Technical Paper No. 465

The Harvest and Use of Wild Resources in Port Heiden, Alaska, 2018

by
Bronwyn Jones
and
Margaret Cunningham

May 2020

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

Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the Système International d'Unités (SI), are used without definition in Division of Subsistence reports. All others, including deviations from definitions listed below, are noted in the text at first mention, in the titles or footnotes of tables, and in figures or figure captions.

Weights and measures (metric)

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

Weights and measures (English)

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

Time and temperature

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

Physics and chemistry

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

General

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

Bronwyn Jones and Margaret Cunningham
Alaska Department of Fish and Game Division of Subsistence, Anchorage

Alaska Department of Fish and Game
Division of Subsistence
333 Raspberry Road
Anchorage, AK 99518

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

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

Bronwyn Jones and Margaret Cunningham
Alaska Department of Fish and Game Division of Subsistence
333 Raspberry Road, Anchorage, AK 99518-1565 USA

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ABSTRACT

This report provides updated information about the harvests of salmon and other wild resources by the community Port Heiden, Alaska. This report details the results of a household survey administered for the study year 2018 for harvests and uses of wild resources by Port Heiden households, as well as community demographic and economic characteristics. Also, this report includes information from in-depth interviews conducted with key respondents, as well as insight from participant observation during salmon fishing and processing activities. Port Heiden is located on the north side of the Alaska Peninsula. As in the past, during the 2018 study year, many residents of this study community relied on subsistence resources for nutrition and to support their way of life. The household surveys estimated that 100% of households used at least one type of wild resource during the study year, and approximately 93% of households harvested at least one type of wild resource in 2018. Overall, 30,789 lb, or 297 lb per capita, of wild resources were harvested during the study year. Salmon and large land mammals composed the largest portions of overall wild resource harvests. Salmon composed almost one-half (48%) of the total wild resource harvest weight in 2018; the total salmon harvest was 14,856 lb, or 143 lb per capita. Large land mammals composed 37% of the total wild resource harvest weight; the large land mammals total harvest weight was 11,511 lb, or 111 lb per capita. This study is part of the effort to collect data about the full range of wild resource harvests and uses, and areas of harvest, to understand in all its complexity the importance of subsistence resources for households in Port Heiden. The project was funded by the Alaska Sustainable Salmon Fund (AKSSF). This information was collected by research staff of the Alaska Department of Fish and Game (ADF&G) Division of Subsistence, with support from the Native Village of Port Heiden.

Key words: subsistence, Bristol Bay, Alaska Peninsula, Port Heiden, Alaska Sustainable Salmon Fund

1. INTRODUCTION

This report summarizes the results of a harvest survey and ethnographic project that investigated the subsistence uses of salmon and other wild resources by the community of Port Heiden, which is on the Alaska Peninsula of Western Alaska (Figure 1-1). The results of a wild resource household survey administered in this community in April 2019 for the 2018 study year (spanning April 1, 2018–March 31, 2019) are presented in this report. Table 1-1 lists the wild resources used by Port Heiden households.

Project Background

The funding for this project was awarded by the Alaska Sustainable Salmon Fund (AKSSF) in October 2018 after the 2017 call for proposals. For the community of Port Heiden, wild resources are important to and highly valued by community residents for subsistence uses. Reliable subsistence salmon harvest permit data are not available for this community, and residents of Port Heiden expressed concerns about this data gap, which prompted the development of this research project. For study year 2018, a comprehensive household survey was administered by the Alaska Department of Fish and Game (ADF&G) Division of Subsistence for the community of Port Heiden to address the information gap for salmon harvests and also estimate harvests of all wild resources. This report provides data that document how participating in subsistence pursuits is important for local families in Port Heiden.

Regulatory Context

Port Heiden is situated in Game Management Unit (GMU) 9E, which includes the Meshik River, the Ugashik River, and the Egegik River (Figure 1-1). GMU 9E also includes a portion of the Alaska Peninsula National Wildlife Refuge, Becharof National Wildlife Refuge, and Aniakchak National Monument and Preserve, which are managed by the federal government through the U.S. Fish and Wildlife Service (USFWS) and the National Park Service (NPS). State-owned lands and private lands—primarily Alaska Native allotments and village and regional corporation lands—are interspersed throughout the region. Game and fisheries management on state-owned and private lands is under the purview of the State of Alaska through the Alaska boards of Game and Fisheries. Since collecting salmon harvest data was the main focus for this research, regulations about salmon harvests are summarized next, followed by information about hunting in GMU 9E.

Alaska Peninsula communities such as Port Heiden are heavily dependent on marine resources, especially salmon. Regulations for subsistence salmon fishing are often tied to commercial fishing operations. ADF&G Division of Commercial Fisheries manages salmon commercial fisheries in the Alaska Peninsula Salmon Management Area, commonly referred to as "Area M," in which Port Heiden is located. Area M comprises two management areas: 1) Alaska Peninsula Area (5 AAC 09.100), which has districts located both north and south of the Alaska Peninsula (5 AAC 09.200), and 2) Aleutian Islands Area (5 AAC 12.100), which stretches west of Unimak Island until reaching the neighboring Atka-Amlia Islands Area.[1] Local subsistence fishing opportunities for Port Heiden households fall on the northern portion of the Alaska Peninsula Area, which includes the waters from Cape Menshikof west to Cape Sarichef (Fall et al. 2019:142). The Alaska Board of Fisheries adopted a positive customary and traditional subsistence use finding for halibut and all other finfish (which includes salmon) in the Alaska Peninsula Area in 1993 (5 AAC 01.416).[2]

1. Alaska Department of Fish and Game, "Commercial Fisheries Overview: Alaska Peninsula Management Area," http://www.adfg.alaska.gov/index.cfm?adfg=commercialbyareaakpeninsula.main, (accessed November 2019).
2. For salmon, the amounts reasonably necessary for subsistence , or ANS, in 5 AAC 01.416 were last amended June 4, 2004 (Register 170) according to a note in the online Alaska Administrative Code: http://www.akleg.gov/basis/aac.asp (accessed November 2019).

Figure 1-1.–Map of study community area, Port Heiden.

Table 1-1.–Resources used, Port Heiden, 2018.

Resource	Scientific name
Chum salmon	*Oncorhynchus keta*
Coho salmon	*Oncorhynchus kisutch*
Chinook salmon	*Oncorhynchus tshawytscha*
Pink salmon	*Oncorhynchus gorbuscha*
Sockeye salmon	*Oncorhynchus nerka*
Spawning sockeye salmon	*Oncorhynchus nerka*
Pacific herring roe	*Clupea pallasi*
Unknown smelt	
Pacific (gray) cod	*Gadus macrocephalus*
Unknown cod	
Pacific halibut	*Hippoglossus stenolepis*
Unknown rockfish	
Dolly Varden–freshwater	*Salvelinus malma*
Dolly Varden–saltwater	*Salvelinus malma*
Rainbow trout	*Oncorhynchus mykiss*
Unknown trout	
Round whitefish	*Prosopium cylindraceum*
Caribou	*Rangifer tarandus*
Moose	*Alces alces*
Red fox	*Vulpes vulpes*
Red fox–cross phase	*Vulpes vulpes*
Porcupine	*Erethizon dorsatum*
Gray wolf	*Canis lupus*
Harbor seal	*Phoca vitulina*
Spotted seal	*Phoca largha*
Unknown seal	
Sea otter	*Enhydra lutris*
Mallard	*Anas platyrhynchos*
Northern pintail	*Anas acuta*
Unknown teal	*Anas spp.*
American wigeon	*Anas americana*
Brant	*Branta bernicla*
Unknown Canada/cackling geese	*Branta spp.*
Emperor goose	*Chen canagica*
White-fronted goose	*Anser albifrons*
Unknown geese	
Sandhill crane	*Grus canadensis*
Ptarmigan	*Lagopus spp.*
Glaucous-winged gull eggs	*Larus glaucescens*
Unknown gull eggs	
Black (small) chitons	
Butter clams	*Saxidomus gigantea*
Pacific littleneck clams (steamers)	*Protothaca staminea*
Razor clams	*Siliqua spp.*
Unknown clams	

-continued-

Table 1-1.–Page 2 of 2.

Resource	Scientific name
Unknown cockles	
Dungeness crab	*Cancer magister*
Red king crab	*Paralithodes camtschaticus*
Unknown king crab	
Tanner crab, opillio	*Chionoecetes opilio*
Octopus	*Octopus vulgaris*
Shrimp	
Blueberry	*Vaccinium uliginosum alpinum*
Lowbush cranberry	*Vaccinum vitis-idaea minus*
Crowberry	*Empetrum nigrum*
Nagoonberry	*Rubus arcticus spp.*
Salmonberry	*Rubus spectabilis*
Other beach greens	
Hudson's Bay (Labrador) tea	*Ledum palustre*
Wild celery	*Angelica lucida*
Wild parsley	*Pastinaca sativa*
Unknown mushrooms	
Beach greens	*Honckenya peploides*
Wood	

Source ADF&G Division of Subsistence household surveys, 2019.

Subsistence fishers must obtain a household permit (Figure 1-2); the permit allows for a harvest of 250 salmon per household, unless otherwise specified on the permit (5 AAC 01.430). An additional permit can be obtained. Permits must be filled out to record subsistence harvests and returned to ADF&G by October 31. New permits are mailed annually to fishers who return their permits and they may be requested from ADF&G offices in person or by phone. It should be noted that Port Heiden does not have a readily accessible ADF&G office or convenient means to obtain a permit in person.

A subsistence salmon permit holder who does not hold a commercial salmon fishing license may subsistence fish for salmon at any time unless there are restrictions on the permit (5 AAC 01.410). Some waters identified in 5 AAC 01.425 are always closed to subsistence fishing; however, none of those closed waters of the Alaska Peninsula Area are in proximity to Port Heiden. In those waters of the Alaska Peninsula Area that are open to commercial salmon fishing, a commercial salmon fishing permit holder may not subsistence fish for salmon during the 24 hours before a commercial fishing period, or the 12 hours following the closure of a commercial fishing period; however, a commercial permit holder may choose to subsistence fish instead of commercial fish (5 AAC 01.410(a)(1)). Subsistence salmon may only be taken by seine or gillnet while following the net length, net depth, mesh size, and net placement restrictions that are specified on both the subsistence permit and in 5 AAC 01.420 and 5 AAC 01.423. Also, subsistence gear must be marked with identification information specified in 5 AAC 01.427.

Federal regulations governing subsistence salmon fishing in waters under the jurisdiction of the Federal Subsistence Board are generally identical to the state regulations summarized above; primarily, exceptions focus on other gear types that may be used in addition to gillnet and seine. According to regulations published by the Federal Subsistence Management Program (n.d.:46), rod and reel, handline, spear, bow and arrow, and bare hand capture are all legal subsistence gear under federal rules for federally qualified rural residents. There is no separate federal subsistence permit; a state permit is required for subsistence fishing under the federal regulations. Additional information about the federal subsistence fishery is available by contacting the USFWS Office of Subsistence Management, which is located in Anchorage, Alaska.

ALASKA PENINSULA AREA SUBSISTENCE SALMON FISHING PERMIT

Permit expires October 31, 2018 (5AAC 01.430(c))

This permit is valid in the Southeastern, South Central, Southwestern, Unimak, Northwestern, and Northern Districts.

Name: _____

Address: _____

_____

I hereby certify that I am an Alaska resident, and any salmon taken will be used for subsistence purposes only.

_____

Permittee signature Date

Additional members of same household to be included on permit (Alaska Residents Only):

_____

_____

Email Address: _____ Renew permit for next year: ☐

The catch report table below must be filled out (even if the permit was not used) and returned to a local Alaska Department of Fish and Game office prior to October 31, 2018. Failure to return the permit could result in future permits being denied (5 AAC 01.015 (C)).

SUBSISTENCE SALMON HARVEST REPORT

Number of salmon by species:

DATE	SPECIFIC LOCATION	KING	SOCKEYE	COHO	PINK	CHUM

- ALL PERSONS MUST HAVE A VALID SUBSISTENCE PERMIT IN POSSESSION WHILE TAKING OR ATTEMPTING TO TAKE SUBSISTENCE SALMON.
- COMPLETE THE SUBSISTENCE HARVEST REPORTS IMMEDIATELY UPON LANDING SALMON. UNSUCCESSFUL TRIPS SHOULD ALSO BE RECORDED.
- NONRESIDENTS CANNOT PARTICIPATE IN SUBSISTENCE FISHING ACTIVITIES.

REFER TO THE CURRENT SUBSISTENCE REGULATION BOOK FOR COMPLETE REGULATIONS

Return permit to: Alaska Department of Fish and Game, Alaska Peninsula Salmon Management, 351 Research Court, Kodiak AK 99615 by October 31, 2018 .

_____

Department representative Date

(SEE OPPOSITE SIDE FOR SUBSISTENCE REGULATIONS)

Figure 1-2.–Alaska Peninsula Area subsistence salmon permit, 2018.

Figure 1-2.–Page 2 of 2.

SELECTED SUBSISTENCE REGULATIONS

These listed regulations are not inclusive of all the regulations that apply to subsistence salmon fishing in the Alaska Peninsula Area.

5 AAC 01.430. LIMITS TO NUMBER OF SALMON TAKEN: 250 salmon per household, unless otherwise specified by a local representative of the department. Additional household permits are available by request from the local ADF&G representative.

5 AAC 01.420. LIMITS TO GEAR USED TO TAKE SALMON: Salmon may be taken by seine or gillnet. No set gillnet may exceed 100 fathoms in length. No drift gillnet may exceed 200 fathoms in length. In areas open to commercial salmon fishing, salmon can only be taken with gillnets of not more than 50 fathoms in aggregate length.

5 AAC 01.427. IDENTIFICATION OF GILLNET GEAR: A buoy at one end of any gillnet must be plainly and legibly marked with the operator's first initial, last name, and mailing address of the permit holder or the vessel's ADF&G number.

5 AAC 01.410. FISHING SEASONS: Salmon may be taken at any time except as follows.

1. In those districts and sections open to commercial salmon fishing, salmon may not be taken by a commercial salmon fishing permit holder within 24 hours before and within 12 hours following a commercial salmon fishing period.
2. As otherwise specified on a subsistence fishing permit; and
3. In the waters closed to subsistence fishing for salmon specified in 5 AAC 01.425.

Exceptions to this rule are listed under EXCEPTIONS 1 and 2 below or as listed on an amended permit.

5 AAC 01.423. SPECIAL PROVISIONS:

1. Mortensens Lagoon: (Mortensens Lagoon and waters within 500 yards of the Mortensens Lagoon terminus only) Salmon may be taken at any time, however the following restrictions apply.
   - A. Subsistence gear is restricted to gillnets of 15 fathoms or less in length.
   - B. No more than 50 salmon per permit per season may be taken from Mortensens Lagoon or within 500 yards of the lagoon terminus.
2. False Pass vicinity: That portion of Bechevin Bay and Isanotski Strait bounded by the latitude of Morzhovoi Village (54°51.58' N lat.) and the latitude of Whirl Point (54°49.50' N lat.). Salmon may be taken at any time using gillnets of 50 fathoms or less in length.
3. Fresh waters of Bear River: Salmon may be taken at anytime upstream from the confluence of the Milky River, also known as the Mad Sow River (a tributary of the Bear River) with gear specified on the subsistence permit.
4. Fresh waters of Sandy River: Salmon may be taken at anytime upstream from the Sandy River (oil exploration) aircraft landing strip located five (5) miles (upriver) of the stream terminus, with gear specified on the subsistence permit.

5 AAC 01.425. WATERS CLOSED TO SUBSISTENCE SALMON FISHING:

1. Russell Creek and Nurse Lagoon and within 500 yards from the stream terminus of Russell Creek and Nurse Lagoon.
2. Trout Creek and within 500 yards outside its mouth.
3. Inshore of a line from the Trident Seafood's Dock at Sand Point to Black Point (located on the northwestern side of Popof Island), including the inlet and Humboldt Creek.
4. Black Hills Section: all freshwaters and within 500 yards of any anadromous salmon stream terminus.
5. Bear River Section: waters closed to commercial salmon fishing under 5 AAC 09.350 and 5 AAC 39.290 and waters of Frank's Lagoon and King Salmon River, excluding exceptions in Bear and Sandy Rivers listed earlier on this permit.
6. No subsistence fishing is allowed in waters closed to commercial salmon fishing as described under 5 AAC 09.350 or 5 AAC 39.290 during a commercial salmon fishing period. Exceptions to this rule are listed under SPECIAL PROVISIONS 1 and 2 above or as specified on an amended permit.

ADDITIONAL RESTRICTIONS:

1. **No more than half the width of a stream or its mouth may by obstructed by a net.** This restriction includes blocking the stream mouth while "roundhauling."
2. The operator must be in proximity of his or her gear at all times.
3. **Salmon may not be taken by sport fishing methods while taking subsistence salmon with a net and you may not be in possession of sport caught and subsistence caught salmon at the same time.**
4. Subsistence fishing gear may at no time be used within 100 feet of another set gillnet.
5. Definition of subsistence uses: AS 16.05.940(33) subsistence uses means the noncommercial, customary and traditional uses of wild, renewable resources.

Return permit by October 31, 2018 to: Alaska Department of Fish and Game, Alaska Peninsula Salmon Management, 351 Research Court, Kodiak AK 99615. Questions or concerns please contact your local Fish and Game Office: Cold Bay (907) 532-2419; Sand Point (907) 383-2066; Port Moller (907) 375-2716; Kodiak (907) 486-1882.

Resident and nonresident hunting opportunities on state-owned and privately-owned lands are managed by ADF&G. Federal agencies, such as the USFWS, have management responsibilities for ensuring subsistence hunting priorities on federal conservation units for federally qualified rural residents having positive customary and traditional use determinations by the Federal Subsistence Board. Residents of Port Heiden are required to carry an annual hunting license as well as appropriate harvest tags. Regulations, including methods and means of take, are prescribed by the Alaska Board of Game (BOG) and the Federal Subsistence Board.

Large land mammals such as caribou, moose, and brown bears are available to Port Heiden residents; the preferred species by this community is caribou. The history of caribou hunting and hunting regulations throughout GMU 9 has been dynamic largely due to variability in the abundance and distribution of the region's caribou population. Historically, the Northern Alaska Peninsula caribou herd has been the most widely used and harvested large land mammal species for Port Heiden (Fall 1993). Historical herd data indicate that the herd has most recently peaked at around 20,000 animals in 1984 (Doherty 2015; Hicks 1997). Subsequent large declines in the herd occurred as a result of several factors, including hunting pressure and a shared habitat with the Mulchatna caribou herd (Doherty 2015; Hicks 1997). In the early 1990s, the herd declines were below management goal levels, and, in 1999, the BOG reviewed the status of the herd and initiated a Tier II[3] permit hunt (Doherty 2015). As a result of continued herd decline, in 2005 both the state and federal hunts closed. The caribou population fell to a low of 2,000 animals in 2008. Over the next decade measures were implemented to help rebound the herd, and in 2016, there were 198 Tier II permits issued for the Northern Alaska Peninsula caribou herd.[4]

In 2018, there were 282 Tier II permits issued for this hunt, and this hunt is available only to Alaska residents.[5] Regulations allow that one bull or cow caribou may be taken by permit (5 AAC 85.025(a)(3)). No individual may hold more than one Tier II permit per species; also, one household may have no more than three Tier II permits (Doherty 2015). Open dates for GMU 9E are August10–October 10 and November 1–April 30 (5 AAC 85.025(a)(3)). Hunters must possess a valid hunting license prior to hunting, and all hunters are required to return their hunt report (5 AAC 92.010). There are permit conditions for this hunt as follows: successful hunters are required to report in person or by telephone to the King Salmon ADF&G office within 10 days of take; if unsuccessful, hunters must report by telephone or mail within 15 days of the season closure (5 AAC 92.010(c)).

More detailed State of Alaska regulations, including open seasons, permit requirements, and annual limits for other large land mammal species relevant to the study community can be found in the annually published hunting regulations; the current regulatory year information is available at ADF&G offices or online.[6] Federal regulations and other information about hunting on federal lands can be found in the biannual federal wildlife regulations booklet, which is also available online.[7]

3. State Tier II hunts are held when there is not enough of a game population with customary and traditional uses to provide a reasonable opportunity for subsistence uses. Hunters must answer questions on an application concerning their dependence on the game for their livelihood and availability of alternative resources. Applications are scored based on responses to the questionnaire and permits are issued to those with the highest scores.
4. *Caribou Hunting in Alaska: Harvest Statistics*, s.v. "Year: 2016; Hunt: Tier II; Hunt # TC505" (by Alaska Department of Fish and Game), http://www.adfg.alaska.gov/index.cfm?adfg=caribouhunting.harvest (accessed November 2019).
5. *Caribou Hunting in Alaska: Harvest Statistics*, s.v. "Year: 2018; Hunt: Tier II; Hunt # TC505" (by Alaska Department of Fish and Game), http://www.adfg.alaska.gov/index.cfm?adfg=caribouhunting.harvest (accessed February 2020).
6. Alaska Department of Fish and Game, "Alaska Hunting Regulations: Hunting Regulations Book," http://www.adfg.alaska.gov/index.cfm?adfg=wildliferegulations.hunting (accessed September 24, 2019).
7. U.S. Department of the Interior, Federal Subsistence Management Program, "Wildlife," https://www.doi.gov/subsistence/wildlife (accessed September 24, 2019).

Study Objectives

The project had the following objectives:

- Document subsistence salmon and other wild resources harvest amounts and locations for Port Heiden households for the 2018 study year;
- Evaluate the current subsistence salmon permit system and make recommendations for a revised harvest monitoring program based on study findings; and
- Record Port Heiden residents' observations and local traditional knowledge related to local wild salmon resources available for subsistence harvest by Port Heiden community members.

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*[8] and by the National Science Foundation, Office of Polar Programs in its *Principles for the Conduct of Research in the Arctic*[9], 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

This project was carried out as a partnership between the Native Village of Port Heiden and the ADF&G Division of Subsistence. Gabriela Halas and Bronwyn Jones, both Subsistence Resource Specialists with the Division of Subsistence, co-led the project (Table 1-2). The Division of Subsistence took the overall lead on managing the project, which included fieldwork logistics, designing and implementing the survey (Appendix A) and key respondent interview protocol (Appendix B), analyzing data, writing a findings report, and communicating with the funding agency. The Native Village of Port Heiden supported research efforts by providing vehicles for researchers to use and space for meetings, interviews, and surveys to occur, and also helped by identifying local research assistants (LRAs) to help with survey administration and participant observation.

While developing this project, letters of support to fund this research were provided by the Native Village of Port Heiden, Bristol Bay Native Association, and National Park Service. Copies of the letters submitted in support of this project are presented in Appendix C. Before project start-up, Jones and Halas traveled to Port Heiden to introduce the study plan at a public scoping meeting to provide community residents an opportunity to ask questions about or comment on the study design. On May 22, 2018, the community meeting was held in Port Heiden and a total of 11 community members attended the meeting.

Systematic Household Surveys

The primary method for collecting subsistence harvest and use information for this project was a systematic household survey. Following receipt of comments at the scoping meetings, ADF&G finalized the survey instrument in February 2019. Appendix A is an example of the survey instrument used in this project. A key goal was to structure the survey instrument to collect demographic, resource harvest and use, and other

8. Alaska Federation of Natives. "Alaska Federation of Natives Guidelines for Research," Alaska Native Knowledge Network, http://www.ankn.uaf.edu/IKS/afnguide.html (last modified August 15, 2006, accessed December 10, 2019).
9. Interagency Arctic Research Policy Committee (IARPC). 2018. "Principles for Conducting Research in the Arctic." National Science Foundation, Office of Polar Programs, https://www.nsf.gov/geo/opp/arctic/conduct.jsp (accessed December 10, 2019).

Table 1-2.–Project staff.

Task	Name	Organization
Southern Regional Program Manager	Robin Dublin	ADF&G Division of Subsistence
Previous Southern Regional Program Manager	Brian Davis	ADF&G Division of Subsistence
Principal Investigator	Bronwyn Jones	ADF&G Division of Subsistence
Co-Investigator	Gabriela Halas	ADF&G Division of Subsistence
Data Management Lead	David Koster	ADF&G Division of Subsistence
Data Management Assistant	Margaret Cunningham	ADF&G Division of Subsistence
Administrative support	Tamsen Coursey-Willis	ADF&G Division of Subsistence
Administrative support	Pamela Amundson	ADF&G Division of Subsistence
Administrative support	Zayleen Kalalo	ADF&G Division of Subsistence
Programmer	Margaret Cunningham	ADF&G Division of Subsistence
Programmer	Gayle P. Neufeld	ADF&G Division of Subsistence
Data entry	Halia Janssen	ADF&G Division of Subsistence
Data cleaning/validation	Margaret Cunningham	ADF&G Division of Subsistence
Data analysis	Margaret Cunningham	ADF&G Division of Subsistence
Data analysis	Gayle P. Neufeld	ADF&G Division of Subsistence
Cartography	Margaret Cunningham	ADF&G Division of Subsistence
Cartography	Bronwyn Jones	ADF&G Division of Subsistence
Cartography	Gayle Neufeld	ADF&G Division of Subsistence
Editorial Review Lead	Mary Lamb	ADF&G Division of Subsistence
Field research lead	Gabriela Halas	ADF&G Division of Subsistence
Field research staff	Bronwyn Jones	ADF&G Division of Subsistence
Field research staff	Zayleen Kalalo	ADF&G Division of Subsistence
Field research staff	Katheryn Hayden	ADF&G Division of Subsistence
Local research assistant	Dimitri Christensen	Port Heiden
Local research assistant	Natalya Shellikoff	Port Heiden
Local research assistant	Terry Christensen	Port Heiden

economic data that are comparable with information collected in other household surveys in the study community during previous research and with data in the Community Subsistence Information System (CSIS[10]) maintained by the Division of Subsistence. The household survey also included a series of questions about food security, sharing of wild resources, and subsistence- and environmental-related observations.

For this study, the sampling goal was to survey all year-round Port Heiden households. In order to complete a census survey, Division of Subsistence researchers worked with a combination of LRAs, knowledgeable community members, members of the Native Council of Port Heiden, and administrators from the Native Village of Port Heiden to develop a community household list. These efforts established an estimate of 35 eligible households to be surveyed (Table 1-3). During the survey effort, for each residence that researchers attempted to contact, a disposition was applied. The disposition categories included:

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

If researchers were initially unsuccessful at making contact with an eligible household, two more attempts to survey the household were made. When a reasonable effort was made to survey the household and no contact could be made, this household was assigned a "no contact" disposition. Contacted households could also decline to participate in the survey. Overall, surveys lasted approximately 45 minutes, which included the standard survey form and a mapping component, which is discussed below (Table 1-4).

10. ADF&G Community Subsistence Information System: http://www.adfg.alaska.gov/sb/CSIS/ (hereinafter cited as CSIS).

Table 1-3.–Estimated households and sample achievement, Port Heiden, 2018.

Sample information	Community Port Heiden
Number of dwelling units	38
Survey goal	100%
Households surveyed	27
Households failed to be contacted	2
Households declined to be surveyed	6
Households moved or occupied by nonresident	9
New households	6
Total households attempted to be surveyed	35
Refusal rate	18.2%
Final estimate of permanent households	35
Percentage of total households survyed	77.1%
Survey weighting factor	1.30
Sampled population	80
Estimated population	103.7

Source ADF&G Division of Subsistence household surveys, 2019.

Table 1-4.–Survey duration, Port Heiden, 2018.

Community	Interview length (in minutes)		
	Average	Minimum	Maximum
Port Heiden	45	9	97

Source ADF&G Division of Subsistence household surveys, 2019.

Mapping Locations of Subsistence Fishing, Hunting, and Gathering Activities

During household interviews, the researchers asked respondents to indicate the locations of their fishing, hunting, and gathering activities during the study year. ADF&G staff established a standard mapping method prior to conducting household surveys. Points were generally used to mark harvest locations and polygons were used to indicate harvest effort areas, such as areas searched while hunting caribou. However, sometimes points were also used to designate a harvest effort location, especially if fishing from a riverbank. Some lines were also drawn in order to depict when the harvesting activity did not occur at a specific point; for example, lines were used to depict traplines or courses taken while trolling for fish or driftnetting.

Harvest locations and fishing, hunting, and gathering areas were documented on iPads[11] using the Collector application (ESRI, or Environmental Systems Research Institute) customized for Division of Subsistence data collection needs. The point, polygon, or line was drawn on a U.S. Geological Survey topographic relief map downloaded on the iPad. The iPad allowed the user to zoom in and out to the appropriate scale, and the ability to document harvesting activities wherever they occurred in the state of Alaska. Once a feature was accepted, an attribute box was filled out by the researcher that noted the species harvested, gear type, amount, method of access to the resource, and month(s) of harvest. Once data collection was complete, the data were uploaded through ArcGIS Online to the ESRI cloud server for storage.

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

Once a survey was complete researchers conducted a quality control exercise by matching the map data to the survey form to ensure all map data had been documented. This was completed in the field before the surveys were submitted to the lead field researcher, Halas. Once the data had been uploaded, researchers also verified that the household data were logged into the server. The data were sorted by resource category and then maps were produced; the maps show spatial results at the species-specific level only for salmon.

Key Respondent Interviews

While researchers were in the study community, they consulted with Native Village of Port Heiden staff and LRAs to identify key respondents to interview. The purpose of the key respondent interviews was to provide additional context for the quantitative data and also to provide information for the community background section; harvest-over-time analysis; wild resource health assessments; permit participation assessments; gear type use; and the community comments and concerns section. In total, eight key respondent interviews (KRIs) were conducted. KRIs were semi-structured and directed by a KRI protocol designed by ADF&G researchers Jones and Halas (see Appendix B). In addition to gathering qualitative data through the KRI protocol, staff took notes to provide additional context to quantitative results for this report. Researchers analyzed KRI responses 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.

Participant Observation

Participant observation is an important method used by researchers to gain an in-depth understanding of the timing, location, methods, logistical considerations, and social organization that combine to create the subsistence salmon harvest patterns practiced by residents of Port Heiden. For participant observation, researchers worked with community members to help harvest and process salmon. This involved learning how to set a gillnet, driftnetting in the Meshik River, observing how harvests were being recorded on permits, and participating in cutting and processing salmon. Jones and Halas conducted participant observation for this project in June in both 2018 and 2019.

Household Survey Implementation

For the 2018 study year survey, Halas, Jones, Zayleen Kalalo, and Kathrine Hayden from ADF&G Division of Subsistence arrived in Port Heiden on April 18, 2019. Jones and Halas trained LRAs Natalya Shellikoff, Dimitri Christensen, and Terry Christensen in the afternoon of the same day. Jones, Kalalo, and Hayden paired with LRAs to complete surveys through the week, while Halas conducted KRIs. Survey administration occurred until April 26, 2019.

Data Analysis and Review

Survey Data Entry and Analysis

Surveys were coded for data entry in each community by research staff and reviewed by Jones and Halas 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 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 internal network. Daily incremental backups of the database occurred, and transaction logs were backed up hourly. Full backups of the database occurred twice weekly. This ensured that no more than one hour of data entry would be lost in the unlikely event of a catastrophic failure. All survey data were entered twice and each set compared in order to minimize data entry errors.

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

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

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

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. 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 the 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 SD, V, and SE:

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

where:

s = sample standard deviation,

n = sampled households,

N = total number of households in the community,

$t_{\alpha/2}$ = student's *t* statistic for alpha level (α=0.95) with n–1 degrees of freedom, and

$\bar{x}$ = sample mean.

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

The corrected final data from the household survey will be added to the 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 Port Heiden. For this study, "year-round" was defined as being domiciled in the community when the surveys took place and for at least six months during the study year. Because not all households were interviewed, the population estimate was 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 Port Heiden generated from the division's surveys and other demographic data developed by the 2010 federal census, the U.S. Census Bureau's American Community Survey, and the Alaska Department of Labor and Workforce Development (ADLWD 2019; U.S. Census Bureau 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. Two possible types of reasons for the differences may relate to varying sample sizes and factors for expansion, and the time and season of data collection. Differing population estimates may also relate to the criteria agencies used to determine "full-time" residency and eligibility in the particular study. Population estimates are discussed in the section "Population Estimates and Demographic Information" in the next report chapter.

Map Data Entry and Analysis

As discussed above, maps were generated based on data collected using an iPad. All data were entered on the iPad and map features were matched to the survey form to ensure that all harvest data were recorded accurately. Once all data were uploaded to the cloud server, ADF&G Information Management staff created search and harvest location maps for each wild resource category and all salmon species in ArcGIS 10.6.1 using a standard template for reports. Maps were reviewed at a community review meeting to ensure accuracy.

Food Security Analysis

A "food security" section of the survey used a modified version of a standard national questionnaire to assess whether or not the household had enough food to eat, whether from subsistence sources or from market sources. The protocol used in this survey was a modified version of the 12-month food security scale questionnaire developed by the U.S. Department of Agriculture (USDA). This questionnaire is administered nationwide each year as part of the annual Current Population Survey (CPS). In 2016–2018, an annual average of 115,576 U.S. households were interviewed, including 1,351 in Alaska (Coleman-Jensen et al. 2019:23). From CPS data, the USDA prepares an annual report on food security in the United States. From 2016 to 2018, the USDA estimated that on average 88% of U.S. households were food secure, while on average 89% of Alaska households were food secure.

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

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

In 2015, Division of Subsistence added a filter question to reduce the number of questions asked of food secure households. Households agreeing with the statement "We had enough of the kinds of foods we wanted to eat" were considered food secure and were not asked about increasingly severe instances of food insecurity.

Key Respondent Interview Analysis

Following transcription of the recorded KRIs to complement notes from interviews where no audio recording occurred, analysis for the key respondent interviews was done using QSR NVivo version 10.0, a qualitative program that allowed the researcher to thematically group the interview content. This iterative process organized themes and subthemes into categories of linked responses. This allowed for quick and effective retrieval of respondent narratives related to each theme. QSR NVivo version 10.0 software is able to produce a series of reports based on themes, creating an efficient tool from which to draw out quotations and ethnographic information. This analysis process was also applied to survey comment data, which were responses to open-ended questions and allowed respondents to add comments regarding the harvest and use of wild resources.

Participant Observation Analysis

For participant observation analysis, fieldwork notes, photographs, and recordings from the participant observation trips in 2018 and 2019 were organized and sorted by category. Data from these sources were categorized by themes and subthemes pertaining to the qualitative information categories developed during KRI analysis.

Community Review Meetings

On Nov. 20, 2019, Jones and Kalalo presented preliminary survey findings and associated search area and harvest maps at a meeting in Port Heiden. The purpose of the community review meeting was to provide an opportunity for community members to comment on the findings of the study and for researchers to capture concerns that were not documented during the survey, but that community members felt were important. The LRAs and tribal administrators were informed about the review meeting. These community members hung flyers and informed residents of the meeting. A total of four community members attended the community review meeting.

Final Report Organization

This report summarizes the results of systematic household surveys, key respondent interviews, and participant observation conducted by staff from ADF&G and LRAs, and the report also summarizes resident feedback provided at the community review meetings. The findings are organized as follows:

- Chapter 2 presents Port Heiden community background, demographic, and income information for the study year. This chapter includes a discussion of historical and contemporary (2018) harvests and uses of wild resources by Port Heiden residents, and assessments of the uses of wild resources. This chapter also includes a discussion of changes in harvest locations, the subsistence permit system, and salmon preservation methods. Local perceptions on community subsistence practices, as they relate to the local environment, and community comments and concerns are also presented. Table 1-5 reports selected findings as an overview of some of the data that will be discussed in detail in Chapter 2; this table may be referred to later in the report.

Table 1-5.–Selected findings, Port Heiden, 2018.

Category	Community Port Heiden
Demography	
Population	103.7
Percentage of population that is Alaska Native	83.8%
Percentage of household heads born in Alaska	80.0%
Average length of residency of household heads (year)	26.7
Cash economy	
Average number of months employed	7.3
Percentage of employed adults working year-round	42.3%
Percentage of income from sources other than employment	9.7%
Average household income[a]	$84,967
Per capita income[a]	$28,676
Resource harvest and use	
Per capita harvest, pounds usable weight	296.9
Average household harvest, pounds usable weight	879.7
Number of resources used by 50% or more households	9.0
Average number of resources used per household	12.2
Average number of resources attempted to be harvested per household	8.7
Average number of resources harvested per household	8.0
Average number of resources received per household	6.4
Average number of resources given away per household	5.5
Percentage of total harvest taken by top 25% ranked households	58.4%
Percentage of households that harvested 70% of harvest	29.6%
Per capita harvest by lowest ranked 50% of households	40.6
Percentage of total harvest taken by lowest ranked 50% of harvesting households	13.7%
Average number of resources used by lowest ranked 50% of households	9.5
Average number of resources used by top 25% ranked households	16.3

Source ADF&G Division of Subsistence household surveys, 2019.
a. Includes income from sources other than employment.

- Chapter 3 provides a short, general overview of the harvests and uses of wild resources, a review of the report objectives and how they were met, and a report conclusion and acknowledgments.

ADF&G provided a draft report the Native Village of Port Heiden for review and comment. After receipt of comments, the report was finalized. ADF&G distributed copies of the report to the Native Council of Port Heiden, the local school, and the ADF&G Kodiak Office. Additionally, a short (four-page) summary of the study findings was provided to all households in Port Heiden (Appendix E).

2. PORT HEIDEN

Community Background

Port Heiden is located approximately 425 miles southwest of Anchorage, in the middle of the Alaska Peninsula, on the north side. This community is positioned near the mouth of the Meshik River, among a treeless landscape composed of tundra, ponds, small lakes, creeks, rivers, and ocean beaches. The main rivers and creeks near Port Heiden are Reindeer Creek (known locally as North River), Barbara Creek, and Birthday Creek. There are many wild resources available near the community including migratory waterfowl, salmon, marine invertebrates, freshwater fish, marine mammals, as well as caribou, moose, and other wildlife.

Directly west of the community is a sandy coastline leading to Bristol Bay. The area northwest of Port Heiden has steep eroding cliffs that overlook the sea, while the landscape southwest of the community is a broad, flat plain that slopes gently to the sea. On a clear day, the Aniakchak National Preserve and Monument can be seen from the community toward the east, along with the other mountains that make up the Aleutian Range. The Aleutian Range acts as a barrier to weather systems, therefore Port Heiden is situated within a transitional climate zone between maritime and continental characteristics. Consequently, Port Heiden often experiences protracted cloud cover, fog, rain, and wind.

Archaeological and historical evidence suggest that the north side of the Alaska Peninsula has historically been an area that borders various cultural traditions. The location of modern-day Port Heiden has long been the site of the blending of socioeconomic adaptations. For a detailed overview of this history see Fall and Morris (1987:11–21).

The first census of Alaska conducted during 1880 found Mashikh[1] (present-day Port Heiden) to have a population of 40 people (Fall and Morris 1987:18). Also, in the 1880s, the commercial fishing industry began in Bristol Bay (Combs 1982:312–313; Fall and Morris 1987:18, 20). A cod fishery developed in Port Heiden, attracting Scandinavian fishermen who settled the community (Combs 1982:272). In 1918, an influenza epidemic severely depleted the Alaska Native population of this region (Combs 1982:272; Fall and Morris 1987:20). According to respondents in Port Heiden, smaller villages were abandoned at this time as a result of the epidemic, and Port Heiden's population eventually increased as remnants of other villages concentrated there (Fall and Morris 1987). World War II brought the development of a military air base near Port Heiden and the construction of an airstrip that is still used today. During World War II, 5,000 personnel were stationed at the base. In the early 1950s, a school was established in Port Heiden. In 1962, the military presence was suspended, at which time the airfield transitioned to civilian use.[2] In 1972, Port Heiden became incorporated as a second-class city located in the Lake and Peninsula Borough. The community of Port Heiden relocated to its current location, several miles inland from the former village site in the 1980s, as a result of shoreline erosion.

1. Modern spelling is Meshik.
2. Alaska Peninsula Corporation. 2019. "Port Heiden (Meshik)." https://www.alaskapeninsulacorp.com/land/port-heiden/ (accessed August 2019).

The federally recognized Native Village of Port Heiden (NVPH) is the Alaska Native tribal governing body, which includes an administrator, president, vice president, secretary/treasurer, and five council members. The City of Port Heiden, NVPH, and a health clinic are all located in a large community building, known locally as Ray's Place. Meshik School is located in Port Heiden and serves grades kindergarten through 12. During the 2017–2018 school year, 27 students were enrolled in the school.[3] The community has a small grocery store, a post office, two bed-and-breakfast businesses, a satellite company, one hunting guide service, one contractor business, and a seafood processor operated by the NVPH. Port Heiden is not connected to a road system but relies solely on aircraft and boats for transportation out of the community. This community has an airport and a natural boat harbor/launch, but no dock. Fuel is available for boats and vehicles, and the main means of transportation are cars, all-terrain vehicles (ATVs), and snowmachines.[4] A barge from Seattle, Wash., delivers supplies twice a year.

Port Heiden maintains a connection with the commercial fishing industry and is located within part of the Northern District of the Alaska Peninsula Management Area M, which includes the Outer Port Heiden Section and the Inner Port Heiden Section.[5] Most commercial fishers residing in Port Heiden currently fish in neighboring Bristol Bay Management Area T, namely around Ugashik and Pilot Point. The community was estimated to have held 23 commercial salmon permits 1990.[6] During the 2018 study year, there were eight year-round resident permit holders.[7]

Seasonal Round

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

As depicted in Figure 2-1, resource search and harvest areas documented during this study year were spread out across the Alaska Peninsula, though the majority of locations where Port Heiden residents harvested wild foods were relatively close to the community. Starting from the north and moving toward the south, the search and harvest areas for all resources encompassed areas from Cinder River to the Meshik River. Southeast of Port Heiden on the south side of the Alaska Peninsula, search and harvest areas included Chignik Bay, and areas near Chignik Lake. Further southeast, Port Heiden community members harvested wild resources in areas near Perryville and Ivanof Bay. On the southwest side of the Alaska Peninsula, Port Heiden community members harvested wild resources near Nelson Lagoon. Additionally, wild resources were harvested in southeast Alaska, in the Gastineau Channel, near the community of Juneau.

3. Alaska Department of Education and Early Development. 2019. "Alaska's Public Schools: A Report Card to the Public: 2017–2018, Meshik School." https://education.alaska.gov/compass/Report/2017-2018/30/300140 (accessed August 2019).
4. *Alaska Community Database Online*, s.v. "Port Heiden" (by Alaska Department of Commerce, Community, and Economic Development), https://dcra-cdo-dcced.opendata.arcgis.com/ (accessed September 2019).
5. Alaska Department of Fish and Game. 2019. "Alaska Peninsula Management Area M Statistical Chart." https://www.adfg.alaska.gov/static/fishing/PDFs/commercial/akpeninsula_stat_map.pdf (accessed September 2019).
6. Alaska Commercial Fisheries Entry Commission, "Permit and Fishing Activity by Year, State, Census Area, or City: State or Census Area: Lake and Peninsula Borough, City: Port Heiden: Fishery Group Salmon 1990," https://www.cfec.state.ak.us/gpbycen/1990/164307.htm (accessed March 2020).
7. Alaska Commercial Fisheries Entry Commission, "Permit and Fishing Activity by Year, State, Census Area, or City: State or Census Area: Lake and Peninsula Borough, City: Port Heiden: Fishery Group Salmon 2018," https://www.cfec.state.ak.us/gpbycen/2018/164307.htm (accessed March 2020).

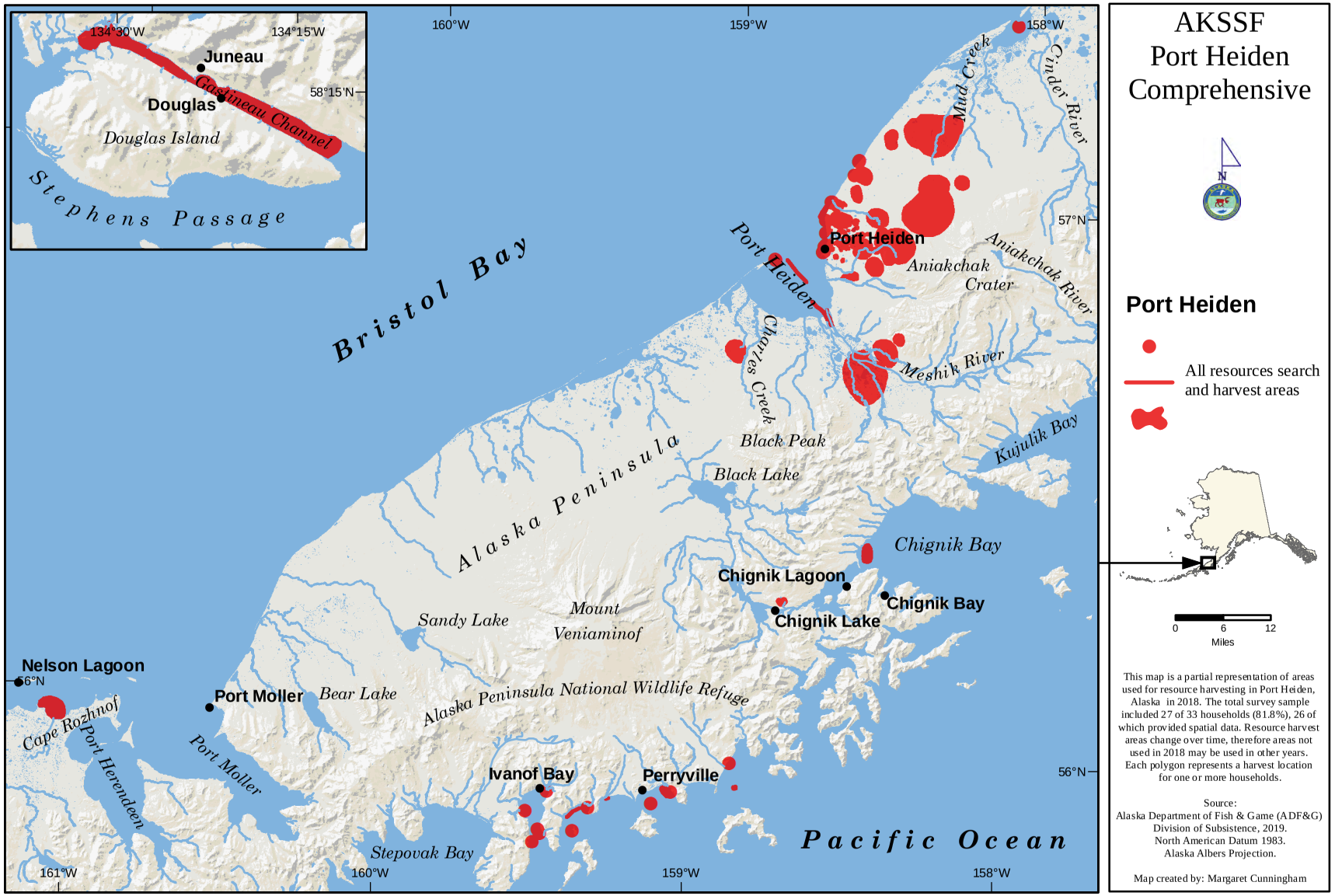


Figure 2-1.–Wild resources search and harvest areas, Port Heiden, 2018.

The annual cycle of resource harvests at Port Heiden begins in the early spring as daylight increases and hunting for ptarmigan and trapping for red fox and other small land mammals comes to an end as the snow melts and winter ice clears from local streams and lakes. Many households begin harvesting marine invertebrates such as cockles and clams during extreme early spring tides, residents being fishing for nonsalmon fish in local freshwater lakes and ponds, and some community residents commence beachcombing for items such as walrus tusks to use for making handicrafts.

During summer months, beginning in early June and extending through September, the Port Heiden residents who do not leave the community for commercial fishing are busy with subsistence salmon fishing in the marine waters and freshwater systems near the community. Using a drift gillnet to harvest Chinook salmon in the Meshik River in early June is a subsistence activity many residents look forward to. Community members gather beach greens, wild celery, and wild parsley as they become available in the summer season. Throughout the summer, Port Heiden residents use a rod and reel to harvest marine fish such as Pacific halibut and cod. Berries begin to ripen in late July. Salmonberries are often the first of the summer berries to become abundant. Many Port Heiden households pick salmonberries, crowberries (known locally as blackberries), blueberries, lowbush cranberries, and nagoonberries near their homes.

Caribou and moose hunting begin in August and extend through October for moose and through the late winter for caribou when the regulatory seasons close. Upland game bird seasons for birds such as ptarmigan also opens in mid-August. Often, ptarmigan is opportunistically harvested during large land mammal hunting trips. In late September and October several Port Heiden families continue the tradition of fishing for spawned-out sockeye salmon, locally referred to as "fall" or "red" fish. Marine mammal hunting for sea otters, harbor seals, and spotted seals often occurs in December and these animals are harvested throughout the winter, and sometimes into the summer months.

During January and February, short days and colder temperatures limit the extent of resource harvest activities. Residents take advantage of occasional warm weather to harvest marine invertebrates, nonsalmon fish, and marine mammals. By the end of March, long days and warming weather conditions start a new annual cycle with the arrival of spring.

Population Estimates and Demographic Information

This study found an estimated population for Port Heiden in 2018 of 104 individuals in 35 households (Table 2-1). This is similar to the 2010 U.S. Census Bureau estimate of 102 individuals in 35 households, and higher than the American Community Survey (ACS) 5-year (2014–2018) average estimate of 78 individuals in 27 households (Figure 2-2). This study estimated that approximately 84% of the population of Port Heiden self-identified as Alaska Native, which is similar to the 85% that was estimated by the 2010 census, but a slightly higher percentage than estimated for the 5-year ACS survey (81%). Reasons these estimates differ may relate to different criteria used by the agencies to determine full-time residency. The criteria employed in this study required at least six consecutive months of occupancy in the community during the study year and self-identification as a full-time resident.

The overall population of Port Heiden has increased since 1960 (Figure 2-3). The community experienced steady growth from a population of 74 in 1960, to 92 in 1980, to 119 in 1990, followed by a relatively stable population until 2000. Population estimates by the Alaska Department of Labor and Workforce Development began to decrease slightly following the 2000 federal census, and in 2010 the population was 102 according to the census and this study found 104 Port Heiden residents in 2018; these latest estimates are closer to the census from 1980.

Table 2-1.–Population estimates, Port Heiden, 2010 and 2018.

	Census (2010)	5-year American Community Survey (2014–2018) Estimate	Range[a]	This study (2018) Estimate	Range[b]
Total population					
Households	35	27.0	14 – 40	35.0	
Population	102	78.0	44 – 112	103.7	93 – 114
Alaska Native					
Population	87	63.0	35 – 91	86.9	75 – 99
Percentage	85.3%	80.8%	44.9% – 116.7%	83.8%	72.2% – 95.3%

Sources U.S. Census Bureau (n.d.) for 2010 decennial census data, and for American Community Survey (ACS) five-year estimate for 2018 (2014–2018); and ADF&G Division of Subsistence household surveys, 2019 for 2018 estimate.

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

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

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

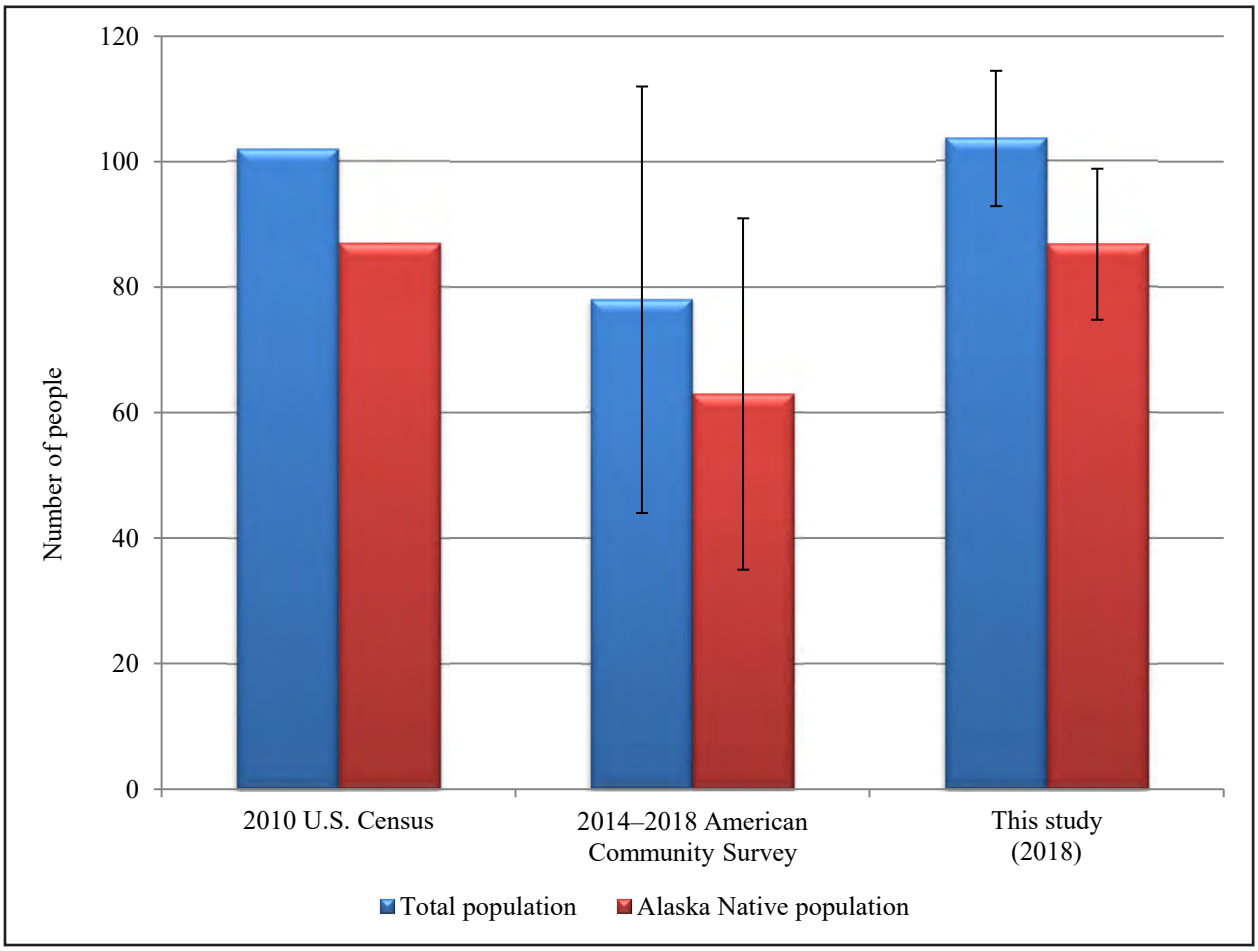


Figure 2-2.–Alaska Native and overall population estimates, Port Heiden, 2010 and 2018.

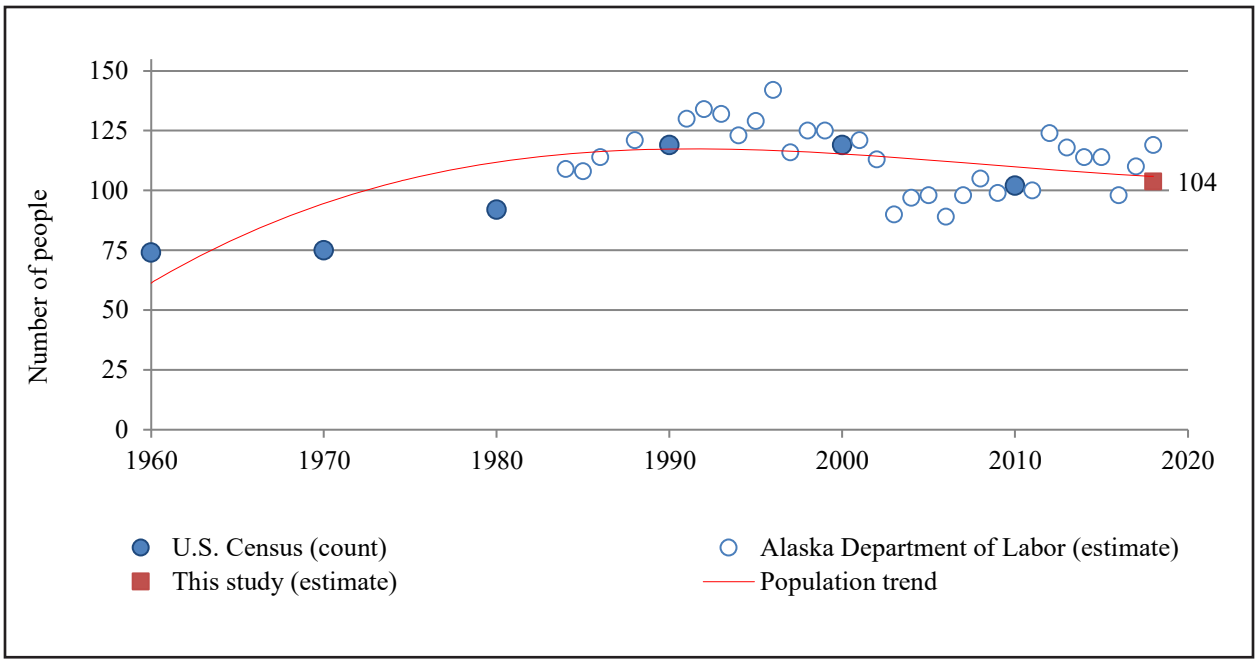


Figure 2-3.–Historical population estimates, Port Heiden, 1960–2018.

The 2018 study estimated the average age of Port Heiden residents to be 30 years old with the youngest individual being less than 1 year old and the oldest individual being 81 years old (Table 2-2). In Port Heiden, the ratio of females (51) to males (53) is relatively even, however the 2018 population profiles indicate that the ratio of females versus males is unevenly distributed within many age cohorts (Table 2-3; Figure 2-4). The population is characterized by a strong representation of youth in the community as evidenced by the frequency that young age cohorts were relatively large. Two of the three largest female age cohorts were youth cohorts (for ages 0–4 and 15–19) while the other largest female cohort was for ages 35–39. The largest male age cohort in 2018 was for ages 10–14, and the second largest male age cohort was for ages 55–59.

The survey estimated 38% of household heads' parents were living in Port Heiden at the time of their birth, and 49% of Port Heiden's total population had parents living in Port Heiden when they were born (Table 2-4; Table 2-5). This indicates that during the past several decades, a portion of people born in Port Heiden have chosen to remain in the community to raise their own families. Other birthplaces of Port Heiden residents included Chignik Lake (14% of the population), other U.S. locations (14%), Perryville (5%), and Wasilla (5%).

Of the 35 eligible households identified in Port Heiden, this study surveyed 27 households, representing 77% of total households (Table 2-2). The mean household size was 3 individuals, with a minimum of 1 individual and a maximum of 6 individuals residing in a household. The mean length of residency was 19 years for the general population, and 27 years for household heads. The longest duration of residency was 69 years as of the 2018 study year.

Table 2-2.–Sample and demographic characteristics, Port Heiden, 2018.

Characteristics	Community Port Heiden
Sampled households	27
Eligible households	35
Percentage sampled	77.1%
Sampled population	80
Estimated community population	103.7
Household size	
Mean	3.0
Minimum	1
Maximum	6
Age	
Mean	30.3
Minimum[a]	0
Maximum	81
Median	28.5
Length of residency	
Total population	
Mean	19.0
Minimum[a]	0
Maximum	69
Heads of household	
Mean	26.7
Minimum[a]	1
Maximum	69
Alaska Native	
Estimated households[b]	
Number	29.8
Percentage	85.2%
Estimated population	
Number	86.9
Percentage	83.8%

Source ADF&G Division of Subsistence household surveys, 2019.

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 one head of household is Alaska Native.

Table 2-3.–Population profile, Port Heiden, 2018.

	Male			Female			Total		
Age	Number	Percentage	Cumulative percentage	Number	Percentage	Cumulative percentage	Number	Percentage	Cumulative percentage
0–4	3.9	7.3%	7.3%	6.5	12.8%	12.8%	10.4	10.0%	10.0%
5–9	1.3	2.4%	9.8%	0.0	0.0%	12.8%	1.3	1.3%	11.3%
10–14	10.4	19.5%	29.3%	5.2	10.3%	23.1%	15.6	15.0%	26.3%
15–19	2.6	4.9%	34.1%	6.5	12.8%	35.9%	9.1	8.8%	35.0%
20–24	5.2	9.8%	43.9%	0.0	0.0%	35.9%	5.2	5.0%	40.0%
25–29	5.2	9.8%	53.7%	3.9	7.7%	43.6%	9.1	8.8%	48.8%
30–34	5.2	9.8%	63.4%	2.6	5.1%	48.7%	7.8	7.5%	56.3%
35–39	5.2	9.8%	73.2%	6.5	12.8%	61.5%	11.7	11.3%	67.5%
40–44	1.3	2.4%	75.6%	3.9	7.7%	69.2%	5.2	5.0%	72.5%
45–49	1.3	2.4%	78.0%	0.0	0.0%	69.2%	1.3	1.3%	73.8%
50–54	2.6	4.9%	82.9%	5.2	10.3%	79.5%	7.8	7.5%	81.3%
55–59	5.2	9.8%	92.7%	2.6	5.1%	84.6%	7.8	7.5%	88.8%
60–64	1.3	2.4%	95.1%	2.6	5.1%	89.7%	3.9	3.8%	92.5%
65–69	1.3	2.4%	97.6%	0.0	0.0%	89.7%	1.3	1.3%	93.8%
70–74	1.3	2.4%	100.0%	1.3	2.6%	92.3%	2.6	2.5%	96.3%
75–79	0.0	0.0%	100.0%	0.0	0.0%	92.3%	0.0	0.0%	96.3%
80–84	0.0	0.0%	100.0%	1.3	2.6%	94.9%	1.3	1.3%	97.5%
85–89	0.0	0.0%	100.0%	0.0	0.0%	94.9%	0.0	0.0%	97.5%
90–94	0.0	0.0%	100.0%	0.0	0.0%	94.9%	0.0	0.0%	97.5%
95–99	0.0	0.0%	100.0%	0.0	0.0%	94.9%	0.0	0.0%	97.5%
100–104	0.0	0.0%	100.0%	0.0	0.0%	94.9%	0.0	0.0%	97.5%
Missing	0.0	0.0%	100.0%	2.6	5.1%	100.0%	2.6	2.5%	100.0%
Total	**53.1**	**100.0%**	**100.0%**	**50.6**	**100.0%**	**100.0%**	**103.7**	**100.0%**	**100.0%**

Source ADF&G Division of Subsistence household surveys, 2019.

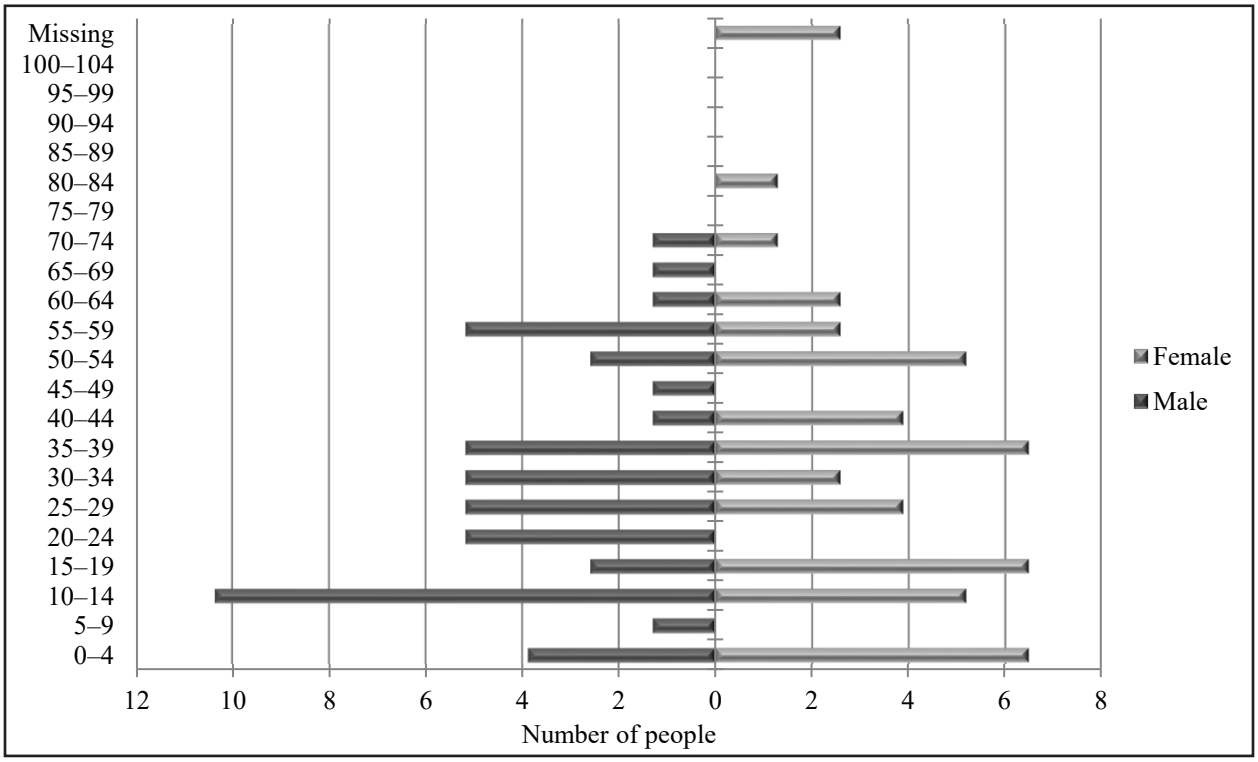


Figure 2-4.–Population profile, Port Heiden, 2018.

Table 2-4.–Birthplaces of household heads, Port Heiden, 2018.

Birthplace	Percentage
Chignik Lagoon	2.2%
Chignik Lake	11.1%
Homer	2.2%
Nondalton	2.2%
Palmer	4.4%
Perryville	4.4%
Pilot Point	2.2%
Port Heiden	37.8%
Port Moller	2.2%
Wasilla	6.7%
Pilot Point/Ugashik	2.2%
Unga	2.2%
Other U.S.	20.0%

Source ADF&G Division of Subsistence household surveys, 2019.
Note "Birthplace" means the place of residence of the parents of the individual when the individual was born.

Table 2-5.–Birthplaces of population, Port Heiden, 2018.

Birthplace	Percentage
Anchorage	2.5%
Chignik Lagoon	1.3%
Chignik Lake	13.8%
Homer	1.3%
Nondalton	1.3%
Palmer	2.5%
Perryville	5.0%
Pilot Point	1.3%
Port Heiden	48.8%
Port Moller	1.3%
Wasilla	5.0%
Pilot Point/Ugashik	1.3%
Unga	1.3%
Other U.S.	13.8%

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

Income and Cash Employment

In 2018, the mean household earned income in Port Heiden was $76,727 (Table 2-6). Earned income represented about 90% of the overall community income, and other sources of income represented the remaining 10%. Other income included sources such as Alaska Permanent Fund dividends, Alaska Native corporation dividends, rental income, unemployment, and child support, among others. Approximately 34 households received a form of other income, with the mean household other income being $8,239. The estimated total mean household income, including both earned and other income, was $84,967. The per capita income in 2018 in Port Heiden was $28,676 (Table 1-5).

Overall, local government (including tribal) made up the greatest percentage of the total community income (45%), followed by: agriculture, forestry, and fishing (primarily commercial fishing) (32%); services (6%); Alaska Permanent Fund dividends (5%); other nonemployment income (4%); transportation, communication, and utilities (2%); federal government (1%); construction (1%); retail trade (1%); and state government (1%) (Figure 2-5). Smaller amounts of earned and other income sources made up the remaining 2% of the total community income.

The estimated median income for Port Heiden households was $71,172 based on household surveys (Figure 2-6). The ACS 2014–2018 average median income estimate of $51,250 for Port Heiden households was lower than the estimate developed by the Division of Subsistence. However, the Division of Subsistence median household income finding for Port Heiden is less than the 2014–2018 median household income for the state of Alaska as a whole ($74,346).

Overall, jobs with the local government (including tribal) contributed the majority (58%) of jobs for the community of Port Heiden, and these jobs employed 89% of households in 2018 (Table 2-7). Local government (including tribal) made up both the highest percentage of wage earnings (50% of overall earned income) and employed 77% of individuals who worked in 2018. Administrative support occupations, including clerical, composed the greatest percentage of wage earnings within this category (11% of overall jobs in the community), followed by construction and extractive occupations (10% overall), general service

Table 2-6.–Estimated earned and other income, Port Heiden, 2018.

Income source	Number of employed adults	Number of households	Total for community	-/+ 95% CI	Mean per household	Percentage of total community income
Earned income						
Local government, including tribal	54.5	31.0	$1,348,847	$828,137 – $1,887,080	$38,538	45.4%
Agriculture, forestry, and fishing	21.3	16.2	$937,937	$314,766 – $1,591,415	$26,798	31.5%
Services	8.0	8.1	$170,855	$26,176 – $424,022	$4,882	5.7%
Transportation, communication, and utilities	2.7	2.7	$66,017	$21,714 – $164,850	$1,886	2.2%
Federal government	1.3	1.3	$41,105	$31,269 – $75,265	$1,174	1.4%
Construction	1.3	1.3	$41,105	$31,662 – $84,312	$1,174	1.4%
Retail trade	1.3	1.3	$41,105	$31,662 – $84,312	$1,174	1.4%
State government	1.3	1.3	$37,368	$33,903 – $76,474	$1,068	1.3%
Manufacturing	1.3	1.3	$1,121	$1,039 – $2,234	$32	0.0%
Earned income subtotal	**70.5**	**35.0**	**$2,685,460**	**$1,701,056 – $3,639,541**	**$76,727**	**90.3%**
Other income						
Alaska Permanent Fund dividend		31.1	$134,815	$97,481 – $170,074	$3,852	4.5%
Native corp. dividend		28.5	$56,498	$26,460 – $97,072	$1,614	1.9%
Rental income		1.3	$25,667	$19,800 – $51,333	$733	0.9%
Unemployment		9.1	$23,969	$4,200 – $55,876	$685	0.8%
Child support		3.9	$21,135	$16,304 – $67,667	$604	0.7%
Pension/retirement		2.6	$10,889	$8,400 – $32,148	$311	0.4%
Food stamps		2.6	$9,046	$6,978 – $27,138	$258	0.3%
Heating assistance		2.6	$3,370	$2,600 – $9,074	$96	0.1%
Social Security		1.3	$2,074	$1,600 – $4,148	$59	0.1%
Meeting honoraria		1.3	$907	$700 – $1,815	$26	0.0%
TANF (temporary cash assistance for needy families)		0.0	$0	$0 – $0	$0	0.0%
Adult public assistance (OAA, APD)		0.0	$0	$0 – $0	$0	0.0%
Supplemental Security income		0.0	$0	$0 – $0	$0	0.0%
Longevity bonus		0.0	$0	$0 – $0	$0	0.0%
Workers' compensation/insurance		0.0	$0	$0 – $0	$0	0.0%
Disability		0.0	$0	$0 – $0	$0	0.0%
Veterans assistance		0.0	$0	$0 – $0	$0	0.0%
Foster care		0.0	$0	$0 – $0	$0	0.0%
CITGO fuel voucher		0.0	$0	$0 – $0	$0	0.0%
Other income subtotal		**33.7**	**$288,370**	**$197,343 – $412,088**	**$8,239**	**9.7%**
Community income total			**$2,973,830**	**$2,015,936 – $3,922,975**	**$84,967**	**100.0%**

Source ADF&G Division of Subsistence household surveys, 2019.

occupations (8% overall), and jobs in transportation and material moving (7% overall). Agriculture, forestry, and fishing represented 35% of overall wage earnings and employed 46% of households in 2018.

Within the other income category, Alaska Permanent Fund dividends made up the greatest percentage of the total community income (5%), followed by Alaska Native corporation dividends (2%), and the remaining types of other income sources each contributed less than 1% to total community income (Table 2-6).

In 2018, there were approximately 71 employed adults (working age 16 and older) in Port Heiden, representing 92% of all adults and all (100%) of the households had at least one employed member (Table 2-8). There were approximately 98 jobs worked by Port Heiden residents during the study year. Employed adults in Port Heiden worked an average of eight months. The mean number of jobs held by employed adults was one and the maximum number of jobs held by an individual was three. In 2018, out of 71 employed adults, 41 individuals worked full-time schedules, 28% worked part time, and 28% worked on-call (occasional) schedules (Table 2-9).

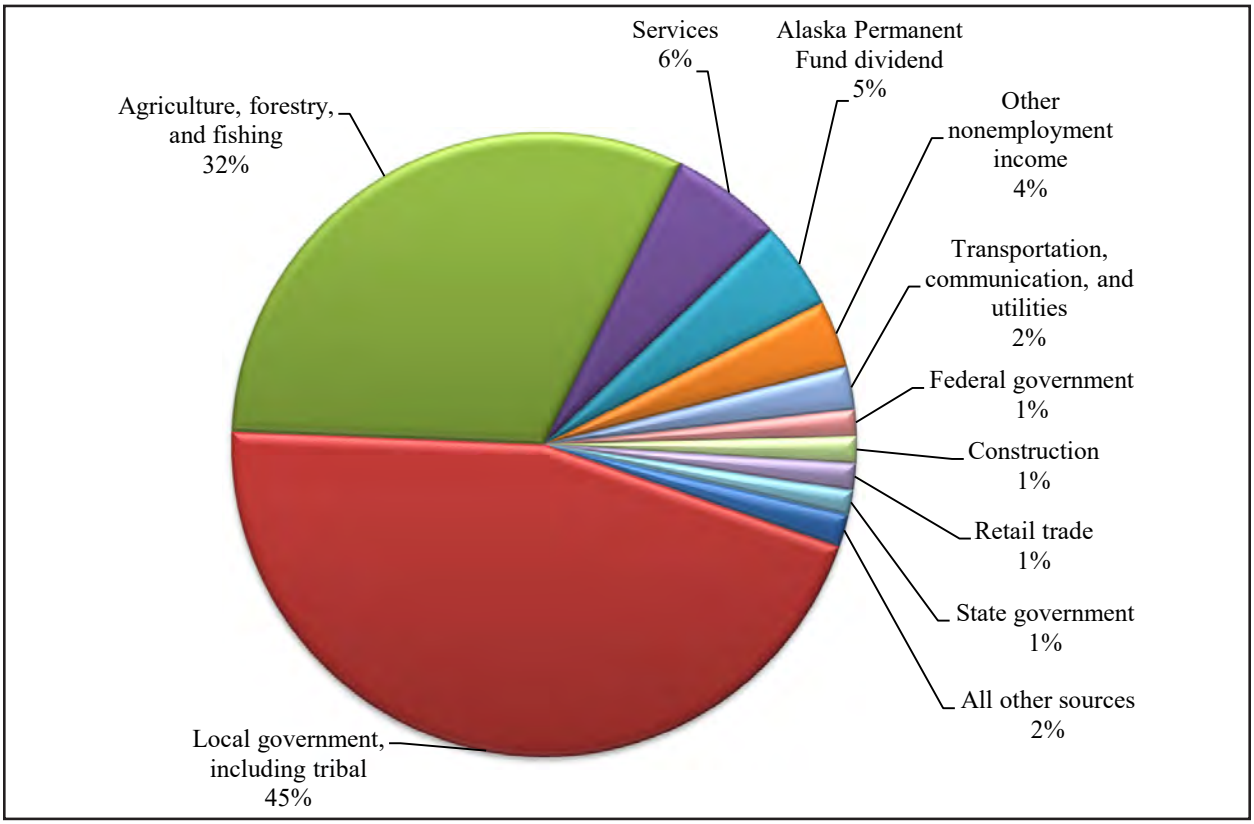
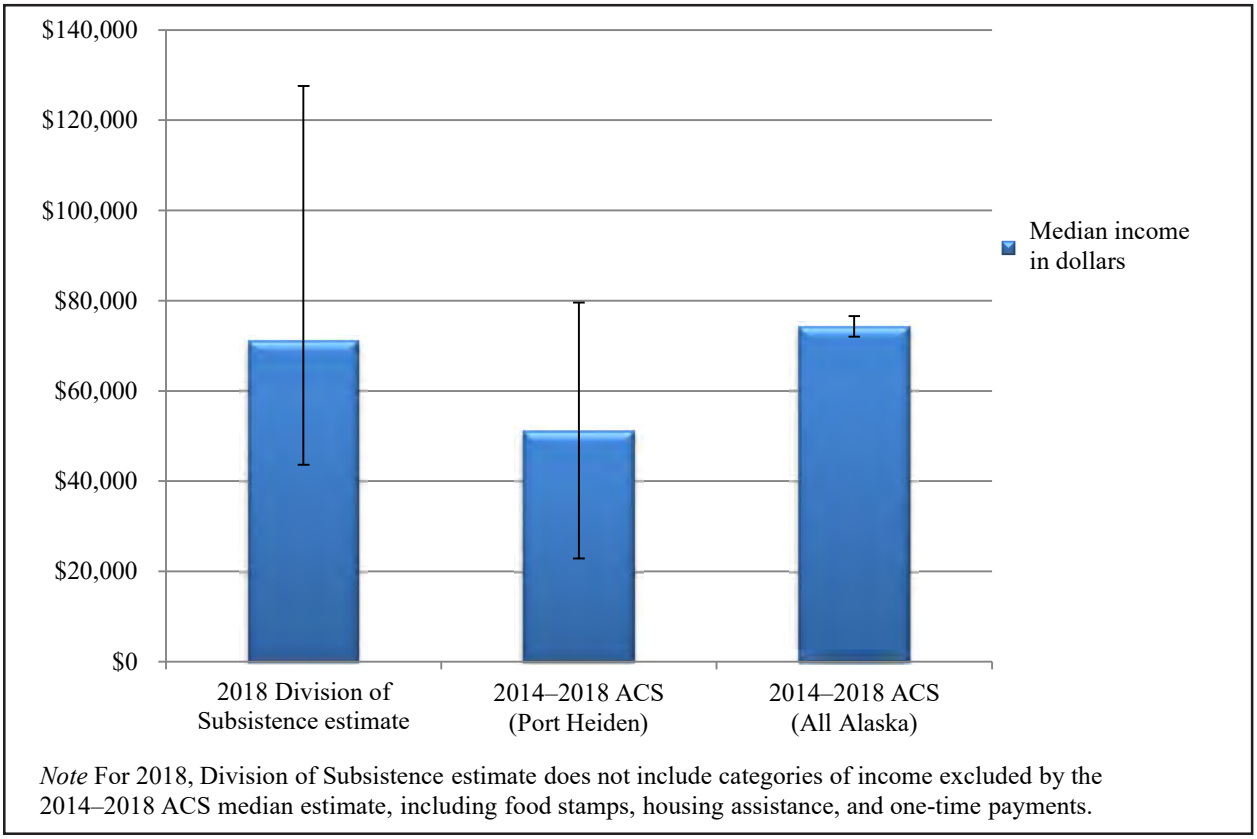


Figure 2-5.–Top income sources, Port Heiden, 2018.



Note For 2018, Division of Subsistence estimate does not include categories of income excluded by the 2014–2018 ACS median estimate, including food stamps, housing assistance, and one-time payments.

Figure 2-6.–Comparison of median income estimates, Port Heiden and Alaska, 2018.

Table 2-7.–Employment by industry, Port Heiden, 2018.

Industry	Jobs	Employed households	Employed individuals	Percentage of wage earnings
Estimated total number	**98.4**	**35.0**	**70.5**	
Federal government	**1.4%**	**3.8%**	**1.9%**	**1.5%**
Executive, administrative, and managerial	1.4%	3.8%	1.9%	1.5%
State government	**1.4%**	**3.8%**	**1.9%**	**1.4%**
Executive, administrative, and managerial	1.4%	3.8%	1.9%	1.4%
Local government, including tribal	**58.1%**	**88.5%**	**77.4%**	**50.2%**
Executive, administrative, and managerial	2.7%	3.8%	3.8%	5.6%
Teachers, librarians, and counselors	4.1%	11.5%	5.7%	7.7%
Health technologists and technicians	1.4%	3.8%	1.9%	3.0%
Technologists and technicians, except health	4.1%	7.7%	5.7%	2.9%
Administrative support occupations, including clerical	10.8%	30.8%	15.1%	14.0%
Service occupations	8.1%	23.1%	11.3%	7.2%
Agricultural, forestry, and fishing occupations	1.4%	3.8%	1.9%	0.5%
Mechanics and repairers	1.4%	3.8%	1.9%	1.0%
Construction and extractive occupations	9.5%	26.9%	13.2%	1.4%
Precision production occupations	1.4%	3.8%	1.9%	0.9%
Transportation and material moving occupations	6.8%	19.2%	9.4%	3.8%
Handlers, equipment cleaners, helpers, and laborers	5.4%	15.4%	7.5%	0.9%
Occupation not indicated	1.4%	3.8%	1.9%	1.5%
Agriculture, forestry, and fishing	**23.0%**	**46.2%**	**30.2%**	**34.9%**
Agricultural, forestry, and fishing occupations	23.0%	46.2%	30.2%	34.9%
Construction	**1.4%**	**3.8%**	**1.9%**	**1.5%**
Construction and extractive occupations	1.4%	3.8%	1.9%	1.5%
Manufacturing	**1.4%**	**3.8%**	**1.9%**	**0.0%**
Writers, artists, entertainers, and athletes	1.4%	3.8%	1.9%	0.0%
Transportation, communication, and utilities	**2.7%**	**7.7%**	**3.8%**	**2.5%**
Transportation and material moving occupations	2.7%	7.7%	3.8%	2.5%
Retail trade	**1.4%**	**3.8%**	**1.9%**	**1.5%**
Executive, administrative, and managerial	1.4%	3.8%	1.9%	1.5%
Services	**9.5%**	**23.1%**	**11.3%**	**6.4%**
Executive, administrative, and managerial	4.1%	11.5%	5.7%	2.8%
Health technologists and technicians	1.4%	3.8%	1.9%	3.2%
Construction and extractive occupations	2.7%	3.8%	1.9%	0.2%
Handlers, equipment cleaners, helpers, and laborers	1.4%	3.8%	1.9%	0.2%

Source ADF&G Division of Subsistence household surveys, 2019.

Table 2-8.–Employment characteristics, Port Heiden, 2018.

Characteristic	Community Port Heiden
All adults	
Number	76.5
Mean weeks employed	31.6
Employed adults	
Number	70.5
Percentage	92.1%
Jobs	
Number	98.4
Mean	1.4
Minimum	1
Maximum	3
Months employed	
Mean	7.9
Minimum	1
Maximum	12
Percentage employed year-round	42.3%
Mean weeks employed	34.3
Households	
Number	35.0
Employed	
Number	35.0
Percentage	100.0%
Jobs per employed household	
Mean	2.8
Minimum	1
Maximum	5
Employed adults	
Mean	
Employed households	2.0
Total households	2.0
Minimum	1
Maximum	3
Mean person-weeks of employment	69.0

Source ADF&G Division of Subsistence household surveys, 2019.

Table 2-9.–Reported job schedules, Port Heiden, 2018.

	Jobs		Employed persons		Employed households	
Schedule	Number	Percentage	Number	Percentage	Number	Percentage
Full time	47.9	48.6%	41.2	58.5%	26.9	76.9%
Part time	21.3	21.6%	19.9	28.3%	14.8	42.3%
Shift	1.3	1.4%	1.3	1.9%	1.3	3.8%
On-call (occasional)	23.9	24.3%	19.9	28.3%	16.2	46.2%
Part-time shift	4.0	4.1%	4.0	5.7%	4.0	11.5%

Source ADF&G Division of Subsistence household surveys, 2019.
Note Respondents who had more than one job in the study year could provide multiple responses, so the percentages may sum to more than 100%.

Food Security

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

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

Core questions and responses from Port Heiden households are summarized in Figure 2-7. For this study, additional questions asked were designed to determine whether food insecurities, if any, were related to subsistence foods or store-bought foods. Based on responses from the surveyed households, an estimated 4% of Port Heiden households reported that their store-bought food did not last while 19% of Port Heiden households specifically said that their subsistence foods did not last.

In 2018, 15% of Port Heiden households worried about having enough food and 19% of households lacked resources to get food. Also, an estimated 7% of Port Heiden households indicated that their food did not last and that they could not get more. According to survey respondents, some Port Heiden households experienced more serious food insecure conditions: 7% had cut the size of meals or skipped meals, 4% indicated that they ate less than they felt they should, but no households said its members were hungry but did not eat, and no households reported weight loss due to a lack of food, nor did any households indicate that members of the household did not eat for a whole day.

Food security results for Port Heiden, the state of Alaska, and the United States are summarized in Figure 2-8. Overall, 85% of Port Heiden households fell in the high or marginal food secure subcategories. This is 3%–4% below the national and state averages of 88% and 89%, respectively. In 2018, 15% of Port Heiden households experienced low food security, which is twice the state average and the national average of 7%. However, no Port Heiden households experienced very low food security, which compares favorably to the state and the national averages of 4% and 5%, respectively.

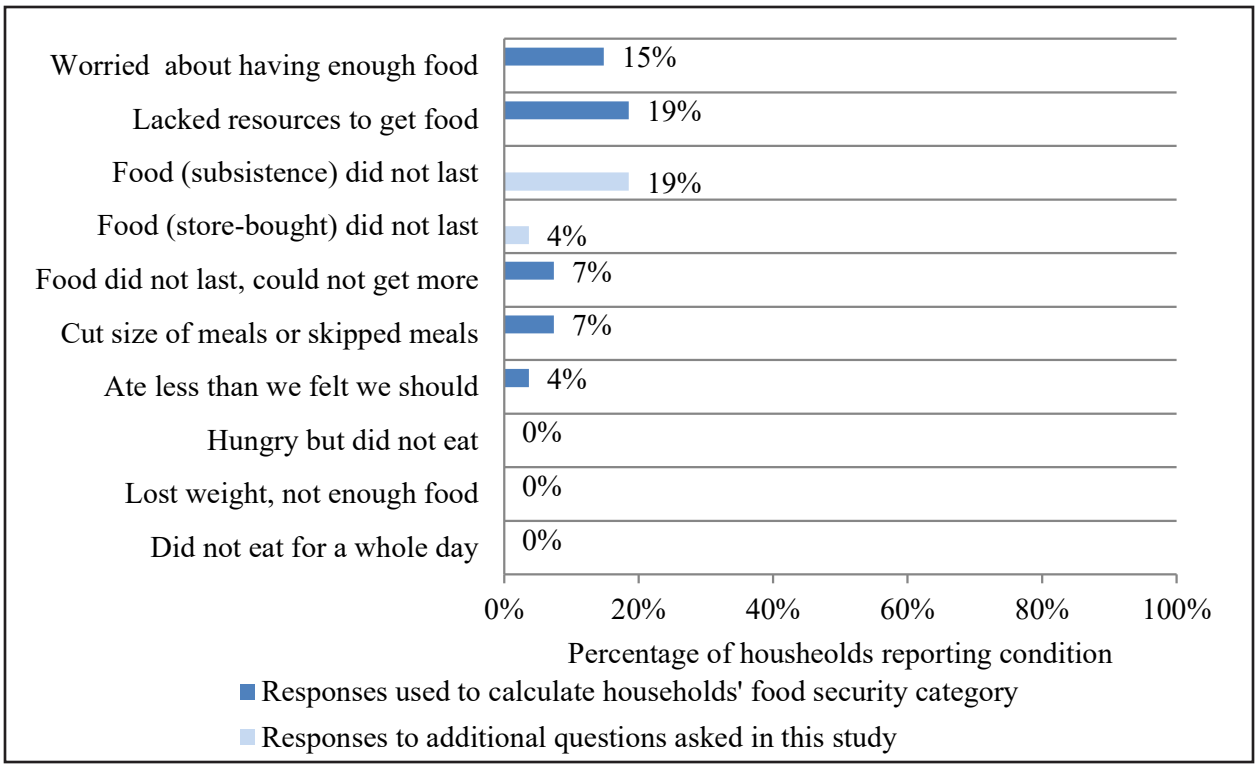


Figure 2-7.–Responses to questions about food insecure conditions, Port Heiden, 2018.

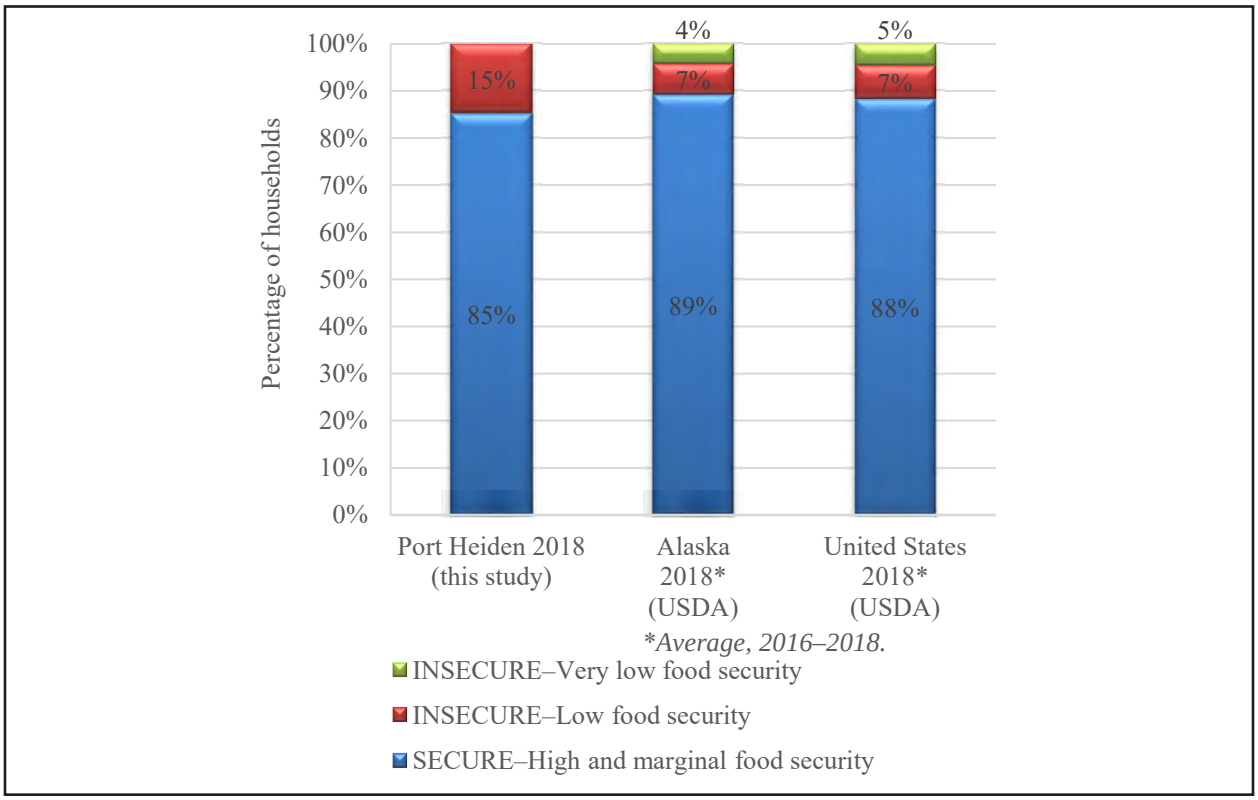


Figure 2-8.–Comparison of food security categories, Port Heiden, Alaska, and United States, 2018.

Table 2-10.–Households' assessments of food security conditions, Port Heiden, 2018.

Statement	Percentage of households
Had enough of the kinds of food desired	55.6%
Had enough food, but not the desired kind	40.7%
Somestimes, or often, did not have enough food	3.7%

Source ADF&G Division of Subsistence household surveys, 2019.

Table 2-10 shows by percentage of sampled Port Heiden households the assessments results regarding eating desired types of food during the study year. According to study results, 56% of households had enough of the kinds of food desired; 41% had enough food, but not the desired kinds; and 4% sometimes, or often, did not have enough food. Figure 2-9 portrays the mean number of food insecure conditions per household by food security category by month. Figure 2-10 shows which months households reported foods not lasting. According to study results, food secure conditions for Port Heiden households with high and marginal food security remained constant and nearly unapparent throughout the year (Figure 2-9). Households with low food security experienced food insecure conditions that started increasing in December and insecure conditions peaked in March. The most food-secure time of the year for these households was May through November.

Figure 2-10 shows that, overall, Port Heiden households experienced subsistence foods not lasting more than their store-bought foods not lasting throughout the year. Looking at subsistence foods alone, the peak times Port Heiden households experienced a shortage in their subsistence foods was in January, when 15% of households—the greatest percentage—experienced subsistence foods not lasting, followed by in February and March when 11% of households had subsistence foods not last. Also, in April and December the percentage decreased further to 7% having subsistence foods not last. From May through November only 4% of Port Heiden households experienced subsistence foods not lasting. Regarding store-bought foods, approximately 4% of households experienced a shortage beginning in December and shortages existed January through March; however, by April no households experienced a shortage of store-bought foods. This could be because Port Heiden households have access to a small local grocery store year-round and the Native Village of Port Heiden runs a farm program, which provides residents an opportunity to purchase foods such as eggs, vegetables, dairy products, and meat. In addition, households with resources to travel outside the community can travel to Dillingham, King Salmon, or Anchorage by plane to purchase groceries in larger quantities from stores and bring them back to the community to be consumed over a longer period of time.

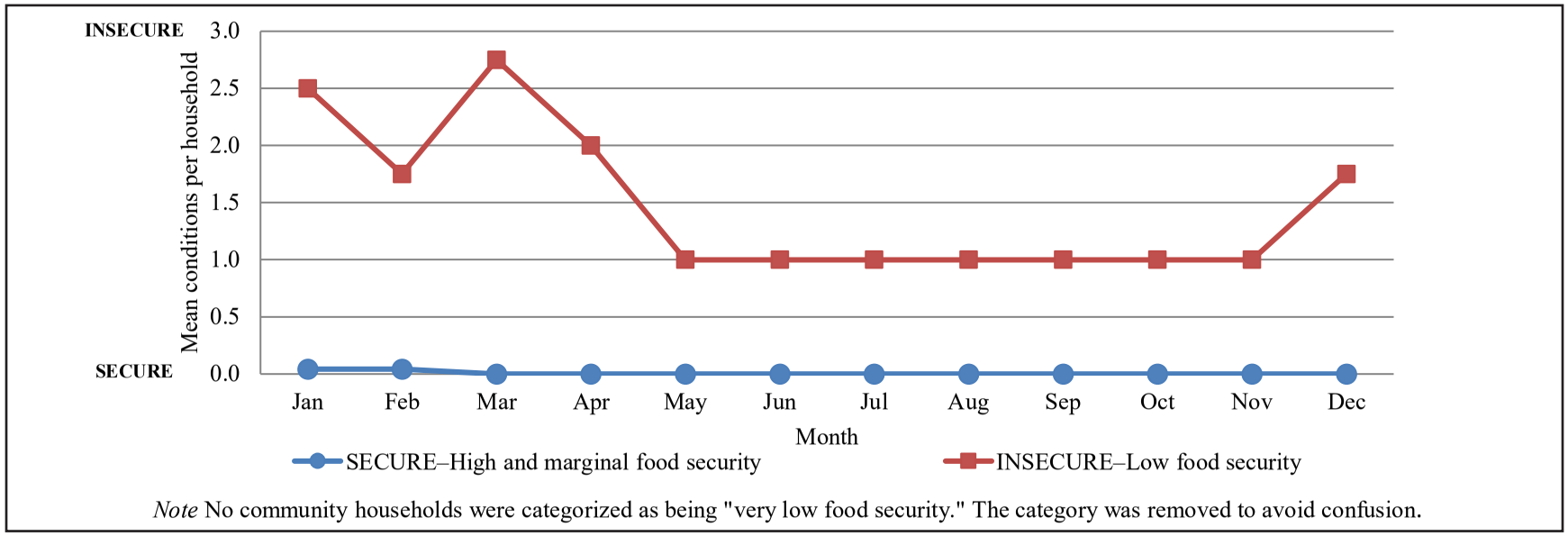


Figure 2-9.–Mean number of food insecure conditions by month and by household food security category, Port Heiden, 2018.

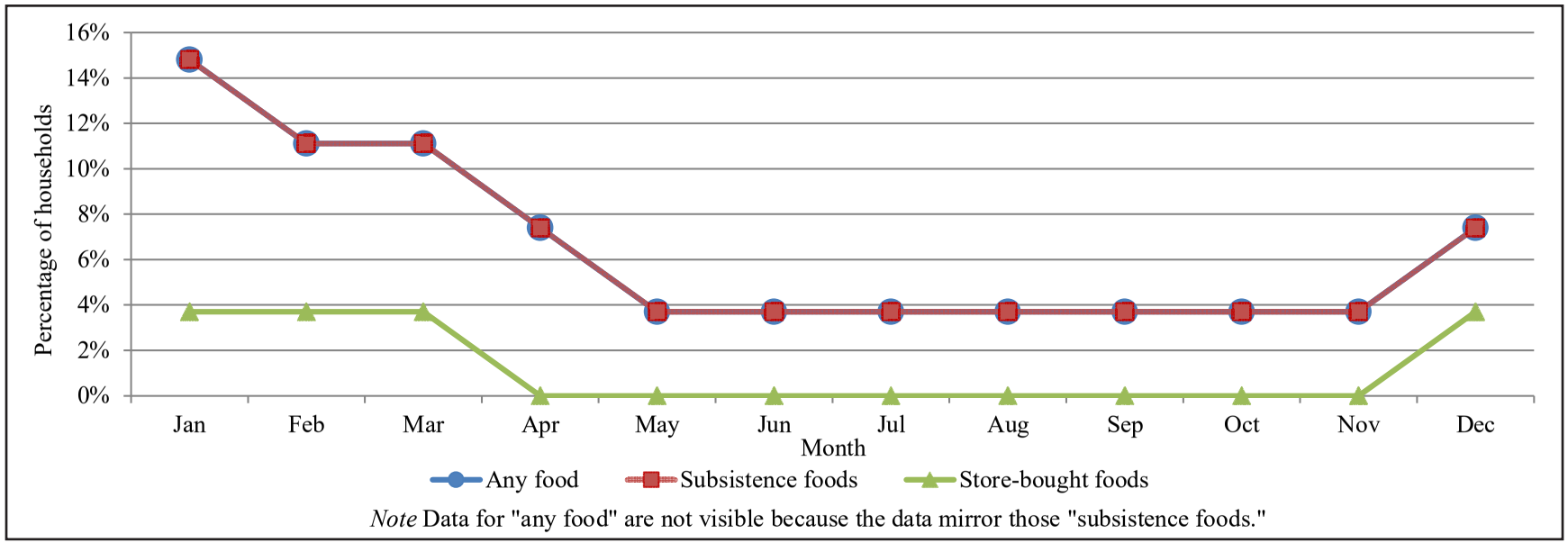


Figure 2-10.–Comparison of months when food did not last, Port Heiden, 2018.

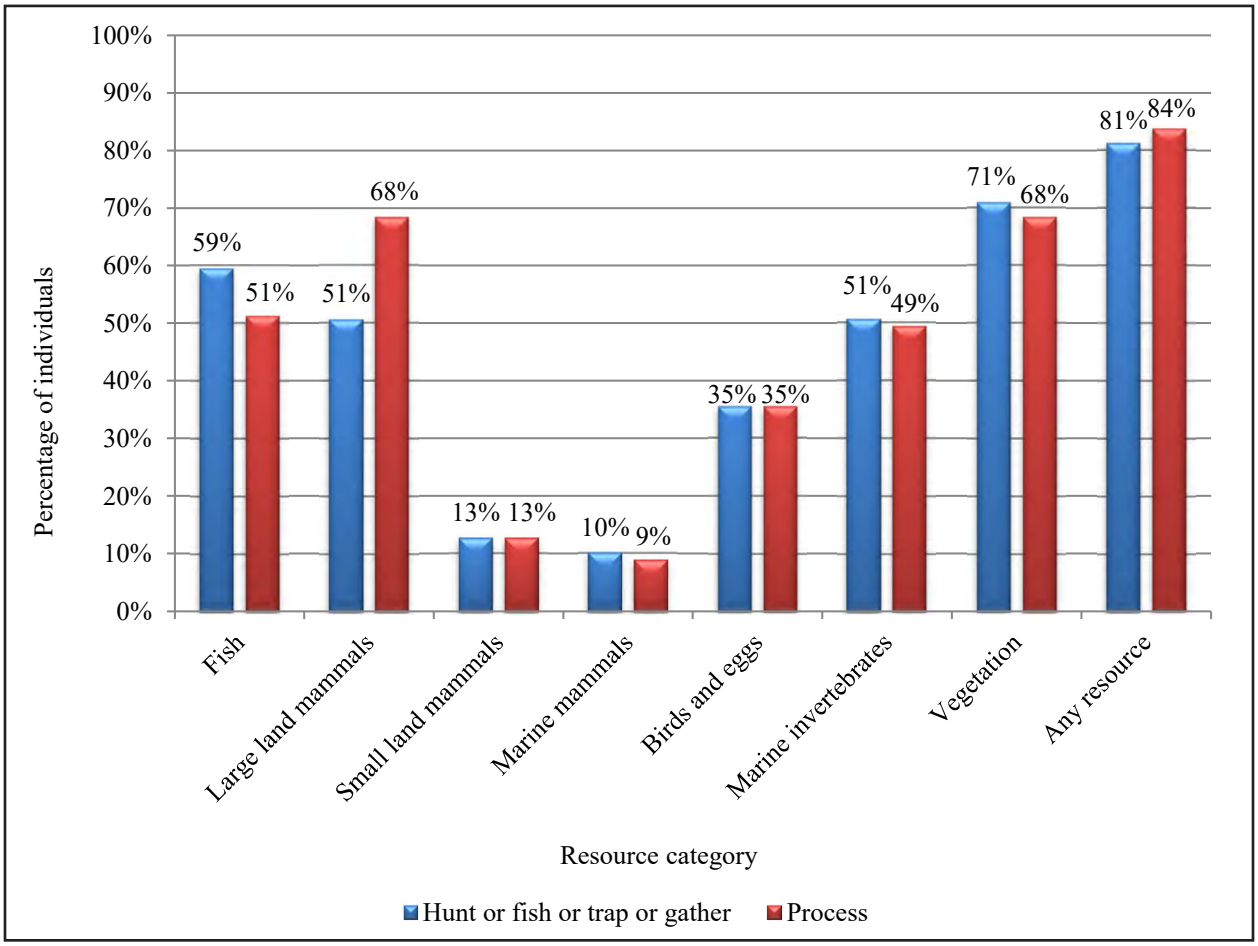


Figure 2-11.–Individual participation in subsistence harvesting and processing activities, Port Heiden, 2018.

Summary of Harvest and Use Patterns

Individual Participation in the Harvesting and Processing of Wild Resources

Figure 2-11 and Table 2-11 report the estimated levels of individual participation in the harvest and processing of wild resources by all Port Heiden residents in 2018. Approximately 81% of residents participated in the harvest of wild resources. Regarding specific resource categories, 71% of residents gathered vegetation, 59% fished, 51% gathered marine invertebrates, 51% hunted for large land mammals, 35% hunted birds or gathered bird eggs, 13% hunted or trapped for small land mammals and furbearers, and 10% hunted marine mammals. A slightly larger proportion of residents (84%) participated in processing any wild resource than harvesting. Looking at the individual resource categories, 68% participated in processing large land mammals, which is the only category for which processing activities were completed by more people than the number who harvested. The same number of individuals participated in processing birds and eggs and also small land mammals/furbearers as harvested these resources. Fewer residents participated in processing vegetation (68%), fish (51%), marine invertebrates (49%), and marine mammals (9%).

Table 2-11.–Individual participation in subsistence harvesting and processing activities, Port Heiden, 2018.

Total number of people	**103.7**
Fish	
Fish	
Number	61.7
Percentage	59.5%
Process	
Number	53.1
Percentage	51.3%
Large land mammals	
Hunt	
Number	52.5
Percentage	50.6%
Process	
Number	70.9
Percentage	68.4%
Small land mammals	
Hunt or trap	
Number	13.1
Percentage	12.7%
Process	
Number	13.1
Percentage	12.7%
Marine mammals	
Hunt	
Number	10.5
Percentage	10.1%
Process	
Number	9.2
Percentage	8.9%
Birds and eggs	
Hunt/gather	
Number	36.8
Percentage	35.4%
Process	
Number	36.8
Percentage	35.4%
Marine Invertebrates	
Attempt harvest	
Number	52.5
Percentage	50.6%
Process	
Number	51.2
Percentage	49.4%
Vegetation	
Gather	
Number	73.5
Percentage	70.9%
Process	
Number	70.9
Percentage	68.4%
Any resource	
Attempt harvest	
Number	84.3
Percentage	81.3%
Process	
Number	86.9
Percentage	83.8%

Source ADF&G Division of Subsistence household surveys, 2019.

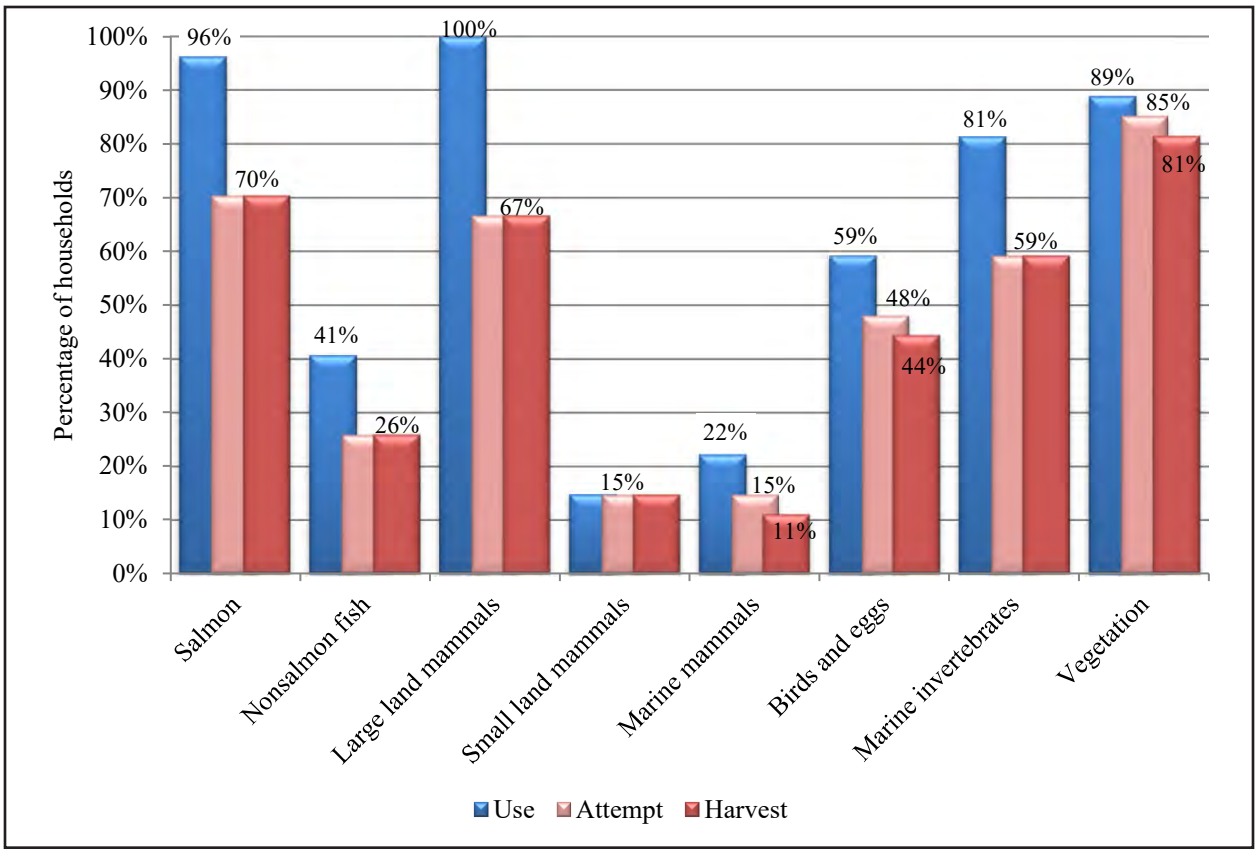


Figure 2-12.–Percentages of households using, attempting to harvest, and harvesting wild resources, by resource category, Port Heiden, 2018.

Use and Harvest of Wild Resources at the Household Level

Figure 2-12 shows by resource category the percentages of households that used wild resources, and attempted to harvest and harvested wild foods. During the study year, for four out of eight resource categories, more than 80% of households used the resources, including large land mammals being used by 100% of households. Following closely was use of salmon (96%), and then vegetation (89%) and marine invertebrates (81%). The percentage of households using the remaining resource categories included: birds and eggs (59%), nonsalmon fish (41%), marine mammals (22%), and small land mammals (15%). For all resource categories, a higher (or the same) percentage of households used resources than attempted to harvest or harvested resources.

The greatest percentage of households harvested vegetation (81%), followed by salmon (70%), large land mammals (67%), marine invertebrates (59%), birds and eggs (44%), nonsalmon fish (26%), small land mammals (15%), and marine mammals (11%). Salmon, large land mammals, marine invertebrates, nonsalmon fish, and small land mammals were the resource categories for which the percentage of households attempting to harvest and successfully harvesting was the same.

Table 2-12 summarizes resource harvest and use characteristics for Port Heiden in 2018 at the household level. The average harvest was 880 lb usable weight per household, or 297 lb per capita. During the study year, community households harvested an average of eight kinds of resources and used an average of 12 kinds of resources. The maximum number of resources used by any household was 24. In addition, households gave away an average of six kinds of resources. Overall, as many as 146 species were available for households to harvest in the study area; this included species that survey respondents identified but were not asked about on the survey instrument.

Table 2-12.–Resource harvest and use characteristics, Port Heiden, 2018.

Characteristic	
Mean number of resources used per household	**12.2**
Minimum	2
Maximum	24
95% confidence limit (±)	9.2%
Median	12
Mean number of resources attempted to harvest per household	**8.7**
Minimum	0
Maximum	22
95% confidence limit (±)	13.8%
Median	7
Mean number of resources harvested per household	**8.0**
Minimum	0
Maximum	21
95% confidence limit (±)	13.8%
Median	6
Mean number of resources received per household	**6.4**
Minimum	1
Maximum	18
95% confidence limit (±)	13.5%
Median	5
Mean number of resources given away per household	**5.5**
Minimum	0
Maximum	17
95% confidence limit (±)	13.6%
Median	5
Household harvest (pounds)	
Minimum	0
Maximum	3,997
Mean	879.7
Median	603
Total harvest weight (lb)	30,788.6
Community per capita harvest (lb)	296.9
Percentage using any resource	100.0%
Percentage attempting to harvest any resource	92.6%
Percentage harvesting any resource	92.6%
Percentage receiving any resource	100.0%
Percentage giving away any resource	96.3%
Number of households in sample	27
Number of resources asked about and identified voluntarily by respondents	146

Source ADF&G Division of Subsistence household surveys, 2019.

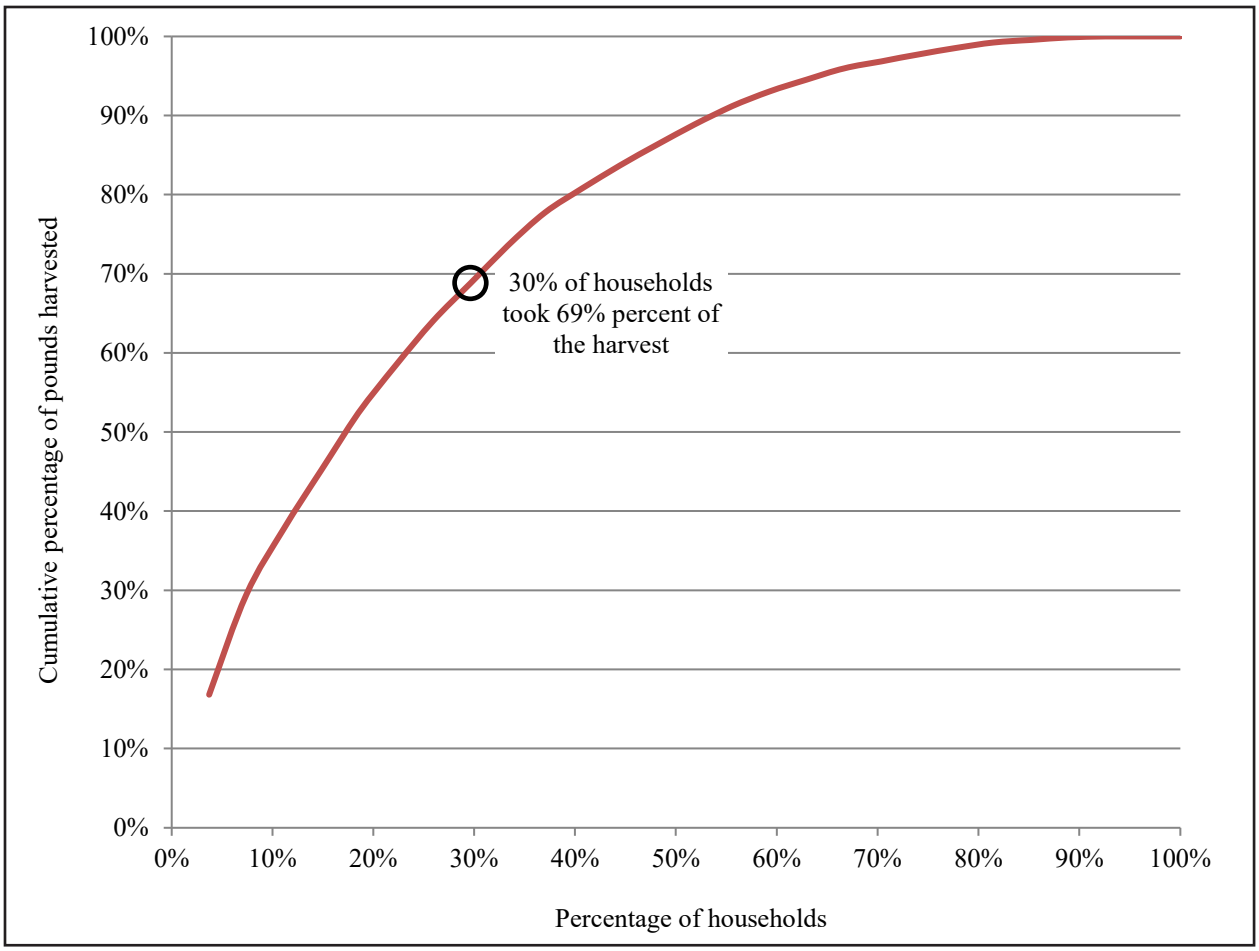


Figure 2-13.–Household specialization, Port Heiden, 2018.

Household Specialization in Resource Harvesting

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

As shown in Figure 2-13, in the 2018 study year in Port Heiden, approximately 69% of the harvests of wild resources as estimated in pounds usable weight were harvested by 30% of the community's households. Further analysis of the study findings, beyond the scope of this report, might identify characteristics of the highly productive households in Port Heiden.

Harvest Quantities and Composition

Table 2-13 reports estimated wild resource harvests and uses by Port Heiden residents in 2018 and is organized first by general category and then by species. All edible resources are reported in pounds usable weight (see Appendix D for conversion factors[8]). The harvest category includes resources harvested by any member of the surveyed household during the study year. The use category includes all resources taken, given away, or used by a household, and resources acquired from other harvesters, either as gifts, by barter or trade, through hunting partnerships, or as meat given by hunting guides and non-local hunters. Purchased and grown foods are not included. Differences between harvest and use percentages reflect sharing among households, which results in a wider distribution of wild foods.

The total harvest by Port Heiden residents was 30,789 lb in 2018 (Table 2-13). The composition of the harvest is represented by salmon (48% of the total harvest weight), followed by large land mammals (37%), vegetation (8%), birds and eggs (3%), and marine invertebrates (2%); additionally, contributing 1% or less to the total harvest weight each were nonsalmon fish, birds, marine mammals, and small land mammals (Figure 2-14). The community harvest by wild resource category in order of most to least harvest weight was salmon (14,856 lb total, or 143 lb per capita), large land mammals (11,511 lb total, or 111 lb per capita), vegetation (2,375 lb total, or 23 lb per capita), birds and eggs (861 lb total, or 8 lb per capita), marine invertebrates (707 lb total, or 7 lb per capita), nonsalmon fish (313 lb total, or 3 lb per capita), marine mammals (145 lb total, or 1 lb per capita), and small land mammals (21 lb total, or less than 1 lb per capita) (Table 2-13).

Use and Harvest Characteristics by Resource Category

All Port Heiden households used wild resources, and 93% of households attempted to harvest and successfully harvested at least one wild resource in 2018 (Table 2-13). Table 2-13 also reports estimates of sharing of each resource by the percentage of households that received each resource and the percentage of households that gave away each resource. Considering all resources combined, sharing clearly was an important activity for Port Heiden residents: all (100%) Port Heiden households received at least one wild resource in 2018, and 96% of households gave away at least one resource. Small land mammals (with a very low harvest) was the category for which sharing activities were an exception: no households shared these resources.

The resource category that was most frequently received by Port Heiden households in 2018 was large land mammals. An estimated 85% of community households received large land mammals in 2018; this was followed by receipt of salmon (82%), vegetation (59%), and marine invertebrates (44%). A smaller percentage of Port Heiden households received birds and eggs (30%), nonsalmon fish (26%), and marine mammals (15%).

An estimated 78% of households gave away large land mammals, which is the type of resource most frequently given away. Salmon was the resource category next most frequently given away by households (70%), and 41% of Port Heiden households gave salmon away to households in other communities (Table 2-14). Vegetation was the third most shared resource category: 67% of Port Heiden households gave away some vegetation in 2018 (Table 2-13). A smaller percentage of households gave away birds and eggs (37%), nonsalmon fish (26%), marine invertebrates (26%), and marine mammals (4%).

Table 2-15 lists the top ranked resources used by households during the 2018 study year. Caribou were used by 93% of households in the community, followed by crowberries (85%), Chinook salmon (82%), sockeye salmon (78%), and moose (78%). Following those five resources, coho salmon were used by 74% of Port Heiden households; this was closely followed by the use of cockles (67%), lowbush cranberries (52%), blueberries (44%), and salmonberries (44%).

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

Table 2-13.–Estimated uses and harvests of fish, game, and vegetation resources, Port Heiden, 2018.

	Percentage of households					Harvest weight (lb)			Harvest amount			95% confidence limit (±) harvest
Resource	Use %	Attempt %	Harvest %	Receive %	Give %	Total	Mean per household	Per capita	Total	Unit	Mean per household	
All resources	**100.0**	**92.6**	**92.6**	**100.0**	**96.3**	**30,788.6**	**879.7**	**296.9**	**30,788.6**	**lb**	**879.7**	**20.7**
Salmon	**96.3**	**70.4**	**70.4**	**81.5**	**70.4**	**14,855.6**	**424.4**	**143.3**	**14,855.6**	**lb**	**424.4**	**32.5**
Chum salmon	25.9	25.9	25.9	7.4	11.1	493.5	14.1	4.8	94.6	ind	2.7	50.8
Coho salmon	74.1	55.6	51.9	44.4	44.4	2,380.2	68.0	23.0	474.4	ind	13.6	27.1
Chinook salmon	81.5	44.4	44.4	59.3	37.0	4,808.5	137.4	46.4	786.9	ind	22.5	50.7
Pink salmon	22.2	22.2	22.2	3.7	11.1	164.1	4.7	1.6	68.7	ind	2.0	44.8
Sockeye salmon	77.8	55.6	55.6	44.4	51.9	6,783.8	193.8	65.4	1,755.2	ind	50.1	29.5
Landlocked salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Spawning sockeye salmon	7.4	7.4	7.4	0.0	0.0	225.5	6.4	2.2	58.3	ind	1.7	78.7
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	**40.7**	**25.9**	**25.9**	**25.9**	**25.9**	**313.1**	**8.9**	**3.0**	**313.1**	**lb**	**8.9**	**39.5**
Pacific herring	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Pacific herring roe	3.7	0.0	0.0	3.7	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Pacific herring sac roe	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Pacific herring spawn on kelp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Capelin (grunion)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Unknown smelt	14.8	3.7	3.7	11.1	7.4	16.2	0.5	0.2	64.8	gal	1.9	98.3
Pacific (gray) cod	11.1	3.7	3.7	7.4	7.4	16.6	0.5	0.2	5.2	ind	0.1	98.3
Unknown cod	7.4	0.0	0.0	7.4	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Starry flounder	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Pacific halibut	25.9	7.4	7.4	22.2	11.1	46.7	1.3	0.5	46.7	ind	1.3	69.6
Unknown rockfish	3.7	3.7	3.7	0.0	0.0	5.8	0.2	0.1	3.9	ind	0.1	98.3
Sablefish (black cod)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Red Irish lord	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown sculpin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Salmon shark	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Yellowfin sole	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Alaska blackfish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Burbot	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Dolly Varden–freshwater	11.1	11.1	11.1	0.0	0.0	63.5	1.8	0.6	45.4	ind	1.3	62.7
Dolly Varden–saltwater	3.7	3.7	3.7	0.0	0.0	18.1	0.5	0.2	13.0	ind	0.4	98.3

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Table 2-13.–Page 2 of 5.

Resource	Percentage of households: Use %	Attempt %	Harvest %	Receive %	Give %	Harvest weight (lb): Total	Mean per household	Per capita	Harvest amount: Total	Unit	Mean per household	95% confidence limit (±) harvest
Nonsalmon fish, continued												
Arctic grayling	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Northern pike	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Rainbow trout	3.7	3.7	3.7	0.0	3.7	90.7	2.6	0.9	64.8	ind	1.9	98.3
Steelhead	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown trout	3.7	3.7	3.7	0.0	0.0	54.4	1.6	0.5	38.9	ind	1.1	98.3
Least cisco	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Humpback whitefish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Round whitefish	3.7	3.7	3.7	0.0	0.0	0.9	0.0	0.0	1.3	ind	0.0	98.3
Large land mammals	**100.0**	**66.7**	**66.7**	**85.2**	**77.8**	**11,511.1**	**328.9**	**111.0**	**11,511.1**	**lb**	**328.9**	**22.0**
Brown bear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Caribou	92.6	66.7	66.7	63.0	66.7	6,611.1	188.9	63.8	44.1	ind	1.3	16.4
Moose	77.8	29.6	22.2	66.7	55.6	4,900.0	140.0	47.3	9.1	ind	0.3	38.3
Small land mammals	**14.8**	**14.8**	**14.8**	**0.0**	**0.0**	**20.7**	**0.6**	**0.2**	**20.7**	**lb**	**0.6**	**98.3**
Beaver	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Red fox	11.1	11.1	11.1	0.0	0.0	0.0	0.0	0.0	13.0	ind	0.4	56.9
Red fox–cross phase	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Alaska hare	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Snowshoe hare	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
River (land) otter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Lynx	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Mink	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Muskrat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Porcupine	3.7	3.7	3.7	0.0	0.0	20.7	0.6	0.2	2.6	ind	0.1	98.3
Arctic ground (parka) squirrel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Red (tree) squirrel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Weasel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Gray wolf	3.7	3.7	3.7	0.0	0.0	0.0	0.0	0.0	1.3	ind	0.0	98.3
Wolverine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Feral animals	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**lb**	**0.0**	**0.0**
Reindeer–feral	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Marine mammals	**22.2**	**14.8**	**11.1**	**14.8**	**3.7**	**145.2**	**4.1**	**1.4**	**145.2**	**lb**	**4.1**	**68.1**
Harbor seal	7.4	7.4	3.7	3.7	3.7	72.6	2.1	0.7	1.3	ind	0.0	98.3
Spotted seal	3.7	3.7	3.7	3.7	0.0	72.6	2.1	0.7	1.3	ind	0.0	98.3

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Table 2-13.–Page 3 of 5.

Resource	Percentage of households: Use %	Attempt %	Harvest %	Receive %	Give %	Harvest weight (lb): Total	Mean per household	Per capita	Harvest amount: Total	Unit	Mean per household	95% confidence limit (±) harvest
Marine mammals, continued												
Unknown seal	7.4	0.0	0.0	7.4	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Sea otter	7.4	7.4	7.4	0.0	0.0	0.0	0.0	0.0	19.4	ind	0.6	69.6
Steller sea lion	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Walrus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Beluga whale	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown whale	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Birds and eggs	**59.3**	**48.1**	**44.4**	**29.6**	**37.0**	**860.8**	**24.6**	**8.3**	**860.8**	**lb**	**24.6**	**34.5**
Bufflehead	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Common eider	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
King eider	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Steller's eider	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown goldeneye	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Harlequin duck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Mallard	7.4	7.4	7.4	0.0	0.0	10.4	0.3	0.1	6.5	ind	0.2	69.6
Unknown merganser	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Long-tailed duck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Northern pintail	7.4	7.4	7.4	0.0	3.7	10.7	0.3	0.1	9.1	ind	0.3	74.6
Unknown scaup	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Black scoter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Surf scoter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
White-winged scoter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Northern shoveler	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown teal	7.4	7.4	7.4	0.0	0.0	6.1	0.2	0.1	13.0	ind	0.4	68.1
American wigeon	3.7	3.7	3.7	0.0	0.0	13.6	0.4	0.1	13.0	ind	0.4	98.3
Brant	7.4	7.4	7.4	7.4	0.0	27.0	0.8	0.3	14.3	ind	0.4	68.4
Unknown Canada/ cackling geese	25.9	22.2	22.2	7.4	14.8	466.6	13.3	4.5	106.3	ind	3.0	44.4
Emperor goose	7.4	7.4	7.4	3.7	7.4	35.9	1.0	0.3	11.7	ind	0.3	72.1
White-fronted goose	3.7	3.7	3.7	0.0	3.7	16.5	0.5	0.2	5.2	ind	0.1	98.3
Unknown geese	7.4	7.4	3.7	3.7	7.4	12.4	0.4	0.1	3.9	ind	0.1	98.3
Unknown swans	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Sandhill crane	3.7	3.7	3.7	0.0	3.7	21.0	0.6	0.2	3.9	ind	0.1	98.3
Black oystercatcher	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown cormorant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0

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Table 2-13.–Page 4 of 5.

Resource	Percentage of households: Use %	Attempt %	Harvest %	Receive %	Give %	Harvest weight (lb): Total	Mean per household	Per capita	Harvest amount: Total	Unit	Mean per household	95% confidence limit (±) harvest
Birds and eggs, continued												
Unknown auklet	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Glaucous-winged gull	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Herring gull	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Mew gull	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Sabine's gull	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Black-legged kittiwake	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown murre	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown tern	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Ptarmigan	18.5	7.4	7.4	14.8	11.1	19.0	0.5	0.2	24.6	ind	0.7	73.0
Mallard eggs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Black oystercatcher eggs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Glaucous-winged gull eggs	3.7	7.4	3.7	3.7	3.7	6.3	0.2	0.1	31.1	ind	0.9	98.3
Herring gull eggs	0.0	3.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Mew gull eggs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown gull eggs	7.4	3.7	3.7	3.7	3.7	215.2	6.1	2.1	13.0	ind	0.4	98.3
Black-legged kittiwake eggs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown murre eggs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown tern eggs	0.0	3.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Marine invertebrates	**81.5**	**59.3**	**59.3**	**44.4**	**25.9**	**707.2**	**20.2**	**6.8**	**707.2**	**lb**	**20.2**	**66.2**
Red (large) chitons	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Black (small) chitons	11.1	0.0	0.0	11.1	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Butter clams	7.4	7.4	7.4	3.7	3.7	186.7	5.3	1.8	62.2	gal	1.8	92.1
Pacific littleneck clams (steamers)	7.4	0.0	0.0	7.4	3.7	0.0	0.0	0.0	0.0	gal	0.0	0.0
Razor clams	11.1	7.4	7.4	7.4	7.4	213.9	6.1	2.1	71.3	gal	2.0	89.4
Softshell clams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Unknown clams	3.7	3.7	3.7	3.7	3.7	7.5	0.2	0.1	2.6	gal	0.1	98.3
Unknown cockles	66.7	59.3	59.3	18.5	18.5	222.9	6.4	2.1	79.1	gal	2.3	34.2
Dungeness crab	14.8	3.7	3.7	14.8	11.1	27.2	0.8	0.3	38.9	ind	1.1	98.3
Red king crab	7.4	3.7	3.7	3.7	0.0	34.9	1.0	0.3	6.5	ind	0.2	98.3
Unknown king crab	3.7	3.7	3.7	0.0	0.0	8.9	0.3	0.1	3.9	ind	0.1	98.3
Tanner crab, opillio	3.7	0.0	0.0	3.7	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0

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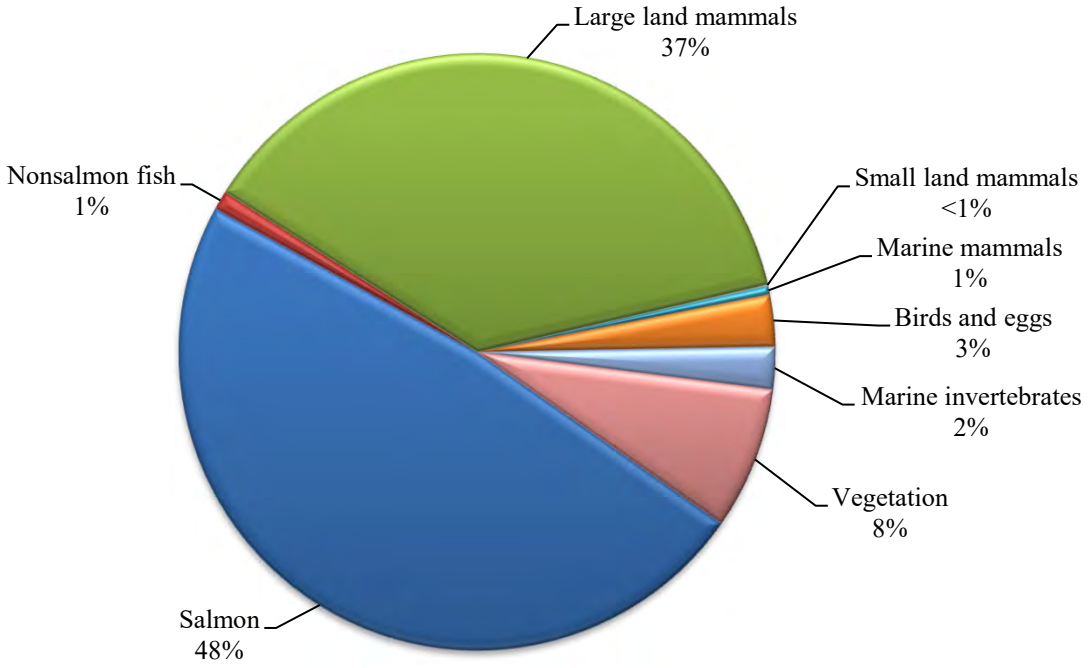
Table 2-13.–Page 5 of 5.

Resource	Percentage of households: Use %	Attempt %	Harvest %	Receive %	Give %	Harvest weight (lb): Total	Mean per household	Per capita	Harvest amount: Total	Unit	Mean per household	95% confidence limit (±) harvest
Unknown Tanner crab	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown crab	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Blue mussels	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Octopus	7.4	0.0	0.0	7.4	3.7	0.0	0.0	0.0	0.0	ind	0.0	0.0
Scallops	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Shrimp	3.7	3.7	3.7	0.0	0.0	5.2	0.1	0.1	2.6	lb	0.1	98.3
Vegetation	**88.9**	**85.2**	**81.5**	**59.3**	**66.7**	**2,375.0**	**67.9**	**22.9**	**2,375.0**	**lb**	**67.9**	**25.9**
Blueberry	44.4	33.3	33.3	25.9	18.5	99.8	2.9	1.0	25.9	gal	0.7	36.5
Lowbush cranberry	51.9	40.7	40.7	18.5	11.1	129.6	3.7	1.3	32.4	gal	0.9	41.6
Highbush cranberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Crowberry	85.2	81.5	81.5	51.9	63.0	1,809.6	51.7	17.5	452.4	gal	12.9	23.9
Nagoonberry	25.9	22.2	22.2	7.4	14.8	24.3	0.7	0.2	9.7	gal	0.3	49.9
Raspberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Salmonberry	44.4	14.8	14.8	33.3	11.1	211.3	6.0	2.0	53.8	gal	1.5	84.7
Strawberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Other wild berry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Beach asparagus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Other beach greens	3.7	3.7	3.7	0.0	0.0	0.3	0.0	0.0	1.3	gal	0.0	98.3
Hudson's Bay (Labrador) tea	7.4	7.4	7.4	0.0	0.0	1.4	0.0	0.0	2.6	gal	0.1	92.5
Lambs quarter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Wild celery	14.8	11.1	11.1	3.7	0.0	2.6	0.1	0.0	10.4	gal	0.3	65.8
Beach rye grass	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Wild parsley	11.1	7.4	7.4	3.7	0.0	1.4	0.0	0.0	2.6	gal	0.1	92.5
Other wild greens	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Unknown mushrooms	11.1	11.1	11.1	7.4	3.7	6.5	0.2	0.1	6.5	gal	0.2	63.6
Beach greens	7.4	7.4	7.4	0.0	0.0	88.1	2.5	0.9	22.0	gal	0.6	87.0
Seaweed/kelp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Wood	51.9	48.1	48.1	3.7	7.4					cord		

Source ADF&G Division of Subsistence household surveys, 2019.

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

Note Blank cells indicate the survey did not collect harvest amount for the resource.



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

Figure 2-14.–Composition of harvest in pounds usable weight, by resource category, Port Heiden, 2018.

Table 2-14.–Estimated household participation in salmon sharing with other communities, Port Heiden, 2018.

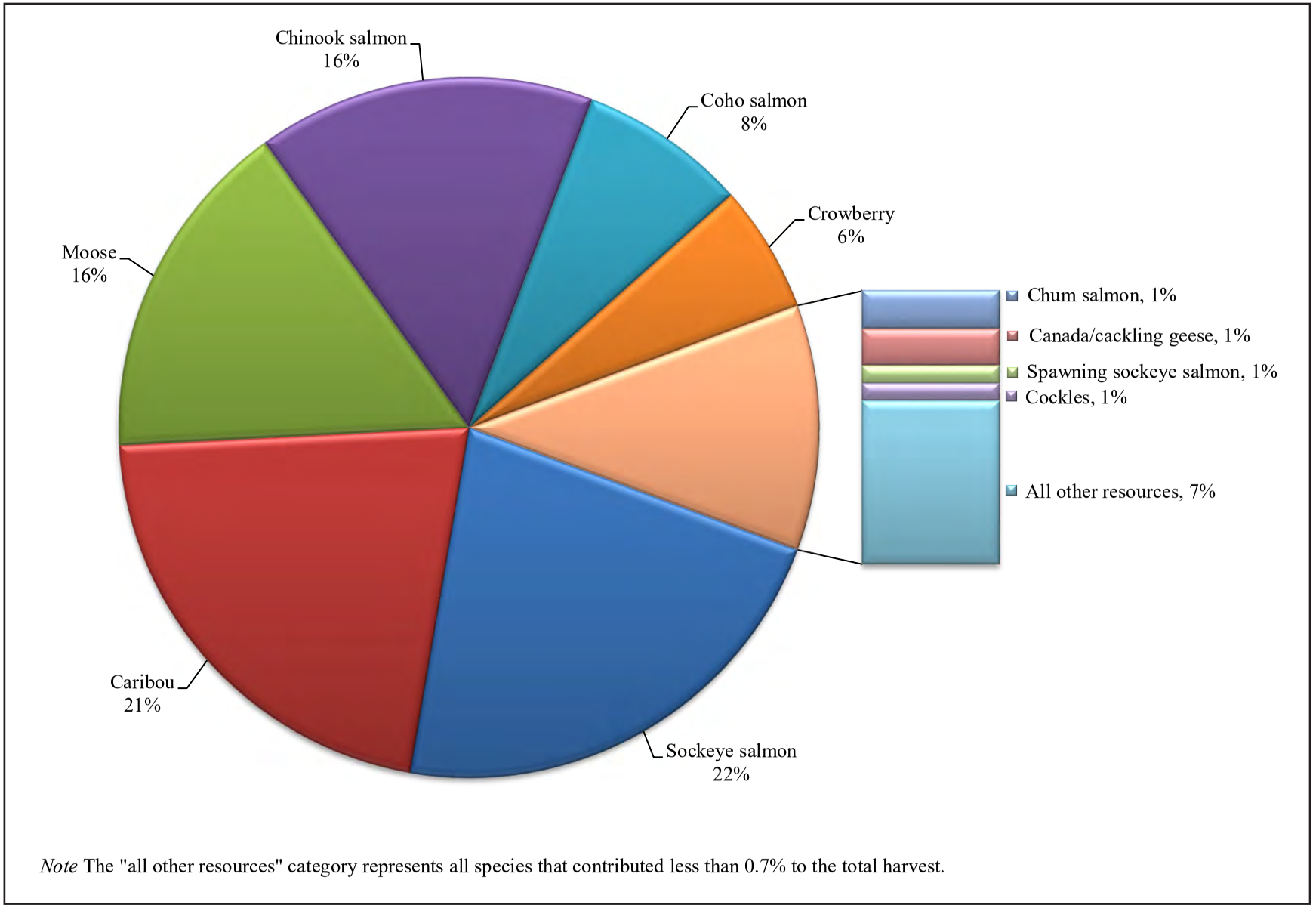
Sharing activity	Number	Percentage
Households giving salmon to another community	14.5	41.4%
Households receiving salmon from another community	11.3	32.1%

Source ADF&G Division of Subsistence household surveys, 2019.

Table 2-15.–Top ranked resources used by households, Port Heiden, 2018.

Rank[a]	Resource	Percentage of households using
1.	Caribou	92.6%
2.	Crowberry	85.2%
3.	Chinook salmon	81.5%
4.	Sockeye salmon	77.8%
4.	Moose	77.8%
6.	Coho salmon	74.1%
7.	Unknown cockles	66.7%
8.	Lowbush cranberry	51.9%
9.	Blueberry	44.4%
9.	Salmonberry	44.4%

Source ADF&G Division of Subsistence household surveys, 2019.
a. Resources used by the same percentage of households share the highest rank value instead of having sequential rank values.



Note The "all other resources" category represents all species that contributed less than 0.7% to the total harvest.

Figure 2-15.–Top resources harvested by percentage of total harvest in pounds usable weight, Port Heiden, 2018.

Figure 2-15 depicts the resources with the largest harvests in pounds usable weight. Importantly, the number of households using a resource is not always directly proportional to the top resources harvested by pounds usable weight. For instance, crowberries only contributed 6% to the overall harvest weight even though this resource was used by 85% of households (Figure 2-15; Table 2-15). This suggests that certain resources are important to households despite being harvested in relatively small quantities. The species that made up the largest percentages of the harvest in pounds usable weight were sockeye salmon (22%), followed by caribou (21%), moose (16%), Chinook salmon (16%), coho salmon (8%), and crowberries (6%). All other harvested resources contributed 1% or less to the total harvest.

Salmon

In 2018, the community of Port Heiden harvested a total of 14,856 lb of salmon, or 143 lb per capita (Table 2-13). Of the total salmon harvest weight, 46% was sockeye salmon, followed by Chinook salmon (32%), coho salmon (16%), chum salmon (3%), spawning sockeye salmon (2%), and pink salmon (1%) (Figure 2-16).

In 2018, the species harvested by the highest proportion of Port Heiden households was sockeye salmon with 56% of households harvesting this resource; more households (78%) used sockeye salmon during the study year (Table 2-13). In 2018, Port Heiden residents harvested 6,784 lb of sockeye salmon, or 65 lb per capita. Chinook salmon were used by 82% of Port Heiden households in 2018. Forty-four percent of households attempted to harvest Chinook salmon, with all fishing Port Heiden households successfully harvesting this resource. The total Chinook salmon harvest in 2018 was 4,809 lb, or 46 lb per capita. Coho salmon were used by 74% of Port Heiden households in 2018 and more than one-half (56%) of households attempted to harvest this species; most fishing households were successful, and, overall, 52% of Port Heiden households harvested coho salmon. The total coho salmon harvest was 2,380 lb, or 23 lb per capita.

In conjunction with contributing very small proportions to the total salmon harvest weight in 2018, the remaining salmon resources were harvested and used by fewer households. Chum salmon were used by 26% of Port Heiden households in 2018, and 26% of households attempted to and successfully harvested chum salmon. The total chum salmon harvest was 494 lb, or 5 lb per capita. The total spawning sockeye salmon harvest was 226 lb, or 2 lb per capita. Spawning sockeye salmon were used by 7% of Port Heiden households in 2018, and approximately 7% of households attempted to and successfully harvested spawning sockeye salmon. The total pink salmon harvest was 164 lb, or less than 2 lb per capita. Pink salmon were used by 22% of Port Heiden households in 2018, and approximately 22% of households attempted to and successfully harvested pink salmon.

Sharing of salmon was common in this community in 2018: all five species of Pacific salmon available in Alaska were received and given away by Port Heiden households, but much of the sharing was focused on the main harvested species. During the study year, 44% of households received sockeye salmon, and 52% gave this resource away. Chinook salmon were received by 59% of households, and 37% gave Chinook salmon resources away. Coho salmon were given away by 44% of households, and the same percentage (44%) of households received this resource.

In 2018, approximately 1,855 salmon (7,897 lb) were harvested using subsistence set gillnets, 543 salmon (2,853 lb) were harvested using subsistence drift gillnets, 481 salmon (2,424 lb) were removed from commercial harvests for home use, 301 salmon (1,456 lb) were taken using rod and reel, 45 salmon (175 lb) were taken using other subsistence methods, and 13 salmon (50 lb) were harvested using dip nets (Table 2-16). Figure 2-17 is a visual representation of the salmon harvest weight harvested by gear type. An estimated 53% of the salmon harvest weight was caught using set gillnets in the subsistence fishery, 19% of the salmon harvest weight was harvested using subsistence drift gillnets, 16% was removed from commercial harvests for home use, 10% of the salmon harvest weight was caught using rod and reel, and the remaining 2% was taken using dip nets and other subsistence methods (Table 2-17). Overall, 74% of the salmon harvest weight was caught by a subsistence method. For sockeye salmon, set gillnet was the most commonly used harvest method (75% of harvest weight), followed by removal from commercial catches (12%), drift gillnet (12%), and rod and reel (2%). For Chinook salmon, drift gillnet was the most commonly

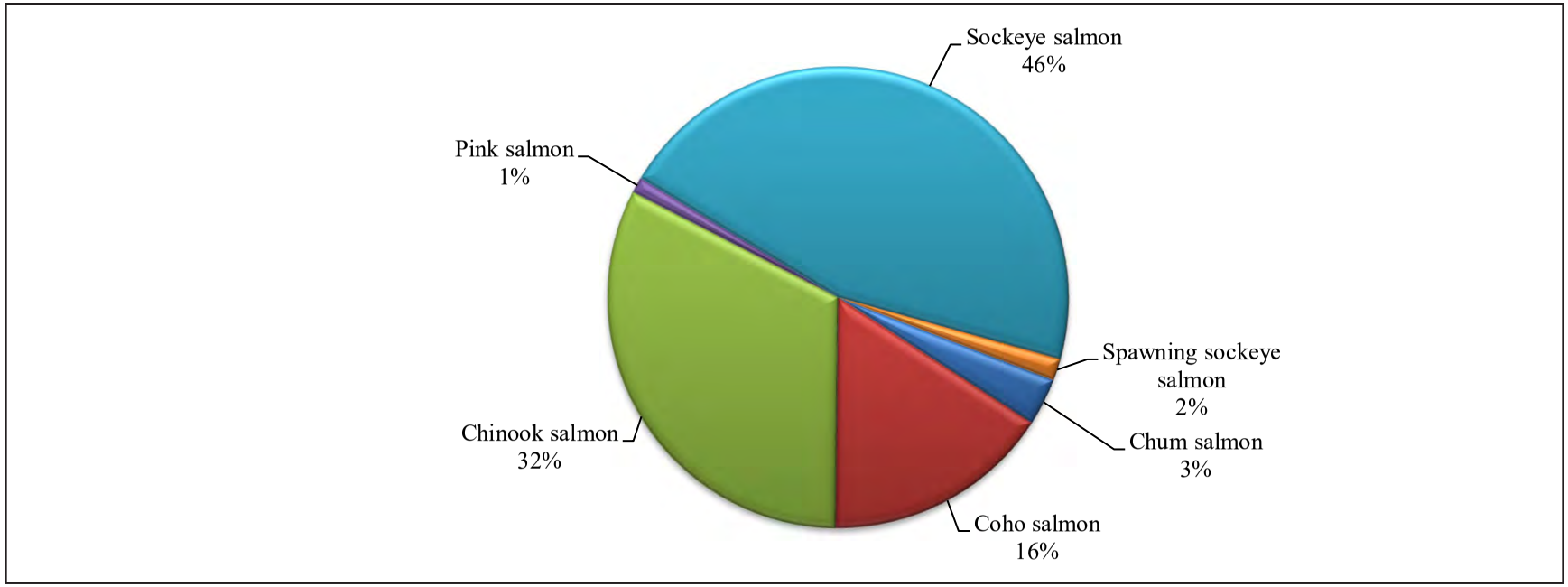


Figure 2-16.–Composition of salmon harvest in pounds usable weight, Port Heiden, 2018.

Table 2-16.–Estimated harvests of salmon by gear type and resource, Port Heiden, 2018.

			Subsistence methods													
	Removed from commercial catch		Drift gillnet		Set gillnet		Dip net		Other		Subsistence gear, any method		Rod and reel		Any method	
Resource	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Salmon	**480.9**	**2,423.7**	**543.1**	**2,853.4**	**1,855.0**	**7,897.2**	**13.0**	**50.1**	**45.4**	**175.4**	**2,456.5**	**10,976.1**	**300.7**	**1,455.8**	**3,238.1**	**14,855.6**
Chum salmon	1.3	6.8	0.0	0.0	93.3	486.7	0.0	0.0	0.0	0.0	93.3	486.7	0.0	0.0	94.6	493.5
Coho salmon	0.0	0.0	0.0	0.0	213.9	1,073.0	0.0	0.0	0.0	0.0	213.9	1,073.0	260.6	1,307.1	474.4	2,380.2
Chinook salmon	259.3	1,584.4	335.7	2,051.7	190.6	1,164.5	0.0	0.0	0.0	0.0	526.3	3,216.3	1.3	7.9	786.9	4,808.5
Pink salmon	13.0	31.0	0.0	0.0	49.3	117.7	0.0	0.0	0.0	0.0	49.3	117.7	6.5	15.5	68.7	164.1
Sockeye salmon	207.4	801.6	207.4	801.6	1,308.0	5,055.3	0.0	0.0	0.0	0.0	1,515.4	5,856.9	32.4	125.3	1,755.2	6,783.8
Landlocked salmon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Spawning sockeye salmon	0.0	0.0	0.0	0.0	0.0	0.0	13.0	50.1	45.4	175.4	58.3	225.5	0.0	0.0	58.3	225.5
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

Source ADF&G Division of Subsistence household surveys, 2019.

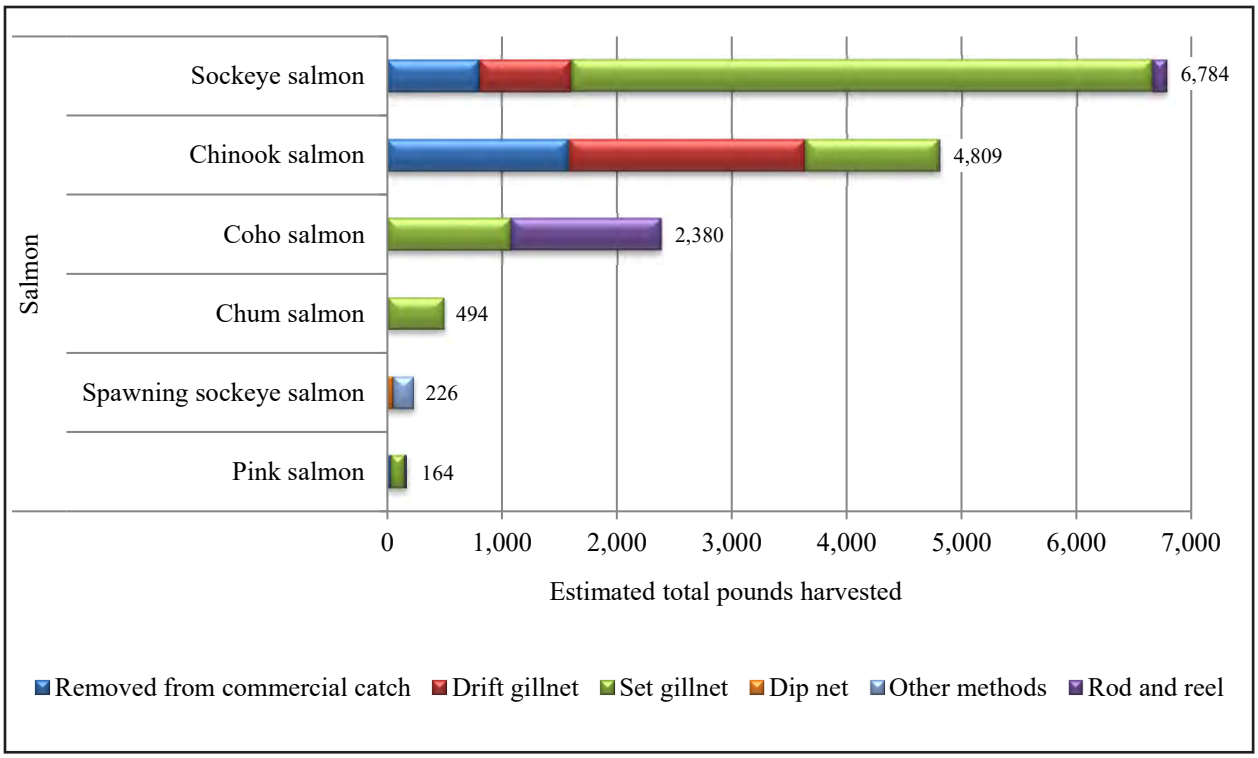


Figure 2-17.–Estimated harvests of salmon in pounds usable weight by gear type and resource, Port Heiden, 2018.

used harvest method (43% of harvest weight), followed by removal from commercial catches (33%), and set gillnet. A little more than one-half (55% of harvest weight) of coho salmon were harvested using rod and reel, and the remaining 45% of the coho salmon harvest weight was harvested using set gillnet. Overall, subsistence harvest methods and sockeye salmon figured prominently in Port Heiden's 2018 total salmon catch: the sockeye salmon harvest by set gillnet accounted for 40% of the total individual fish harvest, or 34% of the total salmon harvest weight.

In the 2018 study year, salmon search and harvest areas included along the beach approximately 10 miles north of the community, in Reindeer Creek (known locally as North River), along the beaches west of the community (near the old village site and Goldfish Lake), south of the community in Barbara Creek at an upriver location, further south in the Meshik River near its mouth, and southwest of the community in the Port Heiden bay (Figure 2-18). Additionally, one Port Heiden household reported harvesting salmon in Gastineau Channel, near Juneau. Many residents reported placing an emphasis on harvesting sockeye salmon along the beaches west of the community, and other sockeye salmon harvest locations included in Reindeer Creek, and along the beaches near Reindeer Creek's mouth, as well as in the Port Heiden bay (Figure 2-19). The majority of Chinook salmon were targeted and harvested in the Meshik River; community members also reported harvesting Chinook salmon in the Port Heiden bay and along the beaches west of the community (Figure 2-20). Search and harvest areas for coho salmon included along the beaches west of the community, within Reindeer Creek, and north of Reindeer Creek along the coast (Figure 2-21). The remaining salmon species (pink salmon, chum salmon, and spawning sockeye salmon) search and harvest areas included along the beaches west of the community, in Barbara Creek, and north of Reindeer Creek just inland from the shoreline (Figure 2-22).

Table 2-17.–Estimated percentages of salmon harvested by gear type, resource, and total salmon harvest, Port Heiden, 2018.

				Subsistence methods													
		Removed from commercial catch		Drift gillnet		Set gillnet		Dip net		Other		Subsistence gear, any method		Rod and reel		Any method	
Resource	Percentage base	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Salmon	**Gear type**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
	Resource	14.9%	16.3%	16.8%	19.2%	57.3%	53.2%	**0.4%**	**0.3%**	**1.4%**	**1.2%**	75.9%	73.9%	9.3%	9.8%	100.0%	100.0%
	Total	14.9%	16.3%	16.8%	19.2%	57.3%	53.2%	**0.4%**	**0.3%**	**1.4%**	**1.2%**	75.9%	73.9%	9.3%	9.8%	100.0%	100.0%
Chum salmon	Gear type	0.3%	0.3%	0.0%	0.0%	5.0%	6.2%	0.0%	0.0%	0.0%	0.0%	3.8%	4.4%	0.0%	0.0%	2.9%	3.3%
	Resource	1.4%	1.4%	0.0%	0.0%	98.6%	98.6%	0.0%	0.0%	0.0%	0.0%	98.6%	98.6%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	2.9%	3.3%	0.0%	0.0%	0.0%	0.0%	2.9%	3.3%	0.0%	0.0%	2.9%	3.3%
Coho salmon	Gear type	0.0%	0.0%	0.0%	0.0%	11.5%	13.6%	0.0%	0.0%	0.0%	0.0%	8.7%	9.8%	86.6%	89.8%	14.7%	16.0%
	Resource	0.0%	0.0%	0.0%	0.0%	45.1%	45.1%	0.0%	0.0%	0.0%	0.0%	45.1%	45.1%	54.9%	54.9%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	6.6%	7.2%	0.0%	0.0%	0.0%	0.0%	6.6%	7.2%	8.0%	8.8%	14.7%	16.0%
Chinook salmon	Gear type	53.9%	65.4%	61.8%	71.9%	10.3%	14.7%	0.0%	0.0%	0.0%	0.0%	21.4%	29.3%	0.4%	0.5%	24.3%	32.4%
	Resource	32.9%	32.9%	42.7%	42.7%	24.2%	24.2%	0.0%	0.0%	0.0%	0.0%	66.9%	66.9%	0.2%	0.2%	100.0%	100.0%
	Total	8.0%	10.7%	10.4%	13.8%	5.9%	7.8%	0.0%	0.0%	0.0%	0.0%	16.3%	21.7%	0.0%	0.1%	24.3%	32.4%
Pink salmon	Gear type	2.7%	1.3%	0.0%	0.0%	2.7%	1.5%	0.0%	0.0%	0.0%	0.0%	2.0%	1.1%	2.2%	1.1%	2.1%	1.1%
	Resource	18.9%	18.9%	0.0%	0.0%	71.7%	71.7%	0.0%	0.0%	0.0%	0.0%	71.7%	71.7%	9.4%	9.4%	100.0%	100.0%
	Total	0.4%	0.2%	0.0%	0.0%	1.5%	0.8%	0.0%	0.0%	0.0%	0.0%	1.5%	0.8%	0.2%	0.1%	2.1%	1.1%
Sockeye salmon	Gear type	43.1%	33.1%	38.2%	28.1%	70.5%	64.0%	0.0%	0.0%	0.0%	0.0%	61.7%	53.4%	10.8%	8.6%	54.2%	45.7%
	Resource	11.8%	11.8%	11.8%	11.8%	74.5%	74.5%	0.0%	0.0%	0.0%	0.0%	86.3%	86.3%	1.8%	1.8%	100.0%	100.0%
	Total	6.4%	5.4%	6.4%	5.4%	40.4%	34.0%	0.0%	0.0%	0.0%	0.0%	46.8%	39.4%	1.0%	0.8%	54.2%	45.7%
Landlocked salmon	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Spawning sockeye salmon	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%	2.4%	2.1%	0.0%	0.0%	1.8%	1.5%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	22.2%	22.2%	77.8%	77.8%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	0.3%	1.4%	1.2%	1.8%	1.5%	0.0%	0.0%	1.8%	1.5%

Source ADF&G Division of Subsistence household surveys, 2019.

Figure 2-18.–Fishing and harvest locations of salmon, Port Heiden, 2018.

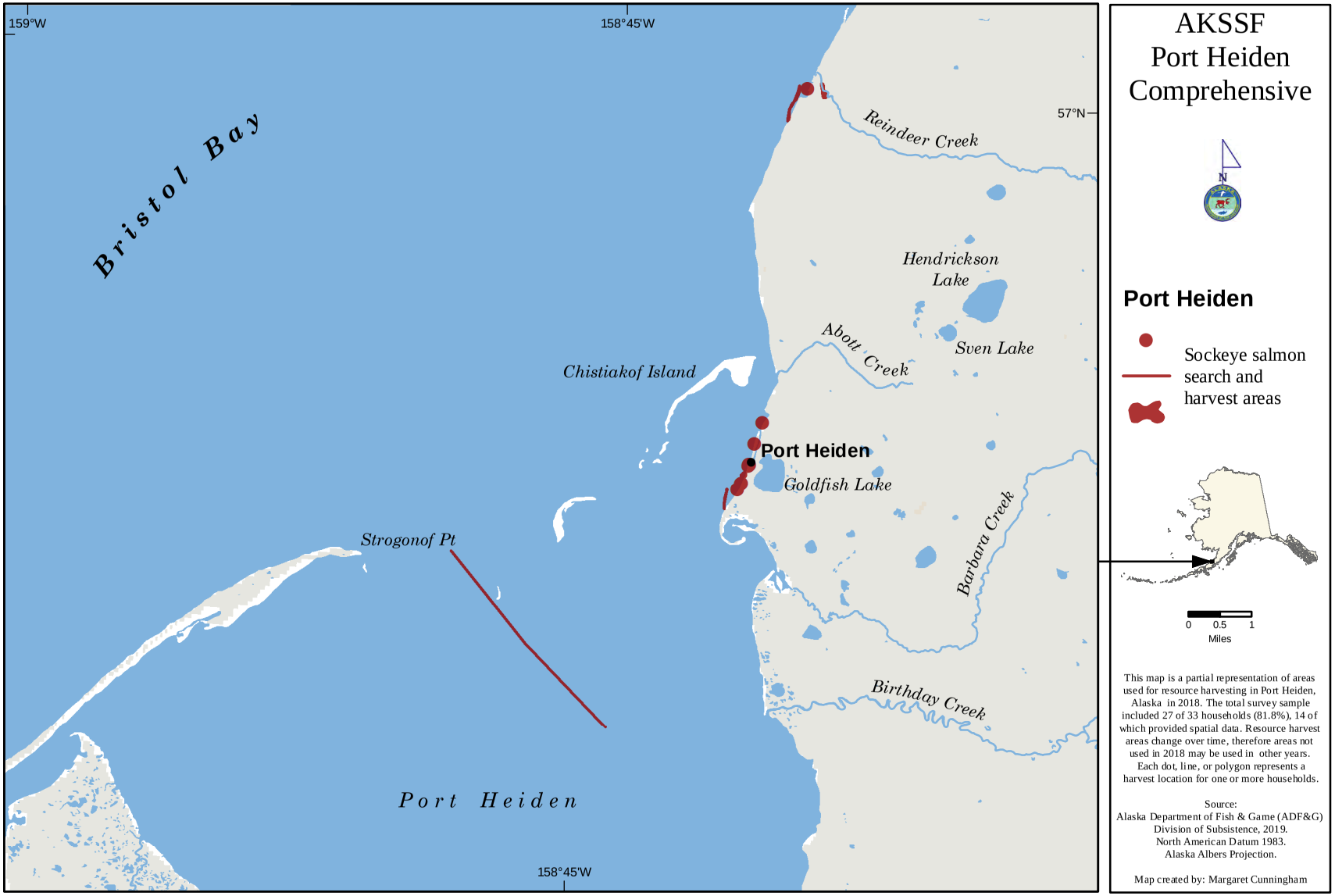


Figure 2-19.–Fishing and harvest locations of sockeye salmon, Port Heiden, 2018.

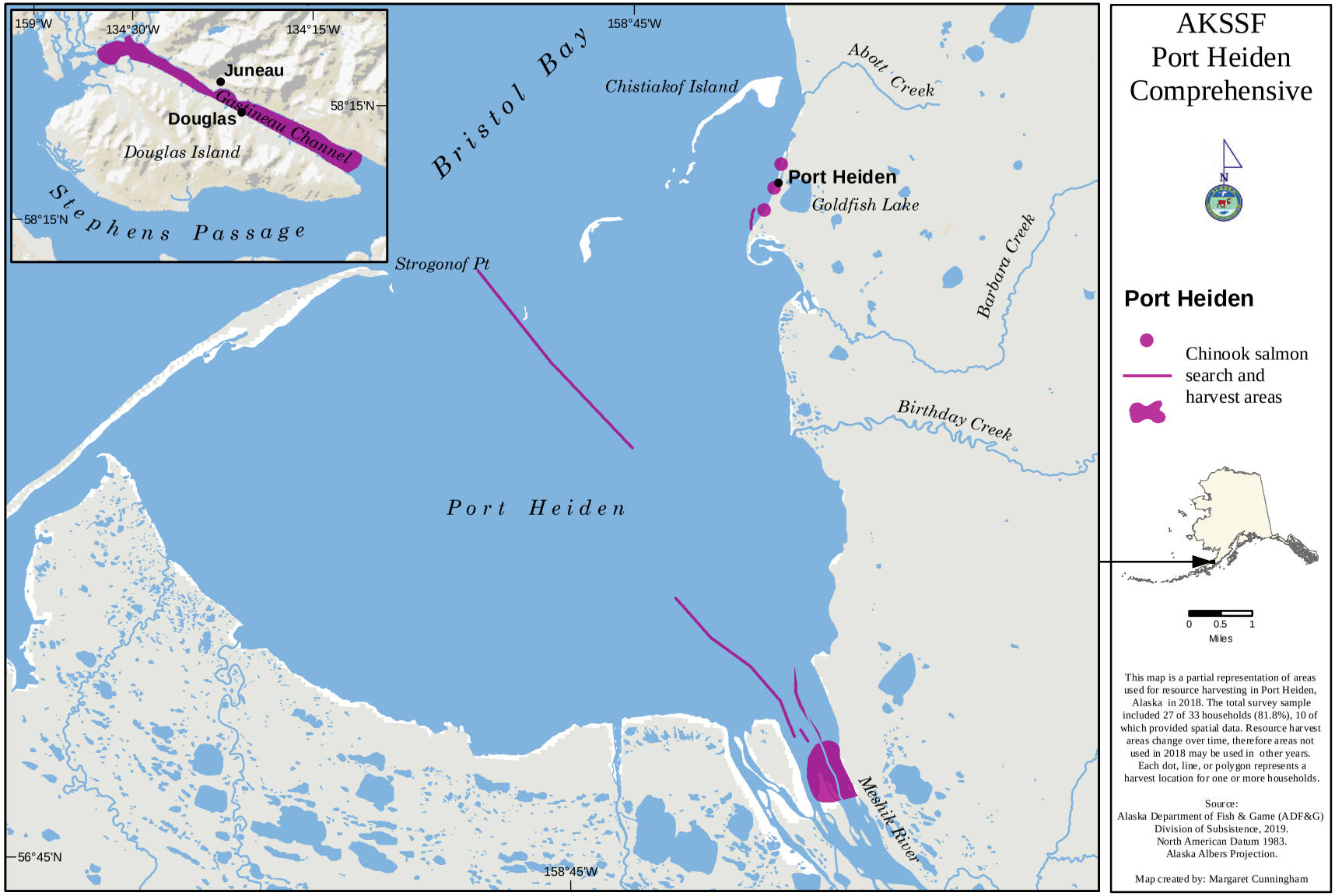


Figure 2-20.–Fishing and harvest locations of Chinook salmon, Port Heiden, 2018.

Figure 2-21.–Fishing and harvest locations of coho salmon, Port Heiden, 2018.

Figure 2-22.–Fishing and harvest locations of chum, pink, and spawning sockeye salmon, Port Heiden, 2018.

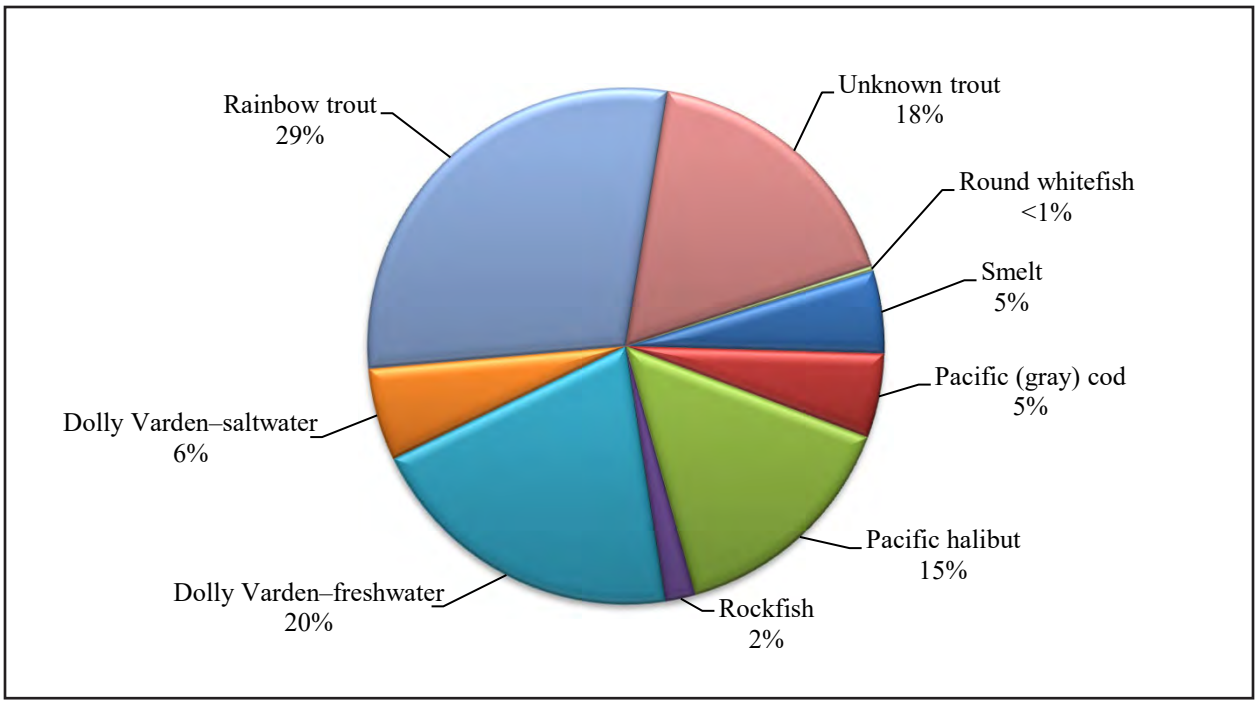


Figure 2-23.–Composition of nonsalmon fish harvest in pounds usable weight, Port Heiden, 2018.

Nonsalmon Fish

Nonsalmon fish accounted for approximately 1% of the overall harvest of wild resources for the community of Port Heiden in 2018 (Figure 2-14). A total of approximately 313 lb of nonsalmon fish were harvested in Port Heiden during the study year, equating to a per capita harvest of 3 lb (Table 2-13). Less than one-half (41%) of Port Heiden households used at least one species of nonsalmon fish during the 2018 study year. The nonsalmon fish harvest included a variety of species: rainbow trout composed 29% of the nonsalmon fish harvest, followed by Dolly Varden–freshwater (20%), unknown or unspecified species of trout (18%), Pacific halibut (15%), Dolly Varden–saltwater (6%), Pacific (gray) cod (5%), smelt (5%), rockfish (2%), and a nominal harvest of round whitefish (Figure 2-23).

The total rainbow trout harvest was 91 lb, or approximately 1 lb per capita (Table 2-13). Rainbow trout were used and harvested by 4% of Port Heiden households in 2018. Dolly Varden harvested from freshwater were used and harvested by 11% of Port Heiden households during the study year. The total Dolly Varden–freshwater harvest in 2018 was 64 lb, or less than 1 lb per capita, as was the per capita estimate for all remaining harvested species from this category.

The total unknown trout harvest in Port Heiden was 54 lb used and harvested by 4% of households during the study year. In 2018, the total harvest of Pacific halibut was 47 lb. Pacific halibut were used by 26% of households, harvested by 7%, given away by 11%, and received by 22% of households; the relatively high rate of use compared to the proportion of households that harvested, shared, and received Pacific halibut suggests Port Heiden household may have received this resource from households in other communities. Dolly Varden–saltwater harvests totaled 18 lb, and residents also harvested Pacific (gray) cod (17 lb), smelt (16 lb), rockfish (6 lb), and round whitefish (1 lb).

The nonsalmon fish harvest broken out by gear type is as follows: approximately 279 lb of the nonsalmon fish harvest was caught using rod and reel, 17 lb were removed from commercial harvests for home use, and 17 lb were taken using other subsistence methods than gillnet (Table 2-18). Figure 2-24 is a visual representation of the nonsalmon fish harvest weight harvested by gear type. In 2018, approximately 89% of the nonsalmon fish harvest weight was harvested using rod and reel, approximately 5% was removed from

Table 2-18.–Estimated harvests of nonsalmon fish by gear type and resource, Port Heiden, 2018.

		Removed from commercial catch		Subsistence methods: Other[b]		Subsistence methods: Subsistence gear, any method		Rod and reel		Any method	
Resource	Unit[a]	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds
Nonsalmon fish		**5.2**	**16.6**	**66.1**	**17.1**	**66.1**	**17.1**	**212.6**	**279.4**	**283.9**	**313.1**
Pacific herring	gal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pacific herring roe	gal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pacific herring sac roe	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pacific herring spawn on kelp	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Capelin (grunion)	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown smelt	ind	0.0	0.0	64.8	16.2	64.8	16.2	0.0	0.0	64.8	16.2
Pacific (gray) cod	ind	5.2	16.6	0.0	0.0	0.0	0.0	0.0	0.0	5.2	16.6
Unknown cod	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Starry flounder	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pacific halibut	ind	0.0	0.0	0.0	0.0	0.0	0.0	46.7	46.7	46.7	46.7
Unknown rockfish	ind	0.0	0.0	0.0	0.0	0.0	0.0	3.9	5.8	3.9	5.8
Sablefish (black cod)	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red Irish lord	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown sculpin	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Salmon shark	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellowfin sole	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Alaska blackfish	ind	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
Dolly Varden–freshwater	ind	0.0	0.0	0.0	0.0	0.0	0.0	45.4	63.5	45.4	63.5
Dolly Varden–saltwater	ind	0.0	0.0	0.0	0.0	0.0	0.0	13.0	18.1	13.0	18.1
Arctic grayling	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Northern pike	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rainbow trout	ind	0.0	0.0	0.0	0.0	0.0	0.0	64.8	90.7	64.8	90.7
Steelhead	ind	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	0.0	0.0	0.0	0.0	38.9	54.4	38.9	54.4
Least cisco	ind	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Round whitefish	ind	0.0	0.0	1.3	0.9	1.3	0.9	0.0	0.0	1.3	0.9

Source ADF&G Division of Subsistence household surveys, 2019.

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.

b. Other methods inlcude by hand, and hook and line attached to a pole or rod through the ice, or from shore ice.

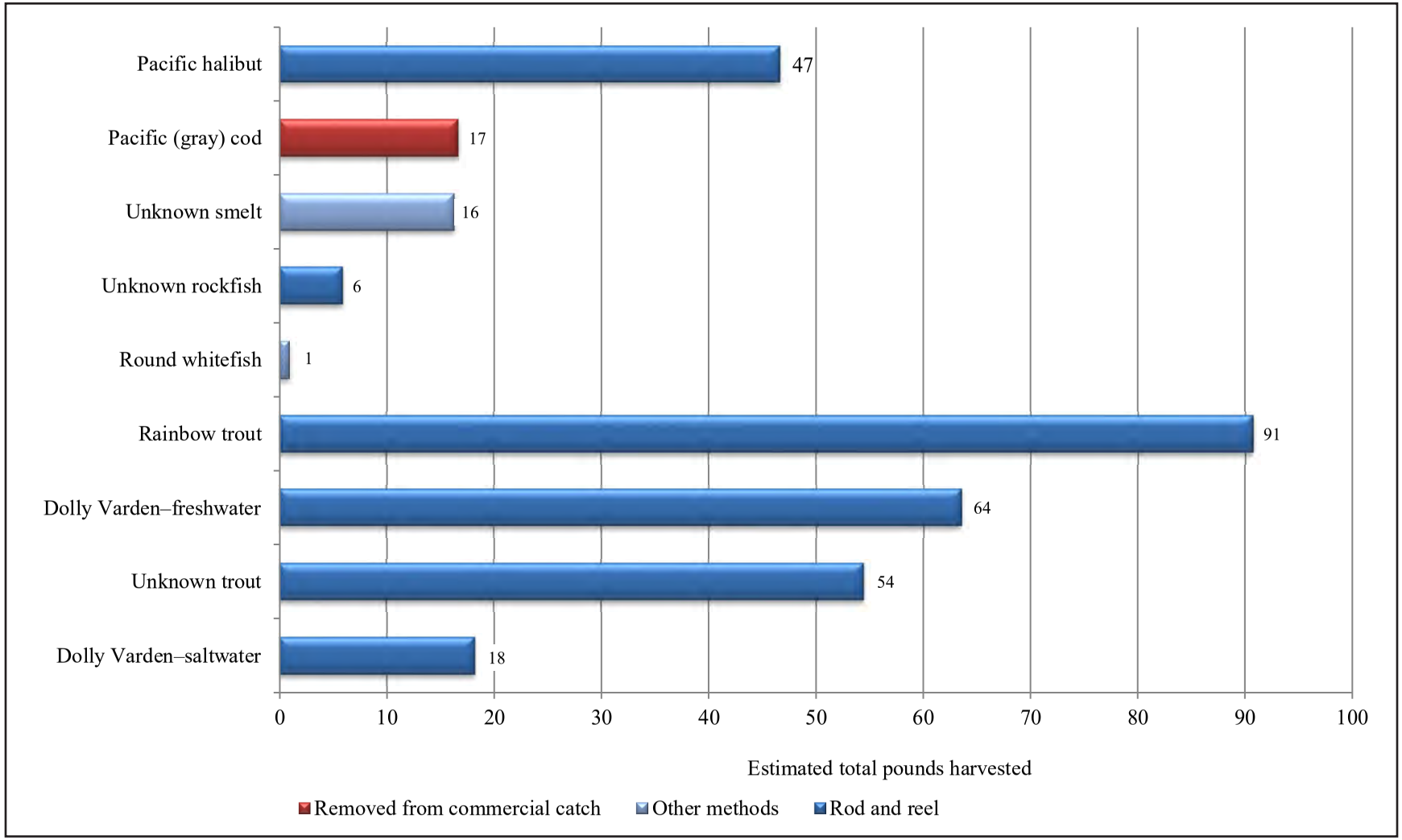


Figure 2-24.–Estimated harvests of nonsalmon fish in pounds usable weight by gear type and resource, Port Heiden, 2018.

Table 2-19.–Estimated percentages of nonsalmon fish harvested by gear type, resource, and total nonsalmon fish harvest, by weight, Port Heiden, 2018.

Resource	Percentage base	Removed from commercial catch	Subsistence methods			
			Other[a]	Subsistence gear, any method	Rod and reel	Any method
Nonsalmon fish	**Gear type**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
	Resource	5.3%	5.5%	5.5%	89.2%	100.0%
	Total	5.3%	5.5%	5.5%	89.2%	100.0%
Pacific herring	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%
Pacific herring roe	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%
Pacific herring sac roe	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%
Pacific herring spawn on kelp	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%
Capelin (grunion)	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown smelt	Gear type	0.0%	94.7%	94.7%	0.0%	5.2%
	Resource	0.0%	100.0%	100.0%	0.0%	100.0%
	Total	0.0%	5.2%	5.2%	0.0%	5.2%
Pacific (gray) cod	Gear type	100.0%	0.0%	0.0%	0.0%	5.3%
	Resource	100.0%	0.0%	0.0%	0.0%	100.0%
	Total	5.3%	0.0%	0.0%	0.0%	5.3%
Unknown cod	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%
Starry flounder	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%

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Table 2-19.–Page 2 of 3.

Resource	Percentage base	Removed from commercial catch	Subsistence methods			
			Other[a]	Subsistence gear, any method	Rod and reel	Any method
Pacific halibut	Gear type	0.0%	0.0%	0.0%	16.7%	14.9%
	Resource	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	14.9%	14.9%
Unknown rockfish	Gear type	0.0%	0.0%	0.0%	2.1%	1.9%
	Resource	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	1.9%	1.9%
Sablefish (black cod)	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%
Red Irish lord	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown sculpin	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%
Salmon shark	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%
Yellowfin sole	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%
Alaska blackfish	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%
Burbot	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%
Dolly Varden–freshwater	Gear type	0.0%	0.0%	0.0%	22.7%	20.3%
	Resource	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	20.3%	20.3%

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Table 2-19.–Page 3 of 3.

Resource	Percentage base	Removed from commercial catch	Subsistence methods			
			Other[a]	Subsistence gear, any method	Rod and reel	Any method
Dolly Varden–saltwater	Gear type	0.0%	0.0%	0.0%	6.5%	5.8%
	Resource	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	5.8%	5.8%
Arctic grayling	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%
Northern pike	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%
Rainbow trout	Gear type	0.0%	0.0%	0.0%	32.5%	29.0%
	Resource	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	29.0%	29.0%
Steelhead	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown trout	Gear type	0.0%	0.0%	0.0%	19.5%	17.4%
	Resource	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	17.4%	17.4%
Least cisco	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%
Humpback whitefish	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%
Round whitefish	Gear type	0.0%	5.3%	5.3%	0.0%	0.3%
	Resource	0.0%	100.0%	100.0%	0.0%	100.0%
	Total	0.0%	0.3%	0.3%	0.0%	0.3%

Source ADF&G Division of Subsistence household surveys, 2019.

a. Other methods inlcude by hand, and hook and line attached to a pole or rod through the ice, or from shore ice.

commercial harvests for home use, and approximately 5% of the nonsalmon fish harvest weight was taken using other methods (Table 2-19). Rod and reel was the only harvest method used for the following species: rainbow trout, Dolly Varden–freshwater and saltwater, unknown trout, Pacific halibut, and rockfish. All Pacific (gray) cod were removed from commercial harvests for home use. All smelt were harvested using other methods, which was jigging with a handline or a pole-and-line through the ice based on notes taken during survey administration.

Port Heiden residents' search and harvest areas for nonsalmon fish occurred near the community and north of Port Heiden (Figure 2-25). Search and harvest areas for Dolly Varden included areas near Hendrickson Lake, and in Reindeer Creek. Search and harvest areas for rainbow trout included small ponds south of Reindeer Creek and in the mouth of a stream located north of Reindeer Creek. In 2018, search and harvest areas for whitefishes occurred close to the community in the marine waters directly west of Goldfish Lake (Figure 2-25).

Figure 2-25.–Fishing and harvest locations of Dolly Varden, rainbow trout, and whitefishes, Port Heiden, 2018.

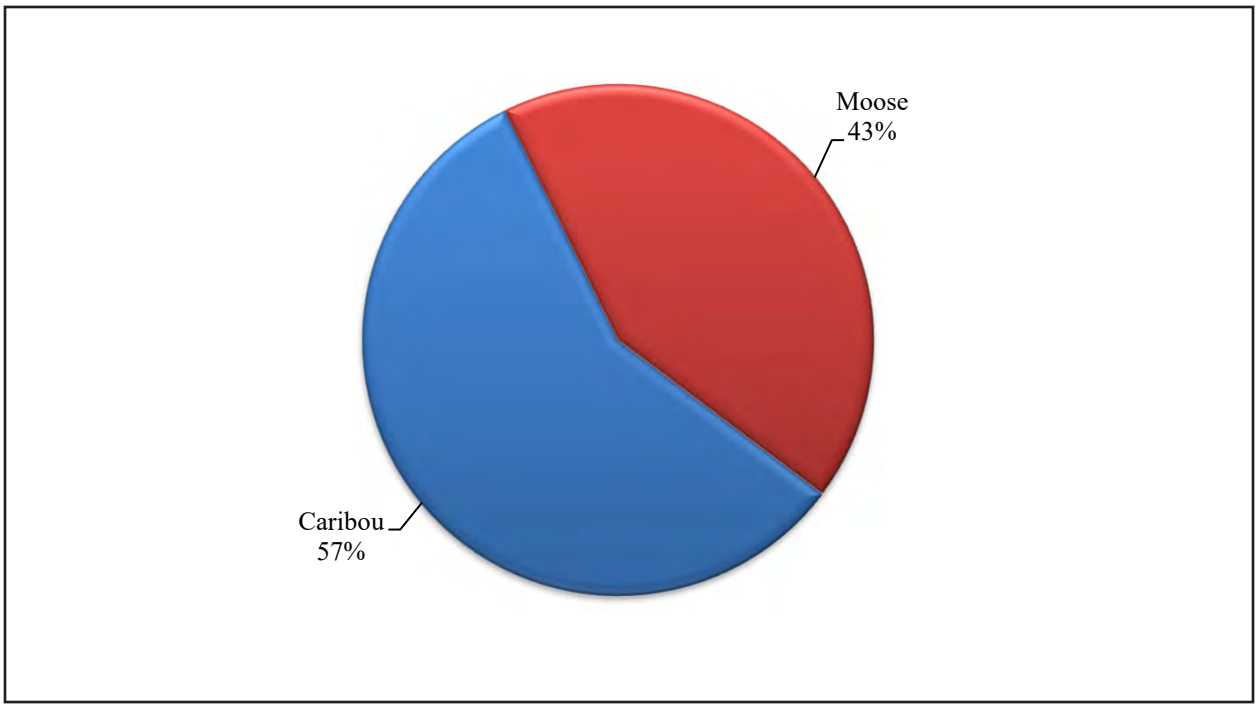


Figure 2-26.–Composition of large land mammals harvest in pounds usable weight, Port Heiden, 2018.

Large Land Mammals

Large land mammals accounted for approximately 37% of the total harvest by weight in Port Heiden during 2018 (Figure 2-14). All Port Heiden households used at least one of the large land mammal species during the 2018 study year. The large land mammal harvest included two species: caribou composed 57% of the large land mammal harvest weight, and moose made up the remaining 43% (Figure 2-26).

The total large land mammal harvest in 2018 was 11,511 lb, or 111 lb per capita (Table 2-13). The 2018 total caribou harvest weight was 6,611 lb, or 64 lb per capita. In 2018, caribou was used by 93% of Port Heiden households, making it the most frequently used wild resource during the study year (Table 2-15). Although widely used, caribou was harvested by only 67% of households (Table 2-13). Caribou was given away by 67% of households and received by 63%; this demonstrates how important sharing of caribou is to the community of Port Heiden. During the study year the total moose harvest weight was 4,900 lb, or 47 lb per capita. Moose was used by 78% of households; however, only 22% of community households successfully harvested this resource. Moose was given away by 56% of households and received by 68%; this shows that moose was redistributed by households that did not harvest but received this species.

Caribou were harvested in August and September, and from January–April and November–December of the study year (Table 2-20). For male caribou, approximately four were harvested in August; nine in September; four in November; four in December; four in January; one in February; five in March; and nine in April. For female caribou, approximately one was harvested in September; one in November; and one in December. Approximately nine bull moose were harvested between August and October, with the majority of harvests (five) occurring in September.

As depicted in Figure 2-27, in 2018 large land mammal search and harvest areas for Port Heiden residents were heavily concentrated within a 50-mile radius of the community in many directions. Starting from the north and moving toward the south, the caribou search and harvest areas encompassed lands near both sides of Mud Creek, Reindeer Creek, Barbara Creek, Birthday Creek, and the Meshik River. Moose search and harvest areas were similar to the areas used for caribou hunting activities, but also included lands near Charles Creek, which is southwest of the Meshik River.

Table 2-20.–Estimated large land mammal harvests by month and sex, Port Heiden, 2018.

Resource	Estimated harvest by month													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk	**Total**
All large land mammals	**3.9**	**1.3**	**5.2**	**9.1**	**0.0**	**0.0**	**0.0**	**6.5**	**15.6**	**1.3**	**5.2**	**5.2**	**0.0**	**53**
Brown bear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Caribou	3.9	1.3	5.2	9.1	0.0	0.0	0.0	3.9	10.4	0.0	5.2	5.2	0.0	**44.1**
Caribou, male	3.9	1.3	5.2	9.1	0.0	0.0	0.0	3.9	9.1	0.0	3.9	3.9	0.0	**40.2**
Caribou, female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	1.3	1.3	0.0	**3.9**
Caribou, unknown sex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Moose	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	5.2	1.3	0.0	0.0	0.0	**9.1**
Moose, bull	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	5.2	1.3	0.0	0.0	0.0	**9.1**
Moose, cow	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Moose, unknown sex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**

Source ADF&G Division of Subsistence household surveys, 2019.

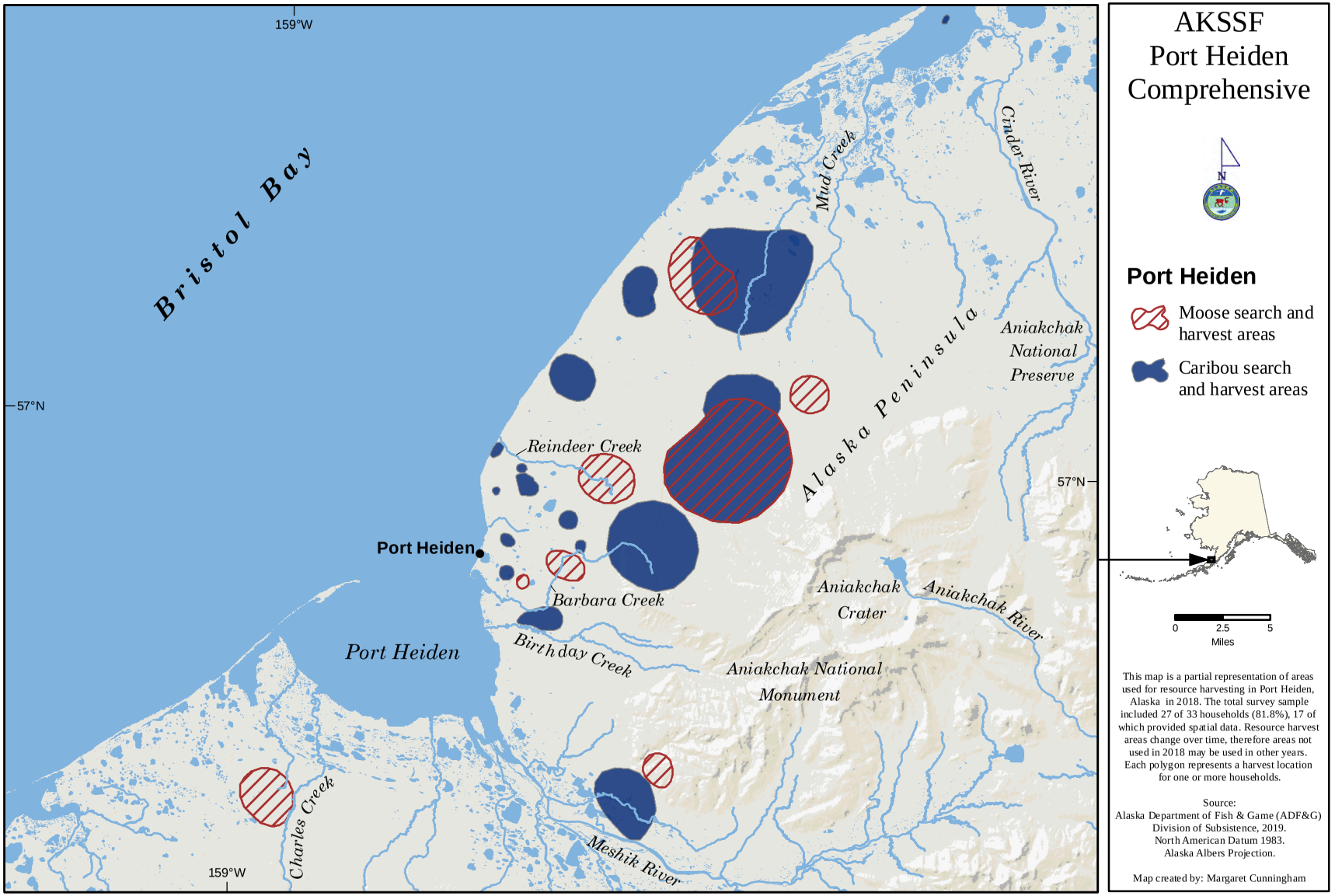


Figure 2-27.–Hunting locations of moose and caribou, Port Heiden, 2018.

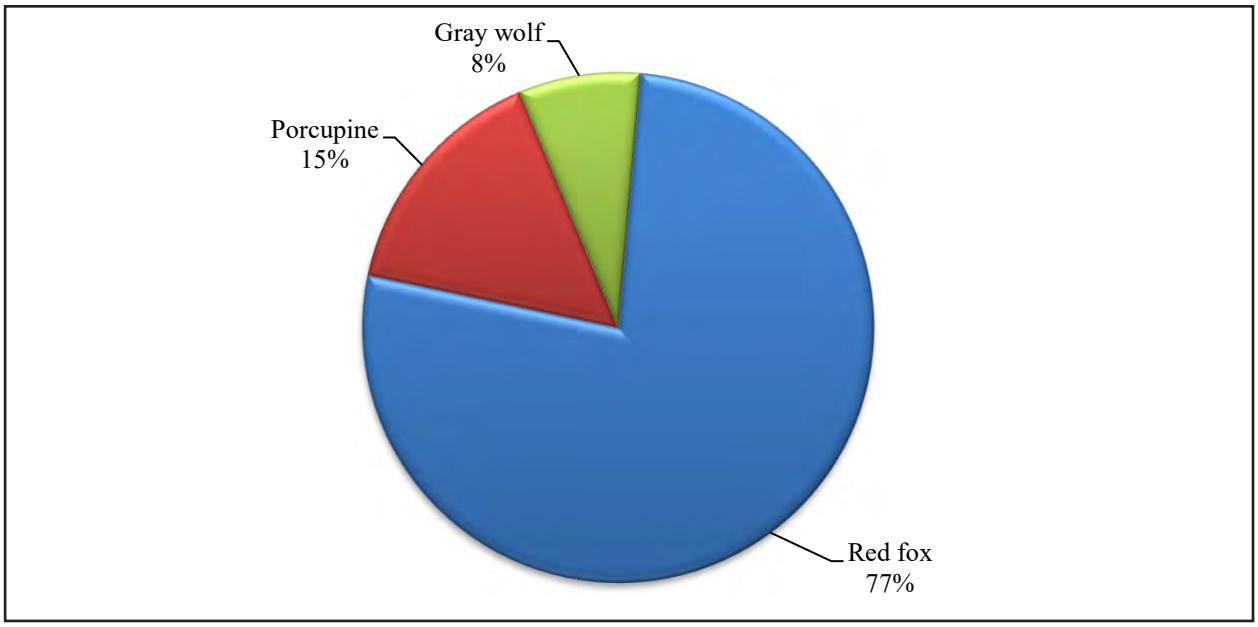


Figure 2-28.–Composition of small land mammal/furbearer harvest by individual animals harvested, Port Heiden, 2018.

Small Land Mammals/Furbearers

Small land mammals made up less than 1% of the total harvest by weight in Port Heiden during the study year (Figure 2-14). Harvests of porcupines may or may not have been intended primarily for consumption (21 lb usable weight); respondents in Port Heiden did not report that these harvests were not eaten, but the animals may have been harvested primarily for the quills for making handicrafts. The species of small land mammals harvested, by individual animals, included red fox (77%), porcupine (15%), and gray wolf (8%) (Figure 2-28). For red fox harvest timing, approximately three animals were harvested each month from September–December, and approximately two red foxes were harvested in February and in March combined (Table 2-21). All porcupine harvests occurred in August, and the gray wolf harvest occurred in April.

In 2018, all small land mammal hunting took place within a 10-mile range of the community of Port Heiden. Small land mammal search and harvest areas included Strogonof Point, located west of Port Heiden; along Barbara Creek; and areas close to Sven and Hendrickson lakes (Figure 2-29). Several survey respondents explained that fewer Port Heiden residents harvested small land mammals in the study year than in the past because snow conditions did not allow for snowmachine travel during the winter season.

Table 2-21.–Estimated small land mammal/furbearer harvests by month, Port Heiden, 2018.

Resource	Estimated harvest by month													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk	**Total**
All small land mammals	**0.0**	**1.3**	**1.3**	**1.3**	**0.0**	**0.0**	**0.0**	**2.6**	**2.6**	**2.6**	**2.6**	**2.6**	**0.0**	**16.9**
Beaver	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Red fox	0.0	1.3	1.3	0.0	0.0	0.0	0.0	0.0	2.6	2.6	2.6	2.6	0.0	**13.0**
Red fox–cross phase	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Alaska hare	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Snowshoe hare	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
River (land) otter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Lynx	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Mink	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Muskrat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Porcupine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	0.0	0.0	0.0	0.0	0.0	**2.6**
Arctic ground (parka) squirrel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Red (tree) squirrel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Weasel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Gray wolf	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**1.3**
Wolverine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**

Source ADF&G Division of Subsistence household surveys, 2019.

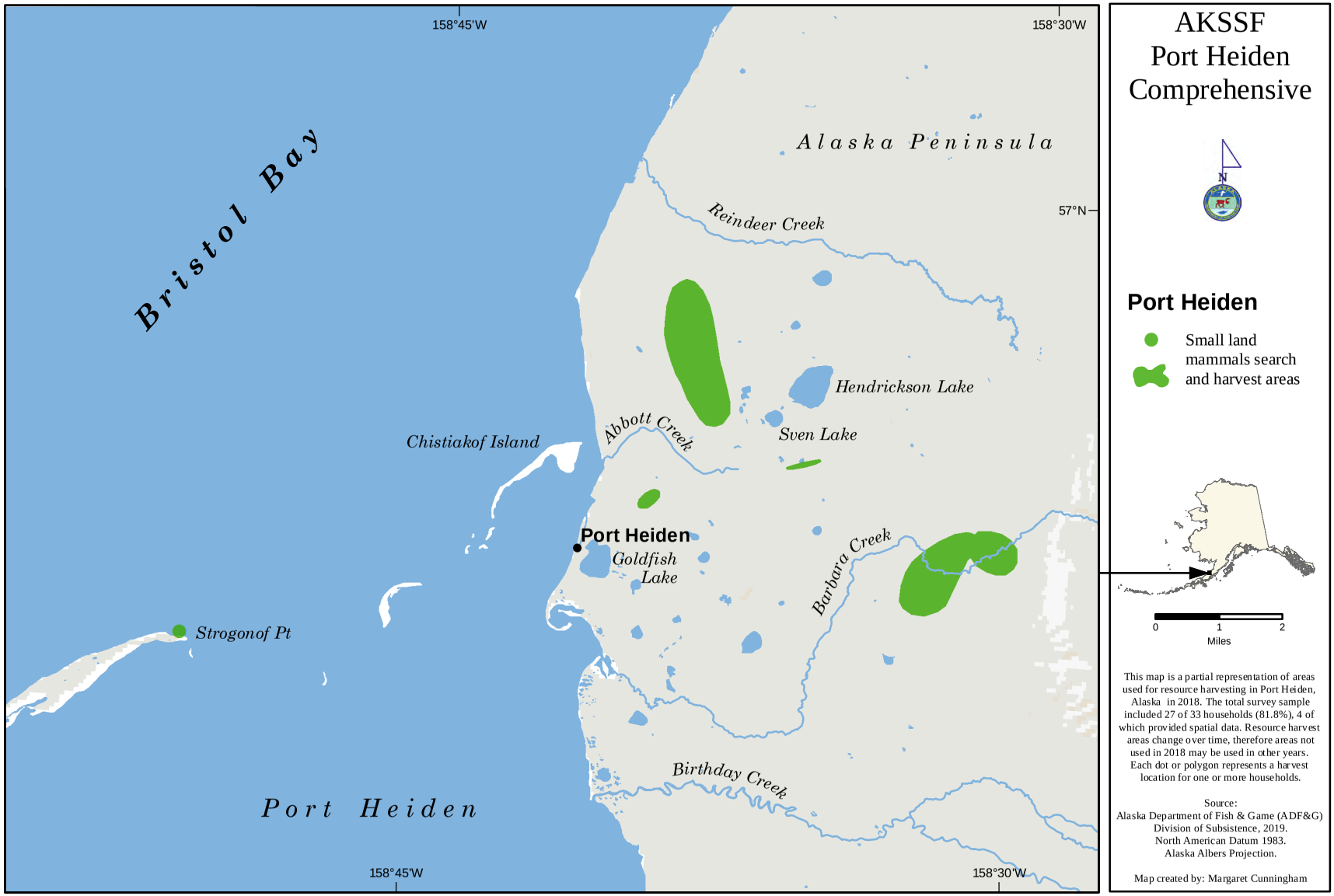


Figure 2-29.–Hunting and trapping locations of small land mammals/furbearers, Port Heiden, 2018.

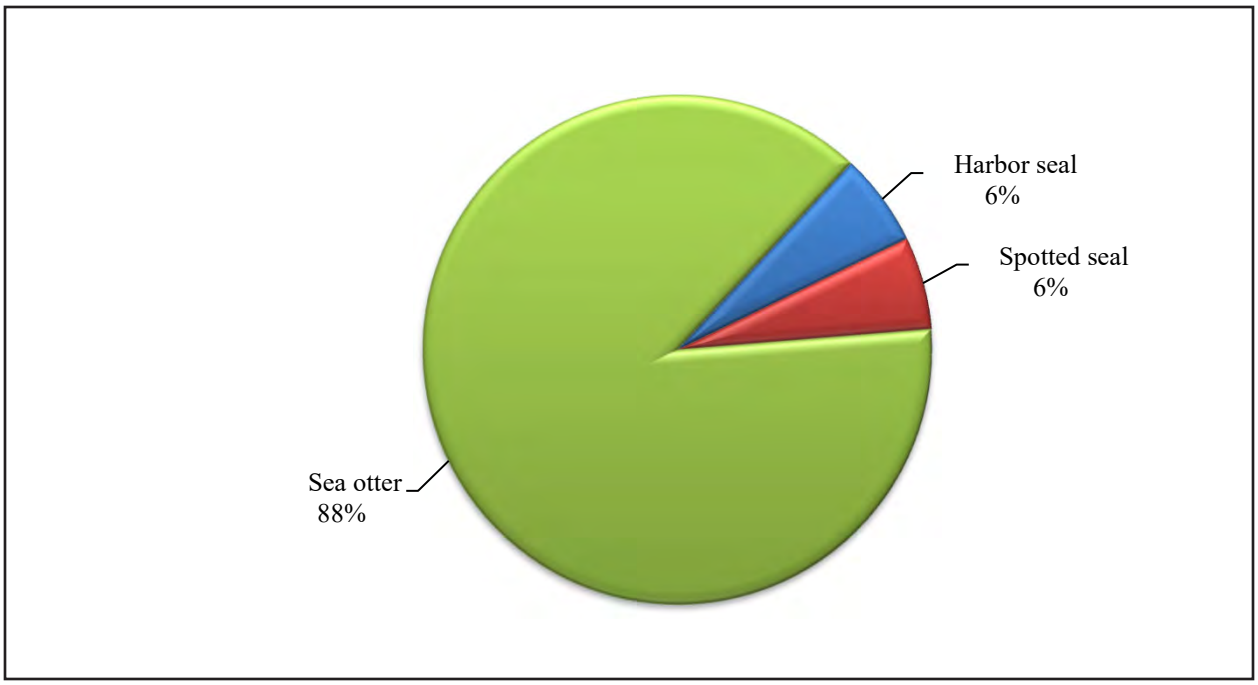


Figure 2-30.–Composition of marine mammal harvest by individual animals harvested, Port Heiden, 2018.

Marine Mammals

Marine mammals accounted for approximately 1% of the total harvest weight in Port Heiden during 2018 (Figure 2-14). Based on individual animals harvested, the majority (88%) of the marine mammal harvest was sea otter. The remaining marine mammal harvest comprised harbor seal (6%) and spotted seal (6%) (Figure 2-30). Sea otters are used for fur only and are not consumed; as such, those harvests did not contribute to the total harvest weight. However, 7% of Port Heiden households harvested and used sea otters during the study year (Table 2-13). The harvests of sea otters occurred in December, January, February, and April: in 2018 approximately 19 sea otters were harvested (Table 2-22). The total harbor and spotted seal harvests were approximately 73 lb each, or less than 1 lb per capita each. Harbor seal was used by 7% of Port Heiden households and harvested by 4% in 2018. Spotted seal was used and harvested by 4% of Port Heiden households in 2018. The harvests of seals occurred exclusively in April and June; approximately one harbor seal was harvested, and one spotted seal was harvested (Table 2-22).

In the 2018 study year, marine mammal search and harvest areas included an area approximately 10 miles north of the community along the beaches near the mouth of Reindeer Creek, along the beaches west of the community near the old village site and Goldfish Lake, and near Strogonof Point located west of Port Heiden (Figure 2-31).

Birds and Eggs

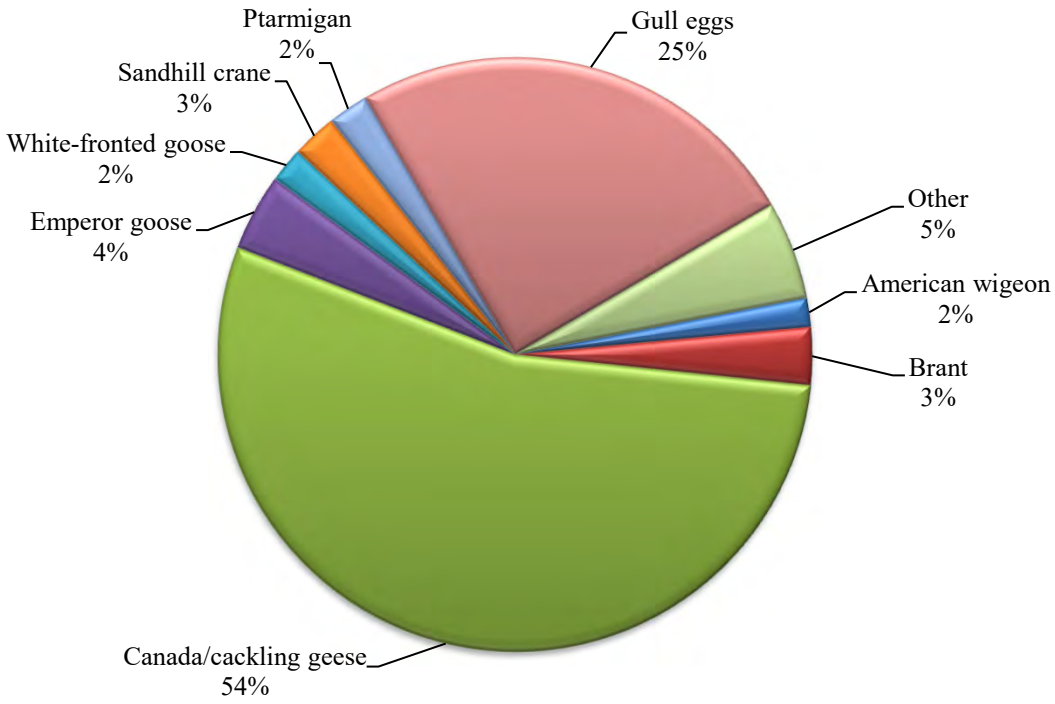
Birds and bird eggs accounted for approximately 3% of the total harvest in Port Heiden during the study year (Figure 2-14). A total of approximately 861 lb of birds and eggs were harvested in Port Heiden, equating to a per capita harvest of 8 lb (Table 2-13). Approximately 59% of Port Heiden households used at least one kind of bird or egg resource during the 2018 study year. The composition of the birds and eggs harvest included a variety of resources, including: Canada/cackling geese (54% of total category harvest weight), gull eggs (25%), emperor goose (4%), sandhill crane (3%), brant (3%), ptarmigan (2%), white-fronted goose (2%), American wigeon (2%), and several other species of birds and eggs that combined contributed 5% to the harvest weight (Figure 2-32).

Table 2-22.–Estimated marine mammal harvests by month, Port Heiden, 2018.

Resource	Estimated harvest by month													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk	**Total**
All marine mammals	**5.2**	**2.6**	**0.0**	**9.1**	**0.0**	**1.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**3.9**	**0.0**	**22.0**
Seal	0.0	0.0	0.0	1.3	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**2.6**
Harbor seal	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**1.3**
Spotted seal	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**1.3**
Sea otter	5.2	2.6	0.0	7.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.9	0.0	**19.4**
Steller sea lion	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Walrus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Whale	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Beluga whale	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**

Source ADF&G Division of Subsistence household surveys, 2019.

Figure 2-31.–Hunting locations of marine mammals, Port Heiden, 2018.



Note The other category includes species providing less than 1.5% each to the per capita harvest.

Figure 2-32.–Composition of birds and bird eggs harvest in pounds usable weight, Port Heiden, 2018.

The total Canada/cackling geese harvest in 2018 was 467 lb (Table 2-13). This resource was harvested by 22% of Port Heiden households and was used by 26% of households in 2018. The gull eggs harvests totaled 222 lb and were used by 11% of households in 2018. Seven percent of households attempted to harvest emperor goose, all were successful, and all gave some of this resource away. The total harvest of brant was 27 lb, and this resource was also used and harvested by 7% of Port Heiden households. Sandhill crane harvests totaled 21 lb, followed by the harvests of ptarmigan (19 lb), white-fronted goose (17 lb), and American wigeon (14 lb); remaining harvested resources each contributed only one dozen pounds or less to the harvest.

An estimated total of 211 individual birds were harvested by Port Heiden residents (Table 2-23). A small amount of harvests (nine) occurred in spring 2018; the harvests included four sandhill cranes and five white-fronted geese. In the summer, 26 birds were harvested, 145 were harvested in the fall, and 31 were harvested in winter 2018. Of the 26 birds harvested in the summer, all were unknown or unspecified types of Canada/cackling geese. In the fall, 80 birds that were unknown types of Canada/cackling geese were harvested, which was the majority of the harvested birds in the fall season, although this is the season in which the most bird species were harvested. Two species of birds were harvested in the winter, including ptarmigan (25) and northern pintail (7).

Resources from this category were harvested from several areas near the community of Port Heiden, as well as near Perryville in Mitrofania Bay, and south of Port Heiden at Cape Rozhnof located near Nelson Lagoon (Figure 2-33). Ducks and geese were only hunted near Port Heiden, including in areas near Goldfish Lake, north of Abbott Creek, and north of Reindeer Creek. Upland game birds, such as ptarmigan, were hunted north of Abbott Creek in 2018. Search and harvest areas for gull eggs include Cape Rozhnof, which is south of Port Heiden and near the community of Nelson Lagoon. Additionally, Port Heiden residents searched for and harvested gull eggs near Perryville in Mitrofania Bay.

Table 2-23.–Estimated bird harvests by season, Port Heiden, 2018.

Resource	Estimated harvest by season					
	Spring	Summer	Fall	Winter	Season unknown	**Total**
All birds	**9.1**	**25.9**	**145.2**	**31.1**	**0.0**	**211.3**
Bufflehead	0.0	0.0	0.0	0.0	0.0	**0.0**
Common eider	0.0	0.0	0.0	0.0	0.0	**0.0**
King eider	0.0	0.0	0.0	0.0	0.0	**0.0**
Steller's eider	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown goldeneye	0.0	0.0	0.0	0.0	0.0	**0.0**
Harlequin duck	0.0	0.0	0.0	0.0	0.0	**0.0**
Mallard	0.0	0.0	6.5	0.0	0.0	**6.5**
Unknown merganser	0.0	0.0	0.0	0.0	0.0	**0.0**
Long-tailed duck	0.0	0.0	0.0	0.0	0.0	**0.0**
Northern pintail	0.0	0.0	2.6	6.5	0.0	**9.1**
Unknown scaup	0.0	0.0	0.0	0.0	0.0	**0.0**
Black scoter	0.0	0.0	0.0	0.0	0.0	**0.0**
Surf scoter	0.0	0.0	0.0	0.0	0.0	**0.0**
White-winged scoter	0.0	0.0	0.0	0.0	0.0	**0.0**
Northern shoveler	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown teal	0.0	0.0	13.0	0.0	0.0	**13.0**
American wigeon	0.0	0.0	13.0	0.0	0.0	**13.0**
Brant	0.0	0.0	14.3	0.0	0.0	**14.3**
Unknown Canada/cackling geese	0.0	25.9	80.4	0.0	0.0	**106.3**
Emperor goose	0.0	0.0	11.7	0.0	0.0	**11.7**
White-fronted goose	5.2	0.0	0.0	0.0	0.0	**5.2**
Unknown geese	0.0	0.0	3.9	0.0	0.0	**3.9**
Unknown swans	0.0	0.0	0.0	0.0	0.0	**0.0**
Sandhill crane	3.9	0.0	0.0	0.0	0.0	**3.9**
Black oystercatcher	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown auklet	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown cormorant	0.0	0.0	0.0	0.0	0.0	**0.0**
Glaucous-winged gull	0.0	0.0	0.0	0.0	0.0	**0.0**
Herring gull	0.0	0.0	0.0	0.0	0.0	**0.0**
Mew gull	0.0	0.0	0.0	0.0	0.0	**0.0**
Sabine's gull	0.0	0.0	0.0	0.0	0.0	**0.0**
Black-legged kittiwake	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown murre	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown tern	0.0	0.0	0.0	0.0	0.0	**0.0**
Ptarmigan	0.0	0.0	0.0	24.6	0.0	**24.6**

Source ADF&G Division of Subsistence household surveys, 2019.

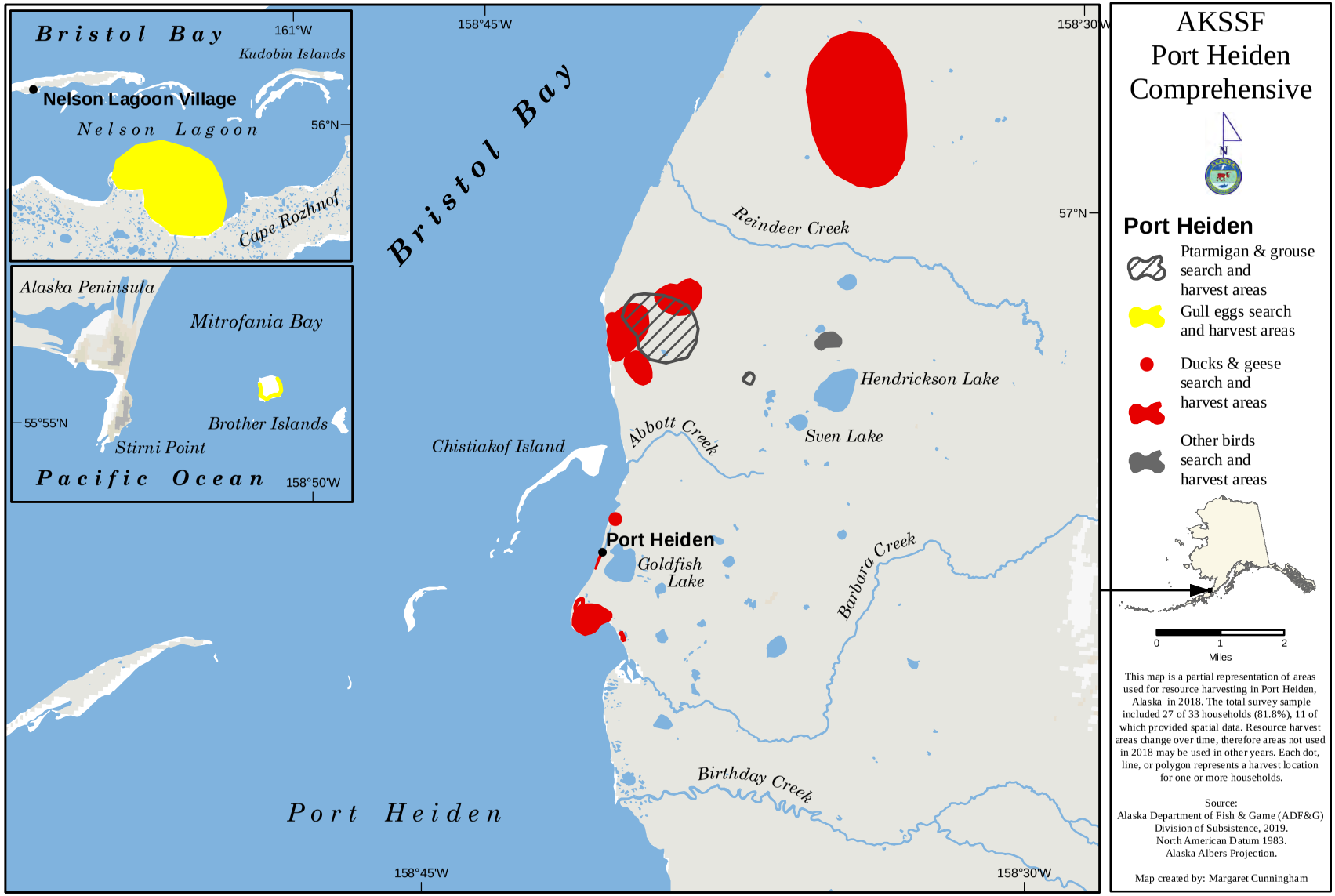
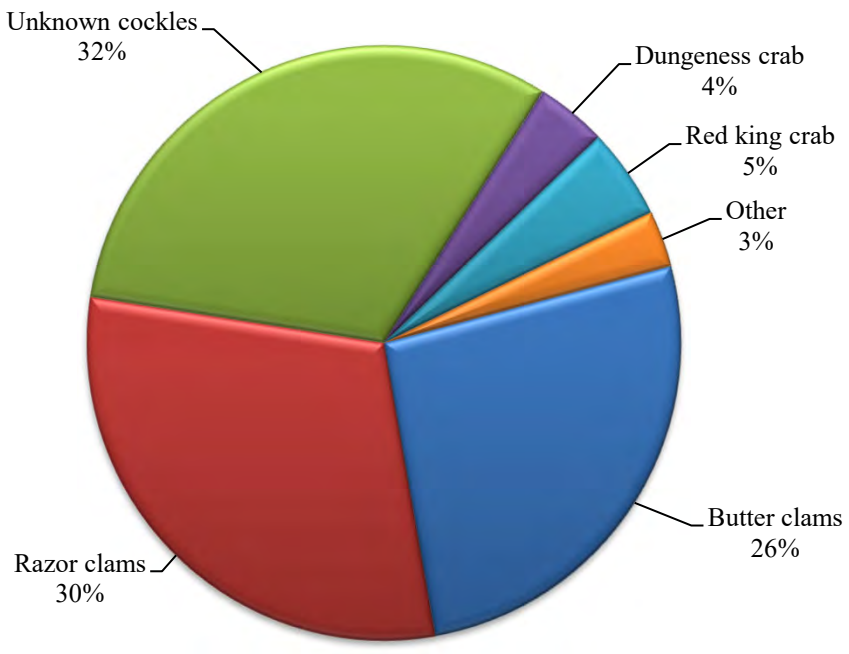


Figure 2-33.–Hunting, harvest, and gathering locations of birds and bird eggs, Port Heiden, 2018.



Note The "other" category includes species providing less than 2% each to the per capita harvest.

Figure 2-34.–Composition of marine invertebrates harvest in pounds usable weight, Port Heiden, 2018.

Marine Invertebrates

Marine invertebrates accounted for approximately 2% of the total harvest weight in Port Heiden during the study year (Figure 2-14). Marine invertebrates were used by 82% of Port Heiden households in 2018 (Table 2-13). The total harvest of marine invertebrates was 707 lb, or 7 lb per capita. The composition of the marine invertebrates harvest included a variety of species: cockles (32%), razor clams (30%), butter clams (26%), red king crab (5%), Dungeness crab (4%), and several other species of marine invertebrates (3%) (Figure 2-34).

Unknown or unspecified species of cockles were used by a little more than one-half (67%) of Port Heiden households (Table 2-13). Cockles were harvested by 59% of households and the total harvest weight was 223 lb, or 2 lb per capita. During the study year, 19% of households gave away some of this resource, and 19% of households received cockles. The total razor clam harvest in 2018 was 214 lb, or 2 lb per capita, which is almost as much as the cockles harvest; however, razor clams were used by only 11% of Port Heiden households and 7% of households harvested this resource. Razor clams were given away by 7% of households and received by 7% of Port Heiden households in 2018.

The total butter clams harvest in 2018 was 187 lb, or slightly less than 2 lb per capita. Butter clams were used and harvested by 7% of Port Heiden households. During the study year, 4% of households received butter clams, and 4% gave away some butter clams. Red king crab harvests totaled 35 lb, and residents also harvested Dungeness crab (27 lb), unknown king crab (9 lb), unknown clams (8 lb), and shrimp (5 lb).

During the 2018 study year, Port Heiden residents searched for and harvested marine invertebrates along the beaches close to the community, including along the shoreline near Goldfish Lake and the mouth of Abbott Creek (Figure 2-35). Additionally, marine invertebrates were also harvested by Port Heiden residents near the communities of Ivanof Bay and Perryville, which are on the southern side of the Alaska Peninsula.

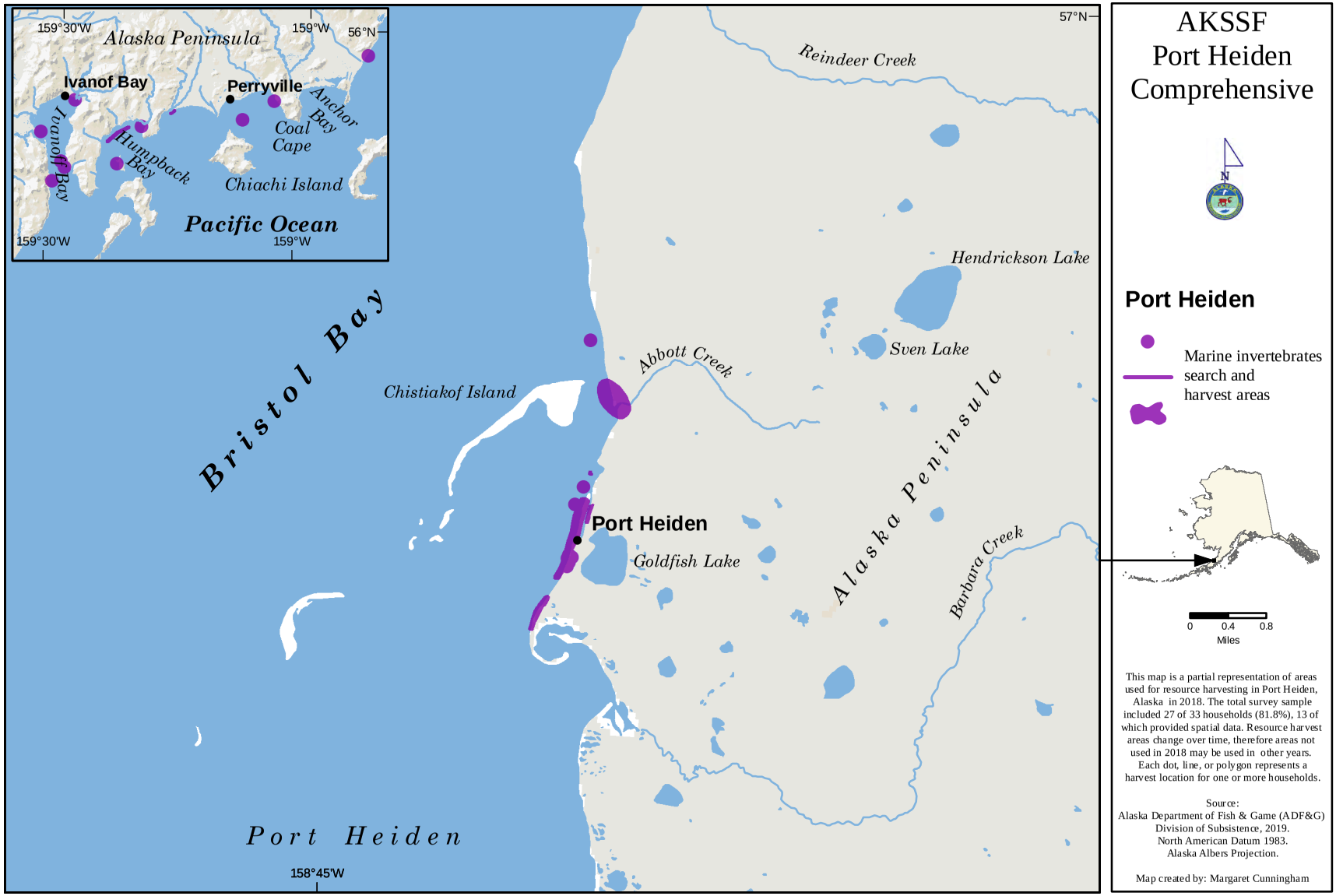


Figure 2-35.–Search and harvest locations of marine invertebrates, Port Heiden, 2018.

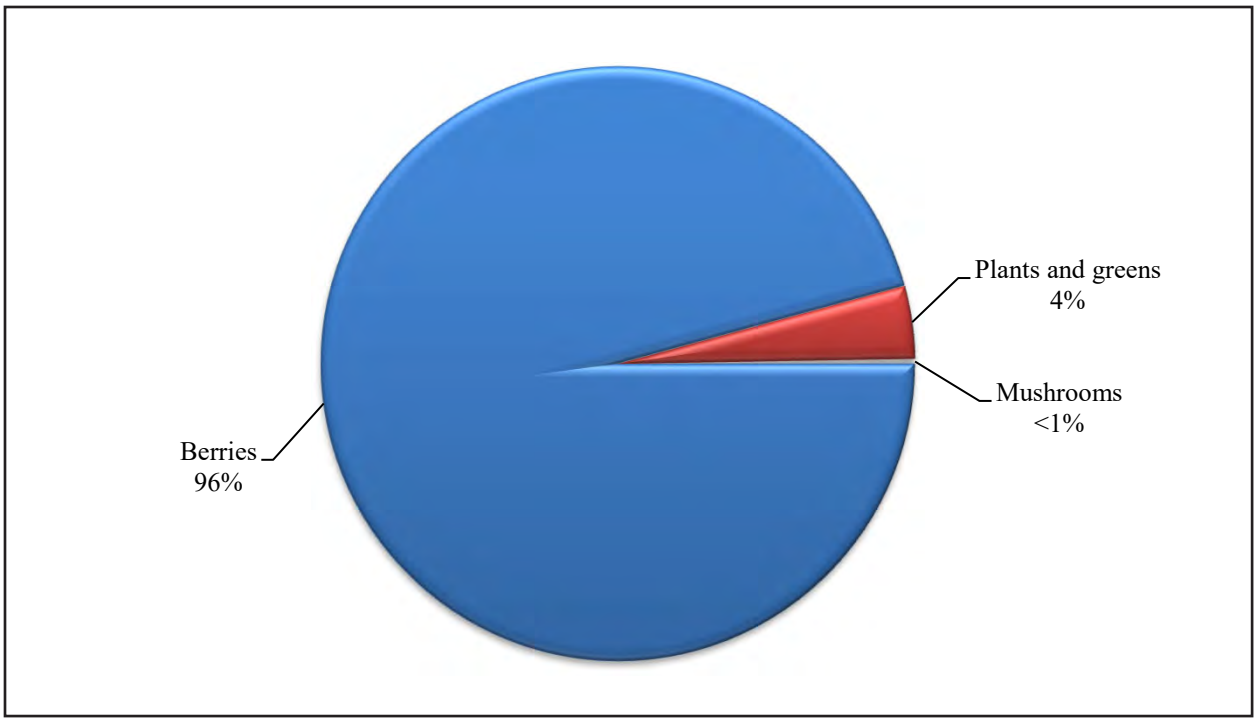


Figure 2-36.–Composition of vegetation harvest by type in pounds usable weight, Port Heiden, 2018.

Vegetation

Vegetation (wild plants) is a resource category that was highly used in Port Heiden during the 2018 study year. Nearly 89% of households used at least one type of vegetation (Table 2-13). Households in Port Heiden used a dozen specifically identified species of vegetation. Overall, vegetation made up 8% of the total community harvest by contributing 2,375 lb, averaging 23 lb per capita harvested (Figure 2-14; Table 2-13). Divided by specific vegetation category, berries made up 96% of the total vegetation harvest weight, followed by plants and greens (4%), and mushrooms (less than 1%) (Figure 2-36).

In 2018, five species of berries were used by Port Heiden households (Table 2-13). Crowberries (known locally as blackberries) was the most frequently harvested and used type of vegetation: 85% of households used crowberries. During the study year, 82% of households attempted to harvest crowberries and all of the Port Heiden households attempting to harvest this resource were successful. The total crowberry harvest was 1,810 lb, or 18 lb per capita. During the study year, 63% of households gave away some crowberries, and 52% of households received crowberries. Salmonberry was the second most harvested and used berry species in 2018. The total salmonberry harvest was 211 lb, or 2 lb per capita. Based on harvest weight, the third most harvested type of berry was lowbush cranberry (130 lb). Following those harvests were the harvests of blueberry (100 lb) and nagoonberry (24 lb).

Other plants were harvested, used, and shared less frequently than berries. Beach greens were the most harvested plants during the study year. In 2018, the total harvest weight of beach greens was 88 lb, or approximately 1 lb per capita. Though the harvest weight for beach greens was the highest in this vegetation category, only an estimated 7% of households harvested and used beach greens, and no sharing of this resource was reported in 2018. The use (11% of households) of unknown mushrooms was higher than for beach greens, but the harvest weight (7 lb) of unknown mushrooms was significantly lower than for beach greens. Similarly, the harvest weight of wild celery was 3 lb, and this plant was used by 15% Port Heiden houses. For wild parsley, the total harvest was approximately 1 lb and this resource was used and harvested by 11% and 7% of households, respectively.

This study also collected information on the use of wood, but the harvest amount is not included in estimated usable harvest weight calculations. All wood was collected from local beaches. Approximately one-half (52%) of Port Heiden households used driftwood during the study year, 48% attempted to collect wood, 7% gave this resource away, and 4% received wood.

Vegetation was harvested from much of the lands surrounding to Port Heiden (Figure 2-37). Berries and plants were harvested within the immediate community area—predominantly north and east of the community. Specifically, some berries and plants were harvested north of Port Heiden along Reindeer Creek, the area of land spanning from Reindeer Creek to Barbara Creek, and between the headwaters of Barbara Creek and a bend in Birthday Creek; also, residents searched and harvested south of the community near the Meshik River, Landlocked River, and Braided Creek. Some Port Heiden residents also harvested berries and plants on the northeast side of Chignik Lake in 2018.

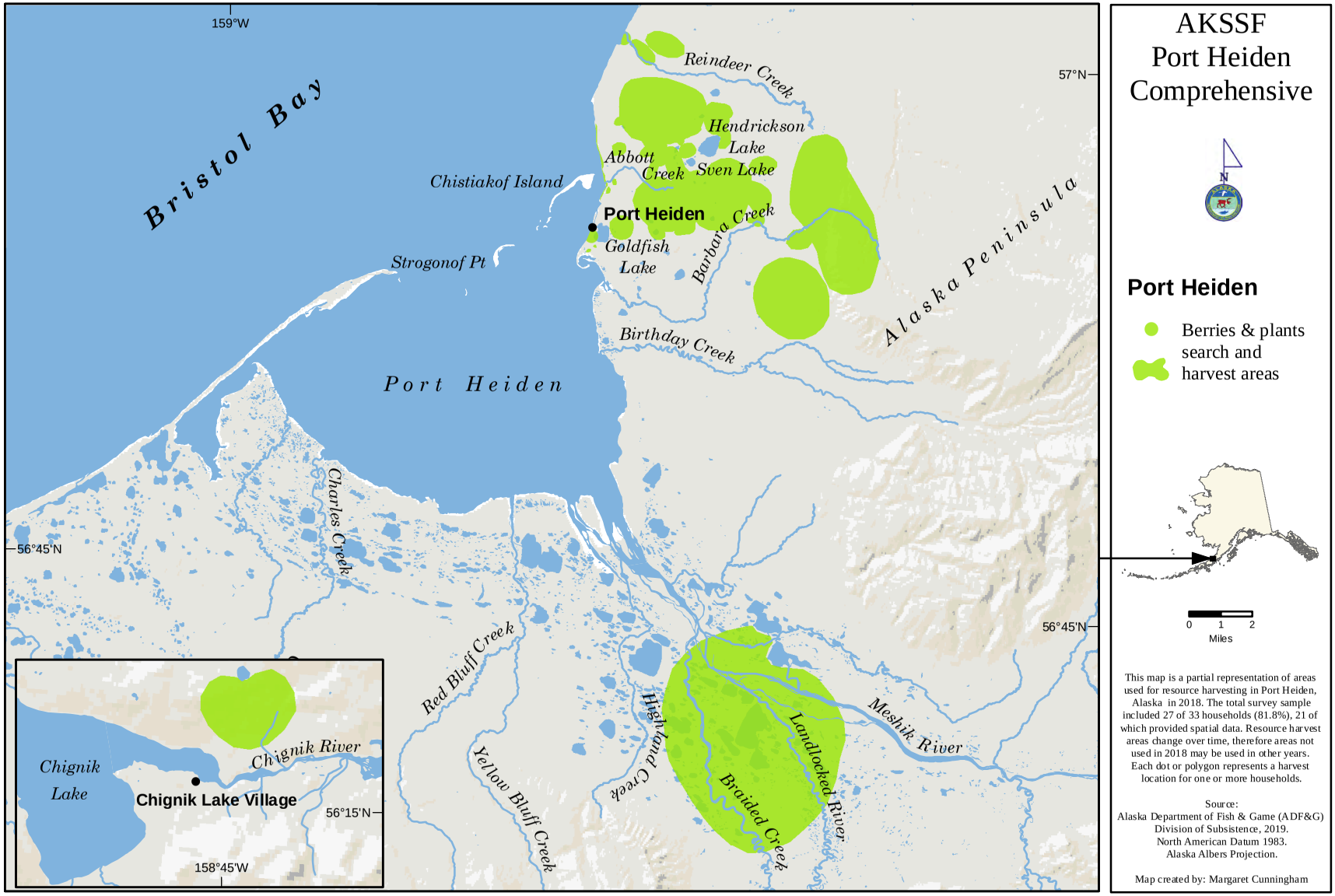


Figure 2-37.–Gathering and harvest locations of berries and plants, Port Heiden, 2018.

Comparing Uses and Harvests in 2018 with Previous Years

Use Assessments

Researchers asked respondents to assess their own harvests in two ways: whether they used more, less, or about the same amount of 10 resource categories and all wild resources overall in 2018 compared to the past five years, and whether they got "enough" of each of the 10 resource categories and all wild resources overall. Households also were asked to provide reasons if their use was different or if they were unable to get enough of a resource. If they did not get enough of a resource, they were asked to evaluate the severity of the impact to their household as a result of not getting enough. They were further asked whether they did anything differently (such as supplement with store-bought food or switch to a different subsistence resource) because they did not get enough. 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 the questions. This section discusses responses to those questions in order of the most to the least harvested resource category in pounds usable weight (Figure 2-14).

Salmon was the most harvested of all subsistence resource categories that were harvested by Port Heiden households in 2018, and 44% of responding households explained that they used fewer salmon in 2018 than they did in previous years, 30% reported that they used more, and 22% reported using the same amount of salmon (Table 2-24; Figure 2-38). When asked why they used fewer salmon, 25% of respondents reported that they did so for family/personal reasons. Other stated reasons for using fewer salmon included: lack of equipment (17%), less sharing (17%), lack of effort (17%), did not need (17%), competition (17%), and regulations (8%) (Table 2-25). For those households that used more salmon in the study year, approximately 57% of respondents who gave a reason reported that using more salmon was a result of increased effort, 14% of respondents reported more use do to personal reasons, 14% of respondents cited that they received more salmon, 14% reported more salmon were needed, 14% reported having more help getting salmon, and 14% reported more use due to getting/fixing equipment (Table 2-26). In Port Heiden, 26% of sampled households did not get enough salmon (Figure 2-39). When asked to evaluate the impact of not getting enough salmon, 57% of respondents who did not get enough described it as minor, and 43% explained that not getting enough salmon had a major effect on their household; no households stated that the impact was not noticeable or that the impact was severe (Table 2-27).When asked what households did differently as the result of not enough salmon during the study year, four households (57% of respondents) reported using more commercial foods, two households (29%) replaced salmon with other subsistence foods, and one household reported sharing less as a result of not getting enough salmon (Table 2-28).

The survey instrument asked respondents about less, same, and more use of caribou compared to recent years separately from asking about other large land mammals due to the recent changes in regulations allowing the harvest of caribou through a Tier II permit program that began in 2016. Therefore, responses about caribou use are presented separately from responses about other large land mammals.

For caribou, 44% of households reported using more caribou than they had in previous years, 30% reported using the same amount, and 22% reported less use (Table 2-24; Figure 2-38). Of those respondents who reported using caribou less, all provided a reason: 33% cited less resources were available, and 33% reported use changed due to less sharing (Table 2-25). Additionally, 17% reported having to travel too far, 17% cited weather/environment, 17% stated regulations, and 17% cited family/personal issues as reasons for less use of caribou during the study year. Reasons for increased caribou use included regulations (42%), more success (33%), received more (17%), personal (8%), increased effort (8%), and needed more (8%) (Table 2-26). During the study year, 33% of sampled households indicated that they did not get enough caribou (Figure 2-39). Of the households that reported not getting enough caribou, 67% reported it had a minor impact on their household, and 33% indicated that the impact to their household was major (Table 2-27).

For the other large land mammals (these responses primarily pertain to moose), of the households that responded to the question, 27% reported using more other large game resources than they had in previous years, 42% reported using the same amount, and 15% reported using less (Table 2-24; Figure 2-38). Of those respondents who reported using fewer other large land mammals, all provided a reason: 50% reported this was due to lack of effort, 25% cited less sharing, and 25% stated they were unsuccessful (Table 2-25).

All the households that indicated increased use of these resources indicated why, and mainly the change was attributed to receiving more resources (Table 2-26). During the study year, 24% of the responding households felt that they did not get enough other large land mammals and reported some degree of impact to their households (Table 2-27). When asked to evaluate the impact of not getting enough large game resources, 60% of respondents who did not get enough described it as minor, and 40% explained that not getting enough had a major effect on their household. For both caribou and other large land mammals, households that reported doing something differently as the result of not having enough of these resources exclusively used more commercial foods (80% or more of responses) or replaced the resources with other subsistence foods (Table 2-28).

For 2018 in Port Heiden, 37% of households reported using more vegetation than in previous years, 26% reported using less, and 26% reported using the same amount (Figure 2-38). Of those households that reported using less vegetation in 2018 and provided a reason, 33% cited family or personal reasons, 17% stated resources were less available, 17% attributed this to lack of equipment, 17% attributed this to lack of effort, and 17% stated they did not need the vegetation resources (Table 2-25). The majority (70%) of respondents who reported using more vegetation cited that more use was due to increased resource availability (Table 2-26). Other reasons included increased effort (30%) and had more help (10%). Approximately 11% of sampled households reported not getting enough vegetation during the study year (Figure 2-39). Of the respondents who stated that they did not get enough vegetation resources, 67% felt that not getting enough had a major impact on their household, and 33% reported that it had a minor impact on their household (Table 2-27). When asked what households did differently as the result of not having enough vegetation during the study year, two households (67% of respondents) reported using more commercial foods, and one household asked others for help as a result of not getting enough vegetation (Table 2-28).

The majority (56%) of households reported using fewer birds in 2018 as compared to recent years, 15% reported using the same amount, and 7% reported using more (Table 2-24; Figure 2-38). Of those households that reported using fewer bird resources in 2018 compared to recent years and provided a reason, 29% stated resources were less available, 21% attributed this to lack of effort, 14% cited family or personal reasons, 14% were unsuccessful, and 14% attributed less sharing (Table 2-25). Other reasons included: too far to travel (7%), lack of equipment (7%), working/no time (7%), and regulations (7%). Those who reported using more birds provided a reason, which included received more (50%) and increased effort (50%) (Table 2-26). During the study year, 39% of responding households reported not getting enough birds (Table 2-27). Of the seven households that indicated not having enough birds, the majority (six households) indicated the impact was minor and one household indicated that not having enough birds had a major effect.

Bird eggs, which were less commonly harvested and used by Port Heiden households than birds, were asked about separately on the survey instrument. Although the majority of households indicated that bird eggs were usually not used, 19% of households reported using fewer bird eggs, 4% reported using more, and 26% reported using the same amount (Table 2-24; Figure 2-38). Those who reported less use in 2018 provided a reason for why, which included: resources were less available (60%), weather/environment (40%), lack of effort (20%), and too far to travel (20%) (Table 2-25). The single reason cited for using more birds was that the respondent received more (Table 2-26). Two respondents indicated that their household did not have enough bird eggs: one cited the impact to the household as minor, and the other indicated it was severe (Table 2-27); both respondents used more commercial foods as a result (Table 2-28).

In Port Heiden, 41% of households reported using fewer marine invertebrate resources in 2018 than they did in recent years, 30% reported using the same amount, and 11% reported using more (Table 2-24; Figure 2-38). The most cited reasons for less use of marine invertebrates included decreases in resource availability (64% of respondents), too far to travel (18%), and lack of effort (18%) (Table 2-25). Reasons for increased use included increased effort (67%), received more (33%), and more harvest success (33%) (Table 2-26). Out of surveyed households, 41% did not get enough marine invertebrates (Figure 2-39). Approximately 82% of those respondents who felt as though they did not get enough marine invertebrates reported that had a minor household impact, and the remaining 18% reported a major impact to their household (Table 2-27).

Table 2-24.–Changes in household uses of resources compared to recent years, Port Heiden, 2018.

Resource category	Sampled households	Valid responses[a]	Households reporting use: Total households Number	Total households Percentage	Less Number	Less Percentage	Same Number	Same Percentage	More Number	More Percentage	Households not using Number	Households not using Percentage
Any resource	**27**	**27**	**27**	**100.0%**	**21**	**77.8%**	**20**	**74.1%**	**23**	**85.2%**		
All resources	27	27	27	100.0%	11	40.7%	8	29.6%	8	29.6%	0	0.0%
Salmon	27	27	26	96.3%	12	44.4%	6	22.2%	8	29.6%	1	3.7%
Nonsalmon fish	27	27	14	51.9%	6	22.2%	6	22.2%	2	7.4%	13	48.1%
Caribou	27	27	26	96.3%	6	22.2%	8	29.6%	12	44.4%	1	3.7%
Other large land mammals	27	26	22	84.6%	4	15.4%	11	42.3%	7	26.9%	4	15.4%
Small land mammals	27	27	6	22.2%	4	14.8%	1	3.7%	1	3.7%	21	77.8%
Marine mammals	27	26	5	19.2%	2	7.7%	2	7.7%	1	3.8%	21	80.8%
Birds	27	27	21	77.8%	15	55.6%	4	14.8%	2	7.4%	6	22.2%
Bird eggs	27	27	7	25.9%	5	18.5%	1	3.7%	1	3.7%	20	74.1%
Marine invertebrates	27	27	22	81.5%	11	40.7%	8	29.6%	3	11.1%	5	18.5%
Vegetation	27	27	24	88.9%	7	25.9%	7	25.9%	10	37.0%	3	11.1%

Source ADF&G Division of Subsistence household surveys, 2019.

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

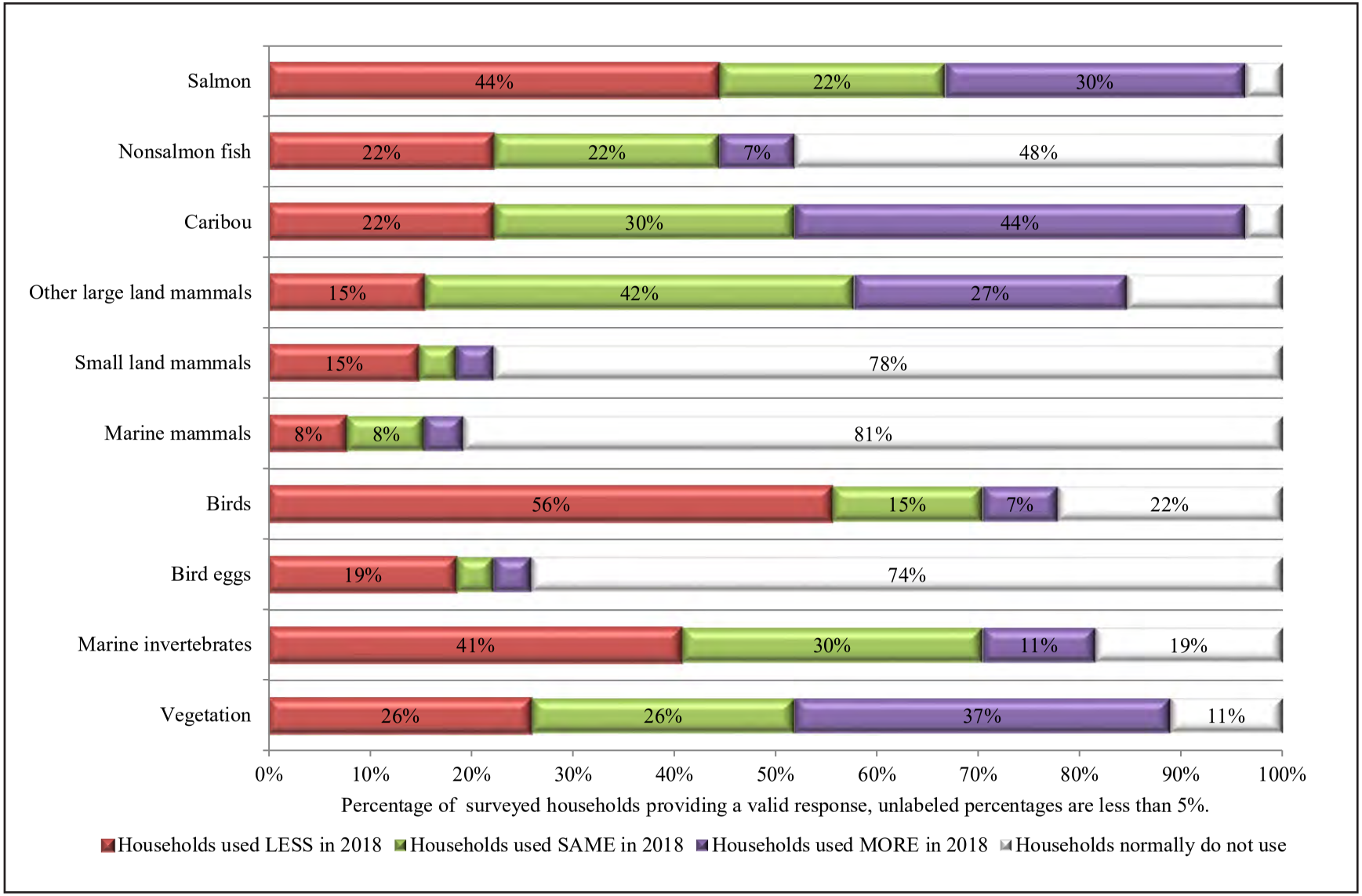


Figure 2-38.–Changes in household uses of resources compared to recent years, Port Heiden, 2018.

Table 2-25.–Reasons for less household uses of resources compared to recent years, Port Heiden, 2018.

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	**27**	**21**	**7**	**33.3%**	**13**	**61.9%**	**5**	**23.8%**	**5**	**23.8%**	**8**	**38.1%**	**11**	**52.4%**	**3**	**14.3%**	**3**	**14.3%**
All resources	27	11	3	27.3%	3	27.3%	2	18.2%	1	9.1%	1	9.1%	3	27.3%	1	9.1%	0	0.0%
Salmon	27	12	3	25.0%	0	0.0%	0	0.0%	2	16.7%	2	16.7%	2	16.7%	0	0.0%	0	0.0%
Nonsalmon fish	27	6	1	16.7%	1	16.7%	0	0.0%	1	16.7%	4	66.7%	2	33.3%	0	0.0%	0	0.0%
Caribou	26	6	1	16.7%	2	33.3%	1	16.7%	0	0.0%	2	33.3%	0	0.0%	0	0.0%	1	16.7%
Other large land mammals	27	4	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	25.0%	2	50.0%	1	25.0%	0	0.0%
Small land mammals	27	3	1	33.3%	0	0.0%	1	33.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	33.3%
Marine mammals	27	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	50.0%	0	0.0%	0	0.0%
Birds	26	14	2	14.3%	4	28.6%	1	7.1%	1	7.1%	2	14.3%	3	21.4%	2	14.3%	0	0.0%
Bird eggs	27	5	0	0.0%	3	60.0%	1	20.0%	0	0.0%	0	0.0%	1	20.0%	0	0.0%	2	40.0%
Marine invertebrates	27	11	1	9.1%	7	63.6%	2	18.2%	0	0.0%	1	9.1%	2	18.2%	1	9.1%	0	0.0%
Vegetation	27	6	2	33.3%	1	16.7%	0	0.0%	1	16.7%	0	0.0%	1	16.7%	0	0.0%	0	0.0%

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Table 2-25.–Continued.

Resource category	Valid responses[a]	Households reporting reasons for less use	Other reasons		Working/ no time		Regulations		Small/ diseased animals		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
Any resource	**27**	**21**	**1**	**4.8%**	**2**	**9.5%**	**3**	**14.3%**	**1**	**4.8%**	**3**	**14.3%**	**0**	**0.0%**	**0**	**0.0%**	**2**	**9.5%**
All resources	27	11	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	9.1%	0	0.0%	0	0.0%	1	9.1%
Salmon	27	12	0	0.0%	0	0.0%	1	8.3%	0	0.0%	2	16.7%	0	0.0%	0	0.0%	2	16.7%
Nonsalmon fish	27	6	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Caribou	26	6	0	0.0%	0	0.0%	1	16.7%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other large land mammals	27	4	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	27	3	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	33.3%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	27	2	0	0.0%	1	50.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Birds	26	14	1	7.1%	1	7.1%	1	7.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Bird eggs	27	5	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	27	11	0	0.0%	0	0.0%	0	0.0%	1	9.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	27	6	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	16.7%	0	0.0%	0	0.0%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2019.

a. Valid responses do not include households that did not provide any response to less, same, or more use assessment question.

Table 2-26.–Reasons for more household uses of resources compared to recent years, Port Heiden, 2018.

Resource category	Valid responses[a]	Households reporting reasons for more use	Personal		Increased availability		Used other resources		Favorable weather		Received more		Needed more		Increased effort		Regulations	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	**27**	**23**	**2**	**8.7%**	**8**	**34.8%**	**0**	**0.0%**	**0**	**0.0%**	**7**	**30.4%**	**2**	**8.7%**	**10**	**43.5%**	**5**	**21.7%**
All resources	27	8	0	0.0%	0	0.0%	0	0.0%	0	0.0%	2	25.0%	0	0.0%	4	50.0%	2	25.0%
Salmon	27	7	1	14.3%	0	0.0%	0	0.0%	0	0.0%	1	14.3%	1	14.3%	4	57.1%	0	0.0%
Nonsalmon fish	27	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	2	100.0%	0	0.0%
Caribou	26	12	1	8.3%	0	0.0%	0	0.0%	0	0.0%	2	16.7%	1	8.3%	1	8.3%	5	41.7%
Other large land mammals	27	7	0	0.0%	1	14.3%	0	0.0%	0	0.0%	5	71.4%	0	0.0%	1	14.3%	0	0.0%
Small land mammals	27	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%
Marine mammals	27	1	0	0.0%	1	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Birds	26	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	50.0%	0	0.0%	1	50.0%	0	0.0%
Bird eggs	27	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	27	3	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	33.3%	0	0.0%	2	66.7%	0	0.0%
Vegetation	27	10	0	0.0%	7	70.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	3	30.0%	0	0.0%

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Table 2-26.–Continued.

Resource category	Valid responses[a]	Households reporting reasons for more use	Traveled farther		More success		Had more time		Store-bought expense		Got/ fixed equipment		Substitue for unavialable resource(s)		Had more help		Other	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Any resource	**27**	**23**	**0**	**0.0%**	**7**	**30.4%**	**0**	**0.0%**	**1**	**4.3%**	**1**	**4.3%**	**0**	**0.0%**	**2**	**8.7%**	**7**	**30.4%**
All resources	27	8	0	0.0%	2	25.0%	0	0.0%	1	12.5%	1	12.5%	0	0.0%	0	0.0%	3	37.5%
Salmon	27	7	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	14.3%	0	0.0%	1	14.3%	3	42.9%
Nonsalmon fish	27	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	50.0%
Caribou	26	12	0	0.0%	4	33.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	8.3%
Other large land mammals	27	7	0	0.0%	1	14.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	27	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	100.0%
Marine mammals	27	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Birds	26	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	2	100.0%
Bird eggs	27	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	27	3	0	0.0%	1	33.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	33.3%
Vegetation	27	10	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	10.0%	2	20.0%

Source ADF&G Division of Subsistence household surveys, 2019.

a. Valid responses do not include households that did not provide any response to less, same, or more use assessment question.

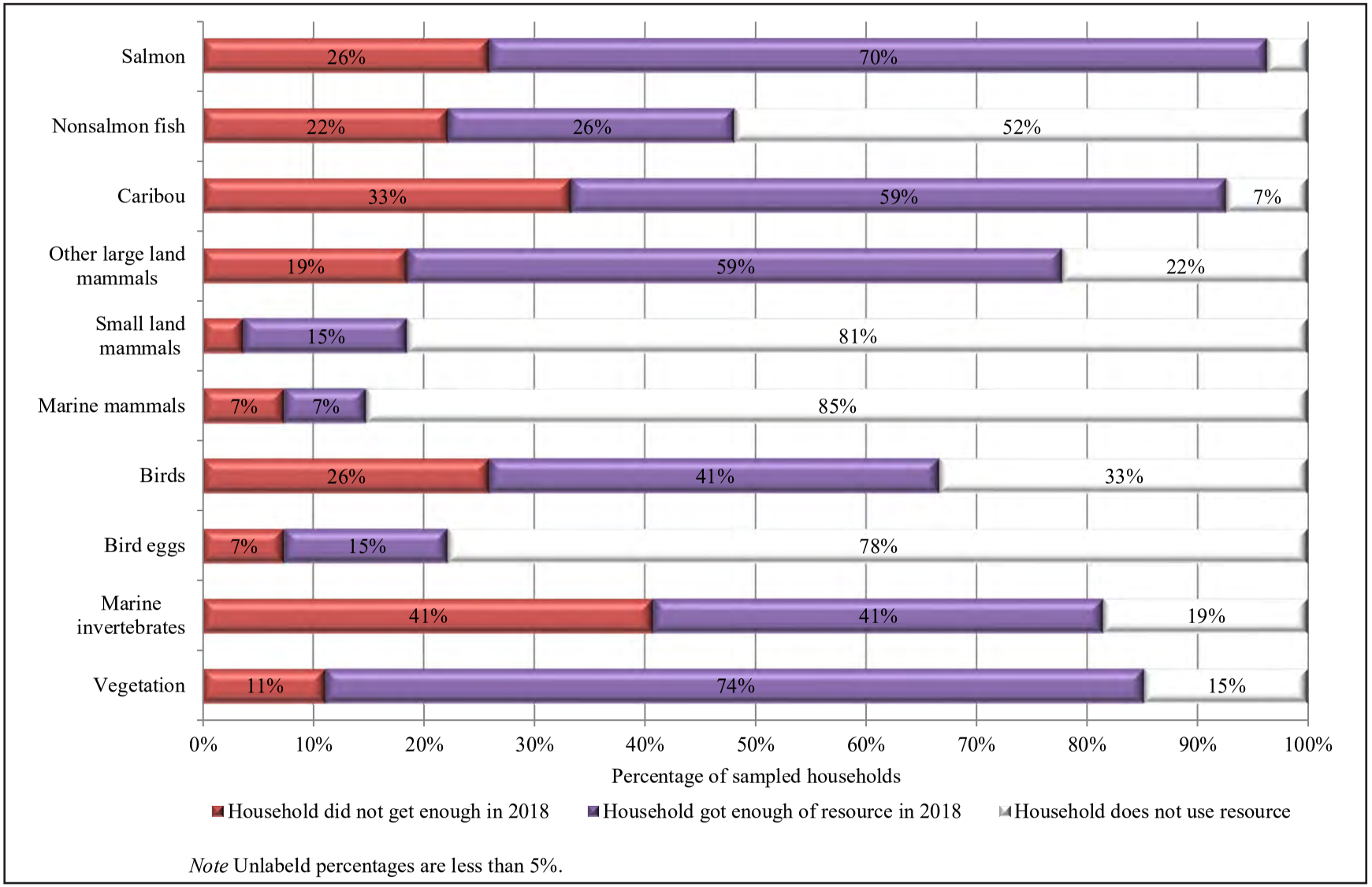


Figure 2-39.–Percentage of sampled households reporting whether they had enough resources, Port Heiden, 2018.

Table 2-27.–Reported impact to households reporting that they did not get enough of a type of resource, Port Heiden, 2018.

		Households not getting enough _____.				Impact to those not getting enough _____.									
	Sample	Valid responses[a]		Did not get enough		No response		Not noticeable		Minor		Major		Severe	
Resource category	households	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
All resources	27	26	96.3%	10	38.5%	0	0.0%	0	0.0%	5	50.0%	5	50.0%	0	0.0%
Salmon	27	26	96.3%	7	26.9%	0	0.0%	0	0.0%	4	57.1%	3	42.9%	0	0.0%
Nonsalmon fish	27	13	48.1%	6	46.2%	0	0.0%	2	33.3%	3	50.0%	1	16.7%	0	0.0%
Caribou	27	25	92.6%	9	36.0%	0	0.0%	0	0.0%	6	66.7%	3	33.3%	0	0.0%
Other large land mammals	27	21	77.8%	5	23.8%	0	0.0%	0	0.0%	3	60.0%	2	40.0%	0	0.0%
Small land mammals	27	5	18.5%	1	20.0%	0	0.0%	0	0.0%	1	100.0%	0	0.0%	0	0.0%
Marine mammals	27	4	14.8%	2	50.0%	1	50.0%	0	0.0%	1	50.0%	0	0.0%	0	0.0%
Birds	27	18	66.7%	7	38.9%	0	0.0%	0	0.0%	6	85.7%	1	14.3%	0	0.0%
Bird eggs	27	6	22.2%	2	33.3%	0	0.0%	0	0.0%	1	50.0%	1	50.0%	0	0.0%
Marine invertebrates	27	22	81.5%	11	50.0%	0	0.0%	0	0.0%	9	81.8%	2	18.2%	0	0.0%
Vegetation	27	23	85.2%	3	13.0%	0	0.0%	0	0.0%	1	33.3%	2	66.7%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2019.

a. Does not include households failing to respond to the question and those households that never used the resource.

Table 2-28.–Things households reported doing differently as the result of not getting enough of a resource, Port Heiden, 2018.

Resource category	Valid responses[a]	Bought/bartered		Used more commercial foods		Replaced with other subsistence foods		Asked others for help		Made do without	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
All resources	10	1	10.0%	8	80.0%	1	10.0%	0	0.0%	0	0.0%
Salmon	7	0	0.0%	4	57.1%	2	28.6%	0	0.0%	0	0.0%
Nonsalmon fish	3	2	66.7%	1	33.3%	0	0.0%	0	0.0%	0	0.0%
Caribou	8	0	0.0%	7	87.5%	1	12.5%	0	0.0%	0	0.0%
Other large land mammals	5	0	0.0%	4	80.0%	1	20.0%	0	0.0%	0	0.0%
Small land mammals	1	1	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	1	0	0.0%	0	0.0%	1	100.0%	0	0.0%	0	0.0%
Birds	8	0	0.0%	7	87.5%	0	0.0%	0	0.0%	1	12.5%
Bird eggs	2	0	0.0%	2	100.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	5	0	0.0%	4	80.0%	2	40.0%	0	0.0%	0	0.0%
Vegetation	3	0	0.0%	2	66.7%	0	0.0%	1	33.3%	0	0.0%

-continued-

Table 2-28.–Continued.

Resource category	Valid responses[a]	Increased effort to harvest		Got a job		Obtained food from other sources		Got public assistance		Did not share as much	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
All resources	10	0	0.0%	0	0.0%	0	0.0%	1	10.0%	0	0.0%
Salmon	7	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	14.3%
Nonsalmon fish	3	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Caribou	8	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other large land mammals	5	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Small land mammals	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Birds	8	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Bird eggs	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	5	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	3	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2019.

a. Does not include households failing to respond to the question and those households that never used the resource.

In 2018, approximately 48% of Port Heiden households reported not normally using nonsalmon fish; of the households that did report use of this resource category, 22% reported using the same amount during the study year as they had in previous years, 22% reported using less, and 7% reported using more (Table 2-24; Figure 2-38). Approximately 67% of respondents who used fewer nonsalmon fish reported doing so because of less sharing. Other reasons included: lack of effort (33%), family/personal reasons (17%), lack of equipment (17%), and less resources available (17%) (Table 2-25). The sole reason cited for using more nonsalmon fish in 2018 was increased effort (Table 2-26). Of the households answering the question, 46% reported not getting enough nonsalmon fish, and 33% of those households reported that it did not have a noticeable impact; also, 50% of those households reported that not getting enough nonsalmon fish had a minor impact on their household, and 17% reported a major impact (Table 2-27). No respondents reported that not getting enough nonsalmon fish had a severe impact to their household.

For the 2018 study year, 81% of responding Port Heiden households reported that they did not use marine mammals (Figure 2-38). Of the households answering the question, 8% cited less use of marine mammals in 2018 than in previous years, 8% reported using the same amount, and 4% reported using more (Table 2-24). Those respondents who reported less use of marine mammals cited lack of effort (50%) and working/no time (50%) as reason why (Table 2-25). According to survey respondents, marine mammal resources are not a significant component to the Port Heiden community's wild resource use and harvest patterns, and of the two respondents who indicated that they did not have enough marine mammals, one household indicated this had a minor impact to their household, while the other household did not provide a response to assess the impact from not getting enough marine mammals (Table 2-27).

According to survey respondents, small land mammals is not as significant of a wild resource category today as it was in the past. For the 2018 study year, 78% of Port Heiden households reported that they did not use small land mammals (Figure 2-38). In Port Heiden, 15% of households cited less use of small land mammals in 2018 than in previous years, 4% reported using the same amount, and 4% reported using more (Table 2-24). Those respondents who reported less use of small land mammals and provided a reason why cited family/personal reasons (33%), too far to travel (33%), weather/environmental reasons (33%), and did not need (33%) as reasons why their use was less (Table 2-25). The only reported reason for using more small land mammals in 2018 than in recent years was increased effort (one household) (Table 2-26). Of the households answering the question, 20% (one household) reported not getting enough small land mammals and this household said the impact to their household was minor (Table 2-27). The one household that did not have small land mammals cited that they bought or bartered as a result of not having enough (Table 2-28).

All households (100%) in Port Heiden reported using at least one wild resource in 2018 (Table 2-24). Approximately 41% of all households reported using fewer resources in 2018 than they had in recent years, 30% reported using the same amount, and 30% reported using more. The most frequently reported reasons for decreased use were family/personal circumstances (27%), resources were less available (27%), and lack of effort (27%) (Table 2-25). Other reasons included too far to travel (18%), lack of equipment (9%), less sharing (9%), unsuccessful (9%), did not need (9%), and competition (9%). The most frequently reported reason for using more resources overall in 2018 than in recent years was increased effort (50%) (Table 2-26). Other reasons included: more success (25%), received more (25%), regulations (25%), store-bought expenses (13%), and got/fixed equipment (13%). Of the households answering the question, 39% reported not getting enough of all wild resources in general and of those respondents who did not get enough, one-half (50%) said the impact to their household was minor, while the other one-half (50%) reported the impact as major (Table 2-27). No households reported the shortage as having a severe effect. In correlation with assessments for several of the specific resource categories, the majority (80%) of households that did not have enough wild resources in general used more commercial foods (Table 2-28).

Table 2-29.–Resources that households reported needing, Port Heiden, 2018.

Resource	Households needing	Percentage of households
Cockles	9	33.3%
Moose	6	22.2%
Sockeye salmon	4	14.8%
Pacific halibut	4	14.8%
Caribou	4	14.8%
Geese	4	14.8%
Salmon	3	11.1%
Ptarmigan	3	11.1%
Berries	3	11.1%
Crowberry	3	11.1%
Chinook salmon	2	7.4%
Rockfish	2	7.4%
Gull eggs	2	7.4%
Clams	2	7.4%
Crabs	2	7.4%
Octopus	2	7.4%
All resources	1	3.7%
Coho salmon	1	3.7%
Pacific herring sac roe	1	3.7%
Yelloweye rockfish	1	3.7%
Beaver	1	3.7%
Porcupine	1	3.7%
Seal	1	3.7%
Harbor seal	1	3.7%
Ducks	1	3.7%
Canada/cackling goose	1	3.7%
Tern eggs	1	3.7%
Chitons (bidarkis, gumboots)	1	3.7%
Shrimp	1	3.7%
Blueberry	1	3.7%
Lowbush cranberry	1	3.7%
Nagoonberry	1	3.7%
Salmonberry	1	3.7%

Source ADF&G Division of Subsistence household surveys, 2019.

With regard to specific resources of which households wanted more, the top species desired was cockles (33% of sampled households) (Table 2-29). In addition, 22% of Port Heiden households needed more moose, 15% desired more sockeye salmon, 15% needed more Pacific halibut, and 15% needed more caribou. Additionally, 15% of households needed more geese in general, 4% needed more Canada/cackling goose specifically, and bird eggs, ducks, and ptarmigan were also desired. More salmon in general were wanted by 11% of households that did not have enough resources, as well as a diverse list of other resources, particularly types of berries and marine invertebrates.

Harvest Data

Changes in the harvest of resources by Port Heiden residents can also be discerned through comparisons with findings from other study years. A comprehensive subsistence harvest survey was conducted in Port Heiden by the Division of Subsistence for the study year 1987, and researchers with the Department of Anthropology, Idaho State University, managed a subsistence harvest survey in Port Heiden for study year 2009, with study results[9] published in Reedy-Maschner and Maschner (2012). The Division of Subsistence conducted a salmon and large land mammal survey in Port Heiden as part of another project for study year 2016. Additionally, large land mammal surveys were conducted by the Division of Subsistence for study years 1991, 1994, 1995, and 1996. Therefore, in addition to results from this project's survey for 2018, for salmon, four years of survey data can be used to discuss subsistence harvest changes, and, for large land mammals, eight years of harvest data can be compared.

Looking at all wild resource harvests, in 1987, Port Heiden households harvested 41,985 lb of wild resources, or 408 lb per capita, which was higher than the 2009 harvest of 27,273 lb of edible wild resources, or 300 lb per capita, and higher than the 2018 harvest of 30,789 lb of wild resources, or 297 lb per capita (Table 2-30). The harvest weights were similar for 2009 and 2018: despite the total wild resource harvest weight being 3,516 lb higher in 2018 than 2009, the 2018 per capita harvest was 3 lb less than the 2009 per capita harvest because of the higher estimated population for 2018.

Harvest composition change can be discerned by comparing the changed percentage of total harvest by resource category between the 1987, 2009, and 2018 estimates, and the per capita harvest weight change by resource category. The per capita harvest for each resource category, with the notable exception of salmon and also wild plants, decreased since the 1987 study; also, the composition of the resources harvested has changed over time, which, as mentioned above, resulted in an overall harvest weight that was decreased by 11,196 lb from 1987 to 2018.

Figure 2-40 compares estimated harvests in pounds per capita for three study years by resource category. The only resource category that had an increased harvest in both 2009 and 2018 (in the overall harvest weight and the per capita harvest weight) compared to 1987 was salmon. The difference in the per capita salmon harvest weight between 1987 and 2009 was 94 lb, and the difference in per capita salmon harvest weight between 1987 and 2018 was 58 lb. The overall harvest weight and the per capita harvest weight of vegetation was higher in 2018 (2,375 lb, or 23 lb per capita) than it was in 1987 (1,427 lb, or 14 lb per capita), but the vegetation harvest in 2009 (257 lb, or 3 lb per capita) was lower than the other two study years. Corresponding to the vegetation harvest weight being higher in 2018, vegetation contributed nearly 8% of the harvest in 2018, compared to less than 1% of the harvest during the 2009 study and approximately 3% of the harvest during the 1987 study (Figure 2-40; Table 2-30).

The overall harvest weight of salmon increased by 6,090 lb between 1987 and the current study year (2018): in 1987 the total salmon harvest weight was 8,766 lb (21% of total harvest), and in 2018 the salmon harvest weight was 14,856 lb (48% of total harvest) (Table 2-30). There was a significant increase to the salmon per capita harvest between 1987 and 2018 as well; however, when comparing salmon harvest data between four study years when salmon harvest amounts were estimated (1987, 2009, 2016, and 2018), 2016 is the year with the highest salmon harvest (18,812 lb, or 179 lb per capita), followed by 2009 (16,315 lb, or 179 lb per capita), 2018 (14,856 lb, or 143 lb per capita), and 1987 (8,766 lb, or 85 lb per capita) (Figure 2-41; Table 2-31). Sockeye salmon accounted for the biggest difference: in 2016 the estimated sockeye salmon harvest was 14,281 lb (136 lb per capita), in 2009 the sockeye salmon harvest was 6,569 lb (72 lb per capita), in 2018 the sockeye salmon harvest was 6,784 lb (65 lb per capita), and in 1987 the sockeye salmon harvest was 2,266 lb (22 lb per capita). However, regarding Chinook salmon, 2009 had the highest harvest for this species (7,716 lb, or 85 lb per capita), followed by the 2018 harvest (4,809 lb, or 46 lb per capita), 1987 harvest (2,422 lb, or 24 lb per capita), and the 2016 harvest (1,466 lb, or 14 lb per capita) (Table 2-31).

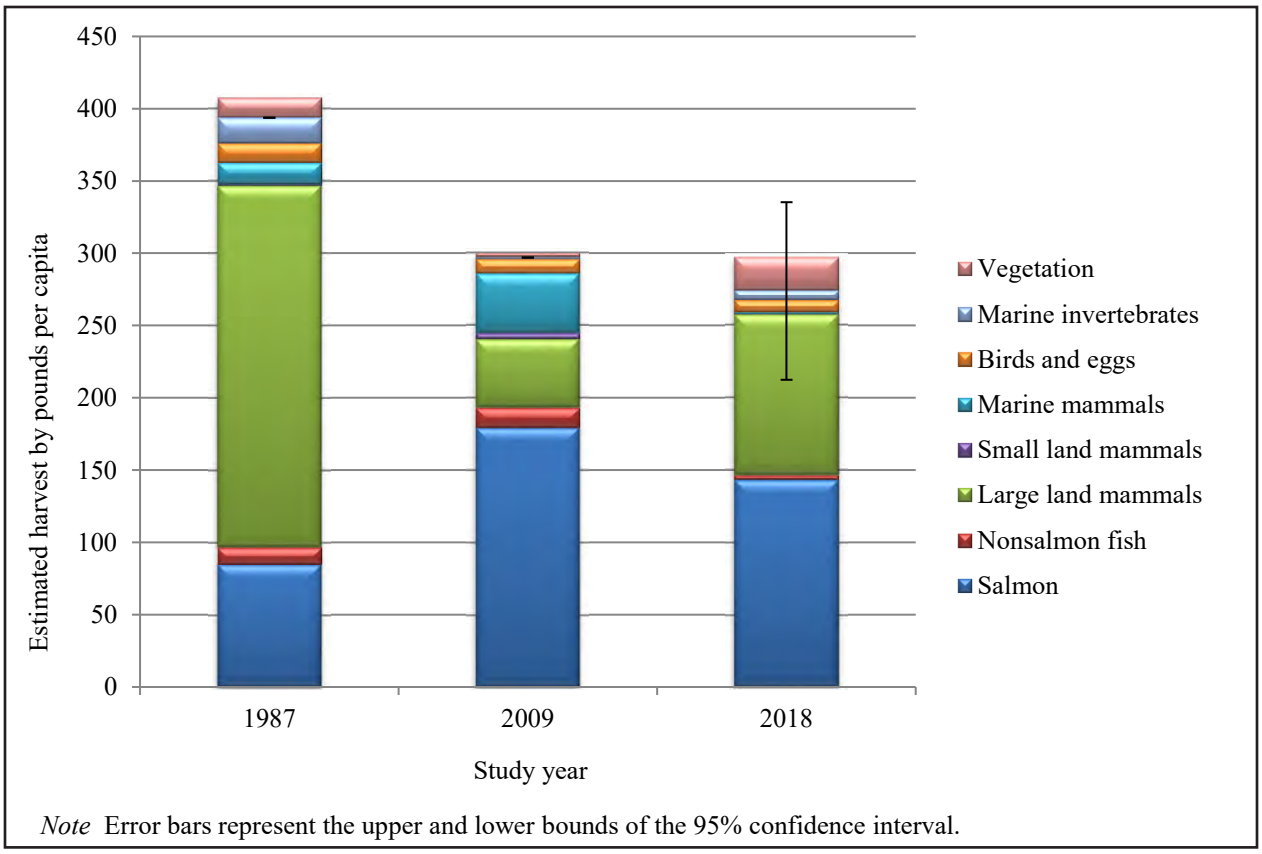
9. Note that the tables and figures in this report present modified estimated harvests from those reported in Reedy-Maschner and Maschner (2012) to remove resources that were not eaten (such as most furbearers and sea otters) to be comparable with harvest estimates in ADF&G Division of Subsistence technical papers and the CSIS.

Table 2-30.–Comparison of estimated total and per capita harvests, by resource category, Port Heiden, 1987, 2009, and 2018.

	Estimated harvest in pounds usable weight											
	1987				2009				2018			
Resource category	Total	Per capita	Percentage of harvest	CIP	Total	Per capita	Percentage of harvest	CIP[a]	Total	Per capita	Percentage of harvest	CIP
All resources	**41,985.0**	**407.6**		**0.0%**	**27,272.6**	**299.9**		**NA**	**30,788.6**	**296.9**		**20.7%**
Salmon	8,766.0	85.1	20.9%	0.0%	16,315.4	179.4	59.8%	NA	14,855.6	143.3	48.3%	32.5%
Nonsalmon fish	1,205.0	11.7	2.9%	0.0%	1,247.3	13.7	4.6%	NA	313.1	3.0	1.0%	39.5%
Large land mammals	25,740.0	249.9	61.3%	0.0%	4,310.5	47.4	15.8%	NA	11,511.1	111.0	37.4%	22.0%
Small land mammals	105.0	1.0	0.3%	0.0%	387.0	4.3	1.4%	NA	20.7	0.2	0.1%	98.3%
Marine mammals	1,543.0	15.0	3.7%	0.0%	3,746.3	41.2	13.7%	NA	145.2	1.4	0.5%	68.1%
Birds and eggs	1,374.0	13.3	3.3%	0.0%	899.0	9.9	3.3%	NA	860.8	8.3	2.8%	34.5%
Marine invertebrates	1,824.0	17.7	4.3%	0.0%	109.8	1.2	0.4%	NA	707.2	6.8	2.3%	66.2%
Vegetation	1,427.0	13.9	3.4%	0.0%	257.3	2.8	0.9%	NA	2,375.0	22.9	7.7%	25.9%

Sources For 2009, Reedy-Maschner and Maschner (2012); for 2018, ADF&G Division of Subsistence household surveys, 2019; for other previous study years, ADF&G Division of Subsistence Community Subsistence Information System (CSIS), accessed 2019.

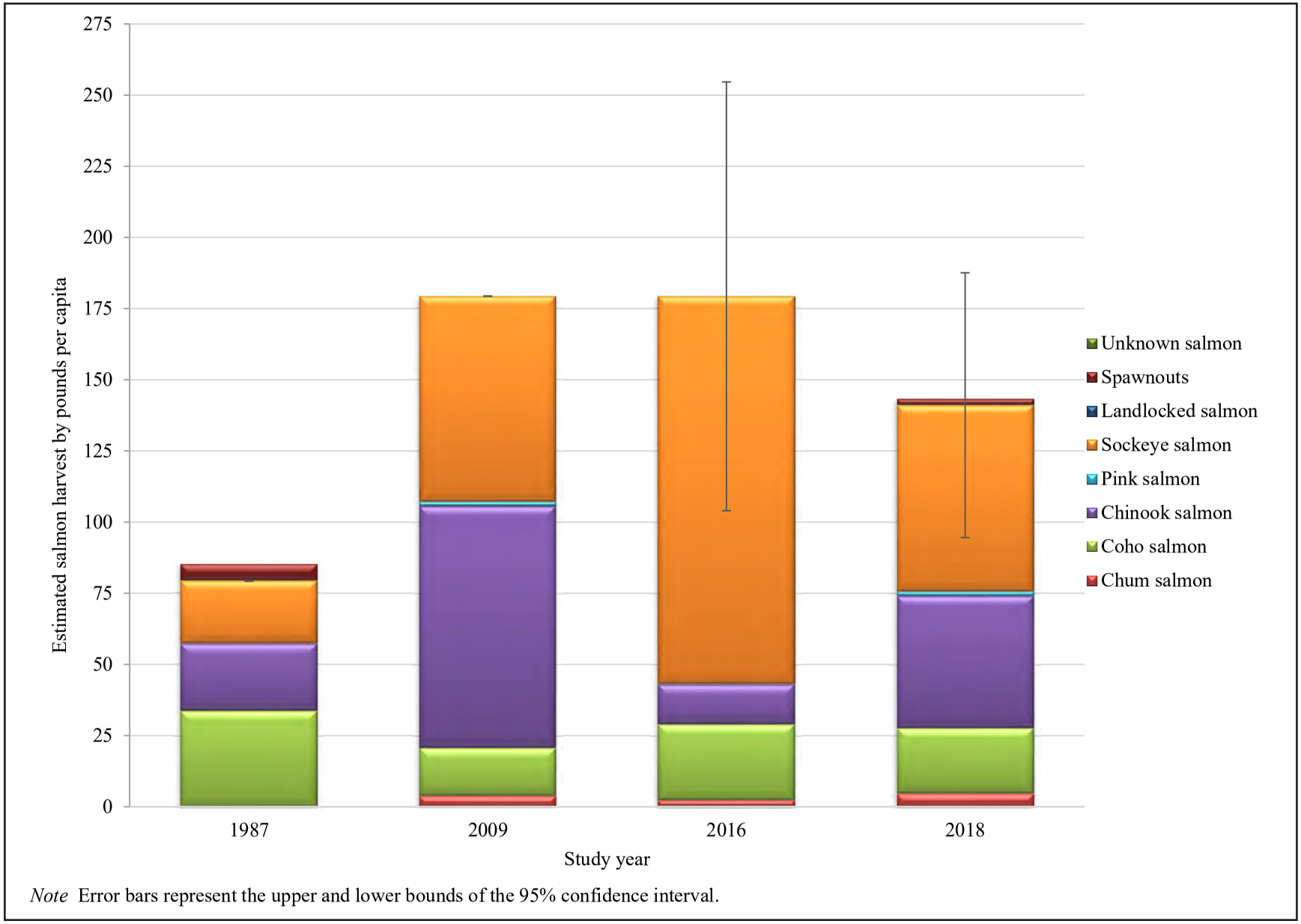
a. Confidence interval percentages (CIP) are not available from the source Reedy-Maschner and Maschner (2012:77–78).



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

Figure 2-40.–Composition of harvest in pounds per capita, by resource category, Port Heiden, 1987, 2009, and 2018.

The most significant harvest composition decrease occurred for large land mammals, which contributed 61% (25,740 lb) of the harvest in 1987, 16% (4,311 lb) of the harvest in 2009, and 37% (11,511 lb) of the harvest in 2018 (Table 2-30). The per capita harvest weight for large land mammals decreased by 139 lb between the 1987 and 2018 study years, changing from 250 lb per capita in 1987 to 111 lb per capita in 2018 (Figure 2-40; Table 2-30). However, the per capita harvest weight increased by 64 lb between the 2009 and 2018 study years for large land mammals, changing from 47 lb per capita in 2009 to 111 lb per capita in 2018. The decrease following 1987 and the ensuing increase from 2009 to 2018 likely is indicative of the changes in caribou harvesting opportunities. When comparing large land mammal harvest data between the eight study years (1987, 1991, 1994, 1995, 1996, 2009, 2016, and 2018) when large land mammal harvest amounts were estimated, 1995 is the year with the highest overall harvest (41,284 lb, or 315 lb per capita) (Figure 2-42; Table 2-32). Caribou accounted for 80% or more of the large land mammal harvest weight in all study years, with the exceptions of 2009, when moose accounted for approximately one-half (50%) of the large land mammal harvest, and 2018, when moose accounted for slightly less than one-half (43%) of the large land mammal harvest weight. No bear harvests were reported in the two most recent study years (2016 and 2018); however, portions of the large land mammal harvest weight in 1994 (829 lb, or 8 lb per capita), 1995 (1,072 lb, or 8 lb per capita), 1996 (495 lb, or 4 lb per capita), and 2009 (1,384 lb, or 15 lb per capita) consisted of brown bear (Table 2-32). The absence of bear harvests likely corresponds with the liberalization of caribou hunting opportunities for this community, according to Reedy-Maschner and Maschner (2012:84): when caribou hunting was closed, Port Heiden residents began hunting brown bears for food.



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

Figure 2-41.–Comparison of estimated per capita harvests of salmon, by species, Port Heiden, 1987, 2009, 2016, and 2018.

Table 2-31.–Comparison of estimated total and per capita harvests of salmon, by species, Port Heiden, 1987, 2009, 2016, and 2018.

	Estimated harvest in pounds usable weight							
	1987				2009			
Resource	Total	Per capita	Percentage of harvest	CIP	Total	Per capita	Percentage of harvest	CIP[a]
Salmon	**8,766.0**	**85.1**		**0.0%**	**16,315.4**	**179.4**		**NA**
Chum salmon	0.0	0.0	0.0%		357.2	3.9	2.2%	NA
Coho salmon	3,468.0	33.7	39.6%	0.0%	1,531.4	16.8	9.4%	NA
Chinook salmon	2,422.0	23.5	27.6%	0.0%	7,716.3	84.8	47.3%	NA
Pink salmon	10.0	0.1	0.1%	0.0%	141.7	1.6	0.9%	NA
Sockeye salmon	2,266.0	22.0	25.8%	0.0%	6,568.7	72.2	40.3%	NA
Landlocked salmon	9.0	0.1	0.1%	0.0%				
Spawnouts	592.0	5.8	6.8%	0.0%				
Unknown salmon	0.0	0.0	0.0%					NA

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Table 2-31.–Continued.

	Estimated harvest in pounds usable weight							
	2016				2018			
Resource	Total	Per capita	Percentage of harvest	CIP	Total	Per capita	Percentage of harvest	CIP
Salmon	**18,812.1**	**179.3**		**42.0%**	**14,855.6**	**143.3**		**32.5%**
Chum salmon	251.6	2.4	1.3%	70.7%	493.5	4.8	3.3%	50.8%
Coho salmon	2,796.5	26.7	14.9%	30.3%	2,380.2	23.0	16.0%	27.1%
Chinook salmon	1,465.9	14.0	7.8%	57.2%	4,808.5	46.4	32.4%	50.7%
Pink salmon	17.7	0.2	0.1%	57.7%	164.1	1.6	1.1%	44.8%
Sockeye salmon	14,280.5	136.1	75.9%	52.1%	6,783.8	65.4	45.7%	29.5%
Landlocked salmon					0.0	0.0	0.0%	
Spawnouts					225.5	2.2	1.5%	78.7%
Unknown salmon	0.0	0.0	0.0%	0.0%	0.0	0.0	0.0%	

Sources For 2009, Reedy-Maschner and Maschner (2012); for 2018, ADF&G Division of Subsistence household surveys, 2019; for other previous study years, ADF&G Division of Subsistence Community Subsistence Information System (CSIS), accessed 2019.

Note Blank cells indicate no data are available.

a. Confidence interval percentages (CIP) are not available from the source Reedy-Maschner and Maschner (2012:77–78).

Both historically and contemporarily, birds and egg have made up a small portion of the overall harvest: this resource category composed approximately 3% of the overall resource harvest in 1987, 2009, and in 2018 (Table 2-30). Though harvests were relatively small, bird and egg harvests did decline between the study years. In 1987, the bird and egg per capita harvest was approximately 13 lb, in 2009 the per capita harvest was 10 lb, and in 2018 the per capita harvest was 8 lb (Figure 2-40; Table 2-30). Similarly to birds and eggs, nonsalmon fish made up a small portion of the overall harvest weight in the three study years: nonsalmon fish composed less than 3% of the overall resource harvest in 1987, less than 5% in 2009, and approximately 1% of the resource harvest in 2018. The nonsalmon fish harvest weight increased slightly between 1987 and 2009 but declined in 2018. In 1987, the nonsalmon fish per capita harvest was approximately 12 lb, in 2009 the per capita harvest was 14 lb, and in 2018 the per capita harvest was 3 lb.

The overall harvest weight of marine mammals increased from 1,543 lb in 1987, to 3,746 lb in 2009, but decreased significantly to 145 lb in 2018 (Table 2-30). In 1987, the per capita harvest of marine mammals was 15 lb, in 2009 the per capita harvest weight was 41 lb, and then decreased to approximately 1 lb per capita for the 2018 study. Marine invertebrates contributed 2% (707 lb) to the harvest in 2018 compared to less than 1% (110 lb) of the harvest in 2009, and 4% (1,824 lb) of the harvest in the 1987 study year. In 1987, the per capita harvest of marine invertebrates was 18 lb, and it decreased to 1 lb during 2009, and, at 7 lb per capita, was still lower in 2018 than in 1987. Following large land mammals, the largest per capita harvest decreases were for marine mammals and marine invertebrates, respectively, although for both of these categories there was not a large reduction in the proportion that these resources contributed to the overall harvest composition.

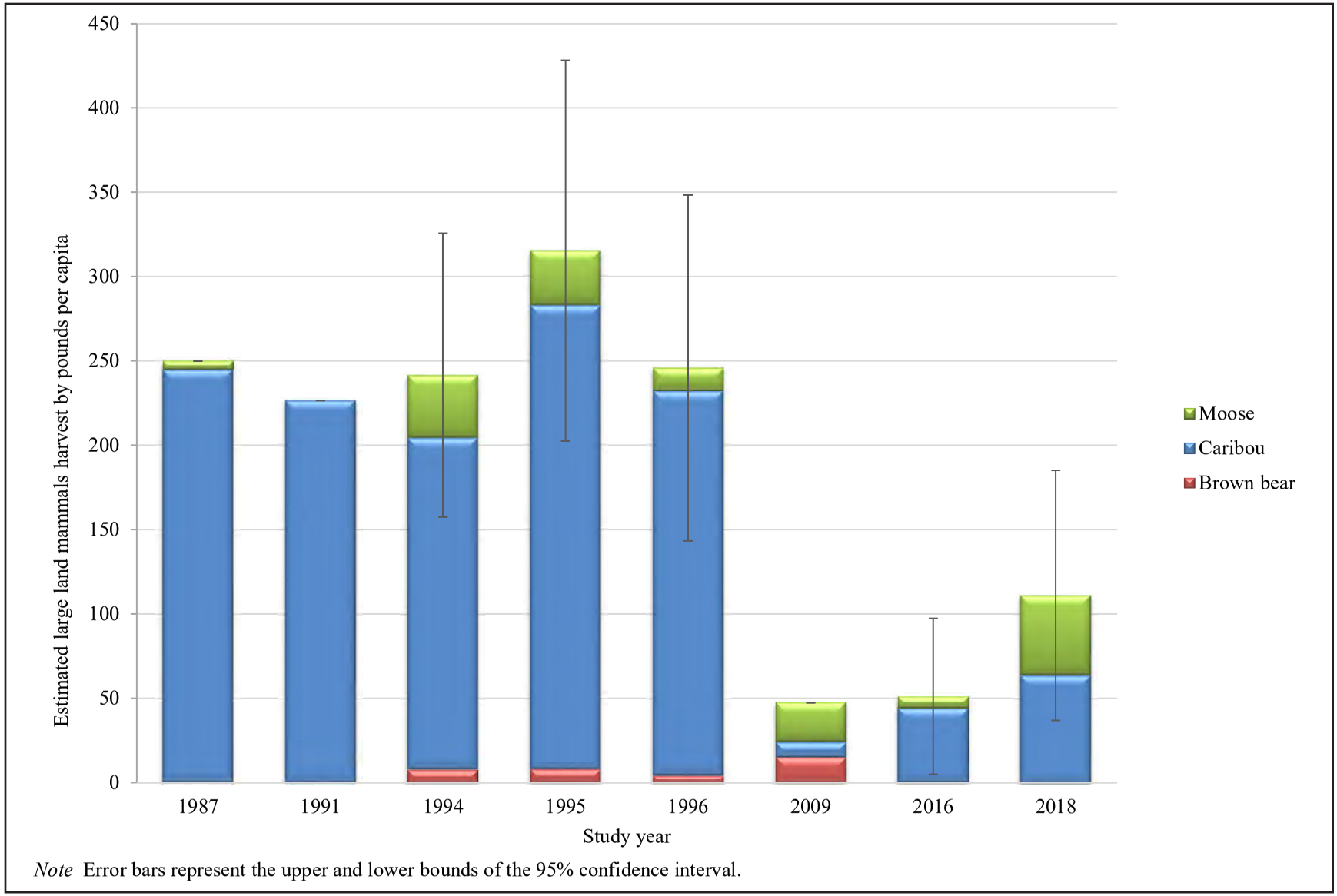

Figure 2-42.–Comparison of estimated per capita harvests of large land mammals, by species, Port Heiden, 1987, 1991, 1994–1996, 2009, 2016, and 2018.

Table 2-32.–Comparison of estimated total and per capita harvests of large land mammals, by species, Port Heiden, 1987, 1991, 1994–1996, 2009, 2016, and 2018.

	Estimated harvest in pounds usable weight											
	1987				1991				1994			
Resource	Total	Per capita	Percentage of harvest	CIP	Total	Per capita	Percentage of harvest	CIP	Total	Per capita	Percentage of harvest	CIP
Brown bear	0.0	0.0	0.0%	0.0%					829.0	7.8	3.2%	100.0%
Caribou	25,200.0	244.7	97.9%	0.0%	26,063.0	226.6	100.0%	0.0%	20,841.0	196.6	81.3%	28.0%
Moose	540.0	5.2	2.1%	0.0%					3,949.0	37.2	15.4%	57.0%

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Table 2-32.–Continued.

	Estimated harvest in pounds usable weight											
	1995				1996				2009			
Resource	Total	Per capita	Percentage of harvest	CIP	Total	Per capita	Percentage of harvest	CIP	Total	Per capita	Percentage of harvest	CIP[a]
Brown bear	1,072.0	8.2	2.6%	125.0%	495.0	4.3	1.8%	116.0%	1,384.1	15.2	32.1%	NA
Caribou	35,954.0	274.7	87.1%	30.0%	26,182.0	227.9	92.7%	38.0%	790.9	8.7	18.3%	NA
Moose	4,258.0	32.5	10.3%	62.0%	1,571.0	13.7	5.6%	80.0%	2,135.5	23.5	49.5%	NA

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Table 2-32.–Continued.

	Estimated harvest in pounds usable weight							
	2016				2018			
Resource	Total	Per capita	Percentage of harvest	CIP	Total	Per capita	Percentage of harvest	CIP
Brown bear	0.0	0.0	0.0%	0.0%	0.0	0.0	0.0%	0.0%
Caribou	4,639.7	44.2	86.5%	26.3%	6,611.1	63.8	57.4%	16.4%
Moose	726.2	6.9	13.5%	103.7%	4,900.0	47.3	42.6%	38.3%

Sources For 2009, Reedy-Maschner and Maschner (2012); for 2018, ADF&G Division of Subsistence household surveys, 2019; for other previous study years, ADF&G Division of Subsistence Community Subsistence Information System (CSIS), accessed 2019.

a. Confidence interval percentages (CIP) are not available from the source Reedy-Maschner and Maschner (2012:77–78).

Current and Historical Harvest Areas

As noted above, mapping occurred for all wild resource harvest and use areas during the 2018 survey. However, past surveys did not collect harvest and use area data for a comprehensive list of resources like the 2018 survey; the 2016 harvest survey was designed to collect salmon and large land mammal map data only, and the 1987 survey was designed to collect caribou harvest and use areas used by Port Heiden residents in 1963–1983. Therefore, caribou harvest and use areas will be discussed below, drawing from Fall and Morris (1987)[10] and from data collected for 2016 and this study (2018). For salmon, the discussion of harvest and use areas will be based on data obtained for study years 2016 and 2018 only, including fishing locations by gear type that were published in Hutchinson-Scarbrough et al. (2020:104–106).

This will be followed by a discussion regarding changes in access to wild resource harvest and use areas, which is based on information obtained through key respondent interviews, the 2018 harvest survey, and through participant observation.

Caribou Harvest and Use Locations

Areas used for caribou hunting in 2016 and 2018 were a small portion of the area used historically (1963–1983) (Figure 2-43). From 1963–1983, Port Heiden residents used a large and expansive area for harvesting caribou on the Alaska Peninsula. The range of hunting during this 20-year period encompassed approximately 1,800 mi^2. The northern boundary for caribou hunting by community members was located on the south side of the Ugashik River, and the boundary extended as far south as Fraction Creek, which is west of Mount Veniaminof. From 1963–1983, caribou search and harvest areas extended east across the Alaska Peninsula, generally ending eastward at the base of mountains that make up the Aleutian Range.

Caribou search and harvest areas in 2016 and 2018 occurred within a closer proximity to the community of Port Heiden than the areas used from 1963–1983. The approximate range of harvest in 2016 was 140 mi^2, and the majority of the area was concentrated north of the community along the coast as far north as Hook Lagoon. The furthest south where caribou hunting occurred in 2016 was in the area around Barber Creek. Though 2018 caribou search and harvest areas were similar to findings from the 2016 survey, the search and harvest range did increase in 2018 when compared to the 2016 range. The range of search and harvest areas in 2018 encompassed approximately 260 mi^2. The 2018 caribou search and harvest areas included lands south of Hook Lagoon and along Reindeer Creek (known locally as North River); southeast of Port Heiden near Barbara Creek and Birthday Creek; and near the Meshik River southeast of the Aniakchak National Monument.

As discussed in Chapter 1, the Northern Alaska Peninsula caribou herd peaked around 20,000 animals in 1984, and then declined until the herd numbers were below management goal levels resulting in regulatory changes to caribou hunting. The first regulatory action occurred in 1999, when the caribou hunt became a Tier II permit hunt, and after continued declines in caribou numbers, both the state and federal hunts closed in 2005. The amount of time when caribou hunting was closed may partly account for the change in Port Heiden residents' caribou search and harvest area range. As one key interview respondent put it, "For caribou everyone's just learning again. It's almost like it was taken out of our DNA almost." Additionally, other reasons for a change in caribou hunting areas may be linked to changes in weather patterns. According to elders and expert caribou hunters from Port Heiden, in the past, frozen rivers provided access to caribou hunting areas throughout the Alaska Peninsula. However, since the Tier II permit hunt opened in 2016, many of the rivers that hunters traditionally used for winter travel have not frozen adequately enough for safe passage to caribou hunting grounds. Many Port Heiden community members commented on this change in access to caribou hunting grounds.

10. Note that Fall and Morris (1987:54) published harvest and use areas used by Port Heiden residents in 1963–1983; also, those spatial data were collected for another project, and the mapping methods were described in Wright et al. (1985:9–12,)

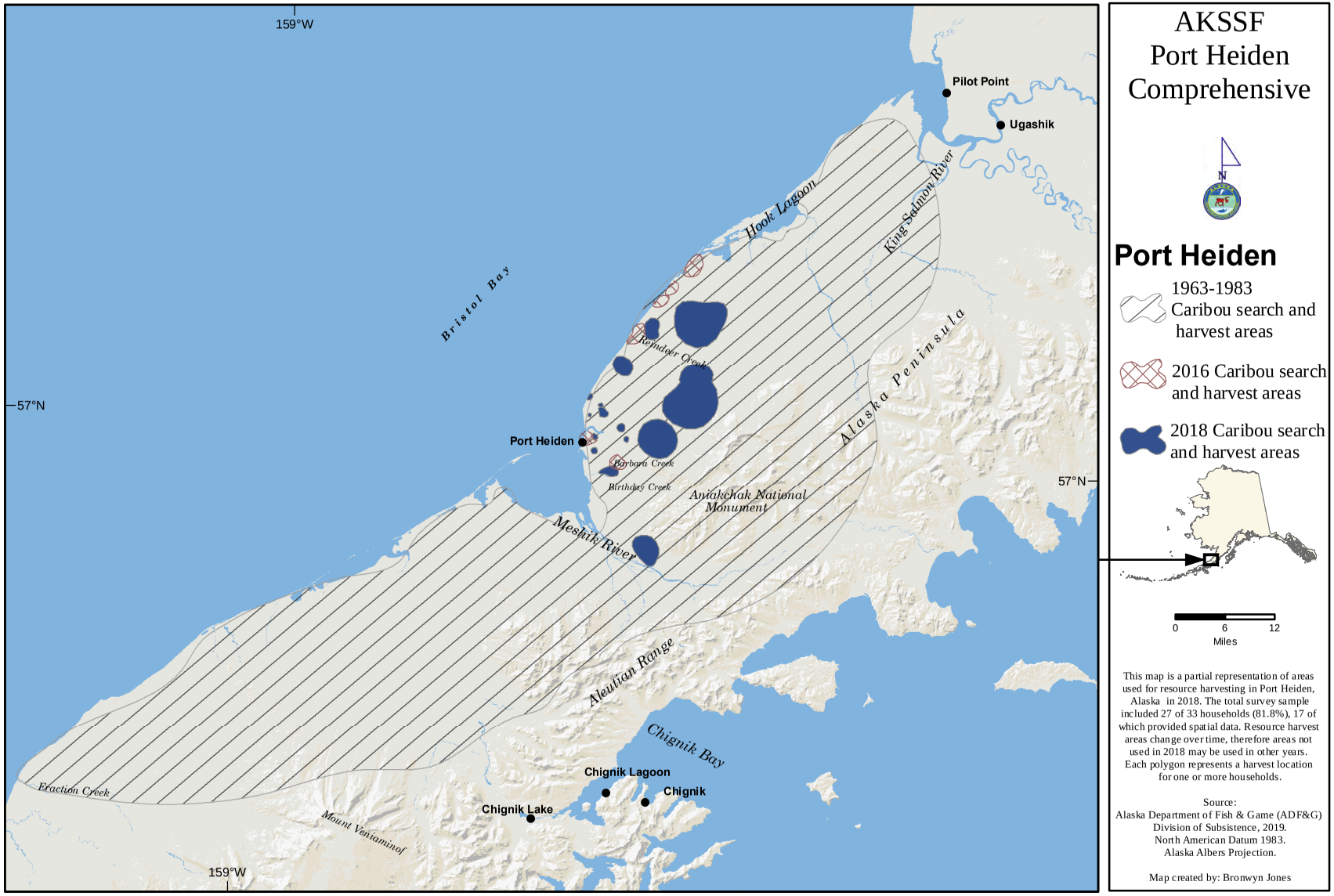

Figure 2-43.–Search and harvest locations, caribou, Port Heiden, 1963–1983, 2016, and 2018.

Reopening caribou hunting was important for reestablishing traditional and cultural practices that were at risk of being lost during the closure. Port Heiden community members explained that hunting opportunities for other large mammals such as moose could not replace caribou for several reasons. Though many people expressed gratitude that they had an alternative in moose, it was noted that caribou is a traditional subsistence food source for consumption and for trade and that having a variety in meat sources is highly valued by community members. According to one key respondent, "You can get moose, but it's not good all the time. You don't want to live on it as a staple every night. We like caribou, more so caribou people around here."

Many Port Heiden residents expressed that the overall food security of community households improved with the reinstatement of a caribou hunting opportunity, and indicated that the full, mixed economy was restored in the community when caribou hunting opened. Allowing caribou hunting helped reduce pressure on moose and lowered food costs and allowed residents to use the money previously spent on store-bought food to purchase different goods and services.

Reestablishing caribou hunting also regenerated important learning, sharing, and trading networks within the community and with other communities. Port Heiden residents explained that enough people are still around and available to help bestow their caribou hunting and processing wisdom upon the younger generation whose members had yet to experience caribou hunting due to the regulatory closure. Regarding the transmission of caribou hunting knowledge, one key respondent explained:

> "… Tier II caribou hunts closed and hunting was a lost art. They [Port Heiden youth] didn't know how to hunt, where to go, how to process. We're lucky that hunt came back, we were able to get the young people involved. All they needed were a couple years and they were able to learn. You never forget it. You take care of the herd and they continue to come back. The herd will be here forever. It was almost a lost art."

Salmon Harvest and Use Locations

Salmon search and harvest areas near the community of Port Heiden were consistent between study years 2016 and 2018 (Figure 2-44). In both years, the majority of salmon search and harvest locations were grouped around beaches near Port Heiden and at Reindeer Creek (known locally as North River). Fishing for coho and sockeye salmon with gillnet and rod and reel occurred in Reindeer Creek; and, in both years, rod and reel fishing for coho salmon occurred along the shore of Bristol Bay several miles north of the mouth of Reindeer Creek.

Set gillnets were also used on the beaches near the old village site near Goldfish Lake in both years (Plate 2-1). Gillnets were also used for drifting in Port Heiden and in the mouth of the Meshik River. In both study years salmon were harvested from sections that are close together within Barbara Creek. In 2016, other gear was used at the Barbara Creek location; according to survey respondents, this method was "hands"—one coho salmon was harvested using hands by one household, and five coho salmon were harvested by another household whose members also used hands—while in 2018 respondents reported using a gillnet to harvest spawned-out sockeye salmon (Hutchinson-Scarbrough et al. 2020:92). In both years, Chinook salmon were harvested using a drift gillnet at the mouth of the Meshik River.

Salmon search and harvest area variation occurred between the two study years in regard to non-locally harvested salmon. In 2016, Port Heiden households reported harvesting salmon in three areas outside of the community: on the beach near the community of Naknek, along Ugashik Bay north of the community Pilot Point, and on the west side of Chignik Lake (Hutchinson-Scarbrough et al. 2020:105). In 2018, the only reported salmon search and harvest area outside of Port Heiden was in Gastineau Channel, near Juneau located in Southeast Alaska (Figure 2-44).

Photo by Bronwyn Jones, ADF&G

Plate 2-1.–A set gillnet awaiting the incoming tide near the old village site, June 2018.

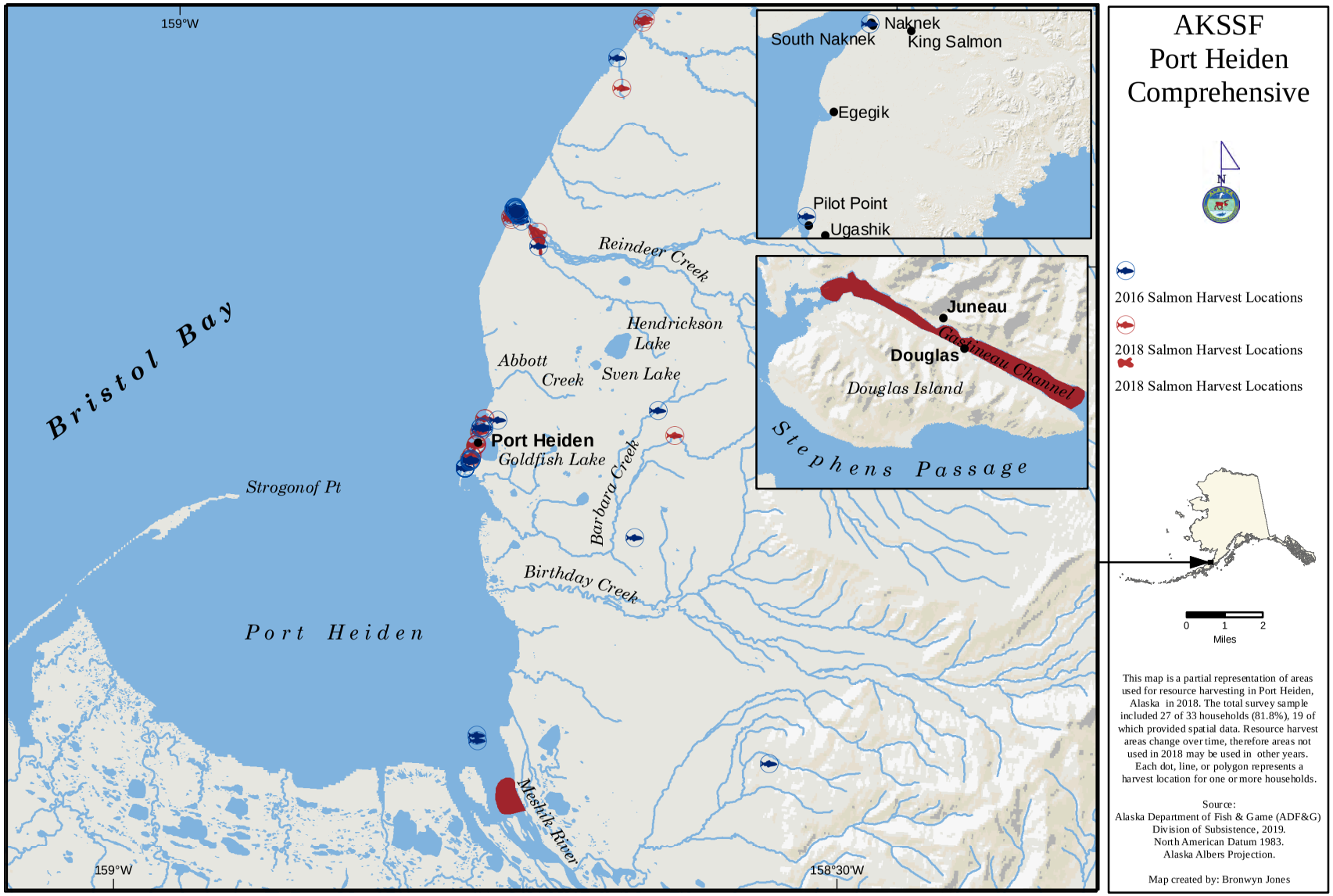

Figure 2-44.–Search and harvest locations, salmon, Port Heiden, 2016 and 2018.

Coastal Erosion and Access to Subsistence Harvest and Use Areas

Widespread erosion along the coastline near Port Heiden continues to be concerning for Port Heiden households. As noted above, the entire community had to relocate inland as a result of coastal erosion in the 1980s; today the land where the old village was located continues to shrink each year (Plate 2-2).

According to one Port Heiden key respondent, "It's been dynamic, it all comes down to our erosion. It changed the complexion of this whole bay." A recurring comment made during the household surveys was that coastal erosion has changed the landscape surrounding Port Heiden so drastically that access to certain areas has become difficult and entire subsistence use areas have disappeared as a result of erosion. Community members are not only concerned about the erosion close to the community, but they also have observed significant erosion for many miles north and south of Port Heiden along most of the coastline of the southern Aleutian Peninsula (Plate 2-3).

Gull Island

Multiple people cited the disappearance of Gull Island, which used to be located directly offshore from the old village site near Goldfish Lake, as a major negative factor to subsistence resource access due to coastal erosion. Up until its disappearance less than 10 years ago, Gull Island was a popular location for gathering seagull eggs. One respondent explained, "We used to go out to the islands and get seagull, duck, and goose eggs. The islands washed away. That was a blast, we looked forward to that every year." According to community members, most people from Port Heiden stopped collecting gull eggs altogether as a result of Gull Island "washing away." One key respondent explained that with the disappearance of Gull Island, most people in the community were unable to access areas for gathering eggs, and many people stopped pursuing these subsistence resources altogether. As one key respondent phrased it, "Getting eggs … no not unless you've got an airplane, then you can get to other islands."

Goldfish Lake

In April 2019, while project staff where in Port Heiden for survey administration, community concerns regarding the future of Goldfish Lake were high. The coastline that separated Goldfish Lake from the ocean was rapidly eroding (Plate 2-4).

According to multiple respondents, Goldfish Lake was an important body of water for this community. Port Heiden community members used this lake to store their skiffs during the summer months, to access certain subsistence resources such as Chinook salmon in the Meshik River, marine invertebrates along the coast, and for marine mammal hunting. In addition, local hunting guides used the lake to land float planes throughout the year. When project staff retuned to Port Heiden for the community review meeting in November 2019, Goldfish Lake had drained (Plate 2-5). Community members reported noticing the water beginning to flow out of the lake in early November, and it took two days for the lake to completely drain into the ocean. According to one respondent at the community review meeting in November, "Now that the lake is gone, the old village is even further from what it used to be, and we will have to adjust, as we always do, find new ways to get to the salmon and new places to set our nets."

Photo by Bronwyn Jones, ADF&G

Plate 2-2.–An example of coastal erosion at the old village site, June 2018.

Photo by Bronwyn Jones, ADF&G

Plate 2-3.–A snapshot of the beach approximately three miles south of Hook Lagoon.

Photo by Zayleen Kalalo, ADF&G

Plate 2-4.–ADF&G researcher Bronwyn Jones walking along eroding coastline that separates Goldfish Lake from the ocean, April 2019.

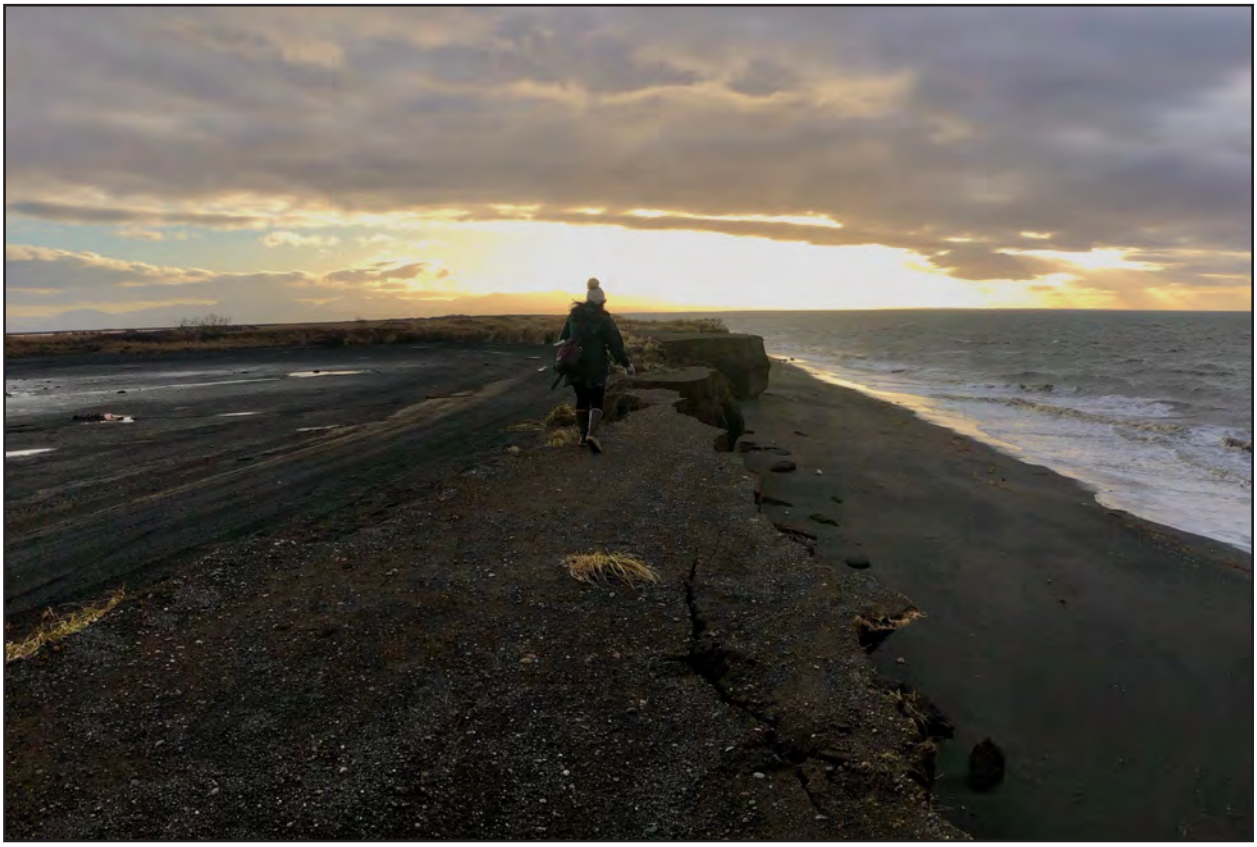

Photo by Zayleen Kalalo, ADF&G

Plate 2-5.–ADF&G researcher Bronwyn Jones walking along eroding coastline that previously separated Goldfish Lake from the ocean, November 2019.

Survey Responses to Environmental Change Topics

During the 2018 household surveys, researchers asked respondents three questions regarding environmental change. These survey questions were designed for survey respondents to answer the questions with a "yes," "no," or "I do not know" response, and each question included an option to record open-ended responses for elaborating answers. This section discusses responses to those questions that are depicted in Table 2-33.

Of the 27 responding households, 93% of the households answered yes to the question, "Do you think environmental change is significantly altering the landscape near Port Heiden?" and the remaining 7% answered no to this question. Of the 25 households that answered yes, 22 cited examples of coastal erosion in their open-end responses to this question. The other three households that said yes cited an increase in temperatures and overall drier weather conditions in recent years.

When asked, "Do you think environmental change has affected your household's ability to obtain subsistence resources?" 12 households (44%) responded yes to this question, and 15 households (56%) responded no. There was a variety of open-ended responses given by those households that indicated yes to this question. Some of the elaborations for this question included comments about erosion such as, "We used to have barrier islands right outside of the community to get gull eggs, it washed away." Another household stated, "It's harder to fish now because we are blocked off from part of the beach due to changing topography, we can't get over to it [fishing areas] now." And an additional comment offered by a survey respondent was, "It's harder to get subsistence food, we get less subsistence food because of beach erosion, we can't get our salmon net where we usually put it. Have to travel further." Other responses to this question related to topics such as warming conditions, such as the following three survey responses: "No snow, we can't go anywhere to hunt in the winter"; "We used to be able to go out on snow machines to get caribou, no snow now"; and "Water temperatures may be affecting the fish; we've just seen less."

Regarding the question, "Do you feel Port Heiden can weather environmental change?" almost all (96%, 26 households) of the responding households responded yes to this question, while 4% (1 household) indicated no. Some of the elaborations for this question include comments such as, "It was sad to relocate from the old village due to erosion, but we will be OK." Other comments mentioned Port Heiden's resilience and important sense of community pride.

Table 2-33.–Household responses to community concern questions, Port Heiden, 2018.

Survey question	Valid responses	Response							
		Yes		No		Do not know		Missing	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Do you think environmental change is significantly altering the landscape near Port Heiden?	27	25	92.6%	2	7.4%	0	0.0%	0	0.0%
Do you think environmental change has affected your household's ability to obtain subsistence resources?	27	12	44.4%	15	55.6%	0	0.0%	0	0.0%
Do you feel Port Heiden can weather environmental change?	27	26	96.2%	1	3.7%	0	0.0%	0	0.0%

Source ADF&G Division of Subsistence household surveys, 2019.

Subsistence Salmon Permits and Local Perceptions

As explained in Chapter 1, by regulation Port Heiden subsistence fishers are required to obtain a household permit from ADF&G prior to subsistence fishing. Permits are not available in-person in Port Heiden. To obtain a subsistence permit, Port Heiden residents must request one from ADF&G area biologists in the Kodiak office by phone, or, in the summer months, from the Sand Point office where the area managers work in the summer. Permits are also available to pick up at the ADF&G Port Moller field office, which is located 100 miles south of the community. For those who do obtain a subsistence permit, the following season a new permit will be mailed to the household's post office box automatically as long as the permit from the prior year was returned to ADF&G.

From 1985–2018, an average of eight permits were issued for Port Heiden and an average of six permits were returned (Table 2-34). In 2018, four Port Heiden households obtained a subsistence fishing permit, and two (50%) of the households returned their permit. Therefore, in 2019, only two households automatically received a subsistence permit. During this study, Port Heiden households shared a consensus opinion that fisheries management currently being based out of Kodiak was problematic for obtaining a subsistence fishing permit. When asked, some respondents did not know what subsistence salmon permits were, while others knew the purpose of subsistence salmon permits, but did not know how to obtain one; and several respondents did know how to obtain a subsistence salmon permit, but explained it was cumbersome to obtain a permit from the Kodiak office. Survey respondents remarked that there is lack of communication from ADF&G about the subsistence permits, and there is a need for public education regarding this program. Several respondents suggested information should be provided to the tribal council for distribution to community members, and others suggested that subsistence permits should be administered by a local vendor, NVPH, or that the King Salmon or Dillingham ADF&G offices should administer the permit program for their community instead of the Kodiak office.

Several Port Heiden residents and NVPH employees expressed concerns that low participation in the subsistence permit program is resulting in unrepresentative salmon harvest amount estimates for this community. Based on those concerns, in 2016, NVPH coordinated with the ADF&G Kodiak office in an attempt to improve subsistence salmon harvest reporting. At the end of the 2016 fishing season, NVPH contracted two local community members to collect subsistence salmon harvest information from Port Heiden households. The data were compiled in the community, sent to the Kodiak ADF&G office, input by ADF&G into the subsistence salmon harvest database, and an annual salmon harvest for Port Heiden for 2016 was estimated. The 2016 estimated harvest data from permits resemble the harvest estimates from the 2018 survey data, suggesting the effort to collect permit harvest data in 2016 did improve the subsistence estimates and provided a more accurate portrayal of Port Heiden subsistence salmon harvest amounts for 2016. As a result of the 2016 coordinated effort, the following year (2017), ADF&G automatically issued permits to the households from the previous year that had returned a permit. However, a coordinated post-season effort to collect the permits was not carried out in 2017 or 2018, resulting in unrepresentative harvest estimates in the years that followed; in 2017, 24 permits were issued and 6 permits returned (Table 2-34). According to permit returns for 2018, Port Heiden residents harvested a total of 180 salmon with subsistence nets. According to the permit returns, of those 180 salmon that were harvested in 2018, an estimated 104 were Chinook salmon, 12 were sockeye salmon, 62 were coho salmon, and 2 were chum salmon. When compared to the 2018 harvest survey data and resulting harvest estimates (2,457 total salmon harvested with subsistence nets: 526 Chinook salmon, 1,574 sockeye salmon [including spawnouts], 214 coho salmon, 93 chum salmon, and 49 pink salmon) it is clear that in fact the 2018 subsistence harvest permit data did underrepresent salmon harvest amounts significantly (Table 2-13).

Table 2-34.–Subsistence salmon harvest estimates from returned permits, by species, Port Heiden, 1985–2018.

	Permits		Estimated harvest of					
Year	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	**Total**
1985	6	4	9	176	0	0	0	**185**
1986	4	4	28	282	0	0	0	**310**
1987	10	7	66	193	229	36	0	**524**
1988	10	9	69	268	134	105	23	**599**
1989	4	4	7	222	28	4	1	**262**
1990	3	3	21	107	20	27	0	**175**
1991	6	6	39	775	25	120	3	**562**
1992	3	3	21	104	10	25	0	**160**
1993	3	2	80	71	0	0	0	**151**
1994	2	1	24	196	0	50	0	**270**
1995	3	3	50	119	160	0	0	**329**
1996	4	4	22	221	51	1	0	**295**
1997	4	3	2	24	40	0	0	**66**
1998	3	3	26	100	100	0	0	**226**
1999	3	3	25	245	60	0	0	**330**
2000	3	2	6	0	21	0	0	**27**
2001	3	3	64	132	50	10	0	**256**
2002	3	3	120	34	50	6	0	**210**
2003	3	3	101	7	40	6	0	**154**
2004	3	3	60	80	0	0	0	**140**
2005	3	2	0	375	0	0	0	**375**
2006	2	2	0	0	30	0	0	**30**
2008	28	28	182	1,023	813	62	33	**2,113**
2009	29	29	206	1,157	69	0	0	**1,432**
2010	28	13	142	1,704	222	75	34	**2,178**
2011	12	5	10	2,448	0	0	0	**2,458**
2012	5	4	29	193	64	55	0	**340**
2013	4	3	9	117	0	29	0	**156**
2014	2	2	4	51	0	35	0	**90**
2015	0	0	–	–	–	–	–	**–**
2016	27	27	131	656	360	11	17	**1,175**
2017	24	6	504	2,500	320	32	124	**3,480**
2018	4	2	104	12	62	2	0	**180**
Historical average (1985-2018)	**8**	**6**	**68**	**425**	**92**	**22**	**7**	**601**

Source ADF&G Division of Subsistence, Alaska Subsistence Fisheries Database (ASFDB) 2019 (accessed 2020).

Salmon Processing, Preservation, Storage, and Use

As in the past, during the 2018 study year Port Heiden residents processed and preserved salmon using a variety of methods; including freezing filets; additionally, some households continued the tradition of using rock salt to preserve a small portion of the salmon catch in buckets. Households that kept a portion of their commercially caught salmon for home use reported salting the sockeye salmon they kept as a preservation means because freezing during the commercial fishing season is not possible. Much of the salmon caught by subsistence means were cut into strips and smoked in smokehouses and were shared among extended families, while a portion of the salmon harvested were pressure cooked in glass jars or canned. Additionally, several households reported air drying spawned-out sockeye salmon in the fall, as well as freezing and smoking spawnouts.

Community Concerns Relating to Salmon

A recurring theme echoed by Port Heiden survey respondents in 2018 was regarding the intersection of Area M commercial fishing and local Port Heiden subsistence fishing. Many respondents voiced the perception that subsistence salmon catches are negatively affected by Area M fishing vessels. These Port Heiden residents further explained that the close proximity in which Area M boats are allowed to commercial fish near subsistence gillnets directly affects the amount of fish subsistence users catch; these respondents suggested a large portion of salmon near Port Heiden are intercepted by the Area M commercial fleet due to the location of the Area M boundary (Plate 2-6).

Most Port Heiden residents commercial fish in the Ugashik, Egegik, and Naknek-Kvichak districts, which are all located in Bristol Bay Area; therefore, many residents spend the summer fishing season away from the community of Port Heiden. Some survey respondents voiced concerns regarding non-local commercial fishermen coming into the community. Respondents cited occurrences of excessive litter during the commercial fishing season and expressed feeling less secure with the influx of strangers in the area.

In contemporary Port Heiden, some adults worry about the future interest of local youth continuing subsistence salmon fishing traditions. Several respondents perceived that fewer families were pursuing subsistence activities together in recent years. As one key respondent explained, “For subsistence out here, there’s only a handful of families that still go out.”

Photo by Bronwyn Jones, ADF&G

Plate 2-6.–ADF&G commercial fisheries regulatory marker denoted the Area M boundary near Reindeer Creek.

Additional Local Comments and Concerns

Following is a summary of local observations of wild resource populations and trends that were recorded during the surveys, key respondent interviews, and participant observation. 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.

Birds

Throughout the survey, interviews, and at the community review meeting local respondents conveyed their concerns about a decline in the ptarmigan population. Some residents attributed the decline to a lack of snow in recent years, which has made it harder for ptarmigans to blend into the environment, therefore making them an easy target for predators. Others mentioned an increase in the red fox populations and believe that the decline of ptarmigan is a cyclical phenomenon.

Marine Invertebrates

The decline of cockle and butter clam abundance near the community of Port Heiden was reported by many households during the study. Port Heiden residents traditionally have harvested these marine invertebrate species during extreme tides near the old village site; however, it was reported that in 2018 there were fewer resources available to harvest at this location (Plate 2-7). Additionally, many respondents reported a decrease in the number of large cockles available to harvest. According to community members, the decline in marine invertebrate abundance and size began approximately 10 years ago. An increase in sea otter abundance was cited as a possible cause by some residents. Other people suggested that the appearance of walruses may be linked to the decrease in local marine invertebrates, while others believed changes in the coastline due to erosion may be a contributing factor to changes in marine invertebrate populations.

Photo by Bronwyn Jones, ADF&G

Plate 2-7.–Port Heiden community members search for cockles and butter clams near the old village site, early June 2018

Photo by Zayleen Kalalo, ADF&G

Plate 2-8.–A group of walruses hauled out near Port Heiden, April 2019.

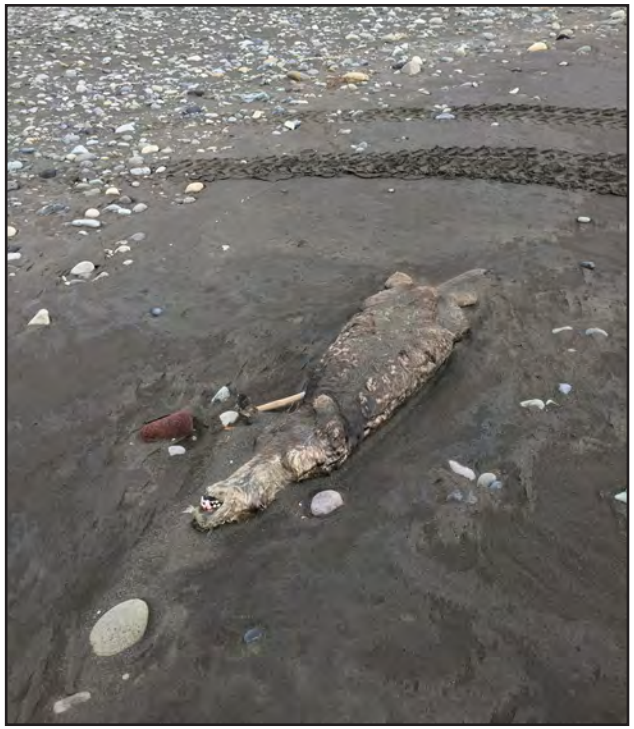

Photo by Bronwyn Jones, ADF&G

Plate 2-9.–A dead sea otter found on a beach near Port Heiden, June 2018

Marine Mammals

In 2017 and 2018 walruses began hauling out in large numbers approximately 20 miles northeast of Port Heiden (Plate 2-8). According to local residents, this is the first time that walruses have used this area to haul out in large numbers, and according to ADF&G biologist Bob Murphy, the stretch of flat beach where the walruses are hauling out is atypical topography for a walrus haul out.[11] Community members have theorized that the walruses are hauling out in this nearby area in search of new food sources and some are concerned that the presence of walruses in the area may further deplete marine invertebrates.

Community residents reported observing sea otters eating clams and cockles across from the old village site throughout the past decade; some people expressed concerns that marine invertebrates in this area were being depleted by sea otters. In 2018, several community members reported they had observed an unusually high amount of dead sea otters on the beach (Plate 2-9). One respondent theorized a sea otter flu was to blame for the high rate of mortality.

Vegetation

Multiple respondents observed changes in the seasonality of berries. Community members commented that berries were ripening earlier than in the past due to warmer and drier temperatures. Port Heiden residents also remarked that each year a different species of berry was much more abundant than any other; for example, during the 2018 study year, crowberries (known locally as blackberries) were the predominant berry, but, during the community review meeting in November 2019, it was reported that crowberries were scarce in 2019 but that lowbush cranberries were very abundant.

11. Avery Lill, "Walrus haul out near Port Heiden," *KDLG Public Radio,* May 3, 2018, https://www.kdlg.org/post/walrus-haul-out-near-port-heiden#stream/0 (accessed February 2020).

3. DISCUSSION AND CONCLUSIONS

This project had three principal objectives. In order to address the project objectives, research staff from the Division of Subsistence worked in collaboration with the Native Village of Port Heiden (NVPH) to conduct household surveys for the 2018 study year for all wild resources used for subsistence. In addition, researchers engaged in participant observation and conducted key respondent interviews to gather additional information about wild resource health, the subsistence salmon permit system, and how changes to the local environment may be affecting subsistence activities. The data gathered from time spent in Port Heiden were analyzed by project research staff and have been presented in this report. Each project objective and associated findings are summarized below, followed by a study conclusions and recommendations section.

Objective One: Document Subsistence Salmon and Other Wild Resources Harvest Amounts and Locations for Port Heiden Households for the 2018 Study Year

A major objective of this study was to document subsistence salmon harvest and use patterns; however, in addition to salmon, the Division of Subsistence updated harvest and use patterns for all subsistence resources used by Port Heiden residents in 2018. In Port Heiden, an estimated total of 30,789 lb, or 297 lb per capita, of wild resources were harvested in 2018 (Table 2-13). The community harvest by wild resource category in order of most to least was salmon (14,856 lb total, or 143 lb per capita), large land mammals (11,511 lb total, or 111 lb per capita), vegetation (2,375 lb total, or 23 lb per capita), birds and eggs (861 lb total, or 8 lb per capita), marine invertebrates (707 lb total, or 7 lb per capita), nonsalmon fish (313 lb total, or 3 lb per capita), marine mammals (145 lb total, or 1 lb per capita), and small land mammals (21 lb total, or less than 1 lb per capita).

For salmon specifically, of the total resource harvest, 46% was composed of sockeye salmon, followed by Chinook salmon (32%), coho salmon (16%), and smaller amounts of chum salmon (3%), spawning sockeye salmon (2%), and pink salmon (1%) (Figure 2-16). Salmon were shared by the majority of households during the study year: 70% of households gave away salmon, and 82% received salmon in 2018 (Table 2-13). During the survey, 44% of households reported using less salmon in 2018 than they did in previous years, 30% reported that they used more, and 22% reported using the same amount of salmon (Table 2-24). Reasons given for less salmon use included: family/personal reasons (25% of households that used fewer salmon), lack of equipment (17%), less sharing (17%), lack of effort (17%), did not need (17%), competition (17%), and regulations (8%) (Table 2-25).

An estimated 53% of the salmon harvest weight was caught using set gillnets in the subsistence fishery, 19% of the salmon harvest was harvested using subsistence drift gillnets, 16% of the salmon harvest was removed from commercial harvests for home use, 10% of the salmon harvest was caught using rod and reel, and the remaining 2% was taken using dip nets and other methods (Table 2-17). Salmon were harvested in several areas, including: along the coast approximately 10 miles north of the community, in Reindeer Creek (known locally as North River), along the beaches west of the community (near the old village site and Goldfish Lake), south of the community in Barbara Creek, further south in the Meshik River, and southwest of the community in Port Heiden bay (Figure 2-18). Additionally, Port Heiden residents reported harvesting salmon in Gastineau Channel, located near Juneau, in Southeast Alaska.

Objective Two: Evaluate the Current Subsistence Salmon Permit System and Make Recommendations for a Revised Harvest Monitoring Program Based on Study Findings

In 2018, many Port Heiden households shared a consensus opinion that public information about subsistence permits and the current options for obtaining a subsistence salmon permit are ineffective for Port Heiden community residents. Subsistence salmon permits are not available for in-person pick up in Port Heiden

nor are the permits available to obtain online: to obtain a permit, Port Heiden residents must request one from ADF&G area biologists by phone, and a permit is mailed to the community. Permits are available for pick-up at the ADF&G Port Moller field office; however, this is located 100 miles south of the community and is accessible only by plane or large boat. When asked, some Port Heiden residents did not know what subsistence salmon permits were, while others knew the purpose of subsistence salmon permits, but did not know how to obtain one; and several respondents did know how to obtain a subsistence salmon permit, but explained it was cumbersome to obtain a permit. Port Heiden respondents expressed concerns that low participation in the subsistence permit program is resulting in unrepresentative salmon harvest amount estimates for Port Heiden. The salmon harvest estimates based on two subsistence salmon permits returned for 2018 by Port Heiden and this study's household surveys differed by 3,058 fish (Table 2-34).

Objective Three: Record Port Heiden Residents' Observations and Local Traditional Knowledge Related to Local Wild Salmon Resources Available for Subsistence Harvest by Port Heiden Community Members

A total of eight key respondent interviews (KRIs) were conducted during this project. The major themes that emerged from the KRIs that related to subsistence salmon fishing were: 1) changes in access to subsistence salmon resources due to local environmental change, 2) effects of the Area M commercial fishery on subsistence fishing activities, and 3) youth participation in subsistence salmon fishing.

Regarding the first theme—access to subsistence resources due to local environmental change—KRI participants described widespread erosion along the coastline near Port Heiden, resulting in reduced access to certain subsistence use areas. One example to illustrate this phenomenon is the erosion near Goldfish Lake. Recently, coastal erosion destroyed the natural barrier wall between Goldfish Lake and the ocean, which caused the lake to drain. According to respondents, without Goldfish Lake, Port Heiden residents will no longer have a spot to anchor skiffs, which makes accessing areas such as the Meshik River to drift for salmon much more difficult. Other key respondents cited that the changing topography resulting from erosion has blocked off parts of the beach where some Port Heiden residents typically set their gillnets, making it challenging to subsistence fish in traditional areas. Also, according to the survey results, 93% of sampled Port Heiden households agreed that environmental change has affected their ability to obtain subsistence resources (Table 2-33).

For the second theme—the intersection of Area M commercial fishing and local Port Heiden subsistence fishing—many respondents voiced the perception that subsistence salmon catches are negatively affected by Area M commercial fishery boats. According to respondents, the proximity of subsistence gillnets and the locations where Area M fishermen are allowed to commercially harvest salmon directly affects the amount of fish subsistence users catch. These respondents suggested that a large portion of salmon near Port Heiden are intercepted by the Area M commercial fleet.

Regarding the third theme—youth participation in subsistence salmon fishing—key respondent interview participants mentioned that they worried about the future interest of local youth continuing subsistence salmon fishing traditions. According to KRIs, fewer families have pursued subsistence activities together in recent years. It was expressed that the lower family participation in subsistence activities seemed to be resulting in a lack of interest by youth, as well as a reduced opportunity for youth to learn about subsistence salmon fishing.

Recommendations

As discussed in Chapter 2, in the years in which NVPH did not collect and provide harvest data to ADF&G, low participation in the subsistence permit program resulted in inaccurate salmon harvest amount estimates for Port Heiden. Therefore, recommendations for improved harvest monitoring include:

- Establish an annual coordinated effort between NVPH and ADF&G to collect household subsistence salmon harvest data.

- Increase outreach by ADF&G to educate the community of Port Heiden on the importance of obtaining subsistence salmon permits and recording salmon harvests;
- Make subsistence salmon permits easily accessible for Port Heiden residents to obtain. Suggestions from the community for this recommendation include:
  - Modify the permitting process by establishing a permit vendor who lives in the community to issue permits;
  - Provide permits for NVPH to issue;
  - Issue permits from the Dillingham or King Salmon ADF&G offices in addition to the Kodiak office.

Conclusions

This study documented the continuing importance of subsistence harvesting and processing activities for the residents in Port Heiden. In 2018, all households in Port Heiden used at least two types of wild resource, coinciding with a high level (93% of households) of participation in harvesting efforts (Table 2-12). During the study year, the wild resource harvest composition by resource category consisted predominantly of salmon (48% of total wild resource harvest composition by weight) and large land mammals (37%), with much smaller amounts of vegetation, birds and eggs, marine invertebrates, nonsalmon fish, marine mammals, and small land mammals harvested, which illustrates reliance on a diverse breadth of resources (Figure 2-14). Furthermore, nine kinds of resources were used by 50% or more Port Heiden households, and 22 different resources were harvested by at least one household (Table 1-5; Table 2-12).

According to survey and interview respondents, the exchange of salmon and large land mammals was of critical importance for this community since many families and individuals were reliant upon salmon and large land mammals shared by other, high-harvesting households and detailed networks of exchange assisted with increasing the diversity and amounts of wild resources used by most residents (Hutchinson-Scarbrough et al. 2020). An estimated 82% and 85% of households received salmon and large land mammals, respectively (Table 2-13). Even when subsistence harvest activities were hampered by changes in the local environment, resource availability, restrictive regulations, lack of time or equipment, age, inability, and other restricting factors, most residents in Port Heiden expressed their preference for obtaining wild resources compared to food purchased in stores. Community members expressed that securing enough wild foods was important for their household food security and for continuing important cultural practices.

As demonstrated by the study findings, subsistence uses of wild resources link people to their past and are vital to the present health of this community. Community members from Port Heiden desire to continue harvesting and processing subsistence resources, not only for themselves, but also for their children and future generations. The intent of this report has been to provide information that will help Port Heiden residents maintain their goal of sustaining their subsistence way of life.

ACKNOWLEDGMENTS

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APPENDIX A—SURVEY FORM

COMPREHENSIVE SUBSISTENCE SURVEY

PORT HEIDEN, ALASKA

AKSSF PORT HEIDEN
COMPREHENSIVE

From April 1, 2018 to March 31, 2019

printed: 2019-04-12

This survey is used to estimate wild food harvests and to describe the role of subsistence in the local economy of your community. We will publish a short summary report that will be available to community members. We share this information with the Alaska Department of Fish and Game, 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:	283	283
INTERVIEWER #1:		
INTERVIEWER #2:		
INTERVIEW DATE:		
START TIME:		
STOP TIME:		
DATA CODED BY:		
DATA ENTERED BY:		
SUPERVISOR:		

photo by Gabriela Halas

NATIVE VILLAGE OF PORT HEIDEN
2200 JAMES STREET
PORT HEIDEN, AK 99549
907-837-2296

ALASKA DEPARTMENT OF FISH & GAME
DIVISION OF SUBSISTENCE
333 RASPBERRY ROAD
ANCHORAGE, AK 99518-1565
907-263-2353

HOUSEHOLD MEMBERS

HOUSEHOLD ID

First, I would like to ask about the people in your household, who are 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 April 1, 2018 and March 31, 2019, WHO were the head or heads of your household?

Is this person answering questions on this survey?		How is this person related to HEAD 1?	Is this person MALE or FEMALE?	Is this person an ALASKA NATIVE?	In what YEAR was this person born?	Where were parents living when this person was born?	How many years has this person lived in Port Heiden?	Did this person participate in a commercial fishery last year[1]? If YES, was this person a CAPTAIN, CREW, or both?	
ID #	*(circle)*	*(relation)*	*(circle)*	*(circle)*	*(year)*	*(AK city or state)*	*(number)*	*(circle)*	*(circle one or both)*
HEAD 1	Y N		M F	Y N				Y N	CAPT / CREW
1		*1*							
NEXT enter spouse or partner. If a household has a SINGLE HEAD, leave HEAD 2 row BLANK and move to PERSON 3.									
HEAD 2	Y N		M F	Y N				Y N	CAPT / CREW
2		*2*							
BELOW, enter children (oldest to youngest), grandchildren, grandparents, or anyone else living full-time in this household.									
PERSON 03	Y N		M F	Y N				Y N	CAPT / CREW
3									
PERSON 04	Y N		M F	Y N				Y N	CAPT / CREW
4									
PERSON 05	Y N		M F	Y N				Y N	CAPT / CREW
5									
PERSON 06	Y N		M F	Y N				Y N	CAPT / CREW
6									
PERSON 07	Y N		M F	Y N				Y N	CAPT / CREW
7									
PERSON 08	Y N		M F	Y N				Y N	CAPT / CREW
8									
PERSON 09	Y N		M F	Y N				Y N	CAPT / CREW
9									
PERSON 10	Y N		M F	Y N				Y N	CAPT / CREW
10									
PERSON 11	Y N		M F	Y N				Y N	CAPT / CREW
11									
PERSON 12	Y N		M F	Y N				Y N	CAPT / CREW
12									
PERSON 13	Y N		M F	Y N				Y N	CAPT / CREW
13									
PERSON 14	Y N		M F	Y N				Y N	CAPT / CREW
14									
PERSON 15	Y N		M F	Y N				Y N	CAPT / CREW
15									

PERMANENT HH MEMBERS: 01 **PORT HEIDEN: 283**

HOUSEHOLD PARTICIPATION

HOUSEHOLD ID

To continue our questions about people in your household, I would like to ask a few questions about participation in fish, wildlife, and plant harvesting activities…

Between April 1, 2018 and March 31, 2019

Did this person ….

PERSON ID# FROM PAGE 2	FISH		MARINE INVERTEBRATES		LARGE LAND MAMMALS		SMALL LAND MAMMALS		MARINE MAMMALS		BIRDS AND EGGS		PLANTS / BERRIES / WOOD	
	FISH FOR	PROCESS	HUNT	PROCESS	HUNT	PROCESS	HUNT / TRAP	PROCESS	HUNT	PROCESS	HUNT / GATHER	PROCESS	GATHER	PROCESS
ID #	*(circle)*	*(circle)*	*(circle)*	*(circle)*	*(circle)*	*(circle)*	*(circle)*	*(circle)*	*(circle)*	*(circle)*	*(circle)*	*(circle)*	*(circle)*	*(circle)*
HEAD 1	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
1														
HEAD 2	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
2														
PERSON 03	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
3														
PERSON 04	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
4														
PERSON 05	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
5														
PERSON 06	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
6														
PERSON 07	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
7														
PERSON 08	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
8														
PERSON 09	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
9														
PERSON 10	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
10														
PERSON 11	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
11														
PERSON 12	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
12														
PERSON 13	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
13														
PERSON 14	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
14														
PERSON 15	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
15														

PERMANENT HH MEMBERS: 01 **PORT HEIDEN: 283**

RETAINED COMMERCIAL HARVESTS: SALMON

HOUSEHOLD ID

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

IF household member(s) DID NOT participate in a commercial fishery last year[1], go to the SALMON HARVEST SECTION on page 7.

IF any household member(s) participated in a commercial fishery last year[1], continue on this page …

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

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

if keep is "yes"

Please estimate how many fish ALL MEMBERS OF YOUR HOUSEHOLD removed from commercial harvests for personal use during the last year.
Include COMMERCIALLY HARVESTED fish that members of this household gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If helping others, report ONLY THIS HOUSEHOLD'S share.

Read names below in blanks above	A COMM FISH?	B KEEP?	How many were removed for your OWN USE[2]? *number*	How many were removed to give to OTHERS, NOT incuding CREW? *number*	Units[3] *specify*	*comments*
CHINOOK SALMON	Y N	Y N			IND.	
113000001						
CHUM SALMON	Y N	Y N			IND.	
111000001						
SOCKEYE SALMON	Y N	Y N			IND.	
115000001						
PINK SALMON	Y N	Y N			IND.	
114000001						
COHO SALMON	Y N	Y N			IND.	
112000001						
UNKNOWN SALMON	Y N	Y N			IND.	
119000001						

Comments:

1 *"LAST YEAR" means between April 1, 2018 and March 31, 2019.*
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.*

COMMERCIAL FISHING: 03 **PORT HEIDEN: 283**

RETAINED COMMERCIAL HARVESTS: NONSALMON FISH

HOUSEHOLD ID

… Continued from previous page.

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

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

if keep is "yes"

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

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

Read names below in blanks above	A COMM FISH?	B KEEP?	How many were removed for your OWN USE?	How many were removed to give to OTHERS, NOT incuding CREW?	Units[3]	
			number	*number*	*specify*	*comments*
HALIBUT	Y N	Y N			LBS.	
121800001						
HERRING	Y N	Y N			GAL.	
120200001						
HERRING SAC ROE	Y N	Y N			GAL.	
120306001						
CAPELIN	Y N	Y N			GAL.	
120402001						
SEA RUN DOLLIES	Y N	Y N			IND.	
125006021						
SCULPIN (UNKNOWN)	Y N	Y N			IND.	
123099001						
STARRY FLOUNDER	Y N	Y N			IND.	
121406001						
SALMON SHARK	Y N	Y N			IND.	
123204001						
YELLOWFIN SOLE	Y N	Y N			IND.	
123606001						
PACIFIC (GRAY) COD	Y N	Y N			IND.	
121004001						

1 *"LAST YEAR" means between April 1, 2018 and March 31, 2019.*
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.*

COMMERCIAL FISHING: 03 **PORT HEIDEN: 283**

RETAINED COMMERCIAL HARVESTS: MARINE INVERTEBRATES

HOUSEHOLD ID

…. CONTINUED from previous page

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

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

if keep is "yes"

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

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

Read names below in blanks above	A COMM FISH?	B KEEP?	How many were removed for your OWN USE?[5]	How many were removed to give to OTHERS, NOT incuding CREW?	Units[3]	
			number	*number*	*specify*	*comments*
RAZOR CLAMS	Y N	Y N			GAL.	
500612001						
PACIFIC LITTLENECK CLAMS *(STEAMERS)*	Y N	Y N			GAL.	
500608001						
DUNGENESS CRAB	Y N	Y N			IND.	
501004001						
KING CRAB	Y N	Y N			IND.	
501008991						
TANNER CRAB	Y N	Y N			IND.	
501012991						
OCTOPUS	Y N	Y N			IND.	
502200001						
SHRIMP	Y N	Y N			LBS.	
503400001						
SCALLOPS	Y N	Y N			IND.	
502699001						
	Y N	Y N			IND.	

Comments:

1 *"LAST YEAR" means between April 1, 2018 and March 31, 2019.*
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.*

COMMERCIAL FISHING: 03 **PORT HEIDEN: 283**

HARVESTS: NONCOMMERCIAL SALMON

HOUSEHOLD ID

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

2. During the last year (between April 1, 2018 and March 31, 2019) did you, or members of your household, USE or TRY TO HARVEST noncommercial salmon? ..... Y N

IF the answer to QUESTION 1 & 2 is NO, go to the *NEXT SECTION*.

IF the answer is *YES*, continue on this page …

Please estimate how many noncommercial salmon ALL MEMBERS OF YOUR HOUSEHOLD HARVESTED in 2018, including with a rod and reel. INCLUDE noncommercial salmon you gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If fishing with others, report ONLY YOUR SHARE of the catch. Do not include fish caught and released.

	In 2018 did members of your household …					In 2018 HOW MANY _____ DID YOUR HOUSEHOLD HARVEST WITH ….						
	USE?	TRY TO HARVEST?	HARVEST?	RECEIVE?	GIVE AWAY?	SET GILL NET	DRIFT GILL NET	SEINE NET	DIP NET	ROD & REEL	OTHER GEAR (specify type)	UNITS
Read names below	*(circle)*					*(number harvested by each gear type)*					*amount / type*	*specify*
CHINOOK (KING) SALMON	Y N	Y N	Y N	Y N	Y N						/	IND.
113000000												
SOCKEYE (RED) SALMON	Y N	Y N	Y N	Y N	Y N						/	IND.
115000000												
COHO (SILVER) SALMON	Y N	Y N	Y N	Y N	Y N						/	IND.
112000000												
PINK SALMON	Y N	Y N	Y N	Y N	Y N						/	IND.
114000000												
CHUM (DOG) SALMON	Y N	Y N	Y N	Y N	Y N						/	IND.
111000000												
LANDLOCKED SALMON	Y N	Y N	Y N	Y N	Y N						/	IND.
116000000												
SPAWNING SOCKEYE	Y N	Y N	Y N	Y N	Y N						/	IND.
117050000												
UNKNOWN SALMON	Y N	Y N	Y N	Y N	Y N						/	IND.
119000000												

Comments:

These columns should include ALL the noncommercial salmon HARVESTED by members of this household in 2018.

NONCOMMERCIAL SALMON: 04 **PORT HEIDEN: 283**

ASSESSMENTS: SALMON

HOUSEHOLD ID

ASSESSMENTS: 120000000

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

Last year…

… did your household use LESS, SAME, or MORE salmon than in recent (about the past 5) years? ..... X L S M

IF LESS or MORE …

X = do not use

WHY was your use different? _____ 1

_____ 2

Last year…

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

If NO…

What KIND of salmon did you need? _____

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

… not noticeable?	*… minor ?*	*… major?*	*… severe?*
(0)	*(1)*	*(2)*	*(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

Does your household usually provide salmon to other communities (outside of Port Heiden)? Y N

Do households in other communities (outside of Port Heiden) usually provide salmon to your household? Y N

Comments:

ASSESSMENTS: 66 PORT HEIDEN: 283

SUBSISTENCE SUMMARY: SALMON

HOUSEHOLD ID

OBSERVATIONS: 110,000,000

❶ Have you observed any changes to the number (abundance) of SALMON in your area? Y N

IF YES…

Which species? CHINOOK SOCKEYE COHO CHUM PINK *(circle all that apply)*

What changes have you observed? 1 2

❷ Have you observed any changes in the quality or appearance of SALMON you harvested last year? Y N

IF YES…

Which species? CHINOOK SOCKEYE COHO CHUM PINK *(circle all that apply)*

What changes have you observed? 1 2

❸ Have you observed any changes in the behavior of SALMON in your area; such as run timing or harvest location? Y N

IF YES…

Which species? CHINOOK SOCKEYE COHO CHUM PINK *(circle all that apply)*

What changes have you observed? 1 2

❹ Do you believe current Fish and Game regulations provide adequate opportunity to get the SALMON you need for home use? Y N

IF NO, please explain. 1 2

Do you have any other comments regarding your SALMON observations?

OBSERVATIONS OF SALMON: 368 **PORT HEIDEN: 283**

FISHERY PARTICIPATION

HOUSEHOLD ID

SALMON

If the houshold harvested salmon in the previous section, continue this section. If the household did not harvest salmon go to the next section…

Last year, did your household get a subsistence salmon permit?..... Y N

If YES …How many members of your household were listed on the permit? *(# HH Members)*

AND …Were there other people outside of your household listed on the permit? Y N

If YES ...how many people besides those in your household were listed on the permit? *(# outside HH)*

If NO …Why not? _____

1 2

AND …Were you listed on another household's permit?..... Y N

Do you own your own net? Y N

Do you fish with the community subsistence net? Y N

If NO …Why not? _____

1 2

Do you have any suggestions for improving the subsistence salmon permit system for Port Heiden? Y N

(If YES, Enter respondent suggestions below)

1 2

PERMIT PARTICIPATION (370) **PORT HEIDEN: 283**

HARVESTS: NONCOMMERCIAL NONSALMON FISH

1. Do you or members of your household USUALLY fish for noncommercial nonsalmon fish?..... Y N

2. During the last year (between April 1, 2018 and March 31, 2019)
   did you, or members of your household, USE or TRY TO HARVEST noncommercial nonsalmon fish?..... Y N

IF the answers to QUESTION 1 & 2 are both NO, go to the *NEXT HARVEST SECTION*.

IF the answer is *YES*, continue on this page …

Please estimate how many noncommercial nonsalmon fish ALL MEMBERS OF YOUR HOUSEHOLD HARVESTED in 2018, including with a rod and reel. INCLUDE noncommercial nonsalmon fish you gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If fishing with others, report ONLY YOUR SHARE of the catch. Do not include fish caught and released.

	In 2018 did members of your household …					In 2018 HOW MANY _____ DID YOUR HOUSEHOLD HARVEST WITH ….						
	USE?	TRY TO HARVEST?	HARVEST?	RECEIVE?	GIVE AWAY?	SET GILL NET	DRIFT GILL NET	SEINE NET	LONG-LINE / SKATE	ROD & REEL	OTHER GEAR (specify type)	UNITS
Read names below	*(circle)*					*(number harvested by each gear type)*					*amount / type*	*specify*
HALIBUT	Y N	Y N	Y N	Y N	Y N						/	LBS.
121800000												
PACIFIC (GRAY) COD	Y N	Y N	Y N	Y N	Y N						/	IND.
121004000												
BURBOT (LING COD)	Y N	Y N	Y N	Y N	Y N						/	IND.
124800000												
SABLEFISH (BLACK COD) *(BUTTER FISH)*	Y N	Y N	Y N	Y N	Y N						/	IND.
122800000												
HERRING	Y N	Y N	Y N	Y N	Y N						/	GAL.
120200000												
HERRING SPAWN ON KELP	Y N	Y N	Y N	Y N	Y N						/	GAL.
120306000												
HERRING SAC ROE	Y N	Y N	Y N	Y N	Y N						/	GAL.
120304000												
SMELT	Y N	Y N	Y N	Y N	Y N						/	GAL.
120499000												
STEELHEAD TROUT	Y N	Y N	Y N	Y N	Y N						/	IND.
126206000												
RAINBOW TROUT	Y N	Y N	Y N	Y N	Y N						/	IND.
126204000												
DOLLY VARDEN TROUT	Y N	Y N	Y N	Y N	Y N						/	IND.
125006010												
CHAR (SEA RUN DOLLIES)	Y N	Y N	Y N	Y N	Y N						/	IND.
125006020												

These columns should include ALL the noncommercial nonsalmon fish HARVESTED by members of this household in 2018.

NONCOMMERCIAL NONSALMON FISH: 04 **PORT HEIDEN: 283**

HARVESTS: NONCOMMERCIAL NONSALMON FISH

HOUSEHOLD ID

…continued from previous page

	In 2018 did members of your household …					In 2018 HOW MANY _____ DID YOUR HOUSEHOLD HARVEST WITH ….						
	USE?	TRY TO HARVEST?	HARVEST?	RECEIVE?	GIVE AWAY?	SET GILL NET	SET DRIFT NET	SEINE NET	LONG-LINE / SKATE	ROD & REEL	OTHER GEAR (specify type)	UNITS
Read names below	*(circle)*					*(number harvested by each gear type)*					*amount / type*	*specify*
TROUT (UNKNOWN)	Y N	Y N	Y N	Y N	Y N						/	IND.
126299000												
GRAYLING	Y N	Y N	Y N	Y N	Y N						/	IND.
125200000												
PIKE	Y N	Y N	Y N	Y N	Y N						/	IND.
125400000												
ROCKFISH (SPECIFY)	Y N	Y N	Y N	Y N	Y N						/	IND.
122699000												
YELLOWFIN SOLE	Y N	Y N	Y N	Y N	Y N						/	IND.
123606000												
SCULPIN	Y N	Y N	Y N	Y N	Y N						/	IND.
123099000												
RED IRISH LORD	Y N	Y N	Y N	Y N	Y N						/	IND.
123006020												
BLACKFISH *(FRESHWATER)*	Y N	Y N	Y N	Y N	Y N						/	IND.
124600000												
STARRY FLOUNDER	Y N	Y N	Y N	Y N	Y N						/	IND.
121406000												
CAPELIN (GRUNION)	Y N	Y N	Y N	Y N	Y N						/	GAL.
120402000												
ROUND WHITEFISH *(CANDLEFISH)*	Y N	Y N	Y N	Y N	Y N						/	IND.
126412000												
LEAST CISCO	Y N	Y N	Y N	Y N	Y N						/	IND.
126406060												
HUMPBACK WHITEFISH	Y N	Y N	Y N	Y N	Y N						/	IND.
126408000												
	Y N	Y N	Y N	Y N	Y N						/	IND.

These columns should include ALL the noncommercial nonsalmon fish HARVESTED by members of this household in 2018.

NONCOMMERCIAL NONSALMON FISH: 06 **COLD BAY: 100**

ASSESSMENTS: NON-SALMON FISH

HOUSEHOLD ID

ASSESSMENTS: 120000000

To continue our non-salmon fish use section, I am going to ask a few general questions about non-salmon fish.

Last year…

… did your household use LESS, SAME, or MORE non-salmon fish than in recent (about the past 5) years? …… X L S M

IF LESS or MORE …

X = do not use

WHY was your use different? _____ 1

_____ 2

Last year…

…did your household GET ENOUGH non-salmon fish?..... Y N

If NO…

What KIND of non-salmon fish did you need? _____

How would you describe the impact to your household from not getting enough non-salmon fish last year?

… not noticeable?	*… minor ?*	*… major?*	*… severe?*
(0)	*(1)*	*(2)*	*(3)*

…did your household do anything DIFFERENTLY because you did not get enough non-salmon fish?..... Y N

If YES…

What did your household do differently? _____ 1

_____ 2

Comments:

ASSESSMENTS: 66 PORT HEIDEN: 283

HARVESTS: MARINE INVERTEBRATES

HOUSEHOLD ID

1. Do you or members of your household USUALLY try to harvest marine invertebrates?..... Y N

2. During the last year (between April 1, 2018 and March 31, 2019)
did you, or members of your household, USE or TRY TO HARVEST marine invertebrates?..... Y N

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

IF the answer is *YES*, continue on this page …

Please estimate how many marine invertebrates ALL MEMBERS OF YOUR HOUSEHOLD HARVESTED in 2018. INCLUDE marine invertebrates you gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If harvesting with others, report ONLY YOUR SHARE of the harvest.

	In 2018 did members of your household …					In 2018 HOW MANY _____ DID YOUR HOUSEHOLD HARVEST….		
	USE?	TRY TO HARVEST?	HARVEST?	RECEIVE?	GIVE AWAY?	AMOUNT	UNITS	COMMENTS
Read names below	*(circle)*					*(amt)*	*specify*	*(text)*
BLACK (SMALL) CHITONS *(BIDARKIS)*	Y N	Y N	Y N	Y N	Y N		GAL.	
500408000								
RED (LARGE) CHITONS *(RED BIDARKIS)*	Y N	Y N	Y N	Y N	Y N		GAL.	
500404000								
RAZOR CLAMS	Y N	Y N	Y N	Y N	Y N		GAL.	
500612000								
BUTTER CLAMS	Y N	Y N	Y N	Y N	Y N		GAL.	
500602000								
PACIFIC LITTLENECK CLAMS *(STEAMERS)*	Y N	Y N	Y N	Y N	Y N		GAL.	
500608000								
SOFT SHELL CLAMS	Y N	Y N	Y N	Y N	Y N		GAL.	
500614000								
CLAMS (UNKNOWN)	Y N	Y N	Y N	Y N	Y N		GAL.	
500699000								
COCKLES	Y N	Y N	Y N	Y N	Y N		GAL.	
500899000								
BLUE MUSSELS	Y N	Y N	Y N	Y N	Y N		GAL.	
502002000								
RED KING CRAB	Y N	Y N	Y N	Y N	Y N		IND.	
501008080								
OCTOPUS	Y N	Y N	Y N	Y N	Y N		IND.	
502200000								
	Y N	Y N	Y N	Y N	Y N		GAL.	

Include ALL the marine invertebrates HARVESTED by members of this household in 2018.

MARINE INVERTEBRATES: 08 **PORT HEIDEN: 283**

ASSESSMENTS: MARINE INVERTEBRATES

HOUSEHOLD ID

ASSESSMENTS: 120000000

To continue our marine invertebrates use section, I am going to ask a few general questions about marine invertebrates.

Last year…

… did your household use LESS, SAME, or MORE marine invertebrates than in recent (about the past 5) years? …… X L S M

IF LESS or MORE … X = do not use

WHY was your use different? _____ 1

_____ 2

Last year…

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

If NO…

What KIND of marine invertebrates did you need? _____

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

… not noticeable?	*… minor ?*	*… major?*	*… severe?*
(0)	*(1)*	*(2)*	*(3)*

…did your household do anything DIFFERENTLY because you did not get enough marine invertebrates?..... Y N

If YES…

What did your household do differently? _____ 1

_____ 2

Comments:

ASSESSMENTS: 66 **PORT HEIDEN: 283**

HARVESTS: LARGE LAND MAMMALS

HOUSEHOLD ID

1. Do you or members of your household USUALLY hunt for large land mammals?........ Y N
2. During the last year (between April 1, 2018 and March 31, 2019) did you, or members of your household, USE or TRY TO HARVEST large land mammals?........ Y N
3. Do you or members of your househould intend to hunt caribou during the remaining days of the 2018/2019 season?........ Y N

(For caribou, record harvests May 1st, 2018 through April 30th, 2019)

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

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

Please estimate how many large land mammals ALL MEMBERS OF YOUR HOUSEHOLD HARVESTED in 2018. INCLUDE large land mammals you gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If hunting with others, report ONLY YOUR SHARE of the harvest.

	In 2018 did members of your household ...					In 2018 HOW MANY _____ DID MEMBERS OF YOUR HOUSEHOLD HARVEST....														
	USE?	TRY TO HARVEST?	HARVEST?	RECEIVE?	GIVE AWAY?	SEX	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	UNKNOWN	UNITS
Read names below	*(circle)*					*M/F*	*(specify amount harvested per month)*													*(specify)*
CARIBOU	Y N	Y N	Y N	Y N	Y N	M														IND.
						F														IND.
211000000						UNK														IND.
211000001						1														
211000002						2														
211000009						-9														
MOOSE	Y N	Y N	Y N	Y N	Y N	M														IND.
						F														IND.
211800000						UNK														IND.
211800001						1														
211800002						2														
211800009						-9														
BROWN BEAR	Y N	Y N	Y N	Y N	Y N															IND.
210800000																				
REINDEER - FERAL	Y N	Y N	Y N	Y N	Y N															IND.
230800000																				
	Y N	Y N	Y N	Y N	Y N															IND.
	Y N	Y N	Y N	Y N	Y N															IND.
	Y N	Y N	Y N	Y N	Y N															IND.
	Y N	Y N	Y N	Y N	Y N															IND.
	Y N	Y N	Y N	Y N	Y N															IND.

Include ALL the large land mammals HARVESTED by members of this household in 2018.

LARGE LAND MAMMALS: 10 **PORT HEIDEN: 283**

ASSESSMENTS: LARGE LAND MAMMALS

HOUSEHOLD ID

ASSESSMENTS: OTHER LARGE LAND MAMMALS 210000000

Between April 1, 2018 and March 31, 2019…

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

Last year…

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

IF LESS or MORE … X = do not use

WHY was your use different? 1 _____

2 _____

Last year…

…did your household GET ENOUGH caribou?..... Y N

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

… not noticable?	*… minor ?*	*… major?*	*… Severe?*
(0)	*(1)*	*(2)*	*(3)*

…did your household do anything DIFFERENTLY because you did not get enough caribou?..... Y N

If YES…

What did your household do differently? 1 _____

2 _____

To continue our other large land mammals section, I am going to ask a few general questions about OTHER LARGE LAND MAMMALS.

Last year…

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

IF LESS or MORE … X = do not use

WHY was your use different? 1 _____

2 _____

Last year…

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

If NO…

What KIND of did you need? _____

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

… not noticable?	*… minor ?*	*… major?*	*… Severe?*
(0)	*(1)*	*(2)*	*(3)*

…did your household do anything DIFFERENTLY because you did not get enough large land mammals?..... Y N

If YES…

What did your household do differently? 1 _____

2 _____

Comments:

ASSESSMENTS: 66 **PORT HEIDEN: 283**

HARVESTS: SMALL LAND MAMMALS

HOUSEHOLD ID

1. Do you or members of your household USUALLY hunt or trap for small land mammals?..... Y N

2. During the last year (between April 1, 2018 and March 31, 2019)
   did you, or members of your household, USE or TRY TO HARVEST small land mammals?..... Y N

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

IF the answer is *YES* , continue on this page …

Please estimate how many small land mammals ALL MEMBERS OF YOUR HOUSEHOLD HARVESTED in 2018. INCLUDE small land mammals you gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If hunting or trapping with others, report ONLY YOUR SHARE of the harvest.

	In 2018 did members of your household …					In 2018 HOW MANY _____ DID MEMBERS OF YOUR HOUSEHOLD HARVEST….														
	USE?	TRY TO HARVEST?	HARVEST?	RECEIVE?	GIVE AWAY?	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	UNKNOWN	HOW MANY _____ WERE USED FOR FUR ONLY?	UNITS
Read names below	(circle)					(specify amount harvested per month)													(amount)	(specify)
BEAVER	Y N	Y N	Y N	Y N	Y N															IND.
220200000																				
PORCUPINE	Y N	Y N	Y N	Y N	Y N															IND.
222600000																				
ARCTIC (ALASKA) HARE	Y N	Y N	Y N	Y N	Y N															IND.
221002000																				
SNOWSHOE HARE	Y N	Y N	Y N	Y N	Y N															IND.
221004000																				
RED FOX	Y N	Y N	Y N	Y N	Y N															IND.
220804040																				
RED FOX - CROSS PHASE	Y N	Y N	Y N	Y N	Y N															IND.
220804020																				
LAND OTTER *(RIVER OTTER)*	Y N	Y N	Y N	Y N	Y N															IND.
221200000																				
LYNX	Y N	Y N	Y N	Y N	Y N															IND.
221600000																				
MINK	Y N	Y N	Y N	Y N	Y N															IND.
222200000																				
MUSKRAT	Y N	Y N	Y N	Y N	Y N															IND.
222400000																				
WEASEL	Y N	Y N	Y N	Y N	Y N															IND.
223000000																				
WOLF	Y N	Y N	Y N	Y N	Y N															IND.
223200000																				

Include ALL the small land mammals HARVESTED by members of this household in 2018.

SMALL LAND MAMMALS: 14 **PORT HEIDEN: 283**

HARVESTS: SMALL LAND MAMMALS

HOUSEHOLD ID

…continued from previous page

	In 2018 did members of your household …					In 2018 HOW MANY _____ DID MEMBERS OF YOUR HOUSEHOLD HARVEST….														
	USE?	TRY TO HARVEST?	HARVEST?	RECEIVE?	GIVE AWAY?	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JAUNARY	FEBRUARY	MARCH	UNKNOWN	HOW MANY _____ WERE USED FOR FUR ONLY?	UNITS
Read names below	(circle)					(specify amount harvested per month)													(amount)	(specify)
WOLVERINE	Y N	Y N	Y N	Y N	Y N															IND.
223400000																				
PARKA SQUIRREL *(GROUND SQUIRREL)*	Y N	Y N	Y N	Y N	Y N															IND.
222802000																				
RED (TREE) SQUIRREL	Y N	Y N	Y N	Y N	Y N															IND.
222804000																				
	Y N	Y N	Y N	Y N	Y N															IND.
	Y N	Y N	Y N	Y N	Y N															IND.
	Y N	Y N	Y N	Y N	Y N															IND.
	Y N	Y N	Y N	Y N	Y N															IND.
	Y N	Y N	Y N	Y N	Y N															IND.

Comments:

Include ALL the small land mammals HARVESTED by members of this household in 2018.

ASSESSMENTS: SMALL LAND MAMMALS

HOUSEHOLD ID

ASSESSMENTS: SMALL LAND MAMMALS 220000000

To continue our small land mammals use section, I am going to ask a few general questions about small land mammals.

Last year…

… did your household use LESS, SAME, or MORE small land mammals than in recent (about the past 5) years? ..... X L S M

IF LESS or MORE … X = do not use

WHY was your use different? _____ 1

_____ 2

Last year…

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

If NO…

What KIND of small land mammals did you need? _____

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

… not noticeable?	*… minor ?*	*… major?*	*… severe?*
(0)	*(1)*	*(2)*	*(3)*

…did your household do anything DIFFERENTLY because you did not get enough small land mammals?..... Y N

If YES…

What did your household do differently? _____ 1

_____ 2

Comments:

ASSESSMENTS: 66 **PORT HEIDEN: 283**

HARVESTS: MARINE MAMMALS

HOUSEHOLD ID

1. Do you or members of your household USUALLY hunt for marine mammals………………………….. Y N

2. During the last year (between April 1, 2018 and March 31, 2019)
did you, or members of your household, USE or TRY TO HARVEST marine mammals?.. Y N

(For harbor seal harvests fill out the separate marine mammal survey form)

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

IF the answer is *YES* , continue on this page …

Please estimate how many marine mammals ALL MEMBERS OF YOUR HOUSEHOLD HARVESTED in 2018. INCLUDE marine mammals you gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If hunting with others, report ONLY YOUR SHARE of the harvest.

	In 2018 did members of your household …					In 2018 HOW MANY _____ DID MEMBERS OF YOUR HOUSEHOLD HARVEST….														
	USE?	TRY TO HARVEST?	HARVEST?	RECEIVE?	GIVE AWAY?	SEX	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	UNKNOWN	UNITS
Read names below	*(circle)*					*M/F*	*(specify amount harvested per month)*													*(specify)*
SEA LION	Y N	Y N	Y N	Y N	Y N	M														IND.
						F														IND.
301200000						UNK														IND.
301200001						1														
301200002						2														
301200009						-9														
SEAL (UNKNOWN)	Y N	Y N	Y N	Y N	Y N															IND.
300899000																				
WALRUS	Y N	Y N	Y N	Y N	Y N															IND.
301400000																				
BELUGA	Y N	Y N	Y N	Y N	Y N															IND.
301602000																				
WHALE (UNKNOWN)	Y N	Y N	Y N	Y N	Y N															IND.
301699000																				
SEA OTTER	Y N	Y N	Y N	Y N	Y N															IND.
301000000																				
	Y N	Y N	Y N	Y N	Y N															IND.
	Y N	Y N	Y N	Y N	Y N															IND.
	Y N	Y N	Y N	Y N	Y N															IND.
	Y N	Y N	Y N	Y N	Y N															IND.
	Y N	Y N	Y N	Y N	Y N															IND.

Include ALL the marine mammals HARVESTED by members of this household in 2018.

ASSESSMENTS: MARINE MAMMALS

HOUSEHOLD ID

ASSESSMENTS: MARINE MAMMALS 300000000

To continue our marine mammals use section, I am going to ask a few general questions about marine mammals.

Last year…

… did your household use LESS, SAME, or MORE marine mammals than in recent (about the past 5) years? ..... X L S M

IF LESS or MORE …

X = do not use

WHY was your use different? _____ 1

_____ 2

Last year…

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

If NO…

What KIND of marine mammals did you need? _____

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

… not noticeable?	*… minor ?*	*… major?*	*… severe?*
(0)	*(1)*	*(2)*	*(3)*

…Did your household do anything DIFFERENTLY because you did not get enough marine mammals?..... Y N

If YES…

What did your household do differently? _____ 1

_____ 2

Comments:

ASSESSMENTS: 66 PORT HEIDEN: 283

HARVESTS: BIRDS

HOUSEHOLD ID

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

2. During the last year (between April 1, 2018 and March 31, 2019) did you, or members of your household, USE or TRY TO HARVEST birds?..... Y N

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

IF the answer is *YES*, continue on this page …

Please estimate how many birds ALL MEMBERS OF YOUR HOUSEHOLD HARVESTED in 2018. INCLUDE birds you gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If hunting with others, report ONLY YOUR SHARE of the harvest.

	In 2018 did members of your household …					In 2018 HOW MANY ____ DID MEMBERS OF YOUR HOUSEHOLD HARVEST….					
						WINTER	SPRING	SUMMER	FALL		
	USE?	TRY TO HARVEST?	HARVEST?	RECEIVE?	GIVE AWAY?	NOVEMBER DECEMBER JANUARY FEBRUARY MARCH	APRIL MAY JUNE	JULY AUGUST	SEPTEMBER OCTOBER	UNKNOWN SEASON	UNITS
Read names below	(circle)					(specify amount harvested per season)					(specify)
AMERICAN WIGEON	Y N	Y N	Y N	Y N	Y N						IND.
410236020											
TEAL	Y N	Y N	Y N	Y N	Y N						IND.
410232990											
MALLARD	Y N	Y N	Y N	Y N	Y N						IND.
410214000											
NORTHERN SHOVELER	Y N	Y N	Y N	Y N	Y N						IND.
410230000											
NORTHERN PINTAIL	Y N	Y N	Y N	Y N	Y N						IND.
410220000											
BLACK SCOTER	Y N	Y N	Y N	Y N	Y N						IND.
410228020											
SURF SCOTER	Y N	Y N	Y N	Y N	Y N						IND.
410228040											
WHITE-WINGED SCOTER	Y N	Y N	Y N	Y N	Y N						IND.
410228060											
BUFFLEHEAD *(BUTTERBALL)*	Y N	Y N	Y N	Y N	Y N						IND.
410202000											
GOLDENEYE	Y N	Y N	Y N	Y N	Y N						IND.
410210990											
SCAUP	Y N	Y N	Y N	Y N	Y N						IND.
410226990											
COMMON EIDER	Y N	Y N	Y N	Y N	Y N						IND.
410206020											

Include ALL the birds HARVESTED by members of this household in 2018.

BIRDS: 15 **PORT HEIDEN: 283**

HARVESTS: BIRDS

HOUSEHOLD ID

… Continued from previous page.

Read names below	In 2018 did members of your household … USE? (circle)	TRY TO HARVEST? (circle)	HARVEST? (circle)	RECEIVE? (circle)	GIVE AWAY? (circle)	In 2018 HOW MANY _____ DID MEMBERS OF YOUR HOUSEHOLD HARVEST…. WINTER NOVEMBER DECEMBER JANUARY FEBRUARY MARCH (specify amount harvested per season)	SPRING APRIL MAY JUNE (specify amount harvested per season)	SUMMER JULY AUGUST (specify amount harvested per season)	FALL SEPTEMBER OCTOBER (specify amount harvested per season)	UNKNOWN SEASON (specify amount harvested per season)	UNITS (specify)
KING EIDER	Y N	Y N	Y N	Y N	Y N						IND.
410206040											
STELLER EIDER	Y N	Y N	Y N	Y N	Y N						IND.
410206080											
HARLEQUIN DUCK	Y N	Y N	Y N	Y N	Y N						IND.
410212000											
LONG-TAILED DUCK	Y N	Y N	Y N	Y N	Y N						IND.
410218000											
MERGANSER	Y N	Y N	Y N	Y N	Y N						IND.
410216990											
BLACK BRANT	Y N	Y N	Y N	Y N	Y N						IND.
410402000											
CANADA GOOSE *(HONKER)*	Y N	Y N	Y N	Y N	Y N						IND.
410404990											
GREATER WHITE-FRONTED GOOSE	Y N	Y N	Y N	Y N	Y N						IND.
410410000											
EMPEROR GOOSE *(BEACH GEESE)*	Y N	Y N	Y N	Y N	Y N						IND.
410406000											
SWAN	Y N	Y N	Y N	Y N	Y N						IND.
410699000											
SANDHILL CRANE	Y N	Y N	Y N	Y N	Y N						IND.
410802000											
PTARMIGAN	Y N	Y N	Y N	Y N	Y N						IND.
421804000											
TERN	Y N	Y N	Y N	Y N	Y N						IND.
411226990											
BLACK LEGGED KITTIWAKE	Y N	Y N	Y N	Y N	Y N						IND.
411214020											

Include ALL the birds HARVESTED by members of this household in 2018.

BIRDS: 15 **PORT HEIDEN: 283**

HARVESTS: BIRDS

HOUSEHOLD ID

… Continued from previous page.

Read names below	In 2018 did members of your household … USE? (circle)	TRY TO HARVEST? (circle)	HARVEST? (circle)	RECEIVE? (circle)	GIVE AWAY? (circle)	In 2018 HOW MANY _____ DID MEMBERS OF YOUR HOUSEHOLD HARVEST…. WINTER (NOVEMBER DECEMBER JANUARY FEBRUARY MARCH) (specify amount harvested per season)	SPRING (APRIL MAY JUNE) (specify amount harvested per season)	SUMMER (JULY AUGUST) (specify amount harvested per season)	FALL (SEPTEMBER OCTOBER) (specify amount harvested per season)	UNKNOWN SEASON (specify amount harvested per season)	UNITS (specify)
BLACK OYSTERCATCHER	Y N	Y N	Y N	Y N	Y N						IND.
411004000											
BONAPARTE'S/SABINE GULL	Y N	Y N	Y N	Y N	Y N						IND.
411212100											
MEW GULL	Y N	Y N	Y N	Y N	Y N						IND.
411212080											
GLAUCOUS-WINGED GULL	Y N	Y N	Y N	Y N	Y N						IND.
411212040											
HERRING GULL	Y N	Y N	Y N	Y N	Y N						IND.
411212060											
AUKLET	Y N	Y N	Y N	Y N	Y N						IND.
411202990											
MURRE	Y N	Y N	Y N	Y N	Y N						IND.
411218990											
CORMORANT	Y N	Y N	Y N	Y N	Y N						IND.
411204990											
	Y N	Y N	Y N	Y N	Y N						IND.
	Y N	Y N	Y N	Y N	Y N						IND.

Include ALL the birds HARVESTED by members of this household in 2018.

Comments:

BIRDS: 15 **PORT HEIDEN: 283**

ASSESSMENTS: BIRDS

HOUSEHOLD ID

ASSESSMENTS: 120000000

To continue our birds use section, I am going to ask a few general questions about birds.

Last year…

…did your household use LESS, SAME, or MORE birds than in recent (about the past 5) years? …… X L S M

IF LESS or MORE … X = do not use

WHY was your use different? 1 _____

2 _____

Last year…

…did your household GET ENOUGH birds?..... Y N

If NO…

What KIND of birds did you need? _____

How would you describe the impact to your household from not getting enough birds last year?

… not noticeable?	*… minor ?*	*… major?*	*… severe?*
(0)	*(1)*	*(2)*	*(3)*

…did your household do anything DIFFERENTLY because you did not get enough birds?..... Y N

If YES…

What did your household do differently? 1 _____

2 _____

Comments:

ASSESSMENTS: 66 **PORT HEIDEN: 283**

HARVESTS: BIRD EGGS

HOUSEHOLD ID

1. Do you or members of your household USUALLY try to harvest bird eggs?..... Y N

2. During the last year (between April 1, 2018 and March 31, 2019)
did you, or members of your household, USE or TRY TO HARVEST bird eggs?..... Y N

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

IF the answer is *YES*, continue on this page …

Please estimate how many bird eggs ALL MEMBERS OF YOUR HOUSEHOLD HARVESTED in 2018. INCLUDE bird eggs you gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If harvesting with others, report ONLY YOUR SHARE of the harvest.

	In 2018 did members of your household …					In 2018 HOW MANY _____ DID YOUR HOUSEHOLD HARVEST….		
	USE?	TRY TO HARVEST?	HARVEST?	RECEIVE?	GIVE AWAY?	AMOUNT	UNITS	COMMENTS
Read names below	(circle)					(amt)	specify	(text)
TERN EGGS	Y N	Y N	Y N	Y N	Y N		IND.	
431226990								
BLACK-LEGGED KITTIWAKE EGGS	Y N	Y N	Y N	Y N	Y N		IND.	
431214020								
MEW GULL EGGS	Y N	Y N	Y N	Y N	Y N		IND.	
431212080								
GLAUCOUS WINGED GULL EGGS	Y N	Y N	Y N	Y N	Y N		IND.	
431212040								
HERRING GULL EGGS	Y N	Y N	Y N	Y N	Y N		IND.	
431212060								
MALLARD EGGS	Y N	Y N	Y N	Y N	Y N		IND.	
430214000								
BLACK OYSTERCATCHER EGGS	Y N	Y N	Y N	Y N	Y N		IND.	
431004000								
MURRE EGGS	Y N	Y N	Y N	Y N	Y N		IND.	
	Y N	Y N	Y N	Y N	Y N		IND.	
	Y N	Y N	Y N	Y N	Y N		IND.	

Comments:

Include ALL the bird eggs HARVESTED by members of this household in 2018.

BIRD EGGS: 15 **PORT HEIDEN: 283**

ASSESSMENTS: BIRD EGGS

HOUSEHOLD ID

ASSESSMENTS: 120000000

To continue our bird eggs use section, I am going to ask a few general questions about bird eggs.

Last year…

… did your household use LESS, SAME, or MORE bird eggs than in recent (about the past 5) years? …… X L S M

IF LESS or MORE …

X = do not use

WHY was your use different?

1 _____

2 _____

Last year…

…did your household GET ENOUGH bird eggs?..... Y N

If NO…

What KIND of bird eggs did you need? _____

How would you describe the impact to your household from not getting enough bird eggs last year?

… not noticeable?	*… minor ?*	*… major?*	*… severe?*
(0)	*(1)*	*(2)*	*(3)*

…did your household do anything DIFFERENTLY because you did not get enough bird eggs?..... Y N

If YES…

What did your household do differently?

1 _____

2 _____

Comments:

ASSESSMENTS: 66 **PORT HEIDEN: 283**

HARVESTS: PLANTS AND BERRIES

HOUSEHOLD ID

1. Do you or members of your household USUALLY try to harvest plants and berries?..... Y N

2. During the last year (between April 1, 2018 and March 31, 2019)
did you, or members of your household, USE or TRY TO HARVEST plants and berries?..... Y N

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

IF the answer is *YES*, continue on this page …

Please estimate how many plants and berries ALL MEMBERS OF YOUR HOUSEHOLD HARVESTED in 2018. INCLUDE plants and berries you gave away, ate fresh, fed to dogs, lost to spoilage, or got by helping others. If harvesting with others, report ONLY YOUR SHARE of the harvest.

	In 2018 did members of your household …					In 2018 HOW MANY _____ DID YOUR HOUSEHOLD HARVEST….		
	USE?	TRY TO HARVEST?	HARVEST?	RECEIVE?	GIVE AWAY?	AMOUNT	Units	COMMENTS
Read names below	(circle)					(amt)	specify	(text)
CROWBERRY *(MOSSBERRY/ BLACKBERRY)*	Y N	Y N	Y N	Y N	Y N		GAL.	
601007000								
BLUEBERRY	Y N	Y N	Y N	Y N	Y N		GAL.	
601002000								
LOWBUSH CRANBERRY	Y N	Y N	Y N	Y N	Y N		GAL.	
601004000								
HIGHBUSH CRANBERRY	Y N	Y N	Y N	Y N	Y N		GAL.	
601006000								
SALMONBERRY	Y N	Y N	Y N	Y N	Y N		GAL.	
601022000								
NAGOONBERRY *(WINE BERRY)*	Y N	Y N	Y N	Y N	Y N		GAL.	
601018000								
STRAWBERRY	Y N	Y N	Y N	Y N	Y N		GAL.	
601026000								
RASPBERRY	Y N	Y N	Y N	Y N	Y N		GAL.	
601020000								
OTHER WILD BERRY	Y N	Y N	Y N	Y N	Y N		GAL.	
601099000								
WILD CELERY *PUSHKI*	Y N	Y N	Y N	Y N	Y N		GAL.	
602032000								
WILD PARSLEY *PETRUSKI*	Y N	Y N	Y N	Y N	Y N		GAL.	
602034000								
BEACH ASPARAGUS	Y N	Y N	Y N	Y N	Y N		GAL.	
602002000								

Include ALL the plants and berries HARVESTED by members of this household in 2018.

PLANTS AND BERRIES: 17 **PORT HEIDEN: 283**

HARVESTS: PLANTS AND BERRIES

HOUSEHOLD ID

… Continued from previous page.

Read names below	In 2018 did members of your household … USE? (circle)	TRY TO HARVEST? (circle)	HARVEST? (circle)	RECEIVE? (circle)	GIVE AWAY? (circle)	In 2018 HOW MANY _____ DID YOUR HOUSEHOLD HARVEST…. AMOUNT (amt)	Units specify	COMMENTS (text)
LABRADOR TEA	Y N	Y N	Y N	Y N	Y N		GAL.	
602018000								
LAMBS QUARTER *(WILD SPINACH)*	Y N	Y N	Y N	Y N	Y N		GAL.	
602025000								
RYE GRASS (ROOTS)	Y N	Y N	Y N	Y N	Y N		GAL.	
602033000								
MUSHROOMS	Y N	Y N	Y N	Y N	Y N		GAL.	
602040000								
OTHER WILD GREENS	Y N	Y N	Y N	Y N	Y N		GAL.	
602038000								
SEAWEED/ KELP	Y N	Y N	Y N	Y N	Y N		GAL.	
603099000								
	Y N	Y N	Y N	Y N	Y N		GAL.	
	Y N	Y N	Y N	Y N	Y N		GAL.	
	Y N	Y N	Y N	Y N	Y N		GAL.	
	Y N	Y N	Y N	Y N	Y N		GAL.	

Include ALL the plants and berries HARVESTED by members of this household in 2018.

FIREWOOD

	USE? (circle)	TRY TO HARVEST? (circle)	HARVEST? (circle)	RECEIVE? (circle)	GIVE AWAY? (circle)
FIREWOOD	Y N	Y N	Y N	Y N	Y N
604000000					

Please estimate the percentage of your household's heating needs in 2018 that came from firewood.

0% (0)	1% - 25% (1)	26% - 50% (2)	51% - 75% (3)	76% - 99% (4)	100% (5)
		(circle one)			

Comments:

PLANTS AND BERRIES: 17 **PORT HEIDEN: 283**

ASSESSMENTS: PLANTS AND BERRIES

HOUSEHOLD ID

ASSESSMENTS: 120000000

To continue our plants and berries use section, I am going to ask a few general questions about plants and berries.

Last year…

… did your household use LESS, SAME, or MORE plants and berries than in recent (about the past 5) years? …… X L S M

IF LESS or MORE … X = do not use

WHY was your use different? _____ 1

_____ 2

Last year…

…did your household GET ENOUGH plants and berries?..... Y N

If NO…

What KIND of plants and berries did you need? _____

How would you describe the impact to your household from not getting enough plants and berries last year?

… not noticeable?	*… minor ?*	*… major?*	*… severe?*
(0)	*(1)*	*(2)*	*(3)*

…did your household do anything DIFFERENTLY because you did not get enough plants and berries?..... Y N

If YES…

What did your household do differently? _____ 1

_____ 2

Comments:

ASSESSMENTS: 66 PORT HEIDEN: 283

HARVEST SUMMARY: ALL RESOURCES

HOUSEHOLD ID

ASSESSMENTS: ALL RESOURCES 0

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

During the last year,[1]

… did your household use LESS, SAME, or MORE wild resources than in recent (about the past 5) years? ..... X L S M

IF LESS or MORE … X = do not use

WHY was your use different? _____ 1

_____ 2

During the last year,[1]

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

If NO…

What KIND of wild resources did you need? _____

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

…did your household do anything DIFFERENTLY because you did not get enough overall?..... Y N

If YES…

What did your household do differently? _____ 1

_____ 2

Comments:

1 *"LAST YEAR" means between April 1, 2018 and March 31, 2019.*

ASSESSMENTS OF ALL RESOURCES: 66 **PORT HEIDEN: 283**

FOOD SECURITY

HOUSEHOLD ID

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

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

(Circle one)

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

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

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

1 2 3 — HH1 — If 2 or 3

If STATEMENT 2 or STATEMENT 3 was TRUE, continue with food security questions 4-8 on this page. Otherwise, go to next section…

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

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

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

If YES…

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

→ …did this happen because your household could not get WILD FOOD,
your HH could not get STORE-BOUGHT food, or your HH could not get BOTH KINDS of food?..... WILD STORE BOTH

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

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

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

If YES…

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

→ …did this happen because your household could not get WILD FOOD,
your HH could not get STORE-BOUGHT food, or your HH could not get BOTH KINDS of food?..... WILD STORE BOTH

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

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

If YES…

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

Now, think just about your household's WILD FOOD…

❼ **STATEMENT 7. The WILD food we had JUST DID NOT LAST, and we could not get more.**

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

If YES…

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

Now, think just about your household's STORE-BOUGHT food…

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

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

If YES…

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

If any ONE of the STATEMENTS 4, 5, OR 6 was "YES," continue with food security questions 9-13 on next page. Otherwise, go to next section…

FOOD SECURITY: 201 **PORT HEIDEN: 283**

FOOD SECURITY

HOUSEHOLD ID

… Continued from previous page.

If any ONE of the STATEMENTS 4, 5, or 6 on previous page was "YES," continue with food security questions 9-13 below. Otherwise, go to next section…

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

   If YES…

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

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

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

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

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

    If YES…

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

FOOD SECURITY : 201 **PORT HEIDEN: 283**

ASSESSMENTS

HOUSEHOLD ID

HEALTH IMPACT ASSESSMENTS 100

(circle ONE response)

In a normal week, how often are wild foods such as salmon, non-salmon fish, moose, caribou, birds, etc. served in your household?	None, don't use (0)	Less than once per week (1)	1 - 3 times per week (2)	4 - 6 times per week (3)	Once per day (4)	2 times per day (5)	3 Times per day (6)	

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

Otherwise, continue below…

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

(Not necessary to fill out every line)

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

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

(Not necessary to fill out every line)

	Other Food	Other Food	Other Food	Other Food	Other Food
OTHER FOODS[1] (1 TO 5)					

Comments:

LOCAL FOOD ASSESSMENTS 100

Is locally grown produce[2], such as lettuce, carrots, herbs, and potatoes, an important part of providing food for your household? Y N

Are locally farmed foods, such as pork, chicken, eggs, beef, and reindeer, an important part of providing food for your household? Y N

(circle ONE response)

In a normal week, how often are locally grown or farmed foods, such as pork, chicken, eggs, vegetables, etc., served in your household?	None, don't use (0)	Less than once per week (1)	1 - 3 times per week (2)	4 - 6 times per week (3)	Once per day (4)	2 times per day (5)	3 Times per day (6)	

1 *For "OTHER FOODS", we are not interested in condiments or staples, such as sugar, flour, coffee, or butter etc... We are interested in foods used in place of traditional foods for meals or snacks. This includes foods substituted by personal preference or out of necessity (traditional food not available).*

2 *For "LOCALLY GROWN PRODUCE", we mean vegetables, greens, herbs, or fruit either grown by your own household, or another household or farm in the community of Port Heiden.*

HEALTH IMPACT ASSESSMENTS: 100 **PORT HEIDEN: 283**

EMPLOYMENT

HOUSEHOLD ID

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

Between April 1, 2018 and March 31, 2019 ...

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

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

For each member of this household born before 2003, list EACH JOB held in 2016. For household members who did not have a job, write: RETIRED, UNEMPLOYED, STUDENT, HOMEMAKER, DISABLED, etc.

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

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

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

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

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

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

EMPLOYMENT: 23 **PORT HEIDEN: 283**

OTHER INCOME

HOUSEHOLD ID

1. Between April 1, 2018 and March 31, 2019 ...
...Did any members of your household receive a dividend from the Permanent Fund or a native corporation?..... Y N

IF NO, go to QUESTION 2 on this page.

IF YES, continue below...

		Did anyone in your household receive income from in 2018 (circle one)		TOTAL amount all members of your household received from in 2018 (dollars)	
DIVIDENDS	ALASKA PERMANENT FUND DIVIDEND	Y	N	$	/ YR
	32				
	NATIVE CORPORATION DIVIDENDS	Y	N	$	/ YR
	13				

Alaska PFD IN 2018	
1	*PFD = $1,600*
2	*PFDs = $3,200*
3	*PFDs = $4,800*
4	*PFDs = $6,400*
5	*PFDs = $8,000*
6	*PFDs = $9,600*
7	*PFDs = $11,200*
8	*PFDs = $12,800*
9	*PFDs = $14,400*
10	*PFDs = $16,000*
11	*PFDs = $17,600*

Regional corporations:	*Dividend*

Village Corporation(s)	*Dividend*

2. Between April 1, 2018 and March 31, 2019 ...
...Did any members of your household receive OTHER income such as SENIOR BENEFITS or UNEMPLOYMENT?..... Y N

IF NO, go to the NEXT SECTION.

IF YES, continue below...

		Received? (circle one)		Total amount? (dollars)	
EMPLOYMENT RELATED	UNEMPLOYMENT	Y	N	$	/ YR
	12				
	WORKERS' COMP	Y	N	$	/ YR
	8				
	SOCIAL SECURITY	Y	N	$	/ YR
	7				
	PENSION & RETIREMENT	Y	N	$	/ YR
	5				
	DISABILITY	Y	N	$	/ YR
	31				
	VETERANS ASSISTANCE	Y	N	$	/ YR
	35				
ENTITLEMENTS	FOOD STAMPS (QUEST CARD)	Y	N	$	/ YR
	11				
	ADULT PUBLIC ASSISTANCE	Y	N	$	/ YR
	3				
	SUPPLEMENTAL SECURITY INCOME (SSI)	Y	N	$	/ YR
	10				
STATE BENEFITS	ENERGY ASSISTANCE	Y	N	$	/ YR
	9				
	ALASKA SENIOR BENEFITS (LONGEVITY)	Y	N	$	/ YR
	6				

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

* per diem covers travel expenses, and is not counted as income

Scratch paper for calculations

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

OTHER INCOME: 24 **PORT HEIDEN: 283**

SNAP ASSESSMENTS

HOUSEHOLD ID

SNAP funds (the Supplemental Nutrition Assistance Program also known as 'food stamps') can be used to purchase materials related to catching or processing subsistence foods. We'd like to learn about how people use SNAP funds to purchase these items to get the food they need.

Last year, did your household receive SNAP funds? …… Y N ?

If YES,

Did your household use SNAP funds to purchase subsistence FISHING or HUNTING GEAR? …… Y N ?

If YES,

What types of gear did your household purchase? *(circle all that apply)*

Nets	Lines	Hooks	Fishing rods	Harpoons	Knives	Ice augers	Other _____
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

How important to your household's subsistence fishing and hunting is the availability of SNAP funds for purchasing gear?

(circle one) not important important very important

Comments:

SNAP ASSESSMENTS: 400 **PORT HEIDEN: 283**

ASSESSMENTS

HOUSEHOLD ID

COMMUNITY CONCERNS

Do you feel Port Heiden can weather environmental change? Y N

Do you think environmental change is significantly altering the landscape near Port Heiden? Y N

Do you think environmental change has affected your household's ability to obtain subsistence resources? Y N

Do you feel that Port Heiden can cope with economic change? Y N

What do you think is the biggest challenge affecting Port Heiden today? Y N

ASSESSMENTS: 100 **PORT HEIDEN: 283**

COMMENTS

HOUSEHOLD ID

DO YOU HAVE ANY QUESTIONS, COMMENTS OR CONCERNS?

INTERVIEW SUMMARY: **DO NOT FORGET TO FILL IN THE STOP TIME** _____

COMMENTS: 300 **PORT HEIDEN: 283**

APPENDIX B—KEY RESPONDENT INTERVIEW PROTOCOL

Key Respondent Interview Protocol
Port Heiden AKSSF, 2019

I want to get a general understanding of Port Heiden's history as a community that uses a variety of subsistence foods. I would like to ask you some questions about subsistence salmon fishing and how that has changed over time. If you like to start by telling me a little about that, or I can start with some specific questions.

Salmon Fishing Past and Present:

1. What is your earliest memory of salmon fishing in Port Heiden?
    a. Subsistence? Commercial?
2. Can you tell me about subsistence salmon fishing in Port Heiden in the past?
3. How has salmon fishing changed over time?
4. Can you describe salmon fishing in Port Heiden today?
    a. Subsistence including rod and reel? Commercial?

Subsistence Salmon Fishing Questions:

1. Who do you fish with?
    - Do you use your own net or the community net?
    - How has the use of individual or household nets changed over time? What about the use of the community net?
    - {**follow up questions:** are there individual permits for the community net or does one household record all the harvest? Who oversees it and/or how does sharing of the net work between households? Who checks the net? Harvests? Processes? How many HHs use the net?}
2. What type of salmon do you fish for?
3. Has the number of salmon you harvest changed from past years? By how much? Why did those numbers change?
4. What gear type do you use for harvesting the different types of salmon and where? **(map locations)**
    - Rod and Reel
    - Gill Net
    - Seine
    - Any from commercial catch?
    - Has your gear changed over time?
5. Have your salmon fishing locations changed?
6. What is your pattern of salmon fishing for the summer/fall?
7. How do you decide how many salmon you need for your family for the winter?
8. Do you have any difficulties getting enough salmon?
    - If you didn't get enough salmon, what happened?
9. How do you process your salmon?
    - Freeze
    - Smoke (type of wood)
    - Dry

- Salt
- Can

5. Can you describe who does what during fishing and processing? How are tasks divided up? Gender? Age?

I want to ask some specific questions about salmon changes:

- Are the runs better or worse? Why? What are some of the reasons?
- Is the quality of the fish any different? What is responsible for those changes?
- How about the quality of the water? (temperature, water levels, pollution)
- How do changes in the weather patterns: warming or cooling, wet or dry, affect salmon? Your fishing and harvest?
- Have you observed any changes to the migration timing of different salmon species? If so, do you have an idea of what is causing those changes?
- Which type of salmon has been most affected by any of these changes? Is one type of salmon being affected more than other types?
- If you have noticed significant changes to salmon abundance? What do you think are some of the reasons?

<u>Other:</u>

1. Have you noticed any changes among younger generations in relation to salmon harvesting and processing?
2. How would you like your knowledge passed on to younger generations?
3. Are there any traditional practices you do, or the community does, when harvesting salmon? (i.e. traditional management?)

<u>Regulations:</u>

1. Have you ever gotten a subsistence permit?
2. If you **<u>do not</u>** get a subsistence salmon permit, why not?
3. Do you think the permit system needs to be changed or improved in some ways?
4. Are any regulations affecting your opportunity for subsistence?
5. Does the commercial fishery affect your subsistence salmon fishing?
    a. Do you feel the Bristol Bay commercial fishery affects your subsistence salmon fishing?
        i. Positive/negative? What has been your experience?
    b. Do you feel the Area M commercial fishery affects your subsistence salmon fishing?
        i. Positive/negative? What has been your experience?
6. Do you have any recommendations for regulatory changes, fisheries management, or ADF&G in general?

<u>Changes in Port Heiden:</u>

1. Are there environmental changes affecting your subsistence fishing, hunting, or gathering?
2. What are the main challenges facing Port Heiden in terms of salmon?
3. What are the main challenges facing Port Heiden in terms of other resources, such as caribou, moose, seals, shellfish?

Non-salmon questions:

1. What can you tell us about how caribou population have changed over time? Including with your own subsistence hunting?
2. Port Heiden seems to try and do a lot of community self-reliance, like some produce, domestic animals, etc? Can you tell us a little about that?
3. Is there anything more you would like to tell us about hunting, fishing, or gathering in Port Heiden?
4. Do you have any questions or other comments?

APPENDIX C—PROJECT SUPPORT LETTERS

Native Village of Port Heiden
2200 James Street
Port Heiden, Alaska 99549
907-837-2296 Fax 907-837-2297

May 1, 2017

Debbie Maas, Program Director
Alaska Sustainable Salmon Fund
PO BOX 115526
Juneau, AK 99811-5526

Dear Ms. Maas,

> The Native Village of Port Heiden would like to express our support for the proposed ADF&G Division of Subsistence project to document subsistence harvest patterns of Port Heiden residents and investigate how environmental changes are affecting our subsistence way of life. We have spoken to the Division of Subsistence about the project and understand that it will involve voluntary household surveys, in-depth interviews with individuals, and participant observation of salmon harvesting in our community.

We feel this project will benefit the residents of our community in several ways. We would like to have quantified multi-year data about our subsistence harvesting practices which is currently lacking. Salmon are important to our tribal members, but this importance has not been well documented over time. Tribal members have also voiced their concerns about bank erosion causing changes to historic set-net sites. The Port Heiden Tribal Council can assist the Division of Subsistence with recommendations about community members who may want to work with researchers on documenting harvests, as well as knowledgeable, long-term residents who may wish to be interviewed for the project. We can also assist the Division with setting up community meetings before the project fieldwork begins and after it ends to share information and solicit community feedback. Given the importance of the project to our tribal members we will further support the project with in-kind use of our tribal community space for project meetings and vehicles to facilitate data collection.

The Port Heiden Tribal Council looks forward to working with the Division of Subsistence on this proposed project. Thank you for considering this important work for funding.

Sincerely,

John Christensen Jr., President

BRISTOL BAY NATIVE ASSOCIATION
P.O. BOX 310
DILLINGHAM, ALASKA 99576
PHONE (907) 842-5257

Aleknagik
Chignik Bay
Chignik Lagoon
Chignik Lake
Clarks Point
Curyung
Egegik
Ekuk
Ekwok
Igiugig
Iliamna
Ivanof Bay
Kanatak
King Salmon
Kokhanok
Koliganek
Levelock
Manokotak
Naknek
New Stuyahok
Newhalen
Nondalton
Pedro Bay
Perryville
Pilot Point
Port Heiden
Portage Creek
South Naknek
Togiak
Twin Hills
Ugashik

May 19, 2017

Debbie Maas
Program Coordinator
Alaska Sustainable Salmon Fund
P.O. BOX 115526
Juneau, AK 99811
debbie.maas@alaska.gov
907-465-6134

Re: BBNA Support Letter for Port Heiden Subsistence Fishery Harvest Monitoring with Coastal Erosion Prediction Mapping project

Dear Ms. Maas:

The Bristol Bay Native Association (BBNA) supports the Alaska Department of Fish and Game's Division of Subsistence in pursuing funding for the "Port Heiden Subsistence Fishery Harvest Monitoring with Coastal Erosion Prediction Mapping" project through the Alaska Sustainable Salmon Fund. The project will investigate the subsistence salmon permitting system in Port Heiden, and allow fisheries managers to fill recent information gaps. BBNA recognizes the value of this information in maintaining unrestricted access to subsistence resources for the Native Village of Port Heiden.

Our region depends on the resources each of us harvest and share with one another. The subsistence priority is elemental in supporting and strengthening our subsistence economy and social well-being. This project compliments some of the upcoming focus goals of the Western Alaska Landscape Conservation Cooperative (WALCC) on coastal resiliency, on issues related to coastal erosion and its impacts to fisheries. WALCC is a partnership between federal, state and tribal entities (including BBNA) that serves Western Alaska on natural resource and environmental conservation initiatives. It also compliments our Environmental Program's current Port Heiden Vulnerability Assessment project in partnership with the Alaska Native Tribal Health Consortium.

As changes to the environment can have adverse effects on our way of life, we support gathering information to aid in management decisions in reducing negative impacts from these changes. This project may serve as a model to inform other communities in our region and throughout Alaska of coastal erosion impacts to subsistence fishing. Thank you for your consideration.

Sincerely,

Ralph Andersen
President and CEO
Bristol Bay Native Association

United States Department of the Interior
NATIONAL PARK SERVICE
Katmai National Park and Preserve
P.O. Box 7
King Salmon, AK 99613

IN REPLY REFER TO:
1.A.2 (KATM-CR)

May 23, 2017

Ms. Debbie Mass, Program Director
Alaska Sustainable Salmon Fund
PO Box 115526
Juneau, AK 99811-5526

Dear Ms. Maas,

The National Park Service would like to express our support for the proposed ADF&G Division of Subsistence project—to document subsistence harvest patterns of Port Heiden residents and investigate how environmental changes are affecting the subsistence way of life in that community. The NPS has worked with the Division of Subsistence on a number of similar projects over the years and have found the results of the Division's research to be very useful in helping NPS achieve its subsistence research mandate as directed by ANILCA VIII, Sec. 812. We understand the goals of the proposed project and understand that it will involve voluntary household surveys, in-depth interviews with individuals, and participant observation of salmon harvesting in our community.

Port Heiden is situated near Aniakchak National Monument and Preserve, and local residents depend on the wild food resources that inhabit portions of those federal lands. We feel this project will benefit the residents of Port Heiden in several ways. Current data on the community's wild food harvests are lacking—the existing community harvest survey data are over thirty years old—and resource managers would benefit greatly from a multi-year research project to update and thoroughly document the use and harvest of those resources, as well as observations and local traditional knowledge about those resources and the lands and waters that support them.

We also support the efforts made by the Division to collaborate directly with community members. It is our understanding that Port Heiden Tribal Council will assist the Division of Subsistence with recommendations about community members who may want to work with researchers on documenting harvests, as well as knowledgeable, long-term residents who may wish to be interviewed for the project.

The NPS wholly supports the Division of Subsistence on this proposed project. Thank you for considering this important work for funding.

Sincerely,

Linda C. Chisholm
Cultural Resource Program Manager,
Archeologist & Subsistence Coordinator

APPENDIX D—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 individual steelhead, the quantity would be multiplied by the appropriate conversion factor (in this case 1.4) to show a harvest of 4.2 lb of steelhead.

Resource name	Reported units	Conversion factor
Chum salmon	Individual	5.2149
Chum salmon [CF retention]	Individual	5.2149
Coho salmon	Individual	5.0168
Coho salmon [CF retention]	Individual	5.0168
Chinook salmon	Individual	6.1111
Chinook salmon [CF retention]	Individual	6.1111
Pink salmon	Individual	2.3887
Pink salmon [CF retention]	Individual	2.3887
Sockeye salmon	Individual	3.8650
Sockeye salmon [CF retention]	Individual	3.8650
Landlocked salmon	Individual	1.5000
Spawning sockeye salmon	Individual	3.8650
Unknown salmon	Individual	4.5900
Unknown salmon [CF retention]	Individual	4.5900
Pacific herring	Gallons	6.0000
Pacific herring [CF retention]	Gallons	6.0000
Pacific herring roe	Gallons	7.0000
Pacific herring roe [CF retention]	Gallons	7.0000
Pacific herring sac roe [CF retention]	Gallons	7.0000
Pacific herring spawn on kelp	Gallons	7.0000
Capelin (grunion)	Gallons	6.0000
Capelin (grunion) [CF retention]	Gallons	6.0000
Unknown smelt	Individual	0.2500
Pacific (gray) cod	Individual	3.2000
Pacific (gray) cod [CF retention]	Individual	3.2000
Unknown cod	Individual	3.2000
Starry flounder	Individual	3.0000
Starry flounder [CF retention]	Individual	3.0000
Pacific halibut	Pounds	1.0000
Pacific halibut [CF retention]	Pounds	1.0000
Unknown rockfish	Individual	1.5000
Sablefish (black cod)	Individual	3.1000
Red Irish lord	Individual	1.0000
Unknown sculpin	Individual	0.5000
Unknown sculpin [CF retention]	Individual	0.5000
Salmon shark [CF retention]	Individual	9.0000
Yellowfin sole	Individual	1.0000
Yellowfin sole [CF retention]	Individual	1.0000
Alaska blackfish	Individual	0.0700
Burbot	Individual	4.2000
Dolly Varden–freshwater	Individual	1.4000
Dolly Varden–saltwater	Individual	1.4000
Dolly Varden–saltwater [CF retention]	Individual	1.4000
Arctic grayling	Individual	0.7000

-continued-

Resource name	Reported units	Conversion factor
Northern pike	Individual	3.0000
Rainbow trout	Individual	1.4000
Steelhead	Individual	1.4000
Unknown trout	Individual	1.4000
Least cisco	Individual	0.7000
Humpback whitefish	Individual	2.1000
Round whitefish	Individual	0.7000
Brown bear	Individual	150.0000
Caribou	Individual	150.0000
Moose	Individual	540.0000
Beaver	Individual	8.7500
Red fox	Individual	0.0000
Red fox–cross phase	Individual	0.0000
Alaska hare	Individual	5.6000
Snowshoe hare	Individual	2.0000
River (land) otter	Individual	3.0000
Lynx	Individual	4.0000
Mink	Individual	2.5000
Muskrat	Individual	0.7500
Porcupine	Individual	8.0000
Arctic ground (parka) squirrel	Individual	0.5000
Red (tree) squirrel	Individual	0.5000
Weasel	Individual	0.5000
Gray wolf	Individual	0.0000
Wolverine	Individual	0.0000
Reindeer–feral	Individual	0.0000
Harbor seal	Individual	56.0000
Spotted seal	Individual	56.0000
Unknown seal	Individual	84.0000
Sea otter	Individual	0.0000
Steller sea lion	Individual	200.0000
Walrus	Individual	770.0000
Beluga whale	Individual	995.0000
Unknown whale	Individual	995.0000
Bufflehead	Individual	0.5700
Common eider	Individual	3.2800
King eider	Individual	2.2500
Steller's eider	Individual	1.2000
Unknown goldeneye	Individual	1.2700
Harlequin duck	Individual	0.8500
Mallard	Individual	1.6100
Unknown merganser	Individual	1.7400
Long-tailed duck	Individual	1.1600
Northern pintail	Individual	1.1800
Unknown scaup	Individual	1.3500
Black scoter	Individual	1.5100
Surf scoter	Individual	1.4600
White-winged scoter	Individual	2.6100
Northern shoveler	Individual	0.8600

-continued-

Resource name	Reported units	Conversion factor
Unknown teal	Individual	0.4700
American wigeon	Individual	1.0500
Brant	Individual	1.8900
Unknown Canada/cackling geese	Individual	4.3900
Emperor goose	Individual	3.0800
White-fronted goose	Individual	3.1800
Unknown geese	Individual	3.2000
Unknown swans	Individual	10.9800
Sandhill crane	Individual	5.4000
Black oystercatcher	Individual	0.7700
Unknown auklet	Individual	0.2500
Unknown cormorant	Individual	2.8500
Glaucous-winged gull	Individual	1.5400
Herring gull	Individual	1.5500
Mew gull	Individual	0.5600
Sabine's gull	Individual	0.2700
Black-legged kittiwake	Individual	0.6200
Unknown murre	Individual	1.3800
Unknown tern	Individual	0.1600
Ptarmigan	Individual	0.7700
Mallard eggs	Individual	0.1150
Black oystercatcher eggs	Individual	0.1010
Glaucous-winged gull eggs	Individual	0.2030
Herring gull eggs	Individual	0.2090
Mew gull eggs	Individual	0.1150
Unknown gull eggs	Individual	0.2140
Unknown gull eggs	Gallons	16.6000
Black-legged kittiwake eggs	Individual	0.1150
Unknown murre eggs	Individual	0.2305
Unknown tern eggs	Individual	0.4200
Red (large) chitons	Gallons	3.0000
Black (small) chitons	Gallons	4.0000
Butter clams	Gallons	3.0000
Pacific littleneck clams (steamers)	Gallons	3.0000
Pacific littleneck clams (steamers) [CF retention]	Gallons	3.0000
Razor clams	Individual	3.0000
Razor clams	Gallons	3.0000
Razor clams [CF retention]	Gallons	3.0000
Softshell clams	Gallons	3.0000
Unknown clams	Gallons	2.8900
Unknown cockles	Gallons	2.8900
Unknown cockles	Quarts	0.7225
Dungeness crab	Individual	0.7000
Dungeness crab [CF retention]	Individual	0.7000
Red king crab	Individual	5.3800
Unknown king crab	Individual	2.3000
Unknown king crab [CF retention]	Individual	2.3000
Tanner crab, opillio	Gallons	6.0000

-continued-

Resource name	Reported units	Conversion factor
Unknown tanner crab [CF retention]	Individual	1.6000
Unknown crab [CF retention]	Individual	1.5700
Blue mussels	Gallons	0.2600
Octopus	Individual	4.0000
Octopus [CF retention]	Individual	4.0000
Scallops [CF retention]	Individual	1.0000
Shrimp	Gallons	2.0000
Shrimp [CF retention]	Pounds	1.0000
Blueberry	Gallons	4.0000
Blueberry	Quarts	1.0000
Lowbush cranberry	Gallons	4.0000
Highbush cranberry	Gallons	4.0000
Crowberry	Gallons	4.0000
Nagoonberry	Gallons	4.0000
Nagoonberry	Quarts	1.0000
Nagoonberry	Half-pints	0.2500
Raspberry	Gallons	4.0000
Salmonberry	Gallons	4.0000
Salmonberry	Quarts	1.0000
Strawberry	Gallons	4.0000
Other wild berry	Gallons	4.0000
Beach asparagus	Gallons	1.0000
Other beach greens	Half-pints	0.2500
Hudson's Bay (Labrador) tea	Pounds	1.0000
Hudson's Bay (Labrador) tea	Gallons	1.0000
Hudson's Bay (Labrador) tea	Half-pints	0.0625
Lambs quarter	Gallons	4.0000
Wild celery	Gallons	0.2500
Beach rye grass	Gallons	4.0000
Wild parsley	Gallons	1.0000
Wild parsley	Half-pints	0.0625
Other wild greens	Gallons	1.0000
Unknown mushrooms	Pounds	1.0000
Unknown mushrooms	Gallons	4.0000
Unknown mushrooms	Quarts	1.0000
Beach greens	Gallons	4.0000
Seaweed/kelp	Gallons	4.0000
Wood	Cords	0.0000

Source ADF&G Division of Subsistence household surveys, 2019.

APPENDIX E—PROJECT SUMMARY

The Harvest and Use of Wild Resources in Port Heiden, Alaska, 2018

Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 465. Published 2020. By Bronwyn Jones and Margaret Cunningham.

Study Overview

This study is part of the effort to collect data about the full range of wild resource harvests and uses by the community Port Heiden, Alaska. This summary provides an overview of the results of a household survey administered for the study year 2018. Information in this summary also was derived from in-depth interviews conducted with key respondents, as well as insight from participant observation and community meetings. The project was funded by the Alaska Sustainable Salmon Fund (AKSSF). This information was collected by research staff of the Alaska Department of Fish and Game (ADF&G) Division of Subsistence with support from the Native Village of Port Heiden, and with the help of local research assistants from Port Heiden.

Acknowledgments

The Division of Subsistence would like to first thank all the residents of Port Heiden for being welcoming and receptive to this research project; community participation in this project was essential and appreciated. Additionally, researchers would like to thank the Native Village of Port Heiden and the Native Council of Port Heiden for supporting this project and allowing the use of their buildings and vehicles, which helped with project logistics while staff were in the community conducting interviews, surveys, meetings, and training sessions for the project. The survey would not have been as successful as it was without the local research assistants; thank you to: Dimitri Christensen, Natalya Shellikoff, and Terry Christensen. In addition, we would like to thank Mark Kosbruk, Sr., Tisha Kalmakoff, Nefuti Orloff, Jaclyn Christensen, John Christensen, Gerda Kosbruk, and Kris Carlson for their help and wisdom.

Highlights of Harvest Survey Findings

This study found an estimated population for Port Heiden in 2018 of 104 individuals in 35 households. As in the past, during the 2018 study year, many residents of this study community relied on subsistence resources for nutrition and to support their way of life. During the study year all households used at least one type of wild resource, which coincided with a high level of household participation in harvesting efforts: 93% of households harvested at least one wild resource in 2018. In addition to harvesting wild resources, a high percentage of households shared what they harvested with others (96% households gave away at least one type of wild resource and 100% received wild resources from other households).

Overall, 30,789 lb, or 297 lb per capita, of wild resources were harvested during the study year. Figure 1 shows the composition of the harvest by resource type and in pounds usable weight for 2018. Salmon and large land mammals composed the largest portions of overall wild resource harvests. Salmon composed almost one-half (48%) of the total wild resource harvest weight in 2018; the total salmon harvest was 14,856 lb, or 143 lb per capita. Large land mammals composed 37% of the total wild resource harvest weight; the large land mammals total harvest weight was 11,511 lb, or 111 lb per capita. The third highest harvested resource type was vegetation (2,375 lb total, or 23 lb per capita), followed by birds and eggs (861 lb total, or 8 lb per capita), marine invertebrates (707 lb total, or 7 lb per capita), nonsalmon fish (313 lb total, or 3 lb per capita), marine mammals (145 lb total, or 1 lb per capita), and small land mammals (21 lb total, or less than 1 lb per capita).

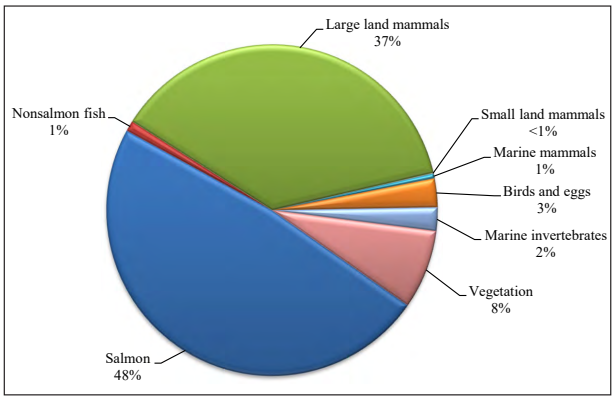


Figure 1.–Composition of wild resource harvest, by category, in pounds usable weight, Port Heiden, 2018.

As depicted in Figure 2, resource search and harvest areas documented during this study year were spread out across the Alaska Peninsula, though the majority of locations where Port Heiden residents harvested wild foods were relatively close to the community.

Key Respondent Interviews (KRIs)

The major themes that emerged from the KRIs that related to subsistence salmon fishing were: 1) changes in access to subsistence salmon resources due to local environmental change, 2) effects of the Area M commercial fishery on subsistence fishing activities, and 3) youth participation in subsistence salmon fishing. Regarding the first theme—access to subsistence resources due to local environmental change—KRI participants described widespread erosion along the coastline near Port Heiden, resulting in reduced access to certain subsistence use areas (Figure 3). For the second theme—the intersection of Area M commercial fishing and local subsistence fishing by Port Heiden households—many respondents voiced the opinion that subsistence salmon catches are negatively affected by Area M commercial fishery boats. According to respondents, the proximity of subsistence gillnets and the locations where Area M fishermen are allowed to commercially harvest salmon directly affects the amount of fish subsistence users catch. Regarding the third theme—youth participation in subsistence salmon fishing—key respondent interview participants mentioned that they worried about the future interest of local youth in continuing subsistence salmon fishing traditions.

Conclusions

This study documented the continuing importance of subsistence harvesting and processing activities for the residents in Port Heiden. According to respondents in Port Heiden, subsistence uses of wild resources link people to their past and are vital to the present health of this community. Even when subsistence harvest activities were hampered by changes in the local environment, resource availability, restrictive regulations, lack of time or equipment, age, inability, and other restricting factors, most residents in Port Heiden expressed their preference for obtaining wild resources compared to food purchased in stores. Community members expressed that securing enough wild foods was important for their household food security and for continuing important cultural practices.

Figure 3.–Coastal erosion, Port Heiden, 2018.

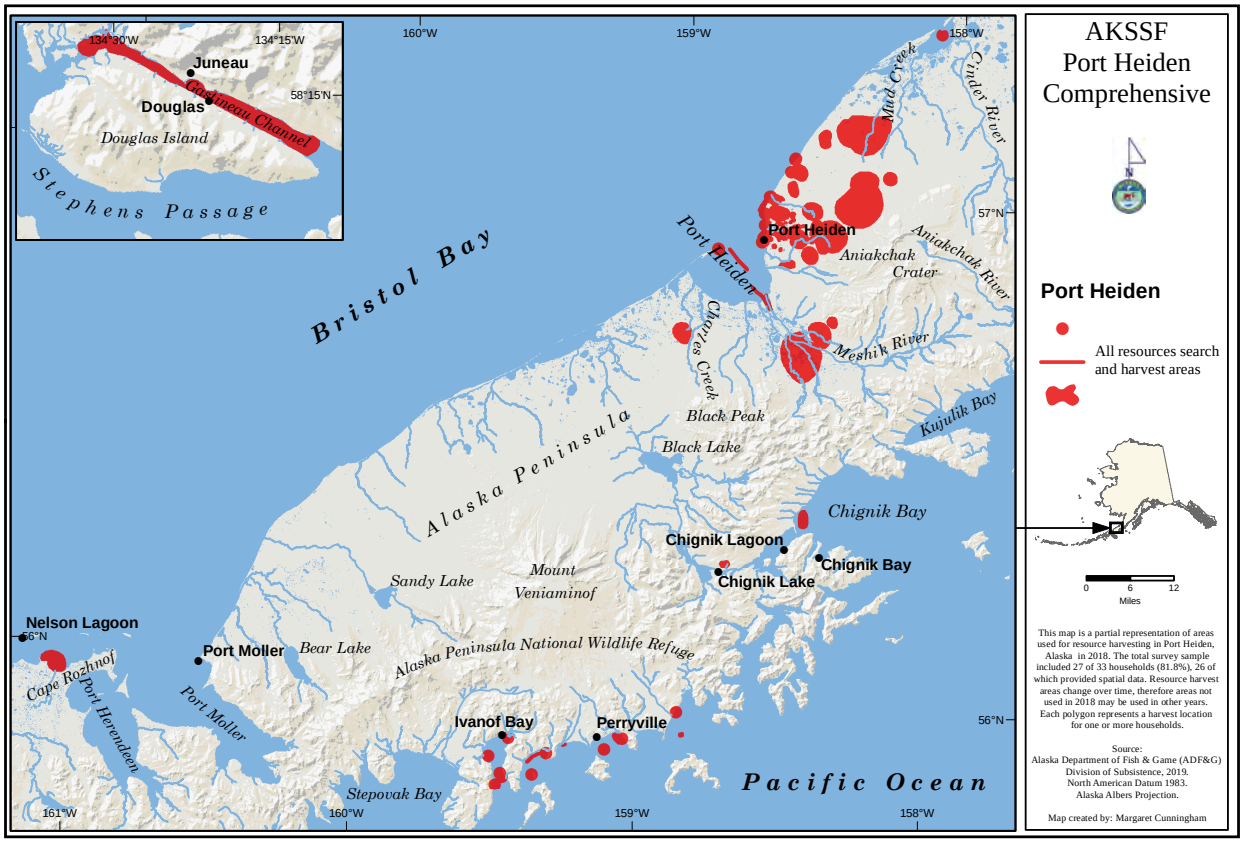


Figure 2.–Search and harvest areas in Alaska, all wild resources, Port Heiden, 2018.

Where to Find the Project Data and Final Report

Community Subsistence Information System

The Community Subsistence Information System (CSIS) is an online database that hosts Alaska community harvest information gathered by the ADF&G Division of Subsistence. The results of the 2018 household surveys, as well as data from previous surveys, are available through the CSIS. To access the CSIS online: https://www.adfg.alaska.gov/sb/CSIS/

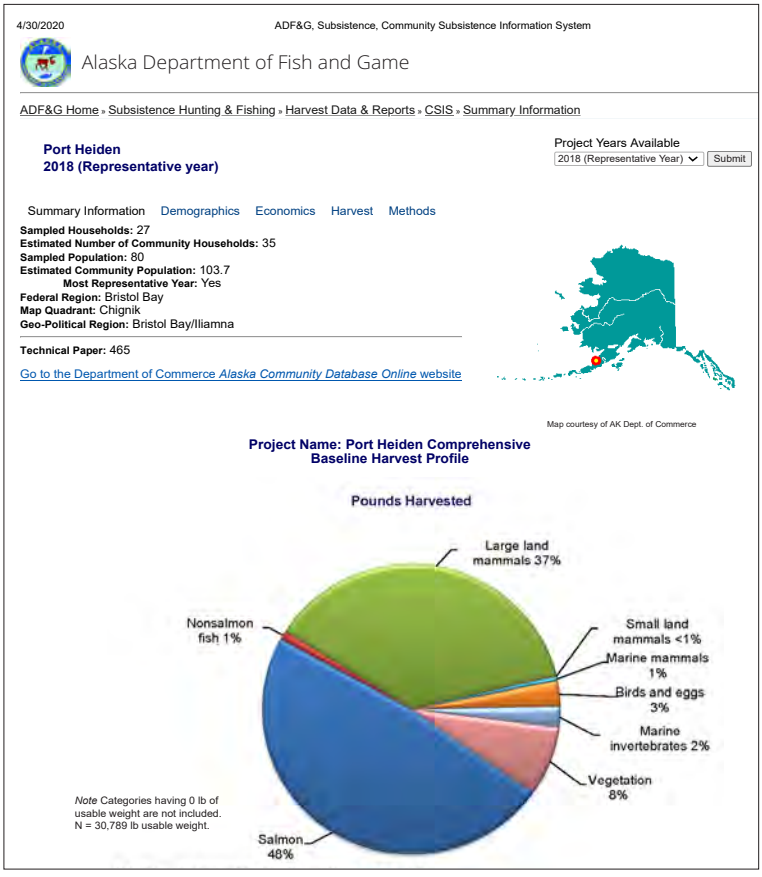
Technical Paper

The results of this study can be found in the following technical paper:

Jones, Bronwyn and Margaret Cunningham. 2020. The Harvest and Use of Wild Resources in Port Heiden, Alaska, 2018. Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 465: Anchorage.

In Port Heiden, hard copies of the technical paper are available at: Ray's Place and the Meshik School library.

To download a copy of the full technical paper: http://www.subsistence.adfg.state.ak.us/TechPap/TP465.pdf



Port Heiden data summary for 2018 displayed in the CSIS.

How Can Data be Used?

Reports and the data included in reports can be used to support a community's proposal to develop or change subsistence fishing or hunting rules and regulations, including gear types, seasons, and limits, to ensure that fish and wildlife populations are managed sustainably and the priority for subsistence uses is recognized in law. Information on the board processes, how to develop proposals, and board and advisory committee schedules are on the ADF&G website under "Regulations."

Alaska Board of Fisheries Process Overview

The Alaska Board of Fisheries' (BOF) main role is to conserve and develop the fishery resources of the state. This involves setting seasons, bag limits, and methods and means for the state's subsistence, commercial, sport, guided sport, and personal use fisheries. The BOF receives written proposals, comments, and oral and written testimony from members of the public and local advisory committees (AC), and staff from ADF&G. The board then deliberates on regulations that respond to people's concerns, while also considering the need for long-term conservation and sustainable use of the resource. BOF meetings are open to the public and provide opportunity for public comment. They work under a regional cycle every three years.

Proposals for BOF meetings are accepted from December 1–April 10 in the year before the scheduled BOF meeting. Public comments can be submitted to the ADF&G Boards Support Section at any time up to two weeks prior to the start of the board meeting. The BOF is especially interested in proposals and comments that represent a collective, consensus approach to problem-solving, such as tribal council or AC comments. Comments are included with the meeting packet materials prepared for the BOF meeting. A final chance to submit written comments is to do so in person at the meeting or via fax, and those are provided to board members periodically throughout the meeting.

Alaska Board of Game Process Overview

The Alaska Board of Games' (BOG) main role is to conserve and develop Alaska's wildlife resources. This includes establishing open and closed seasons, areas for taking game, setting bag limits, and regulating methods and means. The board is also involved with setting policy for directing the management of the state's wildlife resources. The board is charged with making allocative decisions, and ADF&G is responsible for management based on those decisions.

The BOG meeting cycle generally occurs from October through March and follows very similar processes listed above for the BOF.

The next BOG meeting to address the Central/ Southwest Region (GMUs 9, 10, 11, 13, 14A, 14B, 16, 17) will occur during the 2020/2021 BOG cycle. A Call for Proposals enumerating the subjects for the upcoming meeting cycle is typically issued by January and proposals are due May 1, unless May 1 falls on a weekend, in which case the deadline is the Friday prior. Public comments can be submitted online, via email, via fax, and by post until two weeks prior to the start of the board meeting.

ADF&G Advisory Committees

ADF&G advisory committees (AC) are an important component of the BOF and BOG processes. The ACs are local groups that meet to discuss fish and wildlife issues, provide a local forum for those issues, and make recommendations to the Alaska boards of Fisheries and Game. The Lower Bristol Bay AC has a total of 15 seats—with community-designated seats for Egegik (2), Pilot Point (2), Ugashik (1), and Port Heiden (2), and eight undesignated seats. The Lower Bristol Bay AC is located on the east side of Bristol Bay in Game Management Unit 9E. The Lower Bristol Bay AC is an active committee, holding 1–3 in-person and teleconference meetings per year focusing on both fishing and game management issues. Community harvest data from the 2018 Port Heiden household surveys are available to the public and may be used by the AC (or any other person wishing to be part of the BOF process) to submit proposals or use as testimony.

For information on your local AC and how to become involved:

Contact the ADF&G Regional Coordinator: Taryn O'Connor-Brito by phone: (907) 842-5142, or email: taryn.oconnor-brito@alaska.gov

Or visit the ADF&G website by following this link:

- https://www.adfg.alaska.gov/index.cfm?adfg=process.acinfo&ac=lower_bristol_bay

Want to know more? To find out more about advisory committees or how to submit a proposal, contact the Board Support Regional Coordinator for your area:

Arctic: 442-1717

Interior: 459-7263

Southwest: 842-5142

Southcentral: 267-2354

Southeast: 465-4110

Western: 543-2433

Statewide: 465-4110

You can also visit:

- www. boards.adfg.state.ak.us
- http://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/forms/bof_process.pdf
- http://www.adfg.alaska.gov/static/regulations/regprocess/gameboard/pdfs/bog_process.pdf

Contact Us

Please feel free to contact project staff with any questions or comments about the project and report. Additionally, let us know if you have any items of concern or items of interest regarding local wild resources that you would like studied. We welcome the opportunity to work together with individuals, communities and organizations to develop research projects that inform you, your community, fish and game managers and policy makers.

Bronwyn Jones, Subsistence Resource Specialist III (PI), Division of Subsistence, Alaska Department of Fish and Game (ADF&G), 333 Raspberry Road, Anchorage, AK, 99518, Phone: (907) 267-2178, Email: bronwyn.jones@alaska.gov

Anchorage Division of Subsistence General Information: Phone (907) 267-2353