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Harvest and Use of Wild Resources in Wales, 2017

by

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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	$(F, t, \chi^2, etc.)$
confidence interval	CI
correlation coefficient (multiple)	R
correlation coefficient (simple)	r
covariance	cov
degree (angular)	°
degrees of freedom	df
expected value	E
greater than	>
greater than or equal to	≥
harvest per unit effort	HPUE
less than	<
less than or equal to	≤
logarithm (natural)	ln
logarithm (base 10)	log
logarithm (specify base)	log_2, etc.
minute (angular)	'
not significant	NS
null hypothesis	H_O
percent	%
probability	P
probability of a type I error (rejection of the null hypothesis when true)	α
probability of a type II error (acceptance of the null hypothesis when false)	β
second (angular)	"
standard deviation	SD
standard error	SE
variance:	
population	Var
sample	var

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ABSTRACT

This report summarizes the results of research conducted in April 2018 on the subsistence harvests and uses of wild foods in Wales, AK for the 2017 study year. The comprehensive subsistence survey asked respondents about their harvest, sharing, and use of more than 75 species of fish, land mammals, marine mammals, marine invertebrates, birds, wild plants, and berries. The project also collected information on community demographics, income, food security, and wild food networks. Researchers mapped areas used by community residents for subsistence hunting, fishing, and gathering in a 12-month study period. Wales is a primarily Iñupiat community with a reliance on marine mammal species. Hunting for seals, walrus, and bowhead whales are heavily dependent upon sea ice conditions as the animals are targeted on the ice, which must be thick enough to support the weight of the animal and the hunters field dressing their catch. Arctic sea ice has seen unprecedented declines since 2012, and 2017 saw a record low for winter maximum sea ice cover. Subsistence harvests of marine mammals by Wales hunters in 2017, particularly walrus, were the lowest recorded of the years for which comparable harvest data is available.

Key words: Wales, Seward Peninsula, Bering Sea, subsistence fishing, subsistence hunting, food security, climate change

1. INTRODUCTION

Elizabeth H. Mikow

This report summarizes the results of research conducted on the 2017 subsistence harvest and use of wild foods by residents of the community of Wales, in northwest Alaska. The project provides baseline information about contemporary subsistence uses of fish, wildlife, and vegetation resources as well as mapping of search areas utilized by members of the community in pursuit of these resources. Systematic documentation of harvest, use, and sharing information is important to address long-term information needs regarding the role of these wild resources in Wales and to ensure continued opportunities for customary and traditional uses of fish and wildlife resources.

Wales is located on Cape Prince of Wales, at the western tip of the Seward Peninsula (Figure 1-1). Residents of the community are predominately Iñupiaq, and like other small, predominately Alaska Native communities in rural Alaska, remain substantially dependent on their annual harvests of fish, land and marine mammals, migratory waterfowl, and vegetation. Table 1-1 presents a list, including the Linnaean taxonomic names, of resources used by the community during the 2017 study year. Comprehensive harvest surveys were used to collect information at the household level about harvests of specific resources, including the amount harvested, participation in harvest activities, sharing of subsistence resources, and assessments of harvest. Additional collected information included household demographic and economic information.

Marine mammals are of particular importance to residents of coastal Alaska communities, and these resources have composed over one-half of Wales' total estimated harvest in the earlier study years of 1993 and 2006[1]. The extent of sea ice in July 2012 was the lowest ever measured,[2] prompting the scientific community to speculate that a summer without sea ice could occur as early as 2020. Even the most pessimistic of earlier forecasts had not proposed the absence of summer sea ice as a possibility until mid-century (Overland and Wang 2013). In 2013 and 2014, sea ice extent rebounded to the highest levels since 2007, but still remained below long-term averages from 1998 to 2010[3]. Arctic sea ice reached its fourth lowest extent on record in 2015,[4] and a record low for winter maximum sea ice cover was set in 2017[5]. The effects of poor ice conditions on subsistence hunting for marine mammals have been documented in recent research conducted in Arctic Alaska communities (Braem et al. 2017). Respondents in this study noted myriad effects on subsistence pursuits brought about by poor or unpredictable ice conditions, especially to spring hunting for bearded seals, walrus, and bowhead whales. Thinner, more brittle ice conditions have led to shorter windows of time for hunters to harvest bearded seals and walrus on ice floes. Earlier spring breakup has led to occasions in which the ice is too rotten for travel when migrating marine mammal species arrive: hunters must wait until enough open water allows travel by boat and when ice and ice-dependent animals are much further away.

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1. Alaska Department of Fish and Game (ADF&G) Division of Subsistence, Juneau. "Community Subsistence Information System: CSIS." Accessed April 16, 2019. https://www.adfg.alaska.gov/sb/CSIS. Hereinafter *ADF&G CSIS*.
2. National Snow and Ice Data Center (NSIDC). 2012. "Arctic sea ice shatters previous low records; Antarctic sea ice edges to record high." Accessed November 19, 2017. http://nsidc.org/news/newsroom/archive/201210
3. National Snow and Ice Data Center (NSIDC). 2014. "Melt season ending." Accessed November 19, 2017. http://nsidc.org/arcticseaicenews/2014/09/melt-season-ending
4. National Snow and Ice Data Center (NSIDC). 2015. "Arctic sea ice extent settles at fourth lowest in satellite record." Accessed November 19, 2017. http://nsidc.org/news/newsroom/PR_2015meltseason
5. National Snow and Ice Data Center (NSIDC). 2017. "Arctic sea ice 2017: Tapping the brakes in September." Accessed April 15, 2019.
   http://nsidc.org/arcticseaicenews/2017/10/arctic-sea-ice-2017-tapping-the-brakes-in-september/

Figure 1-1.–Study area, 2017.

Table 1-1.–Resources used, Wales, 2017.

Resource	Scientific name
Chum salmon	*Oncorhynchus keta*
Coho salmon	*Oncorhynchus kisutch*
Chinook salmon	*Oncorhynchus tshawytscha*
Pink salmon	*Oncorhynchus gorbuscha*
Sockeye salmon	*Oncorhynchus nerka*
Unknown salmon	*Oncorhynchus spp.*
Pacific herring	*Clupea pallasi*
Capelin (grunion)	*Mallotus villosus*
Rainbow smelt	*Osmerus mordax*
Arctic cod	*Boreogadus saida*
Saffron cod	*Eleginus gracilis*
Pacific halibut	*Hippoglossus stenolepis*
Dolly Varden	*Salvelinus malma*
Northern pike	*Esox lucius*
Sheefish	*Stenodus leucichthys*
Round whitefish	*Prosopium cylindraceum*
Unknown nonsalmon fish	
Caribou	*Rangifer tarandus*
Moose	*Alces alces*
Common muskox	*Ovibos moschatus*
Snowshoe hare	*Lepus americanus*
Young bearded seal	*Erignathus barbatus*
Adult bearded seal	*Erignathus barbatus*
Ringed seal	*Histriophoca fasciata*
Spotted seal	*Phoca largha*
Unknown seal oil	
Walrus	*Odobenus rosmarus*
Beluga whale	*Delphinapterus leucas*
Bowhead whale	*Balaena mysticetus*
Unknown eiders	
Mallard	*Anas platyrhynchos*
Long-tailed duck	*Clangula hyemalis*
Northern pintail	*Anas acuta*
Unknown ducks	
Brant	*Branta bernicla*
Unknown Canada/cackling geese	*Branta spp.*
Snow goose	*Chen caerulescens*
White-fronted goose	*Anser albifrons*
Tundra (whistling) swan	*Cygnus columbianus*
Sandhill crane	*Grus canadensis*
Unknown ptarmigans	*Lagopus spp.*
Unknown eider eggs	
Unknown duck eggs	
Unknown goose eggs	
Unknown gull eggs	
Unknown murre eggs	*Uria spp.*
Unknown eggs	
Unknown clams	
Unknown king crabs	
Unknown crabs	
Giant scale worm	*Eunoe nodosa*
Unknown marine invertebrates	
Blueberry	*Vaccinium uliginosum alpinum*
Lowbush cranberry	*Vaccinum vitis-idaea minus*
Crowberry	*Empetrum nigrum*
Cloudberry	*Rubus chamaemorus*
Wild Potato	*Hedysarum alpinum*
Hudson's Bay (Labrador) tea	*Ledum palustre*
Sourdock	*Rumex fenestratus*
Willow leaves	*Salix spp.*
Other wild greens	
Fireweed	*Epilobium angustifolium*
Stinkweed	*Artemisia tilesii*
Sea lovage	*sigusticum scoticum*
Wild chives	*Allium schoenoprasum*
Unknown vegetation	

Source ADF&G Division of Subsistence household surveys, 2018.

Project Background

The Division of Subsistence scientifically gathers, quantifies, evaluates and reports information about customary and traditional uses of the state of Alaska's fish, wildlife, and vegetative resources (AS 16.05.094). Local residents, agencies, and nongovernmental organizations need updated baseline information over time on customary and traditional uses of fish, wildlife, and vegetation for planning, impact assessment, and decision making. The goal of this study was to document comprehensive baseline subsistence harvest and use information in Wales, because the most recent information was over a decade old. The Division of Subsistence collected comprehensive harvest information for the 1994 study year (Magdanz et al. 2002) and Kawerak collected information for the 2005–2006 study year (Ahmasuk and Trigg 2008rev.). This project was conducted cooperatively by the ADF&G Division of Subsistence and the Native Village of Wales.

Regional Background[6]

The residents of the Bering Strait region, like other Alaska Native people, are among the very few indigenous peoples of the world who inhabit their traditional territories; who are a majority of the population in their territories; whose territories have been largely unaffected by agriculture, industrial development, or roads; who manage their political and economic affairs through both traditional (tribal) and contemporary (borough and corporate) structures; and who continue to rely substantially on hunting, fishing, and gathering to provide for their sustenance (Burch Jr. 1985; Fall and Utermohle 1995; Georgette and Loon 1993; Magdanz et al. 2002; 2004; 2010).

Prehistory

Most archaeologists believe that people have been living in North America for at least 20,000 years based on sites outside of Alaska, and the archaeological record in Arctic Alaska provides evidence of human habitation for at least 11,000 years (Anderson 1984). Numerous sites belonging to the Paleoarctic tradition are spread across Arctic Alaska. Materials from later traditions extending through the historical period are also present, associated with the Northern Archaic, Arctic Small Tool, Norton, and Thule traditions (and various subtraditions). Numerous sites on St. Lawrence Island are associated with Siberian cultural traditions, including major sites associated with Old Bering Sea, Okvik, Punuk, and Thule traditions (Hillside, Kukulik, Kialegak; Hughes 1984; Smith et al. 1978). Among the major sites[7] known in Bering Strait are those excavated at Cape Nome, Cape Denbigh (Difchahak, Iyatet, Madjujuyinuk), near Unalakleet (Ungalaqliq and the Bridge site), and those near modern day Wales (Kugzruk, Kurigtavik). The oldest sites date to the Norton Tradition (roughly 3000–1000 BP; Dumond 2001; Ray 1984).

Ethnographic Past

Prior to non-Native contact, the tribes of the Bering Strait region had unique social organizations: one of the major distinctions between groups was based around subsistence patterns and pursuit of certain resources. Ray (1975) combines tribes into three groups: those subsisting primarily on whales and walrus, on caribou, or on smaller sea mammals. The tribes of Little Diomede, King Island, Wales, Sledge Island, and Cape Nome are included in the whales and walrus pattern to varying degrees. The tribes of Kauwerak, Koyuk, Goodhope, Inglutalik, Egavik, and Shaktoolik primarily subsisted on caribou and fish. The remaining tribes of Cape Espenberg, Shishmaref, Port Clarence, Ignituk, Fish River, Atnuk, Unalakleet, Kikitauk, St. Michael, Stebbins, and Pastolik primarily subsisted on small sea mammals and fish. These distinctions were not rigid: groups would harvest resources outside of their subsistence patterns when possible.

Tribes consisted of people united by a common language and culture with traditional territories recognized by other groups. Tribes were semi-nomadic: they moved seasonally to most efficiently take advantage of seasonally abundant marine mammals, fish, land mammals, and migratory birds. Whaling tribes likely had

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6. This section is adapted from Braem et al. (2017).

7. Many more sites exist, but have not been as extensively researched or documented. Ray (1984) and Koutsky (1981:Volumes I–VII) describe additional sites.

different political and social arrangements than their caribou and small sea mammal counterparts due to complex ceremonies revolving around the selection of crews. Caribou-dependent groups were very focused upon territorial boundaries between tribes, which could cause tension due to the migratory nature of the resource. Population estimates for the Bering Strait region are approximately 2,500 at the beginning of the 19th century (Ray 1975:104–107).

Trade networks between various groups of Iñupiat and other Alaska Natives were extensive prior to first contact with non-Natives. Indigenous peoples living in what is now North Slope, Northwest Alaska, and the Bering Strait participated in major trade fairs at Pastolik, Port Clarence, Sisauliq (on Kotzebue Sound), Nigliq (at the mouth of the Colville River), Barter Island, and the McKenzie River (Bockstoce 2009; Burch Jr. 1975; 1998; Ray 1984). Coastal people traded coastal resources (particularly blubber and oil) for inland resources such as caribou meat and hides, and fox and wolverine skins. Intercontinental trade through Bering Strait occurred as well, intensifying after the establishment of the trade fair at Kolyma in 1789 (Ray 1975). This trade of manufactured goods for Alaskan furs was dominated on the Russian side by Chukchi groups and on the Alaskan side by coastal Bering Strait Natives. By 1791, Bering Strait Iñupiat were using bells, bracelets, harpoon and land points made of metal, and glass beads (Ray 1984:299).

Non-Native Contact

Bering Strait Natives, by mere fact of geography, were the first to experience contact with non-Native people. European Russians learned of the existence of what is now Alaska in the mid-17th century after contact with indigenous groups in the Russian Far East (Ray 1975; 1984). In 1732, the Russian explorers Mikhail Gvozdev and Ivan Fedorov "discovered" Little Diomede Island and King Island and mapped a portion of the Alaska coastline near Wales. Subsequent exploration carried out in the 18th century and early 19th century by Daurkin, Cook, Kobelev, Billings, von Kotzebue, Vasiliev, Kromchenko, and others expanded outside knowledge of the region's lands and inhabitants. Ray calls these encounters "short and haphazard" (Ray 1984:299).

The first long-term presence of non-Natives in the Bering Strait region came with the establishment of a trading post by the Russian American Company at St. Michael in 1833 (Black 2004). The purpose of this trading post was to intercept the Bering Strait fur trade, which the Russian American Company had discovered was highly profitable and which interfered with its own access to Alaska furs. Laventriy Zagoskin wrote at Fort St. Michael in 1842:

> On their arrival in Norton Sound the Russians found the natives in the same stage of enlightenment in which they are today. When the fort was established the natives were using tobacco and iron; they had metal pots, knives and lances, and steel flints. Where did these come from? Partly from the south, from out of Fort Alexander on Bristol Bay, but in the main from the Kolyma through the Chukchis and through a chain of successive trading. From time immemorial there have been kinship ties and trade relations between the natives occupying the shore of Bering Strait, Aziyak [Sledge] and Ukivok [King] islands, and those living along the southern coast of Norton Sound. There were several localities for exchanging products, and most important of these were Pashtolik and Tachik. In addition the islanders frequently visited the villages on the lower Yukon—according to the old men among the natives. (Zagoskin 1967:101)

By the time Fort St. Michael was established, King Island had received a number of contacts from non-Native explorers, while Wales had only been visited twice. Both communities were known to be agents of Siberia-Alaska trade, but the foundation of the trading post did not appear to alter trade patterns or the movements of goods to the north from the Bering Strait region. It took the arrival of American vessels later in the 19th century to influence these networks directly (Ray 1975:124).

Whaling

The arrival of the commercial whaling fleet to Arctic waters set off a period of contact from approximately 1848–1910. Whalers and the traders who followed brought large quantities of liquor in trade, epidemics, and direct competition for the resources on which coastal Iñupiat depended, especially whales and walruses. After severely depleting whale populations, Yankee whalers began to harvest walruses. The decline in these important marine subsistence resources coincided with a decline in caribou populations (Burch Jr. 1975). Iñupiaq societies, already stressed by diseases and the introduction of alcohol, found their primary subsistence resources in reduced numbers and experienced significant population declines due to famine. Inland Iñupiat were hit especially hard by the caribou decline between 1850 and 1900, which plunged from an estimated 300,000 caribou in Northwest Alaska to 10,000–15,000 (Burch Jr. 1975; 1998; Fall and Utermohle 1995).

Reindeer

Following the decline of commercial whaling, Sheldon Jackson in 1892 worked to establish reindeer herding stations, a measure meant to provide in equal parts relief from food insecurity and acculturation (Burch Jr. 2012). As mentioned above, the decline of caribou combined with the depletion of whales and walrus had devastating impacts on local people. This situation was the impetus for governmental action in bringing reindeer herds into Alaska (Burch Jr. 2012). Herding and the growth of the fur trade brought additional change and economic opportunity to local Iñupiat. These economic opportunities also meant a loss of local control: decisions about herd policies and fur prices were made by individuals outside of the local economy and imposed upon Alaska Native groups (Schneider et al. 1980). Although reindeer herds across Northwest Alaska grew in size and number beginning in 1892 until the 1930s, the situation reversed in that decade. Caribou returned in substantial numbers to the Kobuk River valley in the late 1940s as reindeer populations declined (Burch Jr. 1998:44,134).

Originally, reindeer herds had been established for Native ownership, but had heavy oversight from the Bureau of Education; another obstacle to ownership was that herds would be inherited by local missions when a Native herder passed away (Finstad et al. 2006). By 1914, concerns arose over non-Native ownership of reindeer when the Loman family acquired a number of herds by purchasing them from missions and other non-Native owners. The Reindeer Act of 1937 prohibited the ownership of reindeer in Alaska by non-Natives. Following its passage, the government continued to play a large role in the management of herds, changing individual ownership to cooperative herds. The Bureau of Indian Affairs (BIA) took over the administration of reindeer herding in 1941, and the Reindeer Herder's Association (RHA) was formed in 1971 to unite herders in their efforts to develop the industry. By 1932 there were an estimated 640,000 reindeer in Alaska, which decreased to 23,000 by 1985. Presently there are an estimated 17,650 reindeer in Alaska. Twenty-one communities are members of the RHA, including Wales (U.S. Department of the Interior BLM 2008).

Gold Rush

The Bering Strait region experienced an influx of tens of thousands of non-Native settlers in the beginning of the 20th century when significant quantities of gold were discovered in the region of Nome in 1902 (Haycox 2002). Like whaling, the effects of gold prospectors in the region were extensive and often devastating. Wherever miners went into a territory, they often depleted local resources and sometimes ignored traditional land use. Initially, indigenous inhabitants had the possibility of wage labor in non-Native settlements, but they were quickly replaced by nonlocal settlers who followed the miners into new territories. However, many Alaska Natives were drawn to gold rush towns for the amenities they provided and the possibility of employment. Alcohol had a devastating effect on some, but perhaps the most serious consequence of the presence of prospectors and other settlers was the diseases they carried with them. Because the non-Native population expanded so rapidly, opportunities for the transmission of illness greatly increased (Fortuine 1989). The first waves of influenza came through the Pribilof Islands, St. Michael, and Nome in 1900, and measles spread throughout the region simultaneously. Hundreds of people died in Native communities, though they received aid when possible from BIA doctors and U.S. Army personnel. This was not the first

epidemic to have struck indigenous inhabitants of Arctic Alaska: other epidemics spread after contact with the Russians and in the early American colonial period, but the "Great Sickness" of 1900 may have been the most devastating. At least 2,000 people died during this epidemic, an estimate which may in fact be conservative. This epidemic was followed shortly thereafter by the Spanish Flu pandemic in 1917–1919, which primarily affected communities on the Western coast of Alaska (Haycox 2002).

Contemporary Setting

The Bering Strait region is largely composed of the Seward Peninsula and Norton Sound and also includes several communities located off the mainland such as Diomede and the two communities on St. Lawrence Island. The vegetation of the region is largely tundra, and the landscape consists of a mixture of coastal lowlands, expansive hills with scattered broad valleys, and small, isolated mountain ranges. There are dense concentrations of lakes and ponds on the peninsula that support migrating and nesting birds. The tree line begins about 50 miles southeast of Nome, and spruce forests are located in the southern part of the region. The climate in the region is characterized by long, cold winters and short, cool summers. Temperatures in the region can vary widely, ranging from -47° to 84°F. Three distinct cultural and linguistic groups of indigenous people inhabit the Bering Strait region: Iñupiaq, Central Yup'ik, and Siberian Yupik. Most lands are owned by the state or privately; some of the few federally managed lands in the region are the Bering Land Bridge National Preserve and Unalakleet Wild and Scenic River.

There is no defined political boundary for the Bering Strait region. Residents of this region are considered to be a part of the unorganized borough, which encompasses a large portion of rural Alaska. In these areas, cities and tribal organizations generally provide community services and the state provides educational services.[8] There are total of 16 communities in the Nome Census Area, which as of July 2017 had an estimated population of 9,994 people.[9] Over one-third (37%) reside in the regional hub of Nome, and the rest reside in 15 other primarily Alaska Native communities ranging in population from approximately 100 to 750 people. Overall, 76% of the residents of the Nome Census Area are Alaska Native, and an additional 6% report two or more racial backgrounds.[10] Various federally recognized tribes no longer inhabit their former communities year-round; these communities include Council, Solomon, Mary's Igloo, and King Island. The Bering Strait Native Corporation (BSNC, an Alaska Native Claims Settlement Act [ANCSA] for-profit regional corporation) encompasses the majority of the Seward Peninsula and the coastal lands of eastern Norton Sound. Kawerak, Inc., a regional nonprofit corporation, provides services including education, transportation, natural resource management, and economic development.

As of 2016, 67% of residents aged 16 and over in the Nome Census area were employed, with an average unemployment rate of 13% across all 12 months.[11] The greatest source of employment was local government, followed by educational and health services, professional and business services, and trade and transportation/utilities. Commercial fishing and mining activities are also large contributors to the local economy.

About Wales

Wales, also known as *Kiñigin*, is located on Cape Prince of Wales, at the western tip of the Seward Peninsula, 111 miles northwest of Nome and 26 miles east of Little Diomede Island (Mikulski 2012; Figure 1-1). In Iñupiaq, the name of the community roughly translates to "high place" is shared with Cape Mountain, which

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8. Alaska Department of Commerce, Community, and Economic Development, Community and Regional Affairs (ADCCED), Juneau, n.d. "Municipal Government Structure in Alaska." Accessed March 15, 2019.
    https://www.commerce.alaska.gov/web/dcra/LocalGovernmentOnline/MunicipalGovernment/
9. Alaska Department of Labor and Workforce Development (ADLWD), Research and Analysis Section, Juneau, n.d. "Population Estimates." Accessed April 17, 2019. http://live.laborstats.alaska.gov/pop/
10. ADLWD, Research and Analysis Section, Juneau, n.d. "Race and Hispanic Origin." Accessed April 17, 2019. http://live.laborstats.alaska.gov/pop/
11. ADLWD, Research and Analysis Section. Juneau, n.d. "Alaska Local and Regional Information: Nome." Accessed April 17, 2019. http://live.laborstats.alaska.gov/alari/

is situated behind the community (Koutsky 1981; Ray 1971; Thornton 1931). It lies within the transitional climate zone, which is characterized by tundra interspersed with boreal forests. During the months of June to November when the Bering Strait is ice-free, Wales has a maritime climate. After sea ice forms, there is an abrupt change to a cold, continental climate. Summer temperatures average between 40°F and 50°F, and winter temperatures range on average from -10°F to 6°F. Access to Wales is often limited due to frequent fog, high winds, and blizzard conditions.

Although there is considerable evidence of ancient human occupation in the vicinity of Wales, the archaeological record in the area is limited. Artifacts collected by Diamond Jenness in 1926 indicate the presence of Thule and Birnik cultures at Cape Prince of Wales, which are precursors to modern Iñupiaq societies (Dumond 1984; Morrison 1991). These artifacts suggest that Iñupiaq people have had continuous occupation of the area for at least 1,000 years. In the 19th century, residents of Cape Prince of Wales occupied two settlements: *Kigiataanaimiut* on the north side of a small stream and *Agianaimiut* on the south side. The two settlements were collectively referred to as *Kiñigin*. Wales was the largest community noted by Russian and English explorers in the late 18th and early 19th centuries (Ray 1975) and had a population of 400 during the first United States census in 1880.[12]

The size of the community was in part due to the wealth of resources available to inhabitants, who were able to harvest marine mammals that were concentrated near the community during their annual migrations due to the narrowing of the Bering Strait and Cape Prince of Wales. Whitefishes and migratory waterfowl were plentiful due to coastal habitats, and caribou were available on the Seward Peninsula in the 19th century. Likewise, the community had significant importance in trade networks with Siberian communities on the other side of the Bering Strait due to its strategic location (Burch Jr. 1998; Thornton 1931). In the late 19th century, the community's preeminence in Bering Strait trading networks began to fade with the arrival of Yankee whalers and gold miners, who created new networks and trading centers. Additionally, a serious incident in 1877 caused European and American traders to avoid Cape Prince of Wales. The whaling vessel *Allen* had anchored off of the coast near the community and traded alcohol with local residents. The next day, a group of 15 Wales residents returned to the ship under the influence of alcohol and a fight ensued. During the melee, a crew member of the *Allen* was killed, and the rest of the crew killed a majority of the Wales residents present on the boat (Brower 1942).

In 1890, the American Mission Association of the Congregational Church established a mission in the community, and in 1894, in response to the decline of caribou on the Seward Peninsula, the U.S. government gave 100 reindeer to the mission (Stern 1980). The U.S. government established a post office in the community in 1902 (Orth 1971rep.). Along with declining caribou populations, residents of the Bering Strait had the additional hardship of decimated bowhead whale and walrus populations after intensive commercial harvesting (Burch 1975). Non-Native settlers also brought epidemics with them, the most devastating of which was the Spanish influenza epidemic of 1918 (Fortuine 1989). The population of Wales declined from 337 people in 1910 to 136 people in 1920 (Levin 1991). Many children were orphaned, families were destroyed, and people from smaller settlements consolidated into Shishmaref, Wales, and Teller (Koutsky 1981).

The Native Village of Wales was formed under the Indian Reorganization Act in 1939, and the City of Wales was incorporated in 1964. After World War II, Wales' strategic location was noted by the U.S. government, which built a long-range radar station on Cape Mountain. This installation is located in nearby Tin City, which was originally a mining camp established in the early 20th century. The system was modernized in the 1980s and is still in operation today (Mikulski 2012). The original Wales reindeer herd dispersed in the 1950s, and a local family re-established a herd in 1973 (Magdanz et al. 2002). Wales is accessible by air year-round and is connected by 6.5 mile road to Tin City. Freight and cargo are delivered by barge

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12. ADCCED, Division of Community and Regional Affairs, Juneau. n.d. "Alaska Community Database Online: Community Information." Accessed April 17, 2019. https://dcra-cdo-dcced.opendata.arcgis.com/

to Tin City and hauled by truck to Wales. A winter trail connects the community to Brevig Mission and Shishmaref. A school, health clinic, watering point, and washeteria are located in the community.[13]

REGULATORY CONTEXT[14]

Alaska is unique in the nation in having both state and federal laws that make customary and traditional subsistence hunting and fishing a priority over other consumptive uses, such as commercial fishing. Aboriginal hunting and fishing rights were extinguished by ANCSA in 1971, but the lack of legal protection of Alaska's subsistence way of life was noted by the Alaska State Legislature and U.S. Congress. Concerned over competing commercial and recreational uses, both bodies subsequently adopted laws intended to protect opportunities for customary and traditional uses of fish and wildlife in the state.

In 1978, the Alaska State Legislature adopted priorities for subsistence uses of fish and game over other consumptive uses, including a subsistence fishing priority under AS 16.05.251(b) and a subsistence hunting priority under AS 16.05.255(b). In 1980, the U.S. Congress adopted a similar subsistence priority in the Alaska National Interest Lands Conservation Act (ANILCA). In 1986, after a court decision striking down state regulations that imposed a rural residency requirement on subsistence users, the Alaska State Legislature adopted a statute re-establishing a rural subsistence priority consistent with ANILCA. In 1989, the state statute re-establishing a rural subsistence priority was ruled unconstitutional in McDowell v. State of Alaska[15]. In 1992, the Alaska State Legislature adopted the current subsistence statute, AS 16.05.258. The Alaska Board of Fisheries (BOF) and the Alaska Board of Game (BOG) adopt and revise state subsistence regulations for Alaska. Fishing and hunting statutes and regulations affecting subsistence have been further refined by and in response to subsequent court rulings. After the rural priority statute was ruled unconstitutional, the federal government began managing subsistence on federal public lands and waters. Federal subsistence regulations are adopted by the Federal Subsistence Board.

The practical consequence of this arrangement is that subsistence users must often consult both state and federal regulations for the lands on which they are hunting and fishing. This can be confusing, even for agency personnel. State regulations generally apply to most lands, and exclusively on state and private lands, which include ANCSA corporation lands.[16] Federal subsistence regulations apply to federally qualified subsistence users[17] on federal public lands. On most federal public lands, unless pre-empted by federal law, all Alaska residents may hunt and fish under state regulations and bag limits. In certain national parks and monuments, hunting and fishing may be restricted to federally qualified subsistence users.

In many cases, state and federal regulations are identical; however, there are times in which they differ. One important example of this difference can be found in game management units (GMUs) within the range of the Western Arctic caribou herd (WAH) and Teshekpuk caribou herd (TCH; Parrett 2015). In 2014, under state regulations, Alaska residents could harvest five caribou per day with no annual limit (ADF&G Division of Wildlife Conservation 2014). Under federal regulations, federally qualified hunters could take ten caribou per day with no annual bag limit (U.S. Fish and Wildlife Service 2012). Federal regulations passed in April 2016 reduced the daily bag limit to five caribou per day as of July 1, 2016. Also in 2016, the residents of GMU 22 were introduced to the region's first caribou registration permit hunt since 1984 (ADF&G Division of Wildlife Conservation 2016). The registration permit hunt (RC800) set an annual bag limit of 20 caribou (up to 5 per day, no calves could be taken); furthermore, it required permit holders to report within 15 days of taking the legal bag limit or within 15 days after the end of the season. Under

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13. ADCCED, Division of Community and Regional Affairs, Juneau. n.d. "Alaska Community Database Online: Community Information." Accessed April 17, 2019. https://dcra-cdo-dcced.opendata.arcgis.com/

14. This section has been adapted from Braem et al. (2017).

15. McDowell v. State of Alaska. 785 P. 2d 1 (Alaska 1989).

16. However, ANCSA corporations and individual allotment owners may limit access to Native-owned lands, as could any other landowner. NANA, Inc. has placed restrictions on access to its lands for hunting, fishing, and trapping by nonshareholders.

17. Federal qualifications include being a rural Alaska resident domiciled in a community determined to have customary and traditional use of a fish stock or game population.

both state and federal regulations, hunters may harvest caribou from a boat moving under power, and they may take swimming caribou with a firearm using rimfire cartridges. These exceptions to general hunting regulations reflect the customary and traditional caribou hunting practices of the residents of the unit.

Moose populations on the Seward Peninsula are largely not as abundant as other areas of the state, and were first seen in the region in the 1930s. In the late 1980s and early 1990s, severe winters caused declines in moose densities in Unit 22 (Gorn and Dunker 2014). The populations never recovered to historical levels and have stabilized to lower densities due in large part to predation. The Board of Game implemented restrictions with the intent of reducing harvest in the region: as of the publication of the most recent management report (2014), most accessible portions of Unit 22 had 14-day fall hunting seasons with harvest quotas based on current population levels.

Muskox populations disappeared from Alaska in the late 1800s, but were reintroduced to the southern portion of the Seward Peninsula and in the area of Cape Thompson in 1970 (Harper 2014). The Seward Peninsula muskox population has continued to grow.

State management of subsistence fishing on the northern Seward Peninsula is by and large minimal—there are no closed seasons, no bag limits, no required license or permit, no reporting requirement, no harvest monitoring program, and few gear restrictions (Alaska Department of Fish and Game 2016). Salmon may be taken only by gillnets, beach seines, or, in the Kotzebue Sound District, by hook and line attached to a rod or pole, but only in the state waters of and all flowing waters that drain into the Chukchi Sea or Kotzebue Sound from Cape Espenberg to Cape Prince of Wales (5 AAC 01.120(f)). In most of the Port Clarence District, subsistence fishing has few restrictions other than the general statewide provisions.

Under the Marine Mammal Protection Act of 1972, "coastal Alaska Natives" were granted an exemption that allowed them to continue to hunt for marine mammals for subsistence.[18] The International Whaling Commission (IWC) sets aboriginal whaling quotas for four countries, including the United States (Suydam and George 2012). Catch limits for five-year periods are set for Alaska and Chukotka subsistence whaling of bowhead and gray whales. For 2013–2018, the commission has set a quota of 336 bowhead whales, with a limit of no more than 67 strikes per year (Alexander 2013). Bowhead harvests are restricted to the number of strikes allowed by the IWC. Wales is a bowhead whaling community, and the quota for the community is two whales (or strikes).

The Migratory Bird Treaty Act of 1918 prohibited the take of migratory birds or their eggs, except as allowed by federal regulation, eliminating legal spring and summer subsistence hunting as well as egging.[19] In 2003, the U.S. Department of the Interior Fish and Wildlife Service first adopted regulations establishing spring and summer subsistence hunts for migratory waterfowl by permanent Alaska residents of communities within eligible subsistence harvest areas. Subsistence migratory waterfowl hunting and egg harvesting are now permitted by federal law during spring and summer with defined seasons.[20] Federal law also permits a fall season for migratory waterfowl sport hunting with defined seasons and bag and possession limits.[21]

STUDY OBJECTIVES

The project had the following objectives for the community of Wales:

- Estimate subsistence harvests and uses of wild resources in a 12-month period (calendar year 2017)
- Collect community demographic information
- Collect information about involvement in the cash economy, including jobs and other sources of income
- Evaluate trends in subsistence harvests

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18. 16 U.S. Code § 1371(6)(b).
19. 16 U.S. Code § 703.
20. 50 CFR § 92.
21. 50 CFR § 20.

- Evaluate food security patterns for both store-bought and wild foods
- Document social networks of sharing subsistence resources between households and other communities
- Map areas used for hunting, fishing, and gathering in the study year
- Document traditional knowledge

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[22] and by the National Science Foundation, Office of Polar Programs in its Principles for the Conduct of Research in the Arctic[23], 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

Division of Subsistence staff contacted the Native Village of Wales to obtain approval for the survey work. Subsistence Resource Specialist (SRS) Elizabeth Mikow and SRS Daniel Gonzalez endeavored to travel to Wales in order to attend a tribal council meeting in February 2018. Due to weather conditions, they were unable to attend; however, the council approved the project on February 21, 2018 based on the informational materials Mikow provided to the council.

Systematic Household Surveys

The primary method for collecting subsistence harvest and use information in this project was a systematic household survey. ADF&G finalized the survey instrument in March 2018. A key goal was to structure the survey instrument to collect demographic, resource harvest and use, and other data that are comparable with information collected in other household surveys in the study community and with data in the Community Subsistence Information System (CSIS[24]). Appendix A is an example of the survey instrument used in this project. Overall, 26 of an estimated 47 households were surveyed (55%; Table 1-3). Surveys ranged from 12 minutes to 105 minutes with an average length of 54 minutes (Table 1-4).

Mapping Locations of Subsistence Hunting, Fishing, and Gathering Activities

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

Harvest locations and fishing, hunting, and gathering areas were documented using an application designed on the ArcGIS Runtime SDK for iOS platform: a mapping data collection application for iPad.[25] The point,

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22. Alaska Federation of Natives. 2013. "Alaska Federation of Natives Guidelines for Research." Alaska Native Knowledge Network. Accessed April 19, 2019. http://www.ankn.uaf.edu/IKS/afnguide.html

23. National Science Foundation Interagency Social Science Task Force. 2012. "Principles for the Conduct of Research in the Arctic." Accessed April 19, 2019. http://www.nsf.gov/od/opp/arctic/conduct.jsp

24. ADF&G CSIS.

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

Table 1-2.–Project staff.

Task	Name	Organization
Northern Regional Program Manager	Caroline Brown	ADF&G Division of Subsistence
Principal Investigator	Elizabeth Mikow	ADF&G Division of Subsistence
Administrative support	Pam Amundson	ADF&G Division of Subsistence
	Tamsen Coursey-Willis	ADF&G Division of Subsistence
	Deanne Lincoln	ADF&G Division of Subsistence
Data Management Lead	Marylynne L. Kostick	ADF&G Division of Subsistence
Programmer	Marylynne L. Kostick	ADF&G Division of Subsistence
Data Entry	Halia Janssen	ADF&G Division of Subsistence
	Alexzandrea DePue	ADF&G Division of Subsistence
	Alea Robinson	ADF&G Division of Subsistence
Data Cleaning/Validation	Alexzandrea DePue	ADF&G Division of Subsistence
Data Analysis	Marylynne L. Kostick	ADF&G Division of Subsistence
Cartography	Gayle Neufeld	ADF&G Division of Subsistence
Editorial Review Lead	Rebecca Dunne	ADF&G Division of Subsistence
Production Lead	Rebecca Dunne	ADF&G Division of Subsistence
Field Research Staff	Elizabeth Mikow	ADF&G Division of Subsistence
	Daniel Gonzalez	ADF&G Division of Subsistence
	Nicole Braem	National Park Service
Local Research Assistant	Marie Ningealook	Wales
	Lloyd Oxereok	Wales
	Rueben Oxereok	Wales

Source ADF&G Division of Subsistence, 2019.

Table 1-3.–Sample achievement, Wales, 2017.

	Community
Sample information	Wales
Number of dwelling units	47
Survey goal	100%
Households surveyed	26
Households failed to be contacted	8
Households declined to be surveyed	13
Households moved or occupied by nonresident	0
Total households attempted to be surveyed	47
Refusal rate	33.3%
Final estimate of permanent households	47
Percentage of total households survyed	55.3%
Survey weighting factor	1.81
Sampled population	96
Estimated population	173.5

Source ADF&G Division of Subsistence household surveys, 2018.

Table 1-4.–Survey length, Wales, 2017.

	Interview length (in minutes)		
Community	Average	Minimum	Maximum
Wales	54	12	105

Source ADF&G Division of Subsistence household surveys, 2018.

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, the researcher completed an attribute box that noted the species harvested, amount, method of access to the resource, and month(s) of harvest. The data were uploaded via Wi-Fi to a server. Once data collection was complete the data were downloaded into an ArcGIS file geodatabase. The application was developed by HDR, Inc., an environmental research firm located in Anchorage. Paper maps were also available to be used as a reference for respondents as well as by a local research assistant (LRA) when an ADF&G researcher was not available for the interview. These maps were 11x17 inches at a scale of 1:250,000 and 1:500,000 and only documented the area within the survey area. Very few paper maps were used, and research staff digitized markings on paper maps using the iPad application.

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 community's lead researcher. Once the data had been uploaded, researchers also verified that the household data were logged into the server.

At the end of the field season the geodatabase was turned over to ADF&G. A few remaining paper maps were digitized and then map production began. The data were first sorted by resource, and maps were then produced at the species-specific level for each community.

Household Survey Implementation

In April, SRS Mikow led a team that included SRS Gonzalez and Cultural Anthropologist Nicole Braem of the National Park Service. Three LRAs were hired to assist ADF&G staff on the project: Lloyd Oxereok, Reuben Oxereok, and Marie Ningealook. Introduction of the project and training of LRAs to assist with surveying took place on April 19, 2018. Surveying began in the evening following training and continued through April 28. One traditional ecological knowledge interview was conducted.[26]

Data Analysis and Review

Survey Data Entry and Analysis

Surveys were coded for data entry by research staff and reviewed by the project lead for consistency. Responses were coded following standardized conventions used by the Division of Subsistence to facilitate data entry. Information Management staff within the Division of Subsistence set up database structures within Microsoft SQL Server at ADF&G in Anchorage to hold the survey data. The database structures included rules, constraints, and referential integrity to ensure that data were entered completely and accurately. Data entry screens were available on a secured internet site. Daily incremental backups of the database occurred, and transaction logs were backed up hourly. Full backups of the database occurred twice weekly. This ensured that no more than 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 B 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

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26. Unfortunately, ADF&G staff was unable to make an additional trip to conduct ethnographic interviews due to weather conditions. In order to protect the key respondent's anonymity, this interview is not cited in this report.

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:

$$H_i = \overline{h}_i S_i \qquad (1)$$

$$\overline{h}_i = \frac{h_i}{n_i} \qquad (2)$$

where:

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

$\overline{h}_i$ = 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 student's t distribution, and varies slightly depending upon the size of the community. Though there are numerous ways to express the formula below, it contains the components of a SD, V, and SE:

$$CL\%(\pm) = \frac{t_{(\alpha/2)} \times \frac{s}{\sqrt{n}} \times \sqrt{\frac{N-n}{N-1}}}{\overline{h}} \qquad (3)$$

where:

s = sample standard deviation,

n = sample size,

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

N = population size, and

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

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

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

Population Estimates and Other Demographic Information

As noted above, a goal of the research was to collect demographic information for all year-round households in Wales. For this study, "year-round" was defined as being domiciled in Wales for at least six months during the study year 2017. Because not all households were interviewed, population estimates for Wales were calculated by multiplying the average household size of interviewed households by the total number of year-round households, as identified by Division of Subsistence researchers in consultation with community officials and other knowledgeable respondents.

There may be several reasons for the differences among the population estimates for Wales 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,[27] and the Alaska Department of Labor and Workforce Development[28]. Sampling of households, depending on when surveys are conducted or eligibility criteria for inclusion in the survey, may explain differences in the population estimates.

Map Data Entry and Analysis

As discussed above, maps were generated based on data collected using an iPad or on 11x17-inch paper maps. All data were entered on the iPad, whether in the field during interviews or by ADF&G research staff while coding survey data. Map features were matched to the survey form to ensure that all harvest data were recorded accurately. Once all data were entered, an ArcGIS file geodatabase was downloaded by ADF&G researchers from the server and maps showing harvest locations for each species created in ArcGIS 10.2 using a standard template for reports. Maps show harvest locations for fish species, harvest areas for plants, berries, wood, and birds, and hunting areas for land mammals. Maps were reviewed by the community to ensure accuracy as well identify any data the community would like to keep confidential.

27. U.S. Census Bureau, Washington, D.C., n.d. "Explore Census Data." Accessed December 3, 2019.
   https://data.census.gov/cedsci/
28. Alaska Department of Labor and Workforce Development (ADLWD), Research and Analysis Section, Juneau, n.d.
   "Population of Alaska by economic region, borough and census area, 2010–2013." Accessed December 3, 2019.
   http://laborstats.alaska.gov/pop/

Network Analysis

This study gathered data about wild food production networks in Wales. Many rural Alaska communities have mixed subsistence-cash economies built on dense networks of social and familial relationships. Studying these social networks allows for a more robust understanding of the patterns of cooperation and exchange within the community and helps to document the importance of these networks as a defining feature of subsistence economies. Beginning with Wales and Deering in 1994 (Magdanz et al. 2002), Division of Subsistence researchers have described food flows through social networks for more than 50 rural Alaska communities (e.g., Brown et al. 2012; 2013; 2015; Ikuta et al. 2014). Network data track the movement of subsistence resources into and out of households from other households or communities. In this way, network data provide a graphic representation of how resources are produced and distributed within and between communities. Network data were exported from SPSS (version 20) and network graphs were drawn using the UCINET (version 6.392; Borgatti et al. 2002).

The networks section of the Wales survey included questions about the production of 11 types of subsistence resources (Appendix A). For each resource, respondents were asked to identify individuals within their own households who harvested and processed the resource. Then they were asked to identify which other households or communities harvested, processed, or shared resources with their households. Thus, production of resources can be divided into two categories: self-provisioning and social provisioning. Self-provisioning encompasses a household's internal support and social provisioning refers to support received from others.

In network terms, social provisioning relationships between households are called "ties." Ties can also be described as instances of support in the production of wild foods. In Wales, information was only gathered about support received by responding households; no questions were asked about support provided to others. On network diagrams, ties are represented as arrowed lines between households and communities. In this study, "other communities" were treated as households for network mapping analysis to avoid creating a network that includes actors on multiple scales. A simple tie count, or degree analysis, was completed to show the relative connectivity of households in Wales. Degree values were then compared to various household characteristics to determine what factors may influence the level of support that a household receives or provides to others. A complete census was not achieved in Wales, thus some households in the network were not surveyed but are present because they were named by others.

Food Security Analysis

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

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

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

FINAL REPORT ORGANIZATION

This report summarizes the results of systematic household surveys and mapping interviews conducted by staff from ADF&G and National Park Service as well as LRAs. The second chapter includes tables and figures that report findings on demographic characteristics, and characteristics of resource harvests and uses, and food security. A high percentage of households declined to provide economic information, which rendered the data non-representative of the community; due to this factor, economic information was omitted from this report. The final chapter presents harvest and use trends over time.

ADF&G provided a draft report to the Wales Tribal Council via email in September 2019 for review and comment. After receipt of comments, the report was finalized. ADF&G mailed a short summary of the study findings to every household in Wales.

2. RESULTS

Daniel Gonzalez

In April of 2018, two Division of Subsistence researchers, one National Park Service cultural anthropologist, and three local research assistants surveyed 26 of 47 eligible households (55%; Table 2-1) in Wales.

This chapter summarizes findings from household surveys including demographic characteristics, responses to harvest assessment questions, harvest estimates, reported employment and income, and responses to food security questions. Harvest numbers are expanded estimates. Results from this survey are available online in the ADF&G Community Subsistence Information System (CSIS).[1]

Table 2-1.–Sample achievement, Wales, 2017.

	Community
Sample information	Wales
Number of dwelling units	47
Survey goal	100%
Households surveyed	26
Households failed to be contacted	8
Households declined to be surveyed	13
Households moved or occupied by nonresident	0
Total households attempted to be surveyed	47
Refusal rate	33.3%
Final estimate of permanent households	47
Percentage of total households survyed	55.3%
Survey weighting factor	1.81
Sampled population	96
Estimated population	173.5

Source ADF&G Division of Subsistence household surveys, 2018.

Seasonal Round

The harvest of wild resources in Wales follows seasonal cycles of abundance. A variety of natural and social factors influence subsistence activities, including fluctuations in fish and wildlife populations, changes in climate, type and availability of employment opportunities, and regulatory changes. As mentioned in the Introduction chapter, warmer temperatures and poor sea ice quality and quantity affect access to seasonally available resources. Wales households also must balance seasonal employment opportunities, like summer construction projects or wildland firefighting, with resource procurement. The seasonal round described below relies on multiple sources dating from 1971 to 2004; therefore, shifts made in response to more recent natural and social factors may not be wholly represented. Further discussion about how natural factors influence seasonality will be covered in the Discussion chapter of this report. Figure 2-1 shows the search and harvest areas used by Wales residents in 2017. Much of the harvest occurs near the community, in the ocean, on nearby barrier beaches and wetland complexes, or in the adjacent mountains and foothills.

Spring in Wales is a time of transition from ice on the sea and snow on the land to open water and diminishing snowpack (Senungetuk 1971). In the middle of April through early June, sea ice transitions from shore ice to floating bergs of melting ice, and melting snow starts to expose the ground and vegetation underneath. Whales typically migrate through the Wales area in the spring, and depending on the sea ice and the winds,

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

Figure 2-1.–Wild resources search and harvest areas, Wales, 2017

Kingikmiut traditionally target those species at that time (Koutsky 1981). Also in the spring, Wales residents hunt other marine mammals, like bearded seals and walrus. By early May, migratory birds have nested in the melting lakes, grassy beach dunes, and bases of the hillsides. As June continues and summer begins, the tundra, marshes, and hillsides around Wales begin to present colors of greens, yellow, white, orange, purple, and blue (Senungetuk 1971:23). By mid-July, tides and currents remove all remaining sea ice from the area and seal hunting comes to an end. Activities in summer include picking greens and berries, fishing, hunting waterfowl, and gathering eggs. The windy, rainy fall season starts around the end of August and provides another opportunity to hunt for migrating marine mammals. During the fall months, Wales residents also target moose. Fall storms also deposit clams and other shellfish on the beach; residents then collect these (Lowry 1994). In October, snow begins to fall on Cape Prince of Wales and freeze-up follows shortly after. People fish for saffron cod (known locally as tomcods) through the ice after freeze-up. In the winter, as the nights increase in length and temperatures drop, poor visibility caused by frequent winds and blowing snow can limit opportunities to hunt or fish. Seals can still be harvested if the right ice conditions are present; and ptarmigan, hares, and some fish (small cods and flounder) are available at this time of year (Senungetuk 1971). Traditionally, Wales residents hunted snowy owls in the winter, but during data collection for this project, no survey respondents reported attempting to harvest this resource. As daylight increases in the later winter and early spring months, hunters can travel on the snow to search for moose. Although caribou have not been found consistently on the western end of the Seward Peninsula since their decline in the second half of the 1800s, historically this species was harvested whenever available (Magdanz et al. 2002:37).

POPULATION ESTIMATES AND DEMOGRAPHIC INFORMATION

Table 2-2 compares population size and number of households in Wales as found by this study to the 2010 Census and the 2012–2017 American Community Survey. The estimates found by this project fell within the range of the five-year ACS average. Figure 2-2 illustrates the total number of people next to the number of people who self-identified as Alaska Native. During the study year, an estimated 96% of the population of Wales was Alaska Native (Table 2-2; Figure 2-2). Figure 2-3 highlights the population trend from 1940–2017 as shown in decennial Census data, and more recent Alaska Department of Labor estimates and the 2017 population estimate from this study. These data show that the population of Wales decreased significantly between 1940 and 1960, grew slightly from 1960 to 1990, and remained essentially the same from 1990 through 2017.

The 26 surveyed households included 96 individuals (Table 2-3). Expanding for the 21 unsurveyed households, the estimated population size of Wales in 2017 was 174. Household sizes ranged from one to nine individuals, and an average household size was four individuals. The average age was 25 years;

Table 2-2.–Population estimates, Wales, 2010 and 2017.

	Census (2010)	5-year American Community Survey (2013–2017)		This study (2017)	
		Estimate	Range[a]	Estimate	Range[b]
Total population					
Households	43	56.0	46 – 66	47.0	
Population	145	159.0	129 – 189	173.5	143 – 204
Alaska Native					
Population	136	158.0	128 – 188	166.3	136 – 197
Percentage	93.8%	99.4%	80.5% – 118.2%	95.8%	78.1% – 100.0%

Sources U.S. Census Bureau (2011) for 2010 estimate; U.S. Census Bureau for American Community Survey (ACS) 2017 estimate (5-year average); and ADF&G Division of Subsistence household surveys, 2018 for 2017 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, Wales, 2010 and 2017.

Figure 2-3.–Historical population estimates, Wales, 1939–2017.

Table 2-3.–Sample and demographic characteristics, Wales, 2017.

Characteristics	Community Wales
Sampled households	26
Eligible households	47
Percentage sampled	55.3%
Sampled population	96
Estimated community population	173.5
Household size	
Mean	3.7
Minimum	1.0
Maximum	9.0
Age	
Mean	25.3
Minimum[a]	1
Maximum	73
Median	27.0
Length of residency	
Total population	
Mean	17.4
Minimum[a]	1
Maximum	73
Heads of household	
Mean	28.6
Minimum[a]	2
Maximum	73
Alaska Native	
Estimated households[b]	
Number	43.4
Percentage	92.3%
Estimated population	
Number	166.3
Percentage	95.8%

Source ADF&G Division of Subsistence household surveys, 2018.

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

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

Figure 2-4.–Population profile, Wales, 2017.

the oldest person included in the sample was 73 years of age. On average, Wales household heads had lived in the community for 29 years (Table 2-3), and 58% of household heads were born in Wales (Table C1). Household heads also reported birthplaces in other communities within the region, including the communities of Brevig Mission (10%) and Diomede (8%; Table C1). A full list of birthplaces of household heads and of the population can be found in tables C1 and C2. Figure 2-4 and Table C3 illustrate the population profile of the community, the majority of which was under the age of 30 during the study period. The largest cohorts are found in the 5–9 (15% of population), 0–4 (11%) 25–29 (10%), and 10–14 (9%) age groups. According to the profile, 59% of the residents were male and 41% were female.

FOOD SECURITY

Survey respondents in Wales 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 divided into two subcategories: low 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 Wales residents are summarized in Figure 2-5. The greatest source of food insecure conditions were circumstances related to a lack of resources needed to get food; resources can include money to purchase food, as well as equipment or fuel to engage in subsistence activities. Sixty-two percent of households reported that they did not have the resources necessary to get food. Forty-four percent of households reported that the food that they had did not last, and they could not get more: respondents reported that store-bought foods did not last (60% of households) more often than subsistence foods (36%). The consequences of food insecure conditions had a dramatic effect upon some Wales households: 32% of households said adults ate less than they felt they should, 25% reported that adults living in the home cut the size of their meals or skipped meals completely, 16% of households reported adults did not eat for a whole day, and 12% reported that adults in the home lost weight because there was not enough food to eat.

Food security results for surveys for Wales, the state of Alaska, and the United States are summarized in Figure 2-6. During the study year, 65% of Wales households were identified as being food secure. Fifteen percent of Wales households had low food security, and 19% had very low food security. Wales residents were significantly less food secure than the national average (86% of households were food secure in 2016) and the state of Alaska (85% were food secure).

Figure 2-7 portrays the mean number of food insecure conditions per household by food security category by month. Figure 2-8 shows which months households reported foods not lasting. For households with very low food security, food insecure conditions were highest in January (an average of seven conditions per household) and slightly lower in February and June (five conditions; Figure 2-7). The higher rates of food insecure conditions in January and February may be related to seasonal conditions. Long nights and extended periods of wind-blown snow reduce visibility on the ground and can make harvesting subsistence resources difficult and dangerous. The rest of the year averaged between three and four food insecure conditions per month. Households with low food security reported an average of two to three food insecure conditions for each month of the year. For those households, fall and winter months have slightly lower food security than spring and summer. The percentage of all households that reported that subsistence foods did not last did was highest during the fall and winter months, and lowest in July and August. The percentage of households reporting that store-bought food did not last increased in June. The availability of resources such as clams, plants, marine mammals, and fish during spring and summer may fortify food security during those months.

Figure 2-5.–Responses to questions about food insecure conditions, Wales, 2017.

Figure 2-6.–Comparison of food security categories, Wales, Alaska, and United States, 2017.

Figure 2-7. –Mean number of food insecure conditions by month and household food security category, Wales, 2017.

Figure 2-8.–Comparison of months when foods did not last, Wales, 2017.

SUMMARY OF HARVEST AND USE PATTERNS

Harvest and Use of Wild Resources at the Household Level

Figure 2-9 shows by resource category the percentages of households that used, attempted to harvest, and harvested wild resources. All households in Wales reported using subsistence resources: nearly all reported using salmon (96%) and marine mammals (88%). Most households also used vegetation (used by 85% of households), marine invertebrates (81%), and large land mammals (73%). Harvest rates were much lower than use rates for most resource categories, but especially for large land mammals (73% of households used, but only 4% harvested) and marine mammals (88% used, 27% harvested). The exceptions were small land mammals (4% of households harvested as well as used), marine invertebrates (81% used, 73% harvested), and vegetation (85% used, 77% harvested). The difference in levels of use and harvest is likely explained by networks of sharing that are common in rural Alaska subsistence economies and will be discussed in more detail in the next section.

Figure 2-9.–Percentages of households using, attempting to harvest, and harvesting wild resources by resource category, Wales, 2017.

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Table 2-4 summarizes resource harvest and use characteristics for Wales in 2017 at the household level, and Table 2-5 shows additional selected study findings. The average household harvest was 552 lb usable weight (Table 2-4). During the study year, community households harvested an average of nine kinds of resources and used an average of 16 kinds of resources (tables 2-4 and 2-5). The maximum number of resources used by any household was 30 (Table 2-4). In addition, households gave away an average of five kinds of resources. Overall, as many as 120 resources were available for households to harvest in the study area; this included species that survey respondents identified but were not asked about in the survey instrument.

SHARING OF WILD RESOURCES

Household Specialization in Resource Harvesting

Previous studies (Wolfe 1987; Wolfe et al. 2010) have shown that in most rural Alaska communities, a relatively small portion of households produces most of the community's fish and wildlife harvests, which they share with other households. A recent study of 3,265 households in 66 rural Alaska communities found that about 33% of the households accounted for 76% of subsistence harvests (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 2-10, in the 2017 study year in Wales, about 69% of the harvests of wild resources as estimated in pounds usable weight were harvested by 19% of the community's households.

Wild Food Production Networks

Although subsistence harvest surveys collect information based on individual households, in reality, much of the production (harvesting and processing) of subsistence foods is achieved by households within a community that work cooperatively. This cooperation is often organized based on kinship in the manner of traditional Iñupiaq communities. The organization of the contemporary mixed market–subsistence economies that are predominant in rural Alaska communities has been documented ethnographically by numerous researchers (Charnley 1984; Kari 1983; Lonner 1980; Magdanz 1988; Magdanz et al. 2002; 2007; Magdanz and Wolfe 1988; Moncrieff 2007; Pete 1991; Schroeder et al. 1987; Stickney 1984; Wolfe et al. 1993). Of particular interest for northwestern Alaska are reports from Anderson et al. (1977), Burch Jr. (1988), Ellanna (1983), Langdon and Worl (1981), Wolfe and Walker (1987), Wolfe and Ellanna (1983), and Fall (1990). In a study from 1994 that included Wales, researchers documented subsistence sharing networks by focusing largely on production groups and the role of kinship within these networks (Magdanz et al. 2002). In depth comparison of these datasets is beyond the scope of this report due to their differing methodologies, although some basic comparisons can be made between the two network datasets.

In addition to cooperation in the production of foods, subsistence foods are widely distributed among households within a community through sharing, barter, and trade (Brown et al. 2016; 2017; Charnley 1984; Kari 1983; Lonner 1980; Magdanz 1988; Magdanz et al. 2002; 2007; Magdanz and Wolfe 1988; Moncrieff 2007; Pete 1991; Schroeder et al. 1987; Stickney 1984; Wolfe et al. 1993). In Wales, households were asked to provide information about different types of relations with other households in the production and distribution of subsistence resources. Comparing the characteristics of Wales households and their relations with other households and communities provides greater insight into how community economies function.

Previous studies have found a positive association between the ages of household heads and the amount of subsistence foods harvested (Wolfe et al. 2010). Household characteristics associated with higher food production include the presence of multiple working-age males, involvement with commercial fishing, and higher wage incomes. Characteristics common to lower producing households included female household heads, age of elders, non-Native household heads, and single-person households. The relative age of household heads and number of productive household members have also been associated with harvest levels.

Table 2-4.–Resource harvest and use characteristics, Wales, 2017.

Characteristic	
Mean number of resources used per household	**16.1**
Minimum	1
Maximum	30
95% confidence limit (±)	12.6%
Median	15.5
Mean number of resources attempted to harvest per household	**9.8**
Minimum	0
Maximum	25
95% confidence limit (±)	18.0%
Median	10.0
Mean number of resources harvested per household	**8.5**
Minimum	0
Maximum	19
95% confidence limit (±)	18.4%
Median	8.5
Mean number of resources received per household	**9.0**
Minimum	1
Maximum	21
95% confidence limit (±)	15.0%
Median	8.0
Mean number of resources given away per household	**5.3**
Minimum	0
Maximum	18
95% confidence limit (±)	23.7%
Median	4.0
Household harvest (pounds)	
Minimum	0
Maximum	2,457
Mean	551.7
Median	175.8
Total harvest weight (lb)	25,928.1
Community per capita harvest (lb)	149.4
Percentage using any resource	100%
Percentage attempting to harvest any resource	92%
Percentage harvesting any resource	92%
Percentage receiving any resource	100%
Percentage giving away any resource	92%
Number of households in sample	26
Number of resources asked about and identified voluntarily by respondents	113

Source ADF&G Division of Subsistence household surveys, 2018.

Table 2-5.–Selected study findings, Wales, 2017.

Category	Community Wales
Demography	
Population	173.5
Percentage of population that is Alaska Native	95.8%
Percentage of household heads born in Alaska	86.8%
Average length of residency of household heads (years)	28.6
Resource harvest and use	
Per capita harvest (lb)	149.4
Average household harvest (lb)	551.7
Number of resources used by 50% or more households	10.0
Average number of resources used per household	16.1
Average number of resources attempted to be harvested per household	9.8
Average number of resources harvested per household	8.5
Average number of resources received per household	9.0
Average number of resources given away per household	5.3
Percentage of total harvest taken by top 25% ranked households	75.0%
Percentage of households that harvested 70% of harvest	19.2%
Per capita harvest by lowest ranked 50% of households (lb)	10.9
Percentage of total harvest taken by lowest ranked 50% of harvesting households	7.3%
Average number of resources used by lowest ranked 50% of households	14.6
Average number of resources used by top 25% ranked households	21.7

Source ADF&G Division of Subsistence household surveys, 2018.

Figure 2-10.–Household specialization, Wales, 2017.

In Wales, 26 households provided network information on the survey. Of the surveyed households, 92% had at least one head of household who identified as Alaska Native (Table 2-4). There were equal numbers of "developing" (<40 years) and "elder" (>59) households (each accounted for 31% of respondents), and slightly more "mature" (40 to 59) households (38%; Table C4). Fourteen of the households had couples as the heads of household, eight had single male heads of household, and four had single female heads of household (Table C5). The average total subsistence harvest reported by surveyed households was 530 lb (range 0–2,413 lb). Surveyed households that provided network data were divided into four categories based on their total harvest in pounds: 8% reported no harvest, 69% harvested less than 530 lb (the average harvest for Wales households that provided network information), 2% harvested the average harvest or within one standard deviation above the average (530–1,275 lb), and 15% of households reported a harvest greater than one standard deviation above the average (>1,275 lb; Table C6).

In Wales, respondents were asked about who harvested, processed, or gave their household 11 different types of subsistence resources (Appendix A).[2] Households were not asked about the types of support they gave others, only the support they received. Households could have produced subsistence foods independently or cooperatively, or they could have received them through sharing. However, due to survey design, it is not possible to definitively categorize a household's production type. Households that had no assistance from others or that only had assistance from others are easily identified. However, instances when members of a responding household participated in wild food production and when members of other households also provided support could be either cooperative or separate efforts, or they could represent multiple harvesting and processing events in which the participants varied over time. Support is not measured in pounds because this survey project did not attempt to quantify how much a household shared with another household.

Self-Provisioning

For each of the 11 resources, respondents were asked to indicate who within their household harvested or processed resources for the household. An individual could provide support to their household in 22 different ways by harvesting and/or processing the 11 different surveyed resources (Table C7). In networking terms, each instance of support is referred to as a "tie." In total, 24 households reported 308 instances of support in which household members harvested or processed resources for their own household (150 harvesting; 158 processing). This support was provided by 68 individuals: an average of three individuals participated per household (Table C8). The number of individuals involved in production activities in surveyed households in Wales ranged between zero and nine people per household. Sixty-five individuals participated in harvesting, and 65 individuals participated in processing, indicating that the majority of participants fulfilled both roles, although this varied by resource (Table C7). Self-provisioning participation was highest for berries (96 ties), plants/greens/mushrooms (56 ties), and marine invertebrates (53 ties). An equal number of individuals both harvested and processed plants/greens/mushrooms (28 individuals) during the study year; similar numbers of people harvested and processed marine invertebrates (27 and 26) and berries (50 and 46). The resource category of salmon, which requires more equipment to harvest than the last three resource categories, had the greatest difference in numbers of people harvesting (18) and processing (26).

Social Provisioning

Respondents were asked whether people residing in other Wales households or other communities harvested, processed, and gave them 11 different types of resources (Appendix A). Surveyed households identified a total of 294 instances that they received support from other households, or "social provisioning ties" (Table C7). Households surveyed in Wales averaged 11 social-provisioning ties (Table C7). They most commonly reported was that others had harvested a resource for them (146 times), although receiving processing support was almost as common (128). Only 20 reported ties represented simply receiving a resource, but this low number is a reflection of the survey design. For the receiving relation, the survey prompted: "Who else (not yet named for harvesting or processing) gave *x* resource to your household?" Therefore, receiving

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2. Subsistence resources included salmon, saffron cod, herring, moose, caribou, walrus, seals, birds, marine invertebrates, berries, and other edible plants.

was only used to categorize the relation if the respondent did not know who harvested or processed the resource, but did know who shared it with them.

Figure 2-11 depicts the flow of 11 types of wild foods into respondent households in Wales. Also included in the network are 13 unsurveyed Wales households and households in nine other communities who were named as providers of support by respondents. Symbol shapes depict the type of household, colors show the age of heads of household, and symbol size is scaled to indicate a household's total subsistence harvest in 2018 by usable weight. Arrowed lines show the direction of the support from giver to receiver and are weighted to show the number of instances of support reported. Households or communities near the center of the figure were the most active in the network either by receiving food or labor from others, or being identified as an exchange source by other surveyed households. The resource categories for which respondents reported the most social-provisioning ties were seals, salmon, and moose (Table C7). Figure 2-12 compares the support that surveyed households received for 8 of the 11 resource types included on the survey. Symbol sizes are scaled to indicate the amount of the resource that a household harvested in 2017. Lines and arrows show the direction of flow from the provider to the recipient. The subsistence networks vary in structure between each of the eight resources: some networks show a large central component where many households are connected to each other, as well as several pairs and small groups that are not connected to the larger component. Other subsistence networks show only multiple small groups, multiple household pairs, or households that had no social provisioning ties for that resource.

The majority of instances of social-provisioning for salmon and seals were from within the community, but most support came from other communities for walrus and caribou. For moose, two households within Wales provided support to 13 other local households. In contrast to fish and mammals, marine invertebrates, berries, and other vegetation were more often self-provisioned.

Instances of support between Wales households accounted for 63% of social provisioning, and households in other communities provided the remaining 37% (Table C9). Overall, 77% percent of surveyed households received support from other communities for at least one resource. Figure 2-13 shows support from other communities to Wales households. Lines are weighted by the number of times the community was named by Wales residents as a source of support. Responding households named nine other communities as sources of support; seven of those communities are from the same region of Alaska as Wales. Diomede, Brevig Mission, Nome, and Shismaref had the highest levels of inflow to Wales (Table C10). Wales residents most often received seals, walrus, and caribou from other communities (Table C11).

Table C6 compares household harvest amounts to incoming and outgoing support. In network terms, indegree is the number of incoming ties, or the number of times a household reported support from others. Outdegree is the number of outgoing ties, or in this case, the number of times another household named another as a source of support. Degree is the total number of incoming and outgoing instances of support. Above average and high harvesting households provided significantly more support to others, as evidenced by their high outdegree values (15). Households with no or low harvest levels were not named often by others as providing support. Above average and high harvesting households had similar ratios of average indegrees to outdegrees, which may represent a higher level of resources with which to barter or trade, as well as having more resources to share. Households in the no harvest category received support from a greater number of other households than low harvesting households. Some households that did not harvest were still named as sources of support for others; they may have shared resources from a previous year's harvest or resources that they received from others.

Among surveyed households, developing households reported receiving the most social-provisioning and had highest average harvests (Table C4). Mature households were named as providing the most support to others even though their average harvests were slightly less than developing households. Elder households had the lowest average harvest and the lowest instances of support given; however, they did report more instances of support from others than mature households. Mature households may have been better suited to provide support for developing and elder households, considering the resources (e.g., time, equipment, money) necessary to harvest most subsistence resources.

All Resources

Teller

Utqiagvik

Shishmaref

Diomede

Savoonga

Brevig Mission

Nome

Anchorage

White Mountain

LEGEND

	Age of household head (years)			
	< 40	40 to 59	> 59	Unknown
Couple head	▢	▢	▢	▢
Single female head	▽	▽	▽	▽
Single male head	△	△	△	△

→ Flows of wild foods from source harvesting and processing households to consuming households, as reported by consuming (surveyed) households

▢ Household not surveyed

● Household in another community

SYMBOLS are scaled by households' resource harvests (in edible pounds). Surveyed households with relationships to many other housholds appear near the center of the figure.

LINES indcate households with resource production or sharing relations. ARROWS point from source households to surveyed households. A household's production for itself is not shown.

Figure 2-11.–Wild food production network, Wales, 2017.

Figure 2-12.–Wild food production networks by resource, Wales, 2017.

Figure 2-13.–Intercommunity wild food production network, Wales, 2017.

The instances of support received from others did not vary much between household head types; however, support given to others did vary by household head type (Table C5). Households that were led by a couple had the highest average harvests, and other households named those couple-led households as providing the most instances of support to others. Among surveyed households, single-male- and single-female-headed households provided less support to others than couple-headed households. Although single-female-led households had slightly higher average harvests than single-male-led households, single-male-headed households were named as providing slightly more support to others.

Magdanz et al. (2002) reported network data for study year 1994, which can be compared with results from this study. The 1994 study year networking data were more robust than those collected in this study because of research goals, and that project obtained a higher sample achievement (84%). Instances of self-provisioning in 1994 (564) were substantially greater than social provisioning ties (352; Magdanz et al. 2002); in 2017, self-provisioning ties (308) and social provisioning ties (294) were almost equal (Table C7). In both studies, survey respondents reported slightly more instances of household members processing resources than harvesting resources. In 1994, three households reported receiving no support from others (Magdanz et al. 2002); in 2017, all surveyed households reported at least one instance of support from others (Figure 2-11). In both studies, households reported similar instances of another household harvesting resources (144 in 1994; 146 in 2017) and processing resources that a survey respondent received (116 in 1994; 128 in 2017) from them (Table C7; Magdanz et al. 2002). This comparison suggests that Wales households relied more on others in 2017 than in 1994. The 1994 study, like this one, did ask about resources received from residents of other communities; however, the analysis published in that report did not discuss those network ties.

Harvest Quantities and Composition

Table 2-6 reports estimated wild resource harvests and uses by Wales residents in 2017 and is organized first by general category and then by species. All edible resources are reported in pounds edible weight (see Appendix B for conversion factors[3]). The harvest category includes resources harvested by any member of the surveyed household during the study year. The use category includes all resources taken, given away, or used by a household, and resources acquired from other harvesters, either as gifts, by barter or trade, through hunting partnerships, or as meat given by hunting guides and non-local hunters. Purchased foods are not included. Differences between harvest and use percentages reflect sharing among households, which results in a wider distribution of wild foods.

Wales residents harvested 25,928 edible pounds (lb) of wild foods, equating to 149 lb per capita (Table 2-6). Figure 2-14 compares the percentage of harvests in pounds edible weight by resource category. Marine mammals contributed the most edible weight (46%) to Wales' 2017 total harvest; this category accounted for 12,028 lb (69 lb per capita) of food (Table 2-6; Figure 2-14). Salmon and marine invertebrates also contributed significantly to the overall harvest. Salmon accounted for 27% of the harvest (7,018 lb total, 40 lb per capita). Marine invertebrates accounted for 12% of the harvest (3,201 lb total, 18 lb per capita). Vegetation, large land mammals, and birds each contributed 4% each of the 2017 harvest; nonsalmon fish accounted for 3%, and small land mammals composed less than 1%.

Use and Harvest Characteristics by Resource Category

Table 2-7 lists the top ranked resources used by households. Clams and cloudberries (known locally as *aqpiks* or salmonberries) were the most widely used resources, both used by 77% of Wales households, during the study year. Walrus, pink salmon, and crowberries (known locally as blackberries) were the next three most widely used resources, each used by 69% of households. Moose ranked as the sixth most widely used resource (65% of households) in 2017, followed by adult bearded seal (62% of households), sourdock (58% of households), blueberry (54% of households), and willow leaves (54% of households).

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

Table 2-6.–Estimated harvest and use of wild resources, Wales, 2017.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount			95% confidence limit (±) harvest
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total	Mean per household	Per capita	Total	Unit	Mean per household	
All resources	**100.0**	**92.3**	**92.3**	**100.0**	**92.3**	**25,928.1**	**551.7**	**149.4**	**25,928.1**	**lb**	**551.7**	**38.6**
Salmon	**96.2**	**57.7**	**53.8**	**76.9**	**50.0**	**7,017.9**	**149.3**	**40.4**	**7,017.9**	**lb**	**149.3**	**74.8**
Chum salmon	34.6	30.8	26.9	19.2	19.2	1,767.7	37.6	10.2	213.0	ind	4.5	78.5
Coho salmon	46.2	30.8	26.9	30.8	26.9	1,772.3	37.7	10.2	260.6	ind	5.5	118.9
Chinook salmon	11.5	7.7	3.8	7.7	3.8	36.5	0.8	0.2	3.6	ind	0.1	137.7
Pink salmon	69.2	50.0	46.2	46.2	42.3	2,733.2	58.2	15.7	700.8	ind	14.9	68.1
Sockeye salmon	26.9	11.5	11.5	19.2	15.4	309.1	6.6	1.8	51.5	ind	1.1	99.9
Unknown salmon	23.1	7.7	7.7	19.2	7.7	399.0	8.5	2.3	74.1	ind	1.6	134.3
Nonsalmon fish	**69.2**	**42.3**	**30.8**	**53.8**	**23.1**	**722.0**	**15.4**	**4.2**	**722.0**	**lb**	**15.4**	**93.7**
Pacific herring	3.8	0.0	0.0	3.8	3.8	0.0	0.0	0.0	0.0	gal	0.0	0.0
Pacific herring roe	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)	15.4	15.4	15.4	0.0	3.8	168.7	3.6	1.0	28.1	gal	0.6	91.0
Rainbow smelt	15.4	0.0	0.0	15.4	11.5	0.0	0.0	0.0	0.0	gal	0.0	0.0
Arctic cod	3.8	3.8	3.8	0.0	0.0	9.9	0.2	0.1	90.4	ind	1.9	137.7
Saffron cod	26.9	15.4	7.7	23.1	3.8	18.4	0.4	0.1	87.8	ind	1.9	97.0
Pacific halibut	3.8	0.0	0.0	3.8	0.0	0.0	0.0	0.0	0.0	lb	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	34.6	26.9	23.1	19.2	7.7	525.0	11.2	3.0	159.1	ind	3.4	99.2
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	3.8	0.0	0.0	3.8	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Sheefish	11.5	0.0	0.0	11.5	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Broad whitefish	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Bering cisco	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Least cisco	0.0	3.8	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	7.7	0.0	0.0	7.7	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown whitefishes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown nonsalmon fish	3.8	0.0	0.0	3.8	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0

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Table 2-6.–Page 2 of 5.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount			95% confidence limit (±) harvest
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total	Mean per household	Per capita	Total	Unit	Mean per household	
Large land mammals	**73.1**	**11.5**	**3.8**	**73.1**	**7.7**	**972.5**	**20.7**	**5.6**	**972.5**	**lb**	**20.7**	**137.7**
Brown bear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Caribou	30.8	0.0	0.0	30.8	3.8	0.0	0.0	0.0	0.0	ind	0.0	0.0
Moose	65.4	11.5	3.8	65.4	7.7	972.5	20.7	5.6	1.8	ind	0.0	137.7
Common muskox	11.5	3.8	0.0	11.5	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Small land mammals	**3.8**	**11.5**	**3.8**	**0.0**	**0.0**	**5.4**	**0.1**	**0.0**	**5.4**	**lb**	**0.1**	**137.7**
Beaver	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Arctic fox	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	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	3.8	3.8	3.8	0.0	0.0	5.4	0.1	0.0	3.6	ind	0.1	137.7
River otter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Marmot	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
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
Gray wolf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Wolverine	0.0	11.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Marine mammals	**88.5**	**38.5**	**26.9**	**88.5**	**46.2**	**12,028.4**	**255.9**	**69.3**	**12,028.4**	**lb**	**255.9**	**60.4**
Young bearded seal	42.3	23.1	23.1	34.6	26.9	4,653.0	99.0	26.8	16.3	ind	0.3	66.0
Adult bearded seal	61.5	23.1	7.7	53.8	19.2	3,619.0	77.0	20.9	12.7	ind	0.3	118.8
Ringed seal	19.2	15.4	11.5	7.7	11.5	618.2	13.2	3.6	10.8	ind	0.2	83.1
Spotted seal	19.2	7.7	3.8	15.4	7.7	354.3	7.5	2.0	3.6	ind	0.1	137.7
Unknown seal oil	42.3	3.8	0.0	42.3	3.8	0.0	0.0	0.0	0.0	ind	0.0	0.0
Walrus	69.2	23.1	3.8	69.2	26.9	2,783.8	59.2	16.0	3.6	ind	0.1	137.7
Beluga whale	7.7	0.0	0.0	7.7	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Bowhead whale	50.0	3.8	0.0	50.0	11.5	0.0	0.0	0.0	0.0	ind	0.0	0.0
Birds and eggs	**65.4**	**46.2**	**42.3**	**46.2**	**30.8**	**1,004.3**	**21.4**	**5.8**	**1,004.3**	**lb**	**21.4**	**102.6**
Unknown eiders	3.8	0.0	0.0	3.8	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Mallard	3.8	3.8	3.8	0.0	0.0	8.7	0.2	0.1	5.4	ind	0.1	137.7
Long-tailed duck	3.8	3.8	3.8	0.0	0.0	4.2	0.1	0.0	3.6	ind	0.1	137.7

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Table 2-6.–Page 3 of 5.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount			95% confidence limit (±) harvest
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total	Mean per household	Per capita	Total	Unit	Mean per household	
Birds and eggs, continued												
Northern pintail	3.8	3.8	3.8	0.0	0.0	4.3	0.1	0.0	3.6	ind	0.1	137.7
Unknown scaups	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown scoters	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
Green-winged teal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
American wigeon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown ducks	11.5	7.7	3.8	3.8	3.8	7.4	0.2	0.0	5.4	ind	0.1	137.7
Brant	19.2	11.5	11.5	7.7	3.8	30.7	0.7	0.2	16.3	ind	0.3	96.0
Unknown Canada/cackling geese	15.4	7.7	7.7	7.7	0.0	20.5	0.4	0.1	7.2	ind	0.2	107.5
Snow goose	38.5	26.9	19.2	23.1	11.5	70.9	1.5	0.4	25.3	ind	0.5	83.0
White-fronted goose	11.5	3.8	3.8	11.5	3.8	11.5	0.2	0.1	3.6	ind	0.1	137.7
Tundra (whistling) swan	11.5	7.7	7.7	0.0	3.8	56.0	1.2	0.3	5.4	ind	0.1	101.0
Sandhill crane	3.8	3.8	3.8	0.0	3.8	9.8	0.2	0.1	1.8	ind	0.0	137.7
Unknown shorebirds	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown loons	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown seabirds	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown grouses	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown ptarmigans	7.7	3.8	3.8	3.8	0.0	1.4	0.0	0.0	1.8	ind	0.0	137.7
Snowy owl	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown eider eggs	15.4	15.4	15.4	0.0	3.8	34.0	0.7	0.2	208.0	ind	4.4	91.4
Unknown duck eggs	15.4	11.5	7.7	7.7	7.7	422.7	9.0	2.4	2,589.0	ind	55.1	134.6
Unknown goose eggs	7.7	3.8	0.0	7.7	0.0	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown swan eggs	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 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 auklet 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	23.1	11.5	7.7	15.4	7.7	304.3	6.5	1.8	1,422.1	ind	30.3	135.7
Unknown murre eggs	26.9	0.0	0.0	26.9	11.5	0.0	0.0	0.0	0.0	ind	0.0	0.0
Unknown eggs	3.8	3.8	3.8	0.0	0.0	18.1	0.4	0.1	100.2	ind	2.1	137.7

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Table 2-6.–Page 4 of 5.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount			95% confidence limit (±) harvest
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total	Mean per household	Per capita	Total	Unit	Mean per household	
Marine invertebrates	**80.8**	**73.1**	**73.1**	**38.5**	**57.7**	**3,201.2**	**68.1**	**18.4**	**3,201.2**	**lb**	**68.1**	**44.8**
Unknown clams	76.9	69.2	69.2	19.2	53.8	3,131.1	66.6	18.0	1,043.7	gal	22.2	45.8
Unknown king crabs	3.8	3.8	3.8	0.0	0.0	20.8	0.4	0.1	9.0	ind	0.2	137.7
Unknown crabs	42.3	15.4	15.4	26.9	7.7	33.3	0.7	0.2	14.5	ind	0.3	88.7
Giant scale worm	3.8	3.8	3.8	3.8	3.8	14.5	0.3	0.1	1.8	gal	0.0	0.0
Unknown mussels	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Unknown marine invertebrates	11.5	11.5	11.5	0.0	3.8	1.5	0.0	0.0	0.5	gal	0.0	67.3
Vegetation	**84.6**	**76.9**	**76.9**	**50.0**	**42.3**	**976.4**	**20.8**	**5.6**	**976.4**	**lb**	**20.8**	**34.7**
Blueberry	53.8	38.5	38.5	30.8	7.7	23.0	0.5	0.1	5.8	gal	0.1	47.0
Lowbush cranberry	26.9	30.8	26.9	0.0	11.5	26.0	0.6	0.1	6.5	gal	0.1	58.7
Highbush cranberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Crowberry	69.2	57.7	57.7	19.2	23.1	242.5	5.2	1.4	60.6	gal	1.3	55.4
Cloudberry	76.9	61.5	61.5	26.9	30.8	472.4	10.1	2.7	118.1	gal	2.5	40.2
Raspberry	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
Wild rhubarb	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Wild potato	11.5	7.7	7.7	7.7	0.0	0.6	0.0	0.0	0.6	gal	0.0	108.1
Other beach greens	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Hudson's Bay (Labrador) tea	26.9	26.9	26.9	0.0	7.7	19.3	0.4	0.1	19.3	gal	0.4	62.5
Sourdock	57.7	53.8	53.8	3.8	11.5	60.0	1.3	0.3	60.0	gal	1.3	49.0
Spruce tips	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Willow leaves	53.8	42.3	42.3	11.5	19.2	46.3	1.0	0.3	46.3	gal	1.0	44.3
Wild rose hips	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Other wild greens	38.5	34.6	34.6	3.8	7.7	34.0	0.7	0.2	34.0	gal	0.7	73.2
Unknown mushrooms	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Fireweed	19.2	19.2	19.2	0.0	7.7	23.5	0.5	0.1	23.5	gal	0.5	61.6

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Table 2-6.–Page 5 of 5.

Resource	Percentage of households					Harvest weight (lb)			Harvest amount			95% confidence limit (±) harvest
	Using	Attempting harvest	Harvesting	Receiving	Giving away	Total	Mean per household	Per capita	Total	Unit	Mean per household	
Vegetation, continued												
Stinkweed	23.1	23.1	23.1	0.0	7.7	22.1	0.5	0.1	22.1	gal	0.5	72.7
Punk	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Chaga	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Sea lovage	11.5	7.7	7.7	3.8	3.8	6.3	0.1	0.0	6.3	gal	0.1	118.8
Wild chives	7.7	3.8	3.8	3.8	0.0	0.2	0.0	0.0	0.2	gal	0.0	137.7
Mousefoods	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Wood	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	cord	0.0	0.0
Roots	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Other wood	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	gal	0.0	0.0
Unknown vegetation	3.8	3.8	3.8	0.0	0.0	0.1	0.0	0.0	0.1	gal	0.0	137.7

Source ADF&G Division of Subsistence household surveys, 2018.
Note Resources for which the percentage using is greater than the combined received and harvest indicate use from resources obtained during a previous year.

Figure 2-14.–Composition of harvest by resource category, by weight, Wales, 2017.

Table 2-7.–Top ranked resources used by households, Wales, 2017.

Rank[a]	Resource	Percentage of households using
1.	Unknown clams	76.9%
1.	Cloudberry	76.9%
3.	Pink salmon	69.2%
3.	Walrus	69.2%
3.	Crowberry	69.2%
6.	Moose	65.4%
7.	Adult bearded seal	61.5%
8.	Sourdock	57.7%
9.	Blueberry	53.8%
9.	Willow leaves	53.8%

Source ADF&G Division of Subsistence household surveys, 2018.

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

Figure 2-15.–Top resources harvested by percentage of total harvest, by weight, Wales, 2017.

Figure 2-15 shows the species with the highest harvests during the 2017 study year. Bearded seals made up 32% of the total harvest: 18% were young or subadults, and 14% were adult bearded seals. Clams were the next most heavily harvested (12% of the total harvest) resource during the study year. Three species of marine mammals are in the top ten resources harvested: walrus and ringed seals in addition to the bearded seals. Dolly Varden were the only nonsalmon fish included in the top ten resources harvested.

Salmon

Salmon composed 27% of the total estimated harvest for Wales and accounted for 89% of the total harvest of fish species in 2017 (Table 2-6; Figure 2-14). Pink salmon was the most heavily used species (by 69% of households): it accounted for 39% of the total salmon harvest during the study year and contributed the most edible weight of any salmon species (2,733 lb, 16 lb per capita; Table 2-6; Figure 2-16). Although 69% of households used this resource, only 46% of households harvested pink salmon, which is explained by sharing of pink salmon among households. Forty-six percent of households received this resource, and 42% of households gave it away (Table 2-6). Coho salmon was the second most heavily used species of salmon (by 46% of households), and it accounted for 25% of the salmon harvest during the study year (1,772 lb, 10 lb per capita; Table 2-6; Figure 2-16). The same percentage of households (27%) reported harvesting coho salmon and chum salmon; chum salmon also contributed 25% to the total salmon harvest in 2017 (1,768 lb, 10 lb per capita). Wales fishers also harvested smaller amounts of unknown salmon (399 lb), sockeye salmon (309 lb), and Chinook salmon (37 lb); combined these three resources accounted for 11% of the salmon harvest during the study year.

Residents harvested 89% (6,269 lb) of the salmon harvest by set gillnet and the remaining 11% (749 lb) by rod and reel fishing[4] (tables 2-8 and 2-9; Figure 2-17). Sockeye salmon was the only species not harvested by rod and reel fishing. Pink salmon accounted for 72% (536 lb) of all salmon caught by rod and reel fishing.

A small portion of the total salmon harvest was used as dog food in 2017. An estimated 42 lb of pink salmon was the only salmon reportedly used as dog food during the study year. Table C12 shows the estimated salmon harvest for feeding dogs.

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4. Rod and reel is legal subsistence gear in Wales (5AAC 01.170).

Figure 2-16.–Composition of salmon harvest by weight, Wales, 2017.

Figure 2-18 portrays search and harvest areas used by Wales fishers targeting salmon species during the study year. Residents fished mostly in the vicinity of the community, setting their nets or casting rod and reel gear along the coast. Wales fishers also targeted salmon in Lopp Lagoon, near Tin City, Pelazuk, and the Anikovik River drainage at York.

Nonsalmon Fish

Nonsalmon fish species collectively accounted for 3% of Wales' total harvest the study year (Figure 2-14). Nonsalmon fish provided 833 lb (5 lb per capita) to the community harvest. Dolly Varden, locally called trout, was the most heavily harvested nonsalmon resource: it composed 73% (525 lb total, 3 lb per capita) of the nonsalmon fish harvest in the community (Table 2-6; Figure 2-19). This species was the most widely used (35% of households) and harvested (23%) nonsalmon fish during the study year (Table 2-6). Respondents used gillnet and rod and reel to harvest Dolly Varden (Table 2-10; Figure 2-20). Gillnets accounted for the majority (94%; 430 lb) of the trout harvest during the study year (tables 2-10 and 2-11; Figure 2-20). Fishers set nets along the coast in the community or in Lopp Lagoon northeast of the community, at locations used for salmon fishing (Figure 2-21).

Capelin (locally known as cigarfish) was the second most heavily harvested nonsalmon fish species during the study year: it composed 23% (169 lb total, 1 lb per capita) of the nonsalmon fish harvest (Table 2-6; Figure 2-14). Capelin spawn on gravelly beaches with coarse sands, and are usually present in Norton Sound for two to four days; during this time, they provide an accessible, easy-to-harvest food source (Ressel et al. [*n.d.*]). Wales fishers harvested capelin with rod and reel and "other methods" during the study year (Figure 2-20). Wales fishers collected 122 lb of capelin (72%) by using methods such as coffee cans and their hands to scoop the fish out of the water (tables 2-10 and 2-11; Figure 2-20).[5] The other 47 lb (28%) was harvested by rod and reel. All capelin harvests occurred along the coast at the community of Wales (Figure 2-21). This was the only nonsalmon fish that was used as whole fish to feed to dogs: 22 lb of capelin were used for this subsistence practice (Table C12).

Saffron cod (locally known as "tomcod") accounted for 3% (18 lb total) of the total nonsalmon fish harvest during the study year (Table 2-6; Figure 2-14). Although the harvest weight was lower than for trout and capelin, saffron cod was the second most widely used (27% of households) nonsalmon fish in Wales during

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5. E. Mikow field notes, April 2018.

Table 2-8.–Estimated percentages of salmon harvested by gear type, resource, and total salmon harvest, Wales, 2017.

Resource	Percentage base	Removed from commercial catch		Subsistence methods								Subsistence gear, any method		Any method	
				Gillnet		Seine net		Rod and reel		Other method					
		Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Salmon	**Gear type**	**0.0%**	**0.0%**	**100.0%**	**100.0%**	**0.0%**	**0.0%**	**100.0%**	**100.0%**	**0.0%**	**0.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
	Resource	**0.0%**	**0.0%**	**87.3%**	**89.3%**	**0.0%**	**0.0%**	**12.7%**	**10.7%**	**0.0%**	**0.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
	Total	**0.0%**	**0.0%**	**87.3%**	**89.3%**	**0.0%**	**0.0%**	**12.7%**	**10.7%**	**0.0%**	**0.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
Chum salmon	Gear type	0.0%	0.0%	17.8%	26.8%	0.0%	0.0%	6.6%	12.0%	0.0%	0.0%	16.3%	25.2%	16.3%	25.2%
	Resource	0.0%	0.0%	94.9%	94.9%	0.0%	0.0%	5.1%	5.1%	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%
	Total	0.0%	0.0%	15.5%	23.9%	0.0%	0.0%	0.8%	1.3%	0.0%	0.0%	16.3%	25.2%	16.3%	25.2%
Coho salmon	Gear type	0.0%	0.0%	21.9%	27.0%	0.0%	0.0%	6.8%	10.2%	0.0%	0.0%	20.0%	25.3%	20.0%	25.3%
	Resource	0.0%	0.0%	95.7%	95.7%	0.0%	0.0%	4.3%	4.3%	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%
	Total	0.0%	0.0%	19.1%	24.2%	0.0%	0.0%	0.9%	1.1%	0.0%	0.0%	20.0%	25.3%	20.0%	25.3%
Chinook salmon	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.2%	4.9%	0.0%	0.0%	0.3%	0.5%	0.3%	0.5%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.5%	0.0%	0.0%	0.3%	0.5%	0.3%	0.5%
Pink salmon	Gear type	0.0%	0.0%	49.5%	35.1%	0.0%	0.0%	83.3%	71.6%	0.0%	0.0%	53.8%	38.9%	53.8%	38.9%
	Resource	0.0%	0.0%	80.4%	80.4%	0.0%	0.0%	19.6%	19.6%	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%
	Total	0.0%	0.0%	43.2%	31.3%	0.0%	0.0%	10.5%	7.6%	0.0%	0.0%	53.8%	38.9%	53.8%	38.9%
Sockeye salmon	Gear type	0.0%	0.0%	4.5%	4.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.0%	4.4%	4.0%	4.4%
	Resource	0.0%	0.0%	100.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%
	Total	0.0%	0.0%	4.0%	4.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.0%	4.4%	4.0%	4.4%
Unknown salmon	Gear type	0.0%	0.0%	6.3%	6.2%	0.0%	0.0%	1.1%	1.3%	0.0%	0.0%	5.7%	5.7%	5.7%	5.7%
	Resource	0.0%	0.0%	97.6%	97.6%	0.0%	0.0%	2.4%	2.4%	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%
	Total	0.0%	0.0%	5.5%	5.5%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	5.7%	5.7%	5.7%	5.7%

Source ADF&G Division of Subsistence household surveys, 2018.

Table 2-9.–Estimated salmon harvest by gear type and resource, Wales, 2017

| | Removed from commercial catch | | Subsistence methods | | | | | | | | | | Any method | |
| | | | Gillnet | | Seine net | | Rod and reel | | Other method | | Subsistence gear, any method | | | |
Resource	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Salmon	**0.0**	**0.0**	**1,138.8**	**6,269.1**	**0.0**	**0.0**	**164.9**	**748.8**	**0.0**	**0.0**	**1,303.7**	**7,017.9**	**1,303.7**	**7,017.9**
Chum salmon	0.0	0.0	202.1	1,677.7	0.0	0.0	10.8	90.0	0.0	0.0	213.0	1,767.7	213.0	1,767.7
Coho salmon	0.0	0.0	249.4	1,695.6	0.0	0.0	11.3	76.7	0.0	0.0	260.6	1,772.3	260.6	1,772.3
Chinook salmon	0.0	0.0	0.0	0.0	0.0	0.0	3.6	36.5	0.0	0.0	3.6	36.5	3.6	36.5
Pink salmon	0.0	0.0	563.4	2,197.4	0.0	0.0	137.4	535.8	0.0	0.0	700.8	2,733.2	700.8	2,733.2
Sockeye salmon	0.0	0.0	51.5	309.1	0.0	0.0	0.0	0.0	0.0	0.0	51.5	309.1	51.5	309.1
Unknown salmon	0.0	0.0	72.3	389.2	0.0	0.0	1.8	9.7	0.0	0.0	74.1	399.0	74.1	399.0

Source ADF&G Division of Subsistence household surveys, 2018.

Figure 2-17.–Estimated salmon harvest by gear type and resource, Wales, 2017.

Chukchi Sea

168°W

Bering Land Bridge
National Preserve

Lopp Lagoon

Lynx
Creek

Bering Strait

Razorback
Mountain

Wales

Potato
Mountain

Grouse Creek

Yankee River

York Creek

Tin City

Pelazuk

Mint River

Anikovik River

York

Brooks Mountain

Bering Sea

York Mountains

168°W

Wales
Comprehensive
Survey 2017

N

Wales

salmon search
and harvest areas

0 1 2 3 4 5
Miles

This map depicts areas used for resource
harvesting in 2017 by 10 surveyed households
in Wales, Alaska. The total survey
sample includes 26 of 47 households in
Wales (55.3%), so this map is a partial
representation of areas used for resource
harvests in 2017. Resource harvest areas
change over time, therefore areas not used in
2017 may be used in other years.

Source:
Alaska Department of Fish & Game (ADF&G)
Division of Subsistence, 2018.
North American Datum 1983.
Alaska Albers Projection.

Map created by: Gayle Neufeld

Figure 2-18.–Salmon fishing and harvest areas, Wales, 2017.

Figure 2-19.–Composition of nonsalmon fish harvest by weight, Wales, 2017.

the study year (Table 2-6). The only method reported for harvesting saffron cod was hook under the ice (also called jigging through the ice; Table 2-10, Figure 2-20). Wales fishers also harvested a small quantity of Arctic cod (10 lb) by jigging through the ice. Fishers reported jigging for Arctic cod near the community of Diomede (Figure 2-21).

In addition to the species Wales fishers harvested, Wales households also received six other nonsalmon fish species during the study year. Households received rainbow smelt (15% of households); sheefish (12%); round whitefish (8%); and Pacific halibut, Pacific herring, and northern pike (4% each).

Large Land Mammals

Large land mammals composed 4% of Wales's total harvest in 2017 (Figure 2-14). Four percent of households harvested a total of two moose (973 lb; 6 lb per capita), and 65% of households used the meat (Table 2-6). Moose harvests occurred in September, and both harvested animals were bull moose (Table C13). Moose was widely shared: 8% of households reported giving away moose and 65% of households reported receiving moose in 2017. Caribou was the second most widely used species (31% of households) among large land mammals in 2017. Twelve percent of households used muskoxen during the study year, and 4% of households attempted to harvest this species.

Figure 2-22 portrays search and harvest areas used by Wales hunters for large land mammals in 2017. Hunters reported three main areas used for moose hunting. They hunted in an area directly north of Wales along the land that shields Lopp Lagoon from the ocean. Hunters also used an area southeast of the community past Tin City that encompasses the Ocean Creek drainage near the site of Pelazuk. Wales hunters reported using a large area east of the community to search for both moose and muskoxen. This area includes the low lands along the southern edge of Lopp Lagoon as far east as the mouth of the Mint River.

Small Land Mammals/Furbearers

Wales residents harvested four snowshoe hares during the study year (Table 2-6). A small percentage of households (4%) harvested the snowshoe hares in October and November (Table 2-6; Table C14). All four snowshoe hares were used for food or food and fur. Some households (12%) attempted to harvest wolverines but did not succeed (Table 2-6). All search areas for small land mammals were located to the east of Razorback Mountain and west of Potato Mountain (Figure 2-23).

Table 2-10.–Estimated harvest of nonsalmon fish by gear type and resource, Wales, 2017.

| | | | | | | | | | Subsistence methods | | | | | | | | | |
| | | Removed from commercial catch | | Gillnet | | Seine net | | Hook under ice | | Rod and reel | | Other method | | Subsistence gear, any method | | Any method | |
Resource	Unit[a]	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds	Number[a]	Pounds
Nonsalmon fish			0.0		429.5		0.0		28.4		142.6		121.5		722.0		722.0
Pacific herring	gal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0	0.0	0.0
Capelin (grunion)	gal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.9	47.2	20.2	121.5	28.1	168.7	28.1	168.7
Rainbow smelt	gal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Arctic cod	gal	0.0	0.0	0.0	0.0	0.0	0.0	90.4	9.9	0.0	0.0	0.0	0.0	90.4	9.9	90.4	9.9
Saffron cod	ind	0.0	0.0	0.0	0.0	0.0	0.0	87.8	18.4	0.0	0.0	0.0	0.0	87.8	18.4	87.8	18.4
Pacific halibut	lb	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Burbot	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dolly Varden	ind	0.0	0.0	130.2	429.5	0.0	0.0	0.0	0.0	28.9	95.4	0.0	0.0	159.1	525.0	159.1	525.0
Arctic grayling	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Northern pike	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sheefish	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Broad whitefish	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bering cisco	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Least cisco	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Humpback whitefish	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Round whitefish	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown whitefishes	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown nonsalmon fish	ind	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source ADF&G Division of Subsistence household surveys, 2018.

Note The summary row that includes incompatible units of measure has been left blank.

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.

Figure 2-20.–Estimated harvest of nonsalmon fish in pounds by gear type and resource, Wales, 2017.

Table 2-11.–Estimated percentages of nonsalmon fish in pounds by gear type, resource, and total nonsalmon fish harvest, Wales, 2017.

Resource	Percentage base	Removed from commercial catch	Subsistence gear					Subsistence gear, any method	Any method
			Gillnet	Seine net	Hook under ice	Rod and reel	Other method		
Nonsalmon fish	**Gear type**	**0.0%**	**100.0%**	**0.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
	Resource	**0.0%**	**59.5%**	**0.0%**	**3.9%**	**19.8%**	**16.8%**	**100.0%**	**100.0%**
	Total	**0.0%**	**59.5%**	**0.0%**	**3.9%**	**19.8%**	**16.8%**	**100.0%**	**100.0%**
Pacific herring	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	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%

-continued-

Table 2-11.–Page 2 of 3.

Resource	Percentage base	Removed from commercial catch	Subsistence gear					Subsistence gear, any method	Any method
			Gillnet	Seine net	Hook under ice	Rod and reel	Other method		
Pacific herring roe	Gear type	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%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Capelin (grunion)	Gear type	0.0%	0.0%	0.0%	0.0%	33.1%	100.0%	23.4%	23.4%
	Resource	0.0%	0.0%	0.0%	0.0%	28.0%	72.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	6.5%	16.8%	23.4%	23.4%
Rainbow smelt	Gear type	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%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Arctic cod	Gear type	0.0%	0.0%	0.0%	35.0%	0.0%	0.0%	1.4%	1.4%
	Resource	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	1.4%	0.0%	0.0%	1.4%	1.4%
Saffron cod	Gear type	0.0%	0.0%	0.0%	65.0%	0.0%	0.0%	2.6%	2.6%
	Resource	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	2.6%	0.0%	0.0%	2.6%	2.6%
Pacific halibut	Gear type	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%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Burbot	Gear type	0.0%	0.0%	0.0%	0.0%	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%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Dolly Varden	Gear type	0.0%	100.0%	0.0%	0.0%	66.9%	0.0%	72.7%	72.7%
	Resource	0.0%	81.8%	0.0%	0.0%	18.2%	0.0%	100.0%	100.0%
	Total	0.0%	59.5%	0.0%	0.0%	13.2%	0.0%	72.7%	72.7%
Arctic grayling	Gear type	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%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

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Table 2-11.–Page 3 of 3.

| Resource | Percentage base | Removed from commercial catch | Subsistence gear | | | | | | Any method |
			Gillnet	Seine net	Hook under ice	Rod and reel	Other method	Subsistence gear, any method	
Northern pike	Gear type	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%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Sheefish	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	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%
Broad whitefish	Gear type	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%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Bering cisco	Gear type	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%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Least cisco	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	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%
Humpback whitefish	Gear type	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%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Round whitefish	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Resource	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%
Unknown whitefishes	Gear type	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%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unknown nonsalmon fish	Gear type	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%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Source ADF&G Division of Subsistence household surveys, 2018.

Figure 2-21.–Nonsalmon fishing and harvest areas, Wales, 2017.

Wales
Comprehensive
Survey 2017

Wales

● nonsalmon fish search and harvest areas

This map depicts areas used for resource harvesting in 2017 by 5 surveyed households in Wales, Alaska. The total survey sample includes 26 of 47 households in Wales (55.3%), so this map is a partial representation of areas used for resource harvests in 2017. Resource harvest areas change over time, therefore areas not used in 2017 may be used in other years.

Source:
Alaska Department of Fish & Game (ADF&G) Division of Subsistence, 2018.
North American Datum 1983.
Alaska Albers Projection.

Map created by: Gayle Neufeld

Figure 2-22.–Large land mammal hunting and harvest areas, Wales, 2017.

Figure 2-23.–Small land mammal hunting and trapping areas, Wales, 2017.

Marine Mammals

Marine mammals accounted for 46% of Wales' total harvest in 2017; this category provided an estimated 12,028 lb of edible weight (Table 2-6; Figure 2-14). Two species composed 92% of the marine mammal harvest by edible weight: an estimated harvest of 29 bearded seals accounted for 69% of the total marine mammal harvest, and an estimated harvest of four walrus accounted for 23% (Table 2-6; Figure 2-24). This survey separated harvests of bearded seals into two categories: adult bearded seal and young bearded seal. Wales residents harvested 16 young bearded seals (4,653 lb total; 27 lb per capita), and 13 adult bearded seals (3,619 lb total; 21 lb per capita) during 2017 (Table 2-6). Adult bearded seals were the second most widely used (62%) marine mammal species during the study year; young bearded seals were used by 42% of households in 2017. Walrus contributed 2,784 lb of edible weight (16 lb per capita) to the 2017 subsistence harvest; this species was the most widely used marine mammal species during the study period (69% of households). Ringed seals made up 5% of the total edible weight (618 lb total; 4 lb per capita) to 2017 marine mammal harvest; this resource was used by 19% of households. Spotted seals accounted for the final 3% of the estimated marine mammal harvest (354 lb total; 2 lb per capita) in 2017; 19% of households used this resource. Half of Wales' households received bowhead whale during the study year: it was the third most widely used marine mammal resource in 2017.

The entire marine mammal harvest occurred between April and June during the study year (Table C15). Young bearded seal harvests occurred in April and May; adult bearded seal occurred in April and June; ringed seal occurred in April and May; and the spotted seal and walrus harvests took place in May. Unsuccessful attempts to harvest a bowhead whale occurred in April and May. Marine mammal search and harvest areas were mostly concentrated to the west and north of Wales (Figure 2-25).

Figure 2-24.–Composition of marine mammal harvest by weight, Wales, 2017.

Figure 2-25.–Marine mammal hunting and harvest areas, Wales, 2017.

Figure 2-26.–Composition of bird and egg harvest by weight, Wales, 2017.

Birds and Eggs

Birds and eggs contributed 4% to Wales total estimated subsistence harvest in 2017 (Figure 2-14; Table 2-6). Bird egg harvests collectively made up an estimated 78% of the bird and egg category harvest by edible weight during the study year (Table 2-6). Unspecified duck eggs accounted for 43% of the edible weight (423 lb total, 2 lb per capita) of this resource category; this resource was used by 15% of households (Table 2-6; Figure 2-26). Unspecified gull eggs made up 30% of the edible weight of birds and eggs (304 lb total, 2 lb per capita) and were used by 23% of households. Residents also gathered smaller amounts of unspecified eider eggs (34 lb total) and other unspecified eggs (18 lb total) during the study year. Households also used murre eggs (27%) but no survey respondents harvested them: Wales households may have received this resource from Diomede households. Snow geese were the most heavily harvested species of any bird (71 edible pounds) and the most widely used resource in the bird and egg category (39% of households). Snow geese, tundra swans, and brants together composed 15% of the bird and egg harvest (Figure 2-26).

Wales hunters harvested most birds during the spring; however, northern pintails were only harvested in the fall and the majority of brant and snow goose harvests occurred in the fall (Table C16). Wales residents gathered eggs in three main areas: one area is just north outside of town, and the other two areas are further north and east along the Lopp Lagoon barrier beach (Figure 2-27). The furthest egg harvest location used by respondents in 2017 includes small islands formed on the landward side of a main tidal channel that connects the Chukchi Sea to Lopp Lagoon. Wales hunters sought and harvested migratory waterfowl in three main areas around Lopp Lagoon: both on the barrier beach side and from the bottom of the northern slope of Potato Mountain eastward along the southern shore of Lopp Lagoon. One survey respondent mentioned avoiding migratory waterfowl due to concerns about bird flu.[6]

Marine Invertebrates

Wales residents reported significant marine invertebrate harvests. Marine invertebrates composed 12% of the total estimated subsistence harvest in 2017; they contributed an estimated 3,210 edible pounds (18 lb per capita (Table 2-6; Figure 2-14). As a resource category, marine invertebrates rank third overall in

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6. Respondent comments, Wales household survey.

Figure 2-27.–Bird hunting and harvest areas, Wales, 2017.

contribution to the overall harvest during the study year. Clams composed 98% of the total marine invertebrate harvest, contributing 3,131 edible pounds (18 lb per capita); clams were used by an estimated 77% of households (Table 2-6; Figure 2-28). Residents also reported limited harvests of unspecified crabs, unspecified king crabs, and giant scale worms (known locally as "sea worms"). Figure 2-29 shows the areas where Wales residents harvested marine invertebrates. Wales residents reported harvesting clams by hand along the beach in town when winds cause the surf to deposit them on the beach; this natural process was also cited for a few king crab harvests.[7] One survey respondent mentioned that northwest winds produce the best conditions for harvesting clams.

Figure 2-28.–Composition of marine invertebrate harvest by weight, Wales, 2017.

Vegetation

The category of vegetation composed 4% of Wales' total estimated subsistence harvest in 2017; vegetation accounted for an estimated 976 edible pounds (6 lb per capita; Table 2-6; Figure 2-14). Berries composed 78% of the total vegetation harvest at 764 edible pounds (4 lb per capita; Table 2-6; Figure 2-30). Cloudberries (known locally as salmonberries) were the most heavily gathered berry (472 edible pounds; 3 lb per capita); this berry was also the most widely used of all vegetation, by an estimated 77% of households (Table 2-6). Crowberries (known locally as blackberries) were the second most heavily gathered berries, contributing 243 edible pounds (1 lb per capita); this berry was the second most widely used vegetation (69% of households).Wales households also harvested lowbush cranberries and blueberries. One survey respondent commented that 2017 was a bad year for berries.

Residents also reported harvesting at least 8 different types of wild greens during the study year. Of these, the most heavily gathered were sourdock (60 lb), willow leaves (46 lb), and dwarf fireweed (24 lb). An estimated 58% of households used sourdock, and 54% used willow leaves during the study year.

Figure 2-31 portrays search and harvest areas for vegetation used by Wales residents during the study year. Residents predominantly gathered berries and greens along the west facing slopes to the east of the town and airport, although some harvest areas skirted and stretched around to the mountains north and east facing slopes and drainages. Less frequented search and harvest areas included stretches of the coast between Wales and York, some of which extend inland as far as nine miles and land along the eastern extent of Lopp Lagoon, extending west to roughly the mouth of Lynx Creek.

LOCAL COMMENTS AND CONCERNS

Following is a summary of local observations of wild resource populations and trends that were recorded during the surveys (Table C17). Some households did not offer any additional information during the survey interviews, so not all households are represented in the summary.

Many Wales residents voiced concerns about the effects of environmental changes on resource access and availability. One respondent talked about the change in wind patterns over the course of decades. This person said that wind is less predictable now: it changes while a person is out on the water rather than over the course of days. Another respondent talked about how the weather itself switched more quickly and with

7. Respondent comments, Wales household survey.

Figure 2-29.–Marine invertebrate search and harvest areas, Wales, 2017.

more severity in the fall and early spring and considers this a factor in the availability of marine mammals around Wales. Four survey respondents had comments about poor ice conditions negatively affecting hunting. One of those respondents also said they are still seeing lesions on marine mammals similar to those found during an unexplained mortality event declared in 2011–2012[8] .

A few respondents mentioned regulations during the comments and concerns section of the survey. One respondent felt that the regulations should not be so strict for urban residents who rely on subsistence foods; another mentioned seeing moose in the area around July but that the season does not open until August. One respondent wanted more muskox permits to be made available, and another mentioned that regulations are too strict on those who are just trying to feed their families. One survey respondent shared a concern about a perceived decline in subsistence activities by other members of the community; this was also mentioned to researchers by other community members over the course of the project.

Figure 2-30.–Composition of vegetation harvest by weight, Wales, 2017.

8. Beginning in 2011, a workgroup of state and federal agencies, nongovernmental organizations, tribal representatives, marine mammal specialists, and laboratories worked to determine the cause of an unusual mortality event (UME) occurring in various seal species and walruses across the North Slope and Bering Strait regions. In 2014, because few new walrus cases were found, walrus was removed from the list of animals affected; the UME remained open for ringed, ribbon, bearded, and spotted seals. In January 2016, a team of investigators met to discuss the potential for closure of the UME, pending funding for final testing of samples (NOAA 2016).

Figure 2-31.–Vegetation gathering and harvest areas, Wales, 2017.

3. DISCUSSION AND CONCLUSIONS

Elizabeth H. Mikow

The customary and traditional harvests of wild foods continue to make major contributions to the well-being of Wales and other rural Alaska communities. Previous studies have documented the social, cultural, economic, nutritional, and psychological benefits associated with subsistence activities and foods (Ballew et al. 2004; Fall 2016; Heller and Scott 1967; Johnson et al. 2009; McGrath-Hanna et al. 2003; Nobmann 1997; Poppel et al. 2007; Receveur et al. 1998; Richmond and Ross 2009; Wolfe 2000). This project sought to document subsistence uses of fish and wildlife resources in Wales through systematic recording of wild resource harvests and land use patterns. The project updates baseline information that will aid in the sustainable management of public resources.

Updated baseline information also allows for an assessment of potential changes in harvest patterns brought about by a number of factors including changes to the environment, changes to resource populations, and changes to accessing resources. The following sections will present study findings about self-assessments of harvest at the household level in comparison to recent years and will compare quantitative harvest data gathered in earlier study years to the 2017 study year.

Harvest Assessments

Researchers asked respondents to assess their own harvests in two ways: whether they used more, less, or about the same amount of the seven resource categories in 2017 compared to the past five years, and whether they got "enough" of each of the seven resource categories. Households also were asked to provide reasons if their use was different or if they were unable to get enough of a resource. If they did not get enough of a resource, they were asked to evaluate the severity of the impact to their household as a result of not getting enough. They were further asked whether they did anything differently (such as supplement with store-bought food or switch to a different subsistence resource) because they did not get enough. This section discusses responses to those questions.

Together, Table 3-1, Figure 3-1, and Figure 3-2 provide a broad overview of households' assessments of their harvests in 2017. Because not everyone uses all resource categories, some households did not respond to the assessment questions. Additionally, some households that do typically use a resource category simply did not answer questions. Table 3-2 provides additional data to support Figure 3-2.

For all resource categories, with the exception of marine invertebrates and vegetation, higher percentages of Wales households reported using less rather than more or the same amount during the 2017 study year in comparison to recent years (Figure 3-1). The resource categories with the highest percentage of households reporting less use in 2017 were marine mammals (60%), nonsalmon fish (60%), salmon (58%), and all resources (56%). Weather and environmental factors were cited most commonly among households that reported that they used less of these categories in 2017 and gave a reason why their use was less (Table 3-4). Higher percentages of households reported getting enough of most resource categories in 2017 than reported

Table 3-1.–Changes in household uses of resources compared to recent years, Wales, 2017.

| | | | Households reporting use | | | | | | | | | |
| | Sampled households | Valid responses[a] | Total households | | Less | | Same | | More | | Households not using | |
Resource category			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
All resources	26	25	25	100.0%	14	56.0%	9	36.0%	2	8.0%	0	0.0%
Salmon	26	26	26	100.0%	15	57.7%	8	30.8%	3	11.5%	0	0.0%
Nonsalmon fish	26	25	22	88.0%	15	60.0%	5	20.0%	2	8.0%	3	12.0%
Land mammals	26	25	23	92.0%	10	40.0%	8	32.0%	5	20.0%	2	8.0%
Marine mammals	26	25	22	88.0%	15	60.0%	3	12.0%	4	16.0%	3	12.0%
Birds	26	25	19	76.0%	10	40.0%	7	28.0%	2	8.0%	6	24.0%
Marine invertebrates	26	25	20	80.0%	5	20.0%	5	20.0%	10	40.0%	5	20.0%
Vegetation	26	25	22	88.0%	11	44.0%	9	36.0%	2	8.0%	3	12.0%

Source ADF&G Division of Subsistence household surveys, 2018.

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

Figure 3-1.–Changes in household uses of resources compared to recent years, Wales, 2017.

Figure 3-2.–Percentage of sampled households reporting whether they got enough resources, Wales, 2017.

Table 3-2.–Impact to households reporting that they did not get enough of a resource, Wales, 2017.

| | | 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	26	24	92.3%	12	50.0%	0	0.0%	0	0.0%	4	33.3%	6	50.0%	2	16.7%
Salmon	26	25	96.2%	10	40.0%	0	0.0%	1	10.0%	5	50.0%	3	30.0%	1	10.0%
Nonsalmon fish	26	22	84.6%	12	54.5%	1	8.3%	1	8.3%	5	41.7%	4	33.3%	1	8.3%
Land mammals	26	23	88.5%	10	43.5%	0	0.0%	0	0.0%	4	40.0%	4	40.0%	2	20.0%
Marine mammals	26	22	84.6%	12	54.5%	0	0.0%	0	0.0%	3	25.0%	6	50.0%	3	25.0%
Birds	26	19	73.1%	8	42.1%	0	0.0%	0	0.0%	3	37.5%	3	37.5%	2	25.0%
Marine invertebrates	26	20	76.9%	5	25.0%	0	0.0%	1	20.0%	1	20.0%	2	40.0%	1	20.0%
Vegetation	26	22	84.6%	8	36.4%	0	0.0%	0	0.0%	1	12.5%	5	62.5%	2	25.0%

Source ADF&G Division of Subsistence household surveys, 2018.
a. Includes households failing to respond to the question and those households that never used the resource.

not getting enough, although the percentage reporting not getting enough was notable for all categories; more households reported not getting enough of marine mammal resources (46%) and nonsalmon fish species than other resources (46%; Figure 3-2).

Sixty percent of Wales households reported using less marine mammals during the study year, 12% reported using the same amount, 16% reported using more, and 12% reported not using marine mammal resources (Figure 3-1; Table 3-1). Households that used less marine mammal resources and answered why their use was less most commonly said that weather and environmental conditions had affected harvests (36% of households; Table 3-3). Others cited less sharing (21%), less availability of the resources (14%), lack of equipment (14%), and personal reasons (14%). Most of those that used more cited increased effort (50%; Table 3-4). Forty-six percent of households reported that they did not get enough marine mammal resources, 38% said they got enough, and 15% reported no use of marine mammals (Figure 3-2). When asked which resources they needed more of, 27% of responding households reported needing more walrus and 23% reported needing more bearded seal (Table 3-5).

Sixty percent of Wales households reported using less nonsalmon fish in 2017, 20% reported using the same amount, 8% reported using more, and 12% reported no use of nonsalmon fish (Figure 3-1; Table 3-1). Households that used less nonsalmon fish and answered why their use was less most commonly cited weather and environmental conditions (40%) and less sharing (33%; Table 3-3). Those households using more nonsalmon fish cited increased sharing and increased effort (Table 3-4). Forty-six percent of households said they did not get enough nonsalmon fish, 38% said they got enough, and 15% reported no use of these resources (Figure 3-2). When asked which resources they needed more of, households that answered the question said they needed more whitefish (12%) and trout (12%; Table 3-5)

Fifty-eight percent of Wales households reported using less salmon in 2017, 31% reported using the same amount, and 12% reported using more (Figure 3-1; Table 3-1). Households that used less salmon and answered why their use was less most commonly cited weather and environmental conditions (33%) and a lack of time to harvest (20%; Table 3-3). Those households using more salmon most commonly cited increased effort (67%; Table 3-4). Fifty-eight percent of Wales households reported having enough salmon, 38% said they did not get enough, and 4% reported no use of salmon resources (Figure 3-2). When asked which salmon resources they needed more of, 19% of households that answered the question said they needed more coho salmon (Table 3-5).

Overall, 56% of Wales households said they used less wild resources in 2017 in comparison with recent years, 36% reported using the same amount, and 8% said they used more (Figure 3-1). Households that used less wild resources and answered why their use was less most commonly cited weather and environmental conditions (57%) and a lack of equipment (36%; Table 3-3). For households that reported using more wild resources and explained why their use was different, 100% said the increased harvesting effort (Table 3-4). Equal percentages of households reported having enough wild resources in 2017 (46%) and not having enough (46%). Households most commonly reported that they needed more moose (31%), walrus (27%), bearded seal (23%), and coho salmon (19%; Table 3-5).

Table 3-3.–Reasons for less household uses of resources compared to recent years, Wales, 2017.

Resource category	Valid responses[a]	Households reporting reasons for less use	Family/ personal		Resources less available		Too far to travel		Lack of equipment		Less sharing		Lack of effort		Unsuccessful		Weather/ environment	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
All resources	25	14	3	21.4%	0	0%	0	0.0%	5	36%	2	14%	0	0%	0	0.0%	8	57.1%
Salmon	26	15	2	13.3%	2	13%	0	0.0%	2	13%	2	13%	3	20%	0	0.0%	5	33.3%
Nonsalmon fish	25	15	2	13.3%	1	7%	0	0.0%	1	7%	5	33%	1	7%	1	6.7%	6	40.0%
Land mammals	25	9	1	11.1%	0	0%	0	0.0%	2	22%	2	22%	1	11%	0	0.0%	2	22.2%
Marine mammals	25	14	2	14.3%	2	14%	0	0.0%	2	14%	3	21%	1	7%	1	7.1%	5	35.7%
Birds	25	10	5	50.0%	1	10%	0	0.0%	3	30%	1	10%	0	0%	0	0.0%	3	30.0%
Marine invertebrates	25	4	1	25.0%	1	25%	0	0.0%	1	25%	1	25%	1	25%	0	0.0%	0	0.0%
Vegetation	25	11	3	27.3%	2	18%	0	0.0%	1	9%	1	9%	2	18%	0	0.0%	5	45.5%

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Table 3-3.–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		Too much competition	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
All resources	25	14	0	0%	2	14.3%	0	0.0%	0	0.0%	1	7.1%	0	0.0%	0	0.0%	0	0.0%
Salmon	26	15	0	0%	3	20.0%	0	0.0%	0	0.0%	1	6.7%	0	0.0%	0	0.0%	0	0.0%
Nonsalmon fish	25	15	0	0%	2	13.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Land mammals	25	9	0	0%	0	0.0%	1	11.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	25	14	0	0%	1	7.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Birds	25	10	0	0%	1	10.0%	0	0.0%	1	10.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	25	4	0	0%	1	25.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	25	11	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, 2018.

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

Table 3-4.–Reasons for more household uses of resources compared to recent years, Wales, 2017.

Resource category	Valid responses[a]	Households reporting reasons for more use	Increased availability		Used other resources		Favorable weather		Received more		Needed more		Increased effort		Other	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
All resources	25	2	0	0.0%	1	50.0%	0	0.0%	0	0.0%	0	0.0%	2	100.0%	0	0.0%
Salmon	26	3	0	0.0%	0	0.0%	1	33.3%	0	0.0%	0	0.0%	2	66.7%	0	0.0%
Nonsalmon fish	25	2	0	0.0%	0	0.0%	0	0.0%	1	50.0%	0	0.0%	1	50.0%	0	0.0%
Land mammals	25	5	0	0.0%	0	0.0%	0	0.0%	4	80.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	25	4	1	25.0%	0	0.0%	0	0.0%	1	25.0%	0	0.0%	2	50.0%	0	0.0%
Birds	25	2	0	0.0%	0	0.0%	0	0.0%	1	50.0%	0	0.0%	1	50.0%	0	0.0%
Marine invertebrates	25	10	5	50.0%	0	0.0%	3	30.0%	1	10.0%	0	0.0%	3	30.0%	0	0.0%
Vegetation	25	2	0	0.0%	0	0.0%	0	0.0%	1	50.0%	0	0.0%	2	100.0%	0	0.0%

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Table 3-4.–Continued.

Resource category	Valid responses[a]	Households reporting reasons for more use	Regulations		Traveled farther		More success		Had more time		Store-bought expense		Got/ fixed equipment		Had no substitute	
			Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
All resources	25	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Salmon	26	3	0	0.0%	0	0.0%	1	33.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Nonsalmon fish	25	2	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Land mammals	25	5	0	0.0%	0	0.0%	1	20.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine mammals	25	4	0	0.0%	0	0.0%	1	25.0%	0	0.0%	0	0.0%	1	25.0%	0	0.0%
Birds	25	2	0	0.0%	0	0.0%	1	50.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Marine invertebrates	25	10	0	0.0%	0	0.0%	1	10.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vegetation	25	2	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, 2018.

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

Table 3-5.–Resources that sampled households reported needing, Wales, 2017.

Resource	Households needing	Percentage of households
All resources	2	7.7%
Fish	1	3.8%
Salmon	4	15.4%
Coho salmon	5	19.2%
Chinook salmon	2	7.7%
Pink salmon	3	11.5%
Sockeye salmon	1	3.8%
Nonsalmon fish	2	7.7%
Smelt	1	3.8%
Saffron cod	2	7.7%
Arctic char	1	3.8%
Sheefish	1	3.8%
Trout	3	11.5%
Whitefish	3	11.5%
Land mammals	1	3.8%
Caribou	1	3.8%
Moose	8	30.8%
Common muskox	3	11.5%
Snowshoe hare	1	3.8%
Marine mammals	2	7.7%
Seal	4	15.4%
Bearded seal	6	23.1%
Young bearded seal	3	11.5%
Adult bearded seal	3	11.5%
Ringed seal	1	3.8%
Spotted seal	1	3.8%
Unknown seal oil	2	7.7%
Walrus	7	26.9%
Bowhead whale	3	11.5%
Birds and eggs	1	3.8%
Northern pintail	1	3.8%
Geese	4	15.4%
Brant	1	3.8%
Canada/cackling goose	1	3.8%
Snow goose	2	7.7%
White-fronted goose	2	7.7%
Bird eggs	3	11.5%
Clams	4	15.4%
Crabs	2	7.7%
Berries	4	15.4%
Blueberry	1	3.8%
Highbush cranberry	1	3.8%
Salmonberry	1	3.8%
Blackberry	1	3.8%
Plants, greens, and mushrooms	3	11.5%
Sourdock	1	3.8%
Willow leaves	2	7.7%
Unspecified	2	7.7%

Source ADF&G Division of Subsistence household surveys, 2018.

Figure 3-3.–Composition of harvest by resource category in total pounds, Wales, 1994, 2005–2006, and 2017.

Harvest Data

Changes in the harvest of resources by Wales residents can also be discerned through comparisons with findings from other study years. Comprehensive subsistence harvest surveys were conducted in Wales for study years 1994 (Magdanz et al. 2002) and 2005–2006 (Ahmasuk and Trigg 2008rev.).[1] Additional sources of comparison exist for big game harvests in 2000 and 2010 (Braem and Kostick 2014).[2] Wales is one of the 11 bowhead whaling communities in Alaska and has a harvest quota of two bowhead whales per year. Records of bowhead whaling harvests are available for 1974–2017 (Suydam et al. 2018; Suydam and George 2018).

Comparable data for total community harvests exists for three study years, although conversion factors differ between studies. Due to the importance of marine mammal harvests in Wales, conversion factors from this study were applied to earlier datasets.[3] Wales' total harvests declined from 124,690 lb in 1994 (Magdanz et al. 2002) to 51,270 lb in 2005–2006 (Ahmasuk and Trigg 2008rev.) and further to 25,928 lb in 2017 (Table 3-6; Figure 3-3). Per capita harvest amounts allow for a comparison over time that controls for population changes in the community. Wales residents harvested 820 lb of wild resources per person (Magdanz et al. 2002) in 1994, 372 lb in 2005–2006 (Ahmasuk and Trigg 2008rev.), and 149 lb during the 2017 study year (Table 3-6, Figure 3-4). Overall, it appears that harvests have declined over time; however, there are not enough points of comparison to conclude a definitive trend. Additionally, Wales residents harvested a bowhead whale during the 1994 study year, which contributed 28,677 edible pounds (188 lb per capita); no bowhead whale harvests occurred during the 2005–2006 and 2017 study years.

Exploring composition of harvest by resource category also allows for discerning changes or stability in total community harvests over time. The large contribution of marine mammal resources to Wales harvests is evident over the three study years: marine mammals composed 80% of the total estimated harvest in 1994 (Magdanz et al. 2002), 58% in 2005–2006 (Ahmasuk and Trigg 2008rev.), and 46% during the 2017 study

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

2. ADF&G CSIS.

3. For the purposes of comparison, the conversion factors for walrus, bearded seal, ringed seal, and spotted seal from this study were applied to the 1994 dataset. These factors were taken from Brown et al. (2016), which provides a detailed review of the Division of Subsistence Arctic area conversion factors. These factors were already applied to the 2005–2006 dataset in the CSIS.

Table 3-6.–Harvests by resource category, Wales, 1994, 2005–2006, and 2017.

| | 1994 | | | | 2005–2006 | | | | 2017 | | | |
| | Harvest (lb) | | | | Harvest (lb) | | | | Harvest (lb) | | | |
Resource	Total	Per household	Per capita	Percentage of harvest	Total	Per household	Per capita	Percentage of harvest	Total	Per household	Per capita	Percentage of harvest
All resources	**124,690**	**2,494**	**820**	**100%**	**51,270**	**1,250**	**372**	**100%**	**25,928**	**552**	**149**	**100%**
Marine mammals	99,728	1,995	656	80%	29,672	724	215	58%	12,028	256	69	46%
Salmon	11,869	237	78	10%	13,034	318	95	26%	7,018	149	40	27%
Nonsalmon fish	3,173	63	21	3%	1,153	28	8	2%	722	15	4	3%
Large land mammals	3,848	77	25	3%	4,558	111	33	9%	973	21	6	4%
Small land mammals	42	1	0	>1%	0	0	0	0%	5	0	0	>1%
Birds and eggs	1,770	35	12	1%	417	10	3	1%	1,004	21	6	4%
Marine invertebrates	3,546	71	23	3%	498	12	4	1%	3,201	68	18	12%
Vegetation	714	14	5	1%	1,936	47	14	4%	976	21	6	4%

Sources ADF&G Community Subsistence Information System; ADF&G Division of Subsistence household surveys, 2018.

year (Table 3-6). In 2005–2006, large land mammals (primarily muskox) composed 9% of the harvest, compared to only 3% in 1994 and 4% in 2017. Muskox harvests did not occur in 1994 or 2017. Salmon harvests contributed more to the total estimated harvest in the more recent study years (27% in 2017; 25% in 2005–2006) compared to 1994 (10%). Marine invertebrates also contributed more to the harvest in 2017 (12%) in comparison to 1994 (3%) and 2005–2006 (1%). The low marine mammal harvest (discussed in more detail below) may have contributed to the change in Wales' harvest composition in 2017 in comparison to earlier study years. The following section will compare harvests of three resource categories in greater detail: marine mammals, salmon, and large land mammals. In order to control for differences in conversion factors, all comparisons of individual species harvest will be discussed in terms of number of animals per capita[4].

Marine Mammals

The 1994 and 2005–2006 study years provide comparable data for Wales harvest of marine mammals in 2017, and additional information on bowhead whale harvests in the community is available from 1974–2017 (Suydam and George 2018). As mentioned previously, marine mammal resources have composed a significant amount of the total estimated harvest over the three study years, ranging from 80% of the harvest in 1994 to 46% in 2017. The largest contributing species to the marine mammal harvests over the three study years have been bearded seals, walrus, and bowhead whales.

Bearded Seals

Bearded seals composed 31% of the total estimated harvest of marine mammals in 1994 (30,602 lb, 217 lb per capita), 41% in 2005–2006 (12,027 lb; 87 lb), and 69% in 2017 (8,272 lb; 48 lb). Figure 3-5 shows total numbers of bearded seals harvested in 1994, 2005–2006, and 2017. Harvests declined over the three study years, from a high harvest of 107 bearded seals in 1994, to 42 in 2005–2006, and to a low harvest of 29 in 2017. Despite lower harvests of bearded seals, the relative contribution to the total estimated marine mammal harvest (69%) in 2017 is likely due to much lower walrus harvests which will be described in greater detail below. Per capita harvests in terms of individual animals have also showed declines over the three study years. Wales hunters harvested 0.70 bearded seals per person in 1994, 0.30 per person in 2005–2006, and 0.17 per person during the 2017 study year.

Walrus

In 1994, walrus composed 31% of the total estimated harvest of marine mammals in Wales (30,800 lb; 105 lb per capita), 55% in 2005-2006 (16,190 lb; 117 lb), and 23% in 2017 (2,784 lb; 16 lb). Figure 3-5 shows total harvests of walrus by Wales hunters over the three study years. Like bearded seal harvests, walrus harvests have declined over the three study years. Wales residents harvested 40 walrus in 1994, 21 in

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4. Although this study's conversion factors have been applied in the case of marine mammals, individual animals per person will be used to compare studies in order to maintain consistency with other resource categories.

Figure 3-4.–Composition of harvest by resource category in pounds per capita, Wales, 1994, 2005–2006, and 2017.

Figure 3-5.–Estimated numbers of bearded seals and walrus harvested, Wales, 1994–2017.

2005–2006, and only four during the 2017 study year. Per capita harvests showed similar levels of decline: hunters harvested 0.26 walrus per person in 1994, 0.15 in 2005–2006, and 0.02 in 2017.

Bowhead Whales

Wales is one of the 11 Alaskan whaling communities and has received a quota of two bowhead whales per year. Over the three years in which comprehensive harvest data are available, Wales hunters only harvested a bowhead whale in 1994. During that study year, one bowhead whale provided an estimated 28,677 lb and 188 lb per capita (Magdanz et al. 2002). Since 1980, Wales has harvested ten bowhead whales in ten different years (Suydam and George 2018). A majority of bowhead whale harvests occurred in the 1980s and 1990s, when Wales hunters landed one bowhead per year in 1980, 1983, 1985, 1987, 1991, 1994, and 1995. Three bowhead whale harvests have occurred since 2000: hunters landed one whale per year in 2000, 2005, and 2015.

Salmon

As mentioned above, salmon species have collectively accounted for between 10% (1994) and 27% (2017) of Wales total estimated harvest over the three study years (Ahmasuk and Trigg 2008rev.; Magdanz et al. 2002; Figure 2-12). Figure 3-6 shows total harvests of chum, coho, and pink salmon in 1994, 2005–2006, and 2017. With the exception of coho salmon, total harvests of salmon have shown declines over the three study years both in terms of total and per capita harvests. Coho salmon harvests were smaller in 1994 (196 fish; 1.3 fish per person) than 2005–2006 (475 fish; 3.4 per capita) and 2017 (261; 1.5 per capita). Chum salmon harvests ranged from a high of 641 fish (4.2 fish per capita) in 1994 to a low harvest of 213 (1.2 fish per capita) in 2017. Pink salmon harvests ranged from a high of 1,378 fish (9 fish per capita) in 1994 to a low of 701 (4 fish per capita) in 2017.

Large Land Mammals

Large land mammal harvest estimates for Wales exist for five study years: 1994, 2000, 2005–2006, 2010, and the 2017 study year (Ahmasuk and Trigg 2008rev.; Braem and Kostick 2014; Magdanz et al. 2002; Table 2-6).[5] Moose has composed the majority of the large land mammal harvest in each study year, with the exception of 2005–2006. In 1994, moose composed 87% of the large land mammal harvest, 76% in 2000, 100% in 2010, and 100% in 2017. In 2005–2006, an estimated six muskoxen composed 41% of the total large land mammal harvest, followed by moose (37%), and caribou (22%).[6]

Figure 3-7 shows the number of moose harvested by Wales hunters across the five study years. With the exception of 2000 with an estimated harvest of 14 moose, Wales hunters harvested between two and six moose (between 0.01 and 0.04 moose per person) in each study year. The harvest of two moose (0.01 moose per person) in 2017 was the lowest of the five study years. Wales hunters harvested caribou in two study years: they took four caribou (0.03 caribou per person) in 1994 and seven (0.05 per person) in 2005–2006.[7] Muskoxen harvests also occurred in two study years: six were harvested in 2005–2006 (0.04 muskox per person) and four in 2000 (0.03 per person).

Conclusions

As mentioned in the Introduction chapter, sea ice conditions on the Bering Sea have declined dramatically since 2012. Many Arctic Alaska coastal communities are heavily reliant on marine mammal resources, and recent research has documented changes to hunting patterns caused by the quality and quantity of ice (Braem et al. 2017; Huntington et al. 2016). During a recent study conducted for the 2012–2014 study years in nine communities in the Bering Strait, Northwest, and North Slope regions of Alaska, hunters across study communities identified the effects of poor and changing ice conditions on marine mammal hunting (Braem et al. 2017). In the spring time, subsistence users target animals on the ice, which must be thick enough to bear the weight both of the animal and the hunters in order to allow hunters to field dress their

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5. ADF&G CSIS.
6. ADF&G CSIS.
7. ADF&G CSIS.

Figure 3-6.–Estimated numbers of chum, coho, and pink salmon harvested, Wales, 1994–2017.

Table 3-7.–Large land mammal harvests, Wales, 1994 –2017.

| | 1994 | | | 2000 | | | 2005–2006 | | | 2010 | | | 2017 | | |
| | Harvest | | Percentage of large land mammal harvest | Harvest | | Percentage of large land mammal harvest | Harvest | | Percentage of large land mammal harvest | Harvest | | Percentage of large land mammal harvest | Harvest | | Percentage of large land mammal harvest |
	Total number	Per capita (lb)		Total number	Per capita (lb)		Total number	Per capita (lb)		Total number	Per capita (lb)		Total number	Per capita (lb)	
Moose	6	22	87%	14	52	76%	3	12	37%	5	17	100%	2	6	100%
Caribou	4	3	13%	0	0	0%	7	7	22%	0	0	0%	0	0	0%
Muskox	N/A	N/A	N/A	4	16	24%	6	13	41%	0	0	0%	0	0	0%

Sources ADF&G Community Subsistence Information System; ADF&G Division of Subsistence household surveys, 2018.

Figure 3-7.–Estimated numbers of moose harvested, Wales, 1994–2017.

catch. Additionally, residents of these coastal Alaska communities described a shorter window of time for spring hunting activities. Hunters described that they used to hunt by snowmachine in the spring, but now the ice is often too rotten to support travel by the time the animals arrive. Subsistence users also explained that in past they would hunt seals and walrus in open water on diminishing ice floes into July, but in recent years ice is retreating north more quickly (often in June), taking ice-dependent animals with it. Bowhead whaling communities in this study also discussed the paramount importance of ice conditions to successful harvests: the ice must be thick enough to support the weight of the whale during the butchering process. Another recent study also gathered local knowledge of changes to marine mammal hunting practices caused by changing climate conditions in Arctic Alaska (Huntington et al. 2016). The respondents in this study noted the challenges described above as well as adaptations to changing conditions. Larger boats and more efficient motors allow some hunters to travel further in pursuit of marine mammals on the retreating ice, but open water without the presence of sea ice has more wave action, which limits the number of days that are safe for boating. In addition, storms have become more frequent, particularly in the autumn months. Traveling greater distances also entails greater economic investment in fuel, which is more expensive in rural Alaska than in other parts of the U.S.

As data from this study and prior study years indicate, Wales is heavily reliant upon marine mammals. These resources have composed between 46% and 80% of the total estimated harvest over the three study years for which comparable data are available. Comments on the survey and observations gathered in researcher field notes echo concerns documented in previous studies. Several respondents in this study explained the sweeping environmental change they have witnessed over the course of their lifetimes, including changes to wind conditions, ice conditions, and weather patterns. One survey respondent explained, "The winds used to take days to shift (15 years ago), now it change while you are out there [hunting]. First time in [my] life there is open water in January" (Appendix C17).

Another survey respondent explained that the wind has more commonly begun blowing from the south, moving the ice pack past the community quickly and taking with it migrating marine mammals, particularly bowhead whales. Overall, the most common concern shared by respondents to the survey was the poor ice conditions in recent years.

Wales residents face changing environmental conditions that have posed significant challenges to harvesting the marine mammal resources that have continued to compose the bulk of their subsistence harvests. The 2017 study year represents the lowest total subsistence harvest documented for the community, but also the highest rate of sharing of wild resources documented for the community. Every surveyed household in Wales reported using and receiving wild resources during the study year, and 92% of households gave resources to others. Sharing in the community endures despite difficult harvesting conditions, and subsistence remains of vital importance to Wales residents.

ACKNOWLEDGMENTS

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APPENDIX A–SURVEY INSTRUMENT

COMPREHENSIVE SUBSISTENCE SURVEY

WALES, ALASKA

From January 1, 2017 to December 31, 2017

SUBSISTENCE COMPREHENSIVE

printed: 2018-02-14

This survey is used to estimate subsistence 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: 365   **365**
INTERVIEWER #1:
INTERVIEWER #2:
INTERVIEW DATE:
START TIME:
STOP TIME:

DATA CODED BY:
DATA ENTERED BY:
SUPERVISOR:

Photo: Drying bearded seal intestine.
Photo Credit: James Simon

ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF SUBSISTENCE
1300 College RD.
Fairbanks, AK 99701
(907) 459-7321

NATIVE VILLAGE OF WALES

PO BOX 549
Wales, AK 99783
(907)-664-3062

HOUSEHOLD MEMBERS

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

Last year, that is, between January 1, 2017 and December 31, 2017 WHO were the head or heads of your household?

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

PERMANENT HH MEMBERS: 01   **WALES: 365**

RETAINED COMMERCIAL HARVESTS

HOUSEHOLD ID

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

2. During the last year (between January 1, 2017 and December 31, 2017)
   did you, or members of your household PARTICIPATE in any commercial fishery?... Y N

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

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

During the last year,[1]

did you or members of your household...

A … FISH commercially for _____?

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

if keep is "yes"

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

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?	C INCI?	How many were removed for your OWN USE?[5] *number*	How many were removed for your CREW?[5] *number*	How many were removed to give to OTHERS? *number*	Units[3] *specify*	*comments*
CHUM (DOG) SALMON	Y N	Y N	Y N				IND.	
111000001								
PINK (HUMPY) SALMON	Y N	Y N	Y N				IND.	
114000001								
COHO (SILVER) SALMON	Y N	Y N	Y N				IND.	
112000001								
SOCKEYE (RED) SALMON	Y N	Y N	Y N				IND.	
115000001								
CHINOOK (KING) SALMON	Y N	Y N	Y N				IND.	
113000001								
HALIBUT	Y N	Y N	Y N				LB.	
121800001								
HERRING	Y N	Y N	Y N				GAL.	
120200001								
HERRING ROE	Y N	Y N	Y N				GAL.	
120300001								
KING CRAB	Y N	Y N	Y N				IND.	
501008001								
	Y N	Y N	Y N					

1 *"LAST YEAR" means between January 1, 2017 and December 31, 2017.*

2 *"USE" includes eating, feeding to dogs, sharing or trading with others, etc.*

3 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.*

4 *"INCIDENTAL CATCH" means the fish kept was not being commercially fished. For example, a king salmon kept from a chum commerical fishery.*

5 *Double counting (captains' removals for crew members and crew members' removal for own uses) is fixed in analysis. Collect both.*

COMMERCIAL FISHING: 03   **WALES: 365**

HARVESTS: SALMON

HOUSEHOLD ID

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

2. During the last year (between January 1, 2017 and December 31, 2017)
   did you, or members of your household USE or TRY TO HARVEST salmon?... Y N

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

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

During the last year,[1]

did you or members of your household...

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

if harvest is "yes"

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

INCLUDE salmon that members of this household gave away, are fresh, fed to dogs, lost to spoilage, or got by helping others. If fishing with or helping others, report ONLY THIS HOUSEHOLD'S share of the harvest. DO NOT INCLUDE salmon that were caught and released or retained from commercial catch.

Read names below in blanks above	A USE	B REC	C GIVE	D TRY	E HAR	GILL NET	SEINE NET	ROD & REEL[3]	OTHER GEAR (specify type)	Units[4]	# of those used just for dog food?
						(Num harvested by each gear type)				*amount / type* *specify*	*amt.*
CHUM SALMON *DOG SALMON, AQALURUAQ*	Y N	Y N	Y N	Y N	Y N					/ IND.	
111000000											
PINK SALMON *HUMPY, AMAQTUQ*	Y N	Y N	Y N	Y N	Y N					/ IND.	
114000000											
COHO SALMON *SILVER*	Y N	Y N	Y N	Y N	Y N					/ IND.	
112000000											
CHINOOK SALMON *KING SALMON, TAGAYUKPUK*	Y N	Y N	Y N	Y N	Y N					/ IND.	
113000000											
SOCKEYE SALMON *RED*	Y N	Y N	Y N	Y N	Y N					/ IND.	
115000000											
SALMON - UNKNOWN	Y N	Y N	Y N	Y N	Y N					/ IND.	
119000000											
	Y N	Y N	Y N	Y N	Y N					/	

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

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

1 *"LAST YEAR" means between January 1, 2017 and December 31, 2017.*
2 *"USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.*
3 *"ROD AND REEL" includes fish caught in open water with a hook and and a line attached to a rod or a pole. Jigging through the ice is "other gear."*
4 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.*

SALMON: 04　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　**WALES: 365**

HARVEST SUMMARY: SALMON

HOUSEHOLD ID

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

Otherwise, continue with mapping, network, and assessment sections…

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

NETWORKS *…then ask the network and assessment questions below*

During the last year,[1]

…who caught the SALMON your household used? (Enter most important sources first.)

	role	People in THIS household (enter person ID# from page 2)				People in OTHER Wales HOUSEHOLDS (HHID of other households)				People in OTHER COMMUNITIES (community names)		
	CAUGHT SALMON											
1	110000000											

…who processed the SALMON your household used? (Enter most important sources first.)

	role	(enter person ID# from page 2)				(HHID of other households)				(community names)		
	PROCESSED SALMON											
2	110000000											

..who else (not yet names) GAVE SALMON to your household? (Enter most important households or communities first.)

	role		(HHID of other households)				(community names)		
	GAVE SALMON TO US.								
3	110000000								

ASSESSMENTS: SALMON 110000000

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

During the last year,[1]

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

    IF LESS or MORE …   X = do not use

       WHY was your use different? _____ 1

_____ 2

During the last year,[1]

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

    If NO…

      What KIND of salmon did you need? _____

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

1 *"LAST YEAR" means between January 1, 2017 and December 31, 2017.*

NETWORKS & ASSESSMENTS OF SALMON: 66, 67   **WALES: 365**

HARVESTS: WHITEFISH	HOUSEHOLD ID	

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

2. During the last year (between January 1, 2017 and December 31, 2017)
   did you, or members of your household USE or TRY TO HARVEST whitefish?.. Y N

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

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

During the last year,[1]

did you or members of your household...

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

if harvest is "yes"

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

INCLUDE whitefish that members of this household gave away, are fresh, fed to dogs, lost to spoilage, or got by helping others. If fishing with or helping others, report ONLY THIS HOUSEHOLD'S share of the harvest. DO NOT INCLUDE whitefish that you caught and released or retained from

Read names below in blanks above	A USE	B REC	C GIVE	D TRY	E HAR	GILL NET *(Num harvested by each gear type)*	SEINE NET	ROD & REEL[3]	OTHER GEAR (specify type) *amount / type*	UNITS[4] *specify*	# of those used just for dog food? *amt.*
SHEEFISH *SII*	Y N	Y N	Y N	Y N	Y N				/	IND.	
125600000											
HUMPBACK WHITEFISH *QAALĠIQ*	Y N	Y N	Y N	Y N	Y N				/	IND.	
126408000											
BROAD WHITEFISH *QAUSILUK*	Y N	Y N	Y N	Y N	Y N				/	IND.	
126404000											
ROUND WHITEFISH *QUPTIK, SAVAIGUTNIK*	Y N	Y N	Y N	Y N	Y N				/	IND.	
126412000											
BERING CISCO *TIPUK*	Y N	Y N	Y N	Y N	Y N				/	IND.	
126406040											
LEAST CISCO *IQALUSAAQ*	Y N	Y N	Y N	Y N	Y N				/	IND.	
126406060											
UNKNOWN WHITEFISH	Y N	Y N	Y N	Y N	Y N				/	IND.	
126499000											
	Y N	Y N	Y N	Y N	Y N				/	IND.	
	Y N	Y N	Y N	Y N	Y N				/	IND.	

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

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

1 *"LAST YEAR" means between January 1, 2017 and December 31, 2017.*
2 *"USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.*
3 *"ROD AND REEL" includes fish caught in open water with a hook and and a line attached to a rod or a pole. Jigging through the ice is "other gear."*
4 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.*

WHITEFISH: 06	WALES: 365

HARVESTS: OTHER FISH

HOUSEHOLD ID

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

2. During the last year (between January 1, 2017 and December 31, 2017)
   did you, or members of your household USE or TRY TO HARVEST other fish?.. Y N

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

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

During the last year,[1]

did you or members of your household...

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

if harvest is "yes"

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

INCLUDE other fish that members of this household gave away, are fresh, fed to dogs, lost to spoilage, or got by helping others. If fishing with or helping others, report ONLY THIS HOUSEHOLD'S share of the harvest. DO NOT INCLUDE other fish that you caught and released or retained from commercial

Read names below in blanks above	A USE	B REC	C GIVE	D TRY	E HAR	GILL NET	SEINE NET	ROD & REEL[3]	OTHER GEAR (specify type)	UNITS[4]	# of those used just for dog food?
						(Num harvested by each gear type)			*amount / type*	*specify*	*amt.*
TOMCOD (SAFFRON COD) *UUGAQ, UUAQ*	Y N	Y N	Y N	Y N	Y N				/	IND.	
121010000											
ARCTIC COD *BLUE COD, QALUAQ*	Y N	Y N	Y N	Y N	Y N				/	IND.	
121002000											
SMELT *IŁHUAǴÑIK*	Y N	Y N	Y N	Y N	Y N				/	IND.	
120400000											
TROUT (DOLLY VARDEN) *AQALUKPIQ*	Y N	Y N	Y N	Y N	Y N				/	IND.	
126200000											
GRAYLING *SULUKPAGUK*	Y N	Y N	Y N	Y N	Y N				/	IND.	
125200000											
NORTHERN PIKE (PIKE) *SIILIK*	Y N	Y N	Y N	Y N	Y N				/	IND.	
125500000											
BURBOT (MUDSHARK) *TITAALIQ*	Y N	Y N	Y N	Y N	Y N				/	IND.	
124800000											
HERRING *USRUQTUUQ*	Y N	Y N	Y N	Y N	Y N				/	IND.	
120200000											
	Y N	Y N	Y N	Y N	Y N				/	GAL.	

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

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

1 *"LAST YEAR" means between January 1, 2017 and December 31, 2017.*

2 *"USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.*

3 *"ROD AND REEL" includes fish caught in open water with a hook and and a line attached to a rod or a pole. Jigging through the ice is "other gear."*

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

OTHER FISH: 06   **WALES: 365**

HARVEST SUMMARY: OTHER FISH

HOUSEHOLD ID

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

Otherwise, continue with mapping, network, and assessment sections…

MAPPING *Refer to data collection maps and mapping instructions to map other fish…*

NETWORKS *…then ask the network and assessment questions below*

During the last year,[1]

…who caught the SAFFRON / ARCTIC COD your household used? (Enter most important sources first.)

role	People in THIS household *(enter person ID# from page 2)*	People in OTHER Wales HOUSEHOLDS *(HHID of other households)*	People in OTHER COMMUNITIES *(community names)*
CAUGHT SAFFRON / ARCTIC COD			
1 121000000			

…who processed the SAFFRON / ARCTIC COD your household used? (Enter most important sources first.)

role	*(enter person ID# from page 2)*	*(HHID of other households)*	*(community names)*
PROCESSED SAFFRON / ARCTIC COD			
2 121000000			

..who else (not yet names) GAVE SAFFRON / ARCTIC COD to your household? (Enter most important households or communities first.)

role		*(HHID of other households)*	*(community names)*
GAVE SAFFRON / ARCTIC COD TO US.	→		
3 121000000			

…who caught the HERRING your household used? (Enter most important sources first.)

role	People in THIS household *(enter person ID# from page 2)*	People in OTHER Wales HOUSEHOLDS *(HHID of other households)*	People in OTHER COMMUNITIES *(community names)*
CAUGHT HERRING			
1 120200000			

…who processed the HERRING your household used? (Enter most important sources first.)

role	*(enter person ID# from page 2)*	*(HHID of other households)*	*(community names)*
PROCESSED HERRING			
2 120200000			

..who else (not yet names) GAVE HERRING to your household? (Enter most important households or communities first.)

role		*(HHID of other households)*	*(community names)*
GAVE HERRING TO US.	→		
3 120200000			

ASSESSMENTS: OTHER FISH   120000000

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

During the last year,[1]

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

IF LESS or MORE …   X = do not use

WHY was your use different?   1

  2

During the last year,[1]

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

If NO…

What KIND of other fish did you need?

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

1 *"LAST YEAR" means between January 1, 2017 and December 31, 2017.*

NETWORKS & ASSESSMENTS OF OTHER FISH: 66, 67   **WALES: 365**

95

HARVESTS: MARINE INVERTEBRATES

HOUSEHOLD ID _____

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

2. During the last year (between January 1, 2017 and December 31, 2017)
   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 PAGE*.

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

During the last year,[1]

did you or members of your household...

A … use[2] _____?

B …receive _____ from another HH or community

C …give _____ to another HH or community?

if harvest is "yes"

D …try[2] to harvest _____?

E …actually harvest any _____?

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

INCLUDE marine invertebrates that members of this household gave away, are fresh, fed to dogs, lost to spoilage, or got by helping others. If harvesting with or helping others, report ONLY THIS HOUSEHOLD'S share of the harvest. DO NOT INCLUDE marine invertebrates that were retained from commercial harvests.

Read names below in blanks above	A USE	B REC	C GIVE	D TRY	E HAR	AMOUNT *(amt)*	UNITS[4] *specify*	COMMENTS *(text)*
CRABS (SPECIFY) *PUTUVAK* 501000000	Y N	Y N	Y N	Y N	Y N		IND.	
CLAMS (SPECIFY) *IVILLUQ* 500600000	Y N	Y N	Y N	Y N	Y N		GAL.	
MUSSELS *AVYAK* 502000000	Y N	Y N	Y N	Y N	Y N		GAL.	
	Y N	Y N	Y N	Y N	Y N			
	Y N	Y N	Y N	Y N	Y N			
	Y N	Y N	Y N	Y N	Y N			
	Y N	Y N	Y N	Y N	Y N			
	Y N	Y N	Y N	Y N	Y N			
	Y N	Y N	Y N	Y N	Y N			
	Y N	Y N	Y N	Y N	Y N			

During the last year, did your household use any other kind of Marine invertebrates?..Y N ▨
   IF YES, enter the name in a blank row above, and answer the questions in that row.

1 *"LAST YEAR" means between January 1, 2017 and December 31, 2017.*

2 *"USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.*

3 *"ROD AND REEL" includes fish caught in open water with a hook and and a line attached to a rod or a pole. Jigging through the ice is "other gear."*

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

MARINE INVERTEBRATES: 08   **WALES: 365**

HARVEST SUMMARY: MARINE INVERTEBRATES

HOUSEHOLD ID

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

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

NETWORKS	*…then ask the network and assessment questions below*

During the last year,[1]

…who harvested the INVERTEBRATES your household used? (Enter most important sources first.)

role	People in THIS household (enter person ID# from page 2)					People in OTHER Wales HOUSEHOLDS (HHID of other households)					People in OTHER COMMUNITIES (community names)		
HARVESTED INVERTEBRATES													
1 500000000													

…who processed the INVERTEBRATES your household used? (Enter most important sources first.)

role	(enter person ID# from page 2)					(HHID of other households)					(community names)		
PROCESSED INVERTEBRATES													
2 500000000													

..who else (not yet names) GAVE INVERTEBRATES to your household? (Enter most important households or communities first.)

role		(HHID of other households)					(community names)		
GAVE INVERTEBRATES TO US.	→								
3 500000000									

ASSESSMENTS: MARINE INVERTEBRATES	500000000

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

During the last year,[1]

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

IF LESS or MORE … X = do not use

WHY was your use different? _____ 1

_____ 2

During the last year,[1]

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

If NO…

What KIND of marine invertebrates did you need? _____

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

1 *"LAST YEAR" means between January 1, 2017 and December 31, 2017.*

NETWORKS & ASSESSMENTS OF MARINE INVERTEBRATES: 66, 67 **WALES: 365**

HARVESTS: MARINE MAMMALS

HOUSEHOLD ID

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

2. During the last year (between January 1, 2017 and December 31, 2017)
   did you, or members of your household USE or TRY TO HARVEST marine 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 …

During the last year,[1]

did you or members of your household...

A … use[2] _____?

B …receive _____ from another HH or community

C …give _____ to another HH or community?

D …try[2] to harvest _____?

E …actually harvest any _____?

if harvest is "yes"

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

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

Read names below in blanks above	A USE	B REC	C GIVE	D TRY	E HAR	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	UNKNOWN	UNITS[3]
						(specify amount harvested per month)													*(specify)*
ADULT BEARDED SEAL *UGRUK* 300802040	Y N	Y N	Y N	Y N	Y N														IND
YOUNG BEARDED SEAL *ADMIAQ* 300802020	Y N	Y N	Y N	Y N	Y N														IND
RINGED SEAL *NATCHIQ, NIQSAQ* 300810000	Y N	Y N	Y N	Y N	Y N														IND
SPOTTED SEAL *QASIGIAQ* 300812000	Y N	Y N	Y N	Y N	Y N														IND
SEAL OIL *OR OTHER SEAL PRODUCTS* 300899000	Y N	Y N	Y N	Y N	Y N														IND
WALRUS 301400000	Y N	Y N	Y N	Y N	Y N														IND
BELUGA WHALE *SISUAQ* 301602000	Y N	Y N	Y N	Y N	Y N														IND
BOWHEAD WHALE *AĠVIQ* 301606000	Y N	Y N	Y N	Y N	Y N														IND
	Y N	Y N	Y N	Y N	Y N														IND.
	Y N	Y N	Y N	Y N	Y N														IND.

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

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

1 *"LAST YEAR" means between January 1, 2017 and December 31, 2017.*

2 *"USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.*

3 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.*

MARINE MAMMALS: 12   **WALES: 365**

HARVEST SUMMARY: MARINE MAMMALS

HOUSEHOLD ID

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

Otherwise, continue with mapping, network, and assessment sections…

MAPPING   *Refer to data collection maps and mapping instructions to map marine mammals…*

NETWORKS   *…then ask the network and assessment questions below*

During the last year,[1]

…who harvested the SEALS your household used? (Enter most important sources first.)

	People in THIS household	People in OTHER Wales HOUSEHOLDS	People in OTHER COMMUNITIES
role	*(enter person ID# from page 2)*	*(HHID of other households)*	*(community names)*
HARVESTED SEALS			
1 300800000			

…who processed the SEALS your household used? (Enter most important sources first.)

role	*(enter person ID# from page 2)*	*(HHID of other households)*	*(community names)*
PROCESSED SEALS			
2 300800000			

..who else (not yet names) GAVE SEALS to your household? (Enter most important households or communities first.)

role		*(HHID of other households)*	*(community names)*
GAVE SEALS TO US.	→		
3 300800000			

…who harvested the WALRUS your household used? (Enter most important sources first.)

	People in THIS household	People in OTHER Wales HOUSEHOLDS	People in OTHER COMMUNITIES
role	*(enter person ID# from page 2)*	*(HHID of other households)*	*(community names)*
HARVESTED WALRUS			
1 301400000			

…who processed the WALRUS your household used? (Enter most important sources first.)

role	*(enter person ID# from page 2)*	*(HHID of other households)*	*(community names)*
PROCESSED WALRUS			
2 301400000			

..who else (not yet names) GAVE WALRUS to your household? (Enter most important households or communities first.)

role		*(HHID of other households)*	*(community names)*
GAVE WALRUS TO US.	→		
3 301400000			

ASSESSMENTS: MARINE MAMMALS   300000000

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

During the last year,[1]

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

    IF LESS or MORE …   X = do not use

      WHY was your use different? _____   1

      _____   2

During the last year,[1]

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

    If NO…

      What KIND of marine mammals did you need? _____

How would you describe the impact to your household of not getting enough marine mammals last year?	*… not noticable?* (0)	*… minor ?* (1)	*… major?* (2)	*… Severe?* (3)	

1 *"LAST YEAR" means between January 1, 2017 and December 31, 2017.*

NETWORKS & ASSESSMENTS OF MARINE MAMMALS: 66, 67   **WALES: 365**

HARVESTS: LARGE LAND MAMMALS

HOUSEHOLD ID

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

2. During the last year (between January 1, 2017 and December 31, 2017)
   did you, or members of your household USE or TRY TO HARVEST large land mammals?... Y N

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

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

During the last year,[1]

did you or members of your household...

A … use[2] _____?

B …receive _____ from another HH or community

C …give _____ to another HH or community?

D …try[2] to harvest _____?

E …actually harvest any _____?

if harvest is "yes"

Please estimate how many large land mammals ALL MEMBERS OF YOUR HOUSEHOLD got for subsistence uses during the last year. How many were harvested in ….

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

Read names below in blanks above	A USE	B REC	C GIVE	D TRY	E HAR	SEX M/F	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	UNKNOWN	UNITS[3]
							(specify amount harvested per month)													*(specify)*
CARIBOU	Y N	Y N	Y N	Y N	Y N	M														IND
TUTTU						F														IND
211000000						UNK														IND
211000001						1														
211000002						2														
211000009						-9														
MOOSE	Y N	Y N	Y N	Y N	Y N	M														IND
TINIIKAQ						F														IND
211800000						UNK														IND
211800001						1														
211800002						2														
211800009						-9														
MUSKOX	Y N	Y N	Y N	Y N	Y N															IND.
212000000																				
BROWN BEAR	Y N	Y N	Y N	Y N	Y N															IND.
AKŁAQ																				
210800000																				
	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.

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

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

1 *"LAST YEAR" means between January 1, 2017 and December 31, 2017.*

2 *"USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.*

3 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.*

LARGE LAND MAMMALS: 10　　　　　　　　　　　　　　　　　　　　　　　　　　　　**WALES: 365**

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 January 1, 2017 and December 31, 2017)
   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 …

During the last year,[1]

did you or members of your household...

A … use[2] _____?

B …receive _____ from another HH or community

C …give _____ to another HH or community?

D …try[2] to harvest _____?

E …actually harvest any _____?

if harvest is "yes"

Please estimate how many small land mammals ALL MEMBERS OF YOUR HOUSEHOLD got for subsistence uses during the last year. How many were harvested in ….

INCLUDE small land mammals that members of this household gave away, are fresh, fed to dogs, lost to spoilage, or got by helping others. If hunting or trapping with or helping others, report ONLY THIS HOUSEHOLD'S share of the harvest.

Read names below in blanks above	A USE	B REC	C GIVE	D TRY	E HAR	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	UNKNOWN	USED FOR FOOD OR FOR FOOD & FUR (amount)	UNITS[3] specify
						(specify amount harvested per month)														
ALASKA HARE *ACKRABBIT, UKALLISUGRUK* 221006000	Y N	Y N	Y N	Y N	Y N															IND.
SNOWSHOE HARE *UKALLAICHIAK* 221004000	Y N	Y N	Y N	Y N	Y N															IND.
BEAVER *PAŁUQTAQ* 220200000	Y N	Y N	Y N	Y N	Y N															IND.
MUSKRAT *KIGVALUQ* 222400000	Y N	Y N	Y N	Y N	Y N															IND.
	Y N	Y N	Y N	Y N	Y N															IND.
	Y N	Y N	Y N	Y N	Y N															IND.
	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.

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

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

1 *"LAST YEAR" means between January 1, 2017 and December 31, 2017.*

2 *"USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.*

3 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.*

SMALL LAND MAMMALS: 14   **WALES: 365**

HARVESTS: FUR ANIMALS

HOUSEHOLD ID

1. Do you or members of your household USUALLY hunt or trap for fur animals?.. Y   N

2. During the last year (between January 1, 2017 and December 31, 2017)
   did you, or members of your household USE or TRY TO HARVEST fur animals?.. Y   N

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

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

During the last year,[1]

did you or members of your household...

A … use[2] _____?

B …receive _____ from another HH or community

C …give _____ to another HH or community?

D …try[2] to harvest _____?

E …actually harvest any _____?

if harvest is "yes"

Please estimate how many fur animals ALL MEMBERS OF YOUR HOUSEHOLD got for subsistence uses during the last year. How many were harvested in ….

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

Read names below in blanks above	A USE	B REC	C GIVE	D TRY	E HAR	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	UNKNOWN	USED FOR FOOD OR FOR FOOD & FUR	UNITS[3]
						(specify amount harvested per month)													*(amount)*	*specify*
ARCTIC FOX *QUSRHAAQ* 220802000	Y N	Y N	Y N	Y N	Y N															IND.
RED FOX *KAYUQTUQ* 220804000	Y N	Y N	Y N	Y N	Y N															IND.
WOLF *AMAGUQ* 223200000	Y N	Y N	Y N	Y N	Y N															IND.
WOLVERINE *QAVIK* 223400000	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.
	Y N	Y N	Y N	Y N	Y N															IND.
	Y N	Y N	Y N	Y N	Y N															IND.

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

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

1 *"LAST YEAR" means between January 1, 2017 and December 31, 2017.*

2 *"USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.*

3 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.*

FUR ANIMALS: 14   **WALES: 365**

HARVEST SUMMARY: LARGE LAND MAMMALS   HOUSEHOLD ID

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

MAPPING   *Refer to data collection maps and mapping instructions to map large land mammals…*

NETWORKS   *…then ask the network and assessment questions below*

During the last year,[1]

…who harvested the CARIBOU your household used? (Enter most important sources first.)

role	People in THIS household (enter person ID# from page 2)					People in OTHER Wales HOUSEHOLDS (HHID of other households)					People in OTHER COMMUNITIES (community names)		
HARVESTED CARIBOU													
1 211000000													

…who processed the CARIBOU your household used? (Enter most important sources first.)

role	(enter person ID# from page 2)					(HHID of other households)					(community names)		
PROCESSED CARIBOU													
2 211000000													

..who else (not yet names) GAVE CARIBOU to your household? (Enter most important households or communities first.)

role	(HHID of other households)					(community names)		
GAVE CARIBOU TO US.								
3 211000000								

…who harvested the MOOSE your household used? (Enter most important sources first.)

role	People in THIS household (enter person ID# from page 2)					People in OTHER Wales HOUSEHOLDS (HHID of other households)					People in OTHER COMMUNITIES (community names)		
HARVESTED MOOSE													
1 211800000													

…who processed the MOOSE your household used? (Enter most important sources first.)

role	(enter person ID# from page 2)					(HHID of other households)					(community names)		
PROCESSED MOOSE													
2 211800000													

..who else (not yet names) GAVE MOOSE to your household? (Enter most important households or communities first.)

role	(HHID of other households)					(community names)		
GAVE MOOSE TO US.								
3 211800000								

ASSESSMENTS: LAND MAMMALS   210000000

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

During the last year,[1]

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

IF LESS or MORE …   X = do not use

WHY was your use different?   1

2

During the last year,[1]

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

If NO…

What KIND of land mammals did you need?

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

1 *"LAST YEAR" means between January 1, 2017 and December 31, 2017.*

NETWORKS & ASSESSMENTS OF LARGE LAND MAMMALS: 66, 67   **WALES: 365**

HARVESTS: MIGRATORY WATERFOWL

HOUSEHOLD ID

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

2. During the last year (between January 1, 2017 and December 31, 2017)
   did you, or members of your household USE or TRY TO HARVEST migratory waterfowl?..Y N

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

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

During the last year,[1]

did you or members of your household...

A … use[2] _____?

B …receive _____ from another HH or community

C …give _____ to another HH or community?

D …try[2] to harvest _____?

E …actually harvest any _____?

if harvest is "yes"

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

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

Read names below in blanks above	A USE	B REC	C GIVE	D TRY	E HAR	November - March WINTER	April - June SPRING	July - August SUMMER	September - October FALL	Season of harvest unknown	UNITS[3]
						(number killed in each season)				*(number)*	*(specify)*
PINTAIL *IVUGAQ, KURUGAQ*	Y N	Y N	Y N	Y N	Y N						IND.
410220000											
MALLARD *KURUGASUGRUK, IVUGASRUGRUK*	Y N	Y N	Y N	Y N	Y N						IND.
410214000											
SHOVELER *ALUUTAQ*	Y N	Y N	Y N	Y N	Y N						IND.
410230000											
AMERICAN WIGEON *UGGIHIQ, UGIIHIQ*	Y N	Y N	Y N	Y N	Y N						IND.
410236020											
SCAUP *QAQŁUKPALIK, QAQŁUTUUQ*	Y N	Y N	Y N	Y N	Y N						IND.
410226990											
TEAL/POCKET DUCK *QAIÑIQ*	Y N	Y N	Y N	Y N	Y N						IND.
410232060											
SCOTER (SPECIFY)	Y N	Y N	Y N	Y N	Y N						IND.
410228990											
EIDER (SPECIFY)	Y N	Y N	Y N	Y N	Y N						IND.
410206990											
OTHER DUCKS (SPECIFY)	Y N	Y N	Y N	Y N	Y N						IND.
410200000											
	Y N	Y N	Y N	Y N	Y N						IND.

During the last year, did your household use any other kind of Migratory waterfowl?..Y N
  IF YES, enter the name in a blank row above, and answer the questions in that row.

1 *"LAST YEAR" means between January 1, 2017 and December 31, 2017.*

2 *"USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.*

3 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.*

MIGRATORY WATERFOWL: 15

HARVESTS: MIGRATORY WATERFOWL

HOUSEHOLD ID

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

2. During the last year (between January 1, 2017 and December 31, 2017)
   did you, or members of your household USE or TRY TO HARVEST migratory waterfowl?.. Y N

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

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

During the last year,[1]

did you or members of your household...

A … use[2] _____?

B …receive _____ from another HH or community

C …give _____ to another HH or community?

D …try[2] to harvest _____?

E …actually harvest any _____?

if harvest is "yes"

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

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

Read names below in blanks above	A USE	B REC	C GIVE	D TRY	E HAR	November - March WINTER	April - June SPRING	July - August SUMMER	September - October FALL	Season of harvest unknown	UNITS[3]
						(number killed in each season)				*(number)*	*(specify)*
CACKLING/CANADA GEESE *NIGLIK*	Y N	Y N	Y N	Y N	Y N						IND.
410404990											
BRANT *NIĠLIĠNAQ, NIQLIQNAURAT*	Y N	Y N	Y N	Y N	Y N						IND.
410402000											
WHITE-FRONTED GEESE *KIGIYUK*	Y N	Y N	Y N	Y N	Y N						IND.
410410000											
SNOW GEESE *KAŊUQ*	Y N	Y N	Y N	Y N	Y N						IND.
410408000											
	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.
	Y N	Y N	Y N	Y N	Y N						IND.

During the last year, did your household use any other kind of Migratory waterfowl?.. Y N
   IF YES, enter the name in a blank row above, and answer the questions in that row.

1 *"LAST YEAR" means between January 1, 2017 and December 31, 2017.*

2 *"USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.*

3 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.*

MIGRATORY WATERFOWL: 15

HARVESTS: OTHER BIRDS

HOUSEHOLD ID [   ]

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

2. During the last year (between January 1, 2017 and December 31, 2017)
   did you, or members of your household USE or TRY TO HARVEST other birds?... Y N [   ]

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

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

During the last year,[1]

did you or members of your household...

A … use[2] _____?

B …receive _____ from another HH or community

C …give _____ to another HH or community?

D …try[2] to harvest _____?

E …actually harvest any _____?

if harvest is "yes"

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

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

Read names below in blanks above	A USE	B REC	C GIVE	D TRY	E HAR	November - March WINTER	April - June SPRING	July - August SUMMER	September - October FALL	Season of harvest unknown	UNITS[3]
						(number killed in each season)				*(number)*	*(specify)*
TUNDRA SWAN *QUGRUK*	Y N	Y N	Y N	Y N	Y N						IND.
410604000											
SANDHILL CRANE *TATIRGAQ, TATTIRGAQ*	Y N	Y N	Y N	Y N	Y N						IND.
410802000											
SNOWY OWL	Y N	Y N	Y N	Y N	Y N						IND.
422002000											
PTARMIGAN	Y N	Y N	Y N	Y N	Y N						IND.
421804000											
GROUSE *NAPAAQTUM AQARGIQ*	Y N	Y N	Y N	Y N	Y N						IND.
421802990											
SHOREBIRDS (SPECIFY)	Y N	Y N	Y N	Y N	Y N						IND.
411000000											
SEABIRDS (SPECIFY)	Y N	Y N	Y N	Y N	Y N						IND.
411200000											
LOONS (SPECIFY)	Y N	Y N	Y N	Y N	Y N						IND.
411216000											
	Y N	Y N	Y N	Y N	Y N						IND.
	Y N	Y N	Y N	Y N	Y N						IND.

During the last year, did your household use any other kind of Other birds?... Y N [   ]
IF YES, enter the name in a blank row above, and answer the questions in that row.

1 *"LAST YEAR" means between January 1, 2017 and December 31, 2017.*
2 *"USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.*
3 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.*

OTHER BIRDS: 15

HARVESTS: BIRD EGGS

HOUSEHOLD ID [ ]

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

2. During the last year (between January 1, 2017 and December 31, 2017)
   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 PAGE*.

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

During the last year,[1]

did you or members of your household...

A … use[2] _____?

B …receive _____ from another HH or community

C …give _____ to another HH or community?

D …try[2] to harvest _____?

E …actually harvest any _____?

if harvest is "yes"

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

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

Read names below in blanks above	A USE	B REC	C GIVE	D TRY	E HAR	AMOUNT *(amt)*	Units[4] *specify*	COMMENTS *(text)*
DUCK EGGS (SPECIFY)	Y N	Y N	Y N	Y N	Y N		IND.	
430200000								
GEESE EGGS (SPECIFY)	Y N	Y N	Y N	Y N	Y N		IND.	
430400000								
GULL EGGS (SPECIFY)	Y N	Y N	Y N	Y N	Y N		IND.	
431212000								
SWAN EGGS	Y N	Y N	Y N	Y N	Y N		IND.	
430600000								
CRANE EGGS	Y N	Y N	Y N	Y N	Y N		IND.	
430800000								
MURRE EGGS	Y N	Y N	Y N	Y N	Y N		IND.	
431218000								
AUKLET EGGS	Y N	Y N	Y N	Y N	Y N		IND.	
431202000								
UNKNOWN EGGS	Y N	Y N	Y N	Y N	Y N		IND.	
439900000								
	Y N	Y N	Y N	Y N	Y N		IND.	
	Y N	Y N	Y N	Y N	Y N		IND.	

During the last year, did your household use any other kind of Bird eggs?... Y N [ ]

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

1 *"LAST YEAR" means between January 1, 2017 and December 31, 2017.*

2 *"USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.*

3 *"ROD AND REEL" includes fish caught in open water with a hook and and a line attached to a rod or a pole. Jigging through the ice is "other gear."*

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

BIRD EGGS: 15   **WALES: 365**

HARVEST SUMMARY: BIRDS AND EGGS

HOUSEHOLD ID

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

MAPPING	*Refer to data collection maps and mapping instructions to map birds and eggs…*

NETWORKS	*…then ask the network and assessment questions below*

During the last year,[1]

…who harvested the BIRDS & EGGS your household used? (Enter most important sources first.)

role	People in THIS household (enter person ID# from page 2)						People in OTHER Wales HOUSEHOLDS (HHID of other households)						People in OTHER COMMUNITIES (community names)		
HARVESTED BIRDS & EGGS															
1 400000000															

…who processed the BIRDS & EGGS your household used? (Enter most important sources first.)

role	(enter person ID# from page 2)						(HHID of other households)						(community names)		
PROCESSED BIRDS & EGGS															
2 400000000															

..who else (not yet names) GAVE BIRDS & EGGS to your household? (Enter most important households or communities first.)

role							(HHID of other households)						(community names)		
GAVE BIRDS & EGGS TO US.															
3 400000000															

ASSESSMENTS: BIRDS AND EGGS	400000000

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

During the last year,[1]

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

IF LESS or MORE …   X = do not use

WHY was your use different? _____   1

   2

During the last year,[1]

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

If NO…

What KIND of birds and eggs did you need? _____

	… not noticable?	… minor ?	… major?	… Severe?	
How would you describe the impact to your household of not getting enough birds and eggs last year?	(0)	(1)	(2)	(3)	

1 *"LAST YEAR" means between January 1, 2017 and December 31, 2017.*

NETWORKS & ASSESSMENTS OF BIRDS AND EGGS: 66, 67   **WALES: 365**

HARVESTS: BERRIES

HOUSEHOLD ID

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

2. During the last year (between January 1, 2017 and December 31, 2017)
   did you, or members of your household USE or TRY TO HARVEST berries?.. Y   N

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

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

During the last year,[1]

did you or members of your household...

A … use[2] _____?

B …receive _____ from another HH or community

C …give _____ to another HH or community?

D …try[2] to harvest _____?

E …actually harvest any _____?

if harvest is "yes"

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

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

Read names below in blanks above	A USE	B REC	C GIVE	D TRY	E HAR	AMOUNT *(amt)*	Units[4] *specify*	COMMENTS *(text)*
BLUEBERRIES *ASIAQ*	Y N	Y N	Y N	Y N	Y N		GAL.	
601002000								
CLOUDBERRIES *SALMONBERRIES/AQPIK*	Y N	Y N	Y N	Y N	Y N		GAL.	
601016000								
LOW-BUSH CRANBERRIES *KIKMIÑÑAQ*	Y N	Y N	Y N	Y N	Y N		GAL.	
601004000								
HIGH BUSH CRANBERRIES *UQPIƊÑAQ*	Y N	Y N	Y N	Y N	Y N		GAL.	
601006000								
CROWBERRIES *PAUNĠAQ*	Y N	Y N	Y N	Y N	Y N		GAL.	
601007000								
OTHER WILD BERRIES	Y N	Y N	Y N	Y N	Y N		GAL.	
601099000								
	Y N	Y N	Y N	Y N	Y N		GAL.	
	Y N	Y N	Y N	Y N	Y N		GAL.	
	Y N	Y N	Y N	Y N	Y N		GAL.	
	Y N	Y N	Y N	Y N	Y N		GAL.	

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

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

1 *"LAST YEAR" means between January 1, 2017 and December 31, 2017.*

2 *"USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.*

3 *"ROD AND REEL" includes fish caught in open water with a hook and and a line attached to a rod or a pole. Jigging through the ice is "other gear."*

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

BERRIES: 17   **WALES: 365**

HARVESTS: PLANTS AND GREENS

HOUSEHOLD ID [ ]

1. Do you or members of your household USUALLY attempt to harvest plants and greens?..Y N [ ]

2. During the last year (between January 1, 2017 and December 31, 2017)
   did you, or members of your household USE or TRY TO HARVEST plants and greens?..Y N [ ]

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

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

During the last year,[1]

did you or members of your household...

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

if harvest is "yes"

Please estimate how many plants and greens ALL MEMBERS OF YOUR HOUSEHOLD got for subsistence uses during the last year. How many were harvested with ….

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

Read names below in blanks above	A USE	B REC	C GIVE	D TRY	E HAR	AMOUNT *(amt)*	Units[4] *specify*	COMMENTS *(text)*
WILLOW LEAVES *SURA*	Y N	Y N	Y N	Y N	Y N		GAL.	
602031000								
SOURDOCK *QUAGAQ*	Y N	Y N	Y N	Y N	Y N		GAL.	
602028000								
STINKWEED	Y N	Y N	Y N	Y N	Y N		GAL.	
602044000								
LABRADOR/TUNDRA TEA *ESKIMO TEA, SAAYUQ*	Y N	Y N	Y N	Y N	Y N		GAL.	
602018000								
ESKIMO POTATO *MASRU*	Y N	Y N	Y N	Y N	Y N		GAL.	
602009000								
SEA LOVAGE *TAGAAYUK*	Y N	Y N	Y N	Y N	Y N		GAL.	
602032000								
	Y N	Y N	Y N	Y N	Y N		GAL.	
	Y N	Y N	Y N	Y N	Y N		GAL.	
	Y N	Y N	Y N	Y N	Y N		GAL.	

During the last year, did your household use any other kind of Plants and greens?...Y N [ ]
   IF YES, enter the name in a blank row above, and answer the questions in that row.

1 *"LAST YEAR" means between January 1, 2017 and December 31, 2017.*
2 *"USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.*
3 *"ROD AND REEL" includes fish caught in open water with a hook and and a line attached to a rod or a pole. Jigging through the ice is "other gear."*
4 *UNITS will differ by species and situation. Units may be pounds (lbs), individuals (ind), portions of individuals (1/4), buckets, sacks, tubs, etc.*

PLANTS AND GREENS: 17   **WALES: 365**

HARVESTS: OTHER PLANTS

HOUSEHOLD ID

…continued from previous page

During the last year,[1]

did you or members of your household…

A … use[2] _____?

B …receive _____ from another HH or community

C …give _____ to another HH or community?

D …try[2] to harvest _____?

E …actually harvest any _____?

if harvest is "yes"

Please estimate how many plants and greens ALL MEMBERS OF YOUR HOUSEHOLD got for subsistence uses during the last year. How many were harvested with ….

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

Read names below in blanks above	A USE	B REC	C GIVE	D TRY	E HAR	AMOUNT *(amt)*	Units[4] *specify*	COMMENTS *(text)*
OTHER BEACH GREENS	Y N	Y N	Y N	Y N	Y N		GAL.	
602010000								
OTHER WILD GREENS	Y N	Y N	Y N	Y N	Y N		GAL.	
602038000								
	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.	
	Y N	Y N	Y N	Y N	Y N		GAL.	
	Y N	Y N	Y N	Y N	Y N		GAL.	

	A USE	B REC	C GIVE	D TRY	E HAR	Please estimate the percentage of your household's heating needs in 2017 that came from firewood.					
FIREWOOD	Y N	Y N	Y N	Y N	Y N	0% (0)	1% - 25% (1)	26% - 50% (2)	51% - 75% (3)	76% - 99% (4)	100% (5)
604000000								*(circle one)*			

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

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

1 *"LAST YEAR" means between January 1, 2017 and December 31, 2017.*

2 *"USE" includes harvesting, processing, eating, trading, feeding to dogs, etc. "TRY" includes looking, hunting, fishing, or any attempt to get.*

3 *"ROD AND REEL" includes fish caught in open water with a hook and and a line attached to a rod or a pole. Jigging through the ice is "other gear."*

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

OTHER PLANTS: 16

WALES: 365

HARVEST SUMMARY: PLANTS AND BERRIES

HOUSEHOLD ID

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

Otherwise, continue with mapping, network, and assessment sections…

MAPPING   *Refer to data collection maps and mapping instructions to map plants and berries…*

NETWORKS   *…then ask the network and assessment questions below*

During the last year,[1]

…who harvested the BERRIES your household used? (Enter most important sources first.)

role	People in THIS household (enter person ID# from page 2)				People in OTHER Wales HOUSEHOLDS (HHID of other households)				People in OTHER COMMUNITIES (community names)		
HARVESTED BERRIES											
1 601000000											

…who processed the BERRIES your household used? (Enter most important sources first.)

role	(enter person ID# from page 2)				(HHID of other households)				(community names)		
PROCESSED BERRIES											
2 601000000											

..who else (not yet names) GAVE BERRIES to your household? (Enter most important households or communities first.)

role		(HHID of other households)				(community names)		
GAVE BERRIES TO US.								
3 601000000								

…who harvested the VEGETATION your household used? (Enter most important sources first.)

role	People in THIS household (enter person ID# from page 2)				People in OTHER Wales HOUSEHOLDS (HHID of other households)				People in OTHER COMMUNITIES (community names)		
HARVESTED VEGETATION											
1 602000000											

…who processed the VEGETATION your household used? (Enter most important sources first.)

role	(enter person ID# from page 2)				(HHID of other households)				(community names)		
PROCESSED VEGETATION											
2 602000000											

..who else (not yet names) GAVE VEGETATION to your household? (Enter most important households or communities first.)

role		(HHID of other households)				(community names)		
GAVE VEGETATION TO US.								
3 602000000								

ASSESSMENTS: PLANTS AND BERRIES   600000000

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

During the last year,[1]

… did your household use LESS, SAME, or MORE plants and berries than in recent years? …………………………………………… X L S M

   IF LESS or MORE …   X = do not use

     WHY was your use different? _____   1

     _____   2

During the last year,[1]

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

   If NO…

     What KIND of plants and berries did you need? _____

	… not noticable?	… minor ?	… major?	… Severe?
How would you describe the impact to your household of not getting enough plants and berries last year?	(0)	(1)	(2)	(3)

1 *"LAST YEAR" means between January 1, 2017 and December 31, 2017.*

NETWORKS & ASSESSMENTS OF PLANTS AND BERRIES: 66, 67   **WALES: 365**

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 wild resources.

During the last year,[1]

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

IF LESS or MORE …   X = do not use

WHY was your use different?   1

2

During the last year,[1]

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

If NO…

What KIND of wild resources did you need?

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

HEALTH IMPACT ASSESSMENTS

1 *"LAST YEAR" means between January 1, 2017 and December 31, 2017.*

ASSESSMENTS OF ALL RESOURCES: 66   **WALES: 365**

FOOD SECURITY   HOUSEHOLD ID

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

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

(Circle one)

STATEMENT 1. We had enough of the kinds of food we wanted to eat…………………………   HH1

❷ **STATEMENT 2**. We had enough food, but not always the KIND of food we wanted to eat……   1   2   3

❸ **STATEMENT 3**. Sometimes, or often, we did **NOT HAVE ENOUGH** food to eat………………   If 2 or 3

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

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

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 couldn't get WILD FOOD,
your HH couldn't get STORE-BOUGHT food, or your HH couldn't get BOTH KINDS of food?................ WILD STOR BOTH

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 couldn't get WILD FOOD,
your HH couldn't get STORE-BOUGHT food, or your HH couldn't get BOTH KINDS of food?.............. WILD STOR BOTH

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…

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

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

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 on next page. Otherwise, go to next section…

FOOD SECURITY: 201   **WALES: 365**

FOOD SECURITY

HOUSEHOLD ID

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

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

    If YES…

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

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

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

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

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

    If YES…

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

EMPLOYMENT

HOUSEHOLD ID

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

Between January 1, 2017 and December 31, 2017 ...

…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 2002, list EACH JOB held last year. For household members who did not have a job, write: RETIRED, UNEMPLOYED, STUDENT, HOMEMAKER, DISABLED, etc..

		INCLUDE EACH PERSON 16 YEARS AND OLDER EVEN IF THEY DID NOT HAVE A JOB			WORK SCHEDULE[2]					
	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 title¹)*	*(employer)*	*(circle each month worked)*		*(circle one)*				*gross income³*
1ST JOB				J F M A M J J A S O N D	FT	PT	SF	OC	SP	$ / YR
1 6 910100000		SOC:	SIC:				schedule:			
2ND JOB				J F M A M J J A S O N D	FT	PT	SF	OC	SP	$ / YR
2 6 910100000		SOC:	SIC:				schedule:			
3RD JOB				J F M A M J J A S O N D	FT	PT	SF	OC	SP	$ / YR
3 6 910100000		SOC:	SIC:				schedule:			
4TH JOB				J F M A M J J A S O N D	FT	PT	SF	OC	SP	$ / YR
4 6 910100000		SOC:	SIC:				schedule:			
5TH JOB				J F M A M J J A S O N D	FT	PT	SF	OC	SP	$ / YR
5 6 910100000		SOC:	SIC:				schedule:			
6TH JOB				J F M A M J J A S O N D	FT	PT	SF	OC	SP	$ / YR
6 6 910100000		SOC:	SIC:				schedule:			
7TH JOB				J F M A M J J A S O N D	FT	PT	SF	OC	SP	$ / YR
7 6 910100000		SOC:	SIC:				schedule:			
8TH JOB				J F M A M J J A S O N D	FT	PT	SF	OC	SP	$ / YR
8 6 910100000		SOC:	SIC:				schedule:			
9TH JOB				J F M A M J J A S O N D	FT	PT	SF	OC	SP	$ / YR
9 6 910100000		SOC:	SIC:				schedule:			
10TH JOB				J F M A M J J A S O N D	FT	PT	SF	OC	SP	$ / YR
10 6 910100000		SOC:	SIC:				schedule:			

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

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

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

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

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

OTHER INCOME

HOUSEHOLD ID

Between January 1, 2017 and December 31, 2017 ...

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

IF NO, go to the next section on this page

IF YES, continue below…

		Did anyone in your household receive income from _____ in 2017	TOTAL amount all members of your household received from _____ in 2017
		(circle one)	*(dollars)*
DIVIDENDS	ALASKA PERMANENT FUND DIVIDEND	Y N	$ / YR
	32		
	NATIVE CORPORATION DIVIDENDS	Y N	$ / YR
	13		

Alaska PFD IN 2017	
1	*PFD = $1,100*
2	*PFDs = $2,200*
3	*PFDs = $3,300*
4	*PFDs = $4,400*
5	*PFDs = $5,500*
6	*PFDs = $6,600*
7	*PFDs = $7,700*
8	*PFDs = $8,800*
9	*PFDs = $9,900*
10	*PFDs = $11,000*
11	*PFDs = $12,100*

Regional corporations	*Dividend*
Bering Strait Native Corporation………	$3.75
Nana……………………………………..	$8.00

Village Corporation(s)	*Dividend*

Elder Bonus	*Dividend*
Bering Strait Native Corporation………..	$750
Nana…………………………………….	$750

Between January 1, 2017 and December 31, 2017 ...

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

IF NO, go to the next section on this page

IF YES, continue below…

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

		Received?	Total amount?
		(circle one)	*(dollars)*
FAMILY & CHILD	TANF (say "tanif", used to be AFDC)	Y N	$ / YR
	2		
	CHILD SUPPORT	Y N	$ / YR
	15		
	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

for _____ weeks =
for _____ weeks =

for _____ weeks =
for _____ weeks =

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

a *If this household used SNAP / QUEST CARD this year, remember to ask the questions on the following page.*

OTHER INCOME: 24   **WALES: 365**

ASSESSMENTS: GEAR PURCHASES

HOUSEHOLD ID

Please refer to the previous page: If this household DID NOT report using FOOD STAMPS (SNAP), continue to the next page.

If the household DID report use of SNAP on the previous page, continue.

SNAP funds (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.

Prior to this survey, were you aware that you could purchase subsistence FISHING or HUNTING GEAR with SNAP funds?............... Y   N

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 households subsistence fishing and hunting is the availability of SNAP funds for purchasing gear?

Not important   Important   Very Important

COMMENTS

DO YOU HAVE ANY QUESTIONS, COMMENTS OR CONCERNS?

_____

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INTERVIEW SUMMARY:

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DON'T FORGET TO FILL IN THE STOP TIME _____

COMMENTS: 300   **WALES: 365**

APPENDIX B–CONVERSION FACTORS

The following table presents the conversion factors used in determining how many pounds were harvested of each resource surveyed. For instance, if respondents reported harvesting three individual Bering cisco, the quantity would be multiplied by the appropriate conversion factor (in this case 1.4) to show a harvest of 4.2 lb of Bering cisco.

Resource name	Reported units	Conversion factor
Chum salmon	Individual	8.3000
Chum salmon	Pounds	1.0000
Chum salmon [CF retention]	Individual	8.3000
Coho salmon	Individual	6.8000
Coho salmon	Pounds	1.0000
Coho salmon [CF retention]	Individual	6.8000
Chinook salmon	Individual	10.1000
Chinook salmon [CF retention]	Individual	10.1000
Pink salmon	Individual	3.9000
Pink salmon	Pounds	1.0000
Pink salmon [CF retention]	Individual	3.9000
Sockeye salmon	Individual	6.0000
Sockeye salmon	Pounds	1.0000
Sockeye salmon [CF retention]	Individual	6.0000
Unknown salmon	Individual	5.3831
Pacific herring	Individual	0.1800
Pacific herring [CF retention]	Gallons	6.0000
Pacific herring roe [CF retention]	Gallons	6.0000
Capelin (grunion)	Individual	0.1800
Capelin (grunion)	Gallons	6.0000
Rainbow smelt	Individual	0.1800
Unknown smelts	Gallons	6.0000
Arctic cod	Individual	0.1100
Saffron cod	Individual	0.2100
Saffron cod	Gallons	6.0000
Pacific halibut	Pounds	1.0000
Pacific halibut [CF retention]	Pounds	1.0000
Arctic lamprey	Individual	0.6000
Burbot	Individual	4.2000
Arctic char	Individual	3.3000
Dolly Varden	Individual	3.3000
Lake trout	Individual	4.0000
Arctic grayling	Individual	0.9000
Northern pike	Individual	3.3000
Sheefish	Individual	11.4000
Longnose sucker	Individual	1.4000
Broad whitefish	Individual	3.2000
Bering cisco	Individual	1.4000
Least cisco	Individual	0.7000
Humpback whitefish	Individual	2.1000

-continued-

Resource name	Reported units	Conversion factor
Round whitefish	Individual	0.7000
Unknown whitefishes	Individual	0.0000
Unknown nonsalmon fish	Individual	0.0000
Brown bear	Individual	84.0000
Caribou	Individual	136.0000
Moose	Individual	538.0000
Common muskox	Individual	295.0000
Beaver	Individual	20.0000
Arctic fox	Individual	0.0000
Red fox	Individual	0.0000
Alaska hare	Individual	1.5000
Snowshoe hare	Individual	1.5000
River otter	Individual	3.0000
Marmot	Individual	5.0000
Mink	Individual	2.5000
Muskrat	Individual	0.7500
Gray wolf	Individual	0.0000
Wolverine	Individual	0.0000
Young bearded seal	Individual	286.0000
Adult bearded seal	Individual	286.0000
Ringed seal	Individual	57.0000
Spotted seal	Individual	98.0000
Unknown seal oil	Individual	0.0000
Walrus	Individual	770.0000
Beluga whale	Individual	995.0000
Unknown eiders	Individual	2.2075
Mallard	Individual	1.6100
Long-tailed duck	Individual	1.1600
Northern pintail	Individual	1.1800
Unknown scaups	Individual	1.3500
Unknown scoters	Individual	1.8600
Northern shoveler	Individual	0.8600
Green-winged teal	Individual	0.4700
American wigeon	Individual	1.0500
Unknown ducks	Individual	1.3586
Brant	Individual	1.8900
Unknown Canada/cackling geese	Individual	2.8300
Snow goose	Individual	2.8000
White-fronted goose	Individual	3.1800
Tundra (whistling) swan	Individual	10.3300
Sandhill crane	Individual	5.4000
Unknown shorebirds	Individual	0.0500
Unknown loons	Individual	3.6000

-continued-

Resource name	Reported units	Conversion factor
Unknown seabirds	Individual	3.6000
Unknown grouses	Individual	0.8500
Unknown ptarmigans	Individual	0.7700
Snowy owl	Individual	2.6800
Unknown eider eggs	Individual	0.1633
Unknown eider eggs	Quarts	5.7188
Unknown duck eggs	Individual	0.1633
Unknown duck eggs	Gallons	22.8750
Unknown goose eggs	Individual	0.1500
Unknown swan eggs	Individual	0.6330
Sandhill crane eggs	Individual	0.3330
Unknown auklet eggs	Individual	0.0550
Unknown gull eggs	Individual	0.2140
Unknown gull eggs	Gallons	16.6000
Unknown murre eggs	Individual	0.2310
Unknown eggs	Individual	0.1804
Unknown eggs	Quarts	5.0000
Unknown clams	Pounds	1.0000
Unknown clams	Gallons	3.0000
Unknown clams	Half-pints	0.1875
Unknown king crabs	Individual	2.3000
Unknown king crabs [CF retention]	Individual	2.3000
Unknown crabs	Individual	2.3000
Giant scale worm	Individual	0.1800
Unknown mussels	Gallons	1.5000
Unknown marine invertebrates	Individual	0.3700
Unknown marine invertebrates	Quarts	0.3750
Blueberry	Gallons	4.0000
Blueberry	Quarts	1.0000
Blueberry	Half-pints	0.2500
Lowbush cranberry	Gallons	4.0000
Lowbush cranberry	Quarts	1.0000
Lowbush cranberry	Half-pints	0.2500
Highbush cranberry	Gallons	4.0000
Crowberry	Gallons	4.0000
Crowberry	Quarts	1.0000
Cloudberry	Gallons	4.0000
Cloudberry	Quarts	1.0000
Cloudberry	Half-pints	0.2500
Raspberry	Gallons	4.0000
Other wild berry	Gallons	4.0000
Wild rhubarb	Gallons	1.0000
Wild potato	Gallons	1.0000
Wild potato	Quarts	0.2500
Wild potato	Half-pints	0.0625
Other beach greens	Gallons	1.0000
Hudson's Bay (Labrador) tea	Gallons	1.0000

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Resource name	Reported units	Conversion factor
Hudson's Bay (Labrador) tea	Quarts	0.2500
Sourdock	Gallons	1.0000
Sourdock	Quarts	0.2500
Sourdock	Half-pints	0.0625
Spruce tips	Gallons	1.0000
Willow leaves	Gallons	1.0000
Willow leaves	Quarts	0.2500
Willow leaves	Half-pints	0.0625
Wild rose hips	Gallons	4.0000
Other wild greens	Gallons	1.0000
Other wild greens	Quarts	0.2500
Other wild greens	Half-pints	0.0625
Unknown mushrooms	Gallons	1.0000
Fireweed	Gallons	1.0000
Stinkweed	Gallons	1.0000
Stinkweed	Quarts	0.2500
Punk	Gallons	0.0000
Chaga	Gallons	1.0000
Sea lovage	Gallons	1.0000
Sea lovage	Quarts	0.2500
Wild chives	Gallons	1.0000
Wild chives	Half-pints	0.0625
Mousefoods	Gallons	1.0000
Wood	Cords	0.0000
Roots	Gallons	0.0000
Other wood	Cords	0.0000
Unknown vegetation	Half-pints	0.0625

Source ADF&G Division of Subsistence household surveys, 2018.

APPENDIX C–ADDITIONAL TABLES

Table C1.–Birthplaces of household heads, Wales, 2017.

Birthplace	Percentage
Brevig Mission	10.0%
Diomede	7.5%
Nome	2.5%
Shishmaref	2.5%
Teller	2.5%
Wales	57.5%
Other U.S.	12.5%
Missing	5.0%

Source ADF&G Division of Subsistence household surveys, 2018.
Note "Birthplace" means the place of residence of the parents of the individual when the individual was

Table C2.–Birthplaces of population, Wales, 2017.

Birthplace	Percentage
Anchorage	2.1%
Brevig Mission	4.2%
Diomede	4.2%
Gambell	1.0%
Nome	3.1%
Savoonga	1.0%
Shishmaref	1.0%
Teller	1.0%
Tuntutuliak	1.0%
Wales	70.8%
Other U.S.	7.3%
Missing	3.1%

Source ADF&G Division of Subsistence household surveys, 2018.
Note "Birthplace" means the place of residence of the parents of the individual when the individual was born.

Table C3.–Population profile, Wales, 2017.

Age	Male Number	Male Percentage	Male Cumulative percentage	Female Number	Female Percentage	Female Cumulative percentage	Total Number	Total Percentage	Total Cumulative percentage
0–4	13.1	12.7%	12.7%	5.6	7.9%	7.9%	18.7	10.8%	10.8%
5–9	13.1	12.7%	25.5%	13.1	18.4%	26.3%	26.1	15.1%	25.8%
10–14	7.5	7.3%	32.7%	7.5	10.5%	36.8%	14.9	8.6%	34.4%
15–19	5.6	5.5%	38.2%	0.0	0.0%	36.8%	5.6	3.2%	37.6%
20–24	5.6	5.5%	43.6%	3.7	5.3%	42.1%	9.3	5.4%	43.0%
25–29	11.2	10.9%	54.5%	5.6	7.9%	50.0%	16.8	9.7%	52.7%
30–34	1.9	1.8%	56.4%	5.6	7.9%	57.9%	7.5	4.3%	57.0%
35–39	9.3	9.1%	65.5%	3.7	5.3%	63.2%	13.1	7.5%	64.5%
40–44	0.0	0.0%	65.5%	0.0	0.0%	63.2%	0.0	0.0%	64.5%
45–49	5.6	5.5%	70.9%	1.9	2.6%	65.8%	7.5	4.3%	68.8%
50–54	7.5	7.3%	78.2%	5.6	7.9%	73.7%	13.1	7.5%	76.3%
55–59	5.6	5.5%	83.6%	5.6	7.9%	81.6%	11.2	6.5%	82.8%
60–64	5.6	5.5%	89.1%	3.7	5.3%	86.8%	9.3	5.4%	88.2%
65–69	1.9	1.8%	90.9%	0.0	0.0%	86.8%	1.9	1.1%	89.2%
70–74	1.9	1.8%	92.7%	1.9	2.6%	89.5%	3.7	2.2%	91.4%
75–79	0.0	0.0%	92.7%	0.0	0.0%	89.5%	0.0	0.0%	91.4%
80–84	0.0	0.0%	92.7%	0.0	0.0%	89.5%	0.0	0.0%	91.4%
85–89	0.0	0.0%	92.7%	0.0	0.0%	89.5%	0.0	0.0%	91.4%
90–94	0.0	0.0%	92.7%	0.0	0.0%	89.5%	0.0	0.0%	91.4%
95–99	0.0	0.0%	92.7%	0.0	0.0%	89.5%	0.0	0.0%	91.4%
100–104	0.0	0.0%	92.7%	0.0	0.0%	89.5%	0.0	0.0%	91.4%
Missing	7.5	7.3%	100.0%	7.5	10.5%	100.0%	14.9	8.6%	100.0%
Total	**102.6**	**100.0%**	**100.0%**	**70.9**	**100.0%**	**100.0%**	**173.5**	**100.0%**	**100.0%**

Source ADF&G Division of Subsistence household surveys, 2018.

Table C4.–Household maturity and degree of surveyed households, Wales, 2017.

Household maturity[a]	Households		Degree[b] type (average per household)			Harvest (lb)		
	Number	Percentage	Indegree[c]	Outdegree[d]	Total	Average	Min	Max
Developing	8	31%	14.8	3.5	18.3	613.8	0.0	2,412.6
Mature	10	38%	8.8	7.6	16.4	526.8	30.0	2,122.6
Elder	8	31%	11.0	2.4	13.4	451.5	0.0	2,294.6
Any category	26	100%	11.0	5.0	16.0	530	0	2,412.6

Source ADF&G Division of Subsistence household surveys, 2018.

a. Developing households include household heads of less 40 years of age; mature, 40 to 59 years; and elder, greater than 59 years.

b. Number of total instances of support.

c. Number of instances of support received from others.

d. Number of instances of support provided to others.

Table C5.–Household type and degree of surveyed households, Wales, 2017.

Household head	Households		Degree[a] type (average per household)			Harvest (lb)		
	Number	Percentage	Indegree[b]	Outdegree[c]	Total	Average	Min	Max
Couple	14	54%	12.1	7.4	19.5	763.7	0.0	2,412.6
Single female	4	15%	10.8	1.3	12.0	293.6	70.2	803.1
Single male	8	31%	10.1	1.9	12.0	240.4	0.0	524.3
Any category	26	100%	11.0	5.0	16.0	530.0	0.0	2,412.6

Source ADF&G Division of Subsistence household surveys, 2018.

a. Number of total instances of support.

b. Number of instances of support received from others.

c. Number of instances of support provided to others.

Table C6.–Harvest amount and degree type of surveyed households, Wales, 2017.

Harvest Category[a]	Households		Degree[b] type (average per household)		
	Number	Percentage	Indegree[c]	Outdegree[d]	Total
None	2	8%	14.5	1.5	16.0
Low to average	18	69%	9.6	1.8	11.4
Above average	2	8%	17.0	14.5	31.5
High	4	15%	14.8	14.5	29.3
Any category	26	100%	11.0	5.0	16.0

Source ADF&G Division of Subsistence household surveys, 2018.

a. Harvest category None includes households with a harvest of 0 lb; Low to average, 1–529 lb; Above average, 530–1,275 lb; and High, greater than 1,276 lb.

b. Number of total instances of support.

c. Number of instances of support received from others.

d. Number of instances of support provided to others.

Table C7.–Summary of wild food production network ties by type, role, and resource, Wales, 2017.

Resource	Ties[a]							Percentage of total ties	
	Self provisioning[b] (number)			Social provisioning[c]					
	Harvesting	Processing	Total	Harvesting	Processing	Receiving[d]	Total	Self	Social
Berries	50	46	96	11	9	1	21	82%	18%
Birds and eggs	10	12	22	12	10	0	22	50%	50%
Caribou	0	1	1	9	9	1	19	5%	95%
Cod	3	1	4	4	4	0	8	33%	67%
Herring	0	0	0	1	1	0	2	0%	100%
Marine invertebrates	27	26	53	9	4	3	16	77%	23%
Moose	0	2	2	20	19	0	39	5%	95%
Plants, greens, and mushrooms	28	28	56	5	4	0	9	86%	14%
Salmon	18	26	44	31	21	5	57	44%	56%
Seal	10	11	21	30	33	6	69	23%	77%
Walrus	4	5	9	14	14	4	32	22%	78%
Total	150	158	308	146	128	20	294	51%	49%

Source ADF&G Division of Subsistence household surveys, 2018.

a. Instances of support.

b. Harvesting or processing support for one's own household.

c. Harvesting or processing support received from other households.

d. Support received for which the harvester or processor is unknown.

Table C8.–Number of individuals in surveyed households participating in harvesting and processing, by resource category, Wales, 2017.

	Individuals (number)		
Resource	Harvesting	Processing	Any role
Berries	50	46	50
Birds and eggs	10	12	12
Caribou	0	1	1
Marine invertebrates	27	26	29
Moose	0	2	2
Plants, greens, and mushrooms	28	28	28
Saffron cod	3	1	3
Salmon	18	26	27
Seal	10	11	11
Walrus	4	5	5
Any resource	65	65	68

Source ADF&G Division of Subsistence household surveys, 2018.

Table C9.–Local and nonlocal social provisioning ties by resource, Wales, 2017.

	Ties[a]			
	Wales		Other Community	
Resource	Number	Percentage	Number	Percentage
Berries	11	52%	10	48%
Birds and Eggs	9	41%	13	59%
Caribou	5	26%	14	74%
Herring		0%	2	100%
Marine Invertebrates	5	31%	11	69%
Moose	35	90%	4	10%
Plants, greens, and mushrooms	5	56%	4	44%
Saffron Cod	4	50%	4	50%
Salmon	43	79%	14	21%
Seal	51	74%	18	26%
Walrus	14	44%	18	56%
All resources	184	63%	110	37%

Source ADF&G Division of Subsistence household surveys, 2018.

a. Instances of support.

Table C10.–Social provisioning ties by resource and community, Wales, 2017.

	Community									
Resource	Anchorage	Utqiaġvik	Brevig Mission	Diomede	Nome	Savoonga	Shishmaref	Teller	White Mountain	All communities
Berries	2	-	1	-	5	-	2	-	-	10
Birds and eggs	-	-	2	11	-	-	-	-	-	13
Caribou	1	2	4	-	1	1	5	-	-	14
Herring	-	-	-	-	-	-	-	2	-	2
Marine invertebrates	-	-	-	9	2	-	-	-	-	11
Moose	-	-	2	-	-	-	-	-	2	4
Plants, greens, and mushrooms	-	-	-	2	2	-	-	-	-	4
Cod	-	-	2	-	-	-	2	-	-	4
Salmon	2	-	8	-	2	-	-	2	-	14
Seal	-	-	2	7	-	-	5	2	2	18
Walrus	-	-	2	11	-	5	-	-	-	18
All resources	5	2	23	40	12	6	14	6	4	112

Source ADF&G Division of Subsistence household surveys, 2018.

Table C11.–Local and nonlocal social provisioning ties by role, Wales, 2017.

| | Ties[a] | | | |
| | Wales | | Other Community | |
Role	Number	Percentage	Number	Percentage
Harvesting	93	64%	53	36%
Processing	83	65%	45	35%
Receiving[b]	6	30%	14	70%
All roles	184	63%	110	37%

Source ADF&G Division of Subsistence household surveys, 2018.

a. Instances of support.

b. Support received for which the harvester or processor is unknown.

Table C12.–Estimated harvest of fish for consumption by dogs, Wales, 2017.

Resource	Amount	Pounds
Salmon		
Pink salmon	10.8 ind	42.3 lb
Nonsalmon fish		
Capelin (grunion)	3.6 gal	21.7 lb
Total		**64.0** lb

Source ADF&G Division of Subsistence household surveys, 2018.

Note The summary row that includes incompatible units of measure has been left blank.

Table C13.–Estimated large land mammal harvests by month and sex, Wales, 2017.

Resource	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk	Total
							Estimated harvest by month							
All large land mammals	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**1.8**	**0.0**	**0.0**	**0.0**	**0.0**	**1.8**
Brown bear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Caribou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Moose	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	**1.8**
Moose, bull	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	**1.8**
Moose, cow	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
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**
Common muskox	0.0	0.0	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, 2018.

Table C14.–Estimated small land mammal harvests by month, Wales, 2017.

Resource	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk	Total
							Estimated harvest by month							
All small land mammals	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**1.8**	**1.8**	**0.0**	**0.0**	**3.6**
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**
Arctic fox	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Red fox	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**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	1.8	1.8	0.0	0.0	**3.6**
River 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**
Marmot	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
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**
Gray wolf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Wolverine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**

Source ADF&G Division of Subsistence household surveys, 2018.

Table C15.–Estimated marine mammal harvests by month, Wales, 2017.

Resource	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Unk	Total
							Estimated harvest by month							
All marine mammals	**0.0**	**0.0**	**0.0**	**25.3**	**19.9**	**1.8**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**47.0**
Seal	0.0	0.0	0.0	25.3	16.3	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**43.4**
Bearded seal	0.0	0.0	0.0	16.3	10.8	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**28.9**
Young bearded seal	0.0	0.0	0.0	5.4	10.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**16.3**
Adult bearded seal	0.0	0.0	0.0	10.8	0.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**12.7**
Ringed seal	0.0	0.0	0.0	9.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**10.8**
Spotted seal	0.0	0.0	0.0	0.0	3.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**3.6**
Unknown seal oil	0.0	0.0	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	3.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**3.6**
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**
Bowhead whale	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**

Source ADF&G Division of Subsistence household surveys, 2018.

Table C16.–Estimated bird harvests by season, Wales, 2017.

| Resource | Estimated harvest by season | | | | | Total |
	Spring	Summer	Fall	Winter	Season unknown	
All birds	41.6	0.0	38.0	0.0	0.0	**79.5**
Mallard	5.4	0.0	0.0	0.0	0.0	**5.4**
Long-tailed duck	3.6	0.0	0.0	0.0	0.0	**3.6**
Northern pintail	0.0	0.0	3.6	0.0	0.0	**3.6**
Unknown scaups	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown scoters	0.0	0.0	0.0	0.0	0.0	**0.0**
Northern shovelers	0.0	0.0	0.0	0.0	0.0	**0.0**
Green-winged teal	0.0	0.0	0.0	0.0	0.0	**0.0**
American wigeon	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown ducks	5.4	0.0	0.0	0.0	0.0	**5.4**
Brant	1.8	0.0	14.5	0.0	0.0	**16.3**
Unknown Canada/cackling geese	7.2	0.0	0.0	0.0	0.0	**7.2**
Snow goose	5.4	0.0	19.9	0.0	0.0	**25.3**
White-fronted goose	3.6	0.0	0.0	0.0	0.0	**3.6**
Tundra (whistling) swan	5.4	0.0	0.0	0.0	0.0	**5.4**
Sandhill crane	1.8	0.0	0.0	0.0	0.0	**1.8**
Unknown shorebirds	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown loons	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown seabirds	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown grouses	0.0	0.0	0.0	0.0	0.0	**0.0**
Unknown ptarmigans	1.8	0.0	0.0	0.0	0.0	**1.8**
Snowy owl	0.0	0.0	0.0	0.0	0.0	**0.0**

Source ADF&G Division of Subsistence household surveys, 2018.

Table C17.–Respondent comments and concerns, Wales, 2017.

The winds used to take days to shift (15 years ago), now it changes while you're out there. First time in life there is open water in January. Hoping this survey will be used to benefit subsistence users. Want more subsistence useres voice in regulatory processes.

Respondent mentioned no one brings brown bear permits to town, but they bring muskox ones.

Good to have you guys here!

Earlier break up. Extreme environmental change. Elders were talking about it in the early 90s and scientists didn't listen at that time. Seeing those changes in my short lifetime.

Ice conditions are terrible. Fish and Game needs to keep the pressure on working with USFWS to protect our resources. Marine mammal hunting is vital to community and hunting is important. Great expense have to travel far distance in pursuit of resource. Usually goes as far up as Shishmaref when boat is working. Regulations are inappropriate for those just trying to feed their families

Too much south wind, moving ice pack quickly way to fast impacting subsistence. Bowheads like to migrate with ice. We usually see moose in July and the season opens in August, weather conditions impact everything and the store runs out due to weather as well

Weather switches more quickly more severe in fall and early spring sea mammals are less available. Commercial fishing impacts fish stocks, have to go further to find seals. Elders foresaw this making sure younger generation understands

Sea ice conditions available this year. Regulations shouldn't be so harsh on those that rely on subsistence foods who live on urban areas (Anchorage, etc). Emperor good—higher bag limits

Should be more muskox permits for village. Only 2 from the village

Folks aren't hunting, when they do they don't conceal their presence enough and the seals run off. There were folks ice fishing recently and that was nice but didn't see any catch. See people carrying bird guns but no birds

"Peoples propel" is there any program like that around or "Peoples prop." on Kusko. Is there something up here like that. Need this kind of program, the community needs that more. People would be going out harvesting.

Ice conditions are deteriorating making hunting harder.

Lifestyle has changed so much last 25 years. I don't hunt as much. Back then we'd be out there now. Back in 2000 I was part of a successful bowhead crew. Clamming is best with a N.W. wind because the way the beach is oriented. Get reindeer from town. Haven't really done migratory waterfowl since flu scare. Eating less Native food than used to.

Bad spring with ice conditions—hunting for meat. Concerned with lesions, looks the same as the UME 5 years ago, less then there where but still seeing. Geese and berries were bad this year. Pollution is going to hurt us, global warming is impacting us. Pollution is impacting marine life. Elders told about climate change, were aware of it. Said it would get worse and it has. Migration patterns changing, ice conditions are hurting hunting. All of these things impacting food stability in ocean. Wonders if nu

Global warming—concerned about it, ground unstable while picking (cracks opening in the tundra). Poor hunting—ice conditions.

Source ADF&G Division of Subsistence household surveys, 2018.