about 3 and half feet. Lake trout was big but not as long as the rainbow.

More herring than normal.

Less fishing.

Harder to get to sometimes in recent years because of uneven freezing and ice conditions.

Fish moving on, global warming.

Fish aren't where they used to be. Catching sub-adults they are much smaller.

Later freeze-ups. A lot of slush coming down and blocking the rivers. So we have to fish in certain deep holes up on the river.

Smelt

Warm harder to find, migration water moved on.

The last couple of years we've been catching a lot of grayling.

Super hot weather lately, less smelt.

Not much people going due to weather.

Less fish.

Ice piles up in the inlet, harder to fish.

Harder to find them because we got so many channels and inlets to choose from.